

## International Economics

International economics is the study of economic interaction between countries. It addresses many topical issues, such as International trade describes and predicts patterns of production, trade and investment across countries.

Why do we study International economics?

International economics is a field that deals with the economic interactions of a nation and its impacts on consequences on international issues. It helps in assessing the economic and political implications to the international trade for goods and services, finance and foreign investment.

Globalization can also define the international economics such that because Globalization

is the interconnectedness between countries in this globe and there is no country who can avoid it to participate.

Globalization in a sense of trade is means the import from others and exports to others (of goods and services)

ii) → Also in factors of production such as.

Capital & multinational companies, McDonalds, Banks.

Labor & Entrepreneurs, e.g. Chinese labor providing their services in Pakistan.

⇒ Mercantilism (16<sup>th</sup> - 18<sup>th</sup> century)

More Gold, Silver, more the Country will be happy.

4 The power and prosperity of a country lies in

the supply of Gold and services.

That time trade was done through gold and who ever exports were considered the best rather than imports.

So, this economic practice promoted trade (Exports).

So, there were only three ways to collect Gold.

i) Gold reserves.

ii) Invade.

iii) Through trade (Exports)

Countries promoted exports and discouraged imports by applying tariff on imports and when one country applied tariff on other country exports so the other would also do so and due to this system the countries avoided from doing trade.

They believed that there is

a Zero sum Game.

⇒ Zero sum Game 8

Zero-sum is a situation in game theory in which one person's gain is equivalent to another's loss.

So, In mercantilism the countries thought that there is a zero sum game in trade.

But, this was not true.

Due to this countries started producing goods and when they were about to start producing new good they had to reduce the production of that good in which they had specialization. So this resulted in lower output so, specialization puts more output.

Economists criticized this economic system by stating that

is not zero sum game.

⇒ David Hume 1756

David Hume stated the "Price Specie flow Mechanism"

→  $X \uparrow \rightarrow Gold \uparrow \rightarrow$  Domestic price ↑  
 $\rightarrow wage \uparrow \rightarrow Impt \uparrow$   
↓

When wage ↑ cost of production also increased so therefor exports decreases.

⇒ The price - specie flow mechanism is a model developed by David Hume to illustrate how trade imbalances can self correct and adjust under the gold standard.

Hume expounded his argument in "Of the balance of trade" which he wrote to counter the Mercantilist idea that a nation should strive for a positive balance of trade (i.e., greater exports than imports).

In short, "the increase in domestic prices due to the gold inflow would discourage exports and encourage imports, thus automatically limiting the amount by which exports would exceed imports."

→ So in simple words he preferred trade.

⇒ Adam Smith  
(1776 wealth of Nation)

Adam Smith stated that gold is not the source of power and prosperity.

Adam Smith further stated that "Productive Capacity of a country is real wealth".

When learning by doing it increases by specialization

e.g Turkish ice cream

therefore he promoted trade and he didn't use the world opportunity lost.

e.g

	Computers	Textiles
US	2 h/ per unit	6 h/ per unit
Pakistan	10 h/ per unit	4 h/ per unit

In this example US has absolute advantage in producing computers and Pakistan has absolute advantage in producing textiles. So, it will be better off for both the countries to trade.

Then question arose that if only America has an absolute advantage in both the good so will they trade. So what will Pakistan do, so here absolute advantage failed.

Daud

Ricardo

He stated about comparative advantage.

Comparative advantage is an economy's ability to produce a particular good or service at a lower opportunity cost than its trading partners.

here we get the example of a doctor who is paid RS 20,000 per hour and he has a <sup>absolute</sup> comparative advantage in washing cloths also. So he wash his cloths in 1.5 hours it means he will loss RS 30,000 so doing this by himself he should go to check patient's rather washing cloth, because the opportunity cost of washing cloths is RS 30,000 which is higher, so he should go for trade with cloths cleaner.

So here the US should trade with Pakistan and should produce Computers only in which he has specialization.

e.g. Roses production by US Presides in the month of Feb. is also an example.

## General Discussion

## Chapter # 02

### ⇒ World Trade : An Overview.

In 2008, the world as a whole produced goods and services worth about \$50 trillion at current prices. Of this total, more than 30% was sold across national borders. World trade in goods and services exceeded \$16 trillion. That's a whole lot of exporting and importing.

Before we get to all that, however, let's begin by describing who trades with whom. An empirical gravity model helps to make sense of the value of trade between any pair of countries.

### ⇒ Who trades with Whom?

The total value in goods - exports plus imports - between the United States and its top 15 trading partners in 2008. Taken together these

15 countries accounted for 69 percent of U.S. trade in that year.

### Total U.S. Trade with Major Partners, 2008

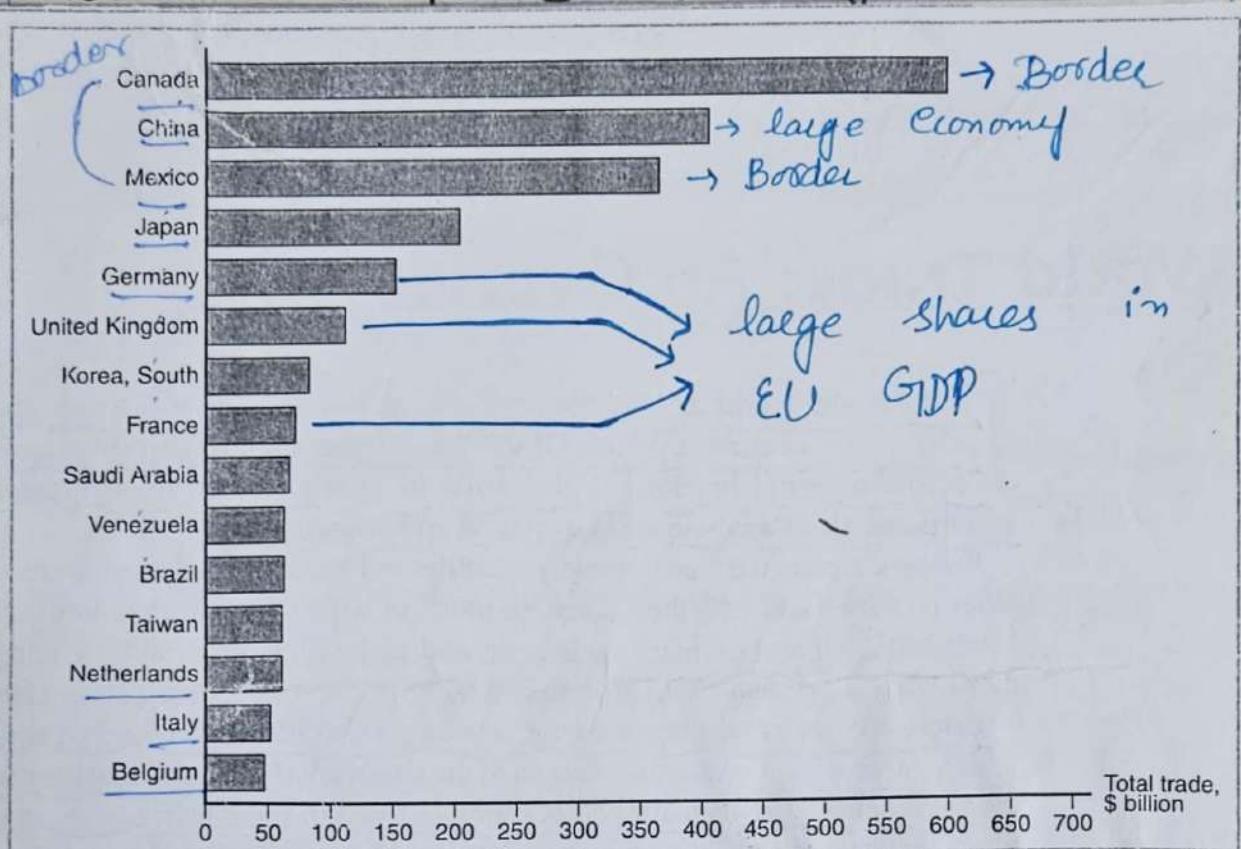


Figure 2-1

#### Total U.S. Trade with Major Partners, 2008

U.S. trade—measured as the sum of imports and exports—is mostly with 15 major partners.

Source: U.S. Department of Commerce.

Why did the United Kingdom trade so much with these countries? Let's look at the factors that, in practice, determine who we trade with whom.

## ⇒ Size Matters : The Gravity Model

To understand the pattern of trade in globalized world, economists have frequently used the Gravity model. This was first presented by "Jan Tinbergen", who proposed that the size of bilateral trade flux between any two countries can be approximated by employing the "gravity equation" which is derived from Newton's theory of gravitation. While planets are attracted to each other in proportion of their size and proximity [the existence of interactions], so too are countries.

→ Relative size is determined by current GDP, and.

↳ Economic proximity is determined by trade cost. The more economically 'distant' the greater the trade costs.

⇒ The Gravity model suggests that relative economic size attracts countries to trade with each other while greater distance weakens the attractiveness.

Looking at world trade as a whole, economists have found that an equation of the following form predicts the volume of trade between any two countries fairly accurately.

$$T_{ij} = A \times Y_i \times Y_j / D_{ij} \rightarrow (i)$$

- ↳ Where  $A$  is constant
- ↳  $T_{ij}$  is the value of trade b/w country  $i$  and country  $j$ ,
- ↳  $Y_i$  is country  $i$ 's GDP,
- ↳  $Y_j$  is country  $j$ 's GDP
- ↳  $D_{ij}$  is the distance b/w two countries

That is, the value of trade between any two countries is proportional, other things equal,

to the product of two countries' GDPs, and diminishes with the distance between the two countries.

An equation such as (i) is known as a gravity model.

Economists often estimate a somewhat more general gravity model of the following form.

$$T_{ij} = A \times Y_i^a \times Y_j^b / D_{ij}^c \rightarrow (ii)$$

This equation says that three things that determine the volume of trade b/w two countries are the size of two countries' GDPs and the distance between the two countries.

Instead,  $a$ ,  $b$  and  $c$  are chosen to fit the actual data as closely as possible. If  $a$ ,  $b$  and  $c$  were all equal to 1 equation (ii) would be the same as equation (i).

Why does the Gravity model work?

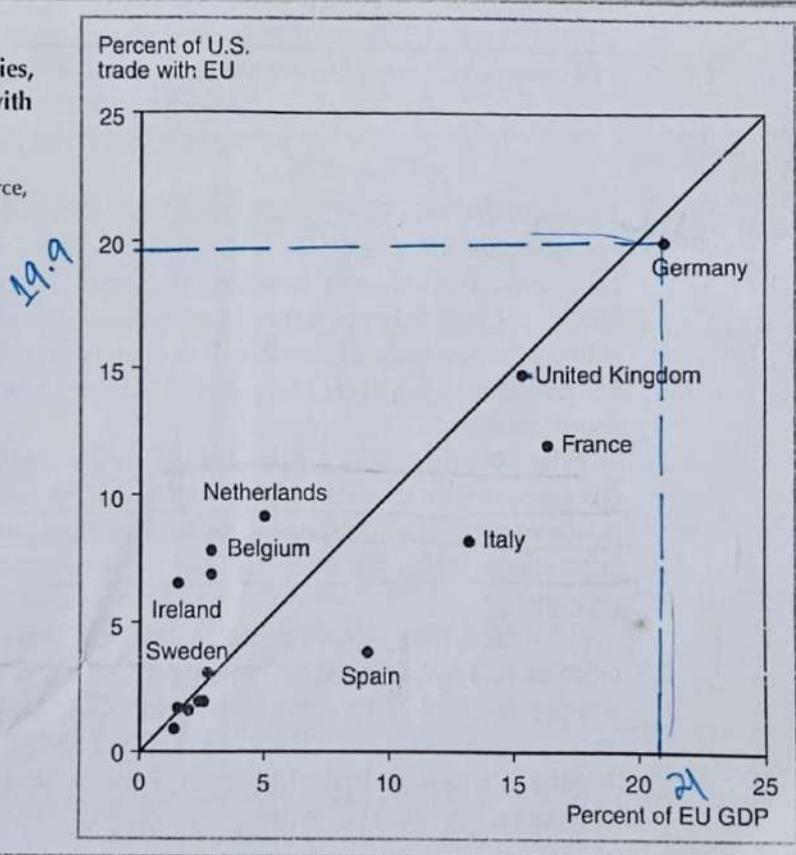
Broadly speaking, large economies tend to spend large amounts on imports because they have large incomes. They also attract large shares of other countries' spending because they produce a wide range of products.

⇒ Using the Gravity model:  
Looking for Anomalies.

Figure 2-2

The Size of European Economies,  
and the Value of Their Trade with  
the United States

Source: U.S. Department of Commerce,  
European Commission.



One of the principles of a Gravity model is that they help us to identify

anomalies in trade. Indeed, when trade between two countries is either much more or much less than a gravity model predicts, economists search for the explanation:

looking at the figure, we see Netherland, Belgium, and Ireland trade considerably more with the United States than would have predicted. Why might this be the case?

### Ireland ↗

In case of Ireland the answer lies partly in culture affinity: Not only Ireland shares a language with the United States, but tens of millions of Americans and are descended from Irish immigrants. Beyond this consideration, Ireland plays a special role as host to many U.S. based corporations.

## ii) Netherlands and Belgium

In case of Netherland and Belgium, geography and transport costs probably explain their large trade with US, because both the countries are located near the mouth of Rhine, western Europe's longest river.

⇒ Impediments to trade : Distance, Barriers, and Borders.

Canada and Mexico, the two neighbours of the US do a lot more trade with the United Nation than European economies of equal size. In fact, Canada, whose economy is about roughly the same size as Spain's, trades as much with the United States as all of the Europe does.

One main reason that the trade of US with Canada and Mexico is that they are much closer to US.

All estimated gravity models show a strong negative effect of distance on international trade; typical estimates say that a 1% increase in the distance between two countries is associated with a fall of 0.7 - 1 percent in the trade flow. These countries. This drop partly reflects increased costs of transporting goods and services.

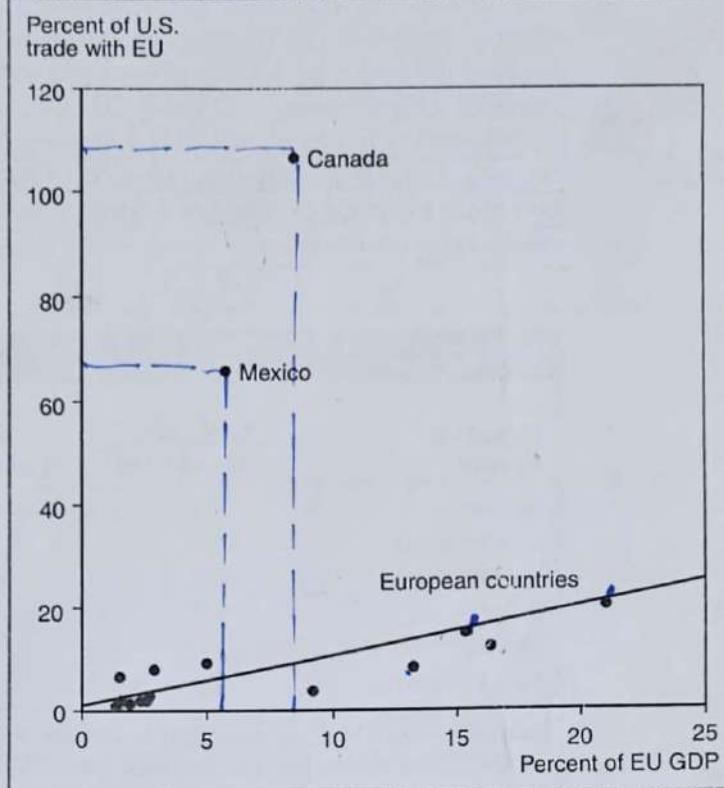
In addition to being U.S. neighbors, Canada and Mexico are part of a trade agreement with the United Nations, the North America free trade agreement, or NAFTA, which ensures that most goods shipped among the three countries are not subject to tariff or other barriers to international trade.

**Figure 2-3**

**Economic Size and Trade with the United States**

The United States does markedly more trade with its neighbors than it does with European economies of the same size.

Source: U.S. Department of Commerce, European Commission.



Yet data on the trade of individual Canadian provinces both with each other and with U.S. states show that, other things equal, there is much more trade between provinces than U.S. states.

Trade with British Columbia, as Percent of GDP, 1996

Canadian Province	Trade as % of GDP	Trade as % of GDP	US States at Similar Distance from British Columbia
Alberta	6.9	2.6	Washington
Saskatchewan	2.4	1.0	Montana

## { Chapter # 02 }

Manitoba	2.0	0.3	California
Ontario	1.9	0.2	Ohio
Quebec	1.4	0.1	New York
New Brunswick	2.3	0.2	Maine.

This table states the total trade of the Canadian province "British Columbia" with the Canadian Provinces and U.S. states. The next graph shows the location of these provinces and states. Each Canadian province is paired with a U.S. state that is roughly the same distance from British Columbia.

The trade with the far eastern Canadian province of New Brunswick, initially Canadian trade drops off steadily with distance. But in each case, the trade between the British Columbia and the Canadian province is much larger than trade with equally distant U.S. state.

## Chapter # 03

→ Labor Productivity and the Comparative advantage: The Ricardian Model.

The concept of Comparative advantage  
Comparative advantage is an economy's ability to produce a particular good or service at a lower opportunity cost than its trading partners.

Trade between two countries can benefit both countries if each country exports the goods in which it has a comparative advantage

→ Countries engage in international trade for two basic reasons, each of which contributes to their gains from trade.

i) First, countries trade because they are different from each other. Nations, like individuals can benefit from their differences by reaching an arrangement in which each does the things it does.

relatively well.

ii) Second, countries trade to achieve economies of scale in production. That is, if each country produces only a limited range of goods, it can produce each of these goods at a larger scale and hence more efficiently than if it tried to produce everything.

### ⇒ A one-factor Economy

To introduce the role of comparative advantage in determining the pattern of international trade, we begin by imagining that we are dealing with an economy — which we call Home — that has only one factor of production.

We imagine that only two goods, wine and cheese, are produced. The technology of Home's economy can be summarized by labor productivity in each industry, expressed in terms of unit labor requirement. The number of hours of

Labor required to produce a pound of cheese or a gallon of wine.

Notice, by the way, that we're dealing defining unit labor requirement as the inverse of productivity, the more cheese or wine a worker can produce in an hour, the lower the unit labor requirement.

⇒ Production Possibilities ( $\text{alc}Q_c + \text{alw}Q_w \leq L$ )

Because any economy has limited resources, there are limits on what it can produce, and there are always tradeoffs;

(3) to produce more of one good, the economy must sacrifice some production of another good

Home production PF &

The line PF shows

The maximum amount

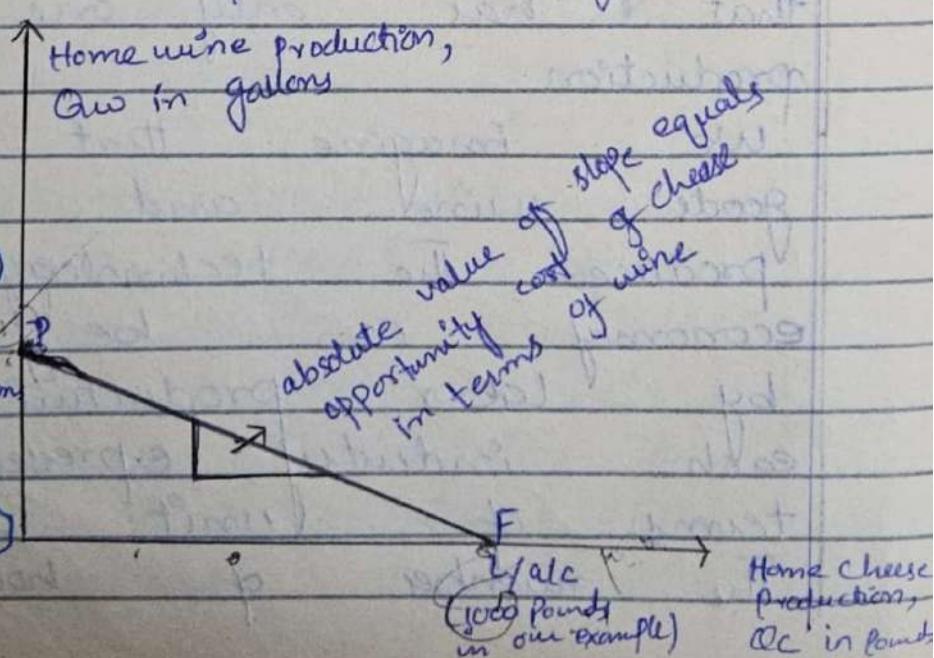
of cheese home can produce given

(100 gallons)

any production

in our example

of wine, and vice versa



These trade offs are illustrated graphically by the production possibility Frontier, which shows the maximum amount of wine that can be produced once the decision has been made to produce any given amount of cheese, and vice versa.

We can see that the slope of the curve is negative downward which tells us that

- if we have to produce 1000 pounds of cheese then we will have ② gallons of wine and if we produce 500 gallons of wine then 0 pounds of cheese, so if we have to produce one good at a greater amount then we have to sacrifice the other good and vice versa.

Important

⇒ When the production possibility Frontier is a straight line, the opportunity cost of a pound of cheese in terms of wine is constant.

For example, if it takes one person hour to make a pound of cheese and two hours to produce a gallon of wine, the opportunity cost of each pound of cheese is half ( $\frac{1}{2}$ ) a gallon of wine.

## ⇒ Relative Prices and Supply

The production possibility frontier illustrates the different mixes of goods the economy can produce.

To determine what the economy will actually produce, however, we need to look at prices.

Suppose that it takes one hour of labor to produce a pound of cheese and two hours to produce a gallon of wine. Now suppose further that cheese sells for \$4 a pound, while wine sells for \$7 a gallon. What will workers produce? Well, if they produce cheese, they can earn \$4 an hour. On the other hand, if workers produce wine,

they will earn only \$3.50 per hour. So, if cheese sells for \$4 a pound while wine sells for \$7 a gallon, workers will do better by producing cheese — and the economy as a whole will specialize in cheese production.

But what if cheese prices drop to \$3 a pound? In this case, workers can earn more by producing wine, and the economy will specialize in wine production instead.

We have therefore just derived a crucial proposition about the relationship between prices and production. The economy will specialize in the production of cheese if the relative price of cheese exceeds its opportunity cost in terms of wine; it will specialize in the production of wine, if the relative price of cheese is less than its opportunity cost in terms of wine.

In the absence of international

trade, Home would have to produce both goods for itself. But it will produce both goods only if the relative price of cheese is just equal to its opportunity cost.

$$\Rightarrow \frac{P_C}{P_W} > \frac{a_{LW}}{a_{LW}} \Rightarrow \text{Home Production}, \quad \frac{P_C}{P_W} < \frac{a_{LW}}{a_{LW}} \Rightarrow \text{Foreign "P"}$$

→ Trade in One-Factor world

To describe the pattern and effects of trade between two countries when each country has only one factor of production is simple. Yet the implications of this analysis can be surprising.

Suppose there are two countries. One of them we call again Home and the other we call Foreign. Each of these countries has one factor of production (labor) and can produce two goods, wine and cheese, and they have difference in technology (Labor productivity).

As before, we denote Home's labor force by  $L$  and home's unit labor requirements

in wine and cheese production by alw and alc, respectively. And for Foreign Labor force we use  $L^*$  and  $D^*$  foreign unit labor requirements in wine and cheese by alw and alc respectively.

In General, the unit labor requirements can follow any pattern. For example, Home could be less productive than Foreign in wine but more productive in cheese, or vice versa.

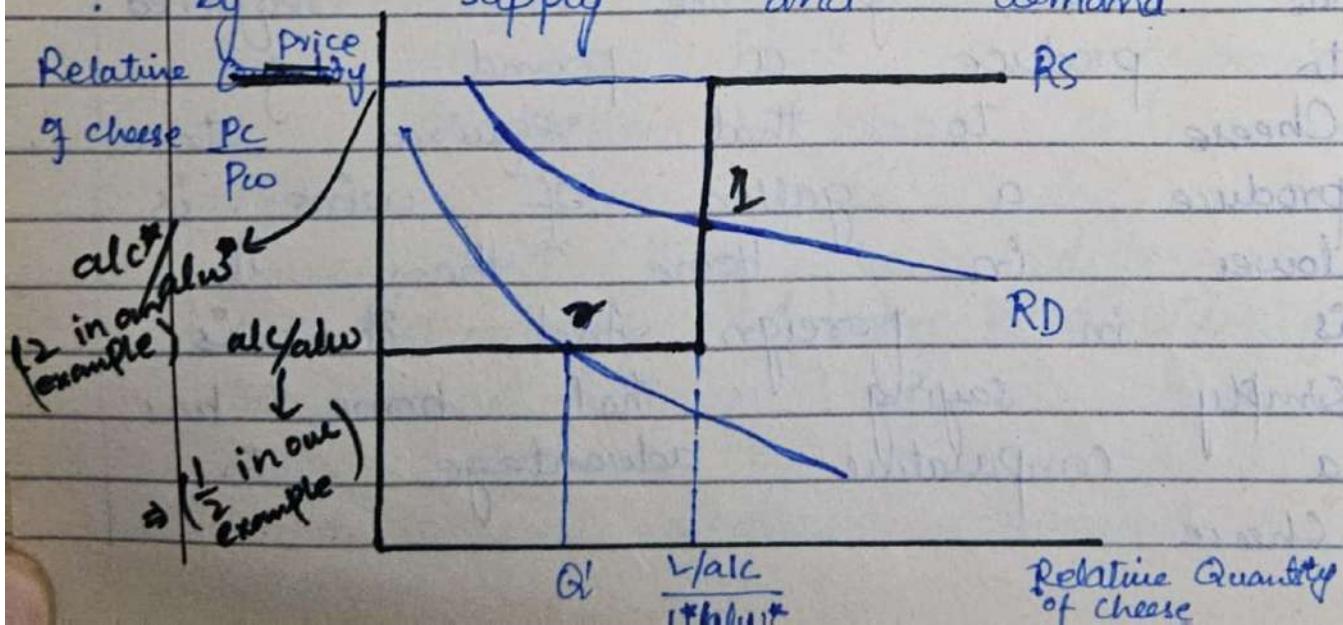
wine alc/alw < alc\*/alw\*  
or alc/alc\* < alw/alw\*

In words, we are assuming that the ratio of the labor required to produce a pound of cheese to that required to produce a gallon of wine is lower in Home than it is in Foreign. And it is simply saying that home has a comparative advantage in cheese.

Once we allow for the possibility of international trade, however, prices will no longer be determined purely by domestic considerations. If the relative price of cheese is higher in foreign than in home, it will be profitable to ship cheese from Home to foreign and to ship wine from foreign to home. Eventually home will export enough cheese and foreign enough wine to equalize the relative price.

→ Determining the relative price after trade &

Prices of internationally traded goods, like other prices, are determined by supply and demand.



This figure shows that world supply and demand for cheese relative to wine as function of the price of cheese relative to that of wine. The relative Demand curve is indicated by RD and relative Supply curve is indicated by RS.

World General equilibrium requires that relative supply equal relative Demand, and thus the world relative price is determined by intersection of RD and RS.

4 First, as drawn the RS curve shows that there would be no supply of cheese if  $\frac{P_C}{P_W} < \frac{alc}{alw}$  (world price)

4 Next when the relative price of cheese  $\frac{P_C}{P_W} = \frac{alc}{alw}$ , so the Home workers can earn exactly the same amount making either cheese or wine. So Home will be willing to supply any relative amount of the two goods, producing a flat section

to the supply curve.

↳ We already know that if

B)  $\frac{P_C}{P_W} > \frac{alc}{alw}$  ('Home will specialize in cheese production')

ii)  $\frac{P_C}{P_W} < \frac{alc^*}{alw^*}$  (Foreign will specialize in wine production)

When Home specializes in cheese it produces  $\frac{L}{alc}$  pound similarly when foreign specializes in wine, it produces  $\frac{L^*}{alw^*}$  gallons,

So for any relative price of cheese between  $\frac{alc}{alw}$  and  $\frac{alc^*}{alw^*}$ ,

the relative supply of cheese is:

$$\frac{L/alc}{L/alw}$$

At  $\frac{P_C}{P_W} = \frac{alc^*}{alw^*}$ , we know that

foreign workers are indifferent between producing cheese and wine, thus here again have a flat section of the supply curve

curve.

- Finally, if  $\frac{P_C}{P_W} > \frac{\text{alc}^*}{\text{alw}^*}$  both home and foreign will specialize in cheese production, there will be no wine.

The relative Demand curve RD does not require such exhaustive analysis.

The downward slope of RD curve reflects substitution effect.

As the relative price of cheese rises consumers will tend to purchase less cheese and more wine, so the relative demand for cheese falls.

- The Graph where a RD curve intersects RS curve at point 1, where the relative price of cheese is between the two countries "pretrade prices" means  $(1/2)$  and  $(1)$ . In this case each country specializes in the production of the good in which it has a comparative advantage: Home produces cheese, while Foreign produces only wine.

- At point 2 the world relative price of cheese after trade is

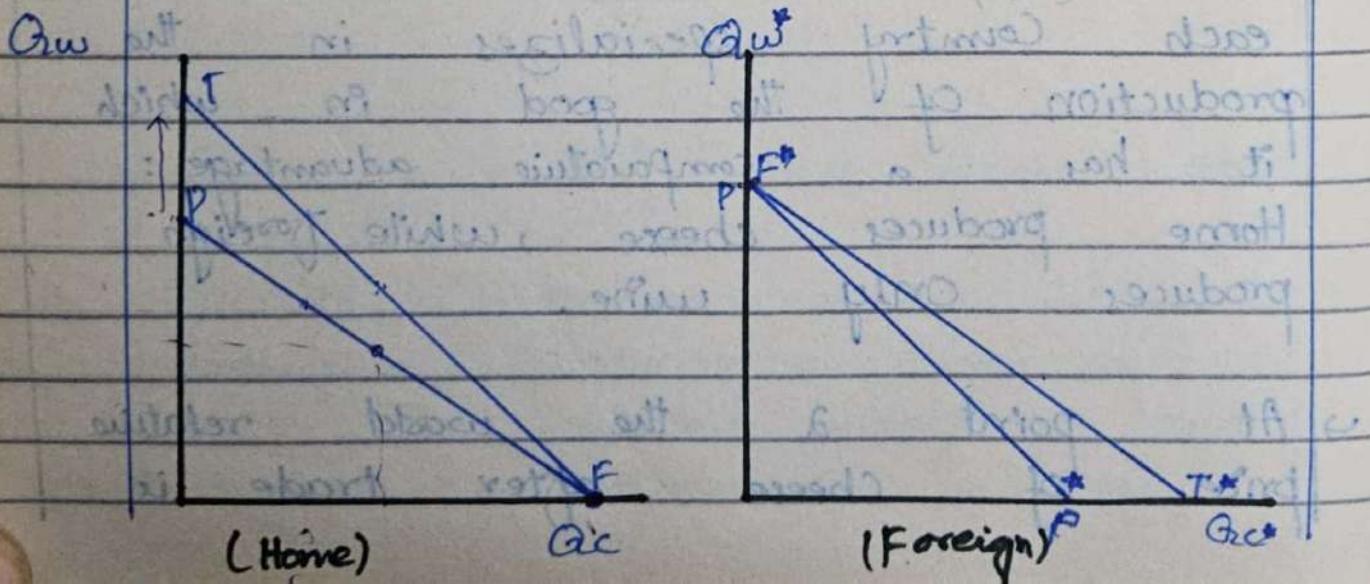
$$\frac{P_C}{P_W} = \frac{alc}{alw}, \text{ so}$$

If the  $\frac{P_C}{P_W} = \frac{alc}{alw}$ , home

economy need not to specialize in producing either cheese or wine, so home must be producing both some wine and some cheese.

But if countries does specialize, it will do so in the good in which it has a comparative advantage.

→ The normal result of trade is that the price of a traded goods (cheese) relative to that of another good (wine) ends up somewhere short between its pretrade levels in the two countries.



## Trade expands consumption Possibilities:

International trade allows Home and Foreign to consume anywhere within the TF and/or TPF\* which lies outside the countries production frontiers.

### → The gains from trade 8

The countries who trades between each other gains from trade.

This mutual gain can be demonstrated in two alternative ways.

- i) The first way to show that specialization and trade are beneficial is to think of trade as an indirect method of production. Home could produce wine directly, but trade with Foreign allows it to produce wine by producing cheese and then trading the cheese for wine. This indirect method of "producing" a gallon of wine is more efficient method than direct production.

Similarly, foreign can "produce" cheese more efficiently by making wine and trading it. This is one way of seeing that both countries gain.

ii) Another way to see the mutual gain from trade is to examine how trade effects each countries possibilities for consumption. Trade allows Home and Foreign to consume anywhere which lies outside the countries production frontiers. Simply it expands the consumption of both countries in terms of cheese and wine.

→ A Note on Relative wages

{Book Page 35 - 36 → half}

→ Misconceptions About Comparative Advantage

Three misconceptions in particular have proved highly persistent (Judeo). In this section we will use our simple model.

of comparative advantage to see why they are incorrect.

### i) Productivity and Competitiveness

"Free trade is beneficial only if your country is strong enough to stand up to foreign competition."

- ↳ This argument seems right to many people.
- ↳ They criticize free trade by asserting that it may fail to hold in reality.
- ↳ They failed to understand the essential points of Ricardo's Model.
- ↳ i) Gain from free trade depends on the comparative advantage rather than absolute advantage.
  - ii) Does not mean nations should produce everything if they produce more efficient than anyone else.
  - iii) Countries with less efficiency may also be able to specialize.

- ↳ Absolute advantage on productivity is also not always required to export.
- ↳ Comparative advantage depends not only on production but also on domestic wage rate relative to foreign wage rate

## 2) Pauper Labour Argument &

Foreign competition is unfair and hurts other countries. When it is based on low wages (Pauper Labour Argument)

Q8 Asking why trade with industries paying lower wages?

- ↳ It is wrong to think trade is good only when higher wages are paid. (then no export)
  - ↳ higher cost of production
- ↳ Higher wages may be fine for home, what about Foreign?

[Book explanation is Brilliant]

### 3) Exploitation 8

Trade exploits a country and make it worse off if its workers receive much lower wages than workers in other nations.

(In Book it's explained.)

← Interventions →

→ Chapter # 03 Completed

→ Completed 8

## {Chapter # 04}

### Specific Factor and Income Distribution

The Ricardian model of international trade leads to international specialization, with each country shifting its labor force from one industry in which it is relatively inefficient to industry in which it is relatively more efficient. Because labor is the only factor of production in that model, and it is assumed that labor can move freely from one industry to another, there is no possibility that individuals will be hurt by trade.

→ In the specific factor model there are two reasons why international trade has a strong effect on the distribution of income.

- i) First, resources cannot move immediately or without a cost

from one industry to another —  
a short run consequence of  
trade.

ii) Second, industries differ in the factors of production they demand.  
A shift in the mix of goods that a country produces will ordinarily reduce the demand for some factors of production, while raising the demand for others, a long-run consequence of trade.

→ In this chapter, we focus on the short-run consequences of trade on the income distribution when factors of production cannot move without cost between sectors. To keep our model simple, we assume that the factor sector switching cost for some factors is high enough that such a switch is impossible in the short-run. Those factors are specific to a particular sector.

→ The Specific factor model  
The specific factor model was

developed by Paul Samuelson and Ronald Jones. Like the simple Ricardian model, it assumes an economy that produces two goods and that can allocate its labor supply b/w the two sectors. Unlike the Ricardian model, however the specific factors model allows for the existence of factor of production besides labor.

Where labor is a mobile factor that can move between sectors, these other factors are assumed to be specific. that is, they can be used only in the production of particular goods.

### → Assumptions of the model

Imagine an economy that can produce two goods, cloth and food and instead of one factor of production, however the country has three i) labor, L  
ii) Capital, K  
iii) Land, T.

- Cloth is produced using capital and labor (not land)
- Food is produced using labor and hand. (not capital)
- The production function that tells us the quantity of cloth that can be produced given any input of capital and labor.

The production function for cloth can be summarized algebraically as

$$Q_c = Q_c(K, L_c)$$

Where  $Q_c$  = Economy's output of production  
 $K$  = Capital.  
 $L_c$  = the labor force employed.

Similarly, the production function for Food.

$$Q_f = Q_f(I, L_f)$$

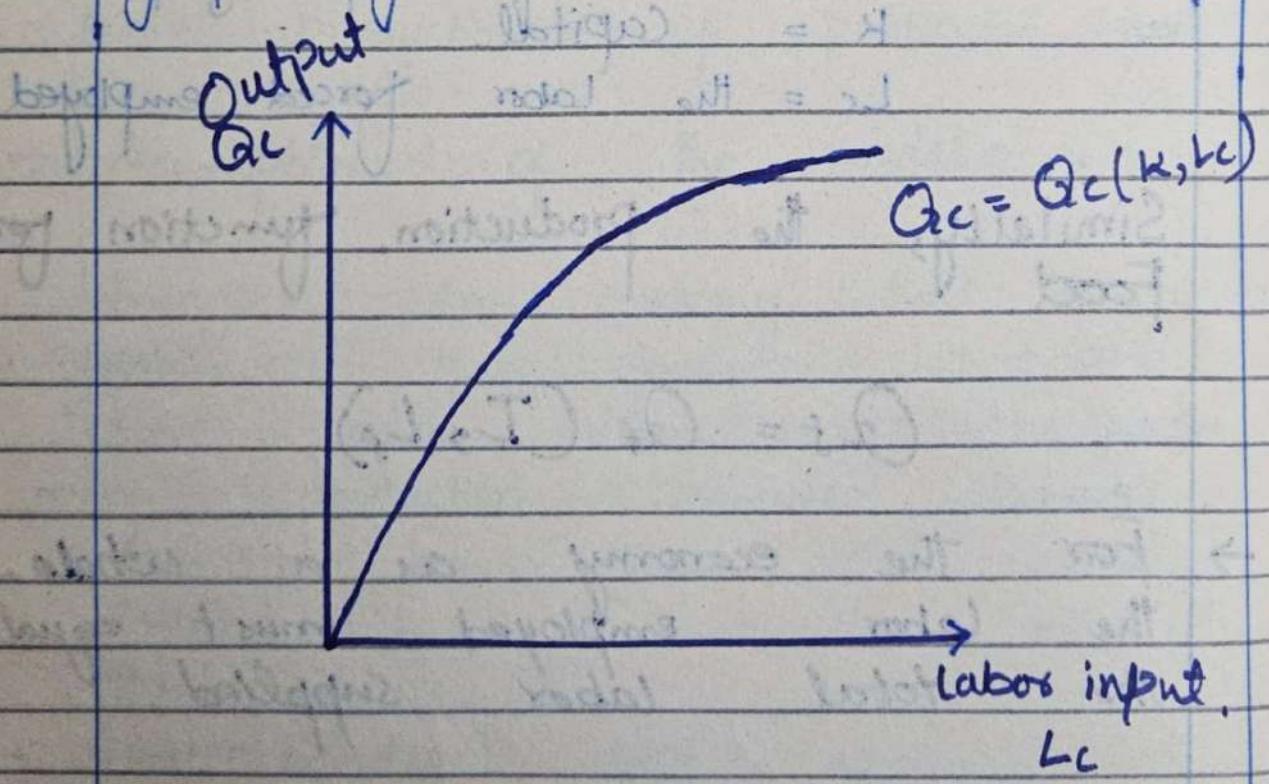
- For the economy as a whole, the labor employed must equal the total labor supplied,

$$L_c + L_f = L.$$

## → Production Possibilities 8

The specific factor model assumes that each of the specific factors, capital and labor, can be used in only one sector, cloth and food respectively.

Only labor can be used in either sector. Thus to analyze the economy's production possibilities, we need only to ask how the economy's mix of output changes as labor is shifted from one sector to the other. This can be done graphically.

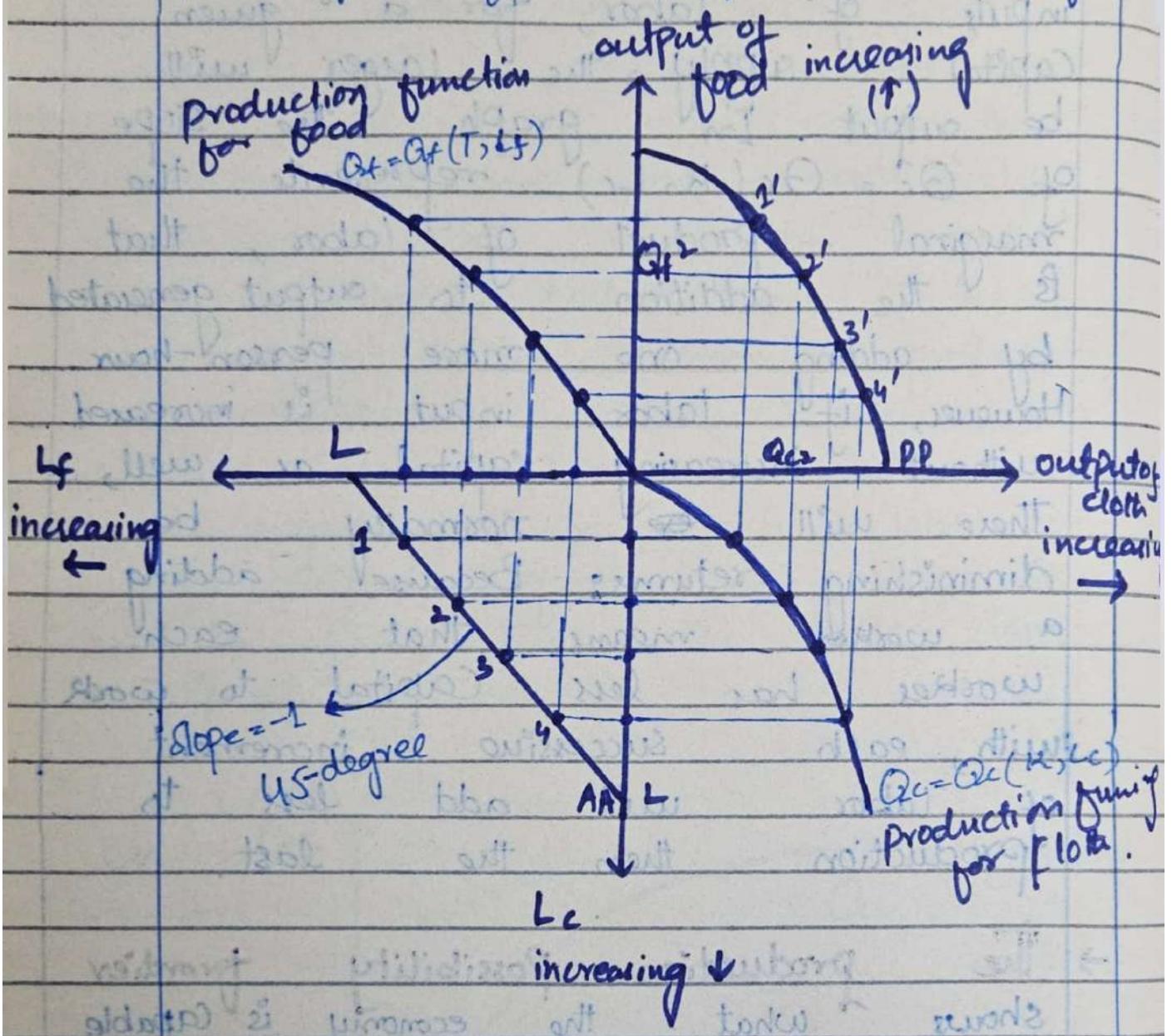


This graph illustrates the relation between Labor input and output of cloth. The larger the inputs of labor, for a given Capital supply, the larger will be output. In graph the slope of  $Q_c = Q_c(K, L_c)$  represents the marginal product of labor, that is the addition to output generated by adding one more person-hour. However, if labor input is increased without increasing capital as well, there will be normally diminishing returns. Because adding a worker means that each worker has less capital to work with, each successive increment of labor will add less to production than the last.

→ The production Possibility frontier shows what the economy is capable of producing; in this case it shows how much food it can produce for any given amount of output of cloth and vice versa.

A similar pair of diagrams can represent the production function for

food. These diagrams can be combined to derive the production possibility frontier for the economy.



## (Economy's Production Possibility Frontier PP)

The production of cloth and food is determined by the allocation of labor. In the economy,

lower left quadrant, the allocation of labor between sectors can be illustrated by a point on Line AA, which represents all combinations of labor input to cloth and food that sum up to the total labor supply  $L$ . Corresponding to any particular point on AA such as point 2, is a labor input to cloth ( $L_c^2$ ) and the labor input to food ( $L_f^2$ ). the curves in the lower right and the upper left quadrants represents the production function for cloth and food, respectively; these allow the determination of output ( $Q_c$ ,  $Q_f$ ) given labor input. Then in the upper right Quadrant, the curve PP shows how the output of the two goods varies as the allocation of labor is shifted from food to cloth, with the output points 1, 2, 3 corresponding to the labor allocations 1, 2, 3. Because of diminishing returns, PP is bowed-out curve instead of the straight line.

$$\text{Slope of PP curve} = -\frac{MPL_F}{MPL_c}$$

## → Prices, Wages, and Labor allocation 8

First, let us focus on the demand for labor. In each sector, profit-maximizing employers will demand labor up to the point where the value produced by an additional person-hour equals the cost of employing that hour.

In each sector, for example, the value of an additional person-hour is the marginal product of labor in cloth multiplied by the price of one unit of cloth:  $MPL_c \times P_c$ .

If  $w$  is the wage rate of labor, employers will therefore hire workers up to the point where

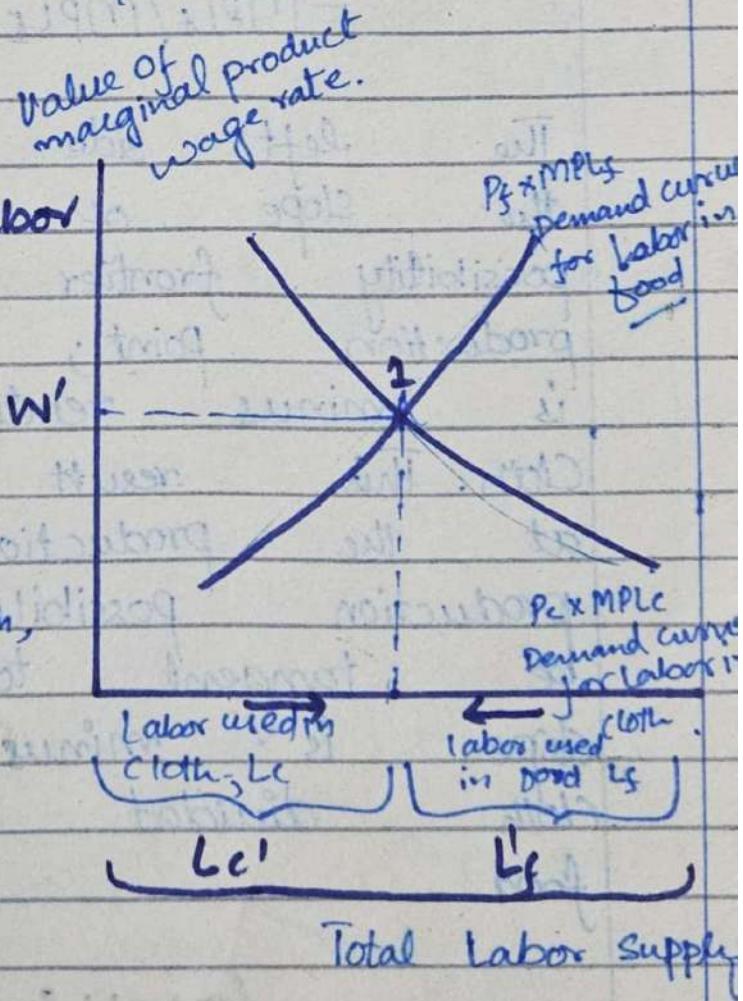
$$MPL_c \times P_c = w$$

The slope of  $MPL_c \times P_c$  will slope down because of the diminishing returns.

So, if the wage rate falls, other things equal, employers in the cloth sector will want to hire more workers.

Similarly, the value of an additional person-hour in food is  $MPL_f \times P_f$ , so, the demand curve for labor in food is  $MPL_f \times P_f = w$ .

→ The wage rate "w" must be the same in both sectors, because of assumption that labor is freely mobile b/w sectors. The wage rate is determined by the requirement that labor demand equals total labor supply. This equilibrium condition for labor is represented in Graph as.



### The allocation of labor

Labor is allocated so that the value of its marginal product  $w'$  ( $P \times MPL$ ) is the same in the cloth and food sectors. In equilibrium, the wage rate is equal to the value of the labor's marginal product.

The equilibrium wage rate and the allocation of labor between the two sectors is represented by point 1. At the wage rate  $w_1$ , the sum of labor demanded in the cloth ( $MPL_C$ ) and food ( $MPL_F$ ) sectors just equals the total labor supply  $L$ .

At the equilibrium point

$$MPL_C \times P_C = MPL_F \times P_F = w_1$$

or rearranging, that

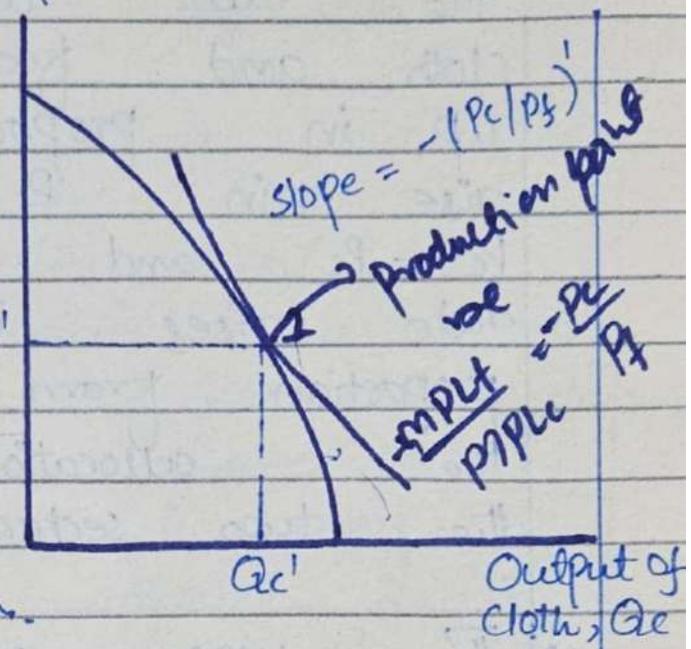
$$-\frac{MPL_F}{MPL_C} = -\frac{P_C}{P_F}$$

The left side of equation is the slope of the production possibility frontier at the actual production point; the right side is minus relative price of cloth. This result tells us that at the production point, the production possibility frontier must be tangent to a line whose slope is minus the price of cloth divided by the price of food.

Graphically

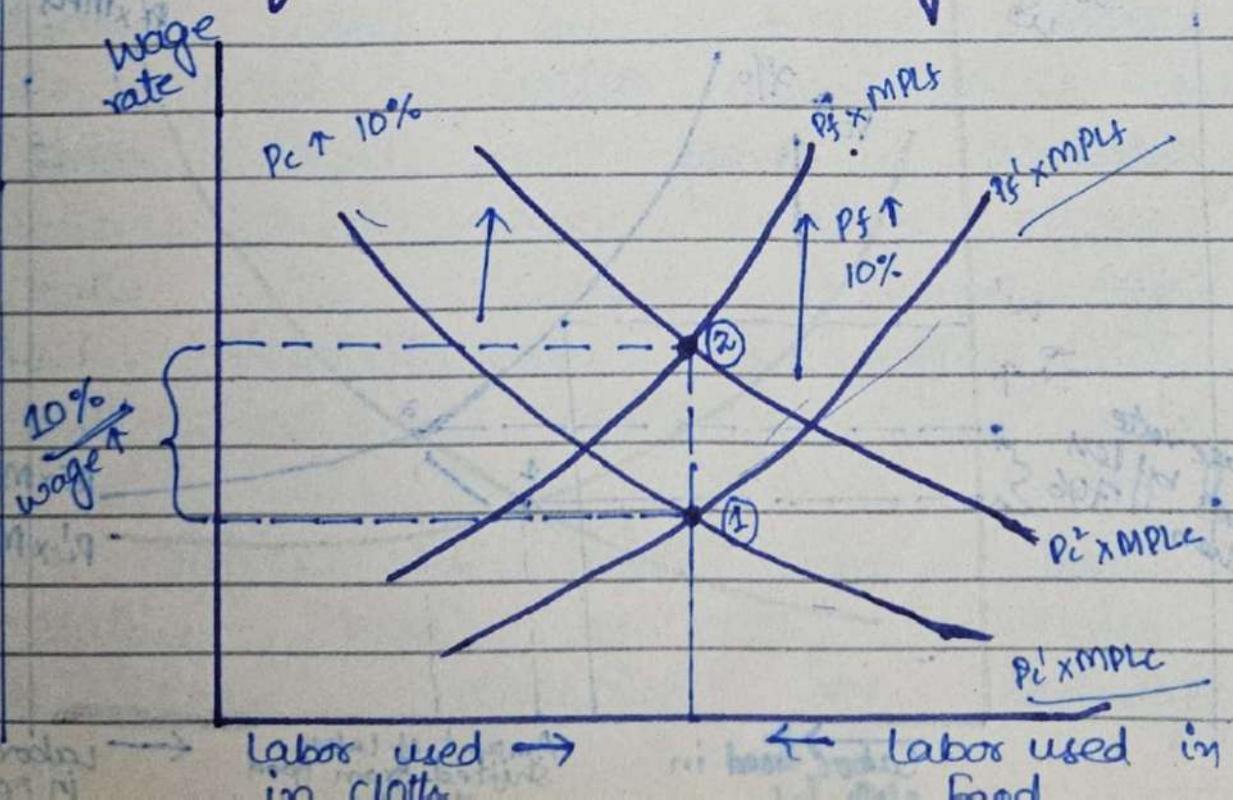
## Production in the specific factor model

The economy produces at the point on its production possibility  $Q_f'$  frontier (PP) where the slope of that frontier equals minus the relative price of cloth.



- What happens to the allocation of labor and the distribution of income when the prices of food and cloth change.

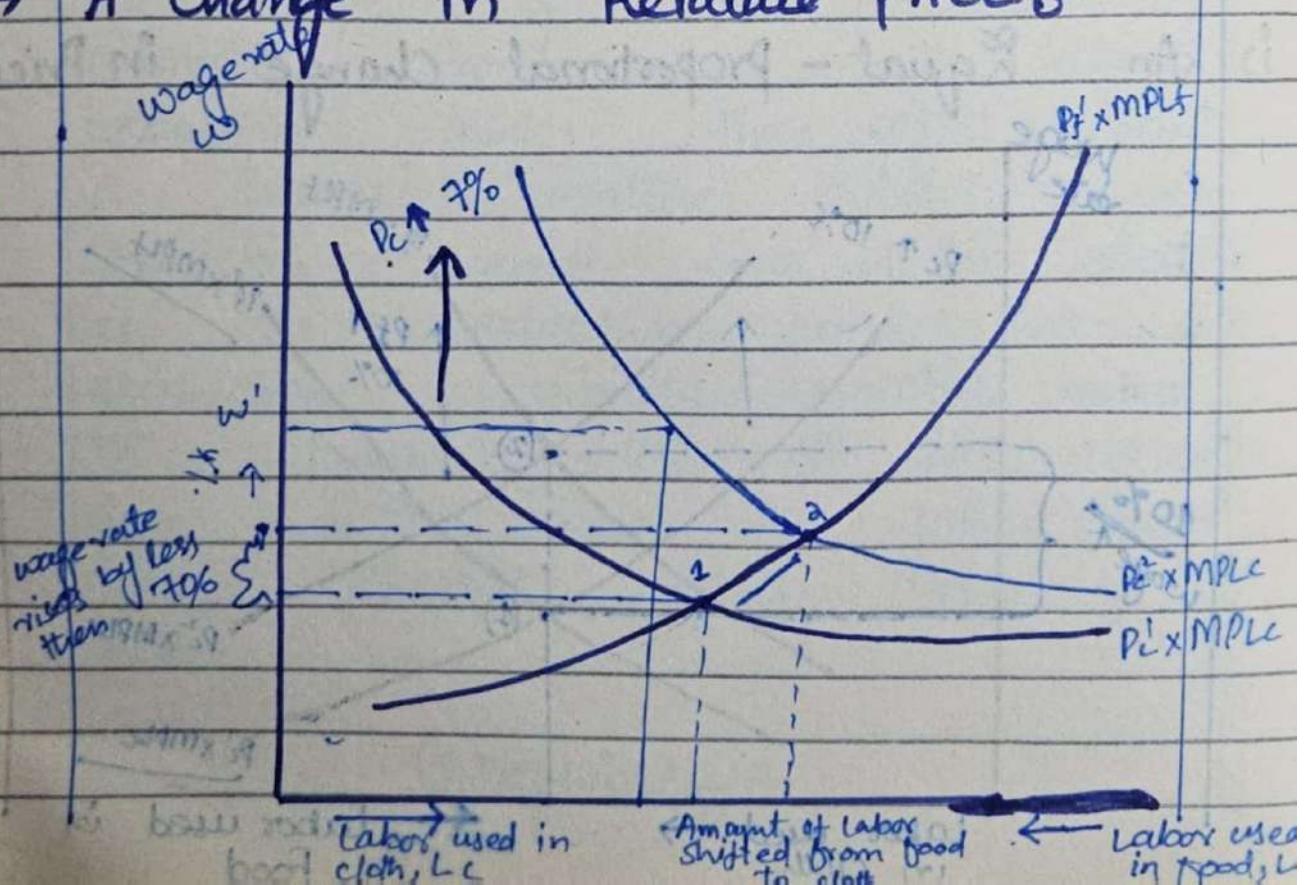
is an equal-proportional change in Prices &



The labor demand curve in cloth and food both shift up in proportional to the rise in  $P_c$  and  $P_f$  from  $P_c^1 - P_c^2$  and  $P_f^1 - P_f^2$ . The wage rate rises in the same proportion, from  $w^1$  to  $w^2$ , but the allocation of labor between the two sectors doesn't change.

→ The wage rate rises in the same proportion as the prices, so real wage rate are unaffected. So everyone is in exactly the same position as before.

## → A Change in Relative Prices



## A Rise in the Price of Cloth &

The cloth labor demand curve rises in proportion to the 7% in  $P_c$  but the wage rate rises less than proportionately. Labor moves from the food sector to the cloth sector.

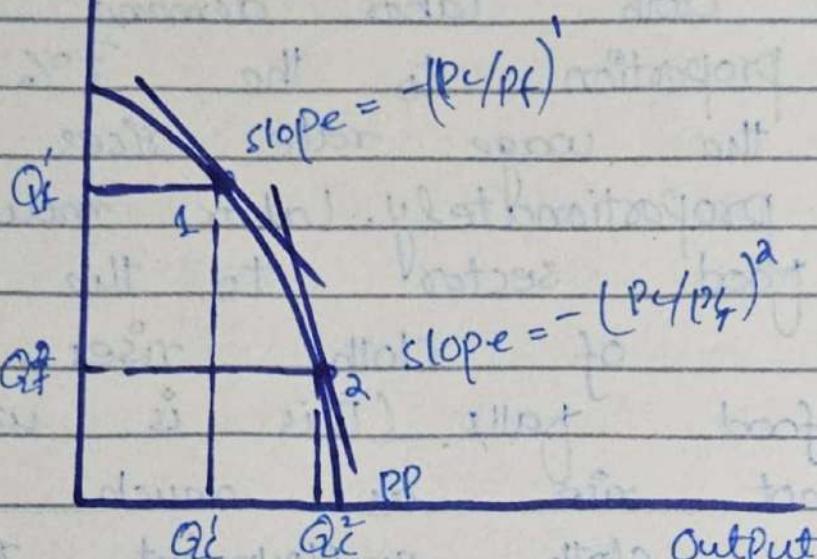
Output of cloth rises, output of food falls. (This is why " $w$ " does not rise as much as  $P_c$ . Because cloth employment rises, the marginal product of labor in that sector falls).

Similarly, when the labor shifts to the cloth sector the marginal product of labor in the food sector rises and that's why the wage rate of food sector also rises and after that a point becomes where the wage rate of both the sectors become equal to satisfy the assumption of the specific model.

→ The effect of Rise in the relative price of cloth can also be seen directly by looking.

at the PP curve.

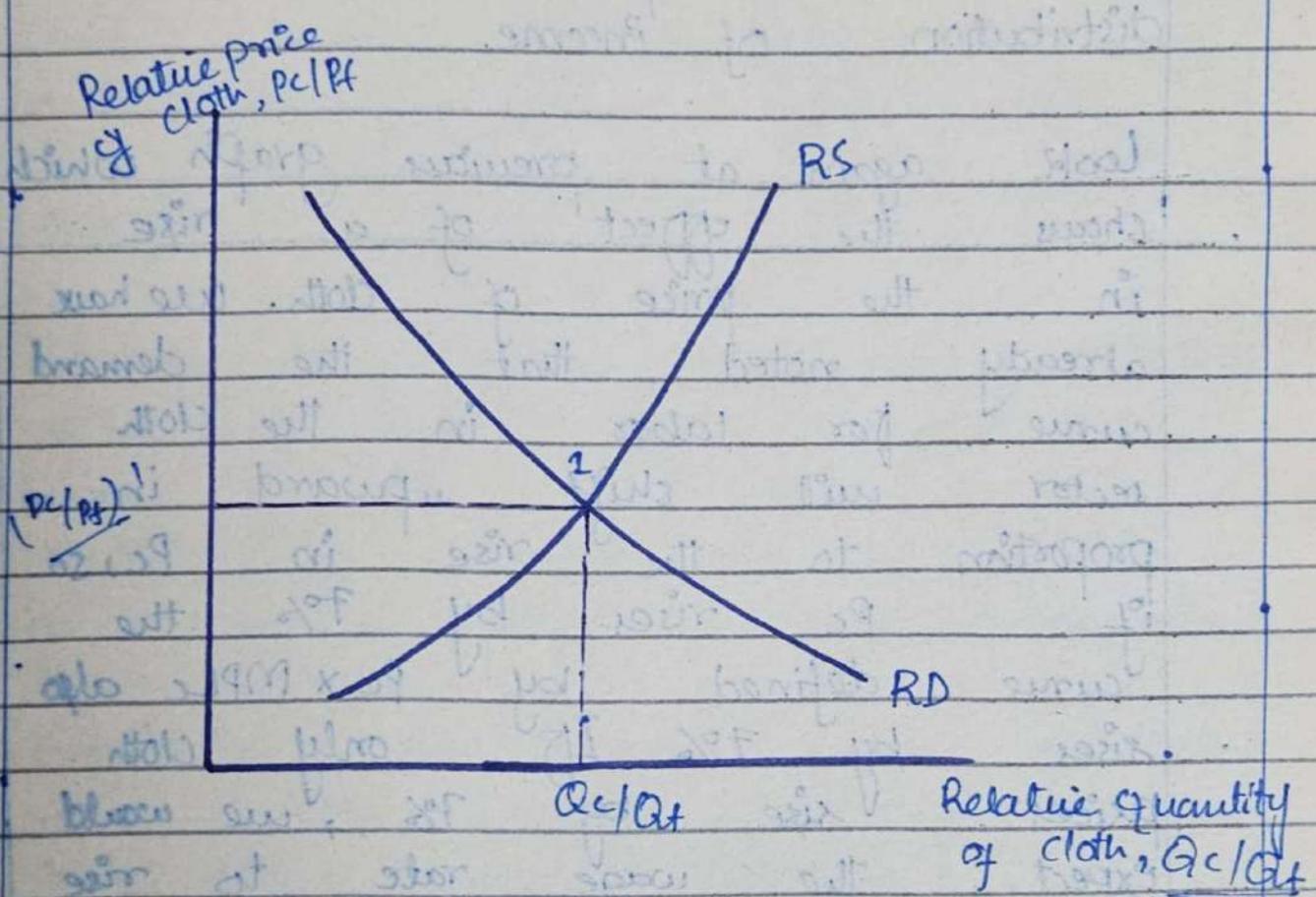
output of  
food,  $Q_f$



The economy always produces at the point on its production possibility frontier (PP) where the slope of PP equals minus relative price of cloth. Thus an increase in  $P_c/P_f$  causes production to move down and to the right along that the PP corresponding to higher output of cloth and lower output of food.

→ The effect of rise in the relative price of cloth can also be seen directly by looking at the PP curve as done above.

→ Since the higher relative prices of cloth lead to a higher output of cloth relative to that of food, we can draw a relative supply curve showing  $Q_c/Q_f$  as a function of  $P_c/P_f$ . This relative supply curve is shown as RS in Graph such as.



In the specific factor model, a higher relative price of cloth will lead to an increase in the output of the cloth relative to that of food. Thus the relative supply curve RS is upward sloping. Equilibrium relative quantities are determined by the intersection of RS with the relative demand curve RD.

## → Relative Prices and the Distribution of Income &

Before turning to the effects of international trade, we must consider the effect of changes in relative prices on the distribution of income.

Look again at previous graph which shows the effect of a rise in the price of cloth. We have already noted that the demand curve for labor in the cloth sector will shift upward in proportion to the rise in  $P_c$ , so if  $P_c$  rises by 7% the curve as defined by  $P_c \times MPL_c$  also rises by 7%. If only cloth prices rise by 7%, we would expect the wage rate to rise by only, say 3%.

Let's look at what this outcome implies for the incomes of three groups:

- i) Workers
- ii) Capital owners
- iii) Land owners

i) Workers find that their wage rate has risen, but less than in proportion to the rise in  $P_c$ . Thus their real wage in terms of cloth ( $w/P_c$ ) falls, while their real wage in terms of food ( $\frac{w}{P_f}$ ) rises. Given this information, we cannot say whether workers are worse off or better off. (This depends on the consumption of food and cloth).

ii) Owners of Capital are definitely better off. The real wage rate in terms of cloth has fallen, so the profits of capital owners in terms of what they produce (cloth) rises.

iii) Conversely, land owners are definitely worse off. They loss for two reasons. The real wage in terms of food rises, and the rise in cloth price reduces the purchasing power of any given income.

→ The effect of a relative price change on the distribution of income can be summarized as follows:

i) The factor "specific to the sector, whose relative price increases is definitely better off."

ii) The factor specific to the sector whose relative price decreases is definitely worse off.

iii) The change in welfare for the mobile factor is ambiguous.

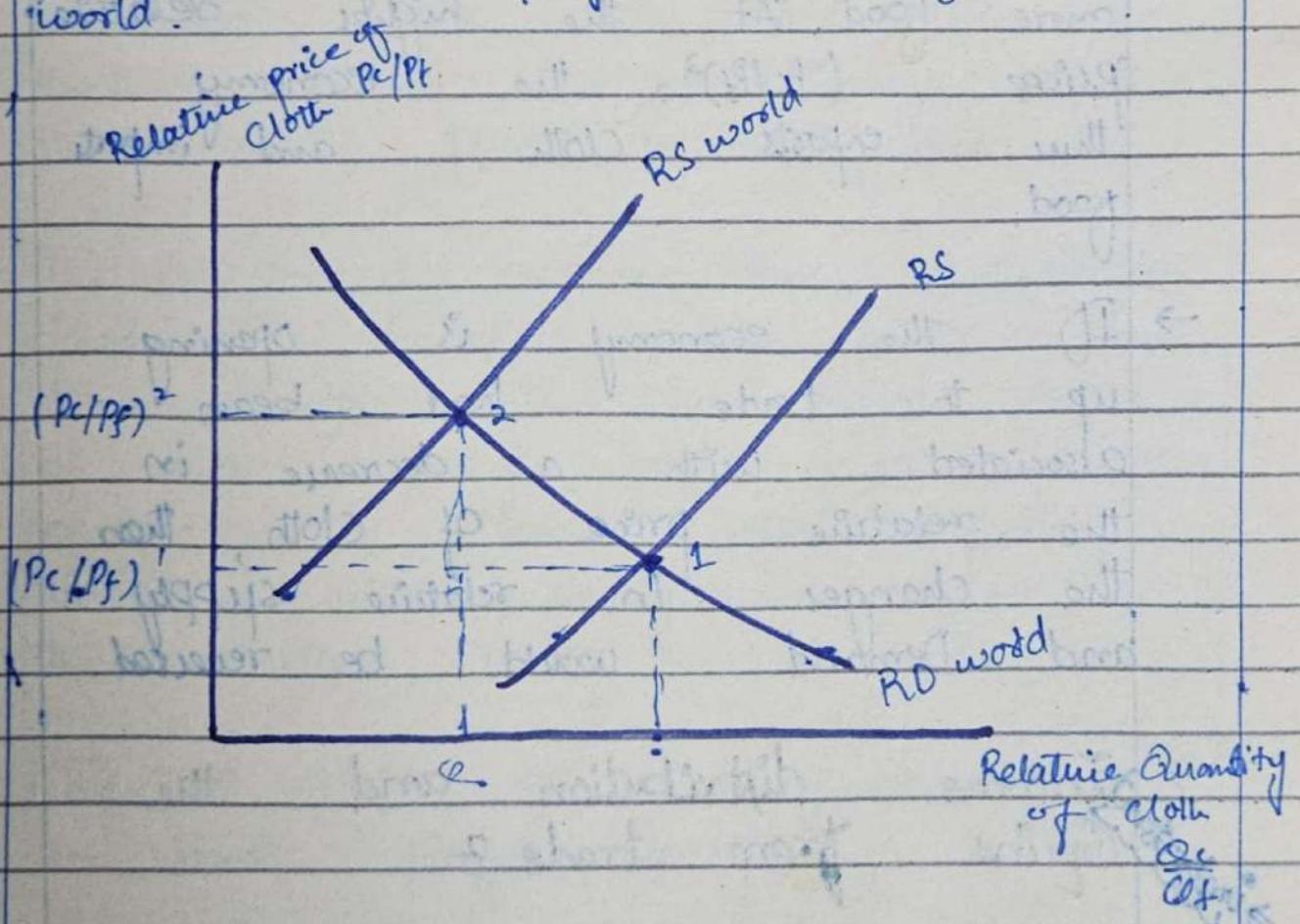
### → International trade in the specific factors model

When opening up to trade and an economy exports the good whose relative price has increased and imports the good whose relative price decreases.

We now want to link the relative price change with the international trade, and match up the predictions for winners and losers with the trade orientation of a sector.

For trade to take place, a country must face a world relative price that is different from the relative price that would prevail in the absence of trade.

The last graph shows how this relative price was determined for our specific factor economy. In the next graph we also add a relative supply curve for the world.



The changes in relative price is shown in Graph. When the economy is open to trade, the

Price of cloth is determined by the relative supply and demand for the world, this corresponds to the relative price ( $P_c/P_f$ )<sup>2</sup>. If the economy could not trade then the relative price would fall at ( $P_c/P_f$ ). At the same time, consumer responds to the higher relative prices of cloth by demanding relatively more food. At the higher relative prices ( $P_c/P_f$ )<sup>2</sup>, the economy thus exports cloth and imports food.

→ If the economy is opening up to trade had been associated with a decrease in the relative price of cloth, then the changes in relative supply and demand would be reversed.

→ Income distribution and the Gains from trade & <sup>import</sup>

Here we ask the crucial question: Who gains and who loses from international trade?

we begin by asking how the welfare of a particular group is effected, and then how trade affects the welfare of the country as a whole.

→ More specifically, we say that the specific factor in the sector whose relative price increases will gain and that the specific factor in the sector whose relative price decreases will loss. We also saw that the welfare changes for the mobile factor is ambiguous.

→ The general outcome, then, is simple: Trade benefits the factor that is specific to the export sector of each country but hurts the factor specific to the import-competing sectors with ambiguous effects on the mobile factors.

The PP graph for trading economy is in book page 64

→ To illustrate that trade is a source of Potential Gain for

everyone, we proceed in three steps.

1) First, we notice that in the absence of trade, the Economy would have to produce what it consumed, and vice versa.

$$D_c = Q_c, \quad D_f = Q_f$$

2) Next, we noticed that it is possible for a trading economy to consume more of both goods than it would have in the absence of trade.

3) Finally, observe that if the economy acts as a whole consumer more of both goods, than it is possible in principle to give each individual more of both goods. This would make everyone better off.

→ That everyone could gain from trade unfortunately does not mean that everyone actually does. In the real world, the presence of losers

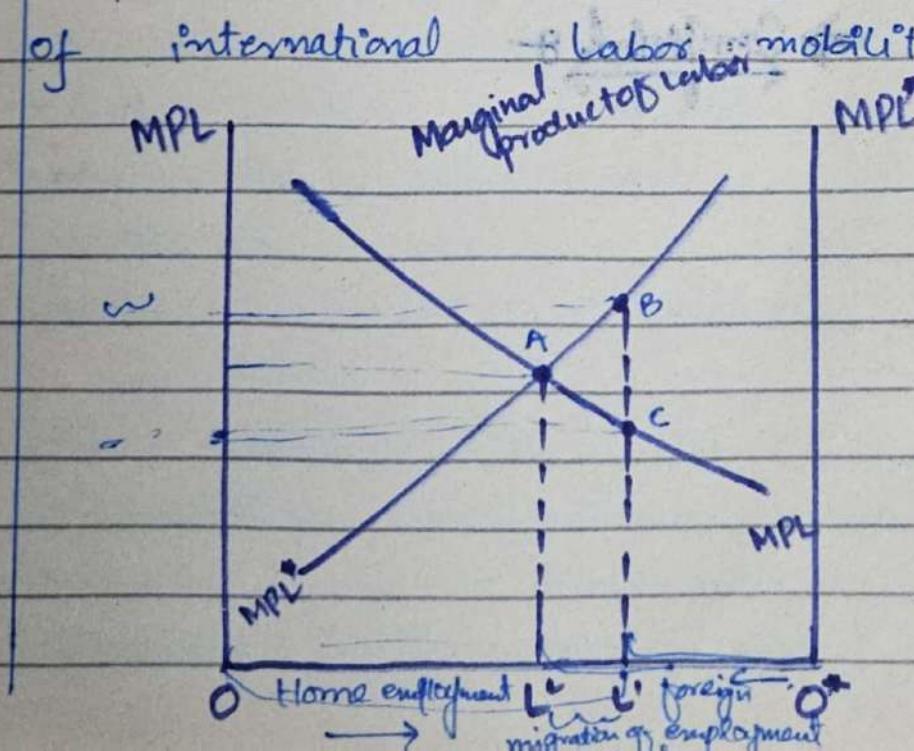
as well as winners from trade is one of the most important reasons why trade is not free.

## → International labor Mobility &

⇒ In Book Page 69 }

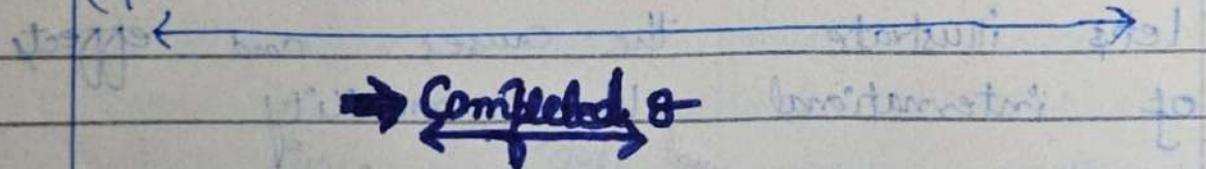
→ In the previous sections, we say how workers move between the cloth and food sectors within a country until the wages in the two country are equalized. So, when ever international migration is possible, workers will also want to move from the low-wage to the high wage country.

Let's illustrate the causes and effects of international labor mobility



Suppose that workers are able to move between these two countries. Workers will move from Home to foreign. This movement will reduce the Home labor force and thus raise the real wage in Home, while increasing the labor force in foreign will reduce the real wage in foreign. If there are no obstacles to labor movement, this process will continue until the real wages in both countries are equalized. The eventual distribution of the world's labor force will be such that  $O^L$  workers in home and  $O^F$  workers in foreign.

(Point A)



# { Chapter # 05 }

## Resources and Trade & The Heckscher - Ohlin Model &

If labor were the only factor of production, as the Ricardian model assumes, comparative advantage could arise only because of international differences in labor productivity. In the real world, however, while trade is partly explained by differences in labor productivity, it also reflects differences in countries' resources.

→ Canada exports forest products to US because Canada has more forested land per capita than the US.

Thus a realistic view of trade must allow for the importance not just for labor, but also of other factors of production such as land, capital, and mineral resources.

To explain the role of resources differences in trade, this chapter examines a model in which resources differences are the only

Patter of trade is due to differences in resources.  
Canada has is land intensive.  
Japan is capital intensive.

source of trade.

The model we study in this chapter puts the interaction b/w abundance and intensity in sharper relief by looking at long-run outcomes when all factors of production are mobile across sectors.

## → Model of a two factor Economy

In this chapter, we will focus on the simplest version of the factor-proportions model, sometimes referred to as "2 by 2 by 2": two countries, 2 goods and 2 factors of production.

The key difference is that in this chapter we assume that the factors such as land and capital which were immobile in the specific model are now mobile in the long-run.

To keep things simple, we model with a single additional factor that we call capital, which is used off in conjunction

with labor to produce either cloth or food. In the long run both capital and labor can move across sectors, thus equalizing their returns (rental rate and wage) in both sectors.

## → Prices and productions

Both cloth and food are produced using capital and labor. The amount of each good produced, given how much capital and labor are employed in each sector, is determined by a production function for each good.

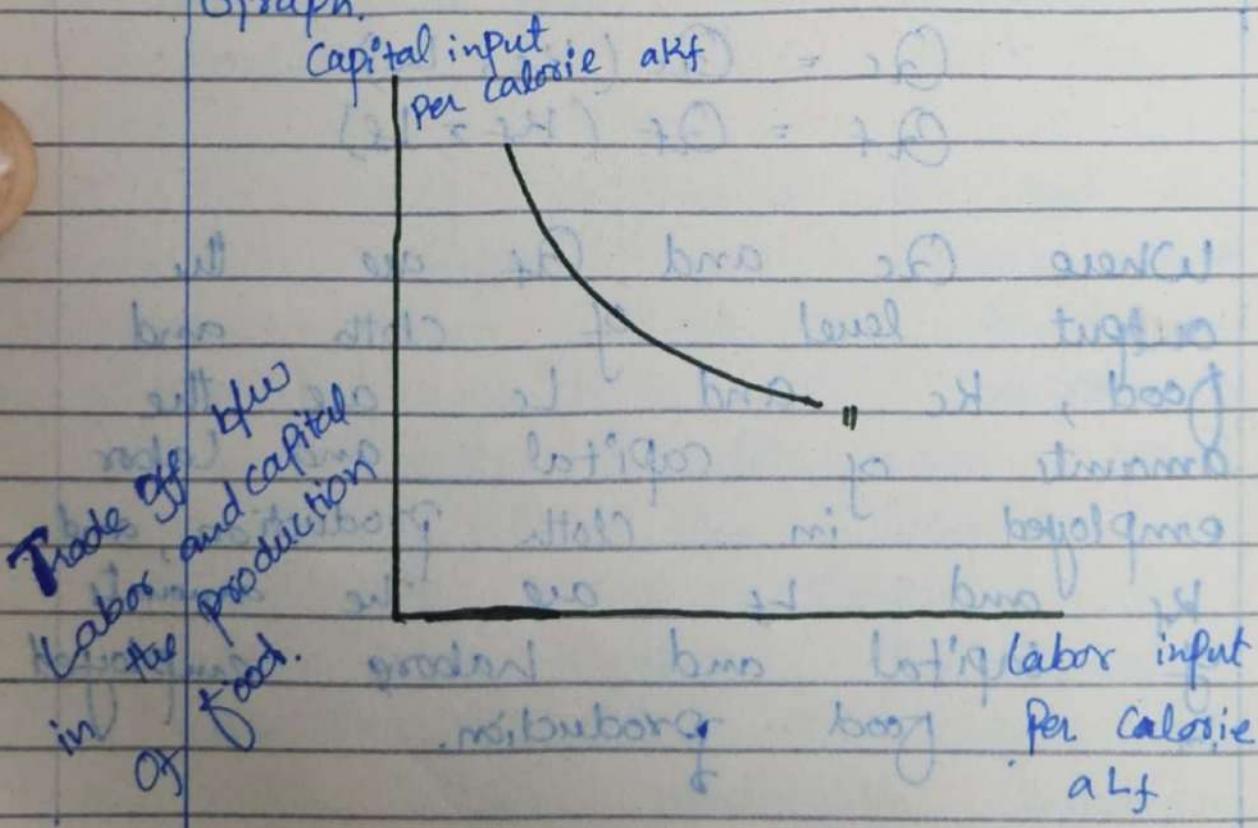
$$Q_c = Q_c(K_c, L_c)$$

$$Q_f = Q_f(K_f, L_f)$$

Where  $Q_c$  and  $Q_f$  are the output level of cloth and food,  $K_c$  and  $L_c$  are the amounts of capital and labor employed in cloth production, and  $K_f$  and  $L_f$  are the amounts of capital and labor employed in food production.

## → Choosing the mix of inputs

In the two factor model producers may have room for choice in the use of inputs. A farmer, for example, can choose between using relatively more capital and fewer workers, or vice versa. Thus, the farmer can choose how much labor and capital to use per unit of output produced. In each sector, then, producers will face not fixed input requirements but trade off like the one illustrated by the curve II in Graph.



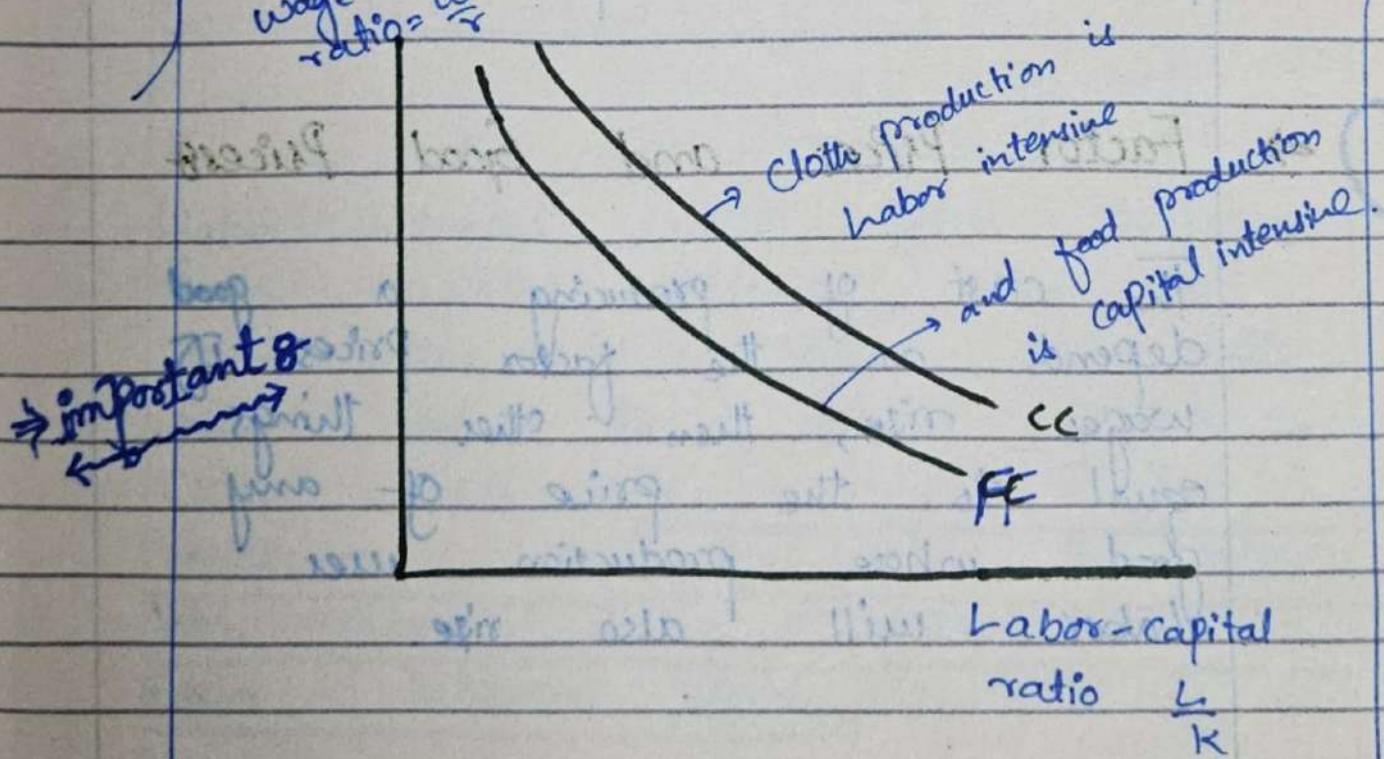
A farmer can produce a calorie of food with less capital if he or she uses more labor, and vice versa.

What input choice will producers actually make?

It depends on the relative costs of capital and labor.

If the capital rental rate is high and wages low, farmers will choose to produce using relatively little capital and a lot of labor and vice versa.

### Factor Prices and Input Choices



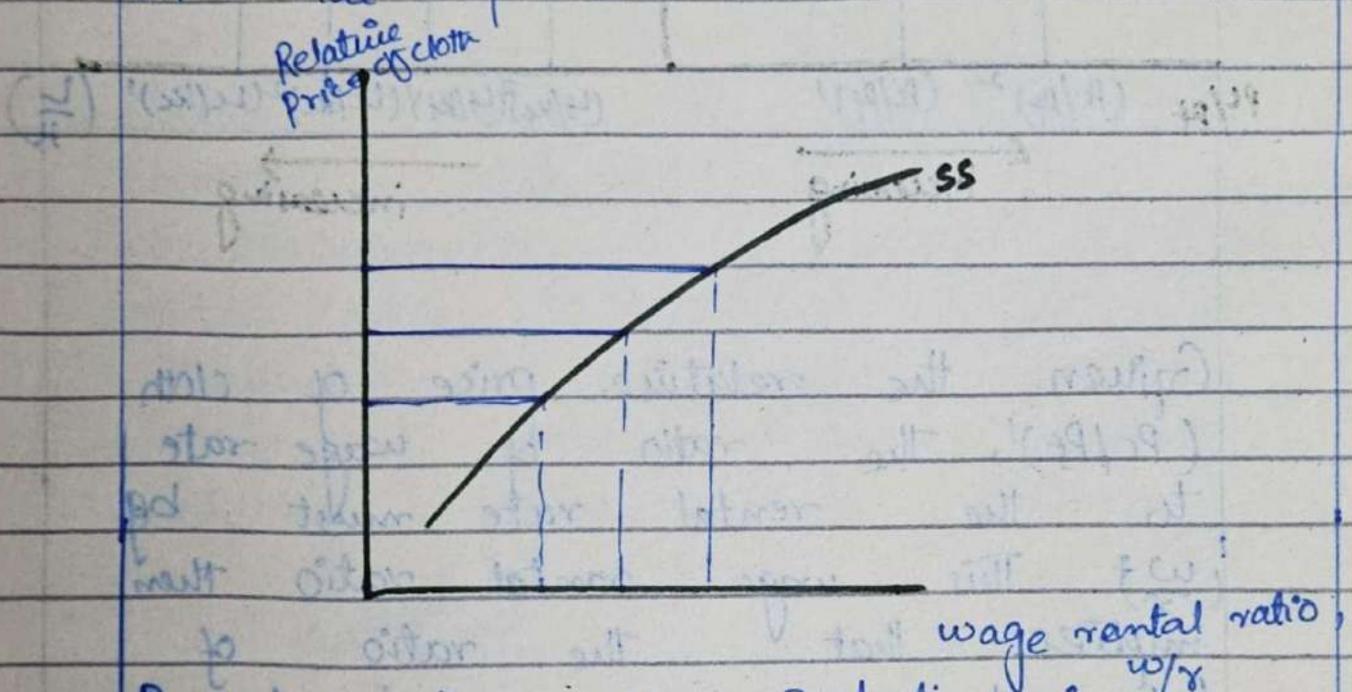
In each sector, the ratio of labor to capital ( $\frac{L}{K}$ ) used in production depends on the cost of labor relative to the cost of capital, ( $\frac{w}{r}$ ). The curve FF shows the Labor-capital ratio choice in food production, while the curve CC shows the Labor-capital ratio choice in cloth production.

At any given wage-rental ratio Cloth production uses a higher labor-capital ratio; when this is the case, we say that Cloth production is labor intensive and that food production is capital intensive.

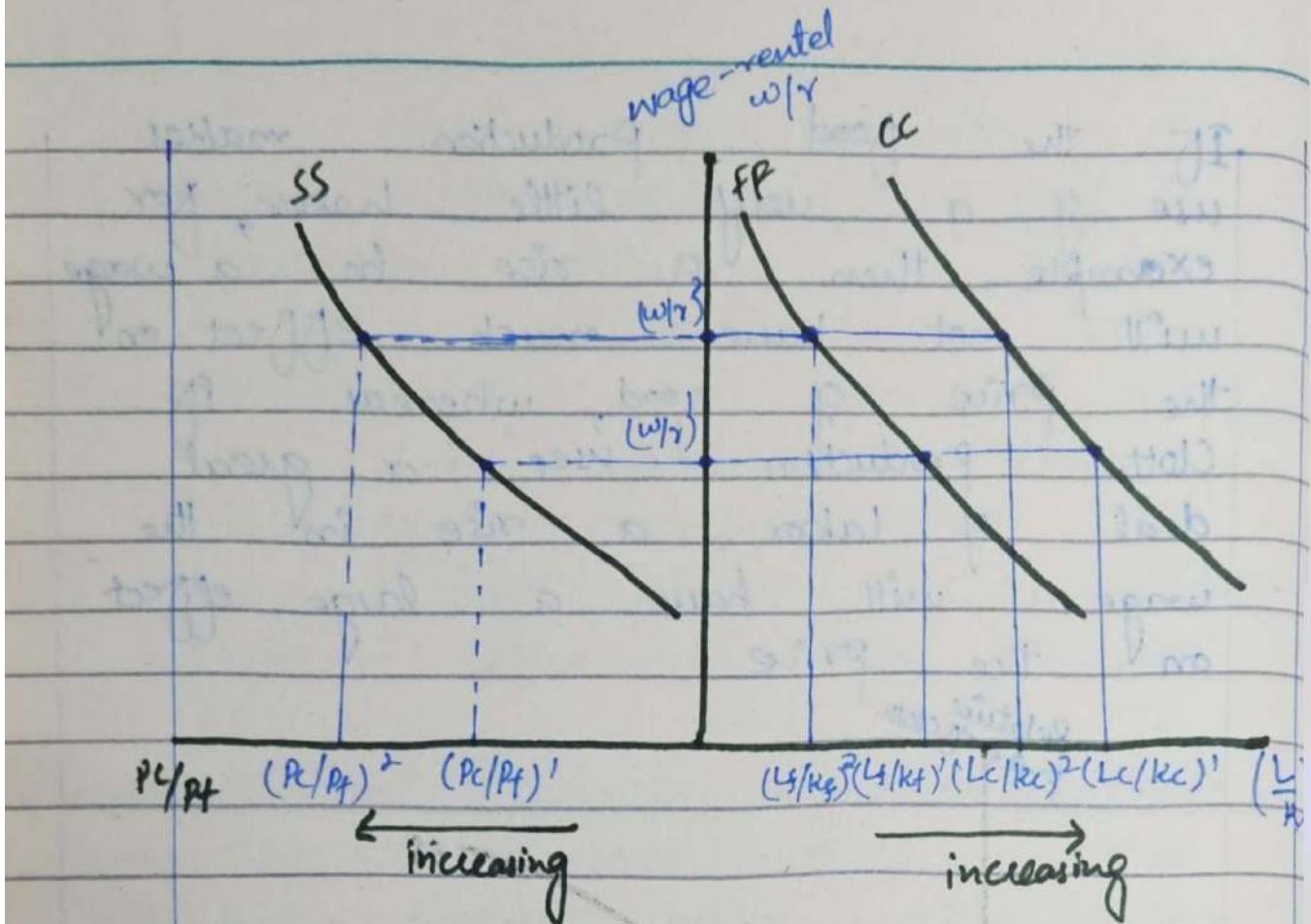
## → Factor Prices and Good Prices

The cost of producing a good depends on the factor prices. If wages rise, then other things equal to the price of any good whose production uses labor will also rise.

If the food production makes use of a very little labor, for example, then a rise in a wage will not have much effect on the price of food, whereas if cloth production uses a great deal of labor, a rise in the wage will have a large effect on the price.



Because the cloth production is labor intensive while food production is capital intensive, there is one-to-one factor price ratio  $w/r$  and the relative price of cloth  $P_c/P_f$ ; the higher the relative cost of labor, the higher must be the relative price of labor intensive good.



Given the relative price of cloth ( $P_c/P_f$ ), the ratio of wage rate to the rental rate must be  $\frac{w_f}{r_f}$ . This wage - rental ratio then implies that the ratio of labor to capital employed in the production of cloth and food must be  $(L_c/k_f)$  and  $(L_f/k_f)$ . If the relative price of cloth rises to  $(P_c/P_f)^2$ , the wage-rental ratio must rise to  $(\frac{w_f}{r_f})^2$ . This will cause the ratio of labor to capital used in all the production of both goods to drop.

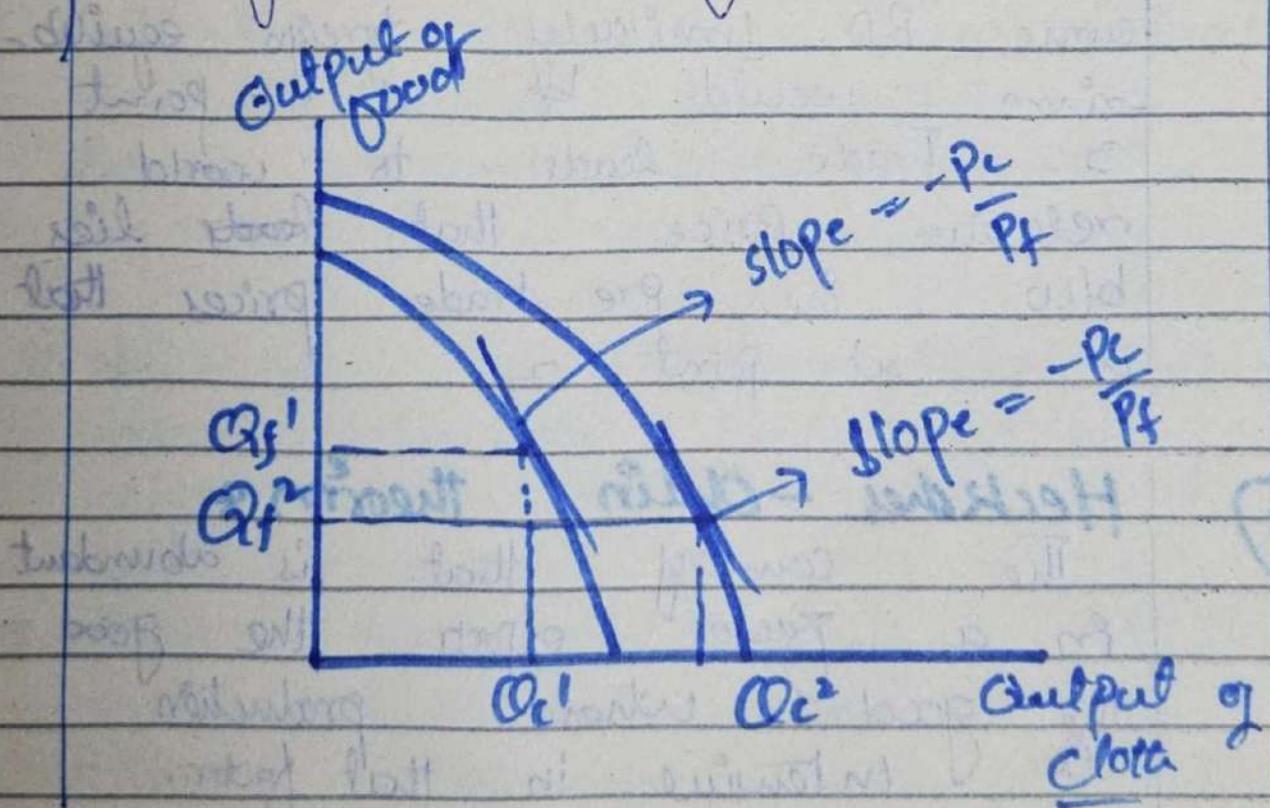
## → Resources and Output 8

Explained in Book Briefly.

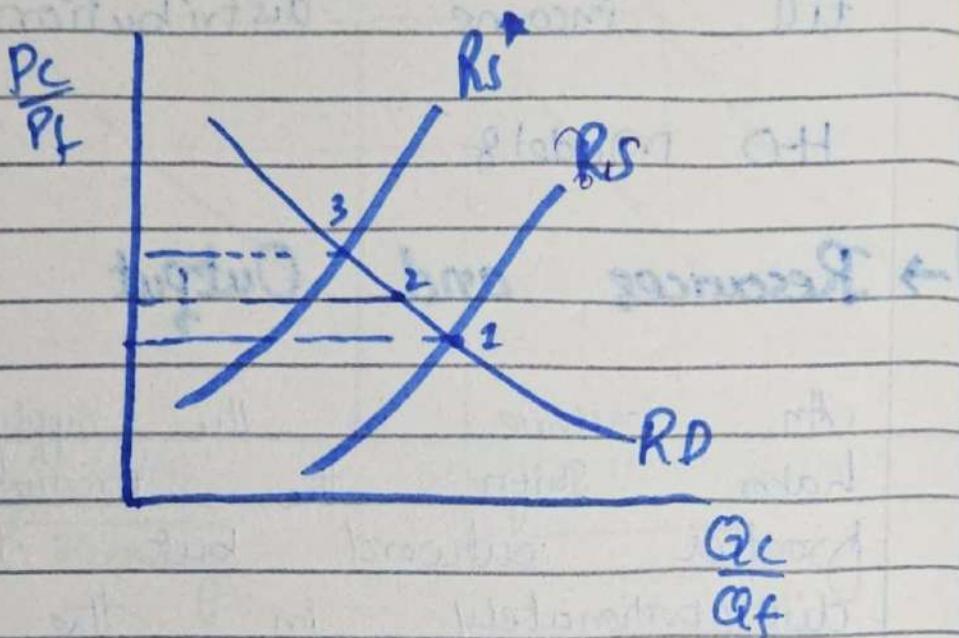
till income distribution in  
HO Model &

## ② → Resources and Output

An increase in the supply of labor shifts the production possibilities frontier outward but does so disproportionately in the direction of cloth production. The result is that at an unchanged relative price of cloth food production actually declines from  $Q_f^1 - Q_f^2$ .



### ③ → Relative Prices and Pattern of trade.



In the absence of trade, Home's equilibrium would be at point 1 where the domestic RS curve intersects the relative demand curve RD. Similarly foreign equilibrium would be at point 3.

Trade leads to world relative price that lies b/w the pre trade prices that is at point 2.

④

### Heckscher - Ohlin theorem

The country that is abundant in a factor exports the good the good whose production is intensive in that factor.

## $\Rightarrow \underline{\text{IS}} - \underline{\text{LM}}$ Curves 8

### $\rightarrow$ The IS - LM model 8

The IS - LM model stands for Investment, Saving (IS) + Liquidity Preference, money supply (LM)

- This model shows that how the market for economic goods (IS) intersects with the money market (LM)

### $\Rightarrow$ Key Takeaways 8

i) The IS-LM model describes how aggregate market for real goods and financial market interact to balance the rate of interest and total output in the macroeconomy.

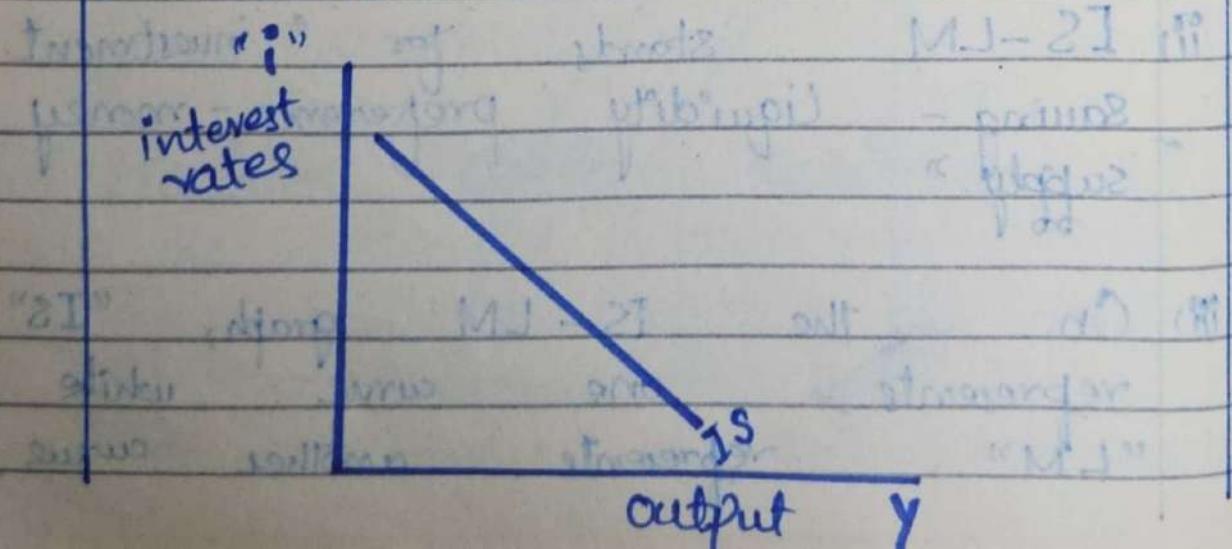
ii) IS-LM stands for "investment saving - liquidity preference - money supply"

iii) On the IS - LM graph, "IS" represents one curve while "LM" represents another curve.

- iv) IS-LM can be used to describe how changes in markets alter the equilibrium level of aggregate output (GDP) and market interest rates.
- v) The IS-LM model lacks precision and realism to be a useful prescription tool for economic policy.

→ IS curve

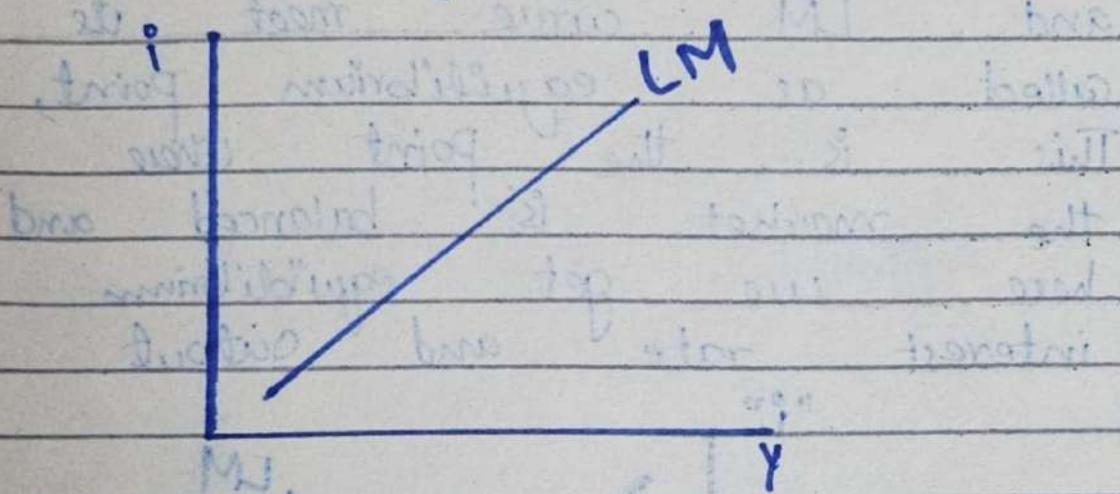
IS curve describes the good market which slopes downward to the right, because as interest rate decreases people investments increases because people put less in saving and more in consumer good when "i" ↓.



Thus, the effect of decrease in interest rates leads to increase in GDP↑, investment and saving.

→ LM curves

LM describes the money market which slopes upward to the right



As the economy expands, banks need funds to support investment. For that they encourage people to deposit more cash in long-term deposits → bonds etc.

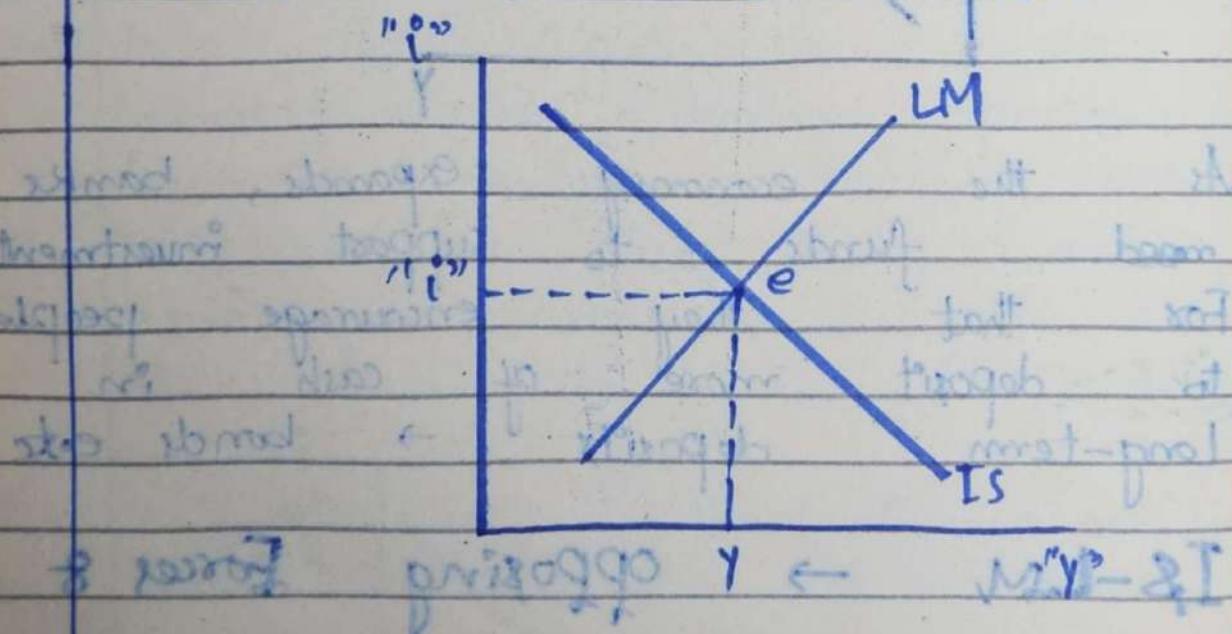
IS-LM → opposing Forces

Means that - when the interest rate decreases the economy expands by investment

So, when the economy expands there will not be a rise in interest rates.

$\downarrow$  int. rate  $\rightarrow$  economy  $\rightarrow$  Rise in int. rates.  
Expands

$\Rightarrow$  The point where the IS and LM curve meet is called as equilibrium point. This is the point where the market is balanced and we get equilibrium interest rate and output.



$\rightarrow$  Shifts in IS - LM curves

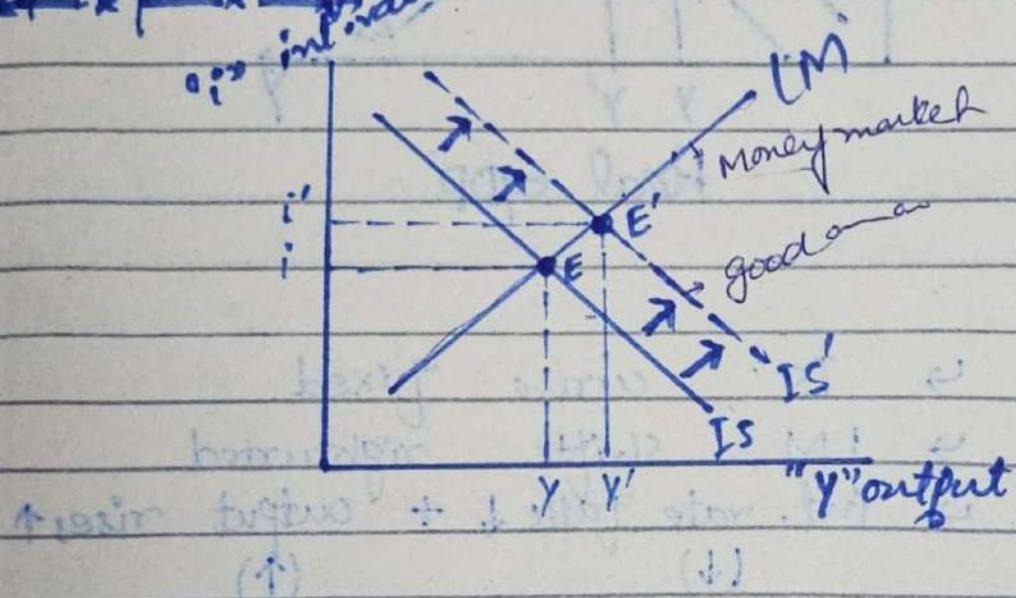
1. Exogenous factors  $\rightarrow$  level of autonomous spending  
2. Real money supply tends to effect the IS and LM curves

i) Shift in IS curve &

Autonomous spending  $\uparrow$ , output  $\uparrow$ , int. rates  $\uparrow \rightarrow$   
(include govt spending)

IS shifts  
Rightward

→ Graphically &

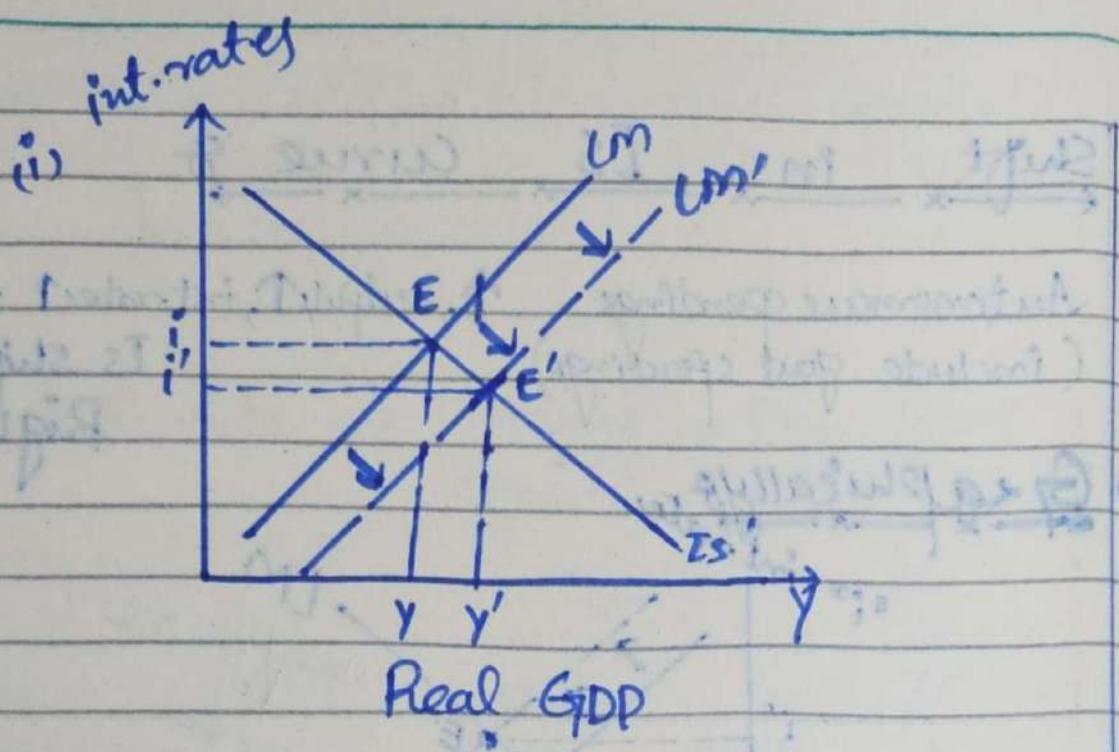


- ↳ LM fixed
- ↳ IS shifts Rightward.
- ↳ Expansionary fiscal Policy.
- ↳ Both int. rates and GDP rise.

ii) Shifts in the LM-Curve &

Money supply  $\uparrow$ , lower int. rates  $\downarrow +$  higher output  $\uparrow$   
→ shifts LM curve  
to the right.

→ Graphically &



- IS curve fixed.
  - LM shifts rightward
  - int. rate falls ↓ + output rises ↑  
(↓) (↑)
  - Expansionary monetary policy.

↑ higher recipient + ↓ return flow toward ← water from M  
surrounding land ←

# Monetary and Fiscal Policy in the Open Economy

Economies that are open, as all economies are to some extent, have trade and capital flows with other economies. In this chapter, we consider monetary and fiscal policy in an open economy model. How do the effects of policy actions differ in the <sup>open</sup> economy relative to the closed economy?

There are several open economy macroeconomics frameworks. The one used here is the Mundell-Fleming model, often called the workhorse model for the open economy.

## ⇒ Mundell - Fleming Model

The Mundell - Fleming model, also known as the IS-LM-BOP model. The Mundell - Fleming model is the extension of the IS-LM model. Where as the traditional IS-LM model

## Mundell-Fleming Model

deals with economy under a closed economy, the Mundell-Fleming model describes a small open economy.

The Mundell-Fleming model portrays the short-run relationship between an economy's nominal exchange rate, interest rate and output in contrast to the closed-economy IS-LM model, which focuses only on the relationship between the interest rate and output.

→ First of all we should know about the factors of Import and exports.

Imports and Exports depends on the following factors.

i) Exchange rates, ii) Income, iii) Prices.

$$\text{Export} = f(y^*, \text{Ex}, \frac{P_d}{P_t})$$

Here export is the function of foreign income, Exchange rate and prices of domestic

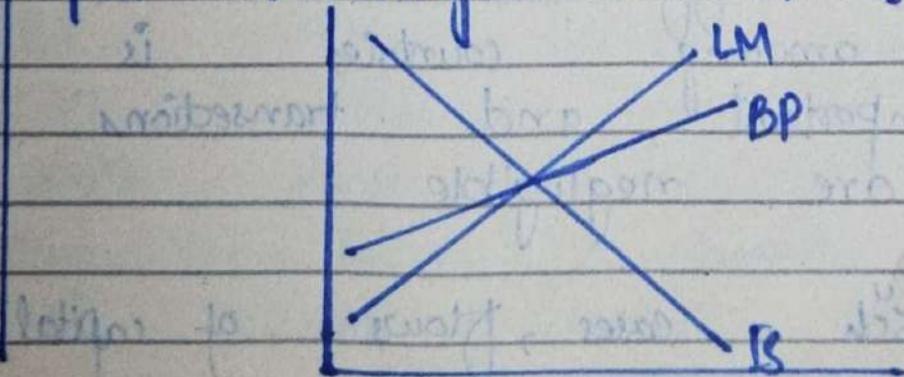
relative to foreign.

- Here exports is directly related to foreign income and exchange rates means that when the foreign income and exchange rates rises the exports will also rise
- And exports are inversely related to the prices of domestic relative to foreign.

$$\text{Import} = f \left( \frac{y_d}{y_f}, \frac{e}{e_f}, \frac{p_d}{p_f} \right)$$

- Here imports is directly related to domestic income and domestic relative price of foreign.
- And import is inversely related to exchange rates.

⇒ Open Economy IS-LM Model &



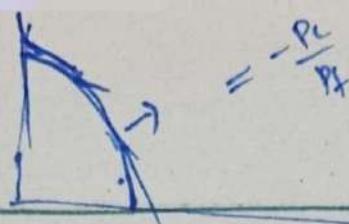
The LM schedule shows the combination of  $r$  and  $y$  that are the points of equilibrium for the money market, and the IS schedule shows the combination of  $r$  and  $y$  that clear the goods market. The BP schedule shows the combination of  $r$  and  $y$  that will equate supply and demand in the foreign exchange market at a given exchange rate.

- ⇒ There are two cases  
i) Perfect capital mobility &  
ii) Imperfect capital mobility &

### i) Perfect Capital Mobility &

In this case there is a freely flow of capital between countries, differential risk assets among countries is not important, and transaction costs are negligible.

In such cases, flows of capital



bring the domestic and foreign interest rates in equality.

So, In the Mundell-Fleming model, the assumption of perfect capital mobility means that the BP equilibrium condition is

$$r = r_f$$

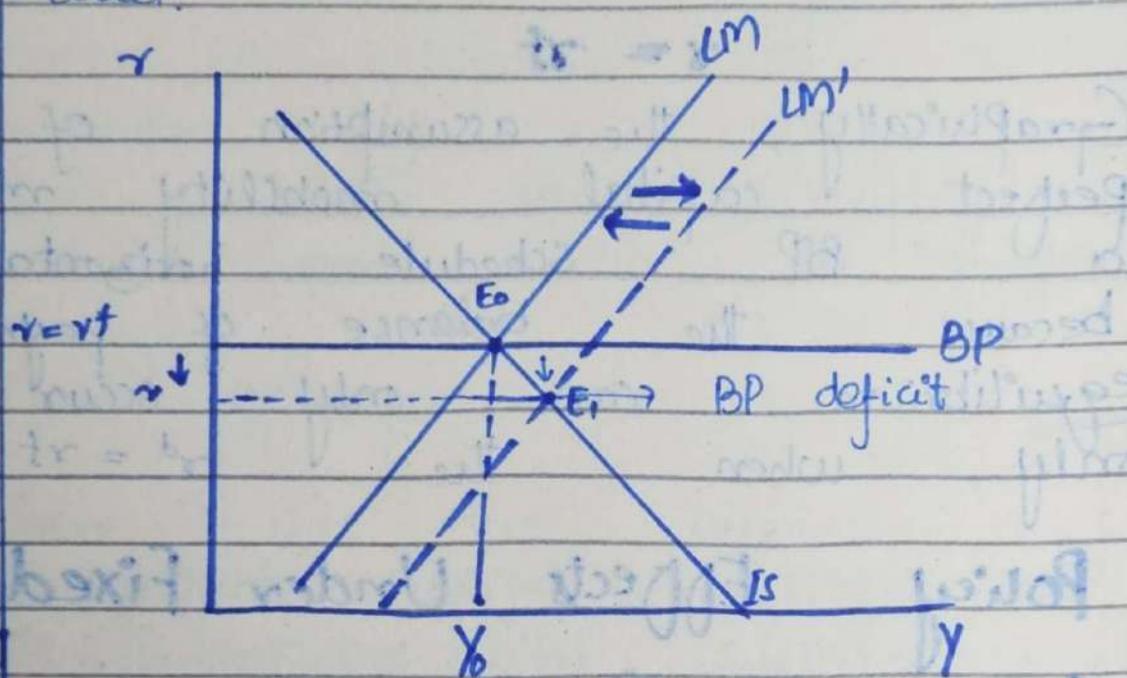
Graphically, the assumption of perfect capital mobility makes a BP schedule horizontal, because the balance of payments equilibrium can only occur only when  $r^d = r_f$ .

## ⇒ Policy Effects Under Fixed Exchange Rates

### 8 Monetary Policy 8

In this case when we expands the monetary Policy the LM curve shifts to  $LM'$  and the equilibrium shifts from  $E_0$  to  $E_1$ , due to this the domestic interest rate falls below the foreign

the foreign interest rates, triggering a massive capital outflow. Central bank intervention to maintain the fixed exchange rate cause the money supply to fall back to the initial level.

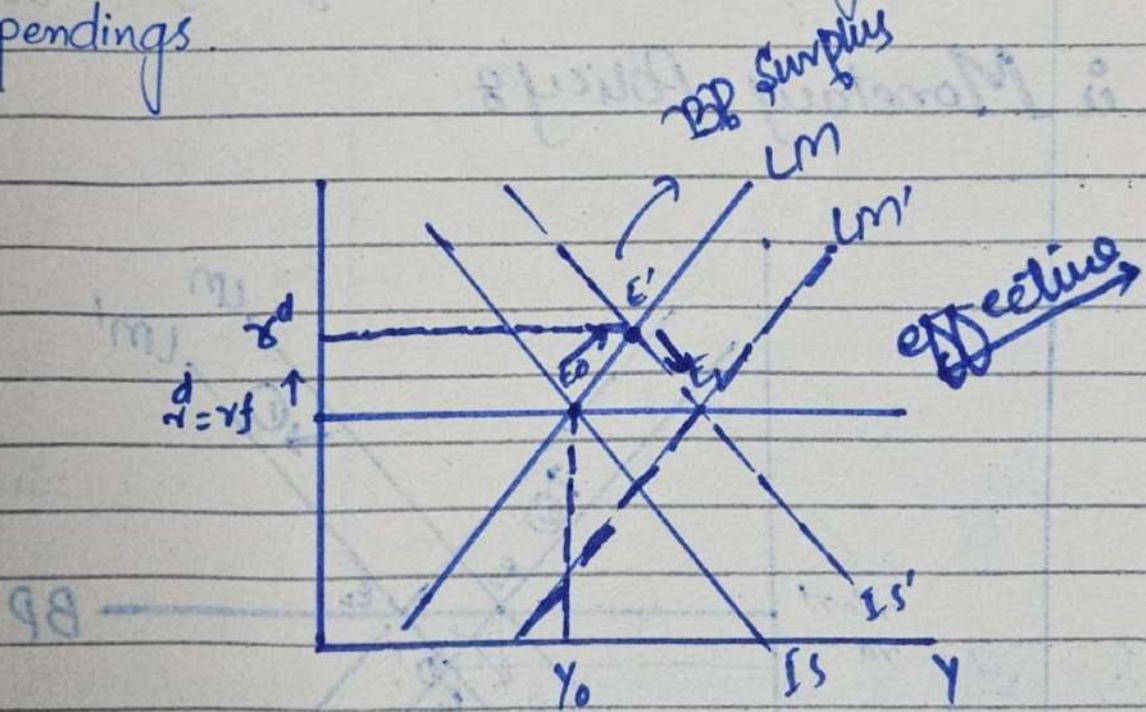


So Monetary Policy  $\Rightarrow$  Ineffective

### ii) Fiscal Policy

An increase in the government spending shifts the IS schedule from  $IS$  to  $IS'$  which will cause the  $r$  above the  $IS'$ , resulting in a massive inflow of capital. Central bank

intervention to maintain the fixed exchange rates causes the money supply to rise by selling the domestic currency and purchasing the foreign currency. The LM shifts rightward. The  $r_d$  is brought back to equilibrium with  $r_f$ , and the increase in the money supply reinforces the expansionary effect of the increase in government spending.



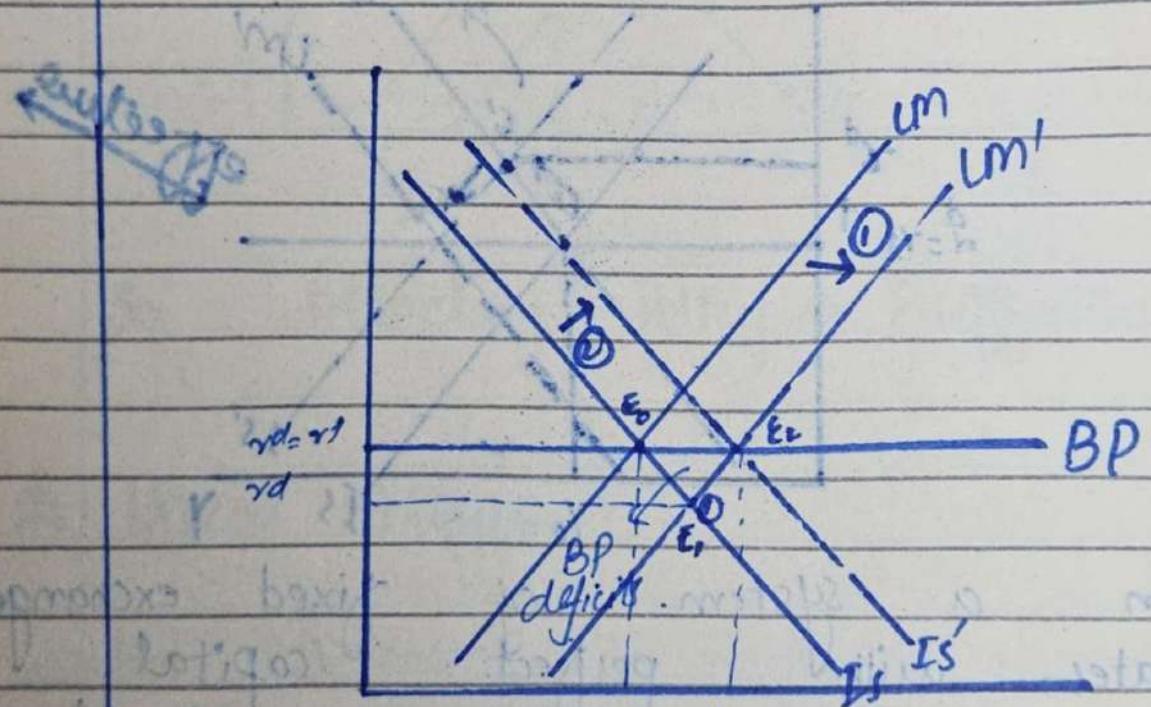
In a system of fixed exchange rates, with perfect capital mobility, this expansionary fiscal policy is highly effective because there is no rise in the domestic interest rate and there is no crowding out of

Private - Sector Spending.

→ Policy Effects Under Flexible Exchange Rates

In the system of flexible exchange rates, the situation is reversed. Here we find that monetary policy is highly effective and fiscal policy is completely ineffective.

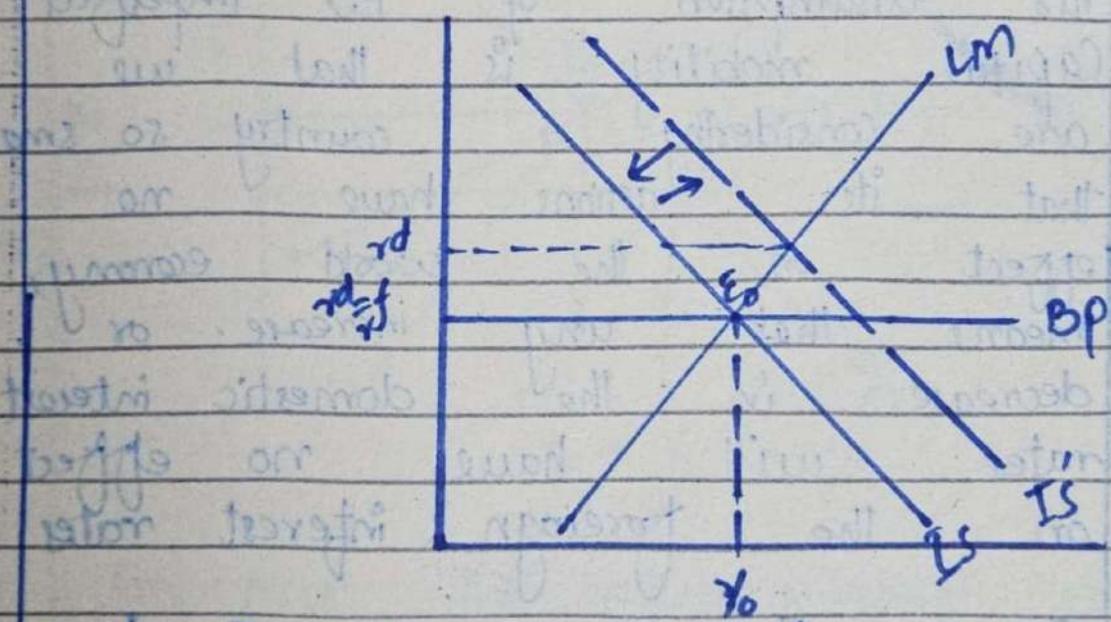
## ii Monetary Policy &



An increase in Government spending causes the LM schedule to shift from  $LM - LM'$ . The ↓ place below the Foreign interest rate,

resulting a massive outflow of capital. The capital outflow causes the exchange rate to fall, which means domestic currency depreciates which will increase the net exports, shifting the IS schedule rightward until it equates the  $IS$  with the  $BP$ .

## ii) Fiscal Policy



An increase in Government spending causes the  $IS$  curve to shift rightward, due to which the  $r_d$  rises above the  $r_f$ , resulting in a massive inflow of capital. The capital inflow causes the exchange rates to fall and appreciate the

domestic currency and there will be a decrease in net exports, which will shift the IS schedule back to its initial level. The domestic interest rate is reequilibrated with the foreign interest rates and income return to its initial level.

## Q1) Imperfect Capital Mobility

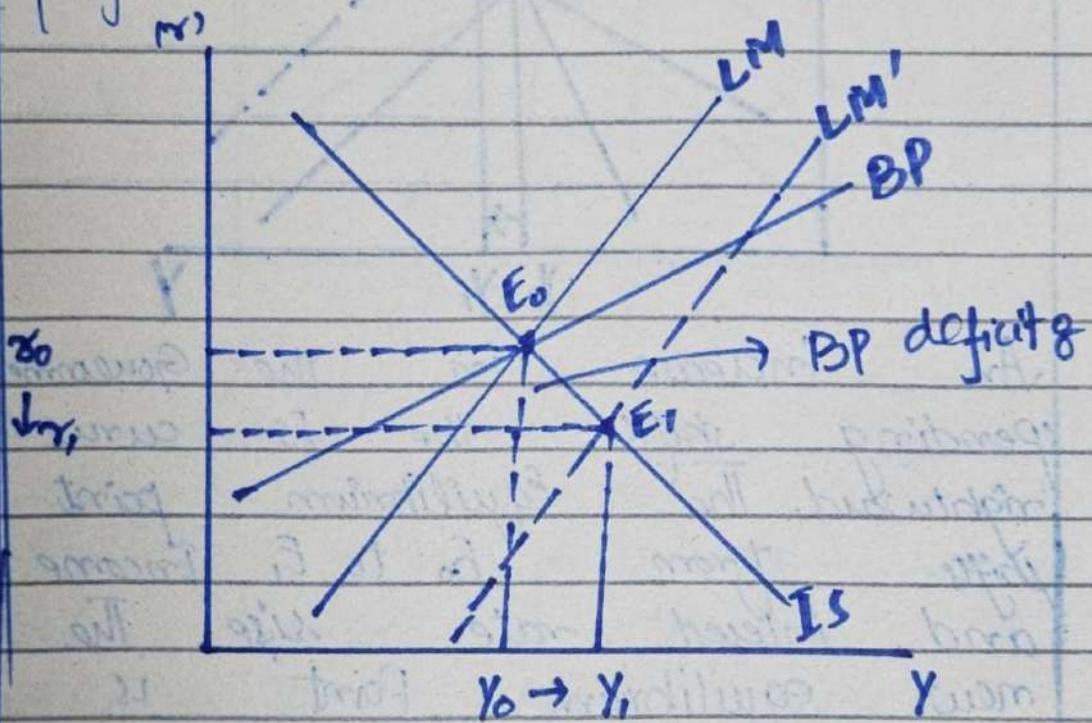
The assumption of the imperfect capital mobility is that we are considering a country so small that its actions have no effect on the world economy, means that any increase or decrease in the domestic interest rates will have no effect on the foreign interest rates.

### → Policy Effects Under Fixed Exchange Rates

#### B → Monetary Policy

An increase in the quantity

of money shifts the LM schedule rightward causing a fall in the rate of interest, and level of income rises. The new equilibrium point is below the BP Schedule, indicating a deficit in the balance of payment.



so, here The expansionary monetary policy is ineffective

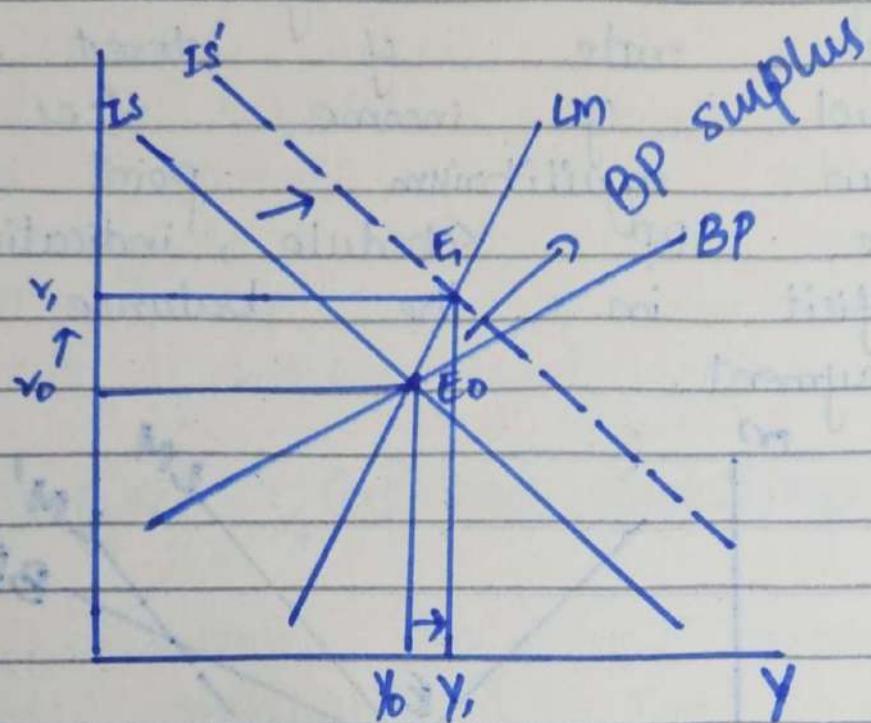
### Fiscal Policy

Here we will study about two cases.

i) LM curve steeper than BP curve

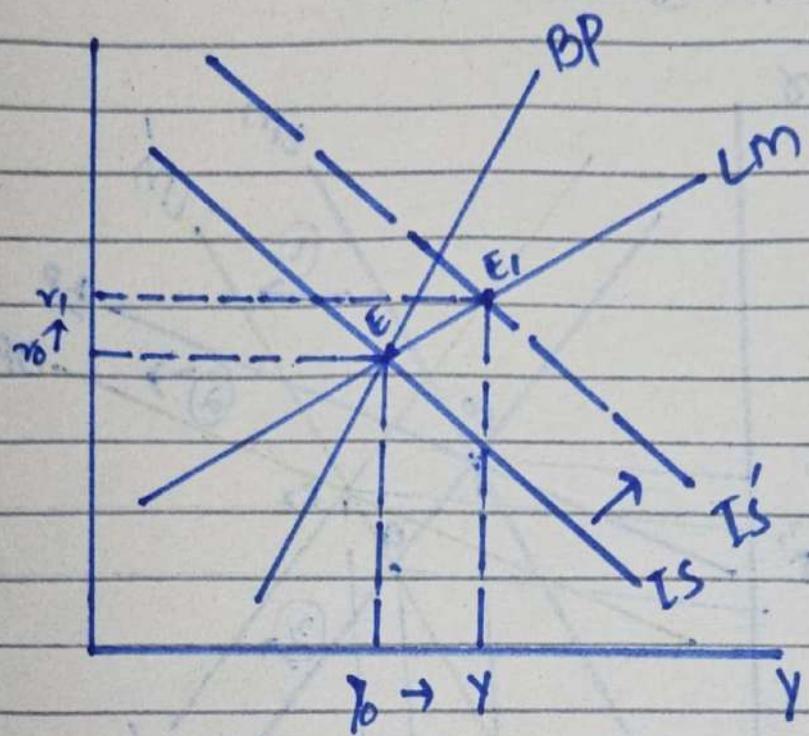
ii) BP curve steeper than LM curve

→ LM curve steeper than BP curve



An increase in the Government spending shifts the IS curve rightward. The equilibrium point shifts from  $E_0$  to  $E_1$ . Income and interest rate rise. The new equilibrium point is above the BP schedule, indicating that, with a fixed exchange rate too, the case in which the BP schedule is flatter than the LM schedule, the expansionary fiscal policy results in a surplus in the balance of payments.

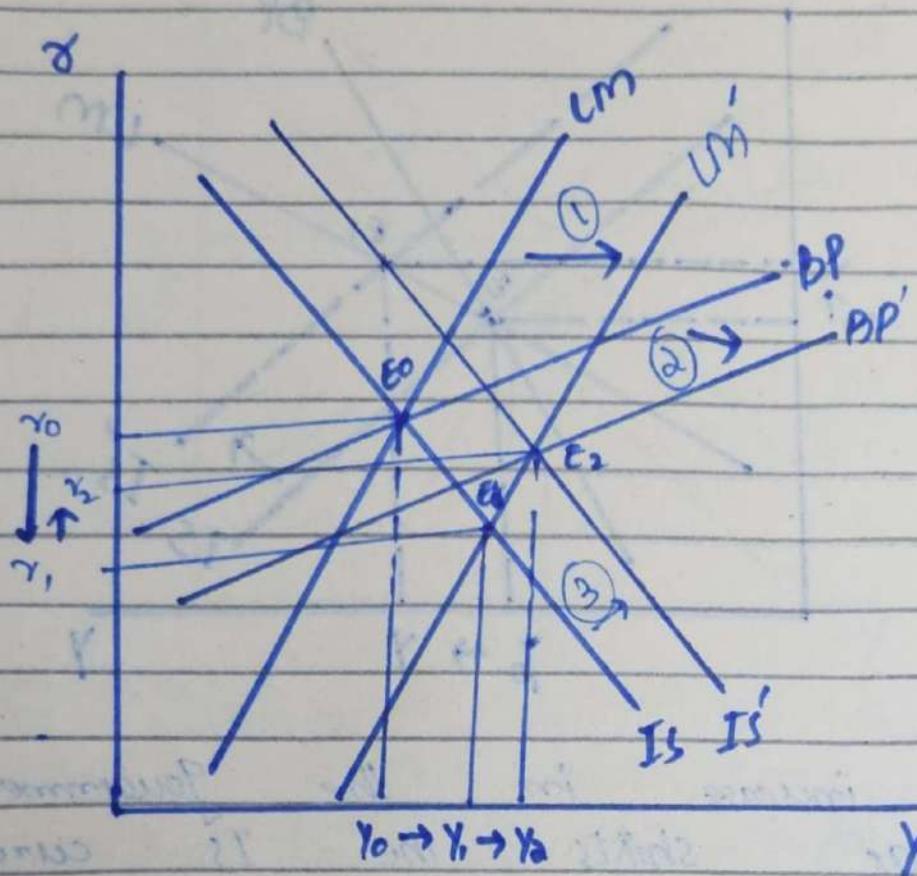
→ BP schedule steeper than LM schedule



An increase in the government spending shifts the IS curve rightward, increasing both income and interest rate. In this case the BP schedule is steeper than the LM schedule, the new equilibrium point ( $E_1$ ) is below the BP schedule. The expansionary fiscal policy results in a balance of payments deficit.

→ Policy under Flexible Exchange Rates 8

## ii) Monetary Policy



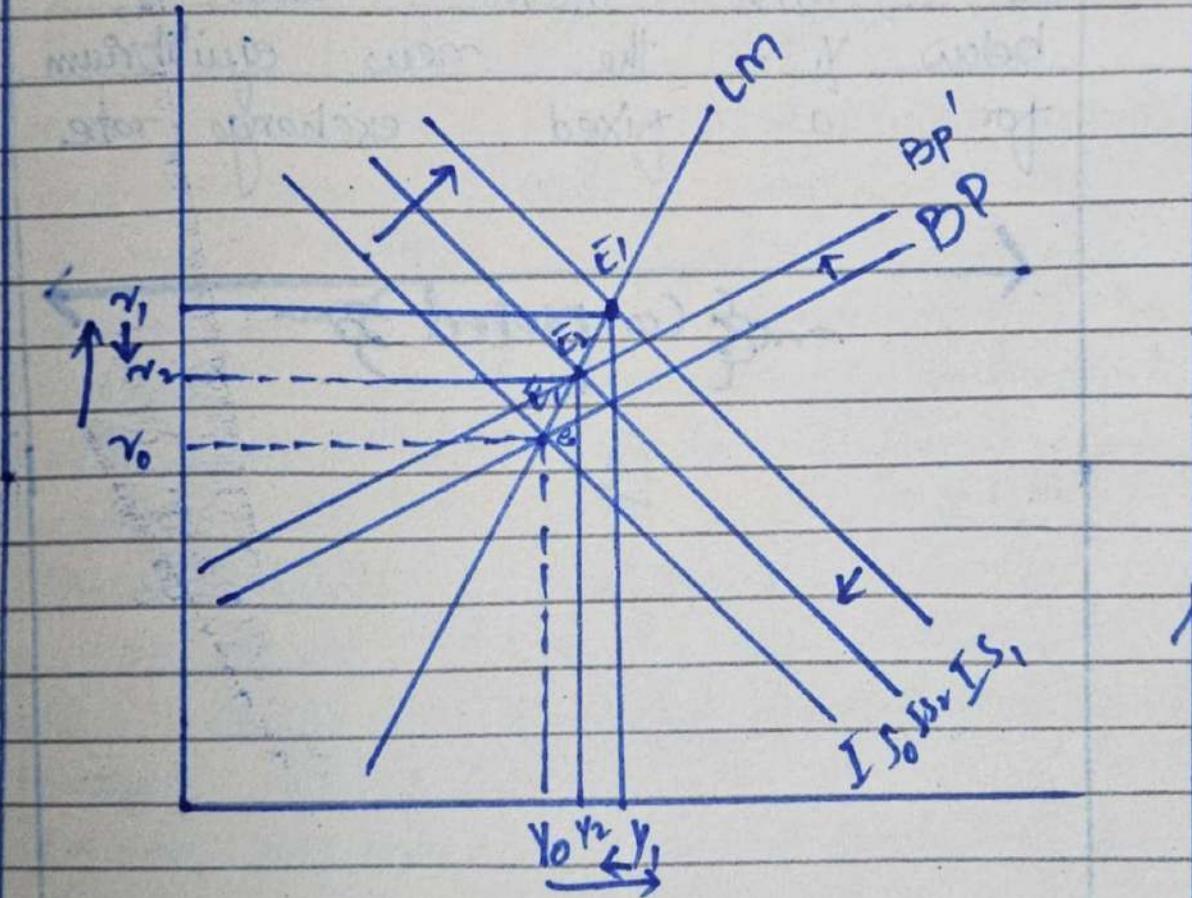
An increase in the money supply shifts the LM schedule rightward; moving the equilibrium point from  $E_0 - E_1$ .

The point  $E_1$  is below the BP schedule, causing a deficit in balance of payment.

In the flexible exchange rate case, the exchange rate rises, causing the BP schedule to shift to the right and also the IS schedule to

shift to the right. The final equilibrium point  $E_2$  with an income level  $Y_2$  above  $Y_1$ , the new equilibrium for a fixed exchange rate.

## ii) Fiscal Policy 8



An increase in Govt. spendings shifts the IS schedule rightward, moving the equilibrium point from  $E_0 - E_1$ . With the schedule flatter than

the LM schedule.  $E_1$  is above the initial BP schedule, there is a balance surplus, and the will fall, shifting the schedule to the left and shifting the IS schedule to the left from  $IS_1 - IS_2$ . The final equilibrium is at  $E_2$  with income level  $y_2$ , below  $y_1$ , the new equilibrium for a fixed exchange rate.

← →  
not completed



Monetary expansion  
leads to inflation  
Interest rates rise  
Investment falls  
GDP falls  
Imports fall  
Exports rise  
Trade balance improves  
Balance of payments improves  
Currency appreciated  
Interest rates fall  
Investment rises  
GDP rises  
Imports rise  
Exports fall  
Trade balance worsens  
Balance of payments worsens  
Currency depreciated

# Chapter # 09

## ⇒ The instruments of Trade Policy

This chapter examines policies that governments adopt towards international trade. Policies involve a number of different actions. These include taxes on some international transactions, subsidies for other transactions, legal limits on the value or volume of particular imports, and many other measures. This chapter thus provides a framework for understanding the effects of the most important instruments of trade policy.

### ① Basic tariff analysis

A tariff, the simplest form of trade policies, is a tax levied when a good is imported.

### ② Specific tariffs

Specific tariffs are levied as a fixed charge for each unit of a good imported (for example, \$3 per

barrel of oil)

## ② Ad valorem tariffs

Ad valorem tariffs are taxes that are levied as a fraction of the value of the imported goods (for example, a 25 percent U.S. tariff on imported trucks).

In either case, the effect of the tariff is to raise the cost of shifting goods to a country.

⇒ Tariffs are the oldest form of trade policy and have traditionally been used as a source of government income. The true purpose of tariff, however, has usually been twofold : both to provide revenue and to protect particular domestic sector. i.e., In the early 19th century, ~~the~~ United States Kingdom used tariffs to protect its agriculture from import competition.

The importance of tariffs has declined in modern times because modern governments usually prefers to protect domestic industries through a variety of non-tariff barriers, such as import quotas and export restraints.

## Supply, Demand, and Trade in a single industry

Let's suppose there are two countries home and foreign, both of which consume and produce wheat. So here trade will arise in such a market if prices are different in the absence of trade. Suppose that in the absence of trade, the price of wheat is higher in Home than it is in Foreign. Now let's allowed trade. Since the price of wheat in home exceeds the price in foreign, shippers begin to move wheat from foreign to home. The export of wheat raises its price in foreign and lowers its

Price in home until the difference in prices has been eliminated.

To determine the world price and quantity traded, it is helpful to define two new curves: The home import demand curve and foreign export supply curve, which are derived from the underlying domestic supply and demand curves.

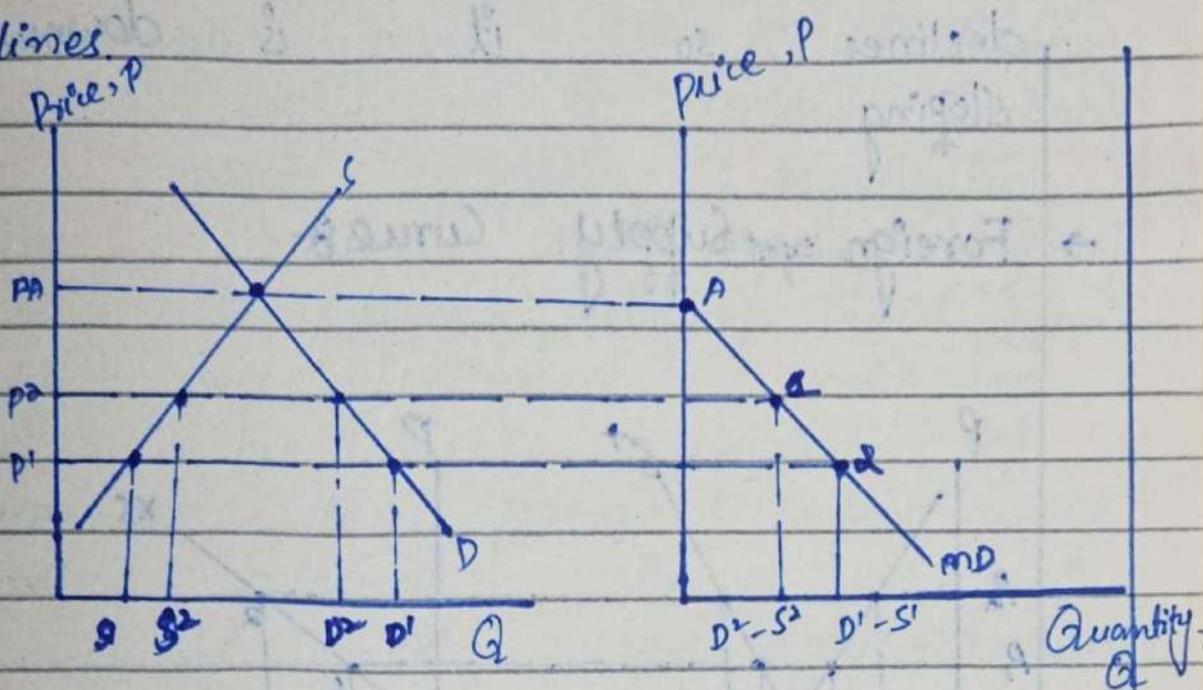
Home import demand is the excess of what home consumers demand over what home producers supply.

Foreign export supply is the excess of what foreign producers supply over what foreign consumers demand.

### Import Demand Curves

The import demand curve (MD) is downward sloping because as price increases the quantity of imports demanded

declines.

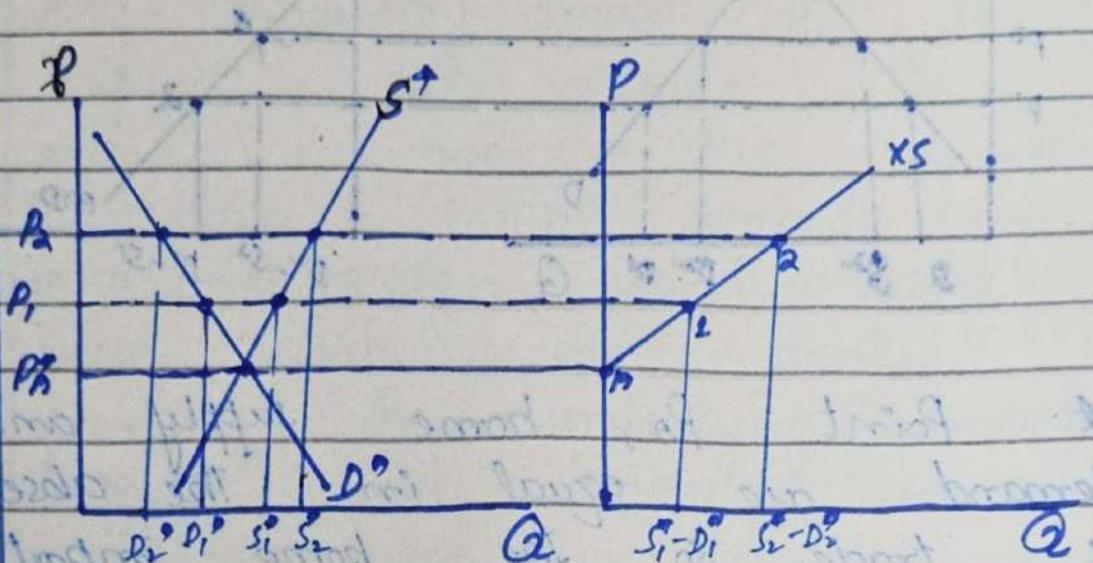


At Point  $P_0$ , home supply and demand are equal in the absence of trade, so the home import demand curve intercepts the price axis at  $P_0$  (import demand =  $D_0 - S_0$ )

But if at  $P_1$  the demand is in excess to supply, as a result home import demand is  $D_1 - S_1$  and at  $P_2$  home demand is  $D_2 - S_2$  and supply is  $S_2$ , so import demand falls to  $D_2 - S_2$ . These Price-Quantity combinations are plotted as point 1 and 2 in the right hand panel of figure which shows that when the price increases the quantity of import demanded

declines so it is downward sloping.

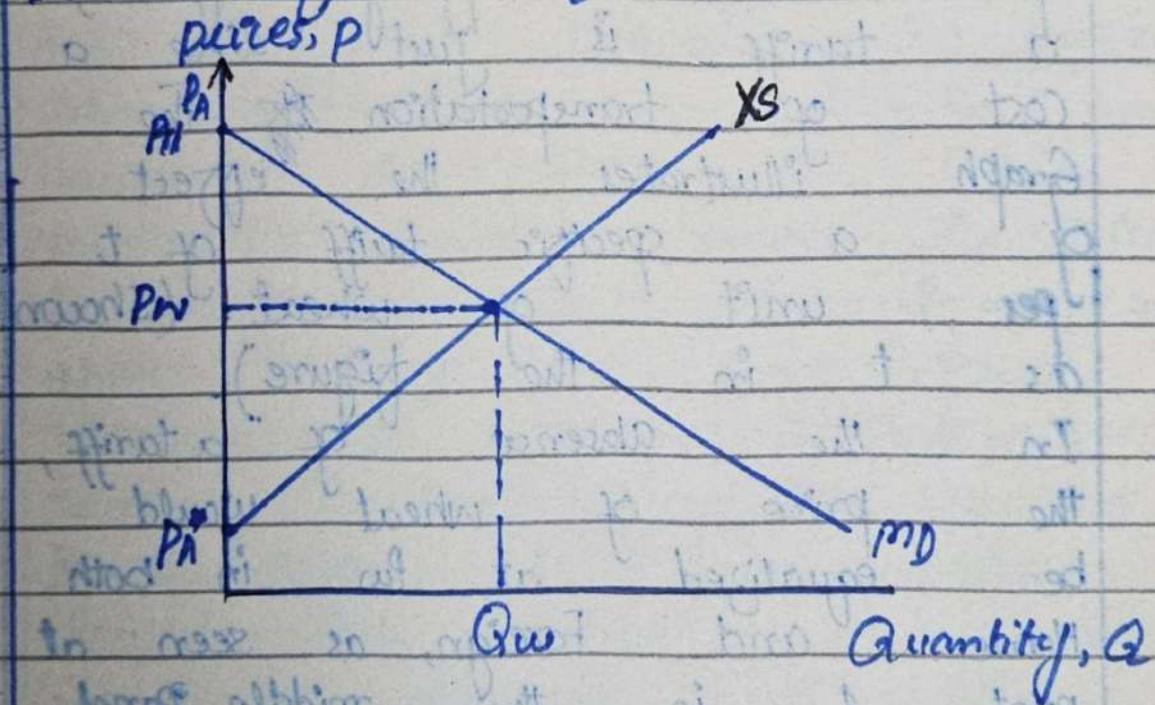
### → Foreign export Supply Curve



This figure shows how the foreign export supply curve  $XS$  is derived. At point  $P_1$  foreign producers supply  $S^*$ , while consumers demand  $D^*$ , so the amount of the total supply available for export is  $S^* - D^*$ . At  $P_a$  foreign producers supply the quantity they supply to  $S^*$  and foreign consumers lower the amount they demand to  $D_a$ , so the quantity of supply available

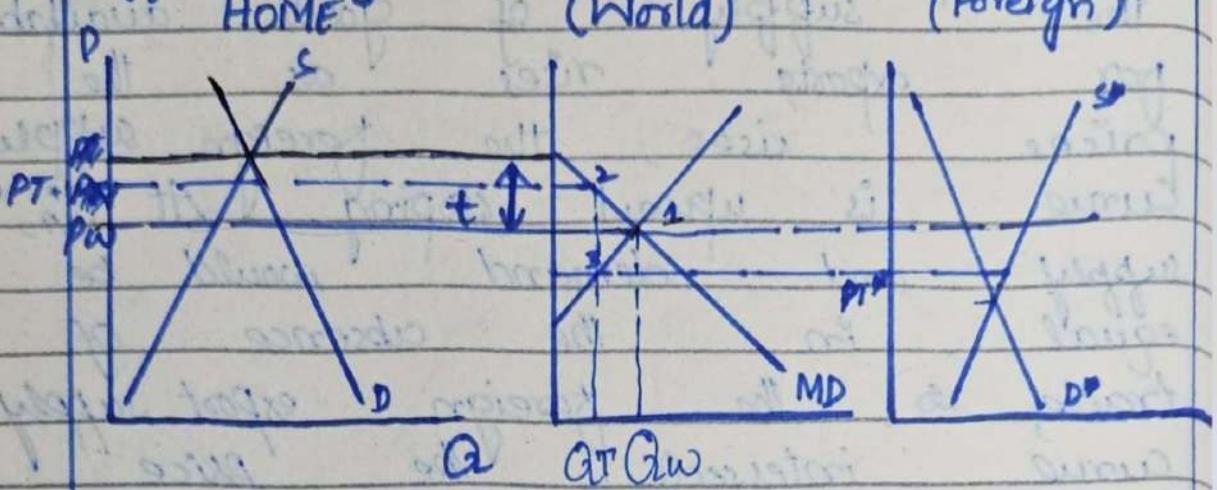
to export rises  $S^* - D^*$ . Because the supply of goods available for exports rises as the prices rises, the foreign supply curve is upward sloping. At  $P_n^*$ , supply and demand would be equal in the absence of trade, so the foreign export supply curve intersects the price axis at  $P_n^*$  (export supply = zero at  $P_n^*$ ).

### ⇒ World Equilibrium



- ① The equilibrium world prices is where home import demand (MD curve) equals Foreign export supply (XS curve).

## Effects of a Tariff



From the point of view of someone shipping goods, a tariff is just like a cost of transportation. The graph illustrates the effect of a specific tariff of  $t$  per unit of wheat (shown as  $t$  in the figure).

In the absence of a tariff, the price of wheat would be equalized at  $P_w$  in both Home and Foreign, as seen at point 1 in the middle panel.

With the tariff in place, however, shippers are not willing to move wheat from Foreign to Home unless the home price exceeds

the foreign price by at least t. If no wheat is being shipped, however, there will be an excess demand for wheat in home and an excess supply in Foreign. Thus the price in home will rise and that in foreign will fall until the price difference is t.

Introducing a tariff, then, drives a wedge between the prices in the two markets. The tariff raises the price in home to  $P_T$  and lowers the price in foreign to  $P_F = P_T - t$ , so after tariff in home price increases so fewer imports are demanded (Point 1 → Point 2). And in Foreign the lower prices leads to reduced supply and increased demand, and thus a smaller export supply. Thus the volume of wheat traded declines from  $Q_W$  to  $Q_T$ . At the trade volume  $Q_T$ , home import demand equals foreign export supply when  $P_T = P_F + t$ .

## Measuring the amount of protection

(BOOK)

### ⇒ Costs and Benefits of a tariff

A tariff raises the price in the importing country and lowers it in the exporting country. As a result of these price changes, consumers loss in the importing country and gain in the exporting country. Producers gain in the importing country and loss in the exporting country. In addition, the government imposing the tariff gains revenue. To compare these costs and benefits, it is necessary to quantify them.

The method for measuring costs and benefits of a tariff depends on two concepts common to much microeconomic analysis: Consumer and producer surplus.

### Consumer and producer surplus

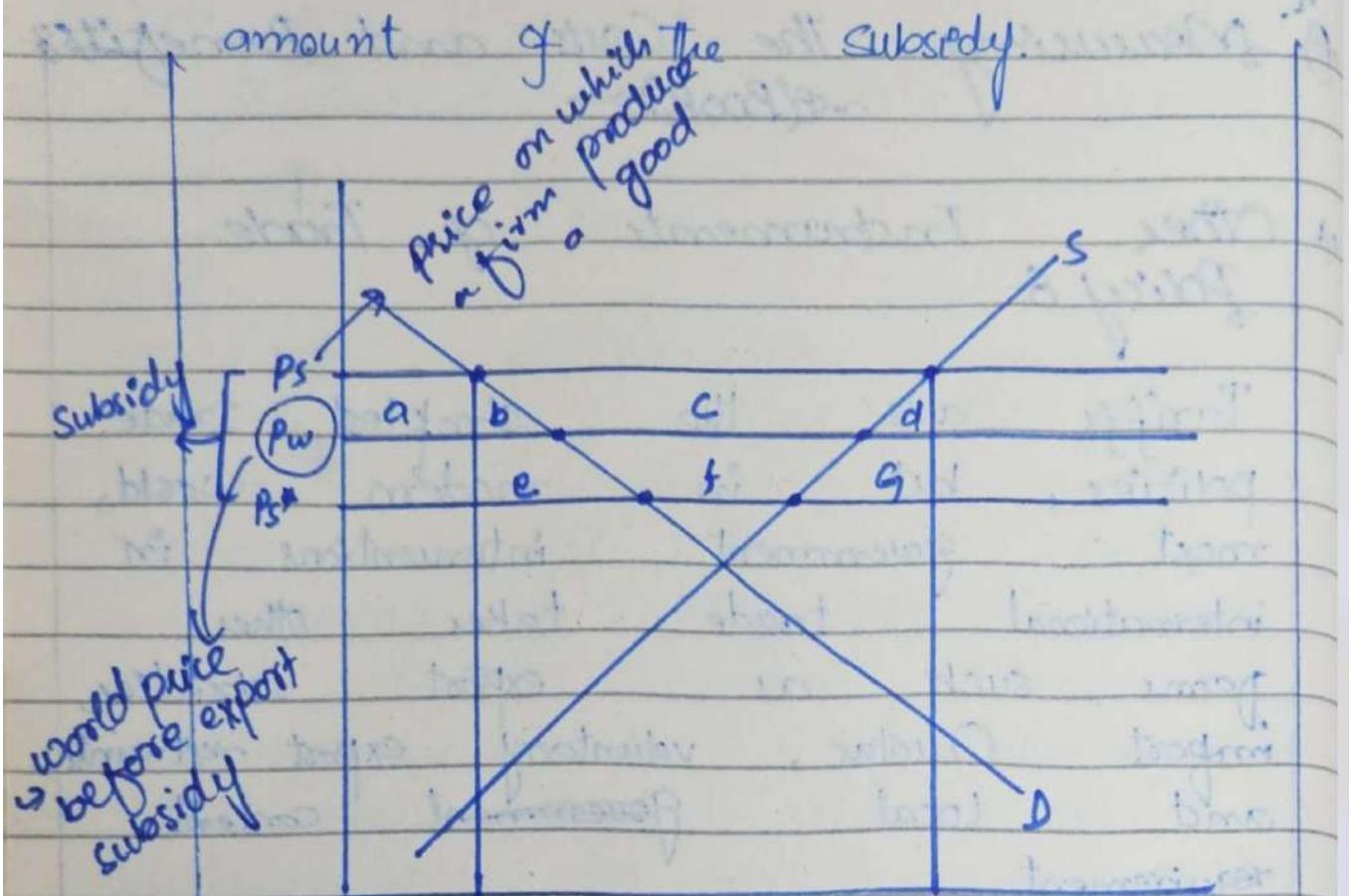
## Measuring the Costs and Benefits wef Book

### → Other Instruments of Trade Policy &

Tariffs are the simplest trade policies, but in most government international trade forms, such as import Quotas, voluntary export restraints, and local requirement takes other export subsidies, government content.

#### ii) → Export Subsidies : Theory &

An export subsidy is a payment to a firm or individual that ships a good abroad. Like a tariff, an export subsidy can be either specific (a fixed sum per unit) or ad valorem (a proportion of the value exported). When a government offers an export subsidy, shippers will export the good up to the point at which the domestic price exceeds the foreign price by the



$$\text{Producer Gain} = (a + b + c)$$

$$\text{Consumer Loss} = (a + b)$$

$$\text{Cost of Govt Subsidies} = (b + c + d + e + f + g)$$

The effects of an export subsidy on prices are exactly reverse of those of a tariff. The price in the exporting country rises from  $P_w$  to  $P_s$ , but the price in the importing country falls from  $P_w$  to  $P_s^*$ . The price increase is less than the subsidy in the exporting country, so consumers are hurt.

producers gain, and the government losses because it must expend money on the subsidy.

In addition, and in contrast to a tariff, the export subsidy worsens the terms of trade because it lowers the price of the export in the foreign market from  $P_w$  to  $P_s^*$ . This leads to the additional terms of trade loss  $e+f+g$ , which is equal to  $P_w - P_s^*$  times the quantity exported with the subsidy! So an export subsidy unambiguously leads to costs that exceeds its benefits. e.g. & Common Agricultural Policy (CAP) of the European countries. (Book)

## ii) → Import Quotas : Theory &

An import quota is a direct restriction on the quantity of some goods that may be imported. The restriction is usually enforced by issuing licences to some group of individuals or firms.

It is important to avoid having the misconception that import quotas somehow limit imports without raising domestic prices. The truth is that an import quota always raises the domestic price of the imported goods. When imports are limited, the immediate result is that at the initial price, the demand for the goods exceeds domestic supply plus imports. This causes the price to be bid up until the market clears. In the end, an import quota will raise domestic prices by the same amount as a tariff that limits imports to the same level.

- The difference between a quota and a tariff is that with a quota, the government receives no revenue and the revenue is collected by whoever receives the import quota licences. License holder

are thus able to buy imports and resell them at a higher price in the domestic market. The profits received by the holders of import licenses are known as quota rent.

## ⇒ Voluntary Export Restraints

Voluntary export restraints are arrangements between exporting and importing countries in which the exporting country agrees to limit the quantity of specific exports below a certain level in order to avoid imposition of mandatory restrictions by the importing country.

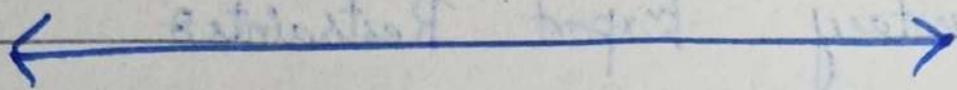
Voluntary export restraints are generally imposed at the request of the importer and are agreed to by the exporter to forestall other trade restrictions.

The most famous example is the limitations on auto exports. These restraints were generally enforced by the United States.

Japan after 1981

## → Local Content Requirement

And other trade policy instruments are stated in book briefly &



## • Other Export Trade policy Instruments

### i) Export credit subsidies &

This is like an export subsidy except that it takes the form of a subsidized loan to the buyer, that is devoted to providing at least slightly subsidized loans to aid export.

### ii) National procurement &

Purchases by the government even when these goods are more expensive than imports

### iii) Red-tape barriers &

Sometime a government wants to restrict imports without

doing so formally. Fortunately or unfortunately, it is easy to twist normal health, safety, and custom procedures in order to place substantial obstacles in the way of trade.

