The Effects of Immigration on Capital Inflow

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Abstract

In this theoretical paper, we study the relationship between immigration and capital inflow. We apply the idea of Helpman (1984) in explaining that physical capital movement occurs to bring about factor price equalization across countries when international trade alone cannot. Based on the Heckscher-Ohlin model, the Edgeworth Box is used in our static analysis. We find that immigrants may increase or decrease capital inflow. This is because immigrants increase labor supply. They may also depress the domestic wage. Consequently, firms substitute labor for capital and this lowers capital inflow. On the other hand, an increase in labor supply through immigration raises the marginal product of capital and thus the return on investments. Higher returns on capital attract capital inflow. The increase in capital inflow may in turn eliminate the impacts of immigration on factor returns. This suggests the need for future empirical studies of migration and labor market outcomes to control for endogenous capital movements.

บทคัดย่อ

บทความนี้เป็นบทความเชิงทฤษฎีที่ศึกษาถึงความสัมพันธ์เชิงสถิตย์ระหว่างการอพยพย้ายเข้า ของแรงงานต่างชาติกับการไหลเข้าของทุนจากต่างประเทศ โดยประยุกต์เอาแนวความคิดของ Helpman

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(1984)	ในการอธิบายการเคลื่อนย้ายทุนทางกายภาพว่าเกิดขึ้นเพื่อให้ผลตอบแทนปัจจัยการผลิต
ระหว่างประเทศเท่ากันในกรณีที่การค้าระหว่างประเทศไม่สามารถทำหน้าที่นี้ได้โดยลำพัง	และได้ใช้
Edgeworth Box ที่มีรากฐานมาจากแบบจำลองของ Heckscher-Ohlin เป็นเครื่องมือในการศึกษา เรา
พบว่า	การย้ายเข้ามาของแรงงานต่างชาติอาจส่งผลเพิ่มหรือลดการไหลเข้าของทุนก็ได้	เพราะการ
เพิ่มขึ้นของแรงงานต่างชาติจะส่งผลให้อุปทานแรงงานในประเทศเพิ่มสูงขึ้น	ทำให้ค่าจ้างแรงงานลด
ต่ำลง ส่งผลให้นายจ้างหันมาจ้างแรงงานเพิ่มขึ้นและลดการพึ่งพิงทุนลง แต่ในขณะเดียวกัน การเพิ่มขึ้น
ของแรงงานต่างชาติจะทำให้ผลตอบแทนส่วนเพิ่มจากการลงทุนเพิ่มสูงขึ้น	ยังผลให้เกิดการไหลเข้า
ของทุนที่เพิ่มสูงขึ้น	ซึ่งก็จะส่งผลดีต่อค่าจ้างแรงงานตามมาด้วย	ดังนั้น	งานศึกษาเชิงประจักษ์ถึง
ผลกระทบของแรงงานข้ามชาติต่อค่าจ้างของแรงงานท้องถิ่นจึงควรคำนึงถึงความสัมพันธ์ระหว่างการ
อพยพย้ายเข้าของแรงงานต่างชาติกับการไหลเข้าของทุนนี้ด้วย

1. Introduction

The standard models in the migration literature deal with the short run. They allow industry-specific factors to earn rents which are neither equalized across industries nor dissipated over time. These models treat capital as a fixed factor and do not impose the long-run equilibrium condition of zero profits. Moreover, the effects of labor immigration are assessed empirically in isolation, not in conjunction with other endogenous economic flows, such as trade and foreign investment. Perhaps this is because most of these studies are done by labor economists who are more interested in wages and employment in developed countries. Capital inflow is not very important in the developed countries. However, in developing countries such as Thailand, capital inflow and exports are very important. They are the engines of growth. Immigrants increase host countries' labor supply and under some conditions at least, lower local wages.[1] Cheap labor attracts more capital inflow but may as well substitute labor for capital and this lowers capital inflow.

Migrant workers in Thailand, for example, may help maintain Thailand's comparative advantage in labor-intensive goods. Mae Sot, a town in Tak province, Northern Thailand is located across from Myanmar. Martin (2004) reports that following the Thai government policy of

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[1]Theoretically, the wage effect of immigration could be negative, positive or just zero.

"constructive engagement" with Myanmar, which began with the Chatichai Choonhavan government (1988-91), factories have begun to open and relocate to Mae Sot to take advantage of cheap laborers from Myanmar. As the cost of labor increased during Thailand's boom decade (1986-1996), and particularly from 1991, when real wages grew at eight percent a year, increasing numbers of Burmese workers migrated to Thailand. Tak is estimated to have about 200,000 Burmese workers, the second highest provincial figure nationwide, while estimates for Mae Sot are 70,000 to 100,000 (Ministry of Labor, Thailand). According to a report by the Federation of Trade Unions-Burma (FTUB), in the roughly 200 factories in Tak, Burmese constitute about 95 percent of the workforce. Many of these factories were established in the 1990s, often by foreign investors seeking to employ Burmese workers to sew garments that could be exported from Thailand. Moreover, in late 2004 twenty-six companies were receiving Thailand's Board of Investment (BOI) privileges in Tak Province.[2] During 2003, the Federation of the Tak Industrial Chapter earned US$ 125 million. Martin (2004) also reports that an effort in 1999 to remove 30,000 illegal Burmese workers to open jobs for unemployed Thais affected 100 garment factories. Only 6,000 Thais replaced the 30,000 departed Burmese. As a result, 30 factories reportedly closed between August and December 1999. This indicates that output production, capital inflow and immigration are closely related.

In this paper, we study the theoretical impact of immigration on capital movement. Motivated by Helpman (1984), we develop a long run static general equilibrium model of international trade and factor movements. Motivated by the Thai experience, we consider the case in which capital movement and international trade take place between two countries, while immigrants come from a third country. In this case, immigration is equivalent to an increase in labor endowment as far as production and GDP are concerned.

The existing literature considers the case in which international trade, capital movement and migration all take place between two countries. It examines whether trade, capital movement and migration are substitutes or complements in the two countries. In a standard framework, migration and trade, capital movement and trade, and migration and capital movement are all substitutes. Trade

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[2]Tak Province is in the most heavily promoted zone by BOI for investors to receive investment privileges.

leads to factor price equalization and therefore lowers incentives for factor mobility; at the same time, factor movements (beyond the Rybczynski cone) reduce price differentials and, hence, trade. Similarly, capital is expected to flow to where labor used intensively in production is abundant and, other things equal, workers will supply their labor services where the highest salary can be obtained. Through such mechanisms, migration and capital inflow are substitutes. On the other hand, there is a growing literature emphasizing that migrant networks facilitate bilateral economic transactions through their lowering of informational and cultural barriers between host and origin countries. Trade and migration as well as capital inflow and migration appear as complements (e.g., Lopez and Schiff, 1998). Moreover, capital inflow and trade are complements in the case that vertical FDI associated with production fragmentation creates trade in intermediates.

This is, however, of little relevance to the situation in Thailand. Thailand's major trading and capital-flow partners and the source countries of its immigration are different countries. Capital inflow in Thailand comes from more developed economies such as Japan, Singapore, Hong Kong and the United States. These are also Thailand's major trade partners (see Table 1). However, immigrants come from less developed countries such as Myanmar, Laos and Cambodia. In contrast to the literature, therefore, we ask a different question: what will happen to trade and capital flow between Thailand and global partners if immigration from Myanmar and its other neighbors is higher?

Table 1: Major Trade and FDI Partners of Thailand (% of total)

Main export partners (as of 2003, % of total export)	Main import partners (as of 2003, % of total import)	Sources of FDI (as of 2000, % of total FDI)
United States 17%	Japan 24.1%	Japan 31%
Japan 14.2%	United States 9.5%	United States 22%
Singapore 7%	China 8%	United Kingdom 14%
China 7%	Malaysia 6%	Singapore 13%
Hong Kong 5.4%	Singapore 4.3%	Hong Kong 12%

Source: Ministry of Commerce, Thailand

In this paper we find that if prices are fixed, immigrants will always increase capital inflow. However, if prices are flexible, immigrants will increase or decrease capital inflow. The first result occurs because an increase in labor supply through immigrants increases the marginal product of capital and thus raises the return on capital, which attracts capital inflow. We call this an *endowment effect*. Meanwhile, since migrant and native workers are assumed to be substitutes, immigrants increase labor supply in the economy and under the assumption that number of the immigrants is high relative to that of the natives, domestic wages decline. Firms consequently substitute labor for capital. This results in a decrease in capital inflow. This is called a *price effect*. Thus, immigrants increase capital inflow if the endowment effect dominates the price effect, and vice versa.

The organization of this paper is as follows. The next section presents a literature review. Section 3 provides a description of the basic model. The structures of equilibrium in an integrated world economy and in two trading economies are described in this section. Our modified version of the Helpman model is also described in this section. Then, in section 4, the modified model is used in order to study the impact of immigration on capital flow. The final section offers some conclusions.

2. Literature Review

The nature of the relationship between migration, investment and trade has long been of interest to economists, one reason being its importance for policy design. Whether a policy change affecting one of these variables results in a positive or negative change in the other two, and whether or not the direction of change in these variables is considered desirable, is a matter of concern to policymakers. For example, suppose a host country in the North liberalizes its trade policy, resulting in an increase in exports by a migrant-source country in the South. If migration and trade are substitutes, migration will decline following trade liberalization in the host country, source country, or both. This may be viewed favorably by the host country, particularly in the case of unskilled migrants. The existing literature mainly considers the bilateral context of the relationship of trade, capital movement and migration as represented in figure 1a. It examines whether trade, capital inflow and migration are substitutes or complements in the two countries.

However, the situation of trade, capital inflow and immigration in Thailand is quite different. Thailand's major trading and capital-flow partners and the source countries of immigration are different. As presented in figure 1b, capital flow in Thailand flows in from more developed countries such as East Asian countries (Japan, Singapore, and Taiwan) and the United States. These countries are also the major trade partners of Thailand. However, immigrants are from less developed countries such as Myanmar, Laos and Cambodia. We therefore ask a different question: what will happen to trade and capital flow between Thailand and its trading and capital-flow partner if immigration from Myanmar is higher?
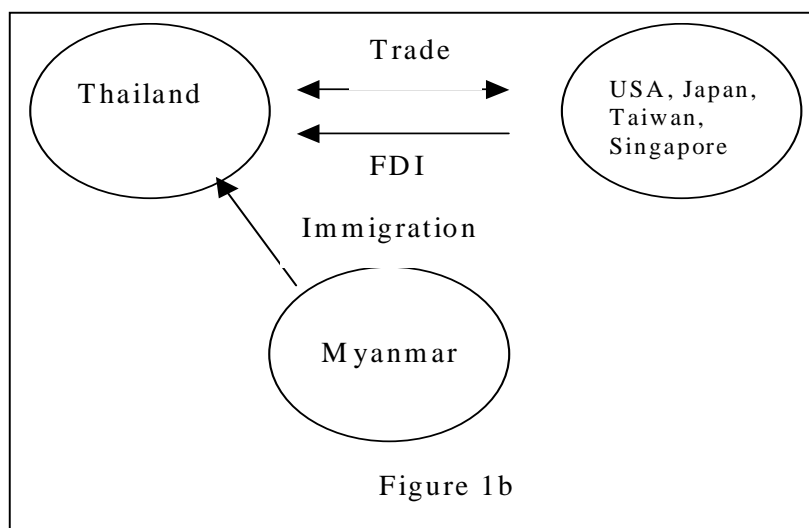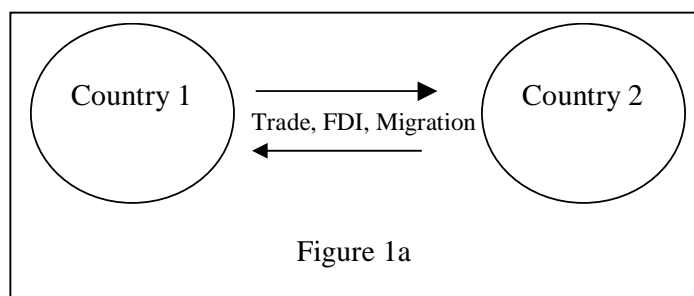

Figure 1: Immigration, FDI and Trade Flows in the Case of Thailand Compared to the Typical Case of Developed Countries

According to the Rybczynski Theorem (1955), in a two-good, two-factor open economy model at constant commodity prices and within the cone of diversification, an increase in the supply of a factor leads to an increase in the output of the commodity that uses factor intensively and a reduction in the output of the other commodity. Thus, an increase in capital inflow will increase the output of capital-intensive good and lower the output of the labor-intensive good. An increase in immigrants will increase the output of the labor-intensive good and lower the output of the capital-intensive good.

Labor and capital are treated exogenously and they are internationally immobile in the Heckscher-Ohlin model, from which the Rybczynski Theorem is derived. Commodity trade brings factor price equalization across countries. Consequently, there is no incentive for factors to move between countries. However, the evidence shows that over the last three decades of the twentieth century, the increasing expansion in global trade was accompanied by massive capital movement across countries and smaller, but significant increases in international movements of workers. The international migration stock in the world went from 77 million people in 1970 to 191 million in 2005 (United Nations, 2006). At the same time, with the progressive liberalization of capital movements since the 1970s, an ever-larger share of financial resource flows reached developing countries. FDI emerged in the 1990s as the preeminent source of external finance for the developing world, and has continued to rise, reaching US$274 billion in 2005 (UNCTAD, 2006).

Helpman (1984) shows that FDI arises when relative factor endowments are sufficiently different across countries that international trade alone does not lead to factor price equalization. His approach came to be known as vertical FDI, which Markusen (2002) defines as investment that "geographically fragments the production process by stages of production."[3] Some stages are best done in skill-abundant countries and the others are best carried out in skill-scarce countries. Multinational enterprises engage in trade and seek to exploit international factor price differentials. They locate their headquarters in the skilled labor-abundant parent country and engage in unskilled

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[3] Markusen (1984) himself models FDI as way that firms could achieve multi-plant economies while avoiding trade costs. It is know as horizontal FDI in the literature. He defines horizontal FDI as "foreign production of products and services roughly similar to those that the firm produces for its own market."

labor-intensive production in an unskilled labor-abundant host. In this paper, we develop a simple static model, motivated by Helpman's analysis, to study the theoretical impact of immigrants on capital inflow and international trade.

3. The model

Our model is based on the Heckscher-Ohlin model, which is a standard general equilibrium international trade model that describes a set of allocations of factors to countries for which it is possible that factor prices will be equalized through trade. And, if countries have identical homothetic preferences, a country is a net exporter of the services of factors of which it has a relatively large share of the world's supply.

The central idea of the Heckscher-Ohlin model is that a world with imperfect mobility of productive factors across countries may replicate the essential equilibrium of a fully integrated economy, provided that goods are perfectly mobile. Our model considers the situation in which the fully integrated equilibrium cannot be attained by international trade alone. As shown by Helpman (1984), physical capital movement helps a world achieve the equilibrium of a fully integrated economy.

In order to study the nature of capital movement it is useful to have as a benchmark the equilibrium of an integrated world economy. We begin with a model setting. In this model, there are two factors of production; labor (L) and capital (K). They are inelastically supplied. The available quantities of capital and labor in the world economy are $\bar{K}$ and $\bar{L}$, respectively. Moreover, there are two goods; labor-intensive good (X) and capital-intensive good (Y), produced with quasi-concave, constant returns to scale production functions.

$$Q_X = f_X(K_X, L_X)$$
$$Q_Y = f_Y(K_Y, L_Y)$$

Preferences are well behaved and homothetic. As a result, the share of spending on every good is a function only of commodity prices, represented by $\alpha_i(p)$ where $i = X, Y$ and p is the relative price of

labor-intensive good to that of the capital-intensive good. In addition, there is perfect competition and two goods are produced in the integrated equilibrium.

From this setting, one can find corresponding equilibrium conditions as follows. Firms minimize cost taking factor prices as given. Given wage (w) and rent (r), the firms solve these problems

$$\underset{a_{LX},a_{KX}}{Min} \; w a_{LX} + r a_{KX} \; s.t. \; Q_X(a_{LX},a_{KX}) \geq 1$$

$$\underset{a_{LY},a_{KY}}{Min} \; w a_{LY} + r a_{KY} \; s.t. \; Q_Y(a_{LY},a_{KY}) \geq 1$$

where a_{ij} is units of input i used to produce one unit of good j. This will give optimal unit inputs, (a_{LX},a_{KX}) and (a_{LY},a_{KY}) that put the unit isoquant on the lowest isocost line. Note that we can draw a ray through the lowest cost point. The slope of the ray is a_{Ki}/a_{Li}, as shown in Figure 2. Since X is labor-intensive good, the ray of X sector has lower slope than that of Y sector, or $a_{KX}/a_{LX} < a_{KY}/a_{LY}$. Moreover, in the equilibrium the firms earn zero profits. In perfectly competitive markets, all firms earn non-positive profits. In particular, with constant returns to scale technologies, price is equal to unit cost (C_i) for both commodities. Normalize the price of the capital intensive good to be 1. That is, $p = C_X(w,r)$ and $1 = C_Y(w,r)$. In addition, factors are fully employed, so $\overline{L} = L_X + L_Y$ and $\overline{K} = K_X + K_Y$.

In the equilibrium, consumers maximize utility by solving this problem.

$$\underset{D_X,D_Y}{Max} \; U(D_X,D_Y) \; s.t. \; p D_X + D_Y \leq w\overline{L} + r\overline{K}$$

where D_X and D_Y are demands for labor-intensive and capital-intensive goods, respectively. Demand equals supply in each industry. That is, $D_X(p) = Q_X(p)$ and $D_Y(p) = Q_Y(p)$. We can denote factor employment vectors in labor-intensive and capital-intensive sectors in the integrated equilibrium as $(L_X, K_X) = (a_{LX}, a_{KX})Q_X$ and $(L_Y, K_Y) = (a_{LY}, a_{KY})Q_Y$, respectively.
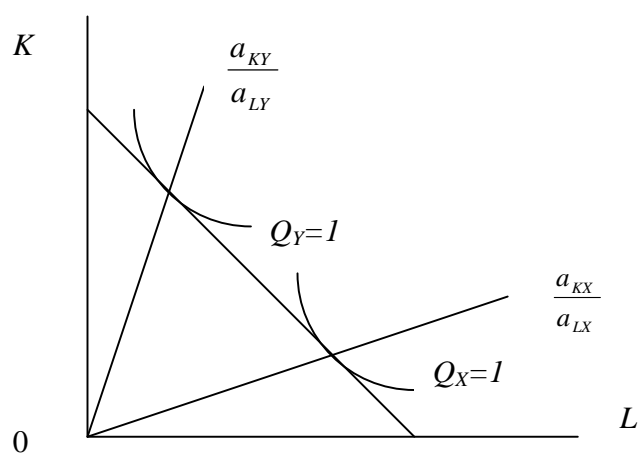
Figure 2: Optimal Unit Inputs

These vectors have a simple geometric representation, as illustrated in Figure 3. The employment vector in labor-intensive sector is represented by OQ_1 or Q_2V and the employment vector in capital-intensive sector is represented by OQ_2 or Q_1V.
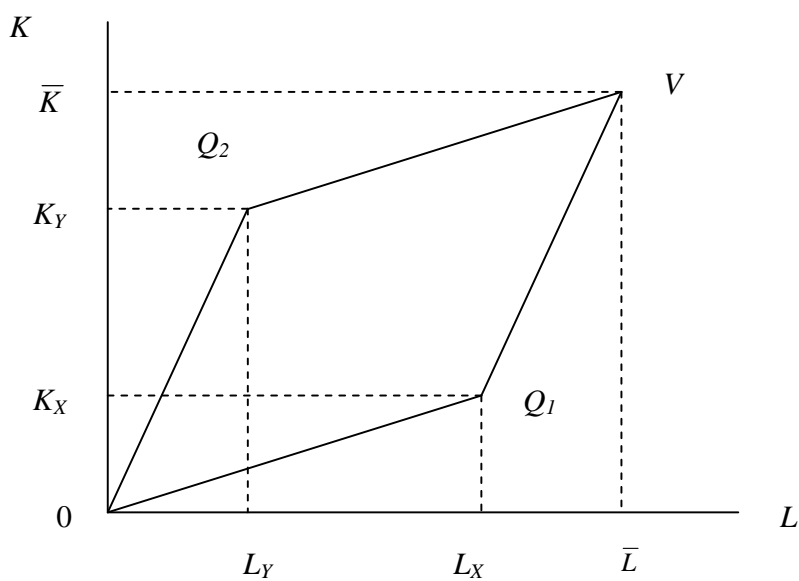

Figure 3: Employment Vectors in Labor-Intensive and Capital-Intensive Sectors

Now suppose that the world economy is divided into 2 countries, labeled 1 and 2. Each country has endowments (L_1, K_1) and $(\bar{L} - L_1, \bar{K} - K_1)$, respectively. Assuming that representative

consumers in both countries have the same homothetic preferences, Heckscher-Ohlin says that there is a set of endowments in which trading equilibrium replicates the integrated equilibrium. In particular, the equilibrium price-factor-reward structure in each country will be the same as in the integrated equilibrium. This set of endowments is therefore called the *FPE* (factor price equalization) set. Moreover, each country will fully employ its resources, using the techniques of production that are used in the integrated equilibrium. In addition, if the endowment lies outside of the set *FPE*, at least one country is specialized in one good and *FPE* no longer holds.

The set *FPE* is constructed from convex combinations of the integrated equilibrium sectoral employment vectors. It is represented by the area of the parallelogram in figure 4. In this figure, *0* is the country 1 origin and *0** is the origin of country 2. The vectors *OQ* and *QO** represent the employment vectors in sectors *X* and *Y*, respectively, relative to the origin of the home country, and the vectors *O*Q'* and *Q'O* represent the same employment vectors relative to the origin of the foreign country.
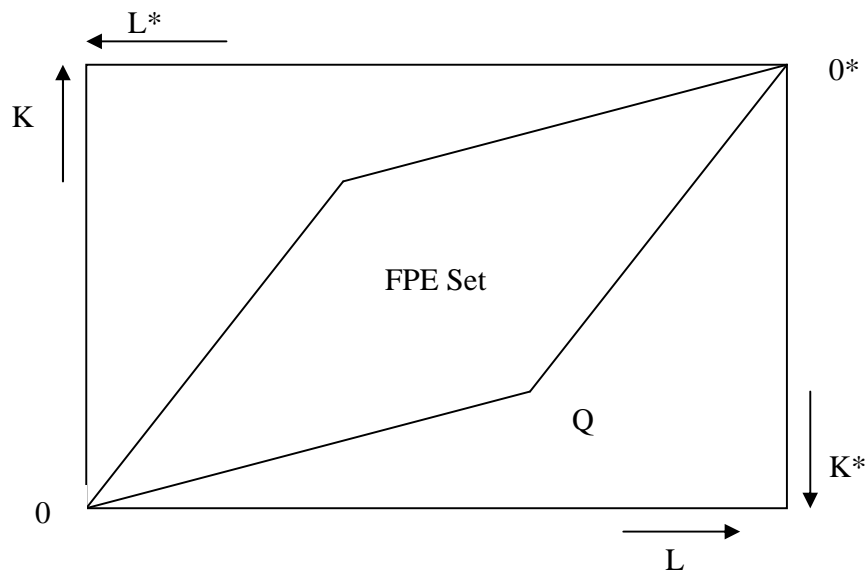

Figure 4: The FPE Set

The Heckscher-Ohlin model shows that provided that both countries have their endowments within their cone of diversification (the area of the parallelogram in figure 3), factor prices are

equalized across countries through trade and each country will export the good that uses its abundant factor intensively. Commodity trade brings factor price equalization across countries. Consequently, there is no need for factors to move between countries. Helpman (1984) argues that the relative factor endowments may be sufficiently different across countries that international trade alone does not lead to factor price equalization. This causes capital inflow to arise.

Like the Heckscher-Ohlin model, the Helpman (1984) model is a two-factor two-good model and technologies are the same across countries. Sector 1 produces a homogeneous good while sector 2 produces a differentiated good. The production function of the homogeneous good requires all inputs to be employed in the same location. The production process of good 2 can be fragmented into two stages. Each stage can be performed in different countries by a multinational firm. The headquarter activity, which is high-skill intensive, is best performed in high-skill labor abundant countries, but the production activity, which is low-skill intensive, is best performed in low skill abundant countries.

Dixit and Norman (1980) developed the FPE set with multiple goods. By ranking activities beginning with the differentiated good which uses only unskilled labor, followed by the homogeneous product which uses both factors; followed by the differentiated good which uses only skilled labor, we get three factor requirement vectors. Multiplying each of these vectors by the total worldwide amount of each activity in the integrated equilibrium, and summing them, we will obtain the FPE set $0^1 RS0^2 R'S'0^1$ in figure 5. This FPE region is clearly larger than the original $0^1 Q0^2 Q'0^1$ in figure 4.

To understand how *FPE* is achieved in Helpman's model, suppose that the factor endowments of the two countries are given by V' in figure 5. This point lies outside the original *FPE* set, so that any firm in sector 1 would choose the country with lowest wage of skilled labor for headquarters, and the country with lowest wage of unskilled labor for production. Since country 2 is skilled labor abundant, we can presume that it would have the lower relative wage of skilled labor, and firms from either country would want to establish headquarters there. This will increase the demand for skilled labor in country 1, to the point where the entire endowment V' can be employed. Country 2 would produce differentiated good using resources shown by $0^2 C'$, and then devote its remaining endowment of skilled labor, shown by $C'V'$, to headquarters services. These headquarters

services would be combined with unskilled labor in country 1, of the amount $V'V^m$, in order to produce varieties of the differentiated product in that country. Additional resources in country 1, of the amount V^mQ', would also be devoted to produce varieties of the differentiated product, and the remaining resources of $Q'0^2$ would be used to produce the homogeneous product in sector 1. Thus, factor price equalization is achieved by combining skilled labor for headquarters services in country 2 with unskilled labor for production in country 1.
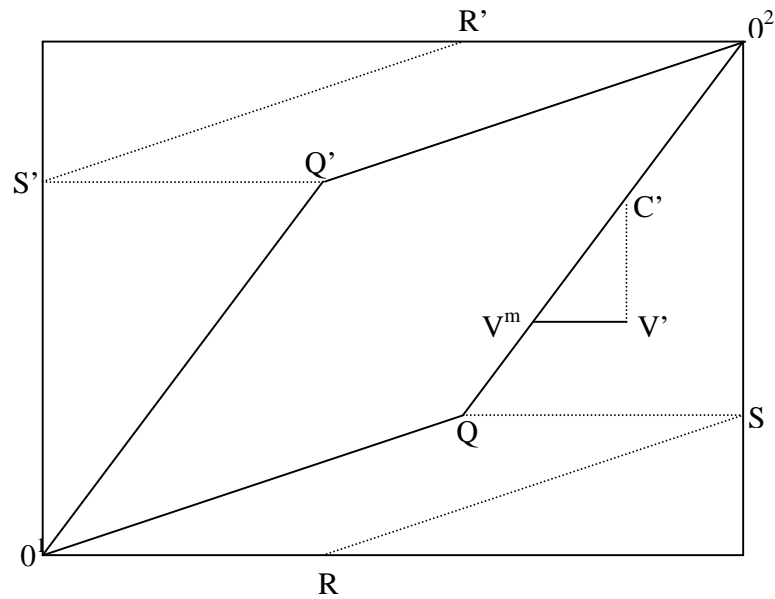

Figure 5: Helpman's Edgeworth Box

Unlike Helpman's model, in which the two inputs are high-skill and low-skill labor, in our model the two factors are instead referred to as physical capital and labor. This is to make it more relevant to capital-scarce economies like Thailand. Moreover, while there is no movement of skilled labor to the low-skill abundant countries in Helpman's model, in our model physical capital produced in a capital abundant country is allowed to move and work with labor in the labor-abundant country. The headquarters services in the Helpman's model are provided by multinationals employing skilled labor in the high skill abundant countries, and the headquarter service and production activity can be separated geographically. In our model, physical capital is required to work together with labor in the

production. Although as a result of capital inflow capital increases in the labor-abundant country, the ownership of capital still belongs to the capital-abundant country. However, like Helpman's model, the physical capital movement serves to ameliorate factor price differences. The assumptions of our model are the same as in the Heckscher-Ohlin model introduced earlier, except that factors are allowed to move across countries. That is, we assume identical technologies across countries; identical and homothetic tastes across countries; differing factor endowments; and free trade in goods as well as factors. We also assume away the possibility of factor intensity reversals.

To show how physical capital movement across countries helps achieve factor price equalization, we consider an initial factor endowment that lies outside the set *FPE*, say (L_1, K_1) in figure 6. Through trade alone, factor prices will not be equalized. At least one country produces only one good. In figure 6, labor is relatively abundant in country 1 (Labor-capital ratio of country 1 is higher than that of country 2.). Returns on capital must be relatively higher in country 1. Higher returns on capital in country 1 will attract capital movement from country 2. This moves the factor endowment point vertically upward. The minimum capital inflow that will bring the endowment into the set *FPE* is equal to K_2- K_1. At the new endowment (L_1, K_2), factor prices can now be equalized through trade. Notice that if country 1 has more labor, say (L_2, K_1), the minimum capital inflow will be correspondingly higher. In this case, capital inflow becomes K_3- K_1.
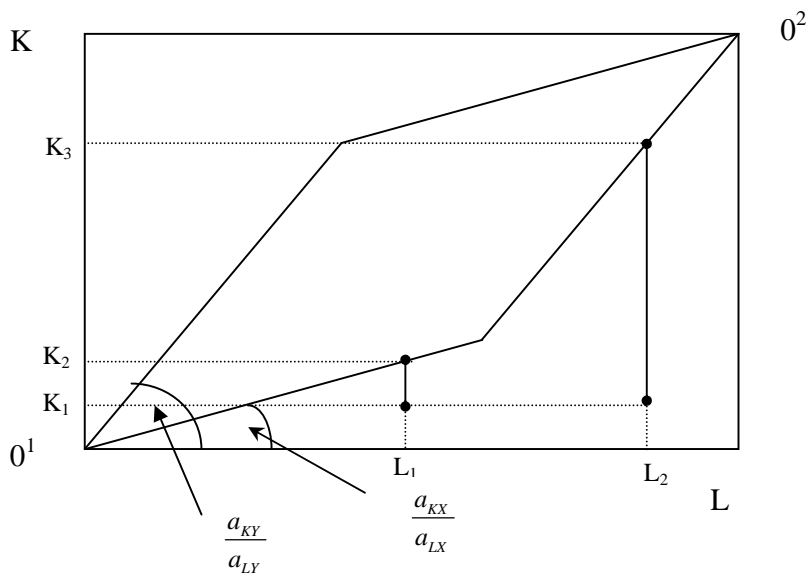

Figure 6: Capital Inflow before Immigration

4. Immigration and Capital Movement

We now use the trade and capital-movement model developed in the previous section to study the relationship of immigration and capital flow. Immigrants are from a third country, which is unmodelled. We assume that other than immigration there are no trade or factor movements between the third country and the first two countries. We believe this assumption is relevant to a closed economy like Myanmar. Before immigration is allowed, the minimum capital inflow is the vertical distance between K at B and K at A in figure 7. After immigration of workers from the third country to country 1, the Edgeworth Box expands horizontally by M. The set *FPE* changes from *0Q0*Q'* to *0P0*P'* and the endowment moves from A to C. The minimum capital inflow required to restore FPE is the vertical distance between K at D and K at C. It is higher than before. Thus, immigration increases capital inflow.
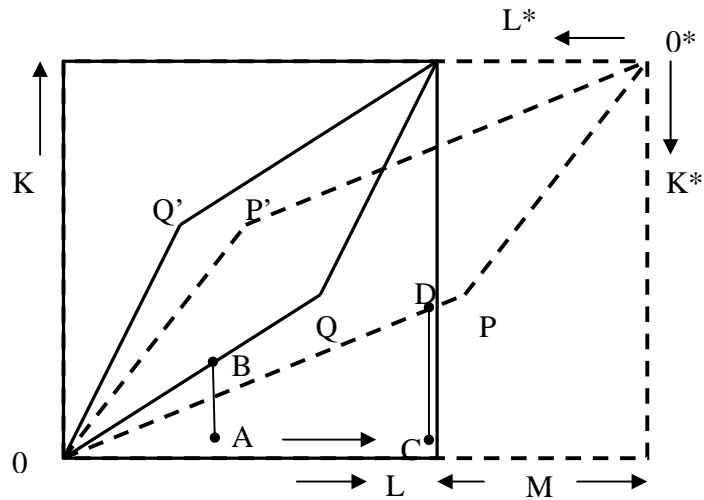

Figure 7: Capital Inflow after Immigration

However, since the slopes of the factor employment vectors change in figure 7, this means that factor prices change as a result of immigration. Immigration increases labor supply and lowers wage. Profit maximizing firms in both countries will use more labor and less capital to produce one unit of output. That is, a_{LX} is higher; a_{KX} is lower; and the slope of the ray of X sector, which is a_{KX}/a_{LX} is lower as shown in figure 7.

However, if migrants are a small proportion of the population of the two countries and all prices remain constant, the use of capital and labor per unit output of both goods will remain unchanged. The slopes of the factor employment vectors then remain unchanged after capital inflow. The set *FPE* will instead be *0R0*R'* in the figure 8. In the case of fixed prices, the quantity of capital inflow required to restore FPE is equal to the vertical distance between K at E and K at C. It is higher than capital inflow in the case of flexible prices, which is the distance between K at D and K at C.

To study the impact of immigrants on capital inflow, we compare capital inflow before and after immigration. Without immigration, capital inflow is equal to the distance between K at B and K at A, which is equal to the distance between K at B' and K at C in figure 8. After immigration, if factor prices are fixed, capital inflow is the distance between K at E and K at C. Thus, when prices remain unchanged, immigrants induce capital inflow to increase at the amount of the distance between K at E and K at B'. Thus when prices are fixed, immigrants always increase incentives for capital inflow.

If prices are flexible, immigration has two impacts on capital inflow. Immigration leads to an increase in labor supply, which raises the marginal product of capital. This results in an increase in capital inflow, which is equal to the distance between K at E and K at C in figures 8 and 9. This is the endowment effect defined earlier. Meanwhile, an increase in labor supply leads to a lower wage and induces the substitution of labor for capital. This results in a smaller capital inflow, equal to the distance between K at E and K at D in figures 8 and 9. This is the price effect. Since the directions of these two effects on capital inflow are opposed, the net change in capital inflow depends on which effect dominates. Figure 8 shows the case where immigration increases capital inflow. Figure 9 shows the case where immigration decreases capital inflow. Thus when prices are flexible, immigration may increase or decrease capital inflow.

Comparing points D in figures 9 and 10, we can see that after capital inflow and immigration country 1 still specializes in producing *X*, which is the labor-intensive good in figure 9, while in figure 10 country 1 produces both *X* and *Y*. That is, if the host country has enough in-migration and capital inflow, it will produces both labor-intensive good and capital-intensive good. This result is quite interesting because it implies that by allowing for immigration, the labor-abundant country can

also produce the capital-intensive good, and this structural change in production may have a positive impact on growth in the long run. Immigration restrictions will therefore lead to lower capital inflow and lower production of capital-intensive goods as well as labor-intensive goods.

For a small country like Thailand, it is reasonable to assume that prices remain unchanged after immigration. Thus, it is likely that immigration from Myanmar will always attract more capital inflow to Thailand. These factor movements will result in greater production and export of labor-intensive good from Thailand. Since factor returns remain unchanged after immigration, native workers, capital owners and consumers are not affected by immigration. Immigrants will only increase the country's export revenues. This will, however be paid to Burmese immigrants as wages and to foreign capital owners as capital rentals. Thus, immigration does not affect welfare or income distribution among natives unless capital inflow and immigration create an externality.

If capital inflow has a positive externality in terms of knowledge/technology transfer, or if unskilled immigration causes a negative externality in term of congestion, immigration and capital inflow may change natives' welfare. There are also concerns related to national security, public safety, health problem and financial burden on the Thai public welfare system on the presence of a large number of illegal foreign workers in Thailand (Pitayanon, 2001). Finally, if there are endogenously priced goods—either used as intermediates in production or as consumption items—then there will be additional welfare and distributional consequences from the international factor flows. However, these issues are beyond the scope of the present analysis.

It should be noted that if the risk premium or other wedges in relative to capital returns outside the FPE region is large, then the labor-abundant country may not attract enough capital inflow to achieve FPE and diversification in production. The risk premium may be a result of political and economic instability, or barriers to entry and exit of capital in the host country. Compared to most other developing countries, the Thai economy and politics have been stable. From the 2004 UNCTAD World Investment Report, Thailand was ranked as the fourth-most attractive FDI destination for 2004-2007 behind China, India and the United States from 87 countries. The Japanese Bank for International Cooperation ranked Thailand the second best FDI destination in 2004. Political and social stability, market growth potential and labor cost are among the factors that made Thailand

one of the best locations for FDI. Moreover, Thailand has traditionally maintained a relatively liberal and open attitude towards FDI. Thus, the risk premium if occurs should be relatively small.

6. Conclusions

In this theoretical paper, we applied the idea of Helpman (1984), explaining how capital inflow brings about factor price equalization across countries when international trade alone cannot. Based on the Heckscher-Ohlin model, the Edgeworth Box was used to study the static relationship between immigration and capital movement. We find that if prices are fixed, immigrants always increase capital inflow. If prices are flexible, immigrants may increase or decrease capital inflow. This is because the increase in labor supply through immigration will increase the marginal product of capital and thus returns on capital, will attract capital inflow. However, immigrants also increase labor supply in the economy and this may depress domestic wages. Domestic firms will minimize unit costs by substituting labor for capital. This will lower capital inflow. Thus, immigrants will increase capital inflow if the endowment effect dominates the price effect, and vice versa. If the wage effect of migration is not negative, the ambiguity of the migration-capital movement relationship goes away. Immigration will have a positive relationship with capital inflow. Moreover, the increase in capital inflow may in turn eliminate the impacts of immigration on factor returns. This suggests the need for future empirical studies of migration and labor market outcomes to control for endogenous capital movements. Lastly, a limitation of our model that is worth noting is that it is a static two-good, two-factor model.
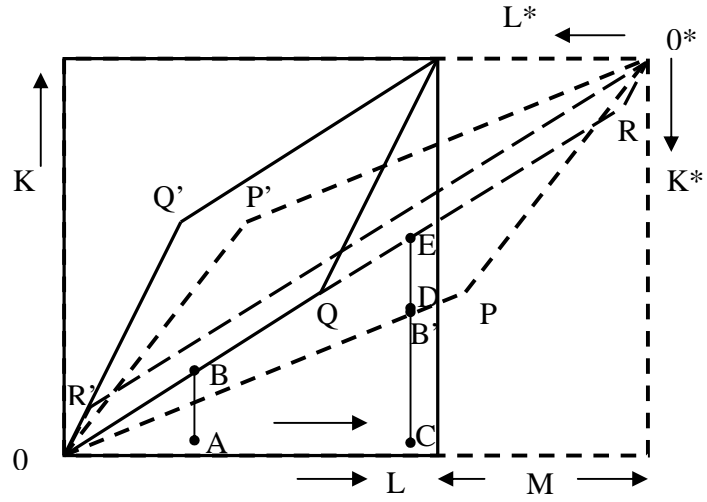
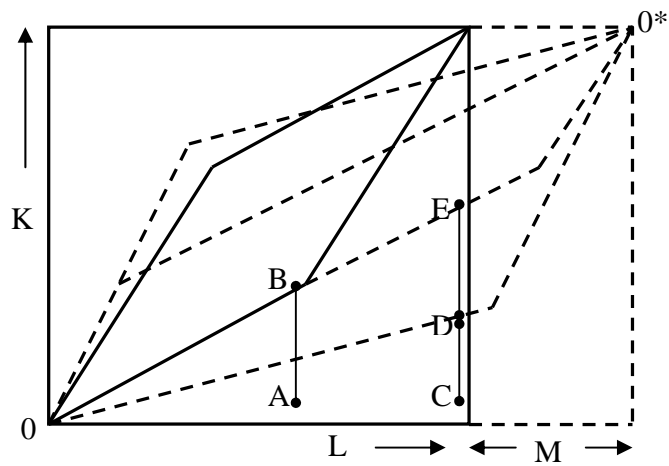Figure 8: Capital inflow increases after immigration.

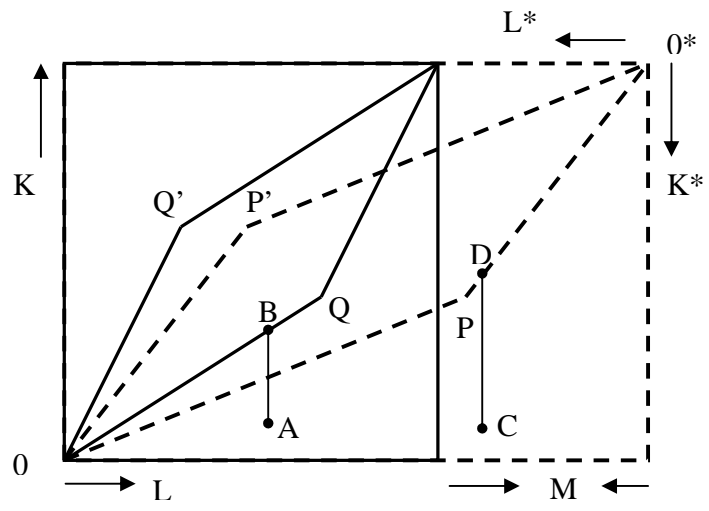Figure 9: Capital inflow decreases after immigration.

Figure 10: The host country produces both goods after immigration.

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