6. International Factor Movements

Learning Objectives

- Consider the implications of international movements of factors of production – labor and capital – as an alternative form of international trade / globalization.

- Examine reasons why countries may erect barriers to the movement of factors of production, as well as the implications of such barriers.

- Examine some implications of international capital mobility.

Readings


Outline

I. International factor movements

   A. International movements of capital and labor may be thought of as a substitute for international movements of goods and services:

      1. *International movements of capital* principally take the form of movements of financial capital (as opposed to physical capital), and substitute for trade in capital-intensive goods.

      2. *International movements of labor* occur as labor migrates from one country to another, and substitute for trade in labor-intensive goods.

   B. As with goods and services, for a variety of reasons countries may choose to erect barriers to trade in factors of production. Restrictions on labor migration are an obvious example, but in the past countries also have frequently attempted to inhibit the international movement of capital.

   C. A key question concerning the international movements of factors (particularly the movement of capital) is if the gains from trade theorem used to explain the creation of welfare gains from expansion of trade in goods and services is equally applicable to the movement of factors.

II. International movement of capital

   A. International capital mobility as *intertemporal trade*.

      1. An economy's balance of payments position identifies it as a saver (lender) or a borrower in international terms. Standard microeconomic analysis portrays the saving decision (for an individual or even an entire economy)
as a tradeoff between current and future consumption. In simplified terms, an individual or an economy faces an *intertemporal budget constraint* in which the present value of consumption must be equal to the present value of output. We may formalize this idea in terms of a model with two time periods, 1 and 2 (or the present and the future), where \( Q_{d1} \) and \( Q_{d2} \) represent consumption demand in periods 1 and 2, \( Q_{s1} \) and \( Q_{s2} \) represent output supply in periods 1 and 2, and \( r \) represents a real interest rate used to discount future values:

\[
Q_{d1} + \frac{Q_{d2}}{(1 + r)} = \frac{Q_{s1} + Q_{s2}}{(1 + r)}
\]

In this budget constraint, the left hand side of this budget constraint represents the present value of consumption over the two planning periods, and the right hand side represents the present value of supply over the two planning periods. This constraint may also be expressed in slope-intercept form, in which case it may be interpreted as an intertemporal "terms of trade" line:

\[
Q_{d2} = Q_{s2} - (1 + r)(Q_{d1} - Q_{s1})
\]

Figure 1 illustrates this constraint and depicts the position for an economy that is an international lender in period 1 (\( Q_{s1} > Q_{d1} \)). As a result of its preferences and its position as a saver / lender in period 1, the economy is able to borrow in period 2 (\( Q_{d2} > Q_{s2} \)).
2. This model is a useful expository devise for understanding international financial capital flows and the effect of interest rates on such flows and on the welfare of an economy. For example, in figure 1, a rising interest rate would cause the intertemporal terms of trade line to become steeper, enabling the economy to attain a position on a higher indifference curve. An intuitive interpretation of such a result is that rising interest rates are beneficial to savers / lenders.

B. The international capital market

1. Dollar value of international capital movements dwarfs the dollar value of international movement of goods and services.

2. Types of capital movements:
   a. Foreign direct investment (FDI)
   b. Portfolio investment

3. Multinational Enterprises (MNE) – the chief instrument for facilitation of FDI
   a. Incentive for FDI via MNEs:
      1) Demand factors
      2) Cost factors
   b. Channels for FDI
      1) Integration
      2) Joint ventures
   c. MNEs as a source of conflict.
      1) Employment issues
      2) Technology transfers
      3) National sovereignty issues / Taxation of MNEs
      4) Balance of payments issues
      5) Transfer pricing
C. “Financial Account Liberalization” vs. International financial instability and capital controls

III. International movement of labor

A. A simple model of labor mobility.

This section describes and uses a standard economic model of a production function with two inputs, each of which displays diminishing marginal returns in output. First, we develop the notion that in competitive markets the marginal product of an input is equal to its real wage. Then we apply this idea to the issue of labor migration and equalization of real wage rates.

1. Consider a two-factor production function that exhibits diminishing marginal returns in each of its inputs, capital and labor:

\[
Q = f(K, L), \text{ where:}
\begin{align*}
MPL &= \frac{\partial f(K, L)}{\partial L} > 0, \text{ and } \frac{\partial^2 f(K, L)}{\partial L^2} < 0 \\
MPK &= \frac{\partial f(K, L)}{\partial K} > 0, \text{ and } \frac{\partial^2 f(K, L)}{\partial K^2} < 0
\end{align*}
\]

Input selection by profit maximizing firms in competitive markets determines that real factor payments are determined by the marginal productivities of the factor inputs:

\[
\begin{align*}
\max \pi &= TR - TC = [P*Q] - [(w*L) + (r*K)] \\
&= P*f(K, L) - wL - rK
\end{align*}
\]

The equivalence of real factor payments and marginal productivities follow from the first order conditions of profit maximization:

\[
\begin{align*}
\frac{\partial \pi}{\partial L} &= P* \cdot \frac{\partial f(K, L)}{\partial L} - w = 0 \rightarrow P* MPL = w \rightarrow \frac{w}{P} = MPL \\
\frac{\partial \pi}{\partial K} &= P* \cdot \frac{\partial f(K, L)}{\partial K} - r = 0 \rightarrow P* MPK = r \rightarrow \frac{r}{P} = MPK
\end{align*}
\]

2. Figure 2, which incorporates the notion of diminishing marginal returns to labor for two economies with equivalent technology, illustrates the incentive for labor to migrate until real wages are equalized. In the figure, \( MPL \) denotes the marginal product of labor in country 1, while \( MPL^* \) denotes the marginal product of labor in country 2. Under the current allocation of labor between the countries \( (L^* > L) \), there will be an incentive for labor to migrate from country 2 to country 1.
B. Labor migration

1. Wage equalization
   
   a. Perfect labor mobility would tend to equalize real wage rates in participating countries.

   b. In truth, complete wage equalization does not occur because labor mobility is restricted and because migration is not costless for workers – there are real economic and psychological costs.

2. Effects on distributions of income – *between* and *within* countries.

3. Guest workers and international transfers

4. Developing countries and brain drain
Assignment 6

Discussion Questions

1. Suppose that a labor abundant country and a land-abundant country both produce labor and land-intensive goods with the same technology. Drawing on the analysis in K&O’s chapter 4, first analyze the conditions under which trade between the two countries eliminates the incentive for labor to migrate. Then, using the analysis in K&O’s chapter 5, show that a tariff by one country will create an incentive for labor migration.

2. What has been a traditional complaint of American labor unions against U.S. multinational corporations? In your opinion, is this complaint valid?

3. Seven of the following ten statements are false. Determine which ones are false and restate them so that they are true.

   a. The relative price of future consumption is the interest rate.

   b. A country that has a comparative advantage in future production of consumption goods will tend to be an international borrower.

   c. The outright construction or purchase abroad of productive facilities by domestic residents is known as portfolio investment.

   d. Most direct investment in the United States has come from Japan.

   e. Most foreign direct investment in the United States occurs in the energy sector.

   f. Multinational corporations (MNCs) increase the rate of technology transfer between countries.

   g. International labor mobility facilitates wage convergence by raising wages in destination countries and lowering wages in source countries.

   h. International labor mobility is a partial substitute for trade flows.

   i. If one observes that Japan is traditionally a net foreign lender, one could conclude that relative to its international trade and financial partners Japan's inter-temporal production possibilities are biased toward future consumption.

   j. Rapidly growing developing countries tend to be borrowers on the international capital markets. From this information we may surmise that they have a comparative advantage in consumer goods.
Problem Set

1. Which of the following countries would you expect to have intertemporal production possibilities biased toward current consumption goods, and which would you expect to be biased toward future consumption goods?

   a. A country, like Argentina or Canada in the 19th century, which only recently had been opened for large-scale settlement and was receiving large inflows of immigrants.

   b. A country, like the United Kingdom in the late 19th or the United States today, which leads the world technologically but is seeing that lead eroded as other countries catch up.

   c. A country, such as Saudi Arabia, which has discovered large oil reserves (or some other natural resource) that can be exploited with little new investment.

   d. A country, such as Norway, which has discovered large oil reserves under the North Sea (or some other difficult-to-extract natural resource) that can be exploited only with massive new investment.

   e. A country like South Korea that has discovered the knack of producing industrial goods and is rapidly gaining on more industrially developed countries.

2. Which of the following are foreign direct investments (FDI), and which are not?


   c. A French company merges with an American company; stockholders in the U.S. company exchange their stock for shares in the French firm.

   d. An Italian firm builds a plant in Russia and manages the plant as a contractor to the Russian government.

3. Suppose the following diagram depicts the demand for a particular type of low-skilled labor in the United States.

   a. If the current supply of this type of labor is 2.0 million workers, what is the real wage?

   b. If immigration is allowed and 1.0 million new workers enter this U.S. labor market, what happens to the real wage?
6. International Factor Movements

c. What is the total value of payments to labor in this market before and after the immigration occurs?

d. What is the total value of new output produced with this new labor?

e. How much of the value of new output accrues to owners of capital?

4. Construct a diagram which you think correctly depicts the current U.S. intertemporal production and consumption patterns (your diagram should look like either Figure 7A-2 or 7A-3 in the appendix to K&O’s chapter 7). Then modify the diagram to show the effects of a rising real interest rate.