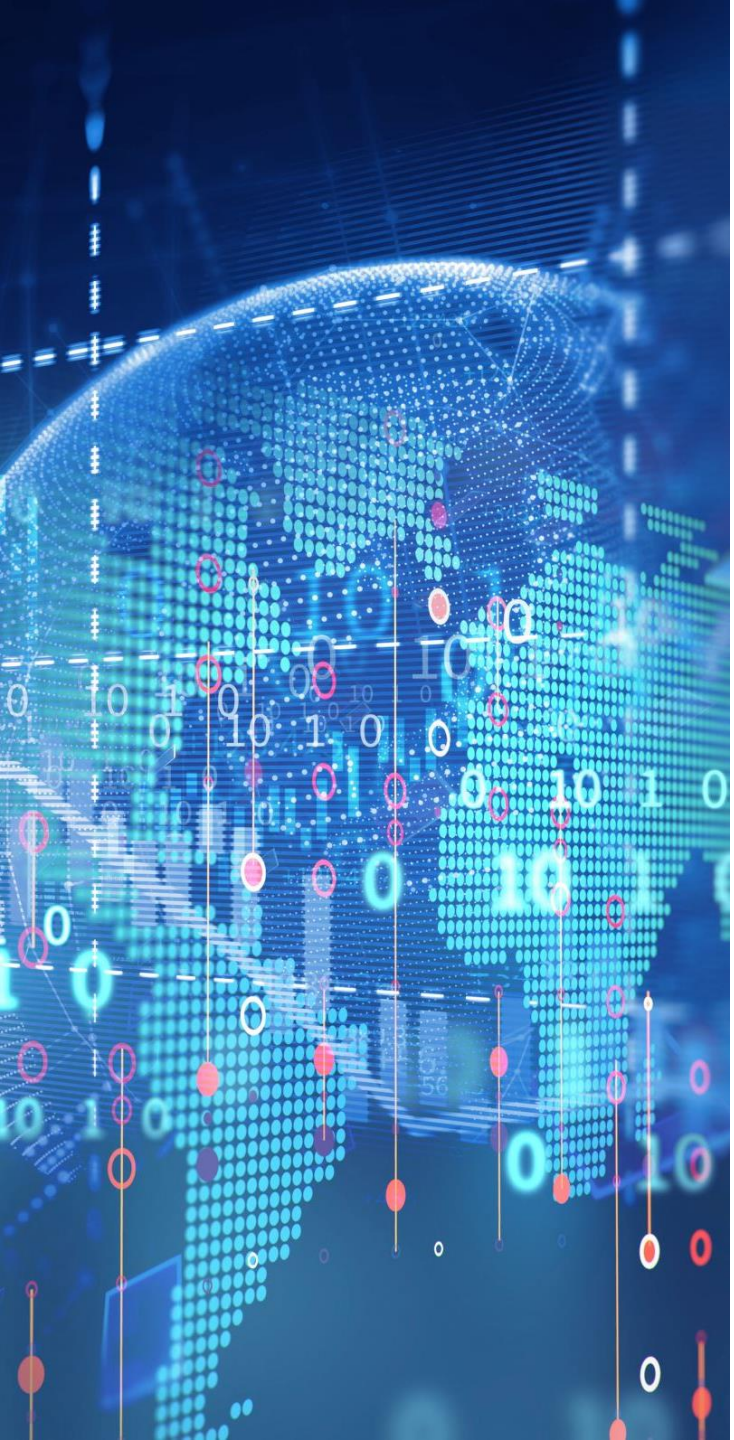


International Economics

THEORIES OF INTERNATIONAL TRADE

TARIFF ANALYSIS

BALANCE OF PAYMENTS

Lecturers

Zoltán Bartha: zoltan.bartha@ekon.me

- First half of the semester (trade theories)
- Main building (A4), 4th floor, Room 418
- Consulting hours
  - Mondays 10-11am, Tuesdays 8-10am

~~Andrea Gubik: getgubik@uni-miskolc.hu~~

- ~~Second half of the semester (trade policy)~~
- ~~Main building (A4), 4th floor, Room 417~~

Exam structure

Type of question	Points value
True or false (explanation needed!)	5
Definitions	4
Exercises	11
Graph	4
Total	**24**

12 points needed to pass

Changes in the assessment method may occur if extraordinary measures are introduced by the university/government

What is International Economics About?

Determining the gains from trade

- Mutual benefits exists even if two countries produce goods at different efficiency level.
- While nations generally gain from international trade, it may hurt particular groups within a nation (because it affects the income distribution).

Determining the pattern of trade

How much trade

Balance of payments

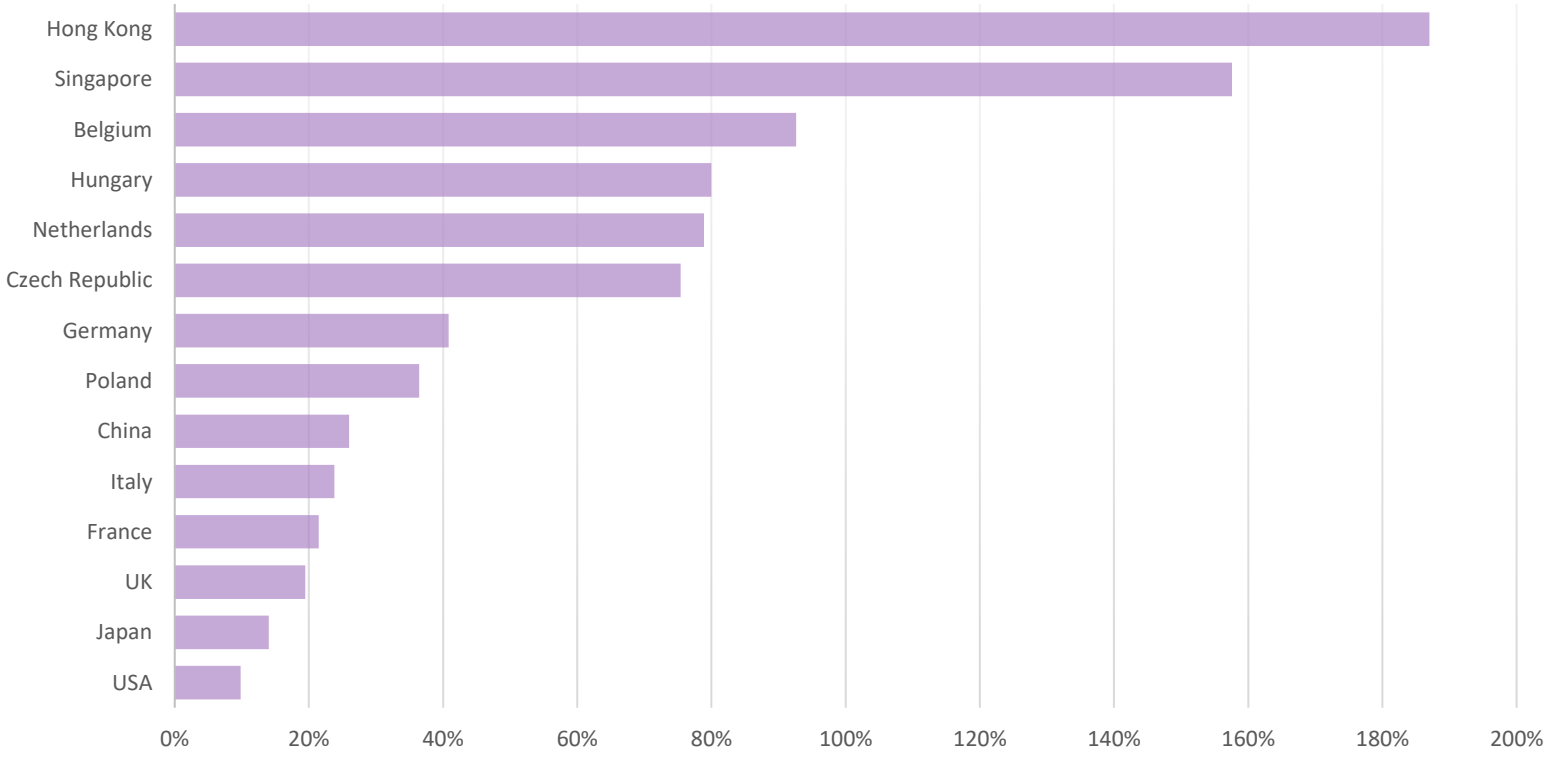
Exchange rate

- The key difference between international and other areas of economics is that countries usually have their own currency

(International policy coordination)

(International capital market)

Export/GDP


Hong Kong
Singapore
Belgium
Hungary
Netherlands
Czech Republic
Germany
Poland
China
Italy
France
UK
Japan
USA
0%
20%
40%
60%
80%
100%
120%
140%
160%
180%
200%

International Theories of Trade

A good theory should explains the following:

1. Why to trade?
2. What to trade?
3. Who wins what?

Theories based on labour requirements

Basic assumptions

- Only two countries (Hungary and Ecuador)
- Only two goods (wine and orange)
- Only one factor of production (labour)
- The two countries differ in the technology used

Definitions

- **Unit labour requirement**: how much it costs (in terms of man-hour) to produce a unit of a good: a_L
- **Unit labour productivity**: how many units of goods can be produced with the use of one man-hour

An example

Country	a_{LO}	a_{LW}	L
Hungary	4	4	**500**
Ecuador	**2**	**5**	**500**

- **Absolute advantage**: when a country can produce a unit of good with less labour than the other, it has an absolute advantage in the production of that good
- Rule: both countries should specialise in the production of the good they produce with an absolute advantage
- Adam Smith

What if a country has no absolute advantage?

Country	a_{LO}	a_{LW}	L
Hungary	4	5	500
Ecuador	2	4	500

Opportunity cost: the opportunity cost of one of the goods (e.g. wine) in terms of the other good (e.g. orange) shows how many units of the other good (orange) has to be sacrificed, if we want to increase the production of wines by a unit

- Opportunity cost of wine in terms of oranges: $a_{LW}/a_{LO}=5/4=1.25$ (Hungary) $a_{LW}/a_{LO}=4/2=2$ (Ecuador)

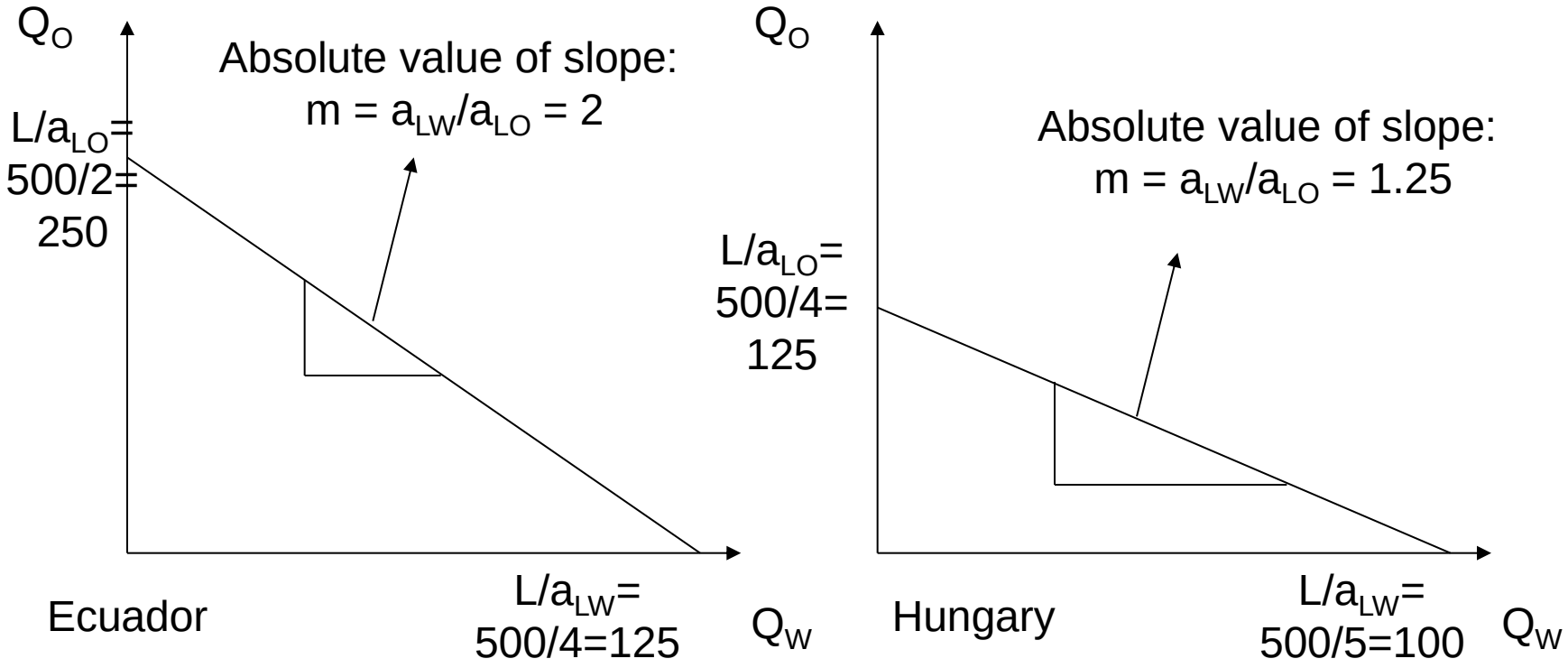
Comparative advantage: a country has a comparative advantage in a good if it can produce it with a lower oppoertunity cost than the other country

David Ricardo – Ricardian theory of comparative advantages

An economy has limited resources (L=500)

The combination of goods that can be produced if all resources are used is shown by the **Production Possibility Frontier (PF) = Transformation curve (TC)**

$a_{LO} \times Q_O$ (labour used to produce oranges)+ $a_{LW} \times Q_W$ (labour used to produce wine) ≤ L



What the international price is going to be?

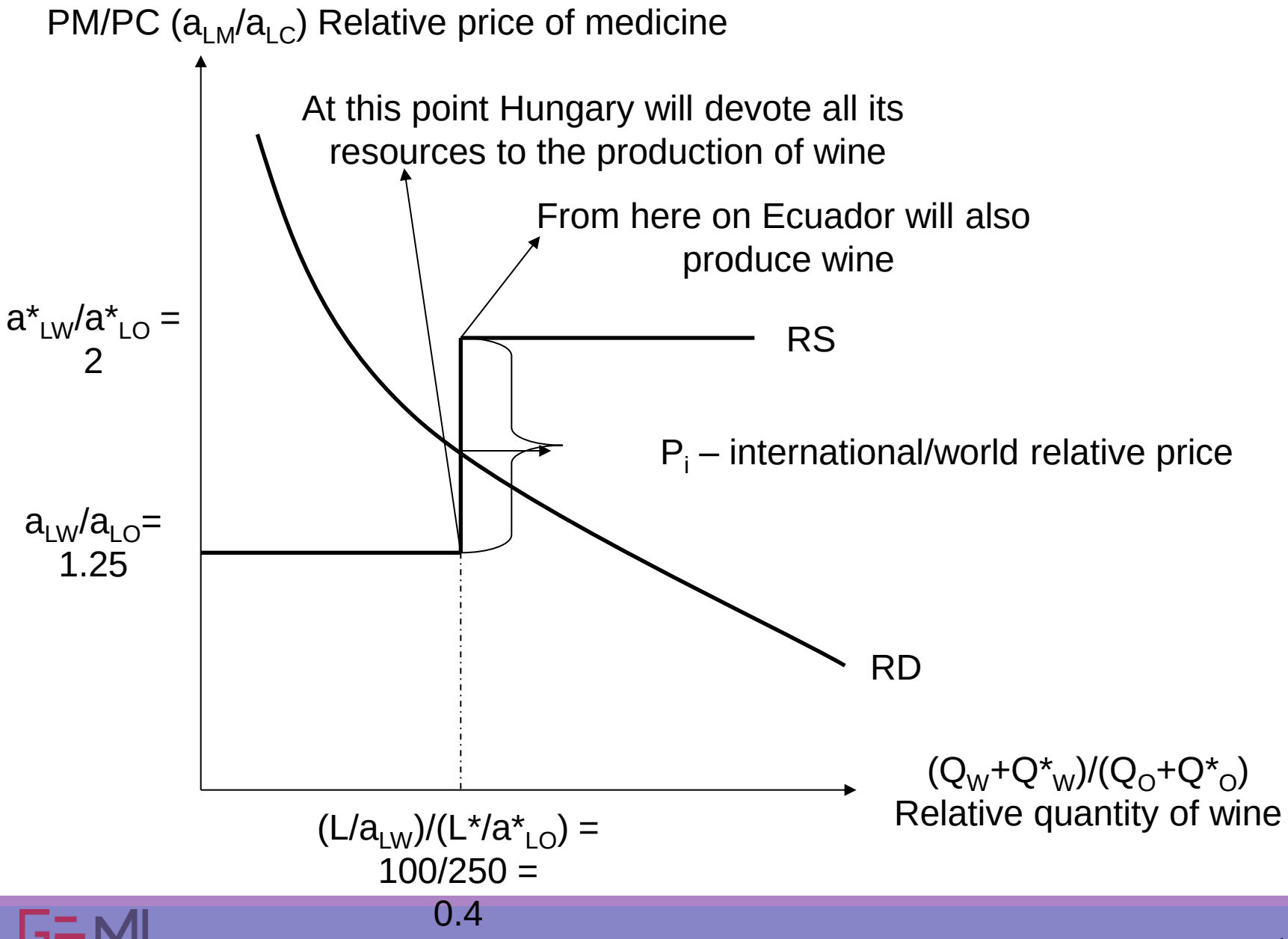
In this model relative prices are used

The domestic relative price of products is equal to their opportunity costs

However, the international/world relative price will have to be a trade-off value that is different from both domestic trade-offs (1.25 and 2, if the opportunity cost of wine is analysed)

The exact value of the international/world relative price is determined by the **relative supply (RS) and demand (RD)** curves

- RS: the amount goods produced by both countries at certain relative prices (compared to the amount produced from the other good)
- RD: the amount of goods consumed by the two countries at certain relative prices (compared to the amount produced from the other good)


PM/PC (a_{LM}/a_{LC}) Relative price of medicine
At this point Hungary will devote all its resources to the production of wine
From here on Ecuador will also produce wine
a^*_{LW}/a^*_{LO} = 2
RS
P_i – international/world relative price
a_{LW}/a_{LO}= 1.25
RD
$(Q_W+Q^*_W)/(Q_O+Q^*_O)$
Relative quantity of wine
$(L/a_{LW})/(L^*/a^*_{LO})$ = 100/250 = 0.4

How much Hungary will gain from international trade?

If both countries specialise in the production of goods that they have a comparative advantage in, they will both benefit from international trade

Indirect 'production': an indirect way of producing oranges is to produce the good that Hungary has a competitive advantage in, and then trade it for orange

Hungary benefits from the indirect 'production', because it can get access to more orange this way, than it would otherwise, through the use of its resources to produce oranges

Hungary can produce $1/a_{LO}$ units of orange in 1 hour (1/4 = 0.25)

Or, alternatively in 1 hour Hungary can produce $1/a_{LW}$ wine (1/5 = 0.2)

We know that a_{LW}/a_{LO} (opportunity cost of wine in Hungary) < P_W/P_O (P_i – world relative price of wine – see slide nr. 12)

By restructuring the above we get:

$$1/a_{LO} < (P_W/P_O)(1/a_{LW})$$

Units of oranges Hungary can produce in an hour

Units of wine Hungary can produce in an hour

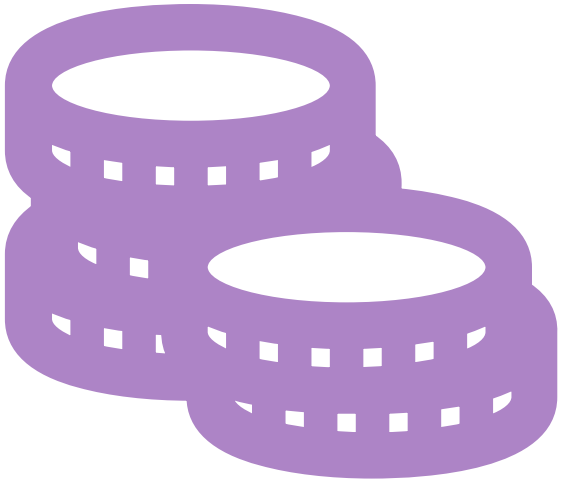
Units of oranges Hungary can indirectly 'produce' in an hour by making wine and exchanging it for orange

Overall

Why? – differences in labour requirements

What? – absolute or comparative advantage

Who wins and how much? – everybody wins, surplus of goods (see excercises!)



International Trade Theory
A Multi-Factor Economy

THE SPECIFIC FACTORS MODEL, &

THE HECKSCHER-OHLIN MODEL

Specific Factors, and Income Distribution

Despite international trade is mutually beneficial for countries, nations often protect certain sectors of the economy from international competition.

Individuals are not hurt by international trade in the Ricardian model, because

- There is only one factor of production – labour
- Labour is assumed to be able to move freely from one sector to the other

But in real life trade hurts some groups of individuals:

- There is more than one factor of production
- Resources cannot move immediately and costlessly between industries
- Industries differ in their demand for resources; a shift in the mix of goods that a country produces will usually reduce the demand for some factors, while raising the demand for others

To have a more realistic model we must go beyond the Ricardian assumptions

The Specific Factors Model

Assumptions

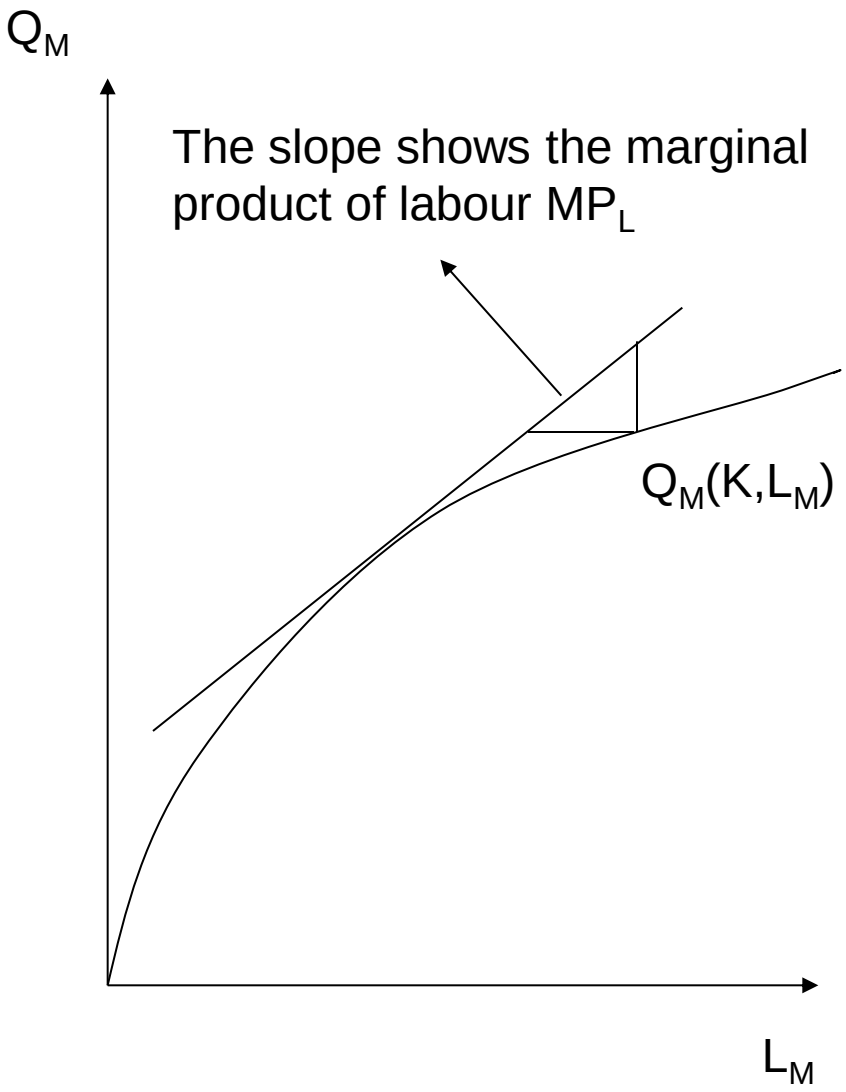
2 countries

2 goods
- Manufactures and Food

3 factors
- Labour (L), Capital (K), and Land (T)

Labour is mobile – the production of both goods needs labour as a resource

Capital, and land is specific
- Manufactures are produced using capital, but no land is required
- Food is produced using land, but no capital is required

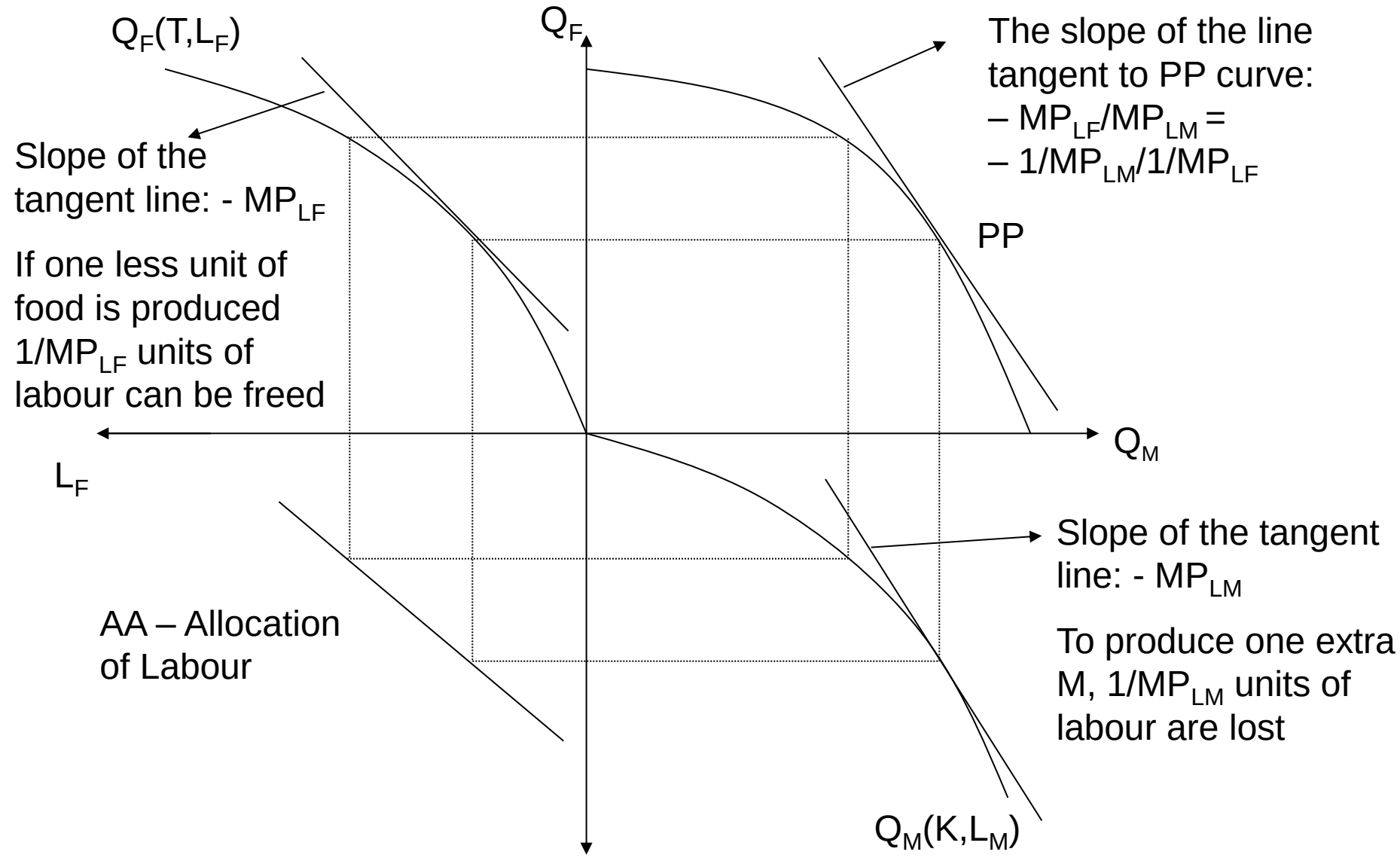


The amount of manufactures, and food that can be produced:

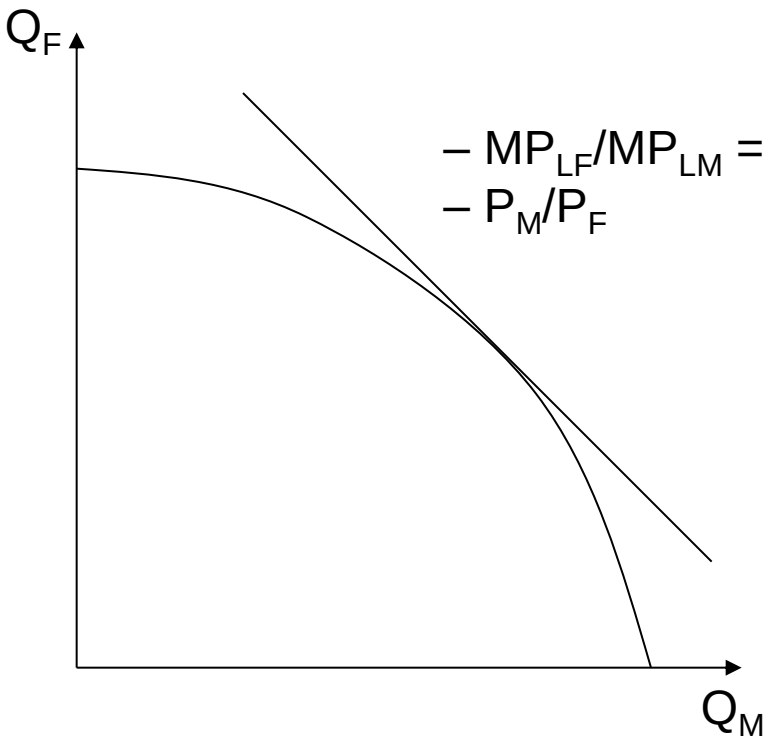
- $Q_M=Q_M(K,L_M)$
- $Q_F=Q_F(T,L_F)$
- where $L_M+L_F=L$

Diminishing returns: the curve, representing the amounts of manufactures produced at different amounts of labour-inputs, gets flatter

Deriving the production possibility frontier



Adding prices, and wages to the model



Each sector will increase its labour use till the value created by the person-hour added equals the actual wage

$MP_{LM} \times P_M = MP_{LF} \times P_F = W$

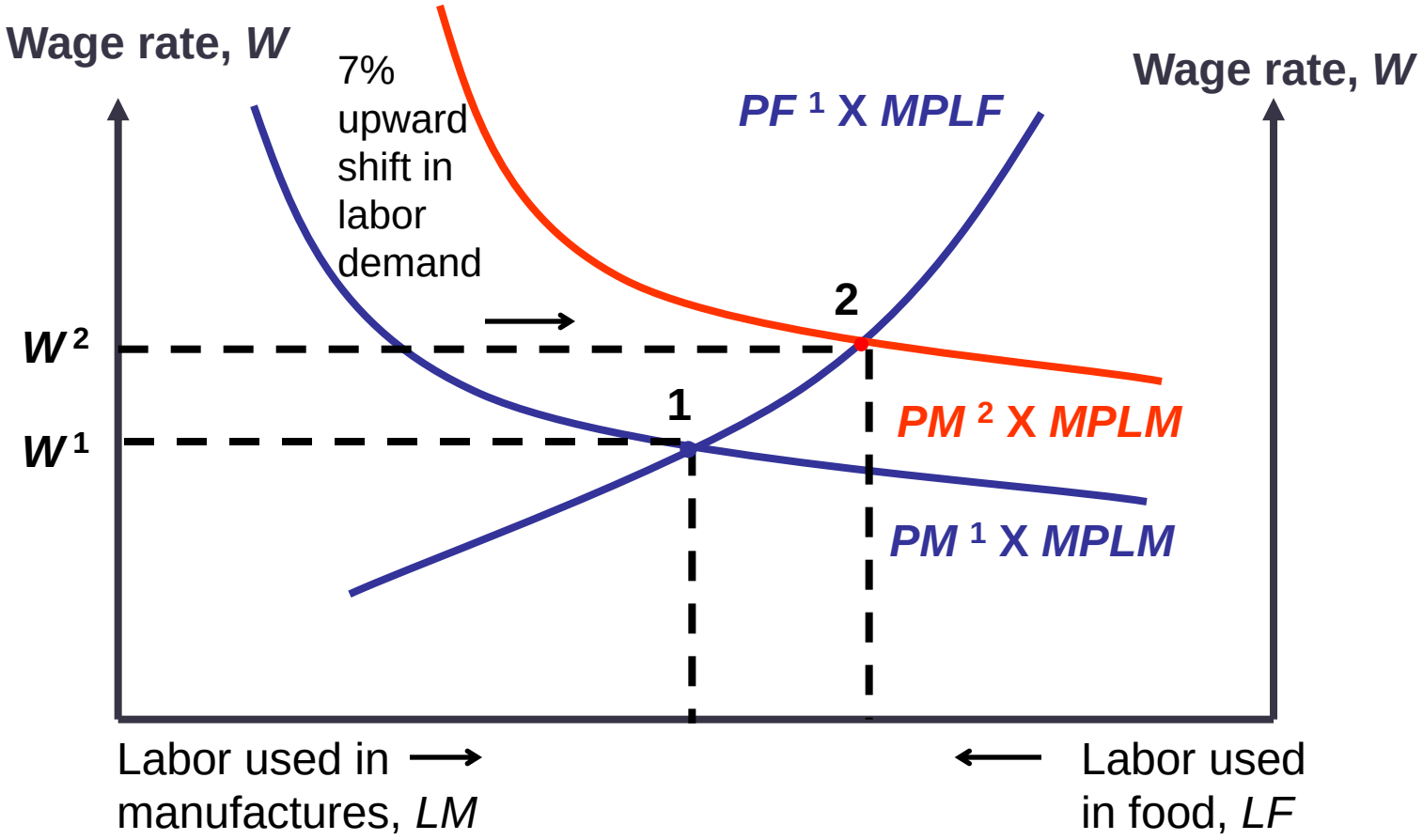
Effects of Changes in Prices

Equal proportional change: the price of both product changes by the same rate

- The nominal wage changes (w), but the allocation of labour between the two sectors remains the same

Change in relative prices

- The increase in the nominal wage is less than the price increase
- Labour is shifted to the sector that experienced an increase in the price of its product


Wage rate, W
7%
upward
shift in
labor
demand
PF 1 X MPLF
Wage rate, W
2
W 2
1
PM 2 X MPLM
W 1
PM 1 X MPLM
Labor used in
manufactures, LM
Labor used
in food, LF

Distribution of Income

¥

If the price of one of the products (manufactures) rises (there is a change in the relative prices)

$

The wages rise less than the price of the product

The real wage in terms of manufactures falls, while in terms of food rises

Workers can either lose or gain on the changes in prices

The owners of capital gain

The owners of land lose

They have to pay more for the labour used (higher wages)

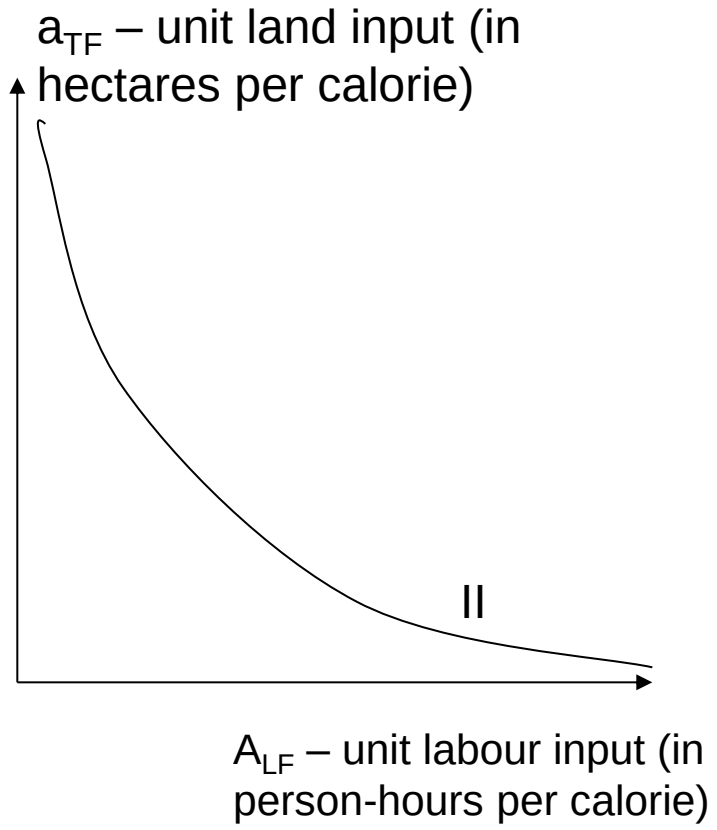
They also have to pay more for manufactures

The Heckscher-Ohlin Model

The HO model is similar to the specific factors model, but it also explains how the relative abundance or scarcity of certain resources affect international trade.

Differences:

- Only two factors, neither is specific to one sector
- Two factors: labour (L) and land (T)
- Two products: cloth and food
  - a_{TC}, a_{TF}, a_{LC}, a_{LF}: Units of factors **used** to produce one unit of output
- Two countries (Hungary and Slovakia)
- Prices:
  - Labour: w (wage)
  - Land: r (rent)
- Goods can be produced using several different combination of factors. The producer will choose the actual combination – basing his decision on calculations.



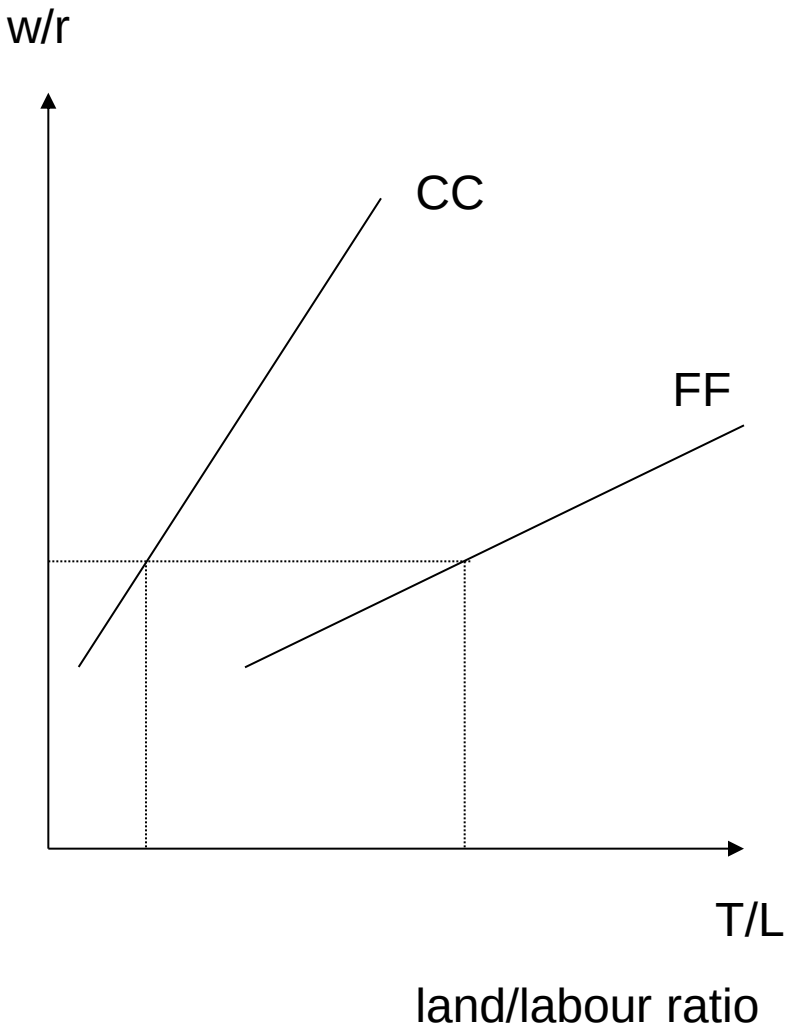
Abundant and scarce factors

Both countries (Hungary and Slovakia) have both resources.

But these resources are not available in same quantities. One of them has relatively more labour (L), and the other one has more land (T).

Abundant factor: the country's rich factor, the one from which the country has relatively large amount available – the aboundant factor is cheaper in the country

Scarce factor: the country's short factor, the one from which the country has relatively small amount avalable – the scarce factor is more expensive in the country



The goods however, cannot be produced with any combination of factors.

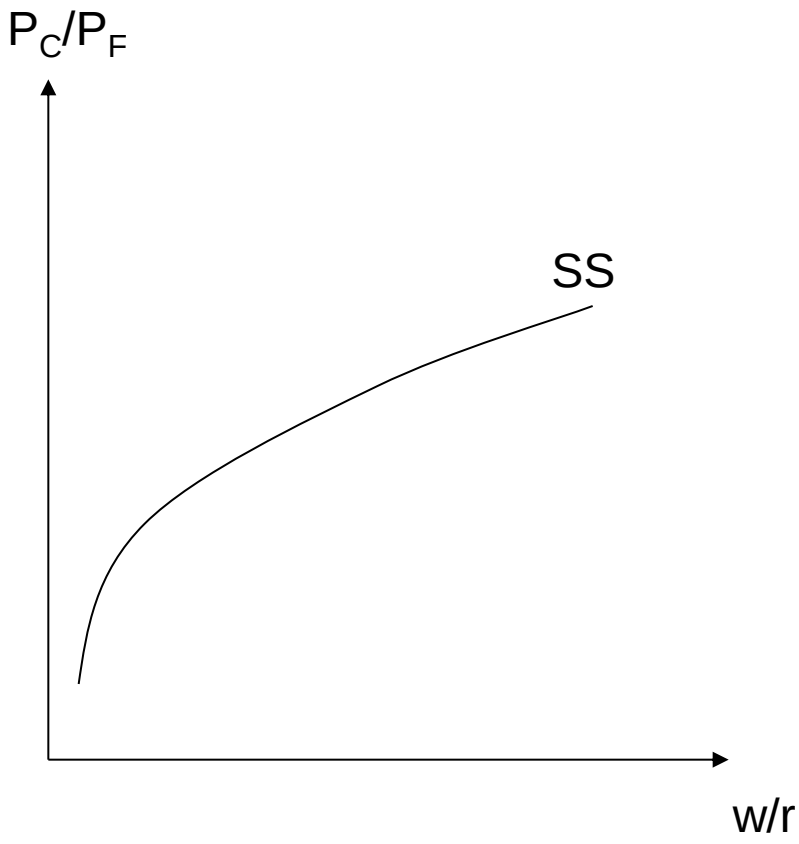
One good will always require a higher ratio of one factor, than the other good

CC & FF – factor combinations used to produce the same amount of cloth or food at different relative wage levels

Food production – compared to the production of cloth – is land intensive

Cloth production on the other hand is labour intensive

Intensive factor: the factor that is used in higher proportion during the production of goods (e.g. higher T/L ratio means T-land is the intensive factor)

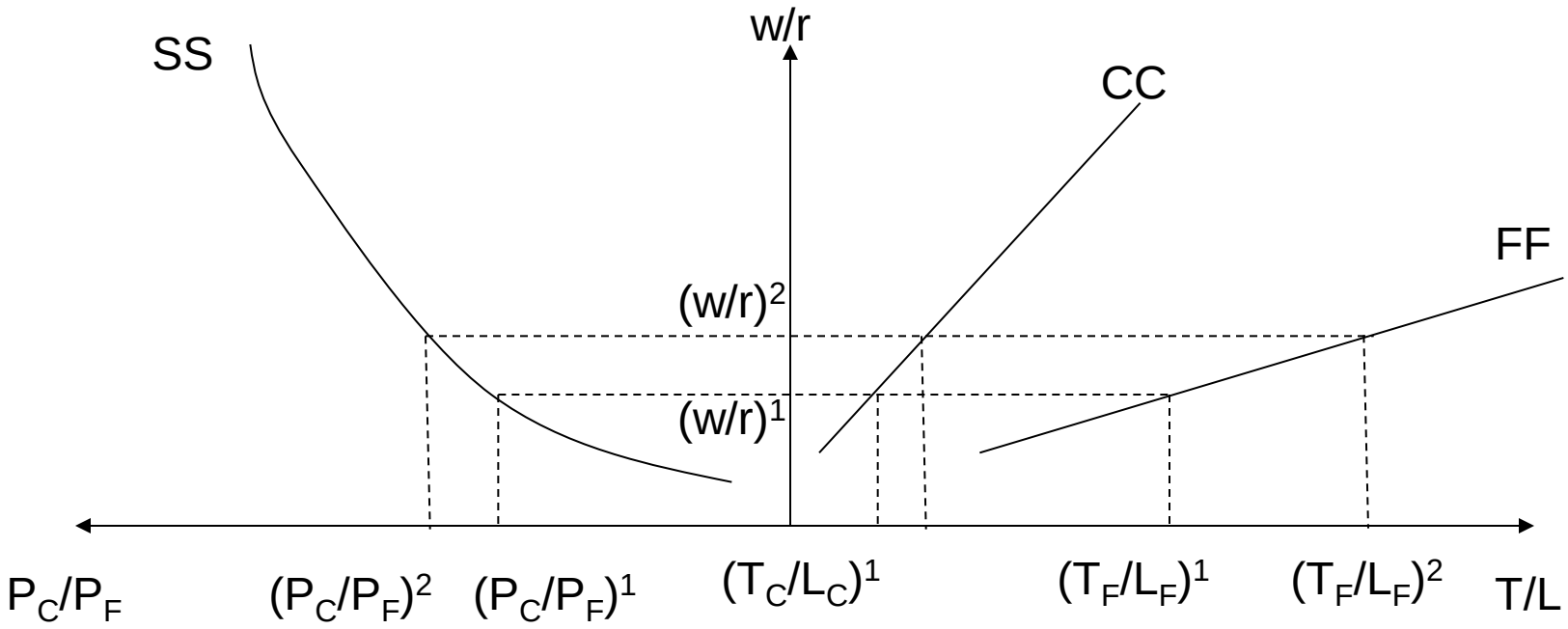


Factor prices not only determine the factor combination of production in the two sectors, but also the prices of goods

SS – the relative price of cloth at different relative wage levels

As cloth production is labour-intensive the rise is wage levels hits that sector harder than farmers

The rise in the price of cloth will be more intensive that the one in the case of food



As wages grow, the ratio of land use rises, too

If the relative price of cloth rises, wages rise, too

So if the price of a good (cloth) gets higher, the price of the factor that is used intensively to produce that good (labour) will also rise

The living standards of the owners of that factor (workers) increases

Effects of Trade

H-O theorem: An economy is relatively effective at producing goods that are intensive in the factor which the country is relatively well-endowed with

Setup of the model

- 2×2×2
- Same preferences in both countries (if prices were the same, the same combination of goods would be purchased in both countries)
- Same technology (given amount of land and labour yields the same amount of output)
- Difference in resource-endowment
  - Abundant factor
  - Scarce factor

	Labour	Land
Hungary	×	
Slovakia		×
Cloth	×	
Food		×

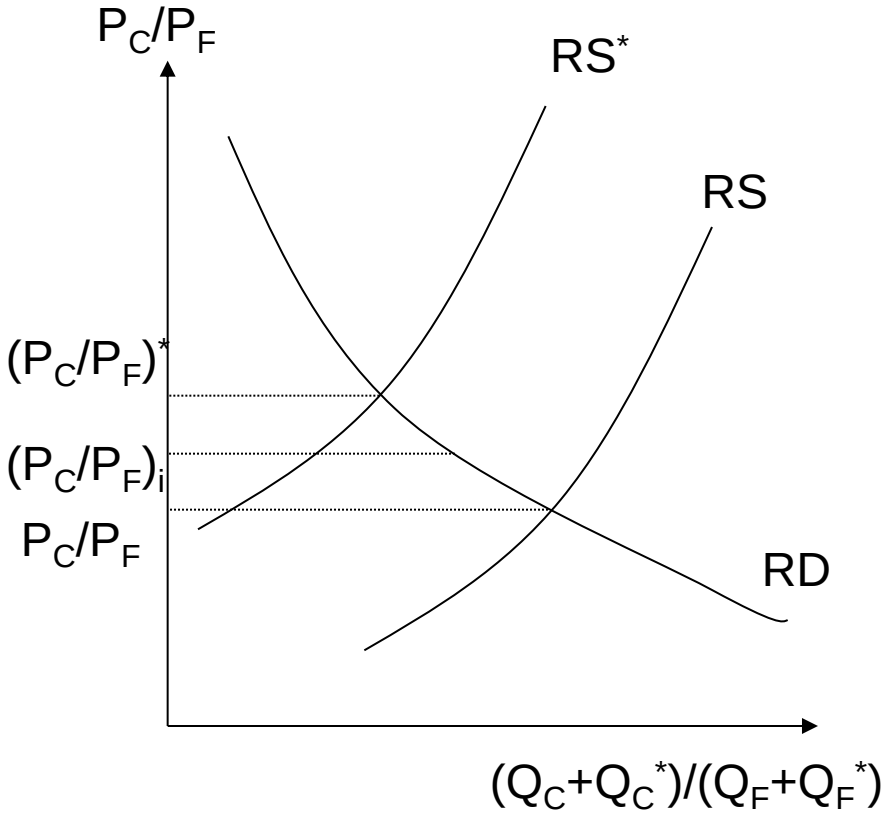
More labour means lower wages, and lower cloth prices

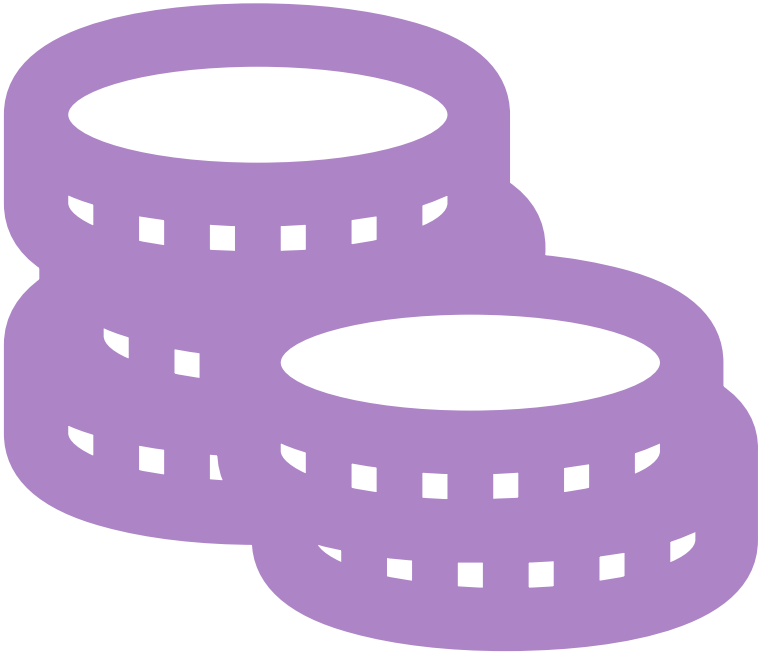
The relative price of cloth is lower in Hungary – Hungary tends to produce more cloth

When the countries trade with each other the domestic relative prices converge – $(P_C/P_F)_i$

Countries export goods whose production is intensive in the factors which they are abundantly endowed with

Stolper-Samuelson theorem (changes in income distribution): owners of the country's abundant factor gain from trade, owners of the scarce factor lose.

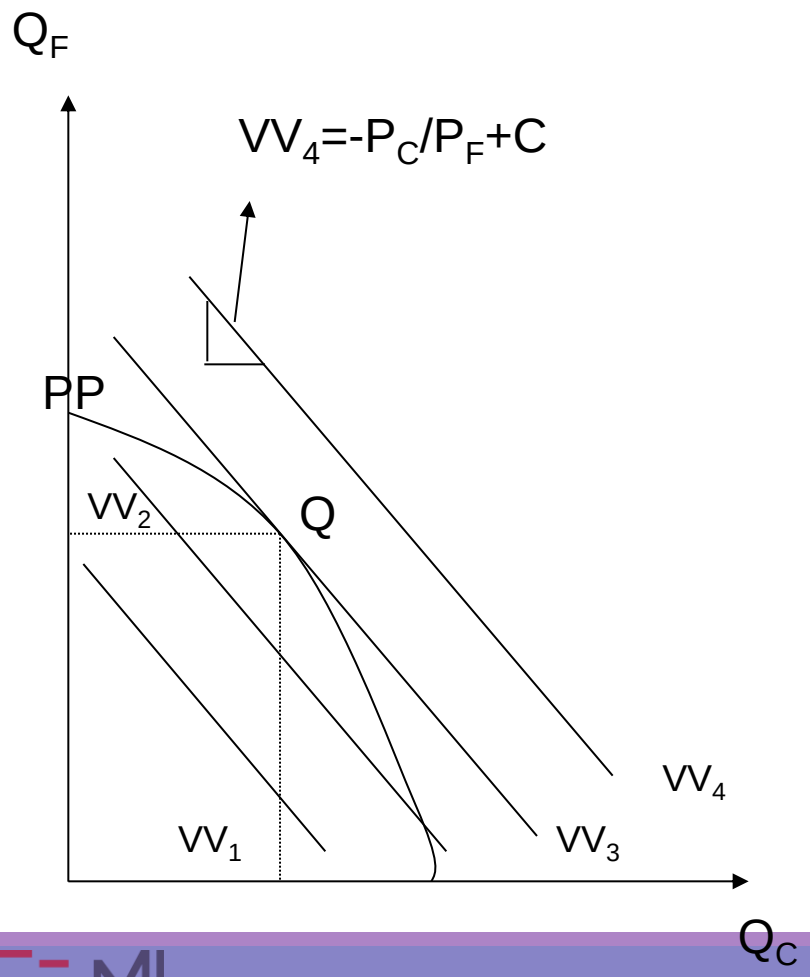




International Trade Theory

THE STANDARD MODEL OF TRADE

The Standard Model of Trade



What combination of goods will Hungary produce?

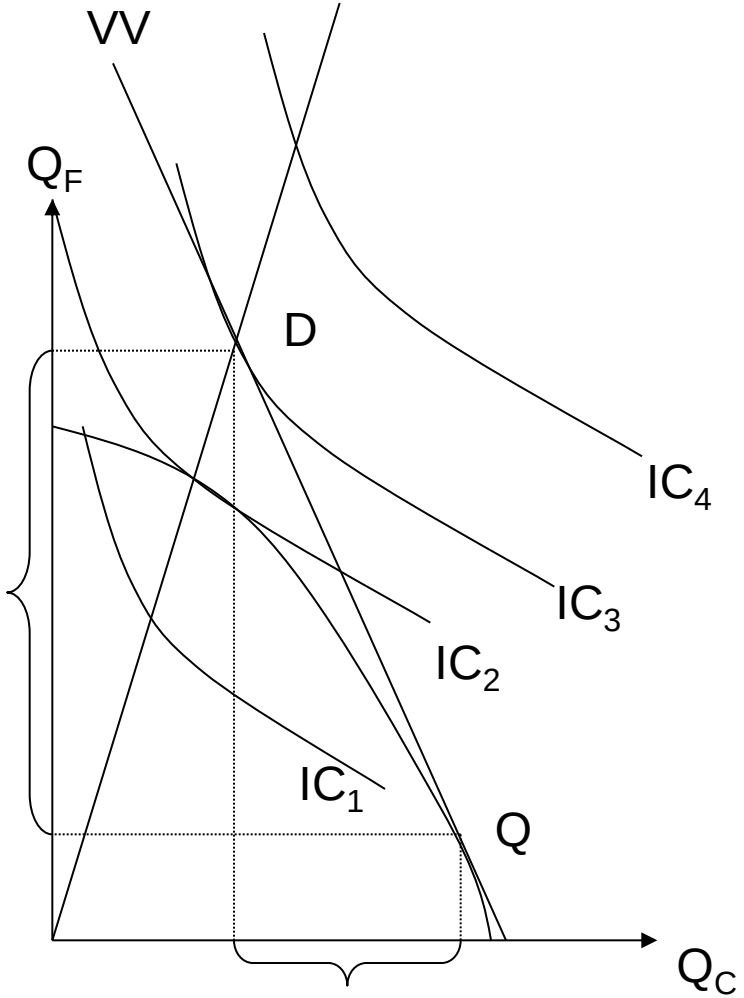
The country will attempt to maximise its wealth → will try to get to the highest iso-value straight possible

$Q_C \times P_C + Q_F \times P_F = V$ (output value) V → max!

The highest value of output is showed by the production possibility curve

The country will produce the combo of goods where one of the iso-value straights is just tangent to the PP curve

What combo of goods will Hungary consume?



Q_C-D_C → cloth exports

In an open economy a country can consume and produce a different combination of goods – the amount of goods purchased are situated to the right of the PP curve, and not on it

But: the value of Hungary's consumption must equal its production: $Q_C \times P_C + Q_F \times P_F = D_C \times P_C + D_F \times P_F = V$ → the combo of goods produced and consumed lie on the same iso-value line

The consumption is also determined by the consumer preferences, showed by the indifference curves

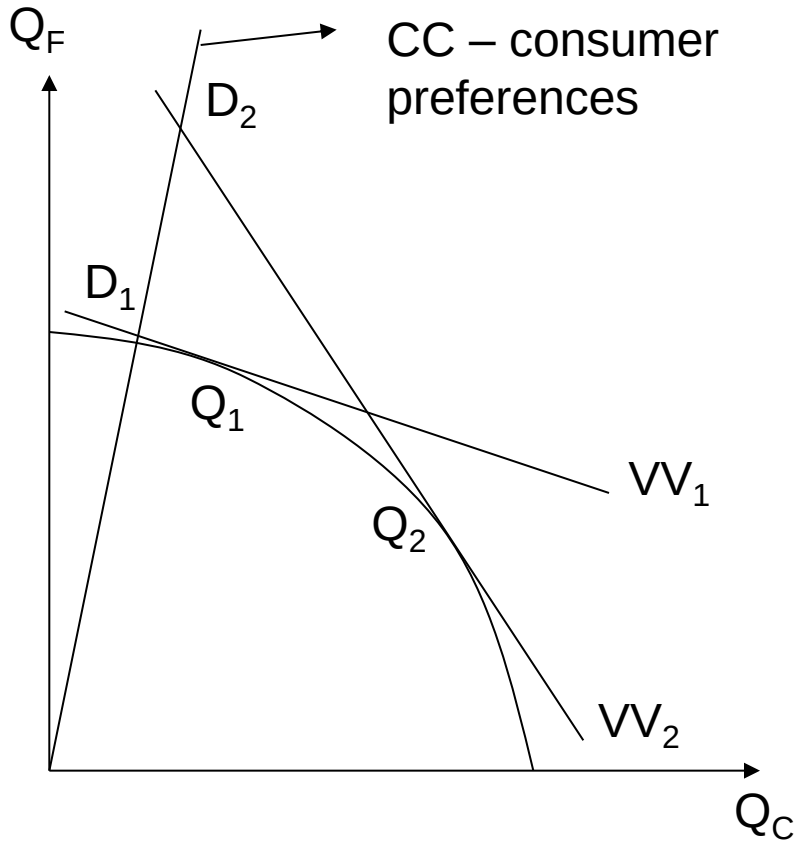
The point of consumption is the one where an indifference curve is just tangent to the iso-value straight

The welfare effect of trade

The welfare effect is determined by the terms of trade

Terms of trade: the price of the good the country initially exported divided by the price of the good it initially imported

The rise in terms of trade increases a country's welfare, while the decline reduces it



Economic Growth and International Trade

Two issues:

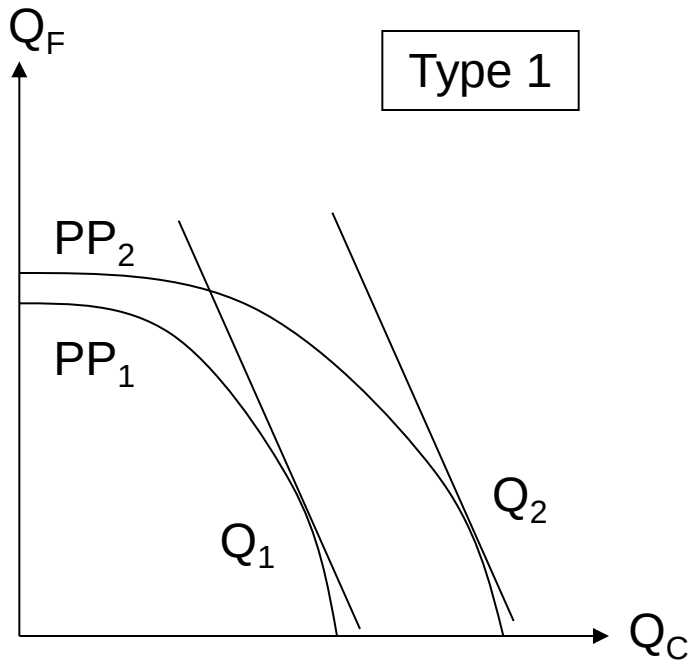
- Is growth in other countries good or bad?
  - Bigger market for exports
  - Bigger competition for local producers
- Is domestic growth good or bad?
  - Opportunity to export more
  - Export prices decline → domestic growth favours foreigners

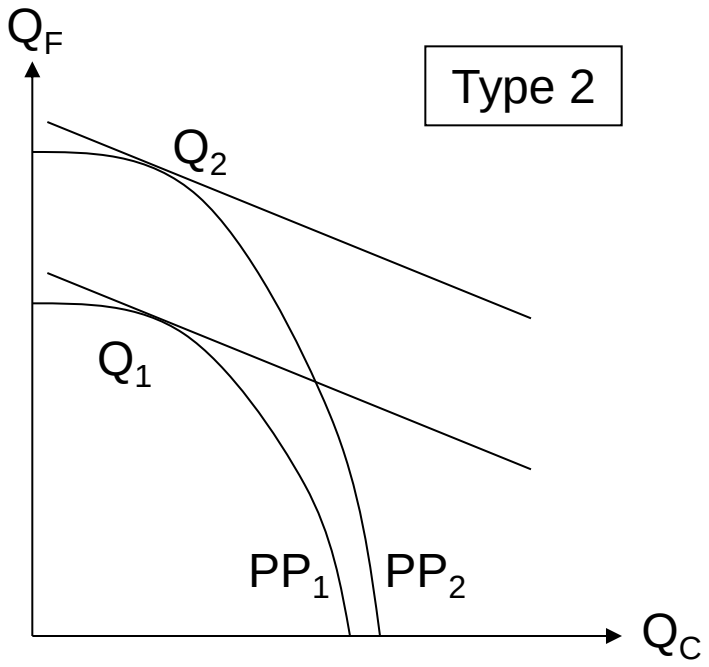
Economic growth represents an outward shift of the country's production possibility curve. Could be caused by:

- Increase in resources
- Improvement in efficiency

Growth usually is biased: the PP shifts out more to one direction than to the other: for any given relative price a rise in the output of one product is experienced, relative to that of the other product

Assumption: terms of trade remain unchanged





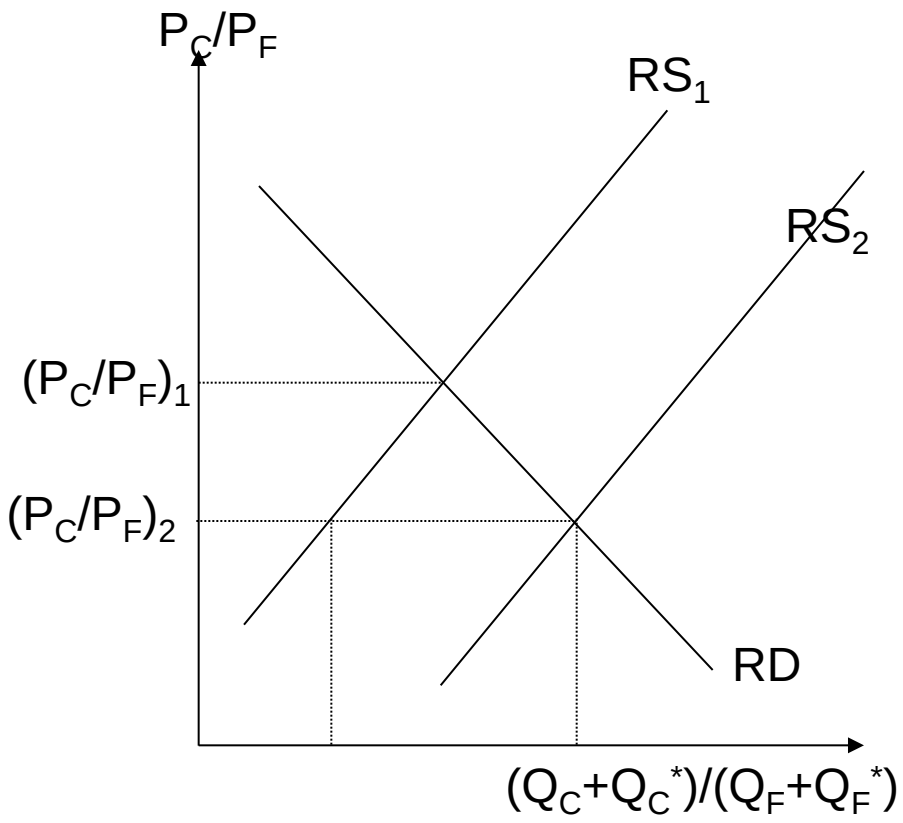
Change in Terms of Trade

Hungary experiences a Type 1 biased growth – the output of cloth rises, the food production declines.

In a two-country modell that means that the relative supply of cloth will rise at any world relative price – RS shifts to the right

$(P_C/P_F)_2<(P_C/P_F)_1$ – the terms of trade of Hungary worsen

Export biased grwoth: growth that disproportionately expands a country's production possibilities in the direction of the good it exports → the country's terms of trade worsen



Will Growth Hurt Hungary?

If growth is export-biased, or the partner country's growth is import-biased, Hungary's terms of trade drop

If however the growth is import-biased, or the other country's growth is export-biased, Hungary's terms of trade get better

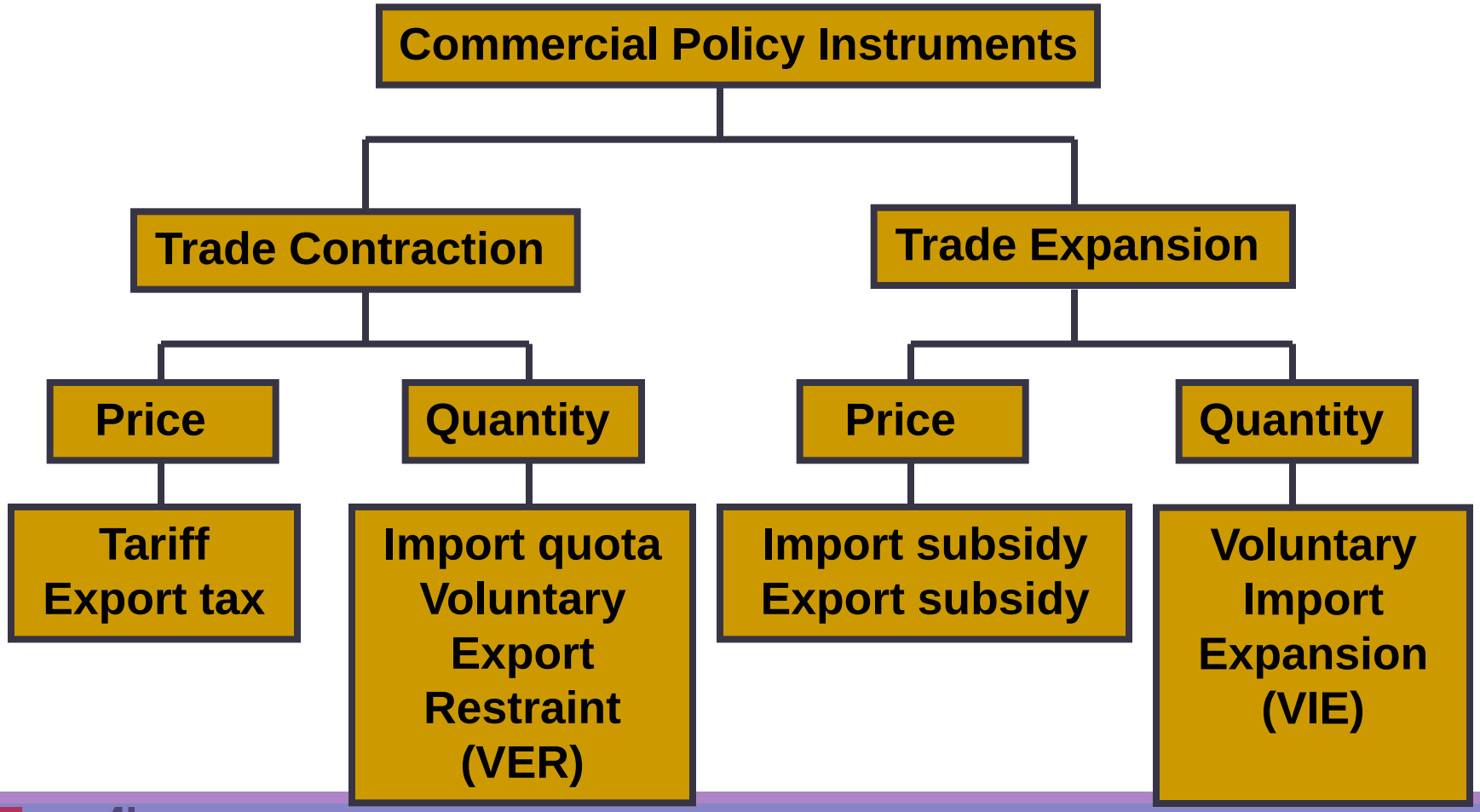
Instruments of trade policy

TARIFF ANALYSIS

Introduction

- What are the effects of various trade policy instruments?
  - Who will benefit and who will lose from these trade policy instruments?
- What are the costs and benefits of protection?
  - Will the benefits outweigh the costs?
- What should a nation's trade policy be?
  - For example, should the United States use a tariff or an import quota to protect its automobile industry against competition from Japan and South Korea?

Classification of Commercial Policy Instruments



Basic Tariff Analysis

Tariffs can be classified as:

- **Specific tariffs**
  - Taxes that are levied as a fixed charge for each unit of goods imported
- **Ad valorem tariffs**
  - Taxes that are levied as a fraction of the value of the imported goods
- A compound duty (tariff) is a combination of an ad valorem and a specific tariff.
- Modern governments usually prefer to protect domestic industries through a variety of nontariff barriers, such as:
  - **Import quotas**
    - Limit the quantity of imports
  - **Export restraints**
    - Limit the quantity of exports

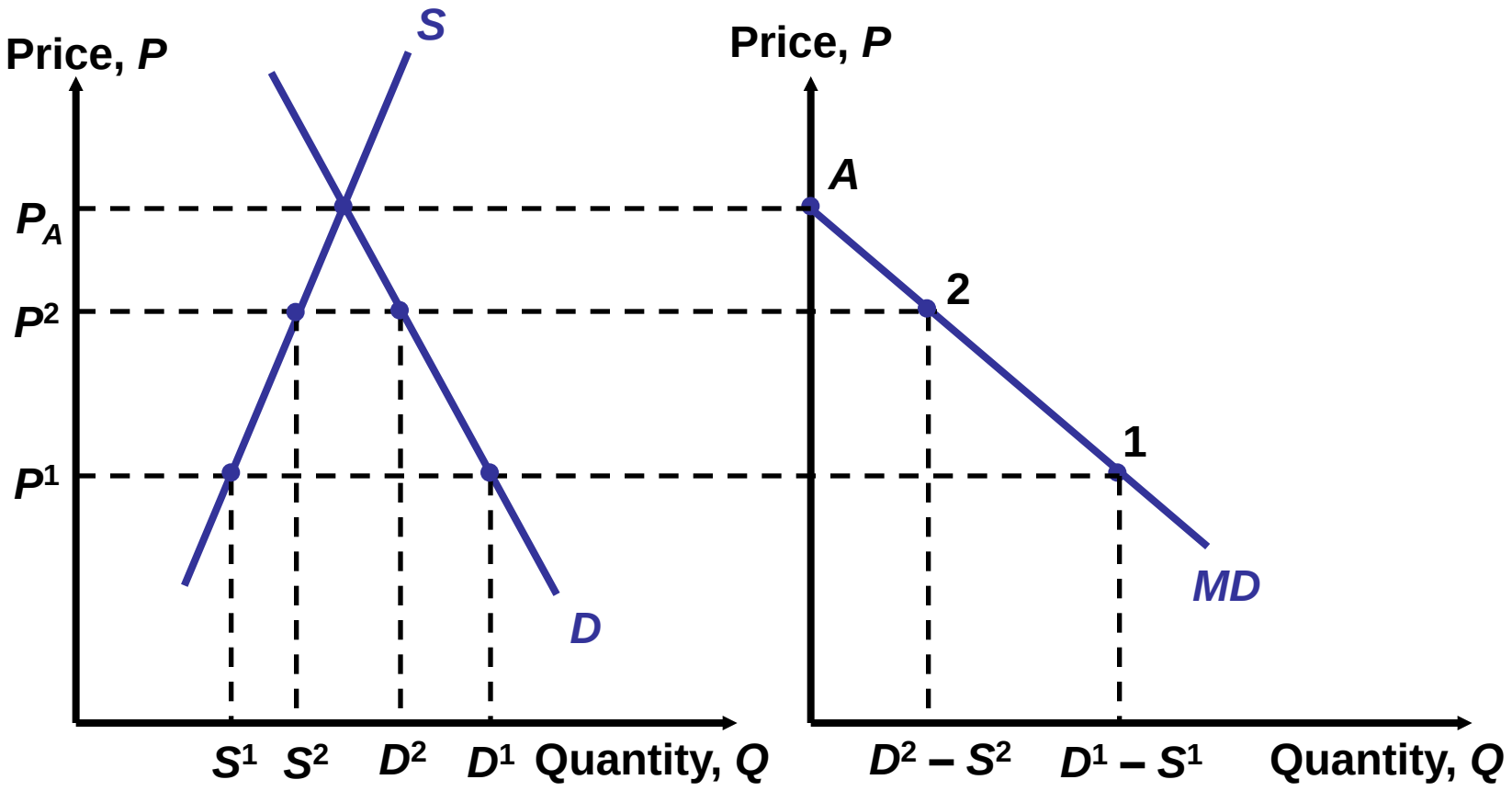
Basic Tariff Analysis

Supply, Demand, and Trade in a Single Industry

- Suppose that there are two countries (Home and Foreign).
- Both countries consume and produce wheat, which can be costless transported between the countries.
- In each country, wheat is a competitive industry.
- Suppose that in the absence of trade the price of wheat at Home exceeds the corresponding price at Foreign.
- With trade the domestic country will import: construct an import demand curve:
  - That is, the excess of what Home consumers demand over what Home producers supply: $MD = D(P) - S(P)$
- With trade the foreign country will export: construct an export supply curve:
  - That is, the excess of what Foreign producers supply over what foreign consumers demand: $XS = S^*(P^*) - D^*(P^*)$

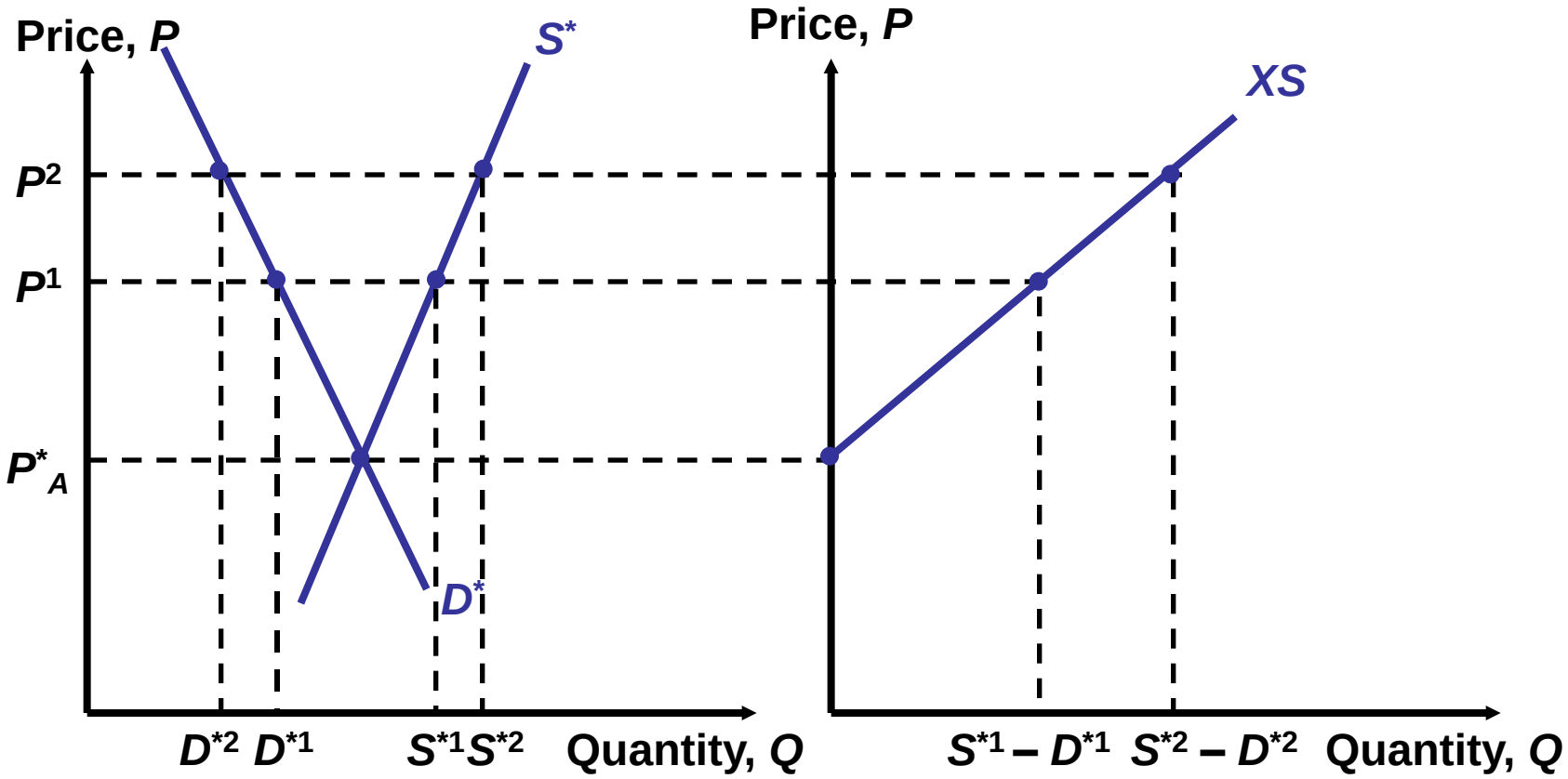
Basic Tariff Analysis

Deriving Home's Import Demand Curve

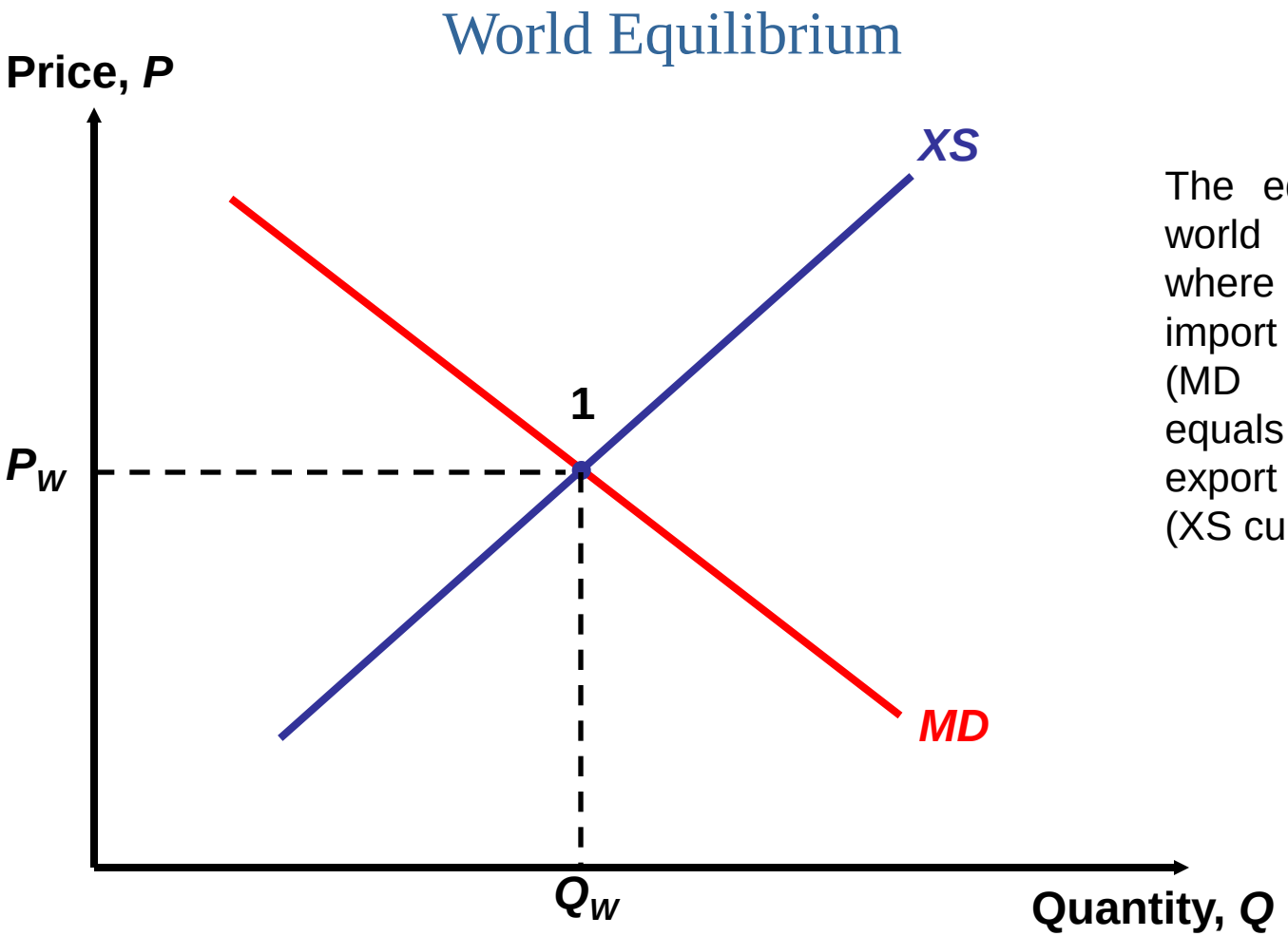


Basic Tariff Analysis

Deriving Foreign's Export Supply Curve



Basic Tariff Analysis



The equilibrium world price is where Home import demand (MD curve) equals Foreign export supply (XS curve).

Basic Tariff Analysis

Useful definitions:

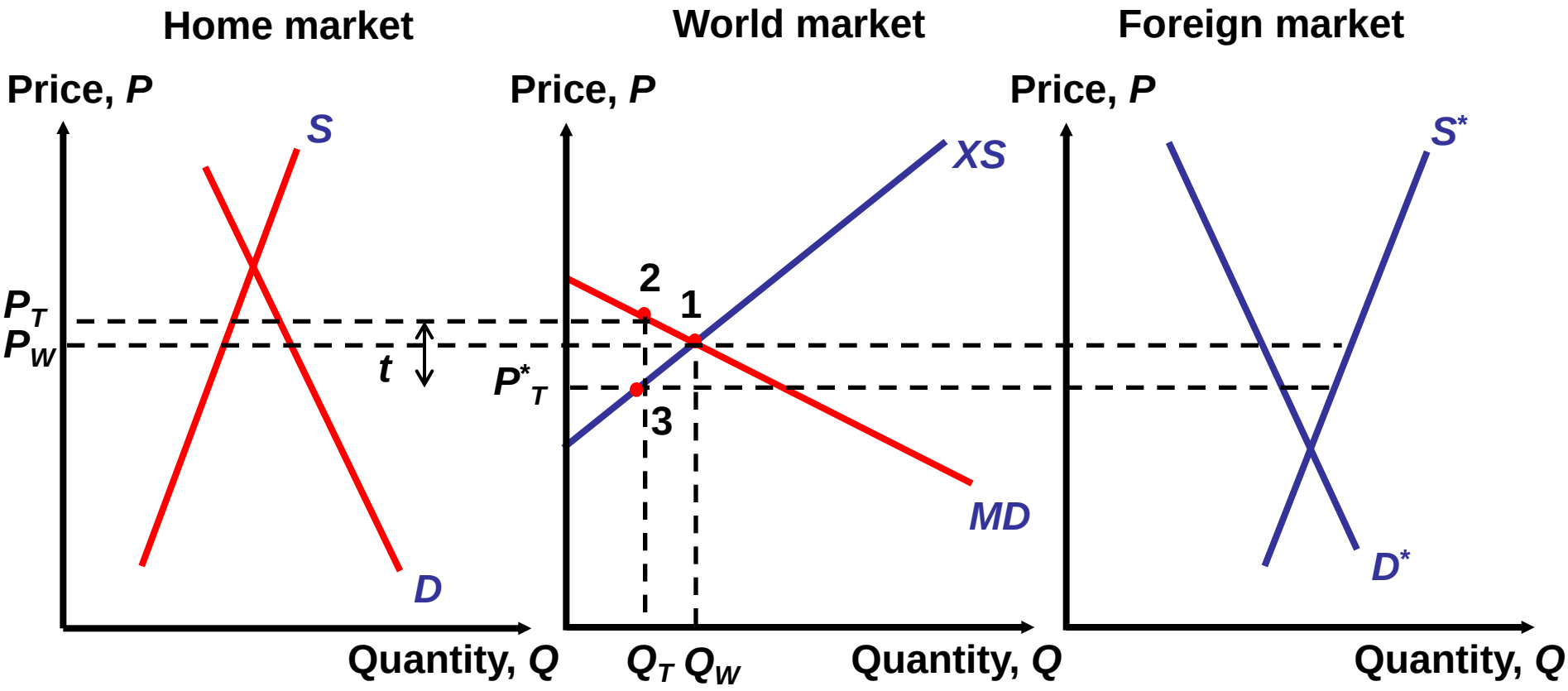
- The **terms of trade** is the relative price of the exportable good expressed in units of the importable good.
- A **small country** is a country that cannot affect its terms of trade no matter how much it trades with the rest of the world.

The analytical framework will be based on either of the following:

- Two large countries trading with each other
- A small country trading with the rest of the world

Basic Tariff Analysis

Effects of a Tariff



Basic Tariff Analysis

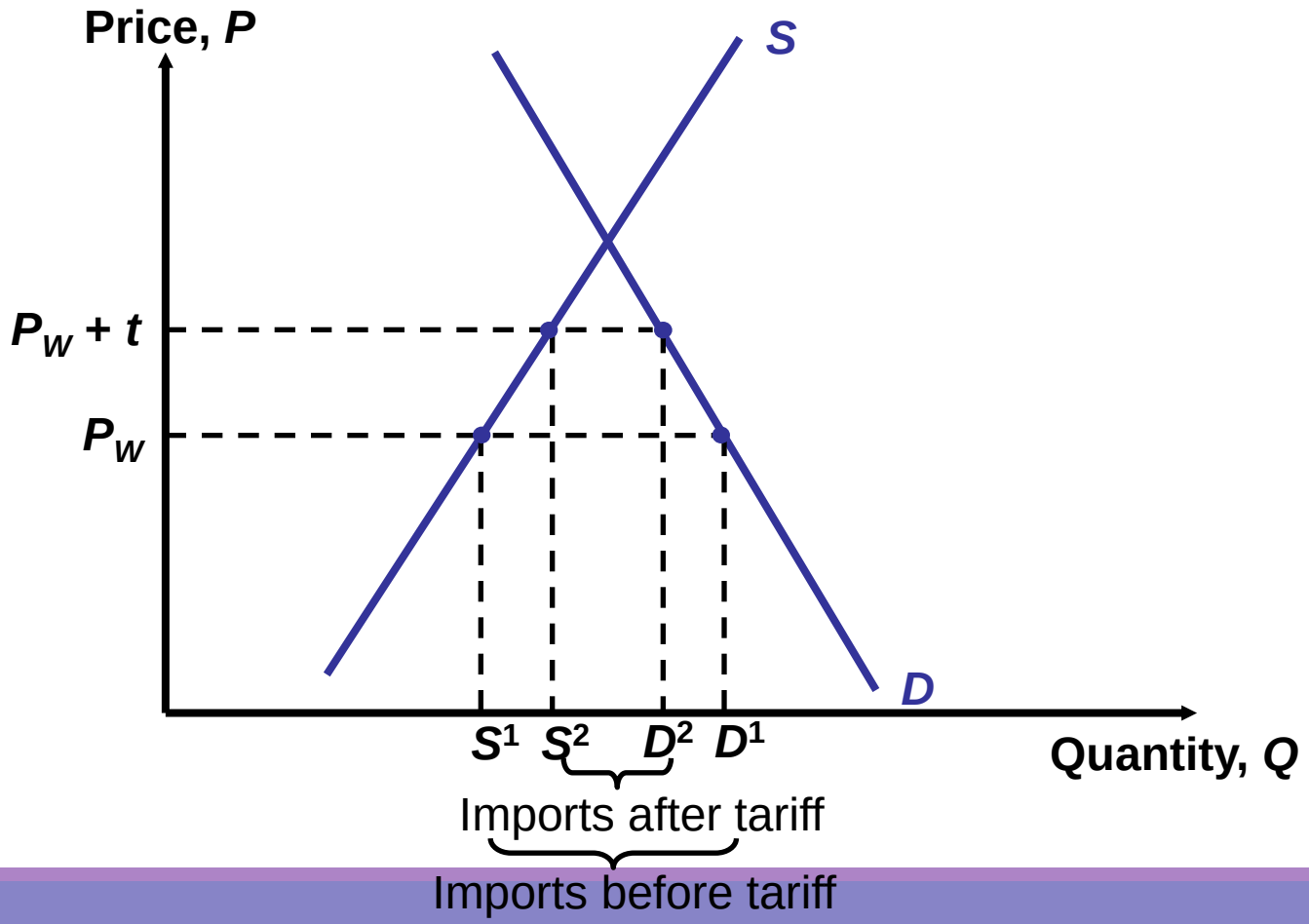
- In the absence of tariff, the world price of wheat (P_w) would be equalized in both countries.
- With the tariff in place, the price of wheat rises to P_T at Home and falls to P^*_T ($= P_T - t$) at Foreign until the price difference is $\$t$.
  - In Home: producers supply more and consumers demand less due to the higher price, so that fewer imports are demanded.
  - In Foreign: producers supply less and consumers demand more due to the lower price, so that fewer exports are supplied.
  - Thus, the volume of wheat traded declines due to the imposition of the tariff.
- The increase in the domestic Home price is less than the tariff, because part of the tariff is reflected in a decline in Foreign' s export price.

Basic Tariff Analysis

- The increase in the domestic Home price is less than the tariff, because part of the tariff is reflected in a decline in Foreign' s export price.
- If Home is a small country and imposes a tariff, the foreign export prices are unaffected and the domestic price at Home (the importing country) rises by the full amount of the tariff.

Basic Tariff Analysis

A Tariff in a Small Country



Basic Tariff Analysis

Measuring the Amount of Protection

- In analyzing trade policy in practice, it is important to know how much protection a trade policy actually provides.
  - One can express the amount of protection as a percentage of the price that would prevail under free trade.
    - Two problems arise from this method of measurement:
      - In the large country case, the tariff will lower the foreign export price.
      - Tariffs may have different effects on different stages of production of a good.
- One must consider both the effects of tariffs on the final price of a good, and the effects of tariffs on the costs of inputs used in production.

Costs and Benefits of a Tariff

A tariff raises the price of a good in the importing country and lowers it in the exporting country.

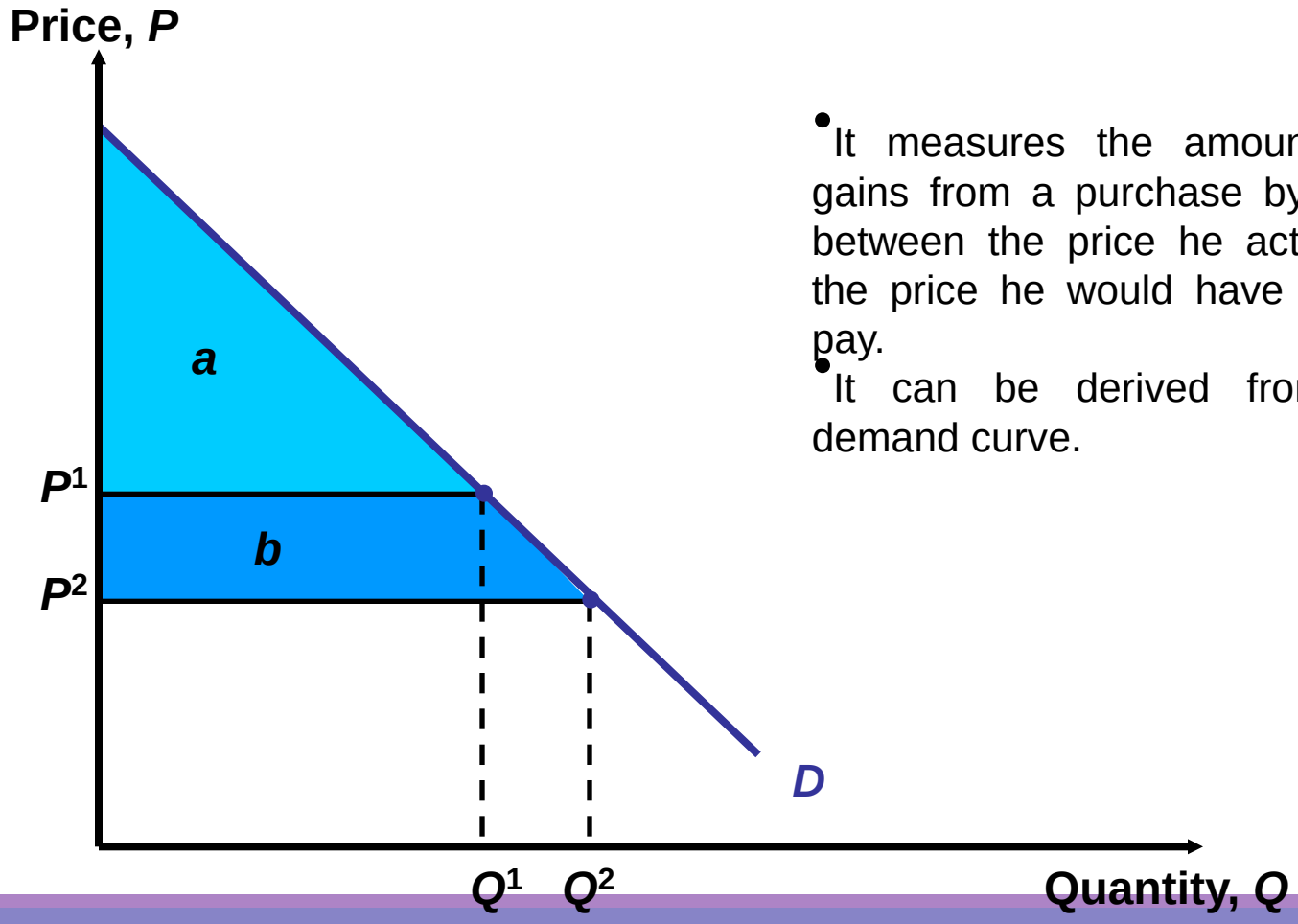
As a result of these price changes:

- Consumers lose in the importing country and gain in the exporting country
- Producers gain in the importing country and lose in the exporting country
- Government imposing the tariff gains revenue

To measure and compare these costs and benefits, we need to define consumer and producer surplus.

Costs and Benefits of a Tariff

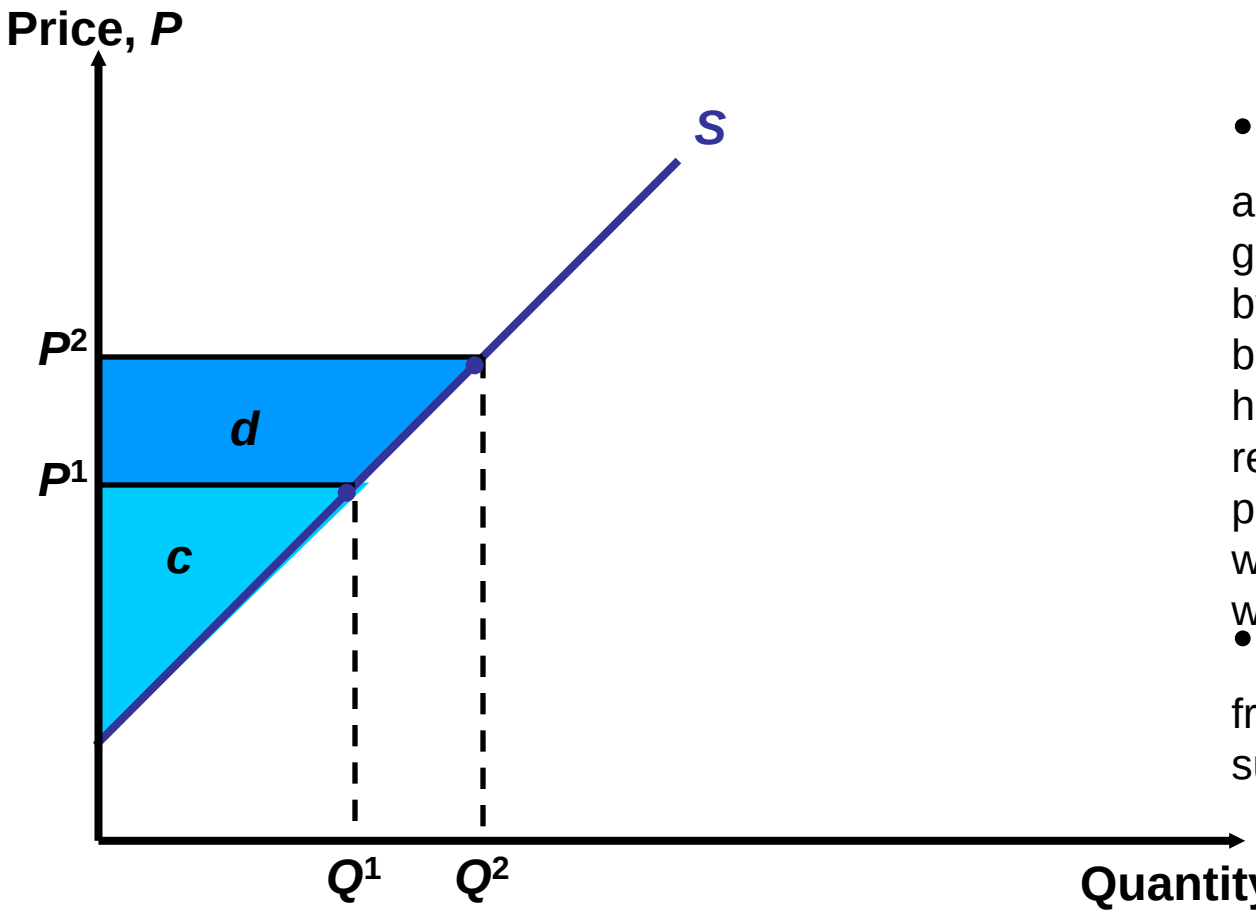
Geometry of Consumer Surplus



- It measures the amount a consumer gains from a purchase by the difference between the price he actually pays and the price he would have been willing to pay.
- It can be derived from the market demand curve.

Costs and Benefits of a Tariff

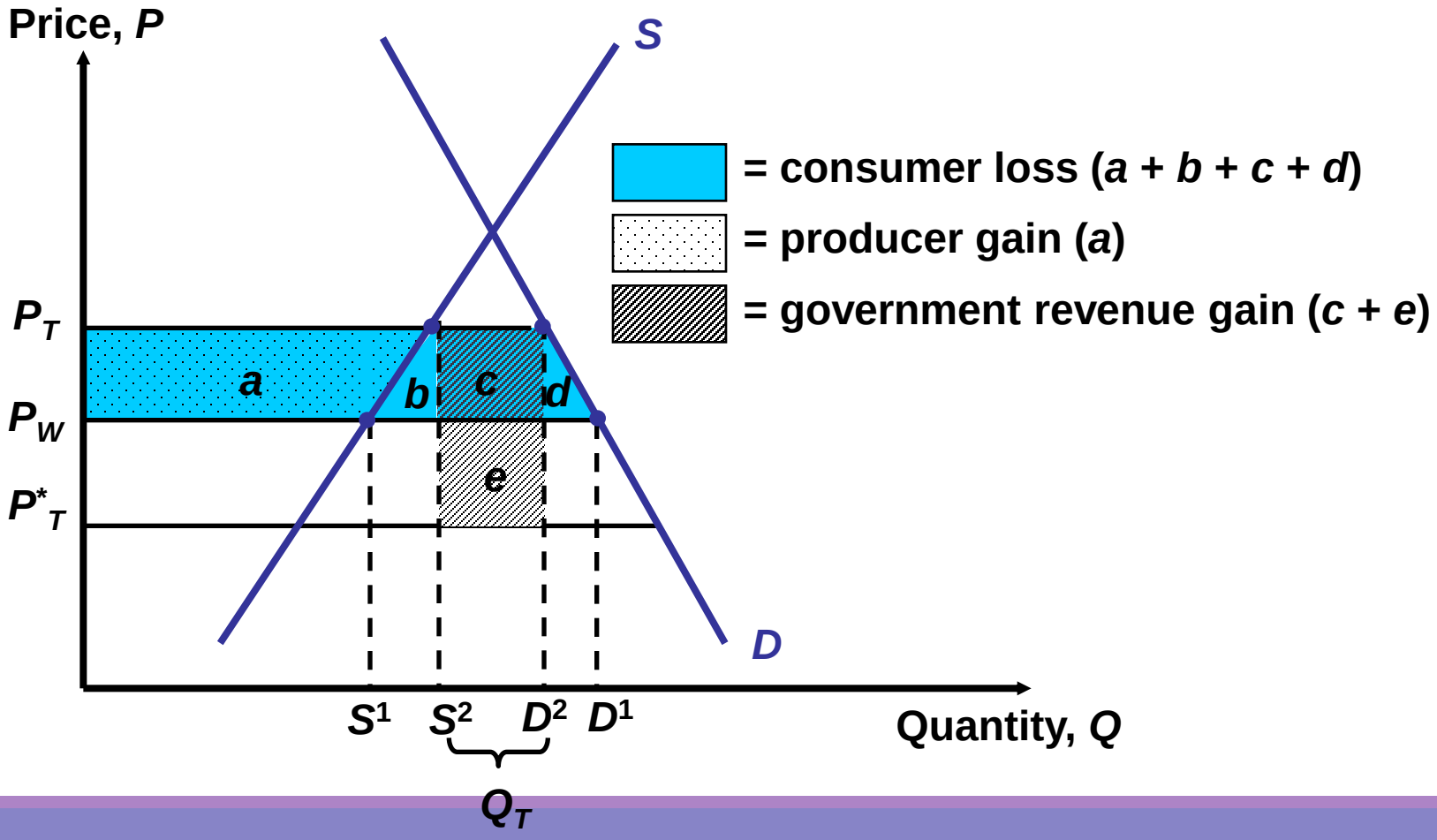
Geometry of Producer Surplus



- It measures the amount a producer gains from a sale by the difference between the price he actually receives and the price at which he would have been willing to sell.
- It can be derived from the market supply curve.

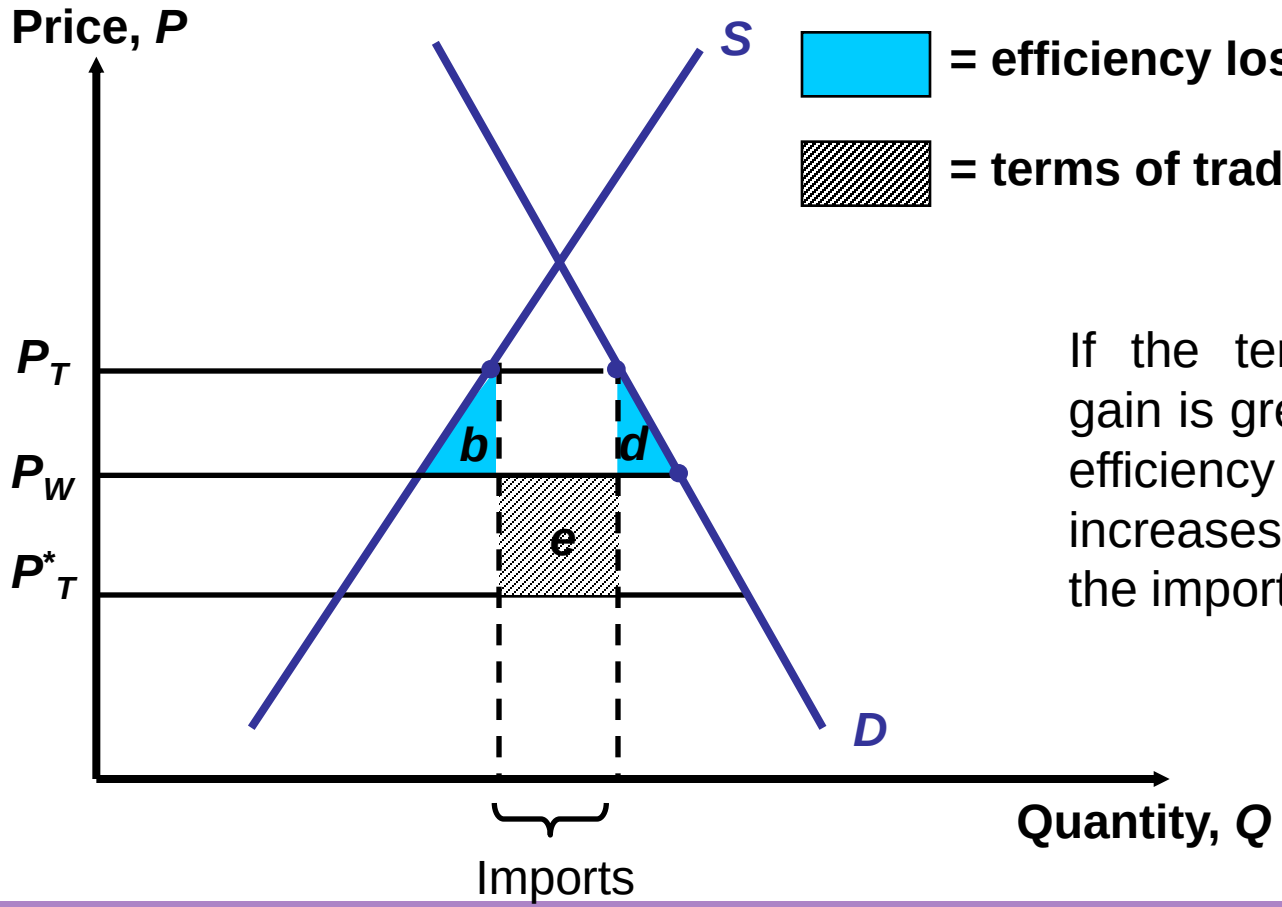
Costs and Benefits of a Tariff

Figure 8-9: Costs and Benefits of a Tariff for the Importing Country



Costs and Benefits of a Tariff

Effects of a Tariff



If the terms of trade gain is greater than the efficiency loss, the tariff increases welfare for the importing country.

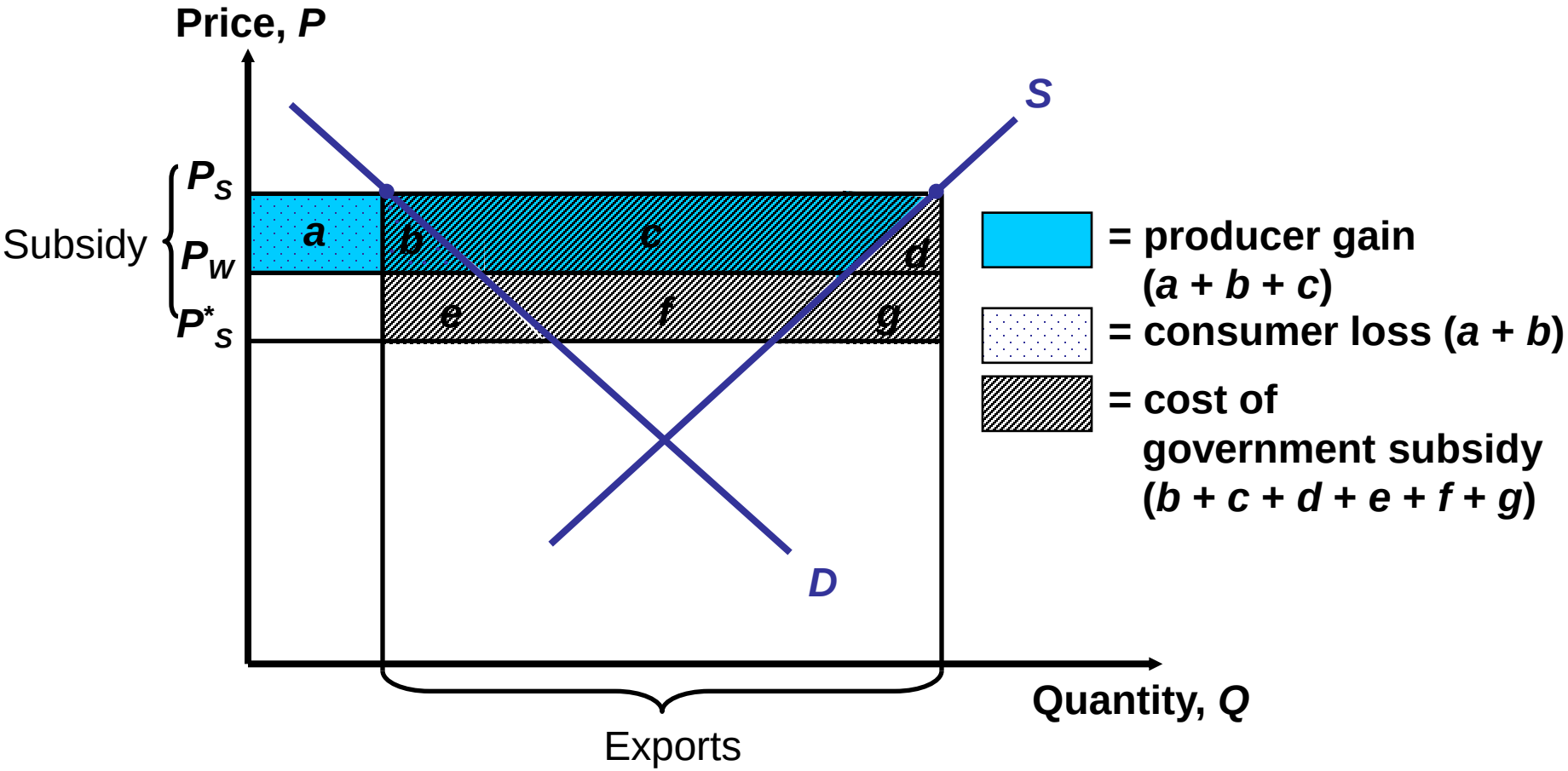
Other Instruments of Trade Policy

Export Subsidies

- A payment by the government to a firm or individual that ships a good abroad
  - When the government offers an export subsidy, shippers will export the good up to the point where the domestic price exceeds the foreign price by the amount of the subsidy.
- It can be either specific or ad valorem.

Other Instruments of Trade Policy

Effects of an Export Subsidy

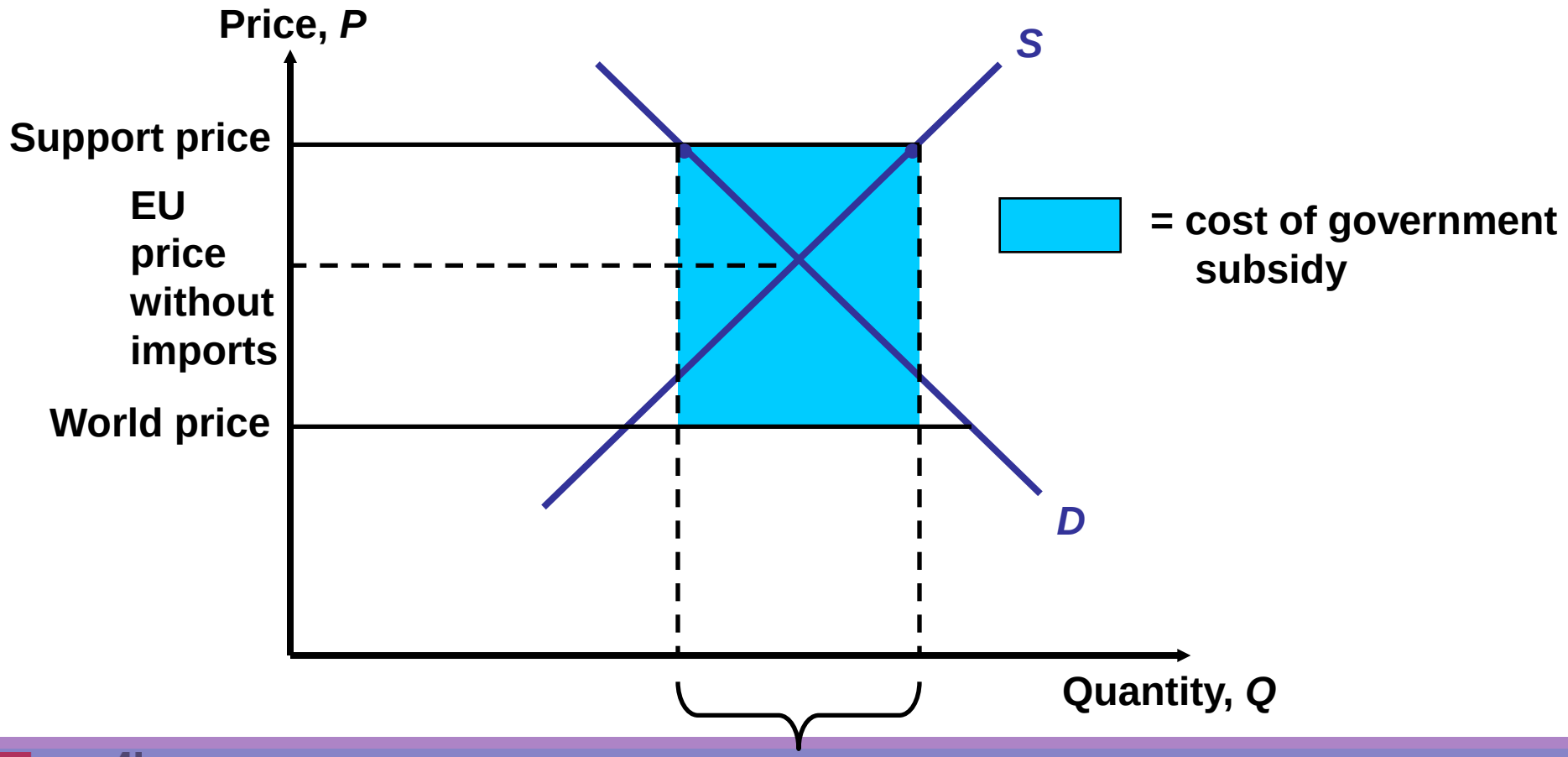


Other Instruments of Trade Policy

- An export subsidy raises prices in the exporting country while lowering them in the importing country.
- In addition, and in contrast to a tariff, the export subsidy worsens the terms of trade.
- Also, government revenue will decrease.
- An export subsidy unambiguously leads to costs that exceed its benefits.

Other Instruments of Trade Policy

Europe's Common Agricultural Program



Other Instruments of Trade Policy

Import Quotas

- An import quota is a direct restriction on the quantity of a good that is imported.
- The restriction is usually enforced by issuing licenses to some group of individuals or firms. (The only firms allowed to import are certain trading companies)
- In some cases the right to sell is given directly to the governments of exporting countries.
- There are two basic types of quotas:
  - absolute quotas: limit the quantity of imports to a specified level during a specified period of time
  - tariff-rate quotas: allow a specified quantity of goods to be imported at a reduced tariff rate during the specified quota period

Other Instruments of Trade Policy

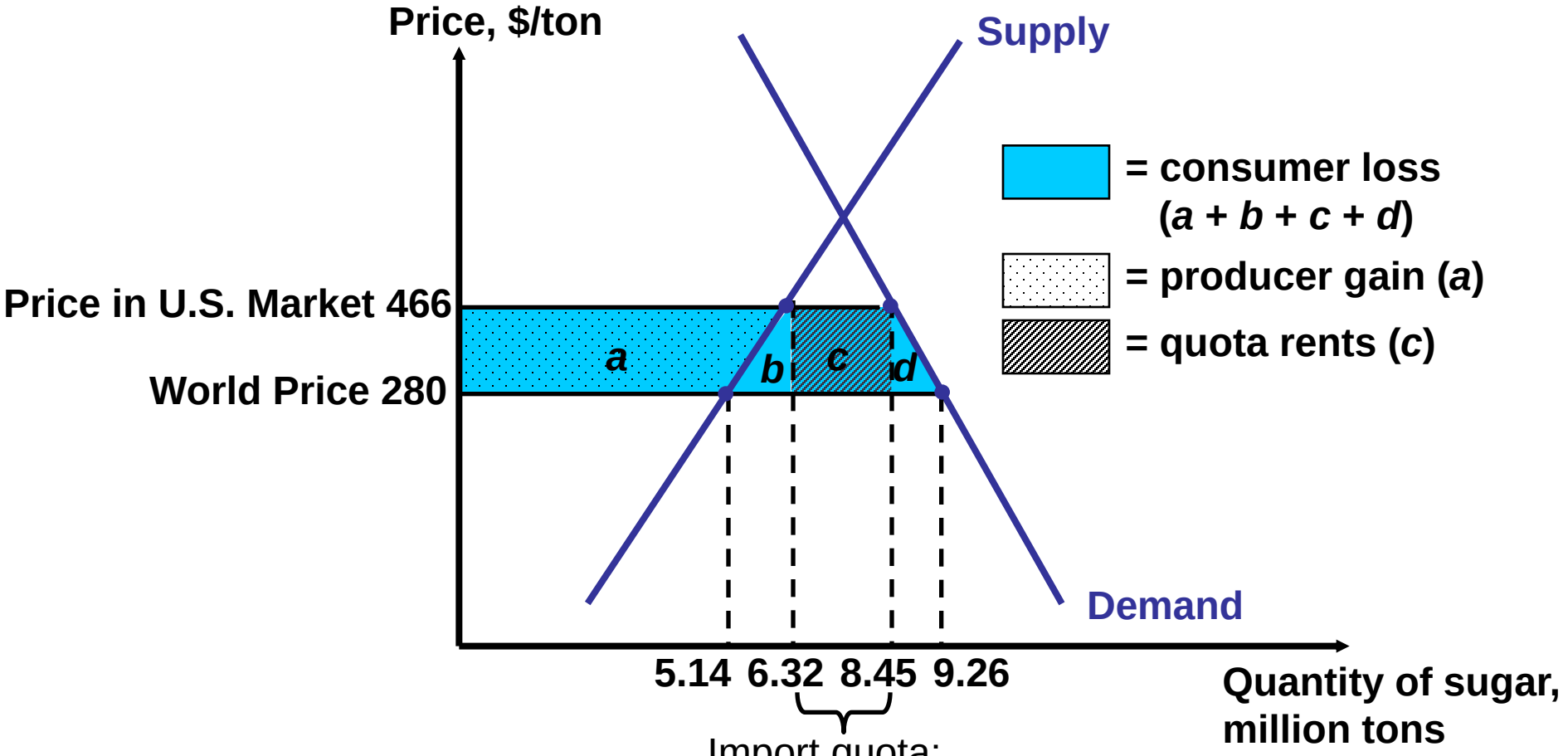
- An import quota is typically set below the free trade level of imports. In this case it is called a *binding quota*.
- An import quota always raises the domestic price of the imported good.
- License holders are able to buy imports and resell them at a higher price in the domestic market.
  - The profits received by the holders of import licenses are known as **quota rents**.

Other Instruments of Trade Policy

- Welfare analysis of import quotas versus of that of tariffs
  - The difference between a quota and a tariff is that with a quota the government receives *no* revenue.
  - In assessing the costs and benefits of an import quota, it is crucial to determine who gets the rents.
    - When the rights to sell in the domestic market are assigned to governments of exporting countries, the transfer of rents abroad makes the costs of a quota substantially higher than the equivalent tariff.

Other Instruments of Trade Policy

Effects of the U.S. Import Quota on Sugar



Other Instruments of Trade Policy

Voluntary Export Restraints

- A voluntary export restraint is a restriction set by a government on the quantity of goods that can be exported out of a country during a specified period of time
- A **voluntary export restraint (VER)** is an export quota administered by the exporting country.
  - It is also known as a voluntary restraint agreement (VRA).
- VERs are imposed at the request of the importer and are agreed to by the exporter to forestall other trade restrictions.

Other Instruments of Trade Policy

- A VER is exactly like an import quota where the licenses are assigned to foreign governments and is therefore very costly to the importing country.
- A VER is always more costly to the importing country than a tariff that limits imports by the same amount.
  - The tariff equivalent revenue becomes rents earned by foreigners under the VER.
- A VER produces a loss for the importing country.

Other Instruments of Trade Policy

Local Content Requirements

- A **local content requirement** is a regulation that requires that some specified fraction of a final good be produced domestically.
  - This fraction can be specified in physical units or in value terms.
- It provides protection in the same way that an import quota would.
- It does not place a strict limit on imports, but allows firms to import more if they also use more domestic parts.
- Local content laws have been widely used by developing countries trying to shift their manufacturing base from assembly back into intermediate goods.

Other Instruments of Trade Policy

- Local content laws do not produce either government revenue or quota rents.
  - Instead, the difference between the prices of imports and domestic goods gets averaged in the final price and is passed on to consumers.
- Firms are allowed to satisfy their local content requirement by exporting instead of using parts domestically.

Other Instruments of Trade Policy

Other Trade Policy Instruments

- Export credit subsidies
  - A form of a subsidized loan to the buyer of exports.
  - They have the same effect as regular export subsidies.
- National procurement
  - Purchases by the government (or public firms) can be directed towards domestic goods, even if they are more expensive than imports.
- Red-tape barriers
  - Sometimes governments place substantial barriers based on health, safety and customs procedures.

The Effects of Trade Policy: A Summary

Effects of Alternative Trade Policies

	Tariff	Export subsidy	Import quota	Voluntary export restraint
Producer surplus	Increases	Increases	Increases	Increases
Consumer surplus	Falls	Falls	Falls	Falls
Government net revenue	Increases	Falls (government spending rises)	No change (rents to licence holders)	No change (rents to foreigners)
National welfare	Ambiguous (falls for small country)	Falls	Ambiguous (falls for small country)	Falls

Summary

1. A tariff decreases the world price of the imported good when a country is “large”, increases the domestic price of the imported good and reduces the quantity traded.
2. A quota does the same.
3. An export subsidy decreases the world price of the exported good when a country is “large”, increases the domestic price of the exported good and increases the quantity produced.
4. The welfare effect of a tariff, quota and export subsidy can be measured by:
    - Efficiency loss from consumers and producers
    - Terms of trade gain or loss
5. With import quotas, voluntary export restraints and local content requirements, the government of the importing country receives no revenue.
6. With voluntary export restraints and occasionally import quotas, quota rents go to foreigners.

Measuring trade

BALANCE OF PAYMENTS

Introduction

The national income accounts and the balance of payments accounts are essential tools for studying the macroeconomics of open, interdependent economies.

National income accounting

- Records all the expenditures that contribute to a country's income and output

Balance of payments accounting

- Helps us keep track of both changes in a country's indebtedness to foreigners and the fortunes of its export- and import-competing industries

National Income Accounts

Records the value of **national income** that results from *production* and *expenditure*.

- Producers earn income from buyers who spend money on goods and services.
- The amount of expenditure by buyers =
  the amount of income for sellers =
  the value of production.
- National income is often defined to be the *income earned by a nation's factors of production.*

National Income Accounts: GNP

Gross national product (GNP)

- The value of all final goods and services produced by a country's factors of production and sold on the market in a given time period
- It is the basic measure of a country's output.
- GNP is calculated by adding the value of expenditure on final goods and services produced.

National Income Accounts: GNP

- GNP is calculated by adding the value of expenditure on final goods and services produced.
- There are 4 types of expenditure:

1. Consumption: expenditure by domestic residents
2. Investment: expenditure by firms on plants & equipment
3. Government purchases: expenditure by governments on goods and services
4. Current account balance (exports minus imports): net expenditure by foreigners on domestic goods and services

National Income Accounts

Capital Depreciation, International Transfers, and Indirect Business Taxes

- Adjustments to the definition of GNP:
  - Depreciation of capital
    - It reduces the income of capital owners.
    - It must be subtracted from GNP (to get the net national product).
  - Net unilateral transfers of income
    - They are part of a country's income but are not part of its product.
    - They must be added to the net national product.
  - Indirect business taxes
    - They are sales taxes.
    - They must be subtracted from GNP.

National Income Accounts: GDP

Another approximate measure of national income is **gross domestic product** (GDP):

Gross domestic product measures the final value of all goods and services that are produced *within a country* in a given time period.

GDP = GNP – factor payments from foreign countries + factor payments to foreign countries

National Income Accounting for an Open Economy

The National Income Identity for an Open Economy

- It is the sum of domestic and foreign expenditure on the goods and services produced by domestic factors of production:

$$Y = C + I + G + EX - IM \qquad (12\text{-}1)$$

where:

- Y is GNP
- C is consumption
- I is investment
- G is government purchases
- EX is exports
- IM is imports

- In a closed economy, $EX = IM = 0$.

National Income Accounting for an Open Economy

The Current Account and Foreign Indebtedness

- **Current account (*CA*) balance**
  - The difference between exports of goods and services and imports of goods and services ($CA = EX - IM$)
  - A country has a *CA* surplus when its $CA > 0$.
  - A country has a *CA* deficit when its $CA < 0$.
  - *CA* measures the size and direction of international borrowing.
    - A country's current account balance equals the change in its net foreign wealth.

National Income Accounting for an Open Economy

- *CA* balance is equal to the difference between national income and domestic residents' spending:

$$Y - (C + I + G) = CA$$

  - *CA* balance is goods production less domestic demand.
  - *CA* balance is the excess supply of domestic financing.

National Income Accounting for an Open Economy

Saving and the Current Account

- **National saving (*S*)**
  - The portion of output, *Y*, that is not devoted to household consumption, *C*, or government purchases, *G*.
  - It always equals investment in a closed economy.
    - A closed economy can save only by building up its capital stock ($S = I$).
    - An open economy can save either by building up its capital stock or by acquiring foreign wealth ($S = I + CA$).
  - A country's *CA* surplus is referred to as its net foreign investment.

Balance of Payments Accounts

A country's balance of payments accounts accounts for its payments to and its receipts from foreigners.

Each international transaction enters the accounts twice: once as a credit (+) and once as a debit (-).

The balance of payment accounts are separated into 3 broad accounts:

- **current account**: accounts for flows of goods and services (imports and exports).
- **financial account**: accounts for flows of financial assets (financial capital).
- **capital account**: flows of special categories of assets (capital), typically non-market, non-produced, or intangible assets like debt forgiveness, copyrights and trademarks.

Balance of Payments Accounts

The Fundamental Balance of Payments Identity

Due to the double entry of each transaction, the balance of payments accounts will balance by the following equation:

current account +

financial account +

capital account = 0

Balance of Payments Accounts

Each of the 3 broad accounts are more finely divided:

Current account: imports and exports

1. merchandise (goods like DVDs)
2. services (payments for legal services, shipping services, tourist meals,…)
3. income receipts (interest and dividend payments, earnings of firms and workers operating in foreign countries)

Current account: *net unilateral transfers*

- gifts (transfers) across countries that do not purchase a good or service nor serve as income

Balance of Payments Accounts

Capital account: records special asset transfers.

Financial account: the difference between sales of domestic assets to foreigners and purchases of foreign assets by domestic citizens.

Financial (capital) inflow

- Foreigners loan to domestic citizens by acquiring domestic assets.
- Foreign owned (sold) assets in the domestic economy are a credit (+)

Financial (capital) outflow

- Domestic citizens loan to foreigners by acquiring foreign assets.
- Domestically owned (purchased) assets in foreign economies are a debit (-)

The Balance of Payments Accounts

The Statistical Discrepancy

- Data associated with a given transaction may come from different sources that differ in coverage, accuracy, and timing.
  - This makes the balance of payments accounts seldom balance in practice.
  - Account keepers force the two sides to balance by adding to the accounts a statistical discrepancy.
  - It is very difficult to allocate this discrepancy among the current, capital, and financial accounts.

Official (international) reserve assets: foreign assets held by central banks to cushion against instability in international markets.

- Assets include government bonds, currency, gold and accounts at the International Monetary Fund.
- Official reserve assets owned by (sold to) foreign central banks are a credit (+).
- Official reserve assets owned by (purchased by) the domestic central bank are a debit (-).

Current account balance

The current account usually is not balanced

CA<0 (surplus)	CA>0 (deficit)
The country purchases more than it sells to foreigners →The deficit must be financed →The country borrows from foreigners: increase in net foreign debt, decrease in net foreign wealth	The country purchases less than it sells to foreigners →The surplus must be spent →The country lends to foreigners

Saving and current account

Closed economy	Open economy
- National saving (part of the income not consumed by the country): S=Y-C-G - National income Y=C+I+G → I=Y-C-G - Equilibrium: S=I	- National saving (part of the income not consumed by the country): S=Y-C-G - National income Y=C+I+G+CA → I+CA=Y-C-G - Equilibrium: S=I+CA - Sources of investment: I=S-CA - National savings (S) - CA deficit (borrowing foreign savings)