

Simplest case:

One good, X

Two factors of production, L and K

Two countries, h and f.

Figure 1

World Edgeworth Box.

Total dimensions are the total world endowments of labor and capital.

Any point in the box is a division of the world endowment between country h and country f.

Country h is measured from the Southwest corner and country f from the Northeast corner.

A is the endowment point (h is capital abundant and f is labor abundant).

Trade is to a final equilibrium at point D, the consumption point.

Consider the trade from A to D. Three ways to do this.

1. h exports capital, imports labor (A directly to D)
2. h exports capital (A to B), imports X (B to D).
3. h imports labor (A to C), exports X (C to D).

All three are equivalent in welfare terms. Wage rate and return to capital are the same. Stolper-Samuelson theorem valid.

3

Implications for the trade account.

Merchandise account: balance of trade in X only.

Current account: balance of trade in X and in factor services.

Option 1: No trade in goods, merchandise account balances

Option 2: Deficit in the merchandise account. Home exports services, imports goods.

Option 3: Surplus in the merchandise account. Home imports labor services, exports goods. The latter is “emigrants remittances from foreign’s point of view.

Complications:

Exports of capital (option 2):

home-country critics don't like the fact that firms are exporting jobs.

home-country worries about loss of tax revenue

host countries worry about the loss of sovereignty to foreign firms.

Imports of labor (option 3)

Congestion effects. In fact there is at least one additional factor, land.

Importing people creates effects not present with the other two.

Immigrants also demand public services, etc. Low wage / low skill immigrants cost more in public services than they contribute in taxes.

This latter effects sets up a fiscal externality. Firms want low wage immigrants, but local and state governments want to keep them out.

Factor trade and commodity trade as substitutes

Heckscher-Ohlin Model

1. Factor prices are equalized by trade and there is no reason to add factor trade to commodity trade.
2. Countries are sufficiently different such that they are specialized in trade: then each country has a relatively high price for its scarce factor, the factor used intensively in its import competing industry.

Allowing factors to move implies that relative factor endowment differences will be reduced and in general trade will be reduced.

Trade in goods and factors are *substitutes*

3. Trade barriers prevent commodity prices from being equalized, and so factor prices are not equalized.

Each country has a relatively high price for its own import good, and thus a relatively high price for its scarce factor (Stolper-Samuelson theorem).

Factor trade tends to equalize relative endowments and thereby reduce or even eliminate trade. Trade in goods and factors are *substitutes*.

Factor Trade and Commodity Trade as Complements

1. Differences in technology: add Ricardo to Heckscher-Ohlin.

Suppose that country h has a superior technology in Y, the capital intensive sector.

But suppose that countries have equal relative endowments of both labor and capital.

Country h will produce relatively more Y in free-trade (in goods) equilibrium. But this will bid up the price of capital in country h.

Then capital should flow to country h until all X is produced in country h. Trade in goods will increase.

Figure 6

Figure 7

If Silicon Valley has a higher productivity in computer hardware and software, then engineers will move there.

They may move from where they are scarce to where they are abundant.

This is commonly referred to as “brain drain”.

2. Distortions: e.g, a production subsidy to X

Suppose that we have two absolutely identical countries except country h subsidizes X production.

Country h produces at C and f produces at A: **Figure 8**

Country h has a higher price for L (used intensively in X) and a lower price for K. (Stolper - Samuelson theorem)

Figure 9

If labor is allowed to move, it will flow into h and h will become even more specialized in X, f will become more specialized in Y (Rybczynski theorem).

The volume of trade will increase: trade in goods and factors are *complements*.

3. Increasing returns to scale

Suppose that two identical economies specialize. **Figure 10**

The economy that specializes in the capital-intensive good will have a relatively high price for capital and vice versa for the country specializing in the labor-intensive good.

Figure 11

Then capital will flow to the country specializing in the capital intensive good, expanding that sector further.

Factor trade can make the initially-identical country different in relative endowments.

Figure 12

This is also the key insight of the so-called “new economic geography”, in which an initial equilibrium with countries having identical factor endowments is *unstable*.

Differences in factor endowments arises *endogenously* if factors can move. *Ex post*, countries will be relatively well endowed with factors used intensively in their export industry. Mimics Heckscher-Ohlin!

Summary

1. There are many possible types of trades, some of which may be equivalent in welfare and factor-price (income distribution) outcomes, but which look very different statistically.

Goods can be traded for goods, or factor service trade can substitute for goods trade. E.g., a country can export capital instead of capital intensive good.

2. In some cases, trade in goods exhaust all possible gains from trade; in particular, this occurs if trade in goods results in factor-price equalization.
3. In the case of the Heckscher-Ohlin model, trade in goods may not equalize factor prices do to specialization and/or trade costs. There are additional gains to be achieved by trading factors.

While trade in goods and factors are welfare complements, they are substitutes in terms of trade volumes in the HO model.

4. For many other underlying causes of trade, trade in goods and factors are both welfare and trade-volume complements.

When countries have identical factor endowments but

ricardian differences in technology

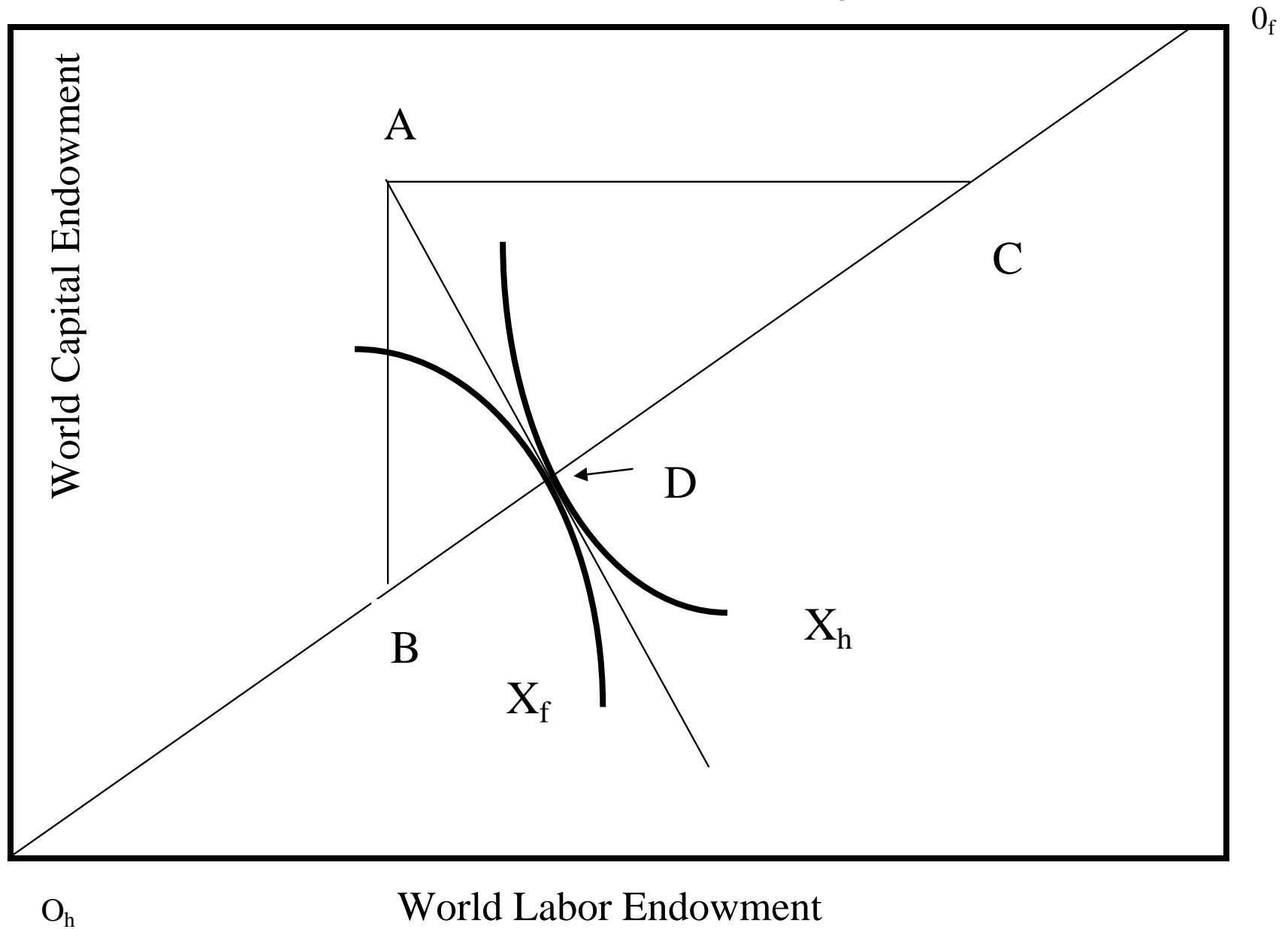
production distortions that differ across countries

strong increasing returns to scale

allowing factors to move increases the volume of goods trade and leads countries to be relatively well endowed with factors used intensively in their export industries.

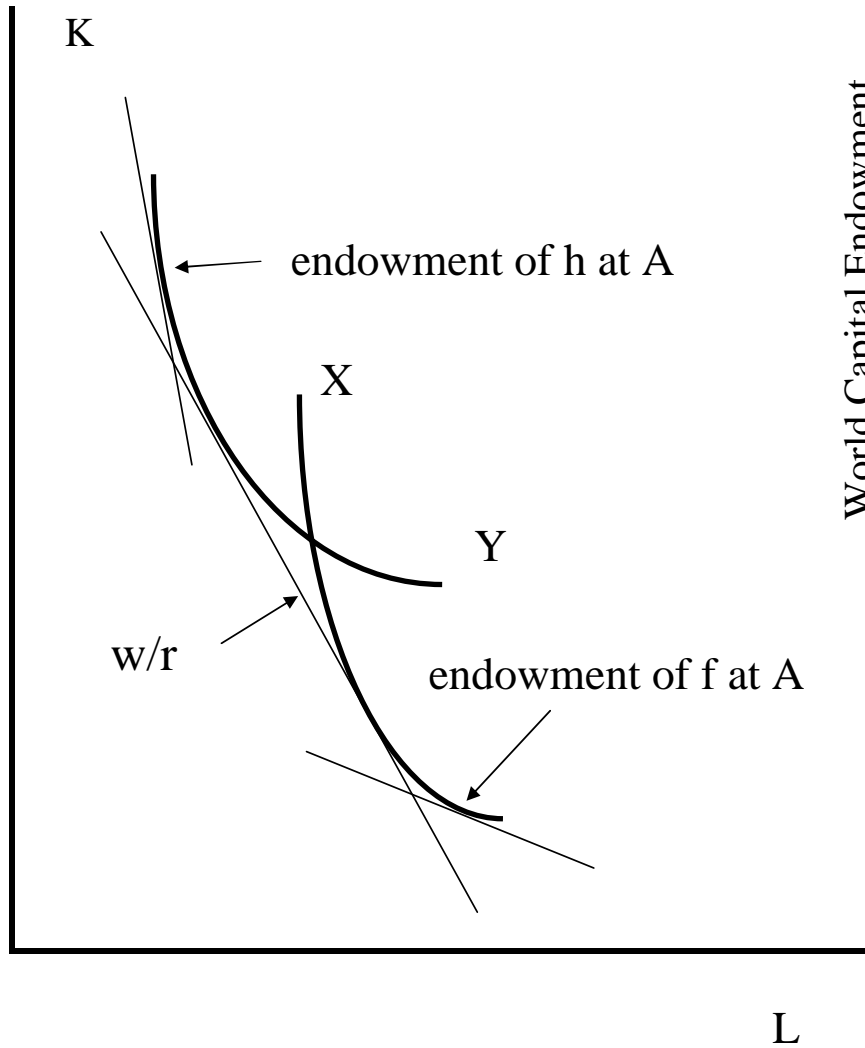
the HO observation becomes a *result* of trade, not a *cause*.

Jones, et. al., two factors, one good



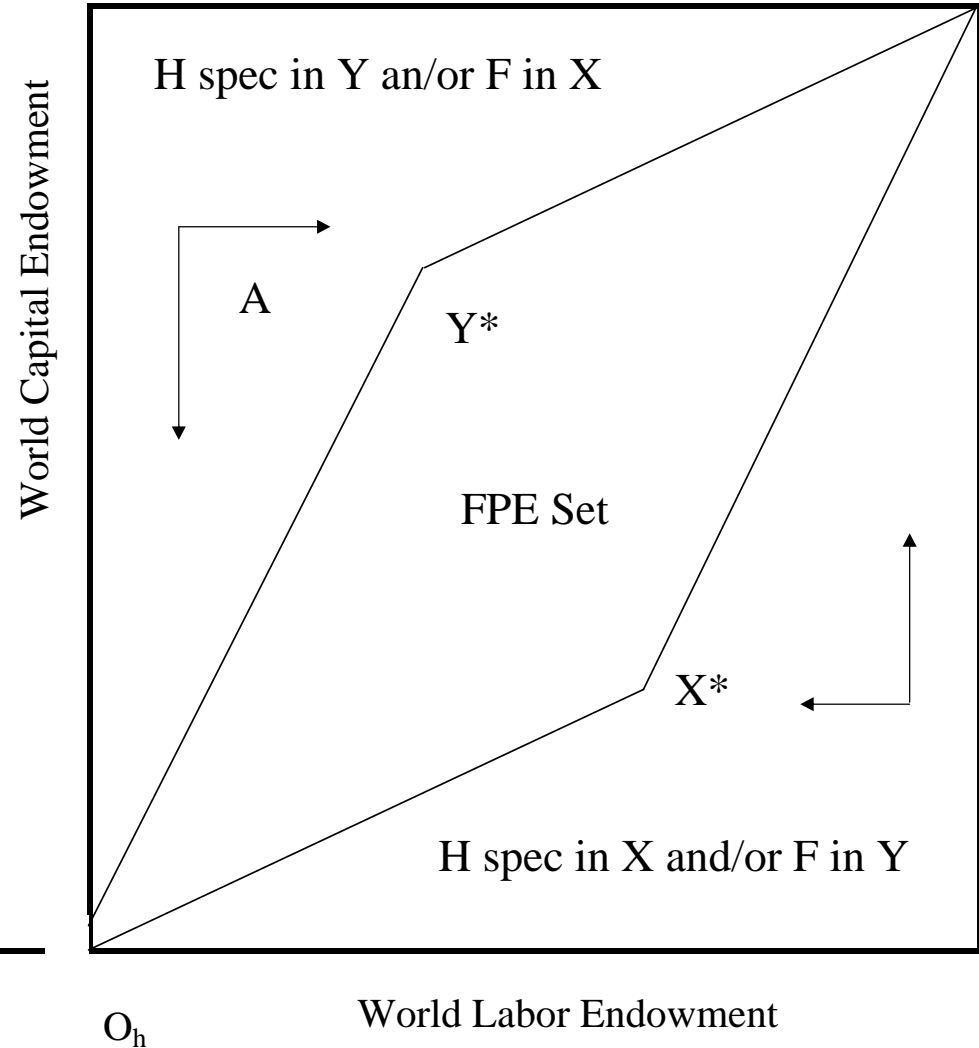
UNOTES 13 FIGURE 1

Specialization and Relative Factor Prices



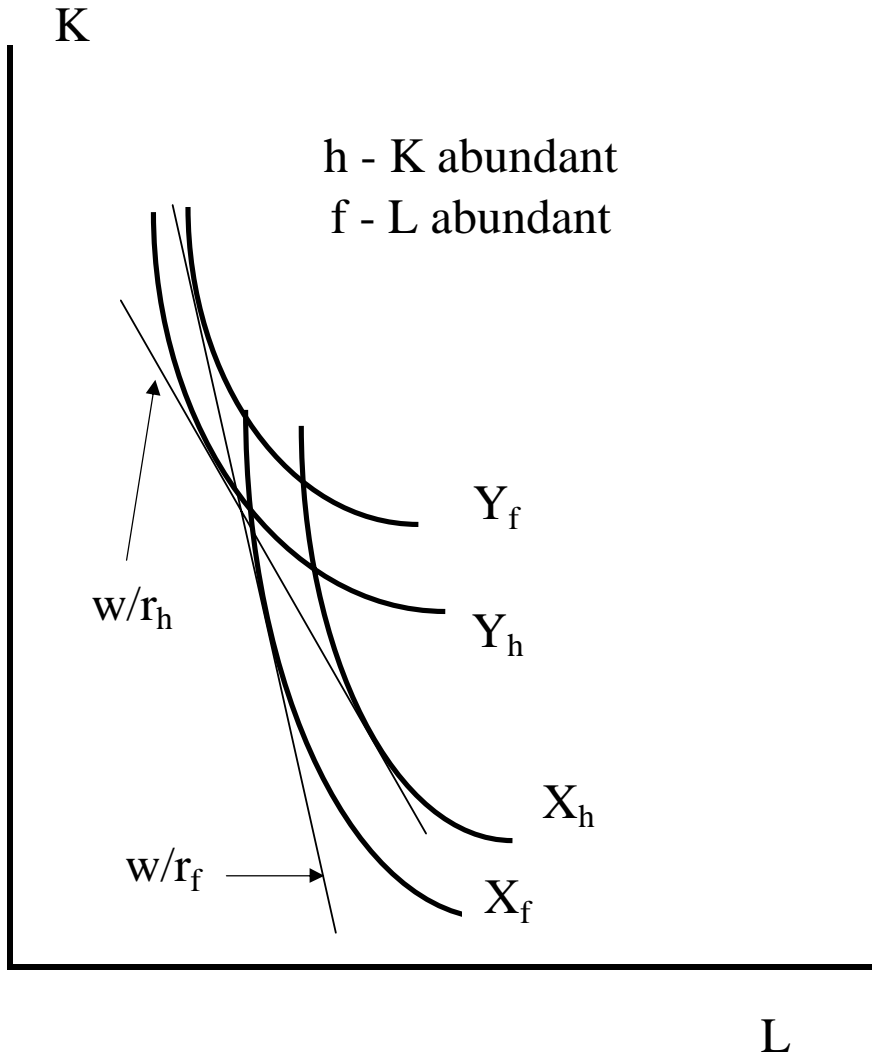
UNOTES 13 FIGURE 2

Heckscher-Ohlin with zero trade costs O_f



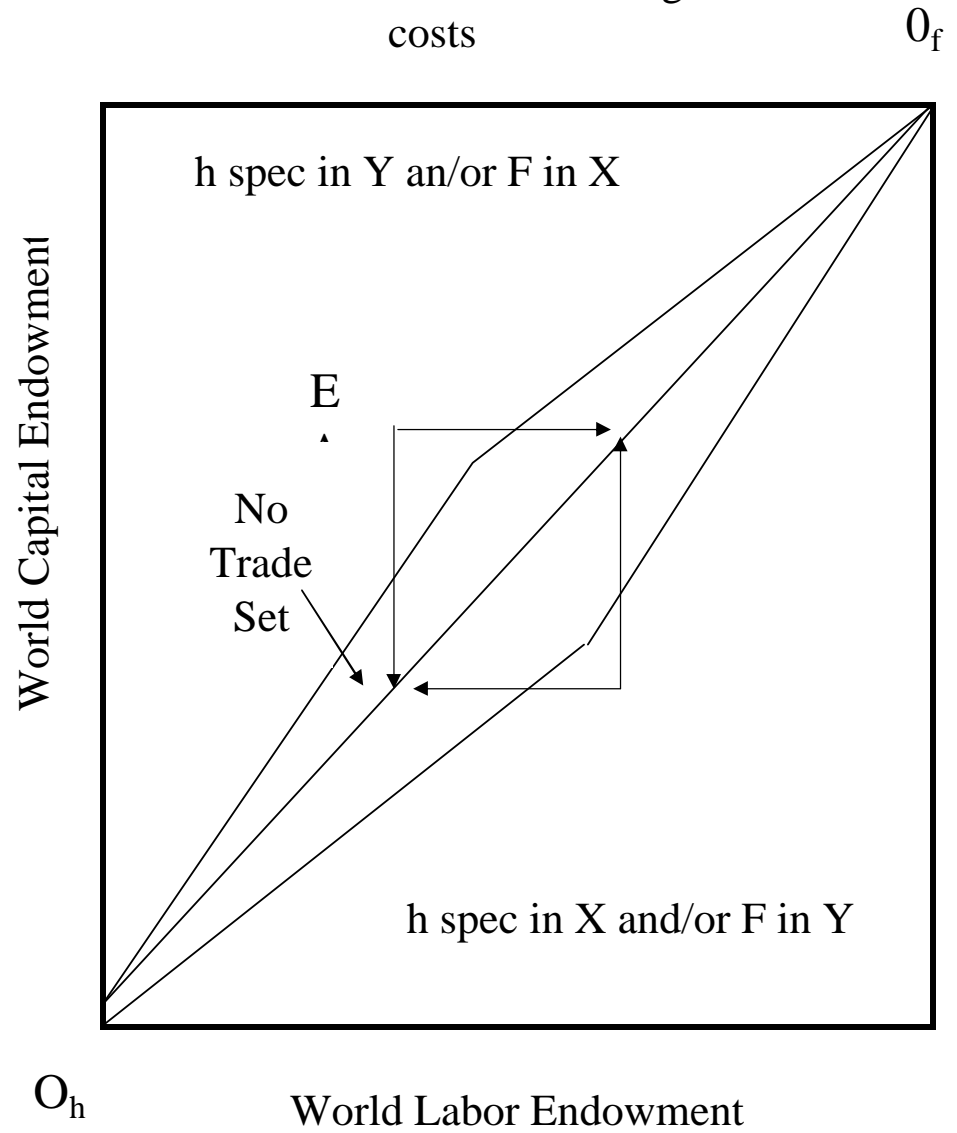
UNOTES 13 FIGURE 3

Trade Costs and Relative Factor Prices

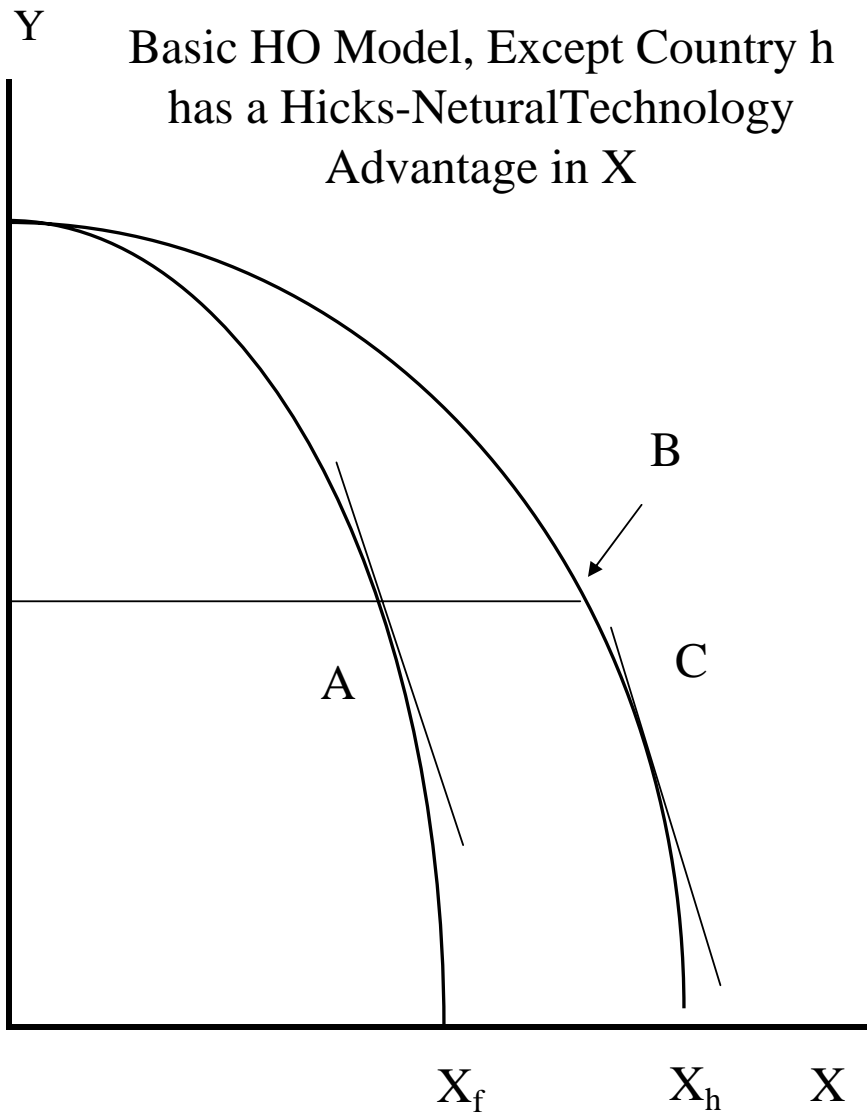


UNOTES 13 FIGURE 4

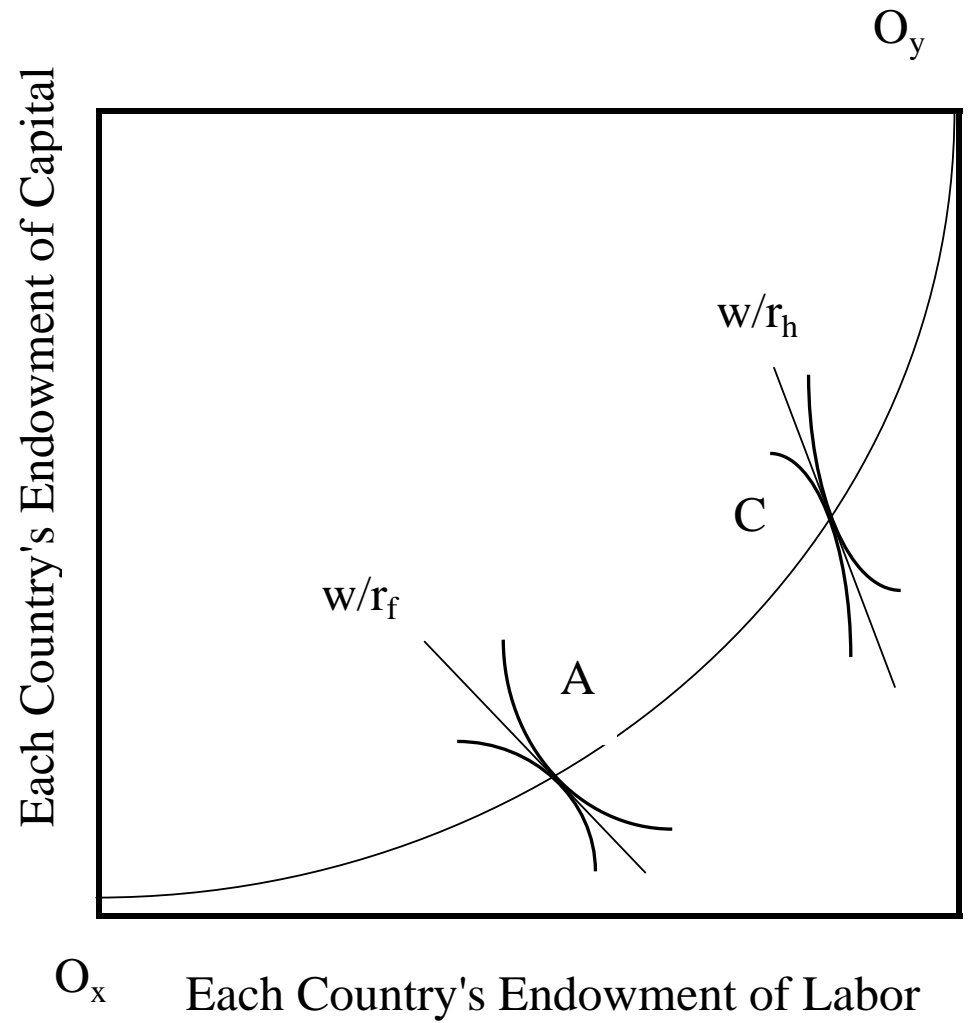
Heckscher-Ohlin Mundell with high trade costs



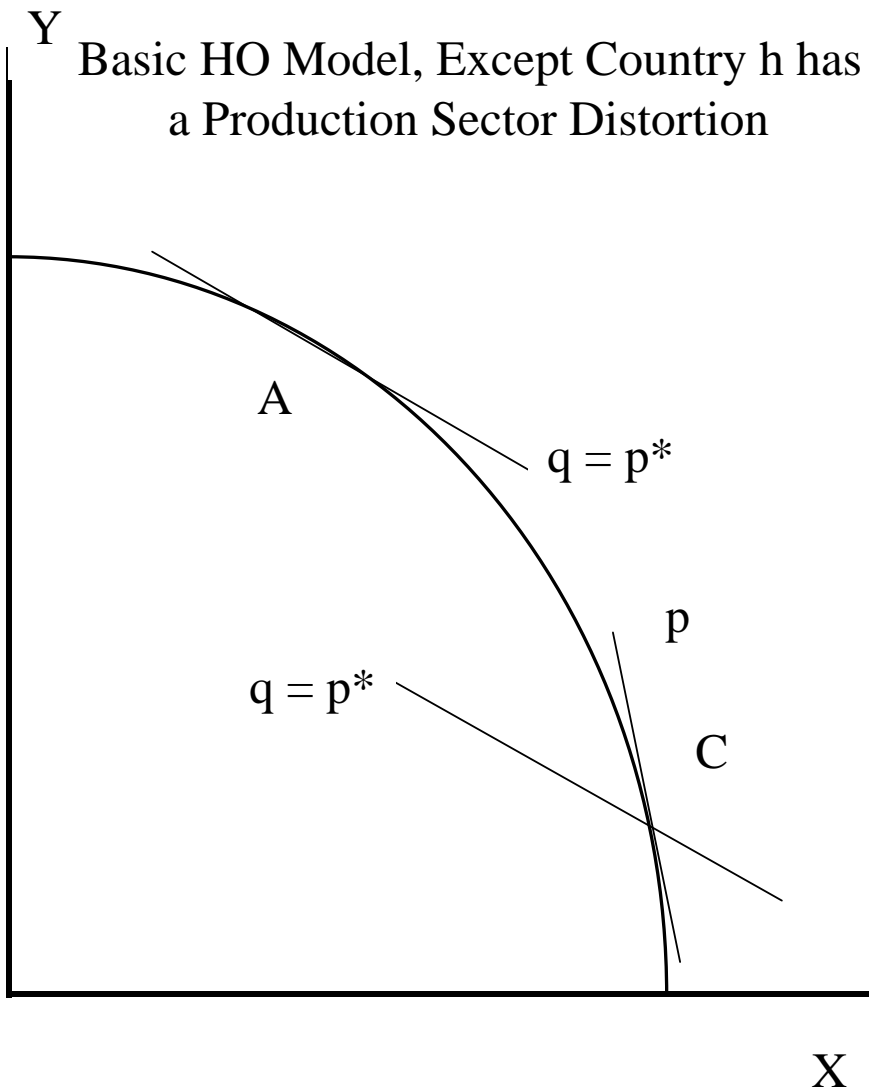
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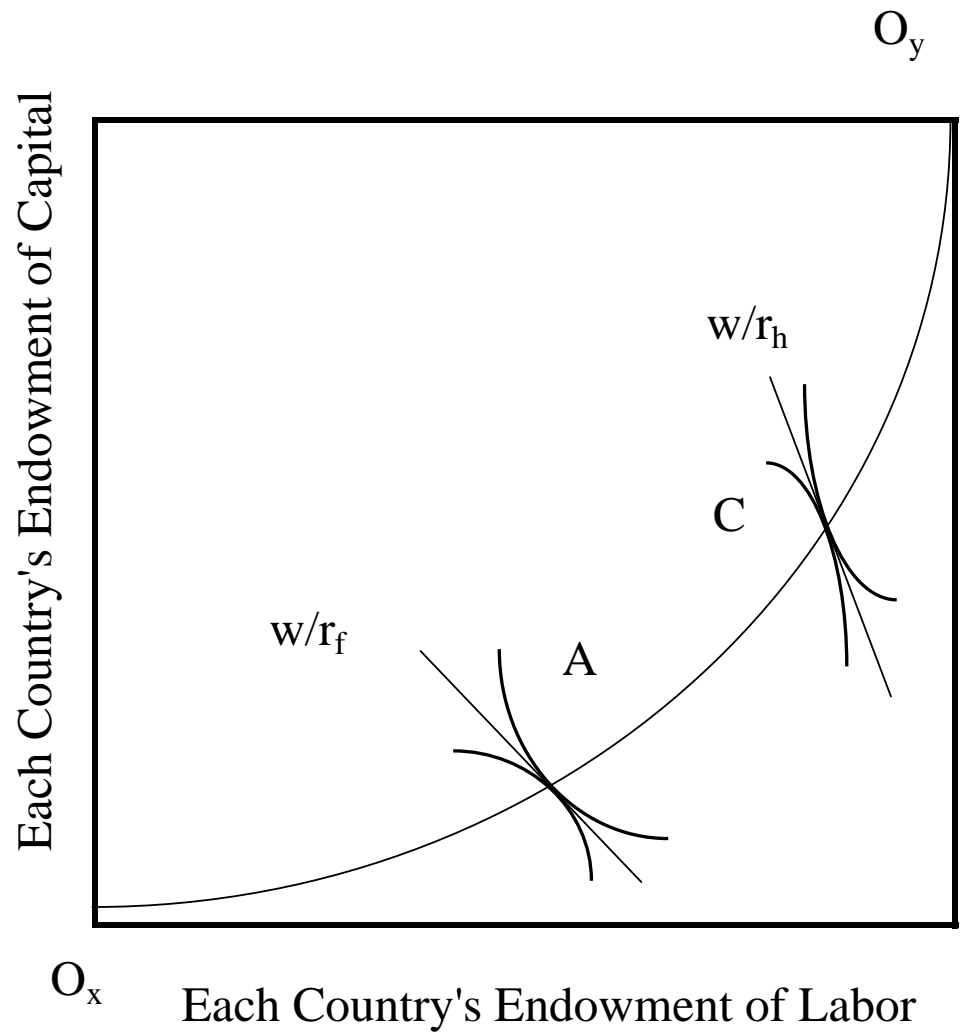
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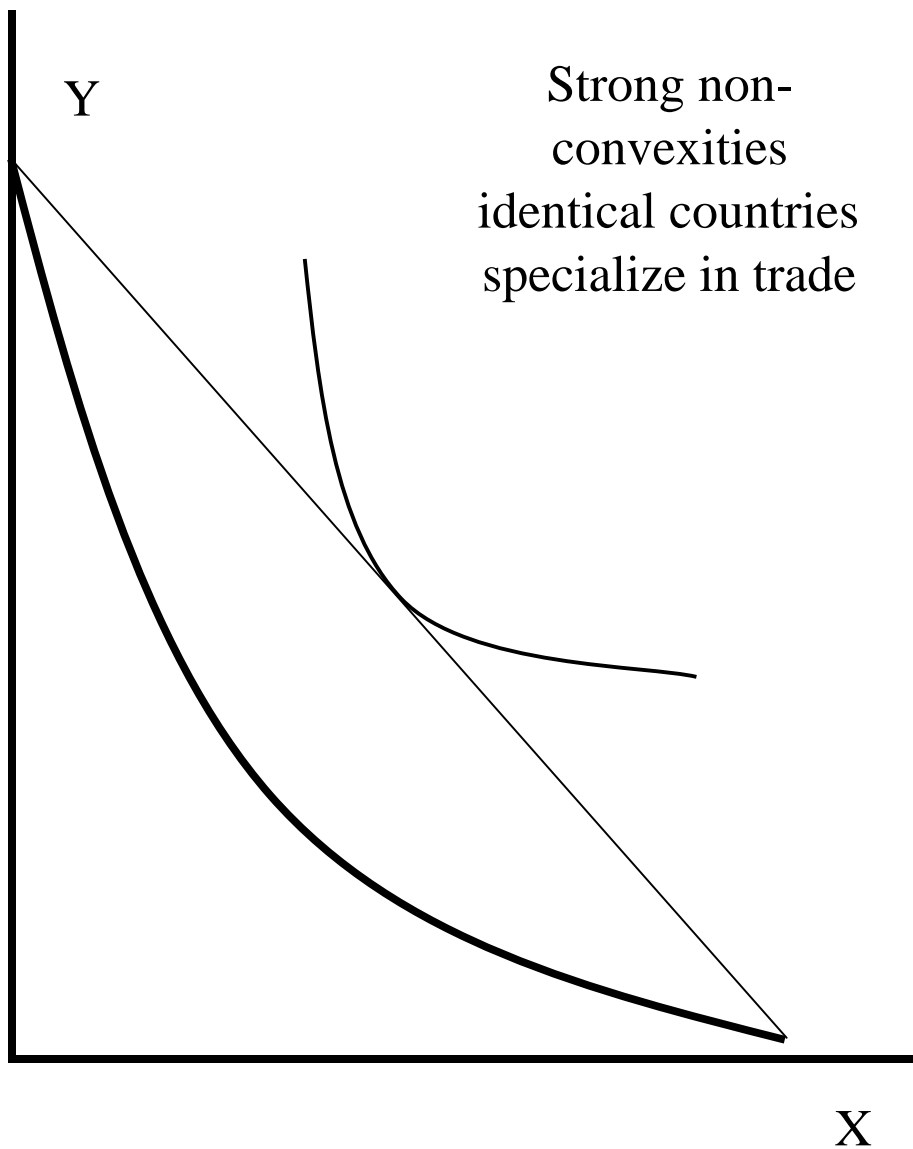
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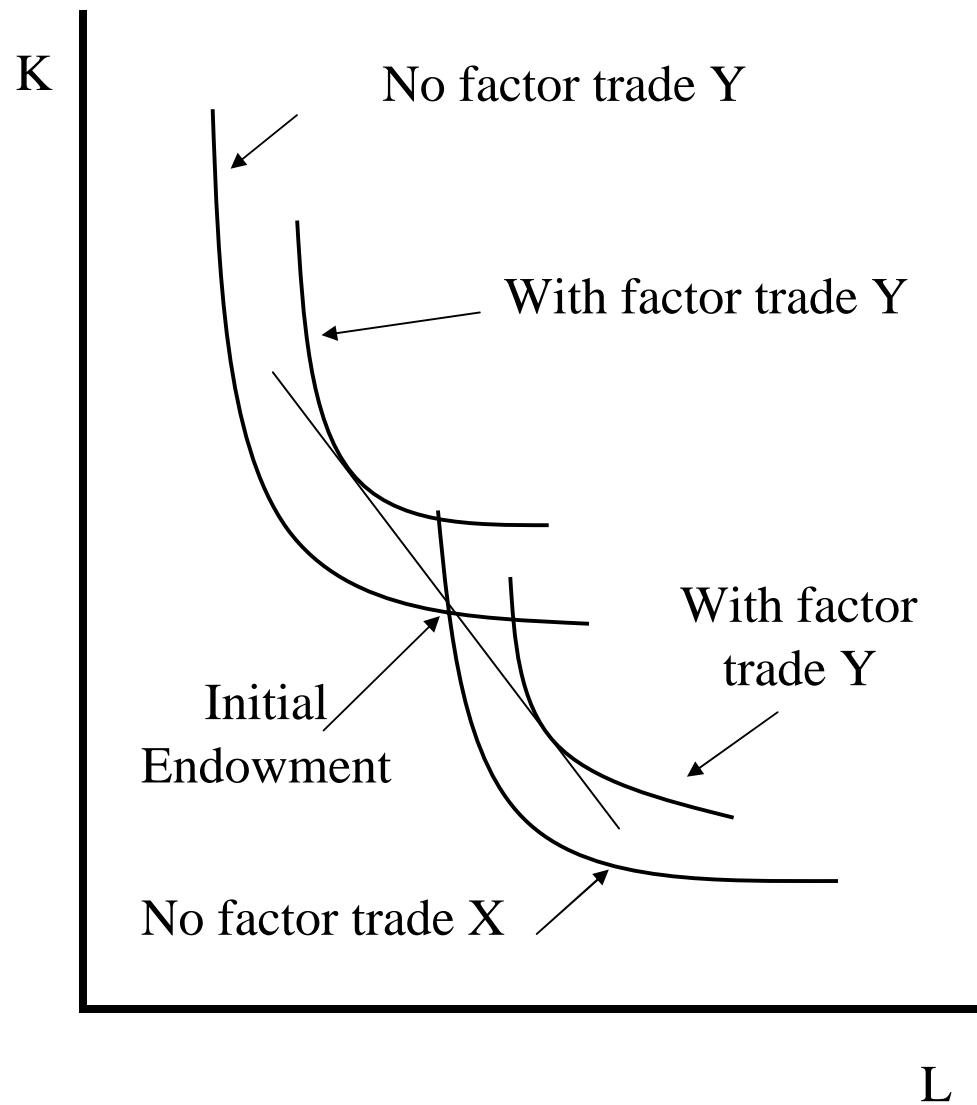
UNOTES 13 FIGURE 8



UNOTES 13 FIGURE 9

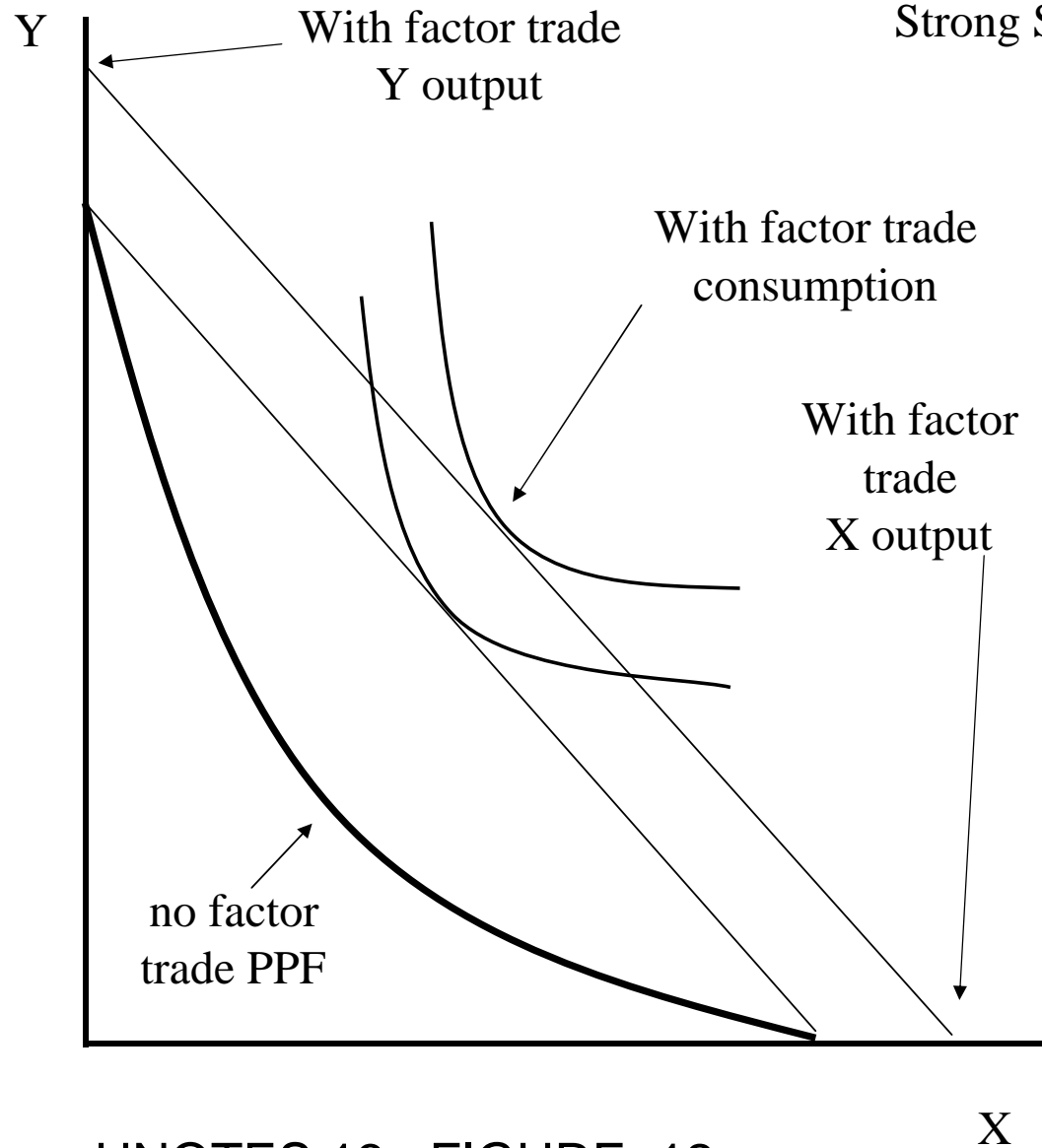


UNOTES 13 FIGURE 10



UNOTES 13 FIGURE 11

Two-Good, Two-Factor Model with
Strong Scale Economies



UNOTES 13 FIGURE 12