The first of the four basic questions of trade theory

- Why countries trade with each other and should trade be restricted by one country to benefit its residents?
- Adam Smith's theory of trade based on absolute advantage. (Productivity differences)
- Later Ricardo's theory based on comparative advantage (Productivity differences)
- Heckscher-Ohlin theory of comparative advantage based on differences in factor endowments, but countries share the same technology.

Why countries trade?

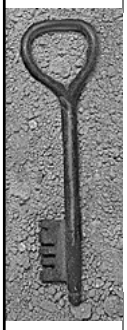
Main reasons in all theories of International trade:

- Countries engage in international trade because they benefit from doing so.
  - Allows countries to specialize production so that resources are allocated most efficiently.
    - Trade frees each country's residents from having to consume goods in the same combination in which the local economy can produce them.
  - Benefits from product specialization:
    - Individuals may produce one good (*e.g., computers*) and exchange that for others goods to consume (*e.g., clothing, shoes*).

Mercantilism

- **Mercantilism represented the dominant attitude toward international trade in the 17th and 18th centuries.**
  - **Nations encouraged exports and restricted imports as a method to improve inflow of gold and silver.**
  - **Mercantilists assumed trade was a zero-sum game and that it could not be mutually beneficial to all parties.**

Adam Smith Points out that it is not the gold or silver reserves that are important for a nation, it is the amount of goods and services that are consumed by individuals that are most important. He showed that free trade between countries will benefit both countries, i.e., it is not a zero sum game.



A. Adam Smith's theory of trade based on absolute advantage

Motivations – to refute the erroneous stand on trade protection of Marcantalism which existed then.
Reading: *Box on Mercantilism on p.33*

Concepts:

- **Absolute Advantage**
- **Labor theory of value**
- **Arbitrage**
- **Direction of trade**

Absolute Advantage: Consider the following example

Labor hours required to make	US	Rest of the World
1 bushel of wheat	2	2.5
1 yd of cloth	4	1.0

Which country has absolute advantage in production of which good?

Us in production of wheat and foreigners in cloth

Labor theory of value: Price in terms of labor content

US: Wheat = 2.0, cloth = 4.0
Foreign: Wheat = 2.5, cloth= 1.0

Relative price of wheat in terms of cloth, denoted $p_{w|c}$

In US: $p_{w|c}$ =1/2 yard/bushel (will not use this notation)
Foreign : $p_{w|c}$=2.5 yard/bushel

Arbitrage possibility and Labor shifting

Arbitrage possibility: Suppose US has 100 units of labor and Produces 20 bu wheat and 15 yd cloth. Similarly, foreigners 20 bu wheat and 50 yd clothes. There is opportunity for traders to **arbitrage** and have risk-free gains as follows:

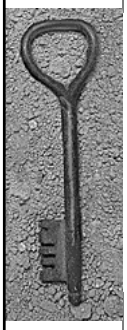
A trader in the US market will buy wheat in exchange for cloth. Each unit of wheat costs him 0.5 units of cloth but after selling it abroad he gets 2.5 units of cloth, so he has 2 units of cloths gained from arbitraging. Using it he will buy more wheat and export it and have more gains.

Labor shifting: Since there will be higher demand for wheat in the US for exporting, more and more labor will be shifted to the production of wheat and away from cloth production, and in this process the US will specialize in wheat production.

Abroad, there will be more and more demand for cloth, so they will stop producing wheat and shift its labor to cloth production. Both countries gain from this trading.

What price will prevail in the world market?

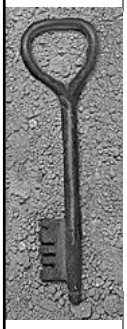
- The world price of wheat in terms of cloth, $p_{w|c}$ has to be between those two domestic prices of the two countries, why?
- The force of demand and supply will tell us that as more and more wheat is demanded in the US, the price of wheat in terms of cloth $p^{U}_{w|c}$ will rise, and since there will be more and more demand for cloth abroad, the foreign price $p^{F}_{c|w}$ will increase. But since $p_{w|c}= 1/ p_{c|w,}$, so, $p_{w|c}$ will fall abroad.



Ricardian Theory

Concepts:

- Comparative Advantage, Opportunity cost of one good in terms of another good.
- Constant cost and linear production possibility curve
- Community indifference curve– demand curve for wheat
- Production decision to maximize revenue –supply curve of wheat
- Autarky equilibrium
- International trade equilibrium and trade pattern
- Gains from trade – in terms of income and welfare



The principle of Comparative advantage

- The Principle of comparative advantage: A nation gains from trade by exporting the goods or services in which it has its greatest comparative advantage in productivity and importing those in which it has the least comparative advantage.
- The keyword is *comparative*, meaning relative, not necessarily absolute

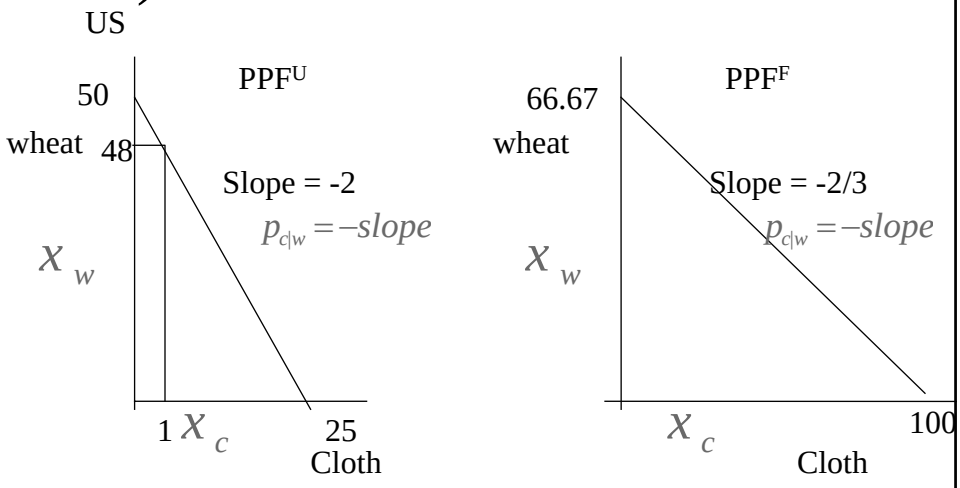
Example(failure of absolute advantage)

Example modified from Adam Smith Section

Labor hrs required to make	US	Rest of the World
1 bushel of wheat	2	1.5
1 yd of cloth	4	1.0

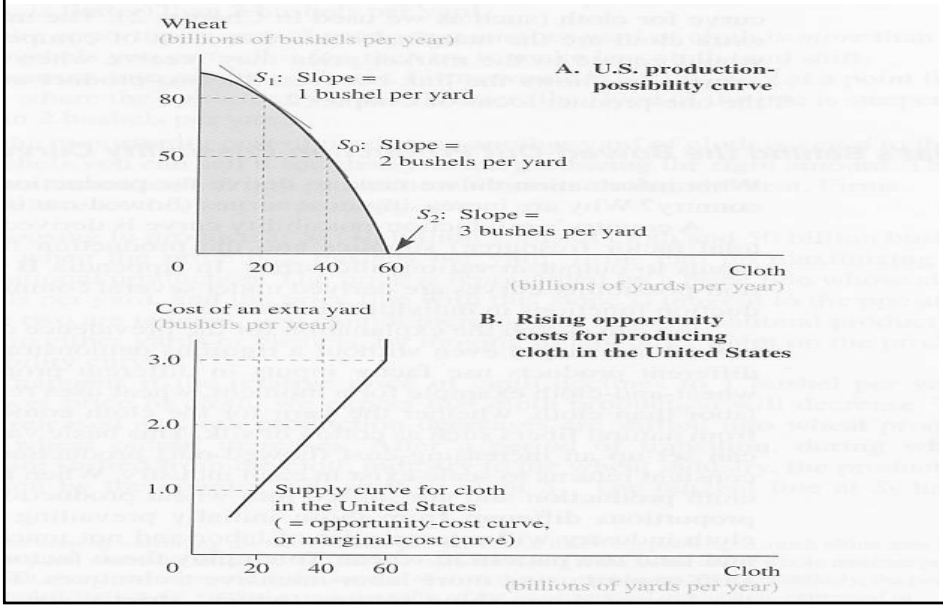
Assume both countries have 100 units of labor.
Note that one country has absolute advantage in production of both goods. So Adam Smith's theory fails
Would the countries benefit from trade?
Applying the same labor theory of value, we see that $p_{c|w}$ differs in two countries. Arbitrage possibility-> gains from free trade. The interpretation of $p_{c|w}$ as opportunity cost.

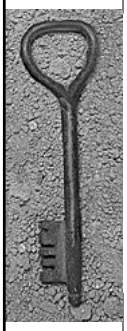
PPF (Production possibility frontier, or curve) also known as PPC



Marginal cost of production is constant at all production levels.

Increasing marginal cost of production





The main ideas to understand…

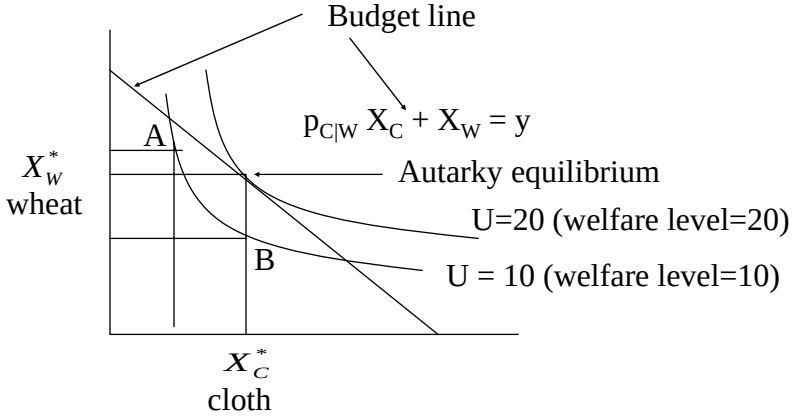
With or without trade:

- Which combination of goods will actually be consumed in the economy?
- Which combination of goods will actually be produced in the economy?

Answer depends on the prices.

- Community indifference curve, utility maximization, gives demand curve for a good
- Revenue maximization, gives supply function

Optimal choices of consumption: Community Indifference curve



Two points A and B on the indifference curve corresponding to U=10, yield same utility level 10. Budget line corresponds to all those bundles each of which costs the same $y to purchase. The slope of the budget line is $- p_{c|w,}$ because, budget line is $X_W = - p_{C|W} X_C + y$

Optimal choice of production levels: Revenue maximization

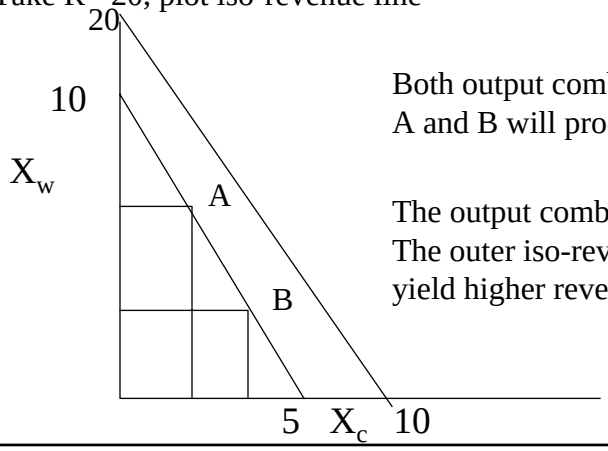
- How to compute revenue? Suppose
- $P_{c|w} = 2$, $p_w = 1$
- If we sell $X_c = 3$ and $X_w = 4$ units of cloth and wheat respectively, how much will be the revenue, R, measured in our unit of account, I.e., wheat?
- R = 10. In general notation,
- It will be $R = P_{c|w} X_c + X_w$
- Draw the iso-revenue lines, and point out which ones give higher revenues.
- Show the output combination that maximizes revenue in the PPF. (draw on board)

Revenue maximization

$R = P_{c|w} X_c + X_w$ $\quad P_{c|w} = 2$, $p_w = 1$

Take R = 10, and plot iso-revenue line

Take R= 20, plot iso-revenue line

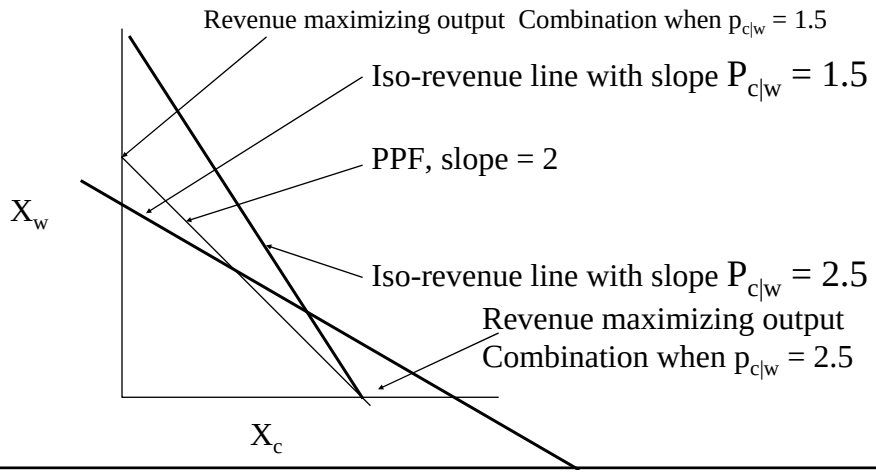


Both output combinations A and B will produce R = 10

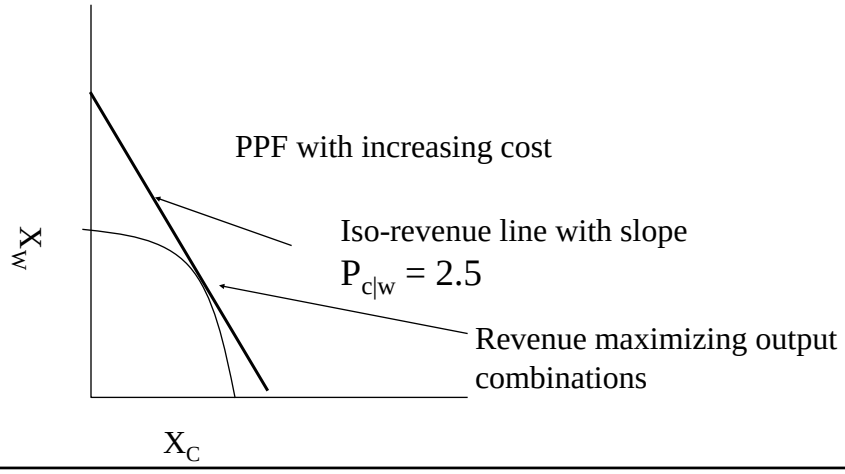
The output combinations on The outer iso-revenue line will yield higher revenue R = 20

Revenue maximization (contd)

Suppose the producers can produce any combinations of the two goods within the PPF, and suppose the prices of the goods are $P_{c|w} = 2.5$, $p_w = 1$, what will be the output combination that maximizes revenue?



Revenue maximization with increasing cost of production



Full Story: The working model of the world economy

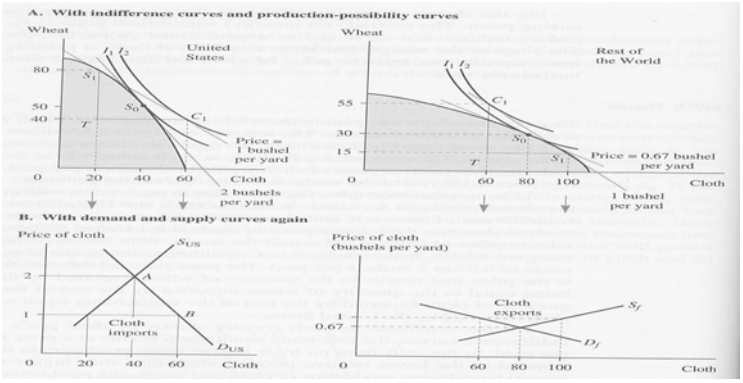
- In each country, there are consumers, producers, two goods (wheat and cloth), and competitive markets for two goods with prices $p_w = 1$, and $p_{c|w}$.
- Given each country's resources, it can produce only on PPF (which could be a line or a bulging out curve)
- Given the market prices of the two goods, $p_w = 1$, and $p_{c|w}$ the producers maximize revenue and determine the revenue maximizing supply of the two goods → you get the supply curve as you find the supplies at different prices.
- The maximized revenue becomes the income of the residents.
- Given this income, and the market prices of the two goods, $p_w = 1$, and $p_{c|w}$,. The consumers demand two goods → when you plot the demand at various prices, you get the demand curves.
- **Autarky equilibrium** is a set of prices $p_w = 1$, and $p_{c|w}$ such that both demand = supply in the product markets.
- At a given set of prices $p_w = 1$, and $p_{c|w}$ import amount is the excess demand at that price, and export is the excess supply at that price. **Free trade equilibrium** is also a set of prices $p_w = 1$, and $p_{c|w}$ such that at those prices the import of a good in one country = the export of the good by the other country. Import amount is the excess demand at that price and export is the excess supply at that price. supply in the product markets.
- In the next slide, we do this whole thing for a bulging out PPF. In the hand-out for your mid-term, we do this whole thing for linear PPF.

Putting it all together: concepts of trade theory illustrated below

- Community indifference curves, utility maximization, demand curve
- Revenue maximization, and supply curve
- Autarky equilibrium prices (slopes) and quantities consumed in each country
- International price after free trade will be between two autarky prices
- At different prices, trade triangle
- Gains from trade
- Terms of trade of a country price of exported goods / price of imported goods

Figure 3.5

For the US and Foreign, suppose we have the following PPFs and indifference curves



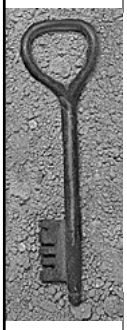
Explain, demand, supply curves, trade triangle, autarky equilibrium
Gains from trade (terms of trade) – due to pure trade,
and due to specialization

Full working of the world: Linear PPF

- Go to Microsoft word Handout

Heckscher-Ohlin Theory

- Two factors of production: capital and labor
- Countries have identical technology
- Labor abundant/capital abundant
- Labor intensive/capital intensive

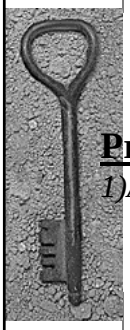


Factor Abundance and factor intensity

- Abundance defined in two ways:
  - First definition is based on relative factor quantities.
    - Country A is capital abundant if it has more capital per unit of labor than does country B.
      - If A is capital abundant, then B must be labor abundant.
    - This definition is used in the textbook.
- Second definition is based on factor prices.
    - Country A is capital abundant if the relative rental rate for capital in A is lower than in B before trade.

Factor intensity

- A product is relatively labor intensive if the labor costs are a greater share of its value than they are of the value of other products.
- Example: wheat and cloth production, to produce a $1 worth of wheat, say rental cost is $0.8, and labor cost is $0.2 and to produce $1 worth of cloth suppose the rental cost is $0.3, and labor cost is $0.7. Then the production technology of which good is labor intensive, and which good is capital intensive?
- Wheat is capital or land intensive, and cloth is labor intensive.



1st predictions of the Heckscher-Ohlin Theory

Prediction of the theory:

1)A country exports the product that uses their abundant factor Intensively. For instance, suppose US is relatively land abundant, and the rest of the world is relatively labor abundant. I.e.,

$$\frac{\text{US land supply}}{\text{US labor supply}} > \frac{\text{Foreign land supply}}{\text{Foreign labor supply}}$$

- Suppose further there are two goods, wheat production of which is land intensive and cloth production of which is labor intensive.
- Prediction of trade pattern is that US will export wheat (because it uses intensively the Land which US is relatively abundant as compared to the rest of the world.