

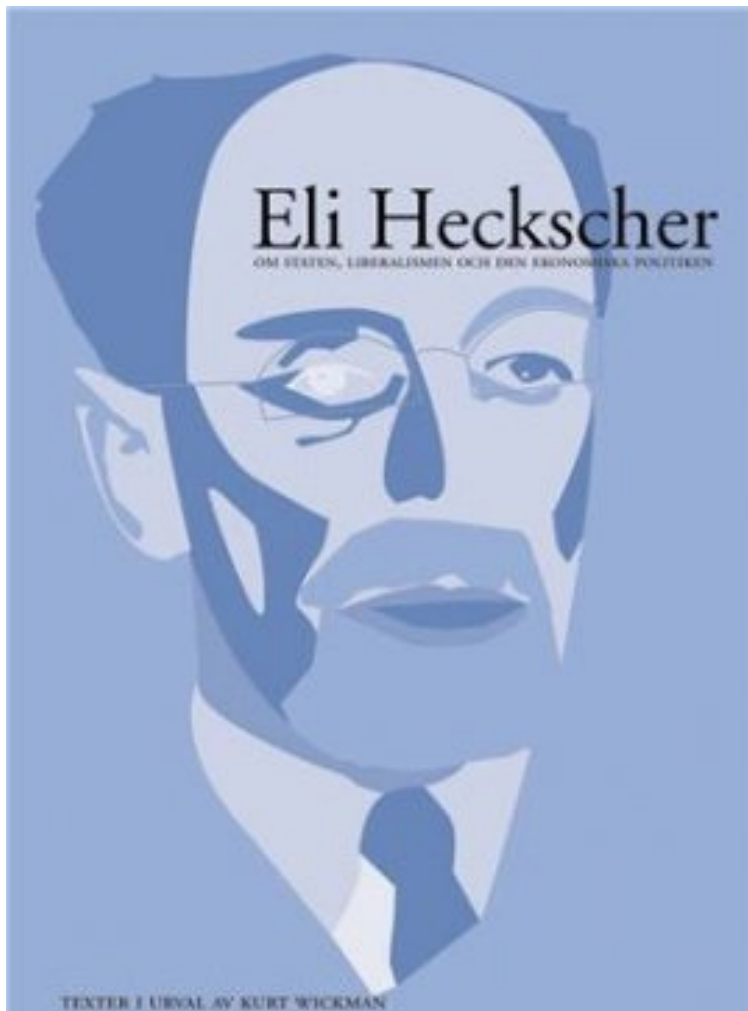
International Economics: Lecture 5

The Heckscher-Ohlin Model

Arman Gabrielyan

ATC, February 15, 2017

The model was developed by two Swedish economists - Eli Heckscher (in a 1919 article) and his student Bertil Ohlin (in his 1924 dissertation)




Pay attention to deadlines
first of all in life, but also in this course.

Food for thought

For Government: The rule of law strongly enforces the development.

For Students: Adherence of deadlines increases the efficiency of learning.

Generally there are **two** fundamental causes of trade

- 1:** Country differences. 
- 2:** Increasing returns to scale.

Countries differ
in terms of...

Ricardo
(previous lectures)

-
- 1: Technology (productivities).
 - 2: Factor endowments.
 - 3: Preferences.
 - 4: Government policy.

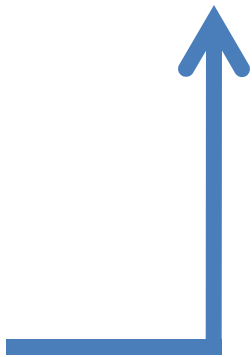
Heckscher-Ohlin vs. Ricardo

1: Ricardo's model emphasized **technology** differences.



2: Heckscher-Ohlin's model emphasizes **factor endowment** differences.

Heckscher-Ohlin's basic idea



- Armenia exports apricot not because our farmers are relatively more productive, but because we are relatively well endowed with appropriate weather.
- Germany exports cars not because their workers are relatively smart, but because they are relatively well endowed with capital.

Extractive vs. Inclusive institutions

→ 2 x 2 x 2

- 2 countries: Home & ROW.
- 2 goods: Butter & Gun.
- 2 factors of production: Labor & Capital.

Countries differ in their relative factor endowments.

Home is labor abundant, i.e. Home is endowed with **relatively** more labor:

$$L/K > L^*/K^*$$

Products differ in their relative factor intensity.

Butter is labor intensive, i.e. butter production uses **relatively** more labor for all factor prices:

$$a_{Lb}/a_{Kb} > a_{Lg}/a_{Kg}$$

→ Identical technologies

Countries share the same technology.

It wasn't meant to be realistic, but to rule out technology difference as a basis for trade.

- In both countries for all factor prices butter is labor intensive, & gun is capital intensive.

No factor intensity reversal.

→ *Factor intensity reversal*

In practice there is some evidence for factor intensity reversal:

In the **US** the production of **cotton** is capital intensive relative to **call center** service production.

But in **Kazakhstan** the reverse is true.



Ken Davitian

Arman Gabrielyan (ATC)



Baron Cohen

International Economics

→ Other assumptions

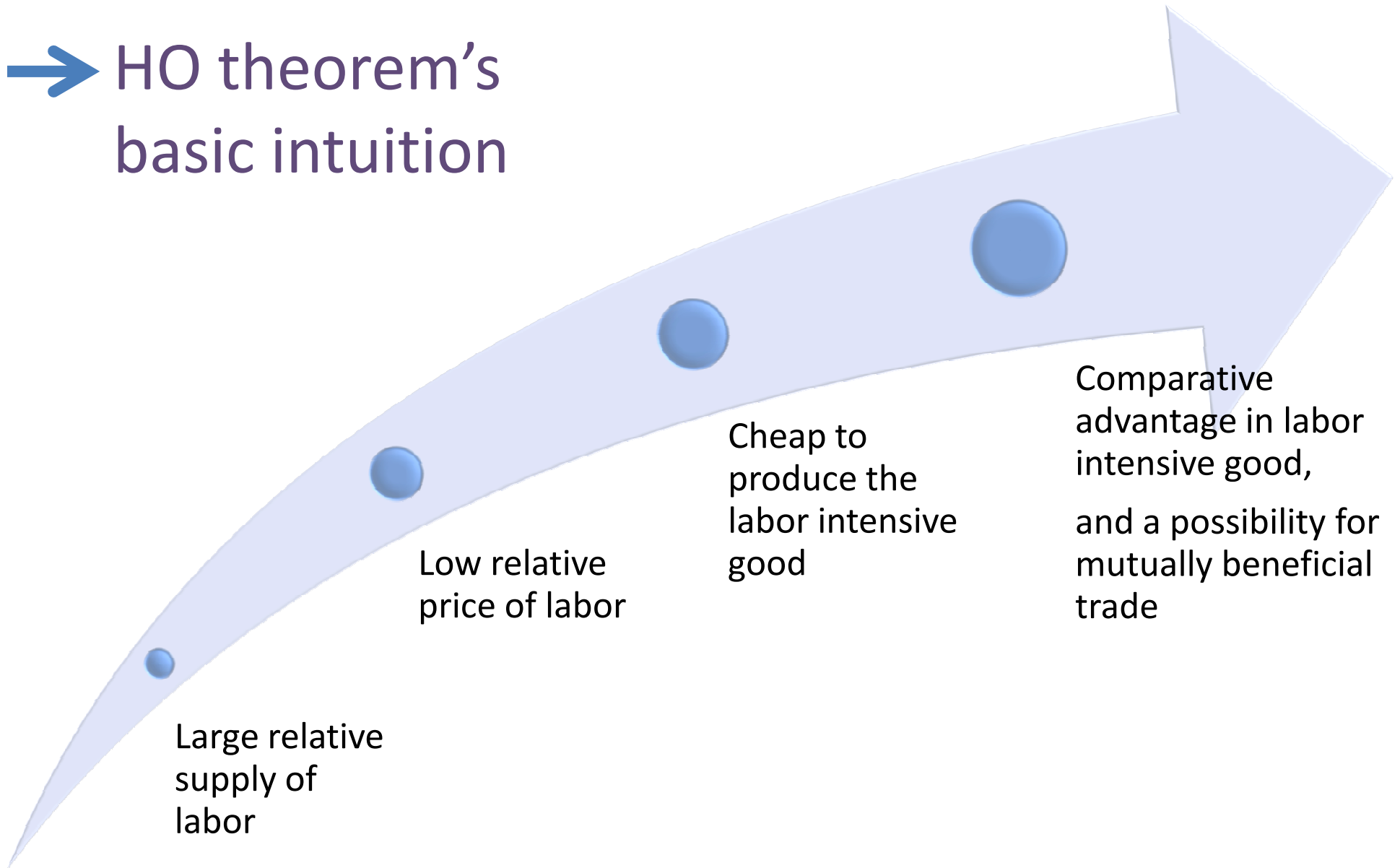
- Technology features **constant returns to scale.**
- All markets are perfectly **competitive.**
- Factors are perfectly **mobile within** countries, but perfectly **immobile between** countries.
- Consumption **preferences are identical.**

Identical preferences: Again it wasn't meant to be realistic, but to eliminate the differences in tastes as a basis for trade.

Consequences:

- Producers take prices and wages as given.
- Workers and capital-owners get competitive returns.
- Community indifference curves in both countries have the same shape.

→ HO theorem's
basic intuition



→ The Heckscher–Ohlin theorem

A country will export that good, which uses its abundant factor intensively,
and will import that good, which uses its scarce factor intensively.

So as in Ricardo's model the bottom-line of the HO model is predicting the pattern of trade.

→ In 2 factor world PPF is bowed out (concave to the origin)

The bowed-out PPF illustrates the Law of Increasing Opportunity Cost.

As you increase the production of one good, the opportunity cost to produce the additional good will increase.

Because resources are not equally suited to producing different goods.

PPF is bowed out also in one factor world, if that factor is nonhomogenous.

→ In 2 factor world PPF is bowed out

$$a_{Lb} \times q_b + a_{Lg} \times q_g \leq L$$

$$a_{Kb} \times q_b + a_{Kg} \times q_g \leq K$$

Resource constraints

$$q_g \leq L/a_{Lg} - a_{Lb}/a_{Lg} \times q_b$$

$$q_g \leq K/a_{Kg} - a_{Kb}/a_{Kg} \times q_b$$

a – unit input requirement

q – production quantity

→ In 2 factor world PPF is bowed out

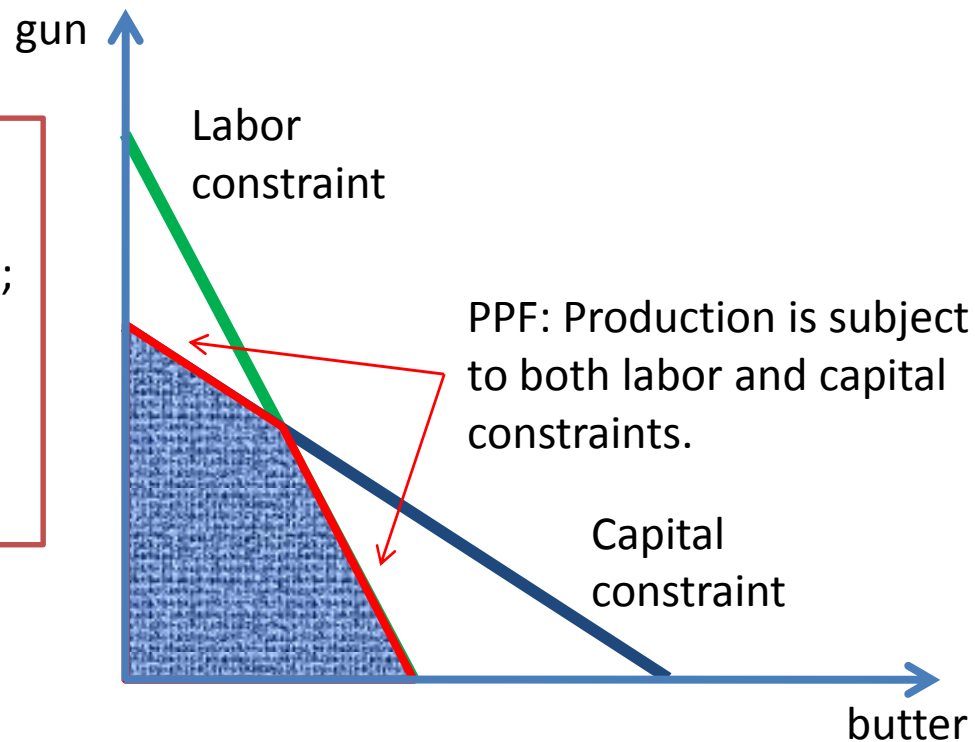
$$q_g \leq L/a_{Lg} - a_{Lb}/a_{Lg} \times q_b$$

$$q_g \leq K/a_{Kg} - a_{Kb}/a_{Kg} \times q_b$$

Butter is labor intensive

$$a_{Lb}/a_{Kb} > a_{Lg}/a_{Kg}$$

PPF is a kinked curve, when factors aren't substitutable; i.e. labor-capital ratio in the production is constant.



→ PPF is skewed

Two countries share the same technology,

BUT the capital abundant country will relatively easily produce the capital intensive good

and the labor abundant country will relatively easily produce the labor intensive good.

Thus their PPFs will not have the same shape.

The labor abundant country's PPF will be skewed towards the labor intensive good axis.

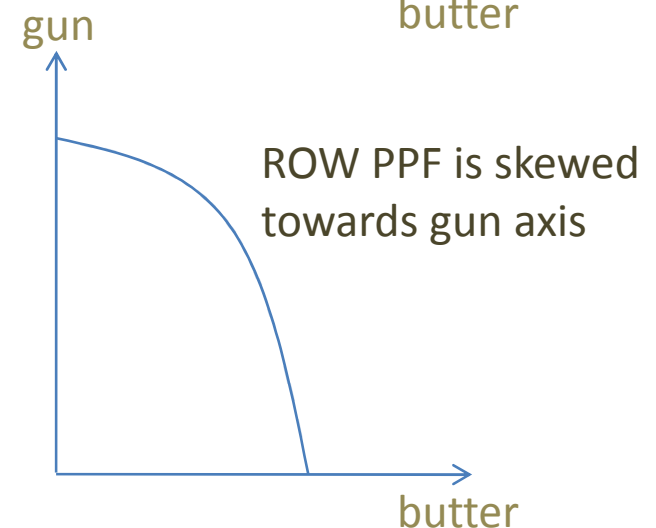
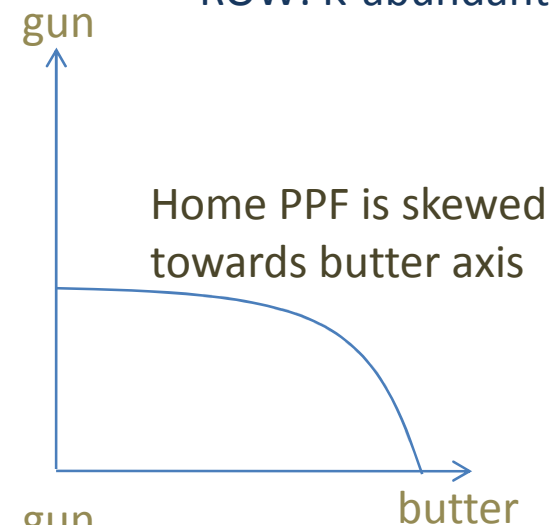
The capital abundant country's PPF will be skewed towards the capital intensive good axis.

Butter: L-intensive

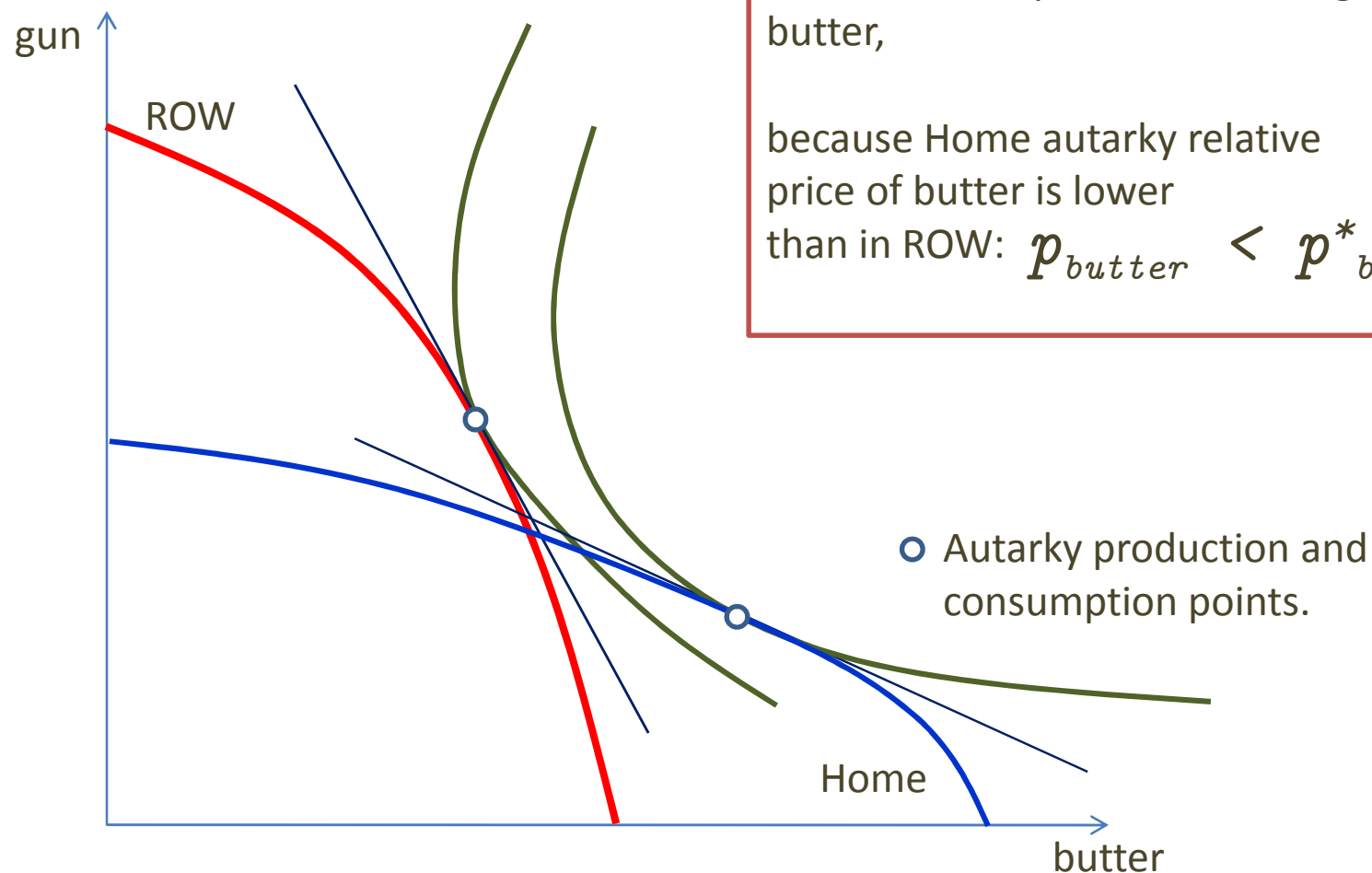
Gun: K-intensive

Home: L-abundant

ROW: K-abundant



→ HO theorem: graphical prove

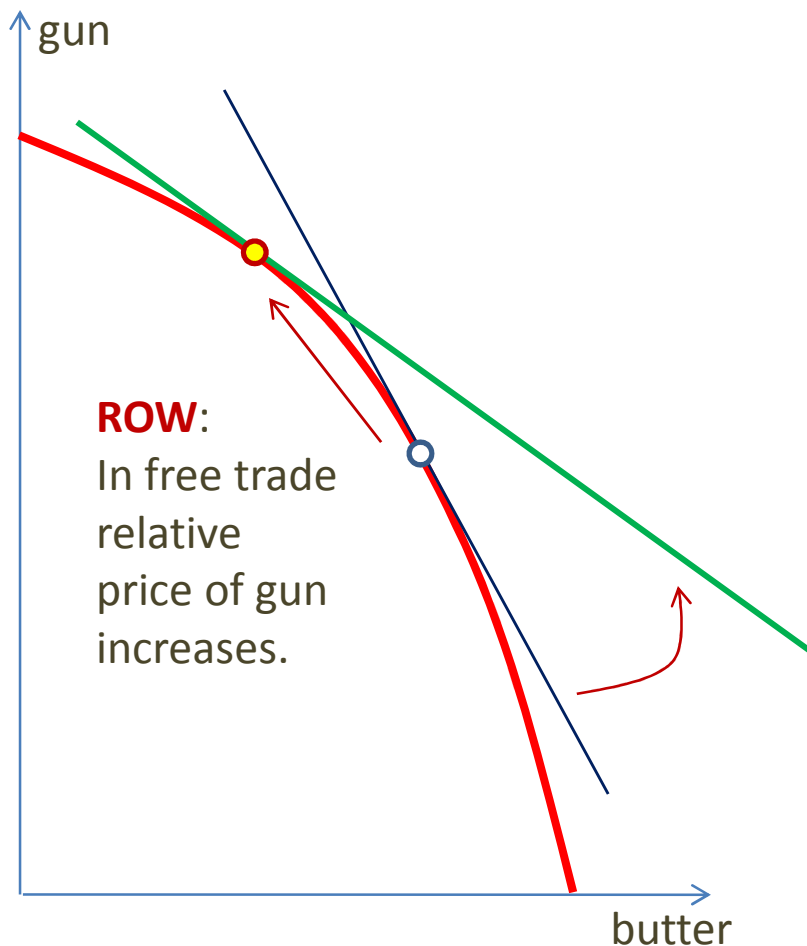


Home has comparative advantage in butter,

because Home autarky relative price of butter is lower than in ROW: $p_{butter} < p^*_{butter}$

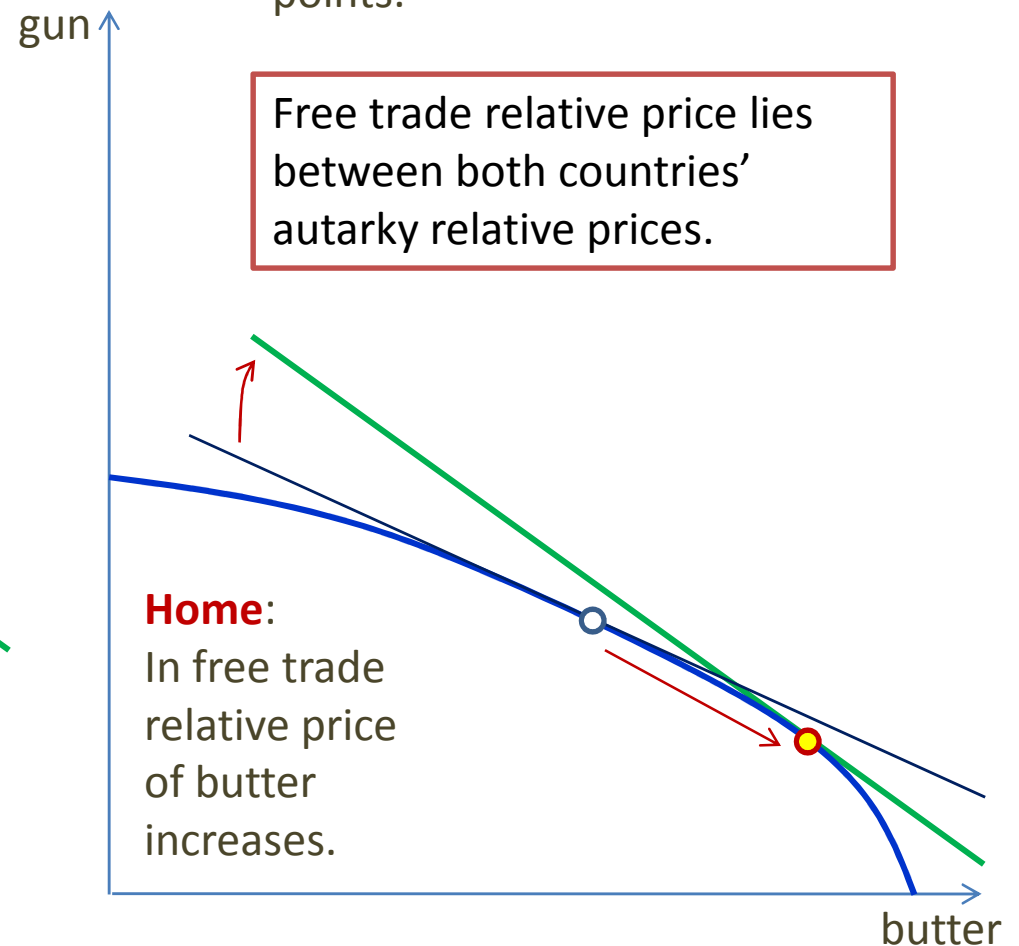
○ Autarky production and consumption points.


→ HO theorem: graphical prove




- Autarky production and consumption points.
- Free trade production points.

Free trade relative price lies between both countries' autarky relative prices.

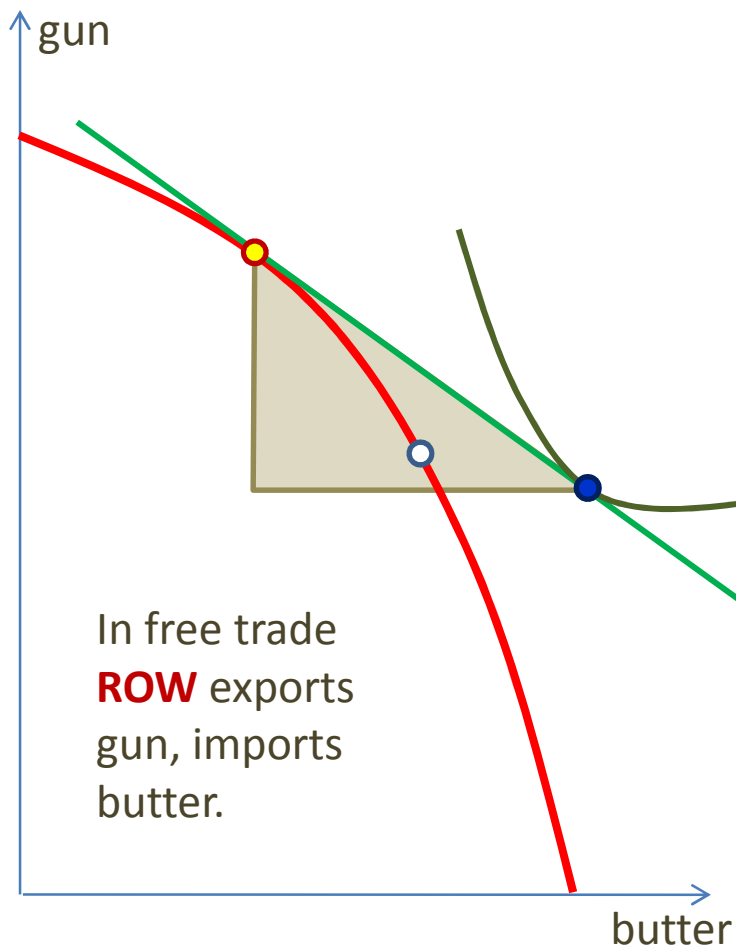




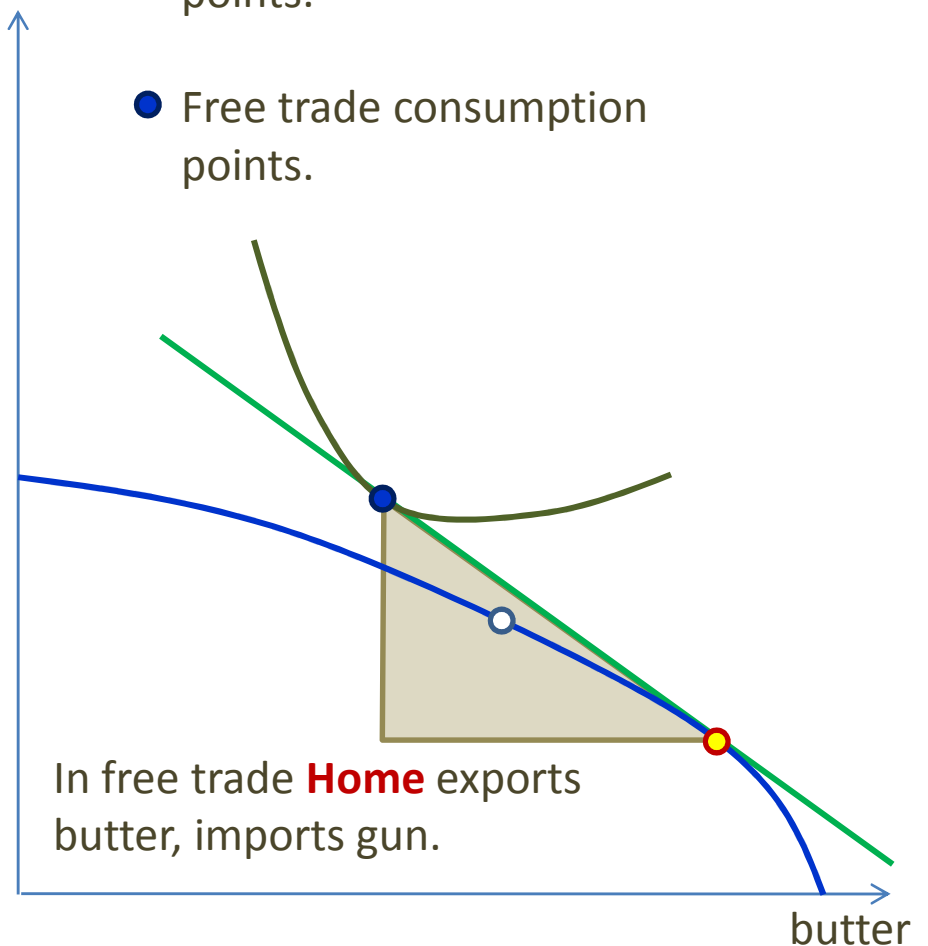
In free trade every country specializes in the good, which uses its abundant factor intensively.



→ HO theorem: graphical prove



- Autarky production and consumption points.
- Free trade production points.
- Free trade consumption points.



→ The Heckscher–Ohlin theorem

Capital-abundant country exports capital-intensive good and imports labor-intensive good from labor-abundant country.

Thank you and enjoy,

and remember

The direction in which
education starts a
man/woman
will determine his/her
future life.

Plato, *Republic*