

# International Trade: Theory and Policy

**Lecture 13**

December, 2016

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## Life expectancy continues to rise, but widespread differences persist across countries and socio-demographic groups

- Life expectancy continues to increase steadily in OECD countries, rising on average by 3-4 months each year. In 2013, life expectancy at birth reached 80.5 years on average, an increase of over ten years since 1970. Japan, Spain and Switzerland lead a group of eight OECD countries in which life expectancy now exceeds 82 years.
- Life expectancy in key emerging economies, such as India, Indonesia, Brazil and China, has increased over the past few decades, converging rapidly towards the OECD average. There has been much less progress in countries such as South Africa (due mainly to the epidemic of HIV/AIDS) and the Russian Federation (due mainly to a rise in risk-increasing behaviours among men).
- Across OECD countries, women can expect to live more than 5 years longer than men, but this gap has narrowed by 1.5 years since 1990.
- People with the highest level of education can expect to live six years longer on average than those with the lowest level. This difference is particularly pronounced for men, with an average gap of almost eight years.

# Topics 9-11. International economic integration. International production factor migration.

## Lecture 13

1. International economic integration.
2. International production factor migration (labor, foreign direct investment [FDI], portfolio investment): theories and facts.
  - 2.1. Theorem on gains from international production factor migration.
  - 2.2. International production factor movement and international trade as substitutes and complements: Ricardo model and H-O-S model.

## Lecture 14

3. Foreign direct investment (FDI).
  - 3.1. FDI: empirical evidence.
  - 3.2. OLI-paradigm and MNC strategies (John Dunning).
  - 3.3. The model of multi-plant firm: the choice between export and FDI (James Markusen).
  - 3.4. Transfer of knowledge capital through FDI (James Markusen).
  - 3.5. Example: FDI location choice in Russia.

## (9.1.) International economic integration

Table 1

### Population, GDP and Trade Shares in 1990

	<i>Population</i> (mill.)	<i>GDP</i> (bill. US \$)	<i>Index of</i> <i>GDP per capita</i> <sup>a</sup>	<i>Exports / GDP</i>
United States	251	5392	100	0.10
Japan	124	2943	82	0.11
EC	328	6016	72	0.29
Belgium	10	192	76	0.74
Denmark	5	131	78	0.35
France	56	1191	81	0.23
Germany (West)	63	1488	85	0.32
Greece	10	66	34	0.22
Ireland	3.5	43	50	0.62
Italy	58	1091	75	0.21
Luxembourg	4	9	90	0.98
Netherlands	15	279	74	0.57
Portugal	10	60	39	0.37
Spain	39	491	55	0.17
United Kingdom	57	975	73	0.24

<sup>a</sup>GDP per capita relative to the United States when converted to US dollars using purchasing power parities.

Source: OECD, *National Accounts 1960–1990*, Paris, 1992.

## (9.1.) International economic integration

‘**The goal of the 1992 program** was to complete by January 1, 1993, what the European Community set out to do in **1957**: create a common market with a free flow of goods, services, labor and capital. 1992: 12 member countries.

### **European Union: stages of development**

**1968**: Tariff-free trade for industrial goods and a common external tariff already had been achieved by the Community. However, a multitude of non-tariff barriers and market access restrictions remained, and external non-tariff trade policies were never unified.

**the '70s**: Attempts at further economic integration, including early initiatives to broaden the scope of integration and create an Economic and Monetary Union, were largely unsuccessful. "1992" was a reaction and an attempt to put the European Community back on track both economically and as an organization.’

Flam, H. (1992) Product markets and 1992: full integration, large gains? *The Journal of Economic Perspectives*, **6**(4), 7-30.

## (9.1.) International economic integration

1. **Fiscal barriers** (such as taxes and subsidies in agricultural trade – ‘Monetary Compensatory Amounts’)
2. **Quantitative barriers** (like quotas on the production and trade of some agricultural goods and steel, and on the share of foreign firms in the market for road and air transportation services)
3. **Market access restrictions** directed at firms from other Community countries. Many - in public procurement, e.g. water, energy, telecommunications equipment, some transportation services and construction; others applied to private banking and insurance, road and air transportation, many professions, and direct investment.
4. **Real costs** incurred in trade between Community countries (border costs, technical regulations on product packaging and marketing). National technical regulations must be mutually recognized.

Flam, H. (1992) Product markets and 1992: full integration, large gains? *The Journal of Economic Perspectives*, 6(4), 7-30.

## (9.1.) International economic integration

Table 2

### Consumer Price Differences for Selected Car Models in 1989, Net of Taxes

(lowest price = index 100)

	<i>BMW 316 i</i>	<i>Citroen AX 11</i>	<i>Fiat Tipo 1400</i>	<i>Mercedes 190 D</i>	<i>Opel Corsa 1000</i>	<i>Peugeot 405 1600</i>	<i>Seat Ibiza 1200</i>	<i>Toyota Corolla 1300</i>	<i>Average (unweighted) of 24 models</i>
Belgium	116	134	128	113	122	133	119	132	123
Denmark	100	103	100	108	100	100	100	100	100
Germany	122	151	136	100	—	155	152	152	137
Greece	107	100	106	—	103	112	114	102	107
Spain	—	142	159	138	135	162	160	—	149
France	124	160	131	128	117	140	138	148	132
Ireland	146	163	144	149	145	140	150	150	145
Italy	138	170	159	119	129	155	156	—	148
Luxembourg	127	138	127	106	123	134	133	146	127
Netherlands	118	132	139	110	112	131	132	138	130
Portugal	146	136	130	136	107	168	144	192	140
United Kingdom	148	185	169	126	141	172	158	193	161

Source: Bureau Européen des Unions de Consommateurs, "Car Prices and Progress Towards 1992," Brussels, October 15, 1989.

## (9.1.) International economic integration

Full economic integration - a state in which there are no government-erected barriers to the movement of goods, services, labor and capital, so that prices are equalized net of transport costs (Flam, 1992).

### Stages of international economic integration:

1. Free trade area – all tariffs among countries are abolished
2. Customs union – like ‘1’ plus exactly the same tariffs for the outward countries
3. Common market – a common market for goods and for production factors (EU: since 1968)
4. Economic union – economic policies are harmonized  
a single or unified market – when subsidizing is stopped; environmental norms  
common currency area (EU: since 1999; 2002 – EU countries join the single currency space)
5. Total economic integration - unified policies under a supra-national authority  
*Bela Balassa (1987) ‘economic integration’ in the New Palgrave*  
*Prof. Wladimir Andreff. Lectures at the Faculty of Economics, Ural State University. 2009.*

‘1992 - > the Community is between a common market and an economic union’

‘The European Monetary and Economic Union-EMU - > the Community is between an economic union and full integration.’

Full integration according to definition – ‘price equalization net of transport costs’ – can be attained without harmonization or unification of macroeconomic policies’ (Flam, 1992).



## (9.1.) International economic integration

**Trade creation (создание торговли)**

**Trade diversion (отклонение торговли)**

‘Trade is created between the members of a customs union when barriers to trade are eliminated, allowing for increased specialization according to comparative advantage and consequently greater gains from trade.

Simultaneously, some trade is diverted from low price suppliers outside the customs union to high cost suppliers inside it, since the outside suppliers still face trade barriers while the inside suppliers do not.’

Flam, H. (1992) Product markets and 1992: full integration, large gains? *The Journal of Economic Perspectives*, 6(4), 7-30.

What is the situation in the EU now? What about trade creation and trade diversion within the EU? (*Areas for research - course papers etc. Possibly about the other economic/customs unions*)

## (9.1.) International economic integration

Example. Eurasian Customs Union (Союз Россия-Беларусь-Казахстан).

Advantages and challenges associated with customs unions:

Advantages	Challenges
Trade creation Increased market size Expansion of export world wide Opportunities to improve institutions Liberalization of services markets	Minimize trade diversion Overcome asymmetry of size Achieve integration among outward-oriented commodity exporters Manage macroeconomic uncertainty

*Erik Berglof. Round table 'Integration across borders: EBRD Transition Report 2012'. The NES 20<sup>th</sup> Anniversary program. December 13-16, 2012.*

What is the situation in the Eurasian Customs Union now? Examples of different industries? Why was the Union created? What are the opinions of experts on the development of the Union?

## (9.2.) International production factor migration: theories and facts

Labor

Capital

- portfolio investment\*\*
- foreign direct investment (FDI) – *considered within this course*

The majority of FDI is performed by transnational corporations (TNCs)

\*\*How is capital movement across borders regulated nowadays? What are the institutions creating such regulations? Which changes occurred in the regulations in the 20-21 centuries?

## **(9.2.) International production factor migration: theories and facts**

### **The gains-from-international factor migration theorem**

- **Graphical illustration:**
  - with curves of marginal production factor revenue (for example, for capital); countries H and F. (*structure of the model: next slide*)

## (9.2.) Structure of the model

- **Structure of the world economy:**
  - 2 countries (h, f);
  - One tradable final good;
  - Resources are mobile between countries.
- **Structure of the production sector:**
  - 1 industry producing one homogeneous good;
  - 2 resources: labor L and capital K; supply of capital is defined exogenously.
  - Technologies in the countries are the same.
- **Structure of the household sector:**
  - Tastes are identical and homogeneous among the households and the countries
- **Market structure:**
  - Perfect competition on the markets of production factors and of final goods.

⇒ **No incentives for trade.**

- **Return to capital is higher in country F**  
=> Country H will benefit from export of capital.

## (9.2.) Revision: the gains-from-trade theorem

- **The gains-from-trade theorem:**

- Suppose that the value of production is maximized at free trade prices. Then the value of free trade consumption at free trade prices exceeds the value of autarky consumption at free trade prices. The free trade consumption bundle must thus be preferred to the autarky bundle, because if it were not, consumers would pick the cheaper autarky bundle.

- **Situations when the theorem does not hold:**

- Under free international trade the value of production is not always maximized (under free international trade price ratio)

*Example: monopoly.*

- **Sufficient conditions of the value of production maximization :**

- Tangency condition (Условие «касания»);

- Convexity condition (Условие «выпуклости»).

In a similar manner, formulate the theorem on gains from international production factor migration.

## (9.2.) International production factor migration: theories and facts

### The theorem on gains from international production factor migration

- Suppose that the value of production is maximized at prices under international production factor migration (economic openness). Then the value of economic openness consumption at economic openness prices exceeds the value of autarky consumption at economic openness prices.

The economic openness consumption bundle must thus be preferred to the autarky bundle, because if it were not, consumers would pick the cheaper autarky bundle

- **Formal proof**

- During the lecture

- **Graphical illustration**

- With unit value isoquants

## **(9.2.) International production factor migration: theories and facts**

### **H-O-S model**

Based on the assumptions of H-O-S model, are international production factor migration and trade substitutes or complements? I.e.

1. Does increase in international trade volumes lead to increase in production factor migration?
2. Does production factor migration lead to the increase in international trade volumes?



## (9.2.) Structure of the Heckscher-Ohlin-Samuelson (H-O-S) model of international trade

- **Structure of the world economy :**
  - 2 countries (h, f);
  - All final goods are tradable;
  - Production factors are mobile between the countries. (Before they were assumed to be immobile)
- **Structure of the production sector :**
  - 2 industries that produce 2 final homogeneous goods (X, Y) – in each country;
  - 2 homogeneous, non-specific resources (K, L), mobile between industries;
  - Fixed quantity of resources in each country; countries differ in relative endowment of production factors: for example,  $K_f/L_f > K_h/L_h$ ;
  - Specific features of the production technology:
    - CRS;
    - Technologies differ among the industries, but not among the countries, i.e., for example,  $K_y/L_y > K_x/L_x$ ;
    - No factor intensity reversal (*отсутствуют технологии с изменяющейся ресурсной интенсивностью*).
- **Structure of the household sector :**
  - Tastes are identical and homogeneous among the households and the countries.
- **Market structure:**
  - Perfect competition on the markets of production factors and of final goods.

## (9.2.) Exogenous parameters of the H-O-S model

### (1) Exogenous parameters of the model:

□ Production technology - production functions:

- $X_h = f_{xh}(K_{xh}, L_{xh}) = AK_{xh}^\alpha L_{xh}^{(1-\alpha)}$ ;  $Y_h = f_{yh}(K_{yh}, L_{yh}) = BK_{xh}^\beta L_{xh}^{(1-\beta)}$ ;
- $X_f = f_{xf}(K_{xf}, L_{xf}) = AK_{xf}^\alpha L_{xf}^{(1-\alpha)}$ ;  $Y_f = f_{yf}(K_{yf}, L_{yf}) = BK_{xf}^\beta L_{xf}^{(1-\beta)}$ ;  
where  $A \neq B$ ,  $\alpha \neq \beta$ .

□ Resource endowment in each economy:  $K_h, K_f, L_h, L_f$ ;

□ Preferences of representative household in each of the economies – utility functions :

- $U_i = U_i(X_i, Y_i)$ ;  $i = h, f$ ;

□ Market structure on the final goods markets – perfect competition.

□ Market structure on the resource market – perfect competition.

## (9.2.) Endogenous parameters of the H-O-S model

### (2) Endogenous parameters of the model:

- Equilibrium production and consumption of final goods in closed economies –  $X_h^a, Y_h^a, X_f^a, Y_f^a$ ;
- Equilibrium price ratios for final goods in closed economies –  $P_{xh}^a/P_{yh}^a, P_{xf}^a/P_{yf}^a$ ;
- Equilibrium production of final goods in the open economy –  $X_{ph}^*, Y_{ph}^*, X_{pf}^*, Y_{pf}^*$ ;
- Equilibrium consumption of final goods in the open economy –  $X_{ch}^*, Y_{ch}^*, X_{cf}^*, Y_{cf}^*$ ;
  - If  $(X_c^* - X_p^*) > 0$  or  $(Y_c^* - Y_p^*) > 0$  – the good is imported;
  - If  $(X_c^* - X_p^*) < 0$  or  $(Y_c^* - Y_p^*) < 0$  – the good is exported;
- Equilibrium world price ratio for final goods –  $P_x^*/P_y^*$ .
- Production factor prices are equalized too => no incentives for production factor migration under free trade

## (9.2.) International production factor migration: theories and facts

### Assumptions

- good Y is more capital intensive than good X:

$$\left(\frac{K}{L}\right)_y > \left(\frac{K}{L}\right)_x$$

- Country F is more capital abundant than country H:

$$\left(\frac{K}{L}\right)_F > \left(\frac{K}{L}\right)_H$$

⇒ Country F specializes in good Y and exports it  
Country H specializes in good X and exports it

Country F imports good X

Country H imports good Y

## (9.2.) International production factor migration: theories and facts

- Assume that country H introduced import tariff on good Y

$$\Rightarrow P_y^h > P_y^f$$

=> price ratio changes

=> unit value isoquant of good Y in country H shifts towards the origin of coordinates (as under a higher price on Y it is enough to produce less Y in order to receive unit value of revenue).

Now the equilibrium relative wage ( $w/r$ ) in country H is lower than in country F

Assume that production factor migration is possible

=> labor moves to country F and/or capital moves to country H

=> Country F becomes relatively more labor abundant; country H becomes relatively more capital abundant => specialization of the countries decreases

## (9.2.) International production factor migration: theories and facts

### Graphical illustration of international trade and international production factor movement in the H-O-S model

□ With unit value isoquants

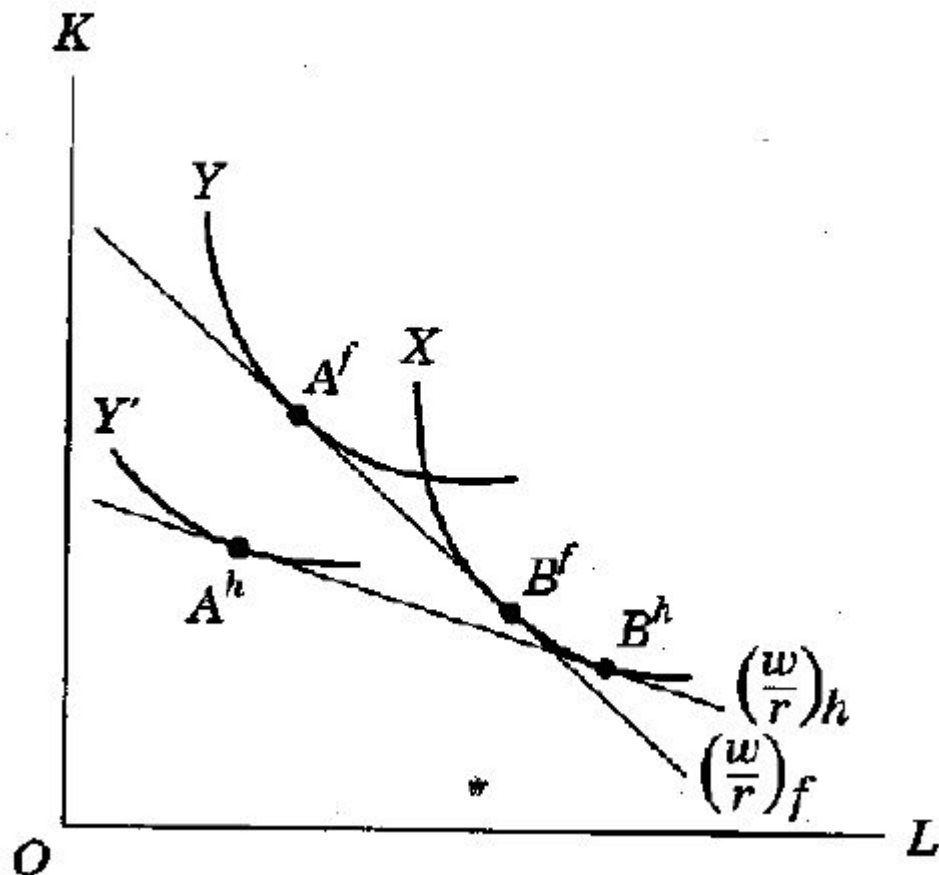


Figure 1: Factor prices unequal due to a tariff on Y in country H

Source: Markusen et al. (1995), Ch. 21, p. 386.

## **(9.2.) International production factor migration: theories and facts**

- **Conclusions:**

- In the H-O-S model the more production factor migration increases, the less becomes trade. I.e. international production factor migration and international trade are substitutes.

## **(9.2.) International production factor migration: theories and facts**

### **D. Ricardo model**

Based on the assumptions of D. Ricardo model, are international production factor migration and trade substitutes or complements?



## (9.2.) Endogenous parameters of the modified Ricardian model (2 production factors)

- **Structure of the world economy:**
  - 2 countries (h, f);
  - All final goods are tradable;
  - A production factor was assumed to be immobile between the countries before. Now it is assumed to be mobile between the countries.
- **Structure of the production sector:**
  - 2 industries that produce 2 final homogeneous goods (X, Y);
  - Usually: 1 homogeneous production factor (L); here: two production factors (L,K) mobile between the industries;
  - Any kind of resource endowment in the countries; assume that it is the same in two countries  $L_h = L_f$ ;  $K_h = K_f$ ;
  - Specific features of the production technology:
    - CRS;
    - Technologies differ among the industries and the countries.
- **Structure of the household sector:**
  - Tastes (*предпочтения*) are identical and homogeneous among the households and the countries
- **Market structure:**
  - Perfect competition on the markets of production factors and of final goods.

## (9.2.) Endogenous parameters of the modified Ricardian model (2 production factors)

### (1) Exogenous parameters of the model:

□ Production technology - production functions:

- $X_h = f_{xh}(K_{xh}, L_{xh}) = AK_{xh}^\alpha L_{xh}^{(1-\alpha)}$ ;  $Y_h = f_{yh}(K_{yh}, L_{yh}) = BK_{yh}^\beta L_{yh}^{(1-\beta)}$ ;
  - $X_f = f_{xf}(K_{xf}, L_{xf}) = AK_{xf}^\alpha L_{xf}^{(1-\alpha)}$ ;  $Y_f = f_{yf}(K_{yf}, L_{yf}) = BK_{yf}^\beta L_{yf}^{(1-\beta)}$ ;
- where  $A \neq B$ ,  $\alpha \neq \beta$ ,  $\beta_h = \beta_f$ ,  $\alpha_h > \alpha_f$

i.e. Technologies in production of Y are the same in the two countries ( $\beta_h = \beta_f$ ); country H has a more advanced technology in production of X ( $\alpha_h > \alpha_f$ ).

- Resource endowments in the economies are the same:  $L_h = L_f$ ;  $K_h = K_f$
- Preferences of representative household in each of the economies – utility functions:
  - $U_i = U_i(X_i, Y_i)$ ;  $i = h, f$ ;
- Market structure on the final goods markets – perfect competition.
- Market structure on the resource market – perfect competition.

How is marginal product ( $\alpha$ ) related to wage?

What does it tell about the incentives to migrate?

## (9.2.) Endogenous parameters of the modified Ricardian model (2 production factors)

### (2) Endogenous parameters of the model:

- Equilibrium production and consumption of final goods in closed economies –  $X_h^a, Y_h^a, X_f^a, Y_f^a$ ;
- Equilibrium price ratios for final goods in closed economies –  $P_{xh}^a/P_{yh}^a, P_{xf}^a/P_{yf}^a$ ;
- Equilibrium production of final goods in the open economy –  $X_{ph}^*, Y_{ph}^*, X_{pf}^*, Y_{pf}^*$ ;
- Equilibrium consumption of final goods in the open economy –  $X_{ch}^*, Y_{ch}^*, X_{cf}^*, Y_{cf}^*$ ;
  - If  $(X_c^* - X_p^*) > 0$  or  $(Y_c^* - Y_p^*) > 0$  – the good is imported;
  - If  $(X_c^* - X_p^*) < 0$  or  $(Y_c^* - Y_p^*) < 0$  – the good is exported;
- Equilibrium world price ratio for final goods –  $P_x^*/P_y^*$ .

Which good is exported by country H? Country F? Why?

## (9.2.) International production factor migration: theories and facts

Technologies in production of Y are the same in the two countries  
( $\beta_h = \beta_f$ );

Country H has a more advanced technology in production of X ( $\alpha_h > \alpha_f$ ).

If it is assumed that good X is labor-intensive (see the graph 'Edgeworth box' below for illustration)

- ⇒ (1) Country H specializes in good X and exports it  
Country F specializes in good Y and exports it

Country H imports good Y

Country F imports good X

- ⇒ (2) as  $MP_L * p = w$ ;  $MP_K * p = r \Rightarrow (w/r)_h > (w/r)_f$

- ⇒ Labor will migrate to H and/or capital will migrate to F

- ⇒ Country H will have more labor and will increase specialization in good X.

## (9.2.) International production factor migration: theories and facts

- Graphical illustration of international trade and international production factor movement in the Ricardo model
  - With production possibility curves and indifference curves

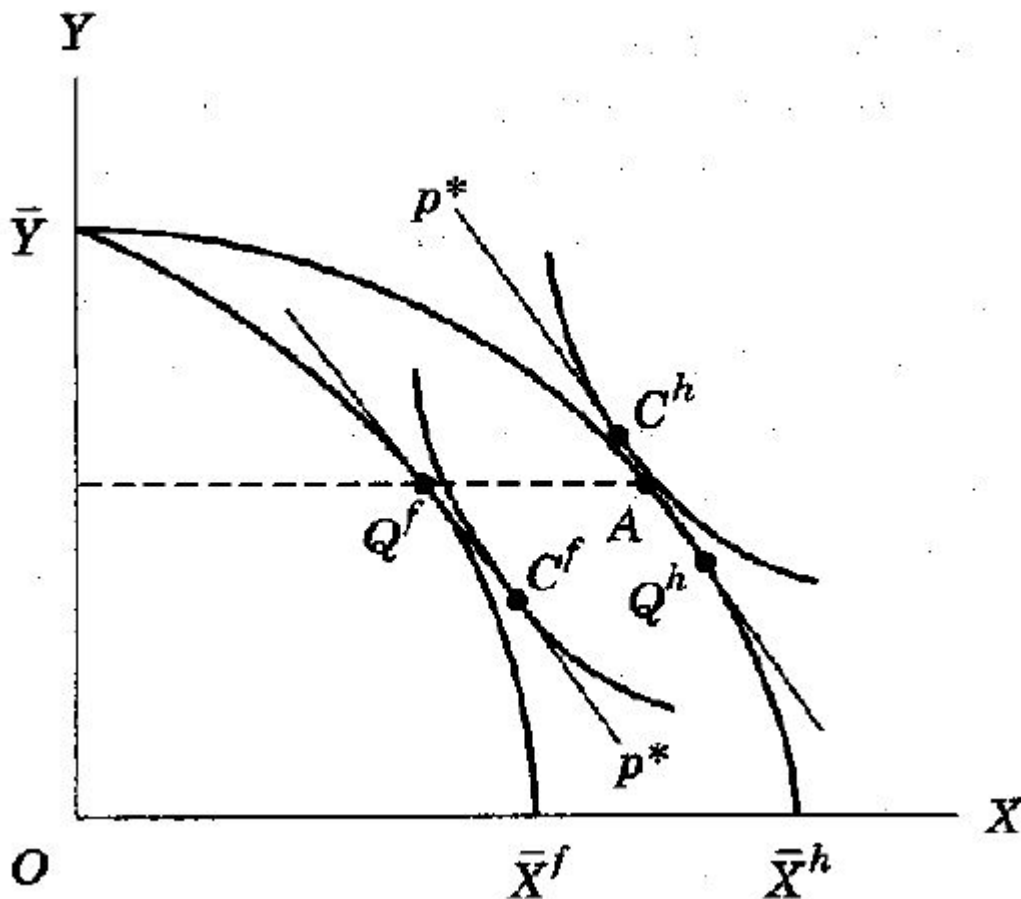


Figure 2: Country H with technical superiority in X

Source: Markusen et al. (1995), Ch. 21, p. 388.

## (9.2.) International production factor migration: theories and facts

### Graphical illustration of international trade and international production factor movement in the Ricardian model

□ With Edgeworth box (resources L and K for production of X and Y are on the axes) /axis –  $ocb$ ; axes –  $ocu$ /

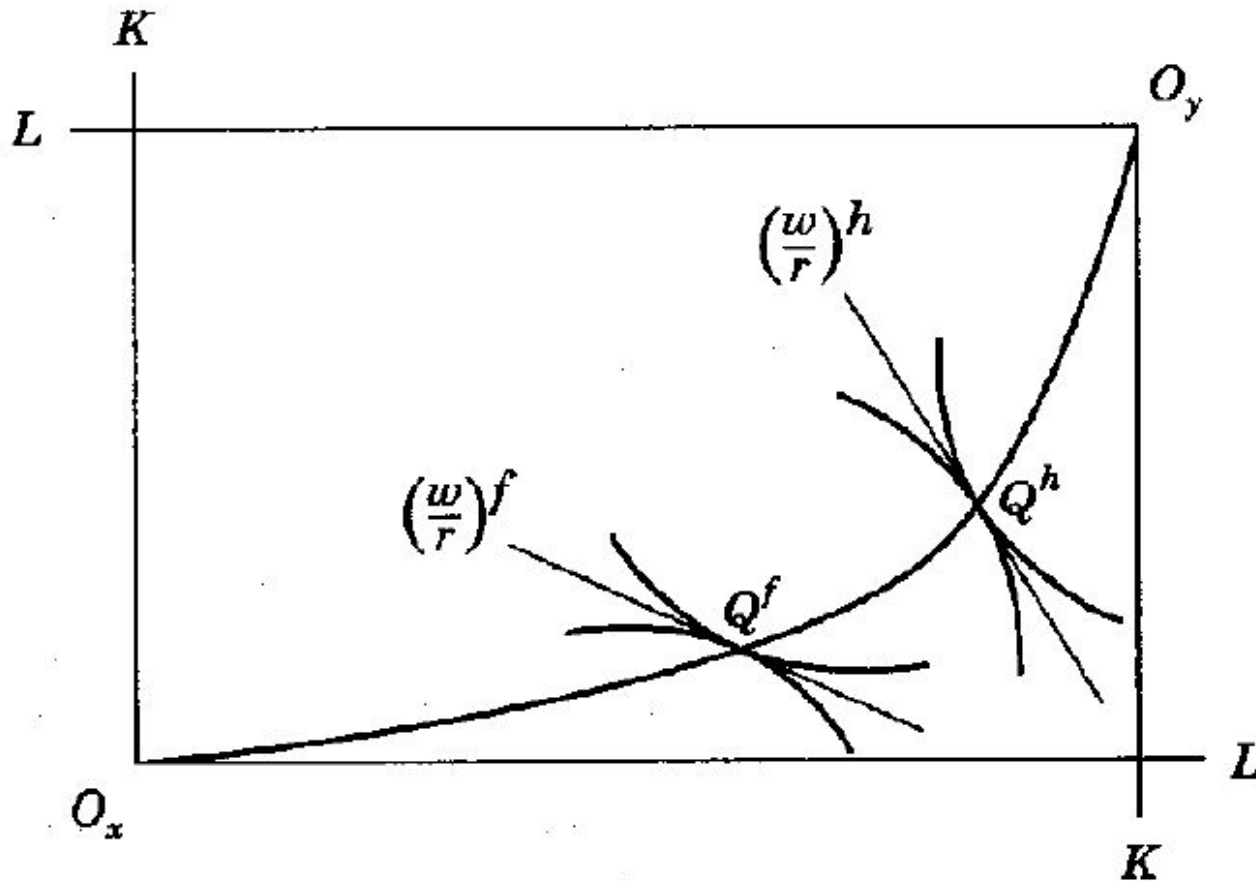


Figure 3: Equilibrium without factor trade.

Source: Markusen et al. (1995), Ch. 21, p. 388.

## (9.2.) International production factor migration: theories and facts

- **Conclusions:**

- In the Ricardian model production factor migration enhances the incentives for international trade, i.e. international production factor migration and international trade are complements.
- In other words, when the aspect of H-O-S model (*resource endowment*) is added to the Ricardian model (*technological differences between countries*), trade incentives increase.

# Homework

(1) Exercise session 8

(2) Think about topics for reports during exercise sessions.

(3) Start revising for the exam.

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## **Next lecture**

Foreign direct investment (FDI)