

KRUGMAN ♦ OBSTFELD

INTERNATIONAL

Theory & Policy

ECONOMICS

8

Chapter 7

International Factor Movements

Preview

- International labor mobility
- International borrowing and lending
- Foreign direct investment and multinational firms

Movements in Factors of Production

- Movements in factors of production include
 - ◆ labor migration
 - ◆ the transfer of financial assets through international borrowing and lending
 - ◆ transactions of multinational corporations involving direct ownership of foreign firms

Movements in Factors of Production (cont.)

- Like movements of goods and services (trade), movements of factors of production are politically sensitive and are often restricted.
 - ◆ Restrictions on immigration
 - ◆ Restrictions on financial asset flows (less common today in Europe and U.S.)
 - ◆ Restrictions on the activities of multinational corporations

International Labor Mobility

- To show the effects of labor migration (mobility), let's build a simple model with only one composite good called output.
- Suppose that there are only two important factors of production: land and labor.
- On a fixed parcel of land, the productivity of workers eventually diminishes as each works more hours and as more workers produce on that fixed parcel of land.
 - ◆ The **marginal productivity of labor** eventually decreases.

Fig. 7-1: An Economy's Production Function

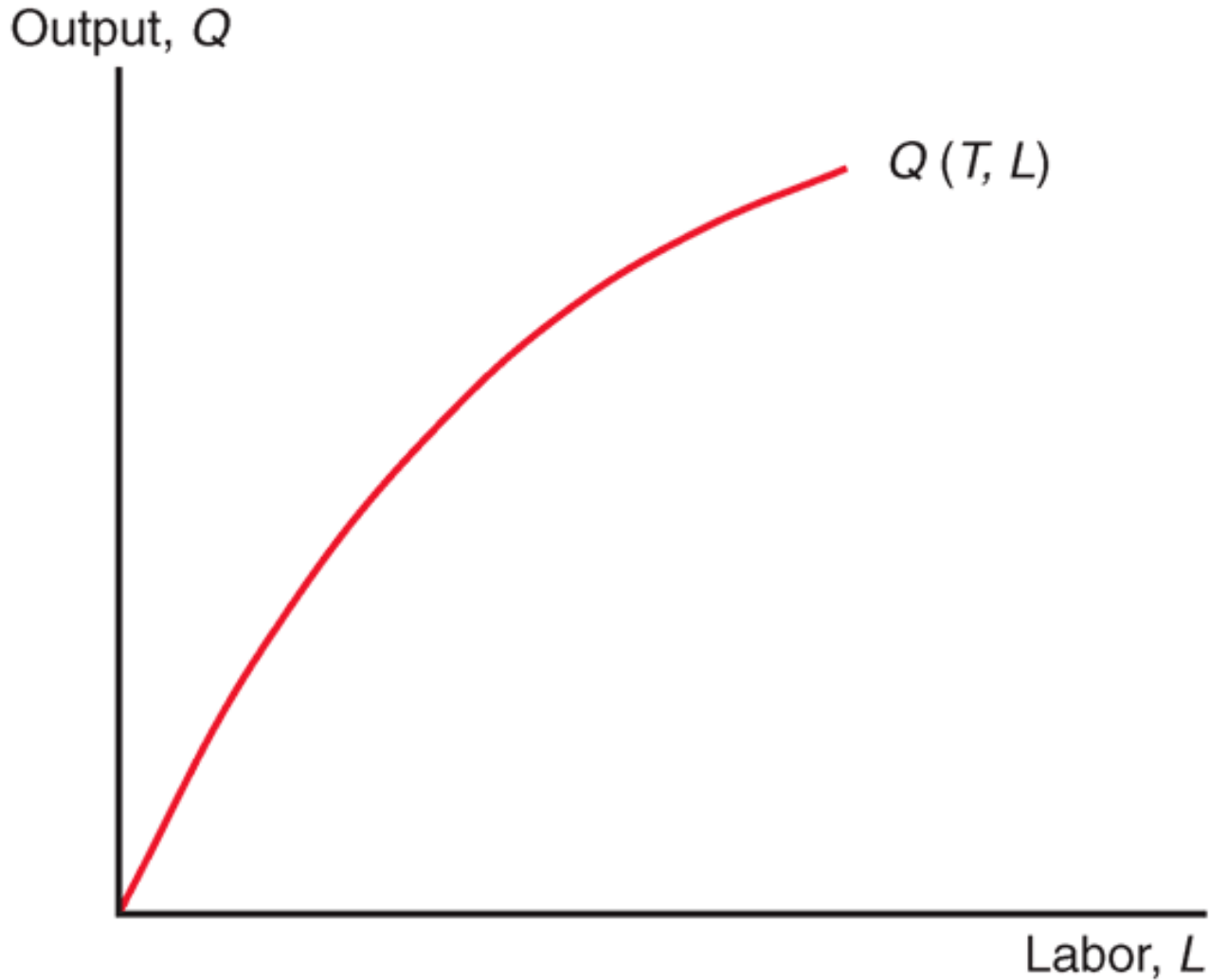
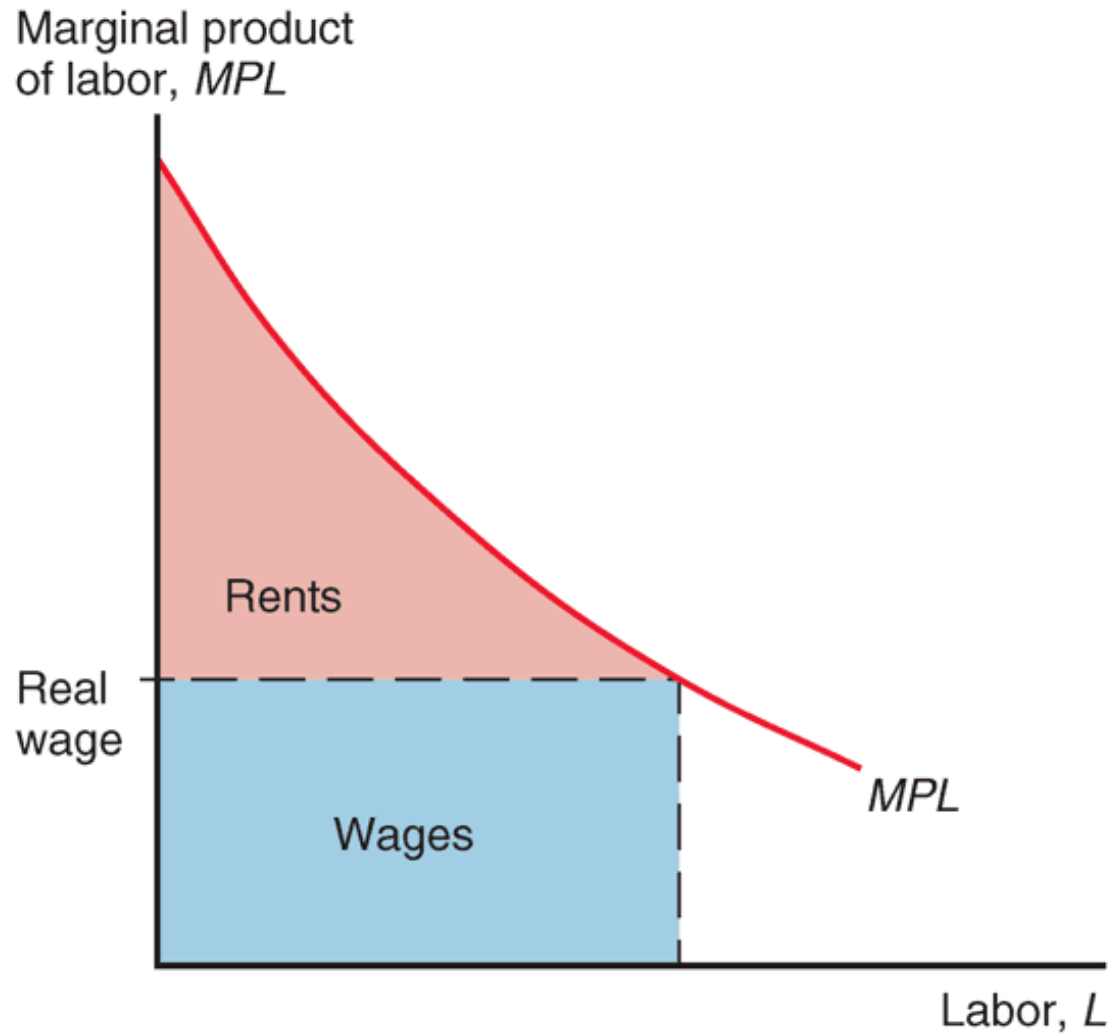


Fig. 7-2: The Marginal Product of Labor



International Labor Mobility (cont.)

- The productivity of labor depends on the amount of work and number of workers.
- In competitive markets, firms can afford to pay only wages whose purchasing power equals the marginal productivity of the workers earning the wages.
- The area under the marginal product(ivity) of labor curve equals the value of output produced, which equals the value of wages and income paid to factors of production when markets are competitive.

International Labor Mobility (cont.)

- If the domestic country is a labor abundant country and the foreign country is a land abundant country,
 - ◆ the marginal productivity of domestic workers is less and they therefore are predicted to earn less than those in the foreign country, if technology and other factors of production are the same across countries.
- There is an incentive for domestic workers to move to the foreign country.

International Labor Mobility (cont.)

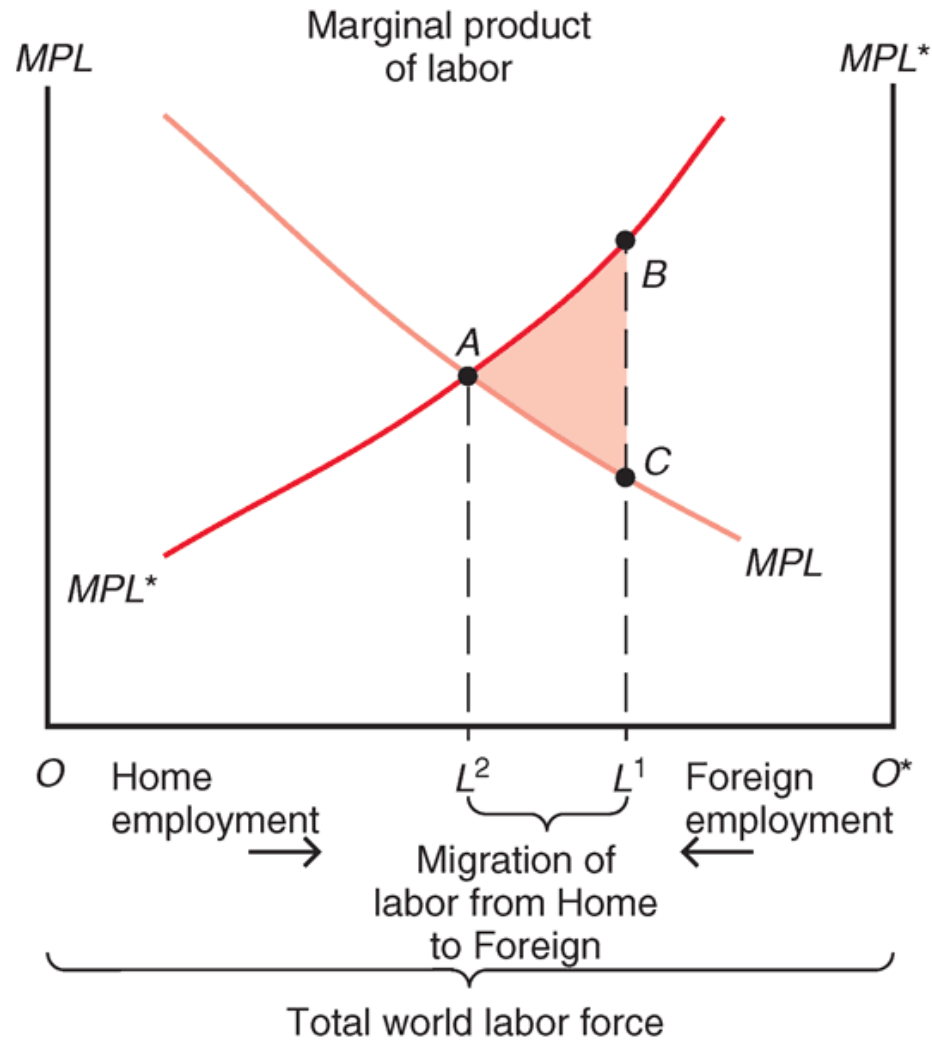
- Workers in the domestic country have an incentive to move to the foreign country until the purchasing power of wages between the countries are equal.
 - ◆ Emigration from the domestic country raises real wages of the remaining workers there.
 - ◆ It increases the supply of labor services and decreases the real wage in the foreign country.

International Labor Mobility (cont.)

	Real Wage, 1870 (U.S. = 100)	Percentage Increase in Real Wage, 1870–1913
Destination Countries		
Argentina	53	51
Australia	110	1
Canada	86	121
United States	100	47
Origin Countries		
Ireland	43	84
Italy	23	112
Norway	24	193
Sweden	24	250

Source: Jeffrey G. Williamson, “The Evolution of Global Labor Markets Since 1830: Background Evidence and Hypotheses,” *Explorations in Economic History* 32 (1995), pp. 141–196.

Fig. 7-3: Causes and Effects of International Labor Mobility



International Labor Mobility (cont.)

- Labor migration between the domestic country and the foreign country is also predicted to increase the value of world output.
 - ◆ The value of foreign output rises by the area under its MPL^* curve from OL^1 to OL^2
 - ◆ The value of domestic output falls by the area under its MPL curve from OL^2 to OL^1
 - ◆ The value of world output is maximized when the marginal productivity of labor is the same across countries.

International Labor Mobility (cont.)

- The Heckscher-Ohlin model predicts that trade in goods is an alternative to factor mobility.
 - ◆ Services from factors of production are “embodied” in goods, so that the value of goods reflects the value or productivity of the factors of production that produced them.
- But equalization of factor prices with labor mobility does not really occur for reasons that are similar to the reasons given in the Heckscher-Ohlin model:

International Labor Mobility (cont.)

1. The model assumes that trading countries produce the same goods, but countries may produce different goods so that marginal productivities of labor are not comparable.
2. The model assumes that trading countries have the same technology, but different technologies could affect the productivities of factors and therefore the wages and income paid to these factors.

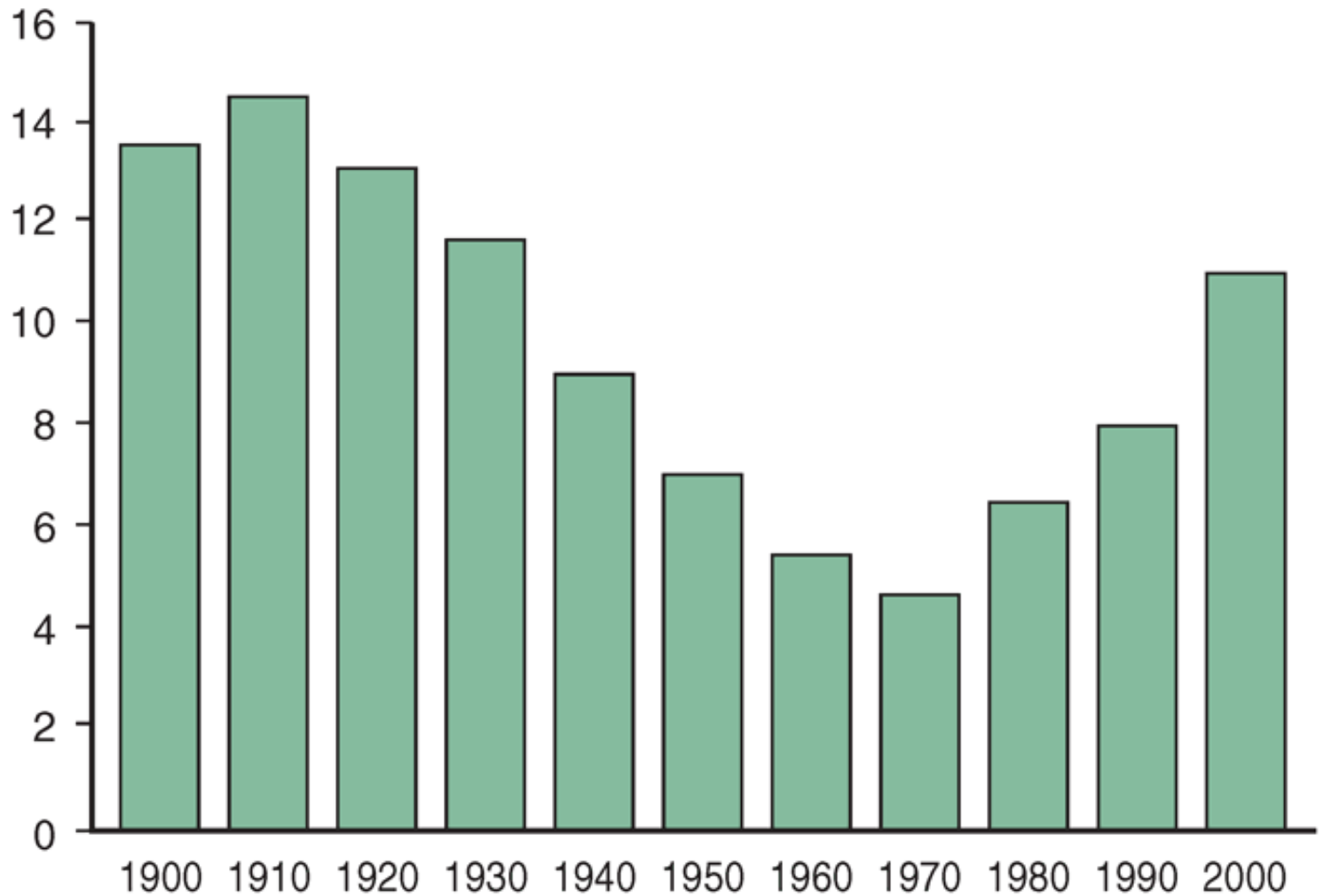
International Labor Mobility (cont.)

3. Barriers to immigration and emigration and transportation costs may prevent the purchasing power of wages from equalizing.
 - ◆ Barriers to movements for other factors of production, like land and capital, are also important.

Immigration and the U.S. Economy

- In the past generation, immigration in the U.S. has increased substantially, especially among workers with the lowest education levels and the highest education levels.
 - ◆ The largest increase in immigration occurred among workers with the lowest education levels, making less educated workers more abundant,
 - ◆ possibly causing a widening wage gap between less educated workers and highly educated workers.

Fig. 7-4: Immigrants as a Percentage of the U.S. Population.



Immigration and the U.S. Economy (cont.)

- But immigration can not wholly explain the widening income distribution in the U.S.
- The fraction of U.S. workers without a high school diploma fell, while that with a college education rose, during 1980–1990.
 - ◆ More highly educated workers became more abundant.
- So why did the wage of highly educated workers rise relative to that of low educated workers?
 - ◆ Possibly due to technological changes that made education more valuable to employers.

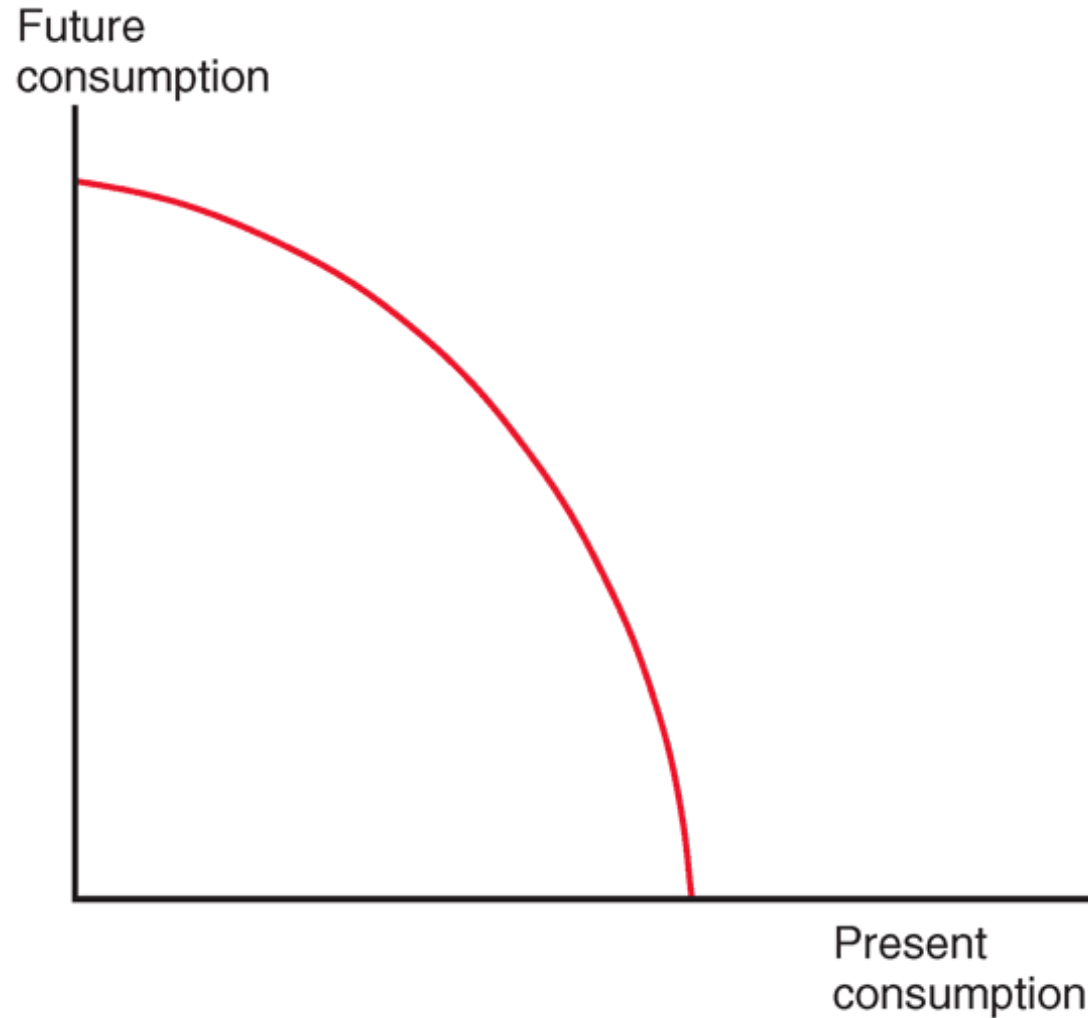
International Borrowing and Lending

- International capital mobility refers to mobility of financial assets, or capital, across countries.
 - ◆ Financial capital is a source of funds used to build physical capital (ex., factories and equipment).
- International capital mobility can be interpreted as **intertemporal trade**:
 - ◆ trade of goods consumed today by borrowers in return for goods consumed in the future by lenders.

International Borrowing and Lending (cont.)

- For any economy, there is a trade-off (opportunity cost) between consuming today and saving for the future: resources can either be consumed or saved.
 - ◆ To save and invest more today typically means that economies need to consume less today.
- We represent this concept by drawing a special kind of production possibility frontier, an **intertemporal production possibility frontier**.

Fig. 7-5: The Intertemporal Production Possibility Frontier



International Borrowing and Lending

- Some countries will have a comparative advantage in spending current output/income (in current consumption).
- Others will have one in saving current output/income (in future consumption).
- A comparative advantage in current consumption
 - ◆ would mean a lower opportunity cost of spending current income.
 - ◆ would be reflected in an intertemporal PPF that is biased toward current consumption.

International Borrowing and Lending (cont.)

- Suppose that the domestic country has a comparative advantage in (bias towards) current consumption, while the foreign country has a comparative advantage (bias towards) future consumption.
- In the absence of international borrowing and lending, the relative price of current consumption should be lower in the domestic country.
- But what is the relative price of current consumption?

International Borrowing and Lending (cont.)

- The price of borrowing 1 unit of output/income to consume today is the output/income that needs to be repaid in the future:
 - ◆ principal + interest = $1+r$, where r is the interest rate
 - ◆ The price of current consumption relative to future consumption is $1/(1+r)$
- The opportunity cost of consuming 1 unit of output/income today is the output/income that could be earned by saving it:
 - ◆ principal + interest = $1+r$, where r is the interest rate
 - ◆ The opportunity cost of current consumption relative to future consumption is $1/(1+r)$

International Borrowing and Lending (cont.)

- If international borrowing and lending are allowed, the domestic country will “export” current consumption (that is, borrow).
 - ◆ The domestic country initially has a lower relative price of current consumption $1/(1+r)$
 - ◆ The domestic country initially has a higher interest rate r .
 - ◆ A higher interest rate r implies a higher return to consumption and investment in production processes: they are highly desirable and profitable so that the domestic country should borrow from foreign lenders.

Foreign Direct Investment

- **Foreign direct investment** refers to investment in which a firm in one country *directly controls or owns* a subsidiary in another country.
- If a foreign company invests in at least 10% of the stock in a subsidiary, the two firms are typically classified as a **multinational corporation**.
 - ◆ 10% or more of ownership in stock is deemed to be sufficient for direct control of business operations.
 - ◆ In addition, international borrowing and lending sometimes occurs between a parent company and its subsidiary.

Theory of Multinational Corporations

- Why are multinational corporations created and why do they undertake direct foreign investment?
- We rephrase these questions into those dealing with
 1. **Location:** Why is a good produced in two countries rather than in one country and then exported to the second country?
 2. **Internalization:** Why is production in different locations done by one firm rather than by separate firms?

Theory of Multinational Corporations (cont.)

- Why production occurs in separate locations is often determined by
 - ◆ the location of necessary factors of production:
 - mining occurs where minerals are;
 - labor intensive production occurs where relatively large numbers of workers live.
 - ◆ transportation costs and other barriers to trade may also influence the location of production.
- These factors also influence the pattern of trade.

Theory of Multinational Corporations (cont.)

- Internalization occurs because it is more profitable to conduct transactions and production within a single organization than in separate organizations. Reasons for this include:
 1. **Technology transfers:** transfer of knowledge or another form of technology may be easier within a single organization than through a market transaction between separate organizations.
 - ◆ Patent or property rights may be weak or non-existent.
 - ◆ Knowledge may not be easily packaged and sold.

Theory of Multinational Corporations (cont.)

2. Vertical integration involves consolidation of different stages of a production process.

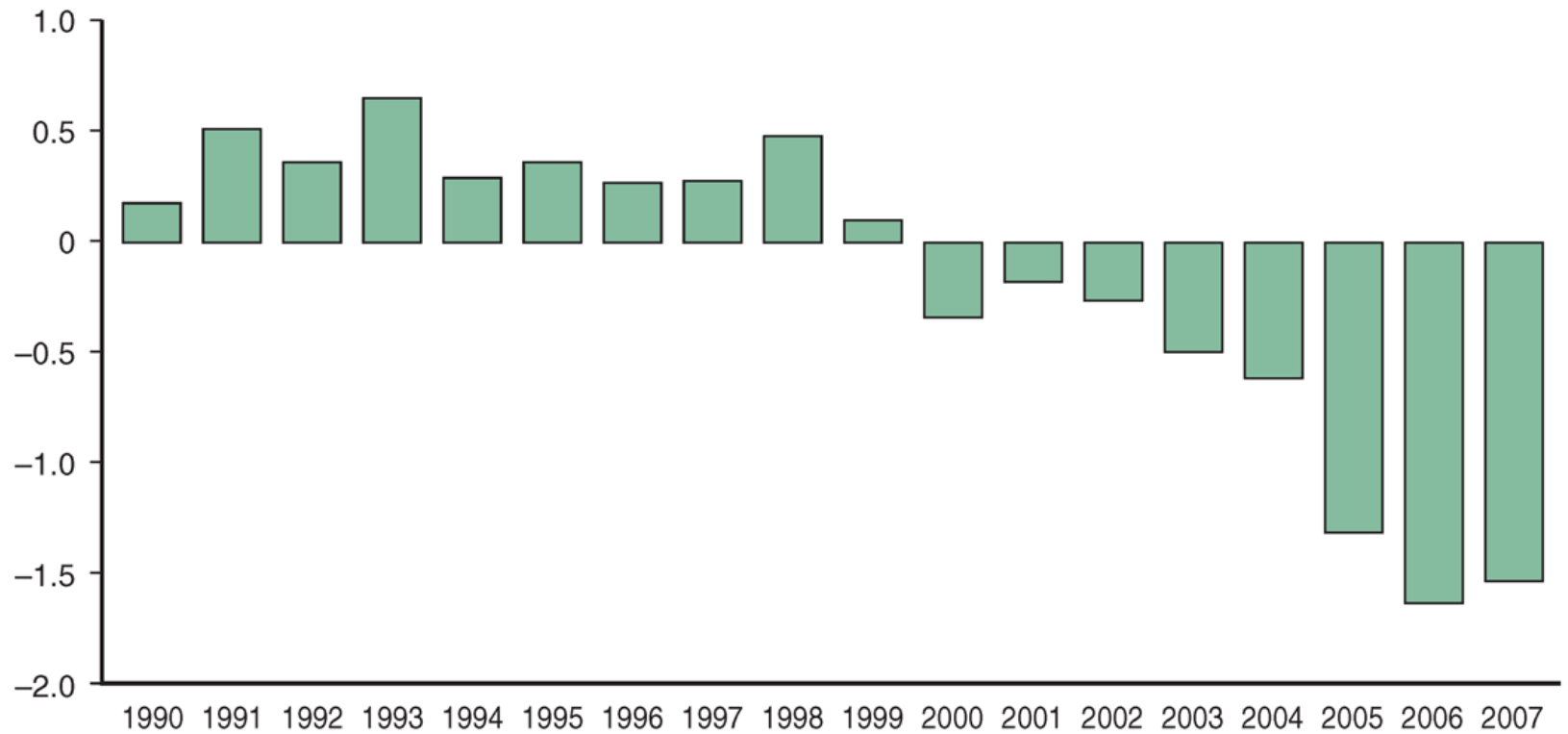
- ◆ Vertical integration involves consolidation of one firm that produces a good which is an input for a another firm.
- ◆ This may be more efficient than having production operated by separate firms.
 - For example, having farms and flour mills consolidate into one organization to make flour may be more efficient than having separate organizations.

Table 7-1: Employment by Foreign-Owned Firms in the United States

	As Percent of Total Nonfarm Employment	As Percent of Manufacturing Employment
1977	1.5	3.8
2005	3.8	14.0

Source: U.S. Commerce Department.

Fig. 7-6: Flows of Capital to Developing Countries, as Percentage of Advanced-Country GDP



Summary

1. A simple model of international labor mobility predicts that labor will migrate to countries with higher labor productivity and higher real wages.
 - ◆ Real wages are predicted to fall due to immigration
 - ◆ Real wages are predicted to rise due to emigration
2. Due to the fact that countries do not produce the same goods, due to differences in technology and due to immigration barriers; real wages across countries are far from equal.

Summary (cont.)

3. International borrowing and lending can be described as intertemporal trade, where countries with profitable investment opportunities borrow funds today and repay lenders in the future, benefiting both borrowers and lenders.
4. The price of current consumption relative to the price of future consumption is a function of borrowing and saving interest rates.

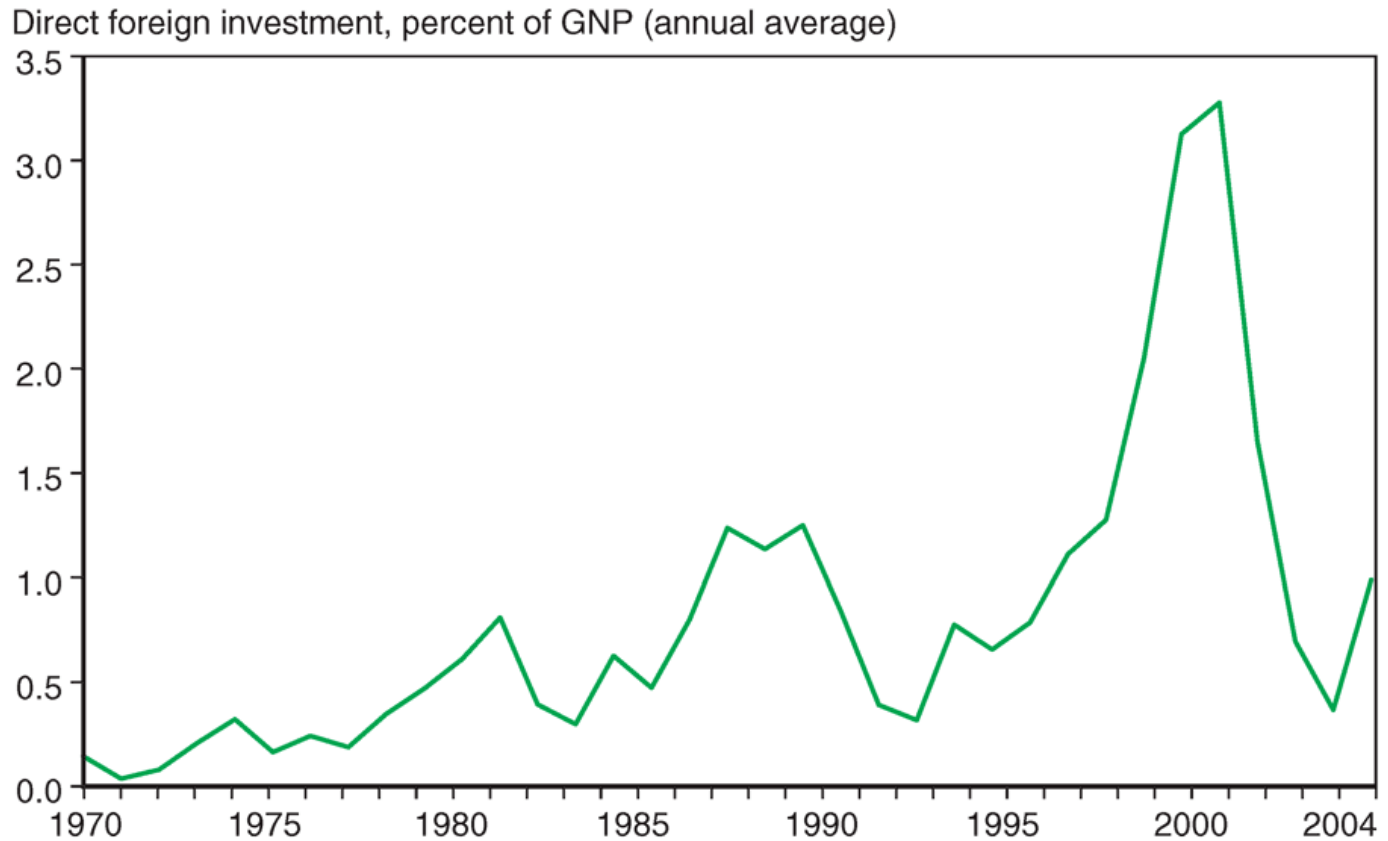
Summary (cont.)

5. Multinational corporations undertake foreign direct investment,
 - ◆ possibly because locating production in foreign countries is efficient,
 - ◆ possibly because internalizing technology transfers is efficient or
 - ◆ possibly because vertical integration is efficient.

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Additional Chapter Art

Fig. 7-7: Foreign Direct Investment in the United States



Source: U.S. Commerce Department.

Fig. 7A1-1: Showing that Output Is Equal to the Area Under the Marginal Product Curve

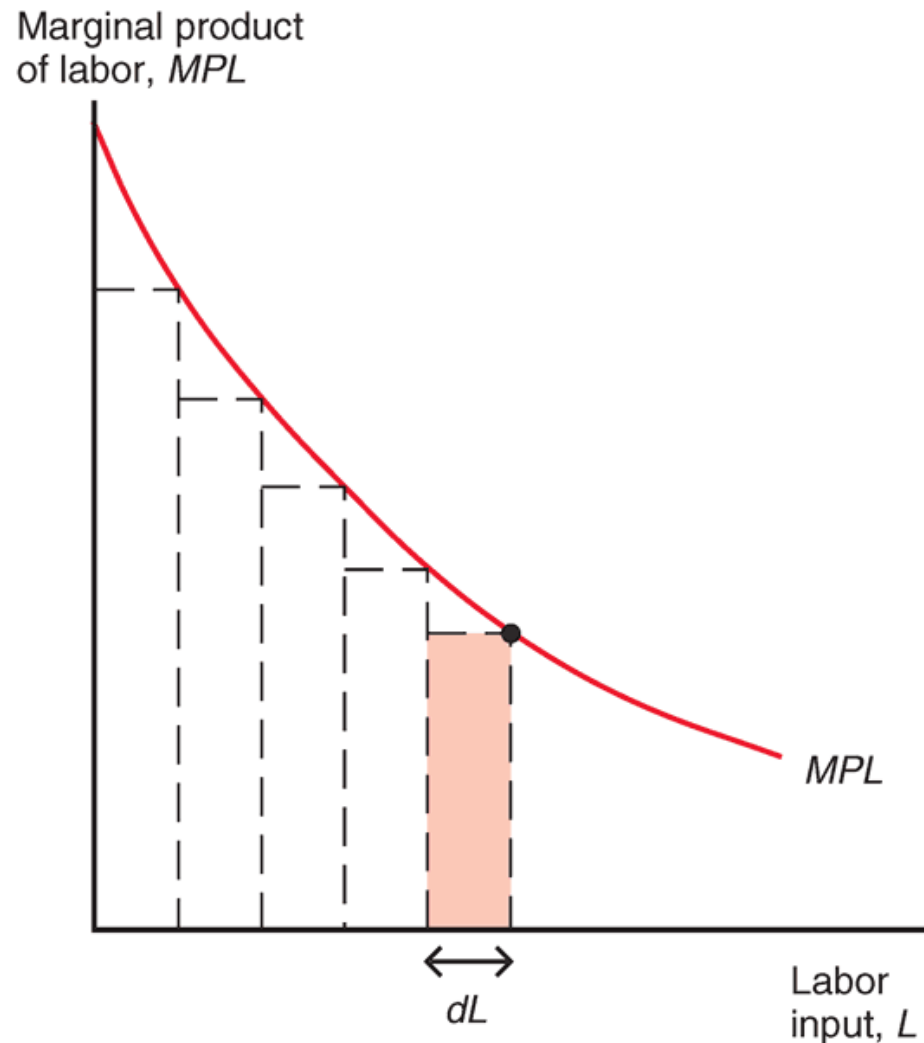


Fig. 7A1-2: The Distribution of Income

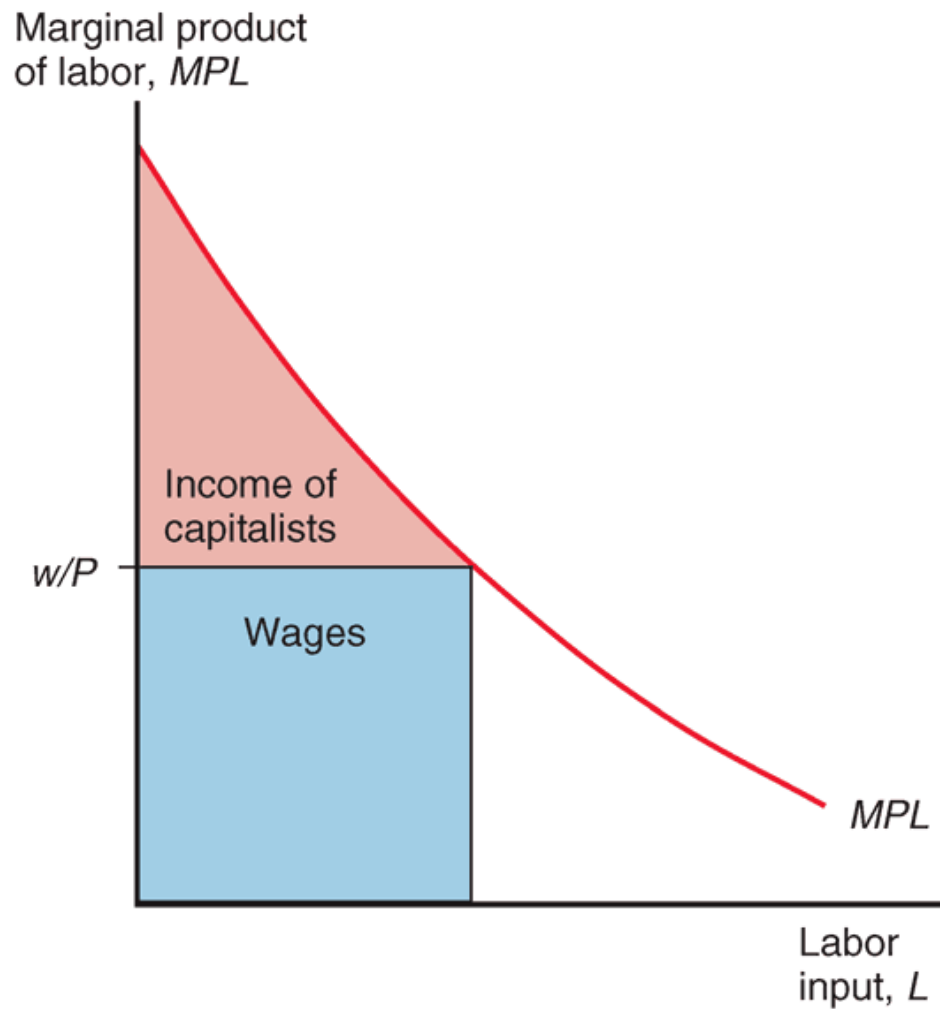


Fig. 7A2-1: Determining Home's Intertemporal Production Pattern

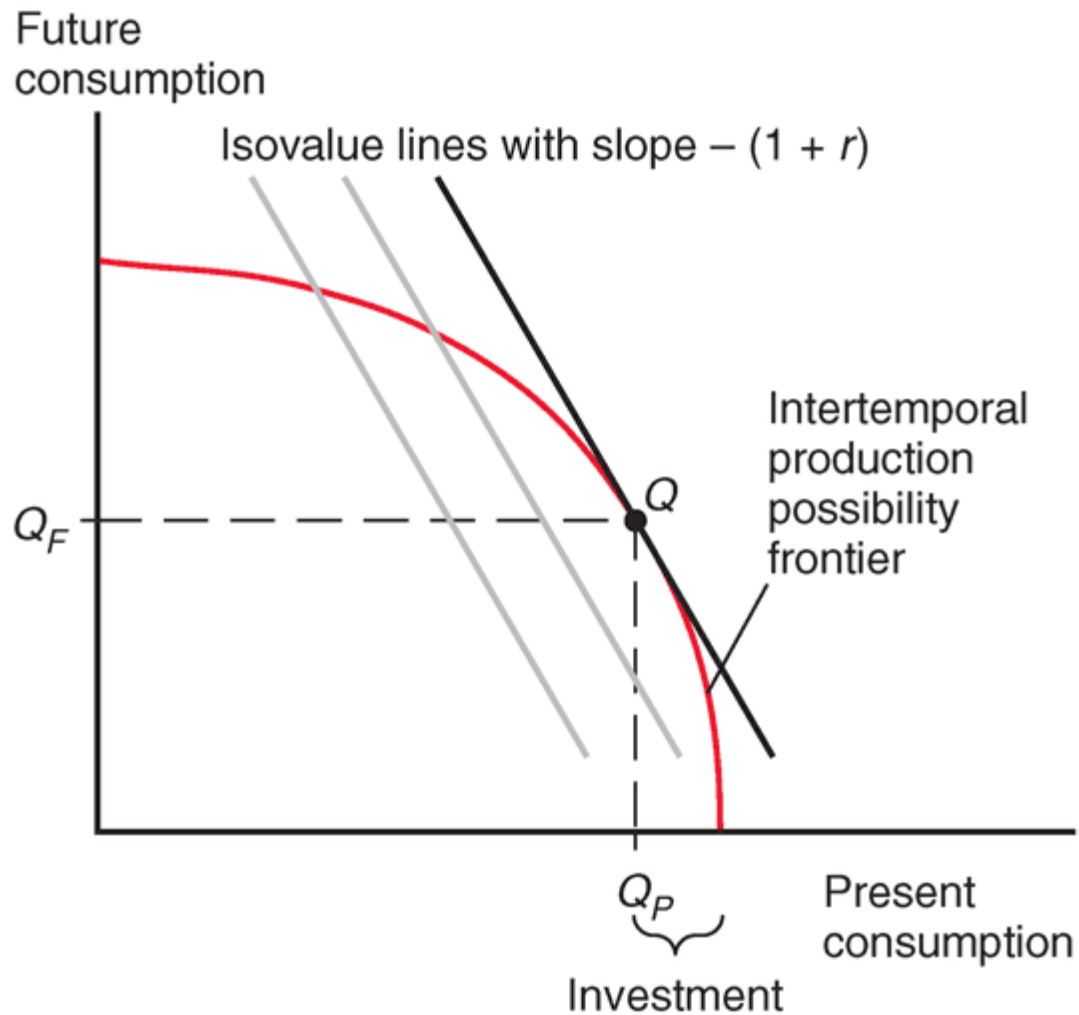


Fig. 7A2-2: Determining Home's Intertemporal Consumption Pattern

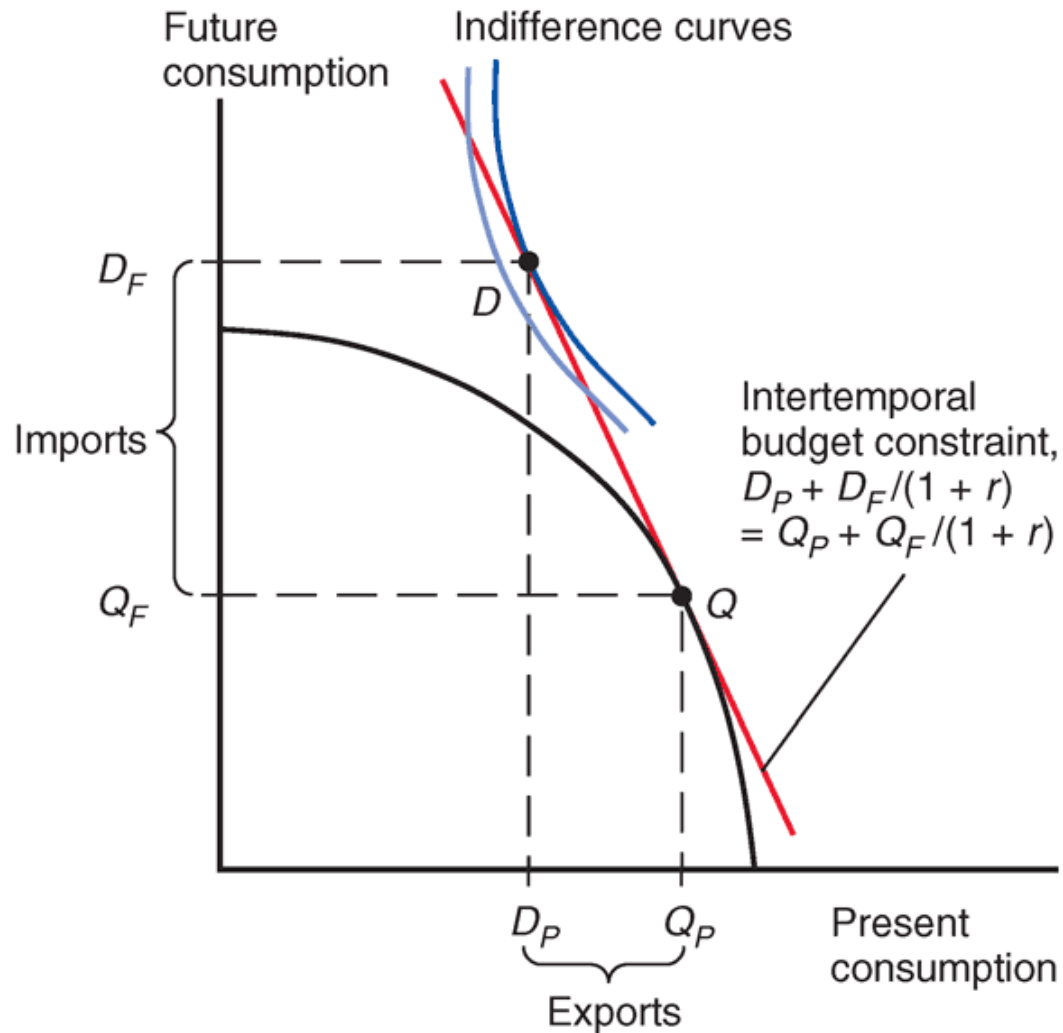


Fig. 7A2-3: Determining Foreign's Intertemporal Production and Consumption Patterns

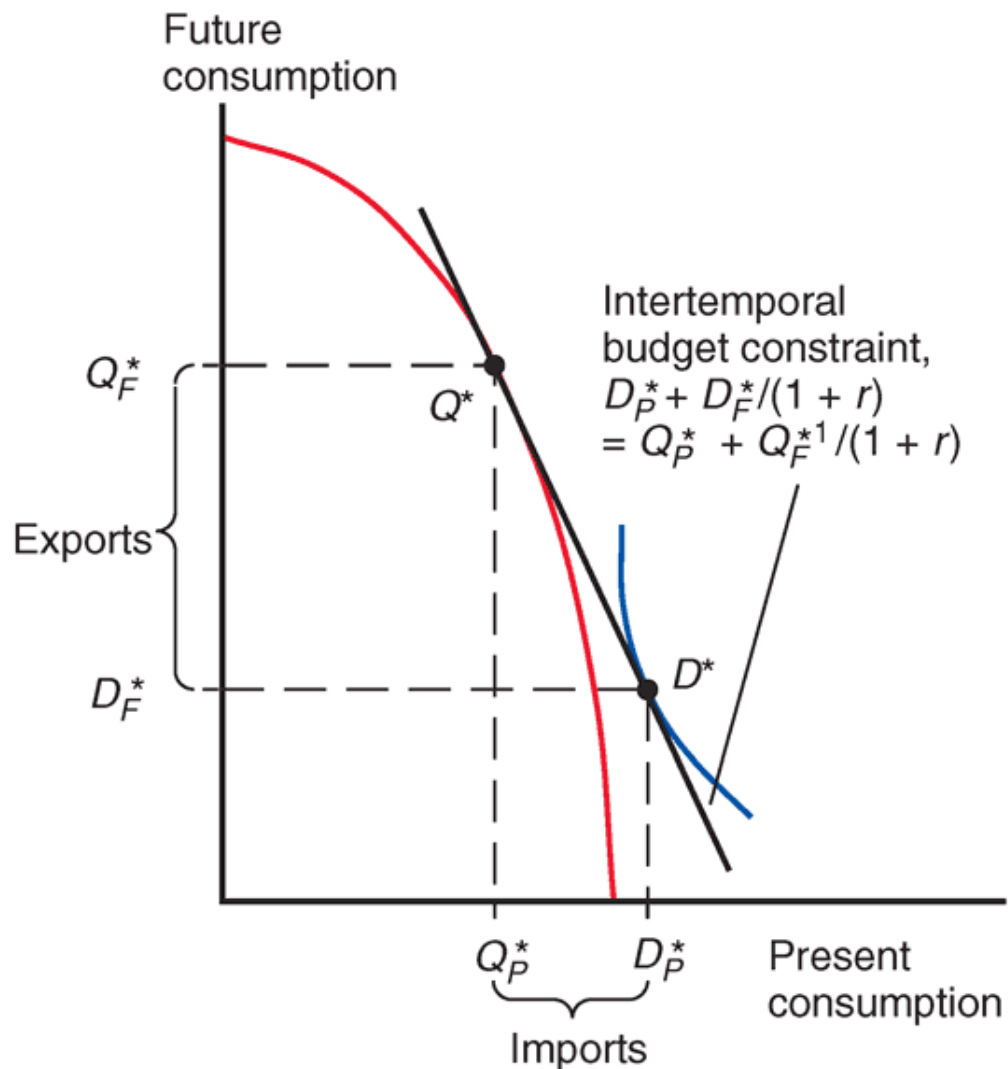
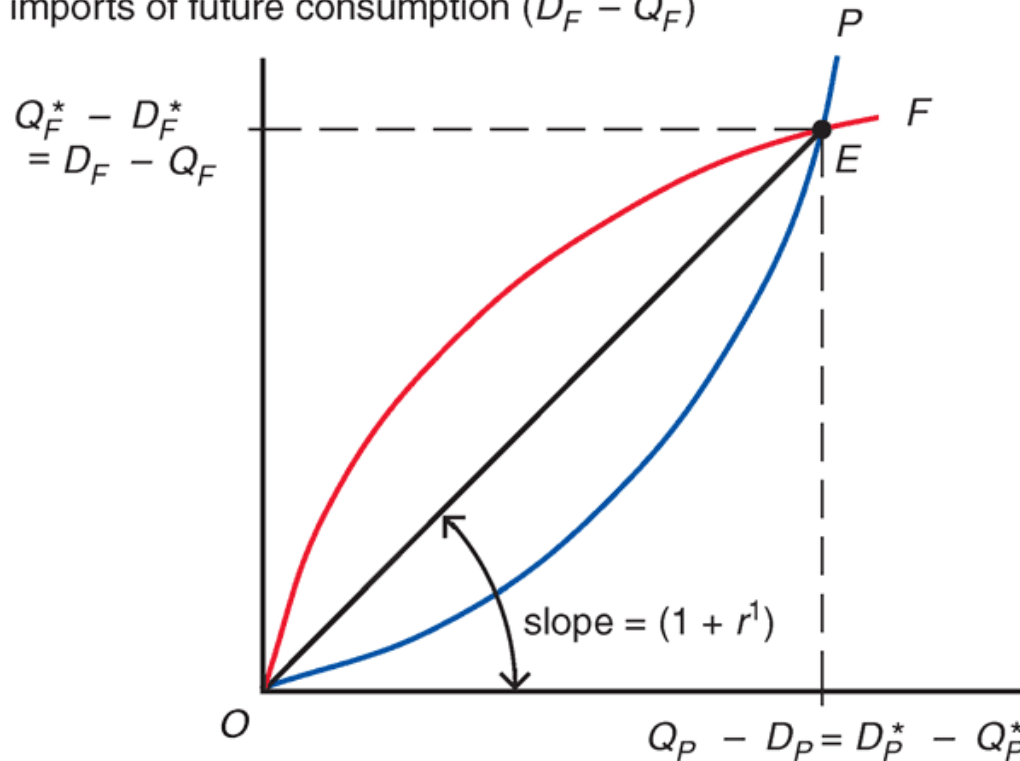


Fig. 7A2-4: International Intertemporal Equilibrium in Terms of Offer Curves

Foreign exports of future consumption ($Q_F^* - D_F^*$) and Home imports of future consumption ($D_F - Q_F$)



Home exports of present consumption ($Q_P - D_P$) and Foreign imports of present consumption ($D_P^* - Q_P^*$)