Globalization

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Econ 102

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Introduction (1/3)

- Today, the trade of final consumer goods accounts only for a fraction of international shipments

- Industries trade half-finished products, components, and intermediate services, which enter later production stages elsewhere.

- Value added is the value of an output less the value of its intermediate inputs → It has fallen significantly over the past three decades.

  - In North America home-made value added dropped from 94 cents for every dollar of goods exported in 1975 to 85 cents today.
  - In East Asia, the home-made value added fell from 88 cents to 79 cents per dollar of exports, and in Europe from 87 cents to 79 cents.

- ▶ Two explanations:
  - ■ Reduction in trade barriers
  - ■ improvements in transport and communication technologies
- ▶ A common, and precise, term to describe the global integration of production is offshoring $\rightarrow$ Offshoring is the procurement of intermediate inputs from abroad.

	Production within Firms boudaries	Production outside Firms boudaries
Location within home borders	Inhouse onshore production	Arm's length onshore production
Location outside home borders	Inhouse offsore production	Arm's length offshore production

- In this lecture, we will see two different models.
  - A model of offshoring production stages
  - A model of trade in tasks.

- The two models differ in their view of the key force for offshoring.
  - In the first, the driving force is the varying requirement of labor skills for different production stages.

  - In the second, the driving force is the contracting cost for the performed task.

- In these models production factors no longer need to be present on site.

The intermediate input trade model

- ► Here we will embed offshoring into a HOS framework.

- ► Two factors: low-skilled labor (*L*) and high-skilled labor (*H*).

- ► Many stages of production *s* and each production stage *s* requires a different combination of *H* and *L*.
    - A high $\frac{H(s)}{L(s)}$ means that the production stage *s* is high-skilled intensive.

- ► We can rank the different stages of production from the least skilled intensive to the most skilled-intensive stage.

- ► We labelize the different stages from 0 to 1.

The intermediate input trade model

▶ In the standard HOS framework, the wage ratio $\frac{w_H}{w_l}$ is the same everywhere $\rightarrow$ factor price equalization theorem.

▶ With multiple production stages it is no longer the case.
  - The home economy is more abundant in high-skilled labor.
  - $\frac{w_H}{w_L} < \frac{w_H^*}{w_L^*}$

▶ A producer can decide where to locate the production stages
  - If a stage with a skill-intensity ratio of $\frac{H(s)}{L(s)}$ is decided to be kept onshore, it cannot be the case that a stage with an even higher skill intensity is moved offshore because it would be even more expensive.
  - If a stage with a low skill-intensity ratio is decided to be kept offshore, it cannot be the case that a stage with an even lower skill-intensity remain onshore because it would be more expensive.

- The cost of the production stages abroad and at home are the following.

$$c(s) = w_H \alpha_H(s) + w_L \alpha_L(s)$$

$$c^*(s) = \bar{\tau} w_H^* \alpha_H(s) + \bar{\tau} w_L^* \alpha_L(s)$$

- It is optimal to purchase from abroad all the intermediate inputs from stage $\underline{s}$ where $c^*(\underline{s}) < c(\underline{s})$
- It is optimal to purchase from home all the intermediate inputs from stage $\bar{s}$ where $c^*(\bar{s}) \geq c(\bar{s})$.
- This implies that there is a unique threshold stage s where the assembler is indifferent. When $c^*(\hat{s}) = c(\hat{s})$.
- This threshold determines the stages that are onshore and offshored.

The intermediate input trade model
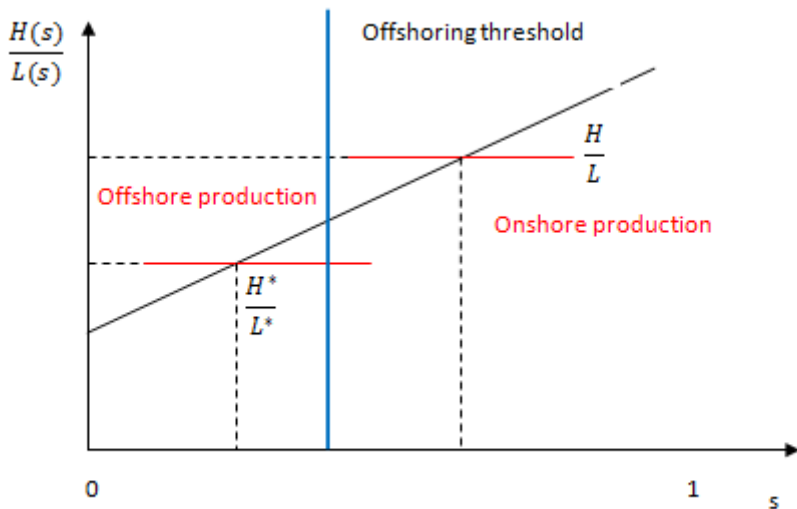
The intermediate input trade model

- Now let's suppose that the offshoring cost $\bar{\tau}$ drops.
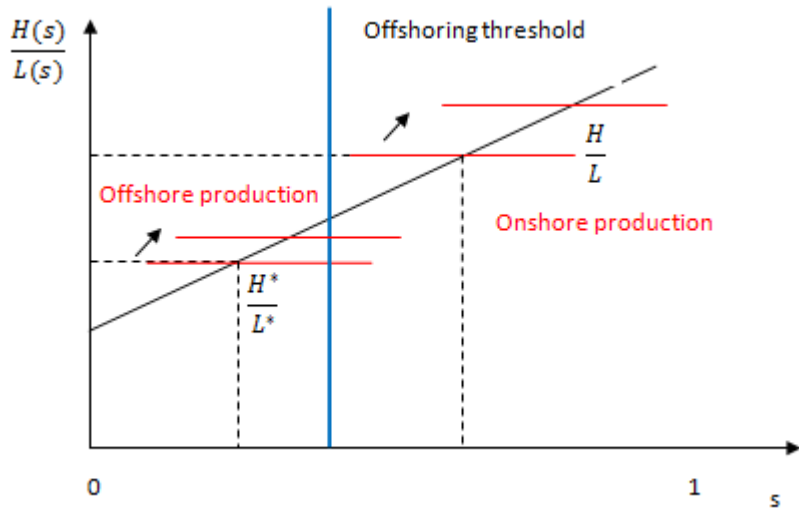
Intermediate input trade model

- ▶ The average skill requirement increases in both country.

  - Home country gets rid of its low-skilled intensive production stages

  - Foreign country takes on more high-skill intensive production stages

  - If high-skilled workers are in higher demand in an economy $\rightarrow \frac{w_H}{w_L}$ will rise in both countries.

    - ▶ Wage inequality increases everywhere.
    - ▶ This is in sharp contrast with the HOS model $\rightarrow$ income inequality rises in developed countries but reduces in developing countries.
    - ▶ This result is closer to what is observed in reality $\rightarrow$ Wage inequality has increased all over the world, no matter the level of development of one country.

Trade in Tasks

- ▶ So far, we have treated all workers with given skills as if they performed the same tasks.

- ▶ In reality, workers perform different tasks that are more or less costly to offshore.
    - developing computer programs and analyzing x-rays vs maintenance work

- ▶ Different criteria were used to define offshorable tasks.
    - The codified nature of a task determines its potential of relocation.
    - It depends on its potential to be realized in another location without loss of quality
    - Depends on the importance of face to face contact with people other than fellow workers.
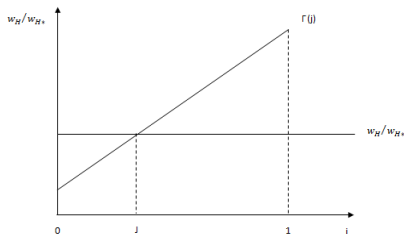
Trade in Tasks

- There are two factors of production in the benchmark model: *L* and *H*.

- The model of trade in tasks allow tasks to be contracted from abroad.

- There must be a wage gap between the home and the foreign country otherwise no producer would offshore any task $\rightarrow$ $\frac{w_L}{w_H} > \frac{w_L^*}{w_H^*}$.

Trade in Tasks

- Some tasks are more costly to offshore than others.
    - We suppose that each task gets a label J that can be ranked from 0 to 1.
    - $T(j)$ is the offshoring cost for a particular task j. The cost for performing a task at home is w_H and the cost for performing a task abroad is $\tau(j)w_H^*$.

- A firm will contract a task from offshore if the labor cost for the task from abroad is $\tau(j)w_H^* \leq w_H$.

- There exists a marginal task J such as the firm is indifferent between contracting the task at home or abroad: $\tau(J)w_H^* = w_H$.

Trade in Tasks

- Each onshore industry *i* receives a product price p_i that exactly equals the unit cost (P=MC).

$$P_i = w_L \alpha_{Li} + (1-J)w_H \alpha_{Hi} + \int\limits_0^J \Gamma(j)dj w_H^* \alpha_{Hi}$$

$$p_i = w_L \alpha_L + w_H \alpha_H - B(J)w_H^* \alpha_H$$

Trade in Tasks

- Suppose that the offshoring cost $\tau(J)$ falls.

- The fraction of tasks performed offshore increases $\rightarrow$ These tasks used to be performed by domestic H workers are now performed by foreign H^* workers.

- Graphically, it means that the area B(j) increases $\rightarrow$ $B(j)$ represent the cost saving of offshoring.

Trade in Tasks

- ► Who gets to the pocket the cost savings?

    - Because there is perfect competition there are no profits, the producers do not get the quasi-rent.
    - w_L and w_L^* remain unchanged because the productivity of low-skilled workers do not change.
    - For the foreign country that receives offshoring, the price $p_i = w_H^* \alpha_H^* + w_L^* \alpha_L^*$ does not change so w_H^* and w_L^* don't change.
    - The only parameter that changes with a shift in the offshoring cost is w_H.

- ► High-skilled workers in the home country gets the quasi-rent which raises inequality in the domestic country.

Conclusion

- ▶ Overall, we have four theoretical predictions as to how offshoring will affect the labor market.

    - In the Ricardo model and the HOS model, inequality increases in the North and decreases in the South.

    - In the Ricardo-Viner model the real wage in the expanding sector decreases and the real wage in the declining sector increases.

    - In the Trade in Tasks model, inequality can increase within a particular skill group.

    - In the intermediate input trade model, with multiple production stages, inequality increases everywhere.

    - In the Trade in Tasks model, inequality can increase within a particular skill group.