International Economics: Lecture 7
The Heckscher-Ohlin World: Further Extensions

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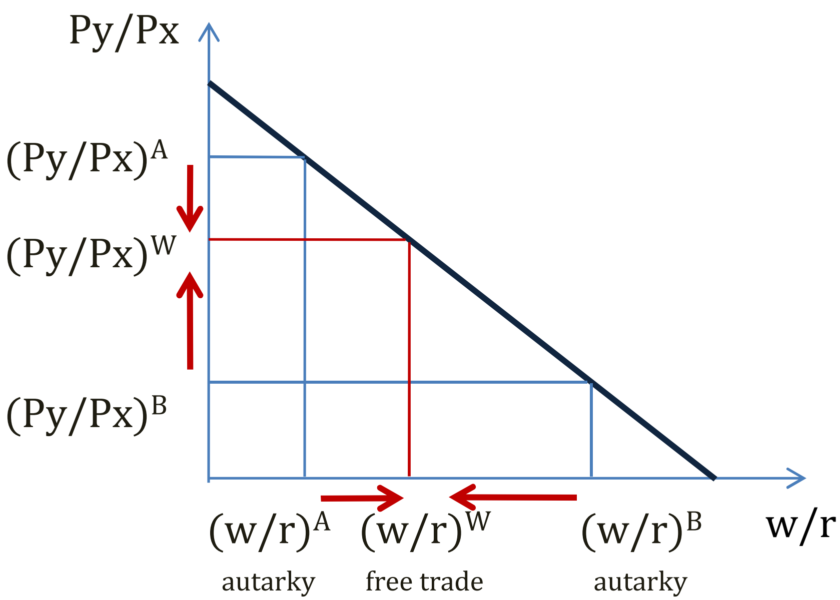
The Heckscher – Ohlin MODEL

1. Heckscher – Ohlin theorem.
2. Factor Price Equalization theorem.
3. Rybczynski theorem.
4. Stolper-Samuelson theorem.



Heckscher – Ohlin Theorem

A country has comparative advantage in and will export the good that uses its abundant factor intensively.

Factor price equalization theorem

In free trade, with

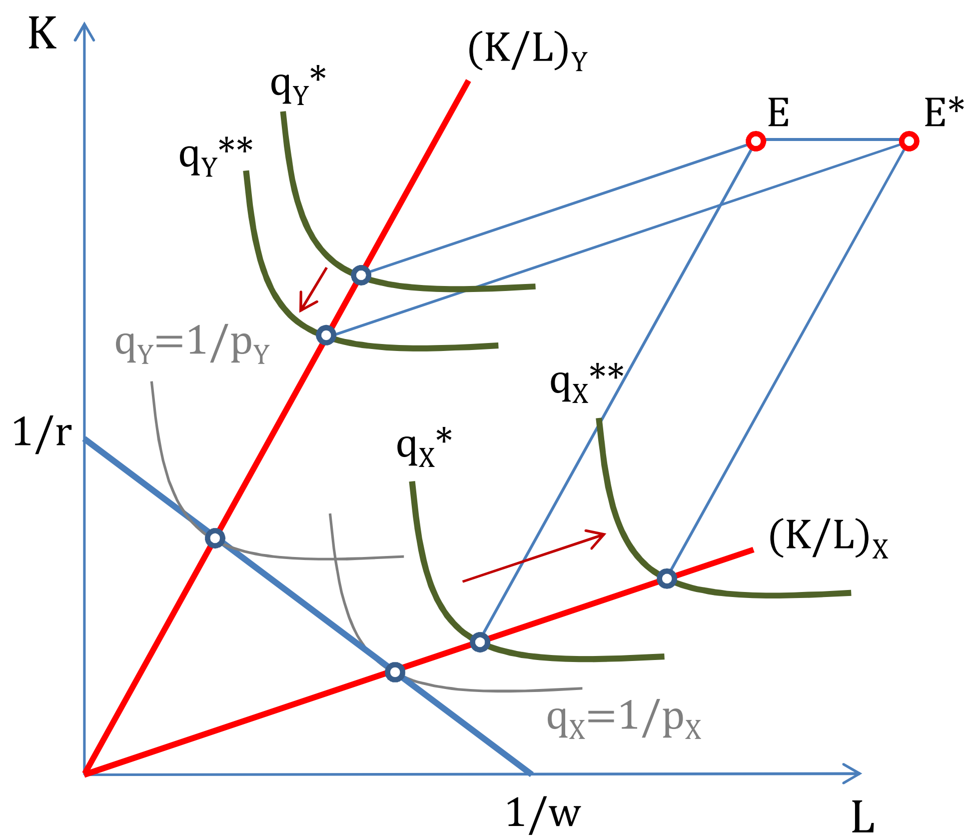
- identical technologies,
- perfect competition,
- no factor intensity reversal,
- constant returns to scale
- different factor endowment

factor prices are equalized

in a two-good, two-factor economy.

i.e. Free trade of goods equalized not only good prices, but also factor prices.

Rybczynski theorem



Factors Space

Rybczynski theorem

refers to unbalanced growth

In a two-good, two-factor economy with constant returns to scale

economic growth due to an increase in one factor of production

at constant relative prices

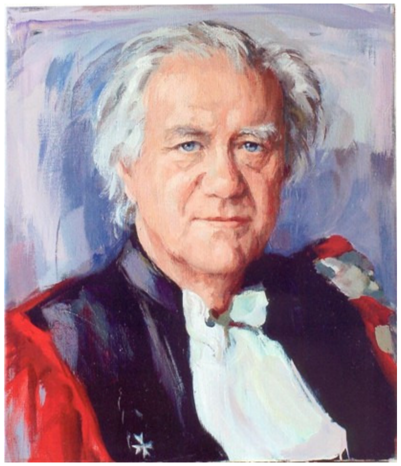
increases more than proportionally the output of the good intensive in that factor,

and decreases the production of the other good.

According to Angus Maddison calculations
GDP per capita in 2010 (in 1990 Intl.$) was

Armenia 10,215
West Europe 20,899
USA 30,491

Azerbaijan 8,841
Georgia 6,171
Russia 8,660



When did the US surpass the current Armenian per capita GDP level?

- in 1860s
- in 1890s
- in 1930s
- in 1950s
- in 1970s

Angus Maddison (1926-2010) was a British economist specialising in the measurement of economic development.

1990 Intl.$ or Geary–Khamis dollar implies the same PPF that the U.S. dollar had in the U.S. at 1990.

Rybczynski theorem

X: L-intensive   A: L-abundant
Y: K-intensive   B: K-abundant

Intuitive explanation

Influx of labor boosts the production of labor-intensive good X.

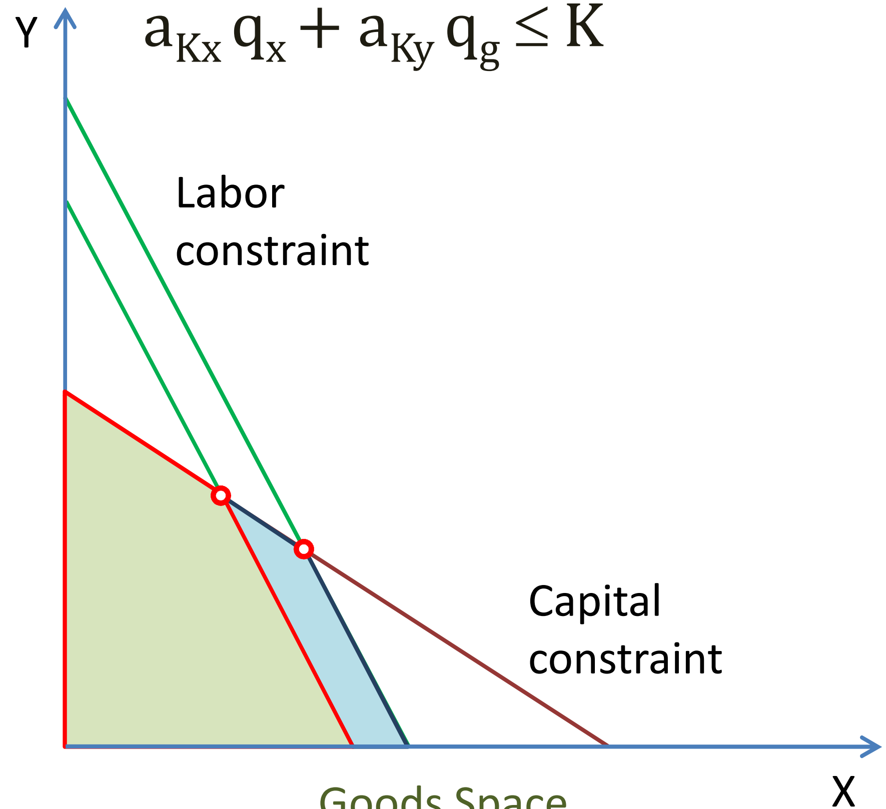
L/K in X goes up, so Marginal Product of Capital in X goes up.

The latter attracts capital from Y industry.

Output in Y industry shrinks because of loss of capital.

Simple graphical prove through resource constraints

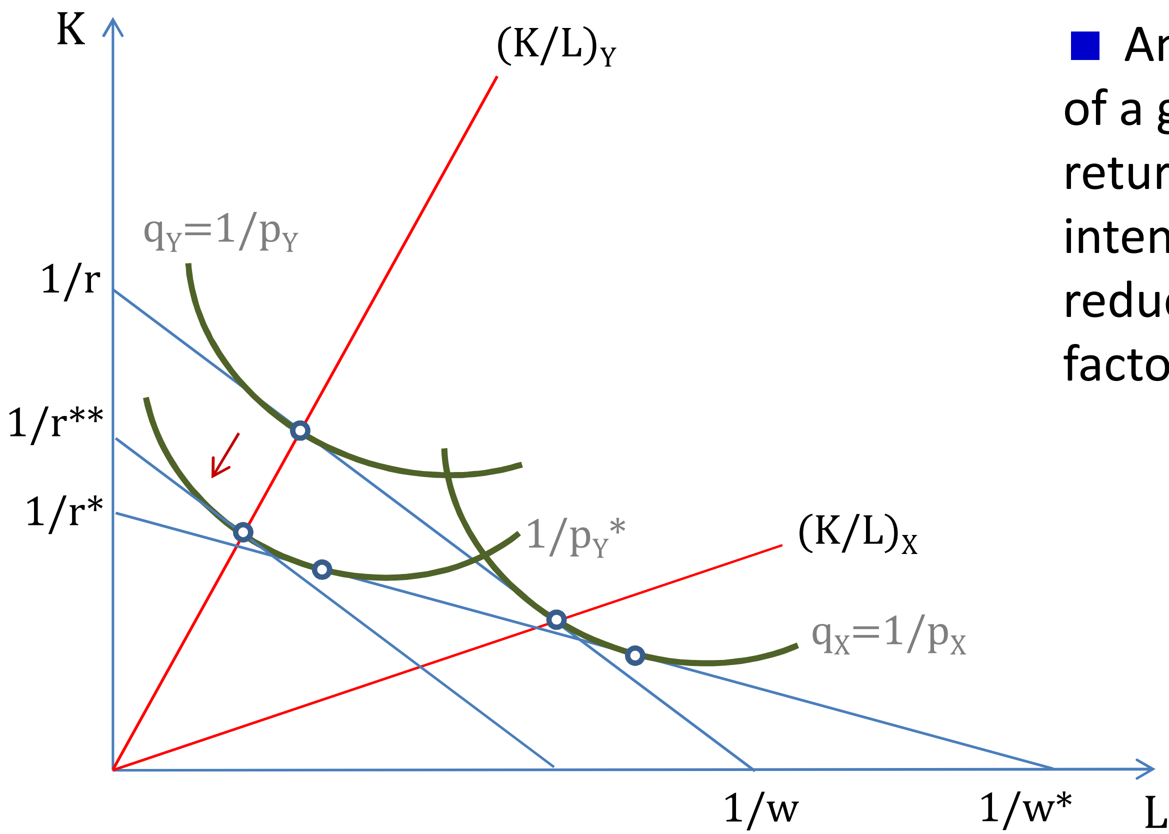
$$a_{Lx}\,q_x + a_{Ly}\,q_y \leq L$$
$$a_{Kx}\,q_x + a_{Ky}\,q_g \leq K$$



Goods Space

Stolper – Samuelson Theorem

Impact of good price changes on factor incomes



Factors Space

- An increase in the relative price of a good will increase the ***real*** return to the factor used intensively in that good, and reduce the ***real*** return to the other factor.

Heckscher - Ohlin theorem

definition of factor abundance

X: L-intensive   A: L-abundant
Y: K-intensive   B: K-abundant

Factor abundance

Physical definition:

$$L_A/K_A > L_B/K_B$$

Price definition:

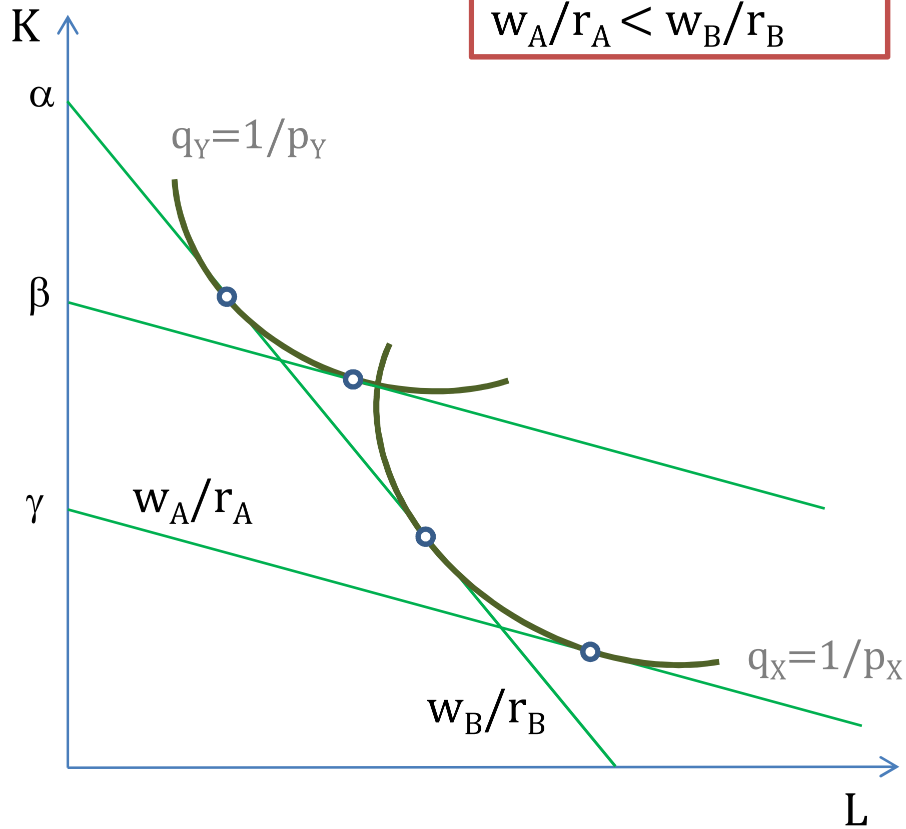
$$w_A/r_A < w_B/r_B$$

Heckscher - Ohlin theorem

factor abundance in terms of factor prices

X: L-intensive A: L-abundant
Y: K-intensive B: K-abundant

A is L-abundant if
$w_A/r_A < w_B/r_B$



In Country B the cost of production of one unit of Y and of X in terms of capital is α.

In Country A the cost of production of one unit of Y is β, and of X is γ in terms of capital.

It is relatively cheap to produce good X in Country A.

A is L-abundant and has comparative advantage in L-intensive good.

Policy implications

Rybczynski theorem
Changes in factor supplies mainly impacts on the *output structure*, not on factor prices and income distribution.

Stolper-Samuelson theorem
Changes in protection or subsidy levels cause *income redistribution* with society.

When did the US surpass the current Armenian per capita GDP level?

- in 1860s $2,368
- in 1890s $3,613
- in 1930s $5,749
- **in 1950s $10,556**
- in 1970s $16,745

According to Angus Maddison calculations
GDP per capita in 2010 (in 1990 Int.$) was

Armenia $10,215
West Europe $20,899
USA $30,491

Azerbaijan $8,841
Georgia $6,171
Russia $8,660

Data Source: Maddison Project Database

Thank you and enjoy,

and remember

Education makes a greater difference between man and man, than nature has made between man and brute.

John Adams