

Samenvatting
-International Economics-



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Objectives of the course

International Economics

After the course students will be able to:

- Think in terms of economic models.
- Apply the basics of national income accounting and the balance of payments and describe the basic adjustment mechanism for the exchange rate and the balance of payments.
- Distinguish key parities in international economics and explain their role in the determination of the exchange rate in the short and long run.
- Discuss the role of money and monetary policy for the determination of the exchange rate and explain why exchange rates may overshoot their long run value.
- Distinguish alternative exchange rate regimes, explain the policy trilemma for open economies and discuss the main developments in international monetary economics.
- Distinguish and explain the alternative theories of international trade, understanding their empirical validity as well.
- Interpret and explain the consequences of international trade for countries as a whole as well as for different groups of constituents in society.
- Explain and understand the role firms play in the world economy.
- Explain the working and effects of trade policy in partial equilibrium.
- Understand the political economy of trade policy and the position of the WTO therein.

Lecture 1

International Monetary Economics

Chapter 1

Introduction

The seven important points when studying international economics are as follows.

1. **The gains from trade:** when countries exchange commodities and services. This exchange is almost always mutually beneficial.
2. **The pattern of trade:** who sells what to whom. For example: Brazil exports coffee, but why exports Japan cars and not planes?
3. **Protectionism:** e.g. free trade agreements to determine how much can be exchanged. Important with this analysis is conflict of interests within nations, instead of conflict of interest between nations.
4. **The balance of payments:** a trade surplus or deficit should be placed in the right economic context of the country, to really understand what it means.
5. **Exchange rate determination:** the relative value of a currency can change over time, so the exchange rate should be determinable.
6. **International policy coordination:** a problem of international economics is the determination of monetary policy of different countries to harmonize trade, while there is no such thing as a worldwide government.

The international capital market: due to the growth of international trade, the international capital market has also been growing. Exchange rate fluctuations is the greatest risk of this international capital market.

International trade: focuses mainly on real transactions in the international economy. These are transactions where there is a physical movement of commodities or a tangible commitment of economic resources.

International money: financial transactions.

Chapter 13

National Income Accounting and the Balance of Payments

Gross national product (GNP) is the value of all final goods and service produced by the country's factors of production and sold on the market in a given time period. It's the basic measure of a country's output.

GNP = national income

Every dollar spend is someone's income.

GNP can be divided in the factors of production:

- **Consumption:** part of GNP purchased by private households.
- **Investment:** part of GNP used by private firms to produce future output*.
- **Government purchases:** goods or services purchased by the government and investments.
- **Current account balance:** the difference between imports and exports of a country.

* Do not confuse this with investment to describe households purchases of stocks, bonds or real estate. These are not goods or services so do not count for the GNP.

Depreciation reduces the income of capital owners. Therefore, to calculate the national income you have to subtract the depreciation of capital from the GNP.

NNP (= net national product) is GNP less depreciation.

Unilateral transfers are gifts from residents of foreign countries (e.g. pension payments to retired citizens living abroad or foreign aid). Unilateral transfers are part of a country's income but not of its product, and they must be added to NNP in calculations of national income.

National income = GNP – depreciation + unilateral transfers

Difference between GNP and national income is an insignificant amount. From now on the terms GNP and national income are interchangeably.

GDP = volume of production within a country's borders

GNP = GDP + net receipts of factor income

Closed economy:

$$Y = C + I + G$$

Open economy:

$$Y = C + I + G + CA$$

The current account balance (CA) is the difference between export and import ($EX - IM$). It measures the size of international borrowing. A country with a current account deficit must be increasing its **net foreign debts** to finance their deficit. When there is a current account surplus **the foreign wealth** of a country rises by lending to other countries. A country's current accounts balance equals the change in net foreign wealth.

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

National saving is the portion of output that is not devoted to consumption or government purchases:

$$S = Y - C - G$$

Closed economy $I = Y - C - G$ so $S = I$

National savings must equal investment in a closed economy.

Open economy $S = I + CA$

A closed economy can only save by building up its capital stock but an open economy can also acquiring foreign wealth.

Net foreign investment = a country's current account surplus.

Private saving is the part of disposable income ($Y - T$) which is not consumed

$$S^p = Y - T - C$$

Government saving is given by taxes minus government spending, $S^g = T - G$

Total savings equals the private savings plus the government savings.

$$S = S^p + S^g$$

The equation below (formula 13-2 of the book) can be useful when analysing the effects of government saving decisions on open economies.

$$S^p = I + CA - S^g = I + CA - (T - G) = I + CA + (G - T)$$

The Balance of Payments (BoP)

Current account: exports and imports.

The current account has three categories: goods, services and income.

Financial account: purchase or sale of financial assets.

Capital account: transfers of wealth, nonmarket activities.

Every international transaction automatically enters the balance of payments twice, once as a credit and once as a debit.

Current account (CA) + Capital account = Financial account

Every Central Bank has **official international reserves**, which are foreign assets that can be used as a cushion against national economic misfortune. **Official foreign exchange interventions** are transactions from a central bank in private asset markets to affect macroeconomic conditions in their economy. These transactions are included in the financial account.

A country had a deficit in its balance of payments when it is running down/reducing its official international reserves or borrowing from foreign central banks. The country has a surplus in the opposite case.

The balance of payments / official settlements balance

Money flows in (+)	Money flows out (-)
Credit	Debit
Exports	Imports
Decrease private net foreign wealth	Increase private net foreign wealth
Decrease in reserves	Increase in reserves

Lecture 2

International Monetary Economics

Chapter 14

Exchange Rates and the Foreign Exchange Market: An Asset Approach

The price of one currency in terms of another is called an **exchange rate**.

- Direct term: the price of the foreign currency in terms of dollars (\$0.01232 per yen).
- Indirect term: the price of dollars in terms of the foreign currency (¥83.77 per dollar).

Depreciation is a fall in the price of a currency against another currency, it lowers the relative price of a country's exports. This makes goods cheaper for foreigners and foreign goods more expensive for domestic consumers.

Depreciation (of home currency \$): $e \uparrow$

- Value of home currency \$ \downarrow
- Value of foreign currency € \uparrow
- The foreign currency euro has appreciated relative to the dollar; it is now more expensive and can buy more domestic goods.

Appreciation is a rise in the price of a currency against another currency, it raises the relative price of its exports. This makes goods more expensive for foreigners and foreign goods cheaper for domestic consumers.



Appreciation (of home currency \$): e ↓

- Value of home currency \$ ↑
- Value of foreign currency € ↓

$$\text{Relative price of a good} = \frac{P}{E \cdot P^*}$$

The market in which international currency trades takes place is called the **foreign exchange market**.

Four major actors in the foreign exchange market and their roles:

1. **Commercial banks**

Commercial banks are at the centre of the foreign exchange market, because almost every international transaction involves debiting and crediting at commercial banks. Foreign currency trading among commercial banks is called **interbank trading**. This accounts for much of the activity in the foreign exchange market.

2. **Corporations**

Corporations with operations in several countries make or receive payments in other currencies than that of the country in which they are headquartered (e.g. pay wages in a local currency).

3. **Nonbank financial institutions**

Deregulation of financial markets has encouraged these institutions to offer their customers a broader range of services, which involve foreign currencies. Examples of nonbank financial institutions are mutual funds, hedge funds or institutional investors.

4. **Central banks**

Central banks affect exchange rates with macroeconomic policies. The volume of the transactions is typically small but they have a great impact since participants in the foreign exchange market watch the actions of central banks closely for clues about future macro-economic policies that may affect exchange rates.

Arbitrage is the process of buying a currency cheap and selling it elsewhere for more. This is possible when, for instance, the dollar/euro rate is 1.1 in the U.S. and 1.2 in the United Kingdom. However, the difference will disappear since the demand for the currency rises in the U.S., which will increase the prices, and in the U.K. the price will fall due to an increase in supply. Nowadays arbitrage opportunities are smaller and short-lived, due to the integration of financial centres around the world.

The U.S. dollar is sometimes called a **vehicle currency**. A currency that is widely used to denominate international contracts made by parties who do not reside in the country that issues the vehicle currency. Change your currency first in dollars and then trade dollars for the wished currency.

Spot exchange rates are exchange rates for currency exchanges “on the spot”, or when trading is executed in the present.

Forward exchange rates are exchange rates for currency exchanges that will occur at a future (“forward”) date. Forward dates are typically 30, 90, 180, or 360 days in the future. The rates are negotiated between two parties in the present, but the actual exchange occurs in the future.

Foreign exchange swap: a spot sale of a currency combined with a forward repurchase of that currency.

Futures contract: a promise that a specified amount of foreign currency will be delivered on a specified date in the future. In contrast to a forward contract, a futures contract does not have to be fulfilled because it can be sold on the secondary market.

Foreign exchange option: gives its owner the right to buy or sell a specified amount of foreign currency at a specified price at any time up to a specified expiration date.

Put option: the right to sell the foreign currency at a known exchange rate at any time during the month.

Call option: the right to buy the foreign currency at a known exchange rate at any time during the month.

A foreign currency deposit’s future value depends on two factors:

- Interest rate.
- Expected change in the currency’s exchange rate against other currencies.

Rate of return: the percentage increase in an asset’s value over some time period.

Dollar rate of return: rate of return expressed in dollars.

Real rate of return: percentage rate of return – percentage increase in price level.

Returns on assets can only be compared if they are measured in the same units.

Savers care about:

- The expected real rate of return – an asset with a high expected rate of return may appear undesirable if its realized rate of return fluctuates widely.
- Risk.
- Liquidity – assets differ according to the cost and speed at which savers can dispose of them.

To calculate the rate of return:

- Interest rate.
\$ interest rate = \$ rate of return of a dollar deposit.
€ interest rate = € rate of return on a euro deposit.
- Exchange rate.
Rate of depreciation of the \$/€.
(percentage increase in the dollar/euro exchange rate over a year)

Expected rate of return on a euro deposit measured in terms of dollars.

$$R_{\text{€}} + \frac{E_{\$,€}^e - E_{\$,€}}{E_{\$,€}}$$

Expected rate of return on a dollar deposit measured in terms of euros.

$$R_{\text{\$}} - \frac{E_{\$,€}^e - E_{\$,€}}{E_{\$,€}}$$

Expected rates of return need to be compared to decide whether euro or dollar deposits offer the highest expected rate of return.

$$R_{\text{\$}} - R_{\text{€}} - \frac{E_{\$,€}^e - E_{\$,€}}{E_{\$,€}}$$

If the outcome of the equation above is negative, then euro's deposit yield the highest expected return. However, if it is positive, the dollar's deposit yield the highest expected return.

Equilibrium in the foreign exchange market

The foreign exchange market is in equilibrium when deposits of all currencies offer the same expected rate of return. The condition that the expected returns on deposits of any two currencies are equal when measured in the same currency is called the **(uncovered) interest parity condition**. It implies that potential holders of foreign currency deposits view them all as equally desirable assets, provided their expected rates of return are the same.

The expected rates of return are equal / the (uncovered) interest parity condition holds when:

$$R_{\text{\$}} = R_{\text{€}} + \frac{E_{\$,€}^e - E_{\$,€}}{E_{\$,€}}$$

When one currency offers a higher return, demand for that currency will increase. Consequently, that currency will appreciate and the other currency depreciates because of an excess supply. This goes on until participants in the foreign exchange market are equally willing to hold either of the currencies.

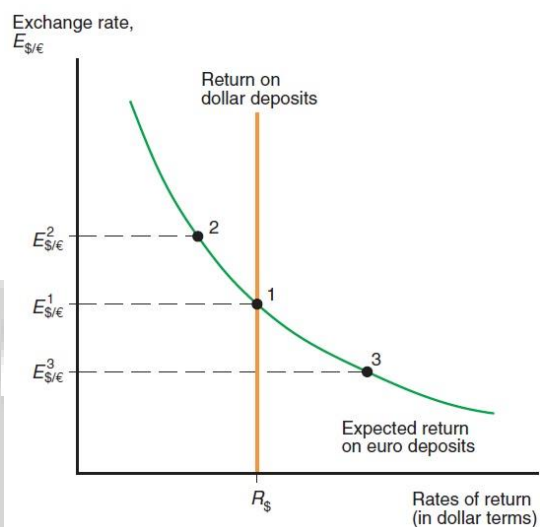
Depreciation of a country's currency today lowers the expected domestic (\$) currency return on foreign (€) currency deposits. Appreciation will raise the domestic currency return expected of foreign currency deposits. (Interest rates and expected exchange rate are fixed).

Equilibrium in the exchange market is when the interest parity condition is satisfied.

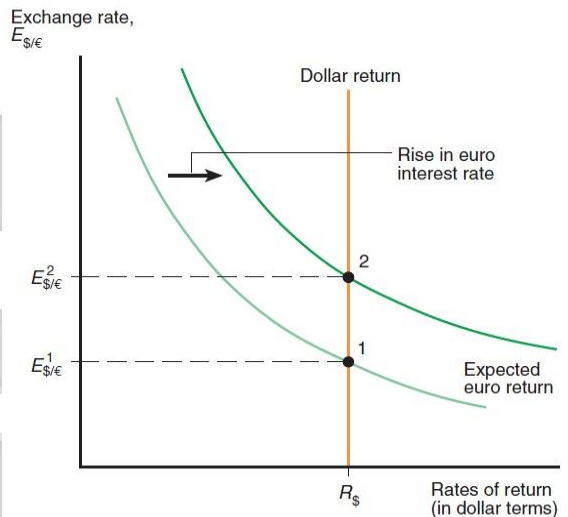
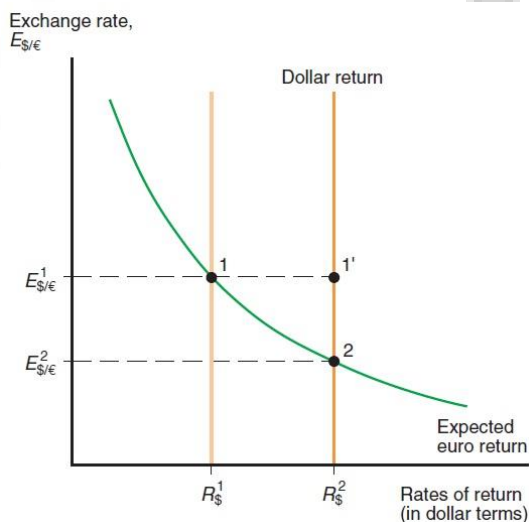
$R_{\text{\$}}$, $R_{\text{€}}$ and $E_{\$,€}^e$ are given. Exchange rates always adjust to maintain interest parity.

When the economy is at a point 2 above the equilibrium point, the return on euro (€) deposits is less than the return on dollar (\$) deposits. People will sell euros (€) and buy dollars (\$). The dollar appreciates and the euro depreciates until the economy is back in equilibrium.

When the economy is at a point 3 below the equilibrium point, the return on euro (€) deposits is higher than the return on dollar (\$) deposits. People will buy euros (€) and sell dollars (\$). The dollar depreciates and the euro appreciates until the economy is back in equilibrium.



The effect of changing \$ or € interest rate on the current exchange rate can be seen as a shift of the curve(s).



If $R_{\$}$ increases, $R_{\$} > R_{€}$ (or $R_{€}$ decreases, $R_{€} < R_{€}$), the demand for dollars (\$) increases and the demand for euros (€) decreases. From equilibrium 1 to equilibrium 2 \rightarrow appreciation of the dollar / depreciation of the euro.

If $R_{\$}$ decreases, $R_{\$} < R_{€}$ (or $R_{€}$ increases, $R_{€} > R_{€}$), the demand for dollars (\$) decreases and the demand for euros (€) increases. From equilibrium 1 to equilibrium 3 \rightarrow depreciation of the dollar / appreciation of the euro.

An increase in the interest paid on deposits of a currency causes that currency to appreciate against the foreign currencies.

Effect of changing of $E_{\$,€}$ or $E_{\$,€}^e \rightarrow$ shift of the curve.

Increase in the expected depreciation of the dollar ($E_{\$,€}^e \uparrow$) $\rightarrow E_{\$,€} \uparrow$ and thus the return on euro deposits will increase .

Increase in the expected depreciation of the euro ($E_{\$,€}^e \downarrow$) $\rightarrow E_{\$,€} \downarrow$ and thus the return on dollar deposits will increase.

A rise or fall in the expected future exchange rate causes a rise or fall in the current exchange rate.

The covered interest parity condition

There is a close connection among the forward exchange rate between two currencies, their spot exchange rate and the interest rates on deposits denominated in those currencies. The connection is described by the **covered interest parity condition**, which is similar to the (uncovered) interest parity condition defining foreign exchange market equilibrium but involves the forward exchange rate rather than the expected future spot exchange rate.

Suppose a consumer want to buy a euro deposit with dollars, but would like to be certain about the number of dollars it will be worth at the end of a year. Exchange rate risk can be avoided by buying a euro deposit and, at the same time, selling the proceeds of your investment forward. When a euro deposit is bought with dollars at the same time the principal and interest is sold forward for dollars, it is said that the consumer has “covered” his-/herself, that is, avoided the possibility of an unexpected depreciation of the euro. The covered interest parity condition states that the rates of return on dollar deposits and “covered” foreign deposits must be the same.

The covered interest parity condition can be written as:

$$R_{\$} = R_{€} + (F_{\$/€} - E_{\$/€})/E_{\$/€}$$

In which $(F_{\$/€} - E_{\$/€})/E_{\$/€}$ is called the forward premium on euros against dollars. (It is also called the forward discount on dollars against euros.) The interest parity condition is thus as follows:

The interest rate on dollar deposits equals the interest rate on euro deposits plus the forward premium on euros against dollars (the forward discount on dollars against euros).

By comparing the (uncovered) interest parity condition with the covered interest parity condition, it can be concluded that both conditions can be true at the same time only if the one-year forward rate quoted today equals the spot exchange rate people expect to materialize a year from today: $F_{\$/€} = E_{\$/€}$.



Chapter 16

Price Levels and the Exchange Rate in the Long Run

The **Law of one price** states that in competitive markets, which are free of transportation costs and official barriers to trade, identical goods sold in different countries must sell for the same price when their prices are expressed in terms of the same currency. Otherwise there would be arbitrage opportunities, until a single price prevailed in the two markets.

$$P_{US}^i = (E_{\$/\epsilon}) \times (P_E^i)$$

The exchange rate is the ratio of the good its prices.

$$E_{\$/\epsilon} = P_{US}^i / P_E^i$$

P^i is the price of good i in U.S. or Europe

Purchasing power parity (PPP) states that the exchange rate between two countries' currencies equals the ratio of the countries' price levels.

A fall in a currency's domestic purchasing power (increase in the domestic price level) will be associated with a proportional currency depreciation in the foreign exchange market. The other way around, an increase in the currency's domestic purchasing power will be associated with a proportional currency appreciation.

PPP predicts a dollar/euro exchange rate of:

$$E_{\$/\epsilon} = \frac{P_{US}}{P_E}$$

$$P_{US} = (E_{\$/\epsilon}) \times (P_E)$$

PPP holds when every currency's domestic purchasing power is always the same as its foreign purchasing power.

The difference between PPP and the law of one price is that the law of one price applies to individual commodities (like commodity i) while PPP applies to the general price level.

Absolute PPP states that the exchange rates equal the relative price levels.

Relative PPP states that the percentage change in the exchange rate between two currencies equals the difference between the percentage change in national price levels.

$$(E_{\$/\epsilon,t} - E_{\$/\epsilon,t-1}) / E_{\$/\epsilon,t-1} = \pi_{US,t} - \pi_{E,t}$$

π = inflation rate

$$\pi = (P_t - P_{t-1}) / P_{t-1}$$

Monetary approach to the exchange rate

In the long run, **prices can adjust right away** to maintain full employment as well as PPP. The long run value is the equilibrium value in a world with perfectly flexible output and factor market prices.

Developing the monetary approach's predictions for the dollar/euro exchange rate.

The foreign exchange market sets the rate so that PPP holds. This applies to a world where there are no market rigidities to prevent the exchange rate and other prices from adjusting immediately to levels consistent with full employment.

$$E_{\$/\epsilon} = \frac{P_{US}}{P_E}$$

Domestic price levels in terms of domestic real money demand and supply:

$$P = \frac{M^S}{L(R, Y)}$$

M^S = the money supply of a country

$L(R, Y)$ = the aggregate real money demand

The aggregate real money demand decreases when the interest rate (R) rises and increases when real output (Y) rises.

According to the PPP, the dollar price of a euro is simply the dollar price of U.S. output divided by the euro price of European output.

The exchange rate, which is the relative price of American and European money, is fully determined in the long run by the relative supplies of those monies and the relative real demands for them. Shifts in interest rates and output levels affect the exchange rate only through their influences on money demand.

Monetary approach

Specific predictions about the long run effect on the exchange rate by changing...

- ...money supply.

A permanent increase in the money supply causes a proportional increase in the long run price level. Under PPP: $E_{\$/\epsilon} = \frac{P_{US}}{P_E}$, so $E_{\$/\epsilon}$ also increases in proportion to the increase in the money supply.

→ In short, an increase M^s_{US} , causes a depreciation of the dollar and increase M^s_{EU} , causes an appreciation of the dollar



- ...interest rates.
An increase in $R_{\$}$ lowers money demand, the long run price level rises and under PPP the dollar must depreciate against the euro in proportion to the price level increase. A rise in $R_{\text{€}}$ opposite effect.
- ...output levels.
An increase in output, raises money demand and the long run price level decreases. According to PPP, the dollar must appreciate against the dollar in proportion to the price level decrease.

Ongoing inflation is a continuing rise in the price level.

Money supply growth at a constant rate eventually results in ongoing price level inflation at the same rate, but changes in this long-run inflation rate do not affect the full-employment output level or the long-run relative prices of goods and services. However, it does affect the interest rate.

The interest parity condition (must hold in the short run and in the long run).

$$R_{\$} = R_{\text{€}} + \frac{E_{\$, \text{€}}^e - E_{\$, \text{€}}}{E_{\$, \text{€}}}$$

Thus, if people expect relative PPP to hold, the difference between the interest rates offered by dollar and euro deposits will equal the difference between the inflation rates expected in the U.S. and Europe.

Expected inflation rate is the expected percentage increase in the price level over the coming year, given by the following formula:

$$\pi = (P_t - P_{t-1}) / P_{t-1}$$

If relative PPP holds, people expect also that relative PPP will hold.

$$(E_{\$/\text{€}, t} - E_{\$/\text{€}, t-1}) / E_{\$/\text{€}, t-1} = \pi_{US, t} - \pi_{E, t}$$

$$(E_{\$/\text{€}}^e - E_{\$/\text{€}}) / E_{\$/\text{€}} = \pi_{US}^e - \pi_E^e$$

Combining the expected relative PPP with the interest parity condition gives:

$$R_{\$} - R_{\text{€}} = \pi_{US}^e - \pi_E^e$$

This formula expresses the international interest rate difference as the difference between expected national inflation rates.

If, as PPP predicts, currency depreciation is expected to offset the international inflation difference (so that the expected dollar depreciation rate is $\pi_{US}^e - \pi_E^e$) the interest rate difference must equal the expected inflation difference.



Fisher effect

The Long run relationship between inflation and interest rates:

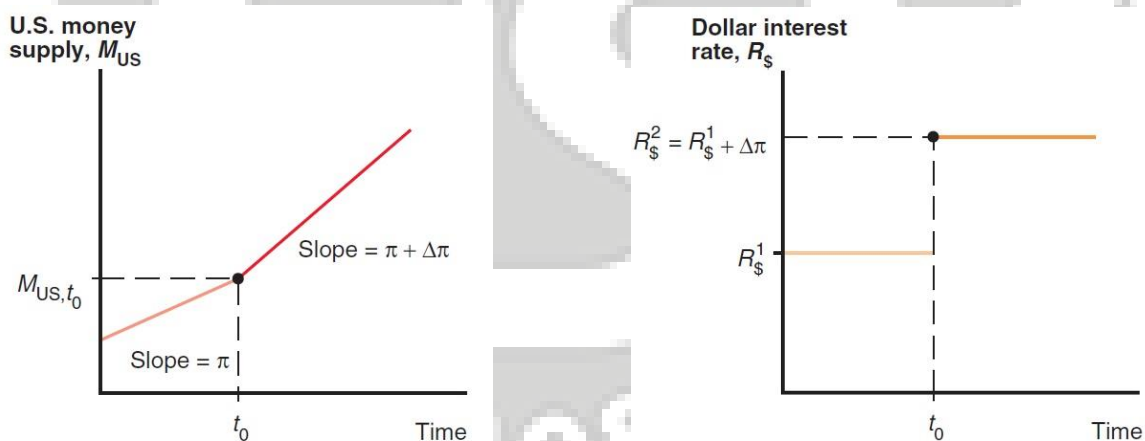
$$R_{\$} - R_{\text{€}} = \pi^e_{US} - \pi^e_E$$

All else equal, a rise in a country's expected inflation rate will eventually cause an equal rise in the interest rate that deposits of its currency offer. Similarly, a fall in the expected inflation rate will eventually cause a fall in the interest rate.

The real rate of return is hereby not affected. This supports the general idea that in the long run, purely monetary developments should have no effect on an economy's relative prices.

Long run effects of an increase in the money supply

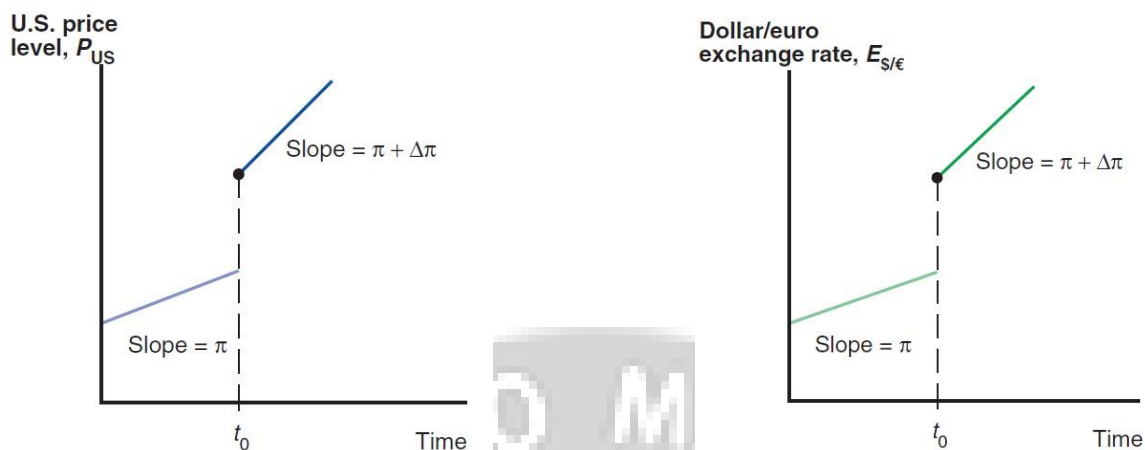
The growth rate of U.S. money supply goes from π to $\pi + \Delta\pi$, while the Europe inflation rate remains constant at zero.



The policy change generates expectations of more rapid currency depreciation in the future. Under PPP the dollar will now depreciate at the rate of $\pi + \Delta\pi$ instead of rate π . Interest parity therefore requires $R_{\$}$ to rise by $\Delta\pi$.

The increase in money supply is not immediate, only the future growth rate changes. However, since the interest rate has increased, there would be an excess supply of money. This will lead to a jump upward of the price level, reducing the real money supply, so that it again equals money demand.

An increase in the price level will simultaneously increase the exchange rate implied by PPP.



Problems with PPP:

- Contrary to the assumption of the law of one price, transportation costs and restrictions on trade do exist. These trade barriers may be high enough to prevent some goods and services from being traded between countries. Also non-tradables (e.g. services) cannot be traded between countries.
- Monopolistic or oligopolistic practices in goods markets may interact with transport costs and other trade barrier to further weaken the link between the prices of similar goods sold in different countries.
- Differences in consumption patterns and price level measurement.

A general model of long run exchange rates

No absolute PPP → since price levels in different countries are not measured by the same basket of commodities, it is different for every country (P is also influenced by monetary factors).

Real exchange rate: the relative price of two output baskets ($q_{\$/€}$).

Nominal exchange rate: the relative price of two currencies ($E_{\$/€}$).

$$q_{\$/€} = (E_{\$/€} \times P_E) / P_{US}$$

A rise in $q_{\$/€}$ is a **real depreciation**, it indicates a fall in the purchasing power of a dollar within Europe's borders relative to its purchasing power within the U.S. This change in relative purchasing power occurs because the dollar prices of European goods rise relative to those of U.S. goods. So, U.S. goods become relative cheaper compared to European goods.

A fall in $q_{\$/€}$ is a **real appreciation**, it indicates a decrease in the relative price of products purchased in Europe, or a rise in the dollar's European purchasing power compared with that in the United States. So, U.S. goods become relative more expensive compared to European goods.

An increase in world relative demand for U.S. output causes a long run real appreciation of the dollar against the euro (fall in $q_{\$/\epsilon}$). Similarly, a decrease in world relative demand for U.S. output causes a long run real depreciation of the dollar against the euro (rise in $q_{\$/\epsilon}$). A relative expansion of U.S. output causes a long run real depreciation of the dollar against the euro because of excess supply, so the relative prices have to decrease. A relative expansion of European output causes a long run real appreciation of the dollar against the euro.

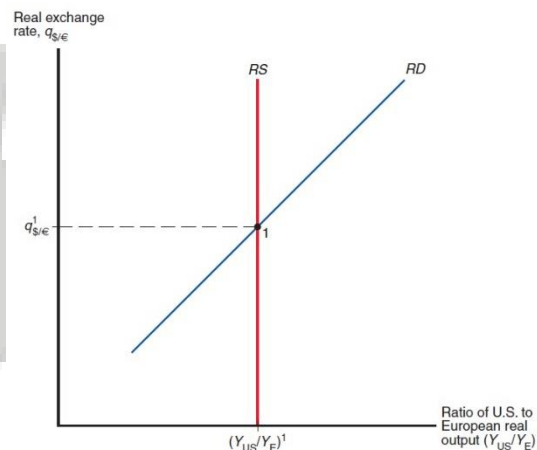
$RD_{US/E} \uparrow$ if $q_{\$/\epsilon} \uparrow$

Consequently, U.S. goods become relatively cheaper.

RS is vertical because in the long run relative national output levels are determined by factor supplies and productivity (economy is at full employment) with no effect on q .

RD will shift if something causes an/a increase/decrease in the world relative demand for U.S. or European goods.

RS will shift if output increases/decrease (e.g. due to higher productivity).



One central conclusion is that changes in national money supply and demand give rise to the proportional long run movements in nominal exchange rates and international price level ratios predicted by the relative PPP theory. Demand and supply shifts in national output markets, however, cause nominal exchange rate movements that do not conform to PPP.

$$q_{\$/\epsilon} = (E_{\$/\epsilon} \times P_E) / P_{US}$$

$$E_{\$/\epsilon} = q_{\$/\epsilon} \times (P_{US} / P_E)$$

The equation implies that at a given real exchange rate, changes in money demand or supply in Europe or the U.S. affect the long run nominal exchange rate as in the monetary approach. Changes in the long run real exchange rate, however, also affect the long run nominal exchange rate. It corrects the monetary approach by allowing for nonmonetary factors that can cause sustained deviations from PPP.

Most important determinants of long run swings in nominal exchange rates

Increase in U.S. money supply level → Proportional increase of nominal exchange rate (nominal depreciation of \$)

Permanent one time increase has no effect on the long run levels of output, the interest rate or any relative price (including q). So P_{US} rises in proportion to M_{US}^S which will only affect the nominal exchange rate.

Increase in EU money supply level → Proportional decrease of nominal exchange rate
(nominal depreciation of €)



Increase in U.S. money supply growth rate → Increase of nominal exchange rate (nominal depreciation of \$)

Permanent increase in the growth rate raises the long run inflation rate and, through the Fischer effect, it raises the $R_{\$}$ relative to $R_{\text{€}}$. Therefore relative U.S. real money demand declines and P_{US} rises. It does not alter the long run real exchange rate, so the nominal exchange rate rises in proportion to the increase in P_{US} .

Increase in EU money supply growth rate → Decrease of nominal exchange rate (nominal depreciation of €)

Increase in demand for U.S. output → Decrease of nominal exchange rate (nominal appreciation of \$)

Change in relative output demand does not affect long run national price levels, it causes a long run real appreciation but because price levels are unchanged also a long run nominal appreciation must occur.

Increase in demand for EU output → Increase of nominal exchange rate (nominal appreciation of €)

Output supply increase in the U.S. → The effect is ambiguous

An increase in the output supply causes the real exchange rate to depreciate, lowering the relative price of U.S. output. In addition, it causes an increase in real money demand so pushing the long run U.S. price level down. The output and money market effects work in opposite directions.

Output supply increase in EU → The effect is ambiguous

We conclude that when all disturbances are monetary in nature, exchange rates obey relative PPP in the long run. In the long run, a monetary disturbance affects only the general purchasing power of a currency, and this change in purchasing power changes equally the currency's value in terms of domestic and foreign goods. When disturbances occur in output markets, the exchange rate is unlikely to obey relative PPP, even in the long run.

Lecture 3

International Monetary Economics

Chapter 15

Money, Interest Rates, and Exchange Rates

Money is an asset with several functions:

- **Medium of exchange** (widely used/accepted as means of payment).
- **Unit of account.**
- **Store value.**

Classifying money:

Different groups of assets may be classified as money. Currency and checking accounts form a useful definition of money, but bank deposits in foreign exchange market are excluded from this definition.

Money supply is the total amount of currency and checking deposits held by household and firms. The money supply is controlled by the central bank

Individuals base their demand for an asset on three characteristics:

- The **expected return** the asset offers compared with the returns offered by other assets: an increase in the interest rate is a rise in the rate of return, so a rise in the interest rate causes the demand for money to fall.
- The **riskiness** of the asset's expected return is not an important factor in money demand.
- The asset's **liquidity**: a rise in the average value of transactions carried out by a household or firm causes its demand for money to rise.

Aggregate money demand: the total demand for money by all households and firm in the economy.

$$M^d = P \times L(R, Y)$$

- The interest rate (-)
- The price level (+)
- Real national income (GNP) (+)

Aggregate real money demand:

$$\frac{M^d}{P} = L(R, Y)$$

Equilibrium in the money market

$$M^s = M^d$$

Nominal money supply equals nominal money demand.

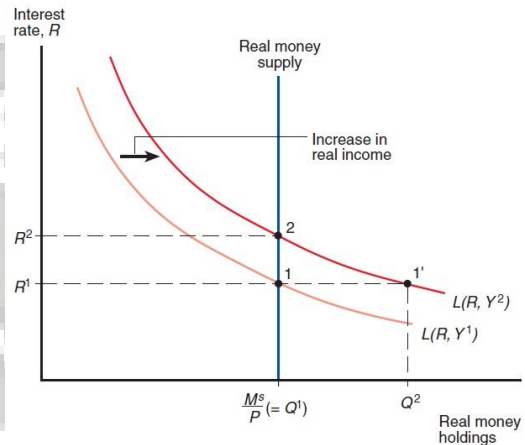
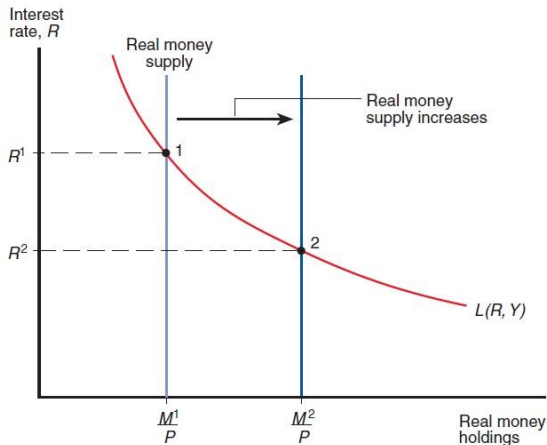
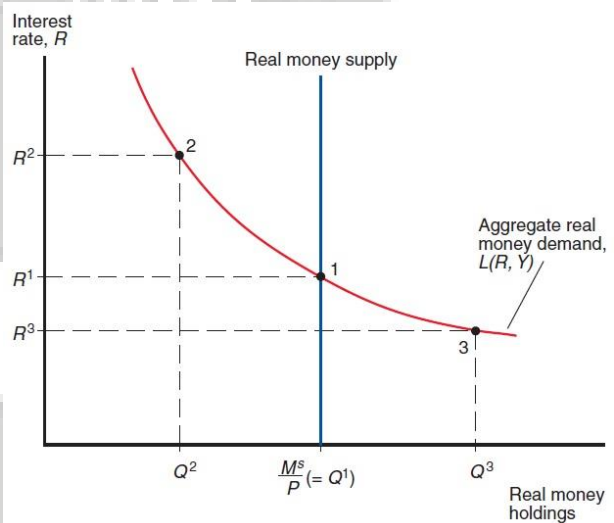
$$\frac{M^s}{P} = L(R, Y)$$

Real money supply equals real money demand.

When the economy is at point 2, supply exceeds demand. Consequently, the interest rate will decrease.

When the economy is at point 3, demand exceeds supply, and the interest rate will increase.

The market always moves toward an interest rate at which the real money supply equals aggregate real money demand. If there initially is an excess supply of money, the interest rate falls, and if there initially is an excess demand, the interest rate rises.



An increase in the money supply lowers the interest rate while a fall in the money supply raises the interest rate, given the price level and output.

An increase in real output raises the interest rate, while a fall in real output lowers the interest rate, given the price level and the money supply.

Prices and exchange rates in the short run

Short run	vs	Long run
Price rigidities		Price flexibility
Unemployment of factors of production		Full employment
Financial markets fluctuate		Fundamental value prevails
Exchange rate expectations adjust, but exchange rates may overshoot		Steady state exchange rate

Categorising exchange rate analyses

Which assumptions?	Temporary monetary or fiscal policy change	Permanent monetary or fiscal policy change
Study short run effects	P fixed exp. e fixed 1	P fixed Expected exchange rate adjusts 2
Study long run effects		P adjusts Expected exchange rate adjusts 3

Equilibrium in the money and foreign exchange market

Both money supply equals money demand and the interest parity condition hold.

The foreign money market (EU) influences the foreign exchange market.

An increase in a country's money supply causes its currency to depreciate in the foreign exchange market, while a reduction in the money supply causes its currency to appreciate.

Long Run

In the short run, the price level is given.

In the long run, the price level can adjust.

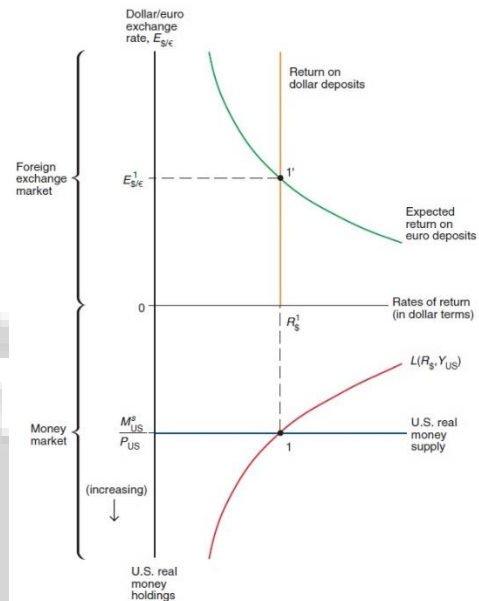


Long run equilibrium price level is given by the following equation:

$$\frac{M^S}{P} = L(R, Y) \rightarrow P = \frac{M^S}{L(R, Y)}$$

In this formula R and Y are such that full employment is realised.

An increase in a country's money supply causes a proportional increase in its price level. Consequently, the demand for money (which is a demand for real money holdings $\frac{M^d}{P}$) does not change if both the money supply and the price level increase (proportionally).



In other words, in order to keep the economy in equilibrium when the nominal money supply increases, but the real money demand stays the same, the price must rise in proportion to the money supply. This will $\frac{M^S}{P}$ constant.

A change in the money supply has no effect on the long run values of the interest rate (R) and output (Y).

Inflation and exchange rate dynamics

Monetary policy causes a process of adjustments from the short run to the long run.

Rising price level is called **inflation**, while a falling price level is called **deflation**.

In the short run prices are sticky, so they are not affected by monetary policy.

A change, in this example an increase, in the money supply creates immediately demand and cost pressures that eventually lead to future changes, in this case an increase, in the price level:

- Excess demand for output and labour → wages will increase, higher prices.
- Inflationary expectations → if everyone expects the price level to rise in the future, their expectation will increase the pace of inflation today.
- Raw materials are sold in markets where prices are not sticky → increase in prices lead immediately to higher production costs and thus higher prices.

Permanent increase in the money supply

A permanent increase in a country's money supply causes a proportional long run depreciation of its currency against foreign currencies. Similarly, a permanent decrease in a country's money supply causes a proportional long run appreciation of its currency against foreign currencies.

STEP 1 & STEP 2

$M^S \uparrow, R \downarrow, E_{\$/\epsilon} \uparrow$

→ From point 1 to point 2.

This would be the short run equilibrium if the monetary expansion was temporary.

However, when the money supply increase is permanent, people will expect the long run prices to increase (including $E_{\$/\epsilon}$).

STEP 3

$E_{\$/\epsilon}^e \uparrow, R_{\epsilon}^e \uparrow, E_{\$/\epsilon} \uparrow$

→ From point 2 to point 3

STEP 4

Price level rises, $\uparrow P$ must be proportional to $\uparrow M^S$, shift along the curve.

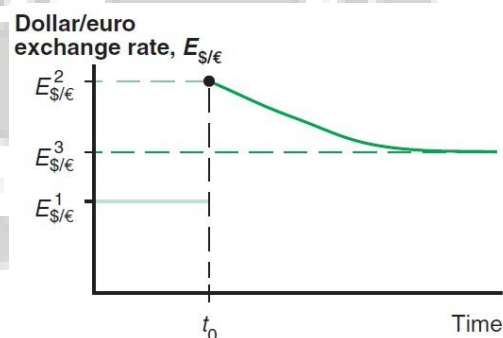
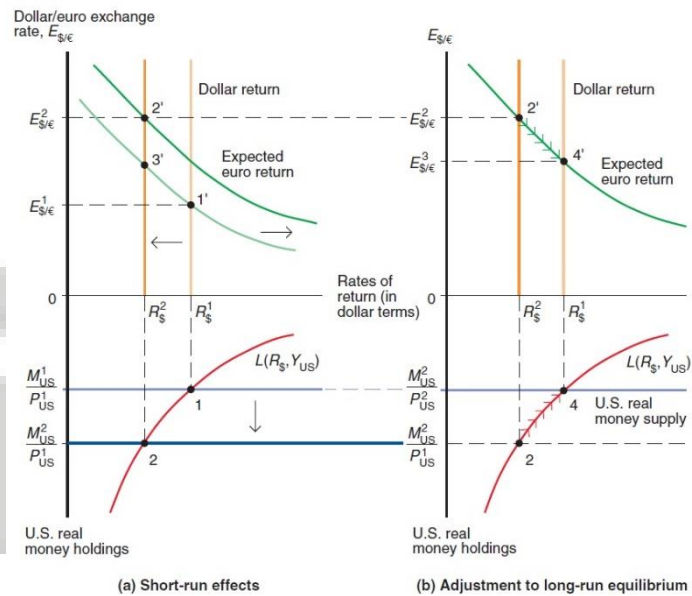
STEP 5

Output is given, so M^S/P back to original level, $R_{\$/\epsilon}$ back to original level $R_{\$/\epsilon} \uparrow, E_{\$/\epsilon} \downarrow$

Exchange rate overshooting

The short run depreciation (or appreciation) of $E_{\$/\epsilon}$ is greater than its long run depreciation (or appreciation). This explains why exchange rates move so sharply from day to day.

In order to maintain asset-market equilibrium, the increased quantity of money would have to be matched by higher prices and/or a depreciation in the exchange rate.





Lecture 4

International Monetary Economics

Chapter 19

International Monetary Systems: An Historical Overview

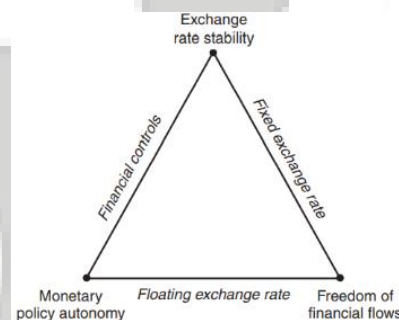
In an open economy, it will be tried to maintain the following macroeconomic policy goals:

- **Internal balance** describes the macroeconomic goals of producing at potential output (at “full employment”), while achieving price stability (low inflation).
- **External balance** is achieved when a current account is neither so deeply in deficit that the country may be unable to repay its foreign debt, nor so strongly in surplus that foreigners are put in that position

A country with major persistent deficits may endanger its intertemporal budget constraint (restricting a repayment country's expenses) by a **sudden stop** of foreign borrowing.

The limits of an alternative exchange rate regime can be understood by the **open economy monetary trilemma**, which states that it is impossible for an economy to achieve more than two of the following items:

1. **Exchange rate stability**, i.e. avoiding exchange rate fluctuations. If the exchange rate is unstable, deals with foreign countries could become more uncertain.
2. **Freedom international capital movements**.
3. **Monetary policy autonomy**, i.e. monetary policy can be used for achieving domestic goals.



A country that fixes its currency's exchange rate while allowing free international financial (capital) movements gives up control over domestic monetary policy.

A country that fixes its exchange rate can have control over domestic monetary policy if it restricts international financial (capital) flows (so that the interest parity $R = R^*$ (UIP with fixed exchange rates) need not hold).

Or a country can allow international capital to flow freely and have control over domestic monetary policy if it allows the exchange rate to float.

International macroeconomic policy under the gold standard, 1870 – 1914

The **gold standard system** contained two powerful automatic mechanisms for preventing external imbalances (a deficit or surplus in the balance of payments, corresponding to the gold flow reserves):

- **Price-specie-flow mechanism:** the gold flows accompanied by deficits and surpluses caused price changes that reduced current account imbalances and therefore tended to an external balance for all countries.
- **Rules of the game:** buying or selling domestic assets by central banks to influence the flow of financial assets. As a consequence, the non-reserve portion of the financial account matched the current account to reduce the gold in or outflow.

The performance of the Gold Standard, however, was not always good. When WWI started, the system was abolished.

Balance of payments equilibrium is achieved when the sum of the current and capital account reduced by the non-reserve portion of net financial flows abroad is zero. The current and capital account balance is fully financed by private international loans without official reserve shifts.

The interwar years, 1918 – 1939

Attempts to return to the pre-war gold standard after 1918 were unsuccessful. When the economy shifted into a general depression after 1929, the remaining gold standard broke down, thus weakening economic integration. Due to the poor economic conditions of that period, the internal balance for governments was the most important. They evaded the external balance problems by temporarily closing their economies from the rest of the world. This led to a global economy in which all economies would be better off when there was international cooperation.

This realization led to the blueprints for the post-war international monetary system: **the Bretton Woods agreement.**

The founders of the **International Monetary Fund (IMF)** hoped to develop a fixed exchange rate system that would stimulate growth in international trade. While requirements for the external balance are flexible so that they can be realized without harming the internal balance.

The IMF provided funding for countries with a deficit and allowed exchange rates to adjust to 'fundamental disequilibrium'. All countries pegged their exchange rates to the dollar. The U.S. pegged to gold and agreed to exchange gold for dollars at foreign central banks at \$35 per ounce.

After **currency convertibility** was reinstated in the EU in 1958, the financial markets of countries were integrated. Monetary policy became less effective (except in U.S.), and shifts in international reserves became more volatile.

This change revealed a major weakness in the system. In order to achieve internal and external balance at the same time, expenditure-switching and expenditure-changing policies were needed.

But the possibility of spending-switching policy (exchange rate changes) can give rise to speculative financial flows that undermine fixed exchange rates.

Analysing policy options for reaching internal and external balance

Internal balance (II) in the short term is achieved when the following applies:

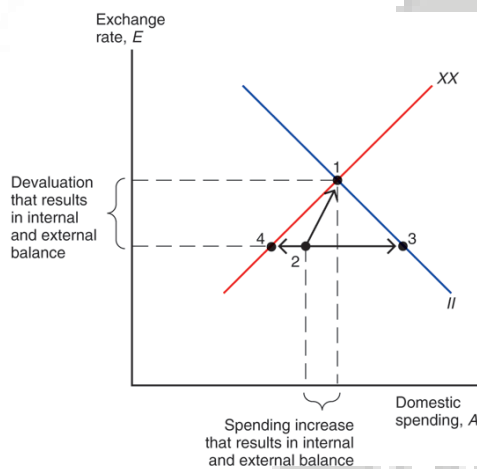
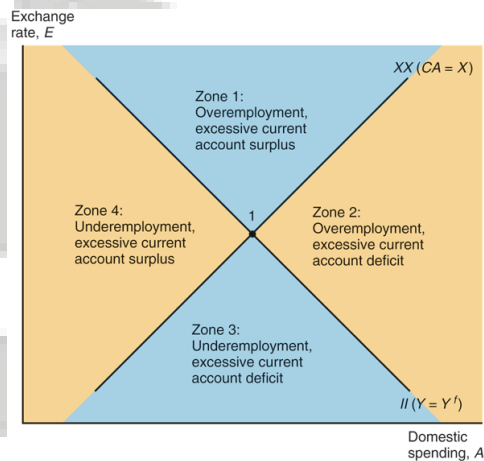
$$Y^f = C + I + G + CA \times \left(\frac{EP^*}{P}, A\right) = A + CA \times \left(\frac{EP^*}{P}, A\right)$$

External balance (XX) in the short term is achieved when the following applies:

$$CA \times \left(\frac{EP^*}{P}, A\right) = X$$

Unless the currency devaluates and the level of domestic spending rises, internal and external balance can not be reached (item 1).

A change in fiscal policy that impacts spending, shifting the economy to point 1 is called an expenditure-changing policy. It changes the level of total demand.



The accompanying exchange rate change is called an expenditure-switching policy because it changes the direction of demand, it is shifted between domestic output and import. Both policy strategies are needed to achieve internal and external balance.

The big reserve currency country U.S. had a unique external balance issue, **the confidence problem**: this occurs when foreign dollar holdings inevitably grow and exceed U.S. gold holdings. Central banks who knew their dollars were no longer "as good as gold" might not be willing to accumulate more dollars, and even destroy the system when they exchanged the dollars for cash.

The case of floating exchange rates

Before 1973, the weakness of the Bretton Woods system caused many economists to support floating exchange rates:

- Floating rates give national macroeconomic policy makers greater autonomy for managing their economies. They get more freedom because they no longer have to intervene in foreign exchange markets to maintain fixed exchange rates.

- They predicted that floating rates removed the asymmetry of the Bretton Woods agreements. The U.S. could no longer draw up monetary conditions alone.
- Floating exchange rates would quickly eliminate fundamental disequilibrium, which would lead to parity changes and speculative attacks under fixed exchange rates.
- These same exchange rate changes would prevent large persistent outflows from the external balance.

Macroeconomic interdependence under a floating rate

Transmission of policies between countries with a linked floating exchange rate:

- Effect of permanent monetary expansion by Home → Home's output increases → Home's currency depreciates → the output of Foreign increases or decreases.
- Effect of permanent tax expansion by Home → Home's output increases → Home's currency appreciates → the output of Foreign increases.

A clear lesson is that no exchange rate system can function properly if there is no international economic cooperation.

Lecture 5

International Trade and Trade Policy

Chapter 2

World Trade: An Overview

The **gravity model** of world trade is an equation that predicts the volume of trade between any two countries fairly accurately. The reason for the name is the analogy to Newton's law of gravity: Just as the gravitational attraction between any two objects is proportional to the product of their masses and diminishes with distance, the trade between any two countries is, other things equal, proportional to the product of their GDPs and diminishes with distance.

$$T_{ij} = A \times Y_i \times Y_j / D_{ij}$$

$A = \text{constant}$

$T_{ij} = \text{the value of trade between country } i \text{ and country } j$

$Y = \text{GDP of country}$

$D_{ij} = \text{the distance between country } i \text{ and country } j$

This gravity model works, because large economies tend to spend large amounts on imports since they have large incomes. Those large countries also tend to attract large shares of

other countries' spending because they produce a wide range of products. So, other things equal, the trade between any two economies is larger—the larger is either economy.

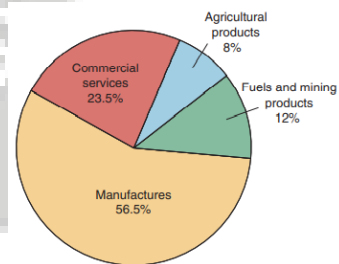
In addition to the size (and distance), other aspects can influence international trade.

Anomalies in the gravity model can be explained by factors such as:

- Cultural affinity.
- Geography and transportation costs.
- Multinational corporations.
- Distance and personal contact between countries.
- Borders and trade agreements.

Nowadays, most world trade is in manufactured goods, but minerals – mainly oil – remain important.

Modern technology makes it possible to perform some economic functions at a long range, i.e. many services can also be done in a remote location. When a service previously done within a country is shifted to a foreign location, the change is known as **service offshoring** (sometimes known as **service outsourcing**).



Chapter 3

Labour Productivity and Comparative Advantage: The Ricardian Model

Country A has a **comparative advantage** in producing good X, if the opportunity costs of producing that good (in terms of other goods) is lower in country A than it is in other countries.

Trade between two countries can benefit both countries, if each country exports the good in which it has a comparative advantage and imports the other good.

Ricardian model states that international trade is solely due to international differences in the productivity of labour.

- Labour is the only factor of production.
- Countries differ only in the productivity of labour in different industries.
- Countries' production pattern is determined by comparative advantage.

The **production possibility frontier (PPF)** shows the limits on what a country can produce.

When there is only one factor of production the PPF is a straight line, since the opportunity cost of a good in terms of the other good is constant.

The PPF shows what a country can produce, but what it actually produces depends on the relative prices of the goods. When there is no trade, and the production factor (labour) can move easily between the sectors, the relative prices of goods will equal the relative unit labour requirements (i.e. the opportunity costs). The prices in absence of trade are also called **autarky prices**.

with the amount workers in another country are paid per hour. This relative wage rate lies between the ratios of the two countries' productivities in the two industries/sectors. If, for example, Home is six times as productive as Foreign in cheese, but only one-and-a-half times as productive in wine, and it ends up with a wage rate three times as high as Foreign's. It is precisely because the relative wage is between the relative productivities that each country ends up with a cost advantage in one good. Because of its lower wage rate, Foreign has a cost advantage in wine even though it has lower productivity. Home has a cost advantage in cheese, despite its higher wage rate, because the higher wage is more than offset by its higher productivity.

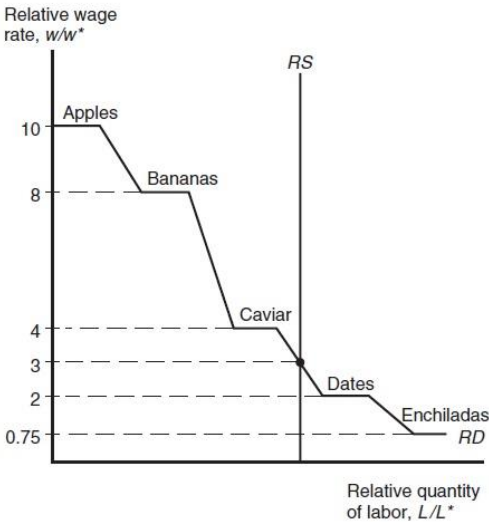
On page 65 of the book, three misconceptions about comparative advantages can be found.

Ricardian model with many goods

The pattern of trade, i.e. which country exports which good, depends on the ratio of Home to Foreign wages: $\frac{w}{w^*}$. Goods will always be produced in the

TABLE 3-2 Home and Foreign Unit Labor Requirements			
Good	Home Unit Labor Requirement a_{Lj}	Foreign Unit Labor Requirement (a_{Lj}^*)	Relative Home Productivity Advantage (a_{Lj}^*/a_{Lj})
Apples	1	10	10
Bananas	5	40	8
Caviar	3	12	4
Dates	6	12	2
Enchiladas	12	9	0.75

country where they can be made the cheapest. The cost of making a product is the unit labour requirement times the wage rate. Another way to calculate which country produces which good is to compare the relative Home productivity advantage with the wage rate.



Relative wages are determined by the relative supply and relative (derived) demand of labour services. The relative (derived) demand of domestic labour services falls when w/w^* rises:

- Goods produced in the domestic country become more expensive, and demand of these goods and the labour services to produce them falls.
- Fewer goods will be produced in the domestic country, further reducing the demand of domestic labour services.

This lies at the heart of the figure on the left, in which Home will produce apples, bananas and caviar, while Foreign produces dates and enchiladas. This is at a relative wage rate of 3.

As mentioned before, the equilibrium of the relative wage ratio determines the trade pattern. Relative wages and trade pattern may change due to shifts in relative labour supply, technology and preferences.

Transportation costs do not change the fundamental principles of comparative advantage or the gains from trade. However it is costly to transport goods and services. In some cases, the cost of transportation is high enough to result into self-sufficiency of countries in certain sectors. Consequently, some goods become nontraded goods. The transportation costs differ among sectors.



Lecture 6

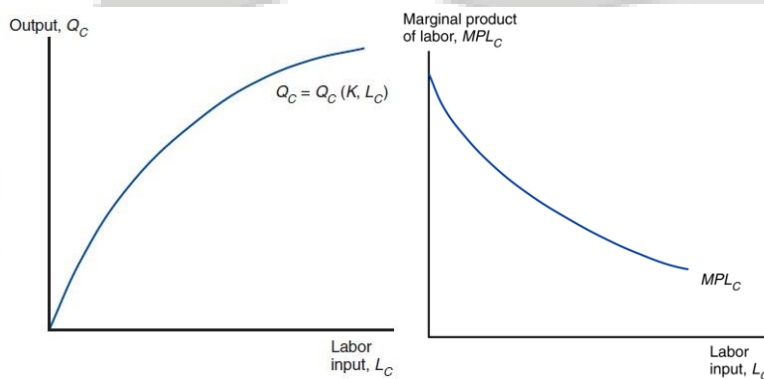
International Trade and Trade Policy

Chapter 4

Specific Factors and Income Distribution

The set-up of the **specific factors model**

- 2 goods; e.g. cloth (C) and food (F).
- 3 production factors; e.g. labour (L), capital (K) and land (T).
- L (labour) is mobile across sectors and there is full employment.
- K (capital) and T (land) are specific to, respectively, the cloth and food sector, i.e. they cannot switch between sectors.

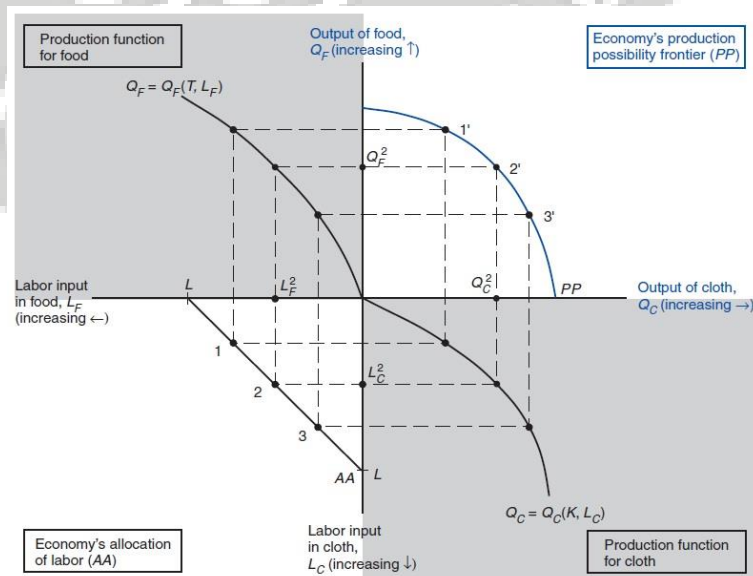


The production function is an upward sloping curve. However, the curve gets flatter, due to the **diminishing returns**. The slope of the production function represents the **marginal product of labour (MPL)**.

The graph on the right side shows that the marginal product of labour decreases the more labour input is used in a sector. In addition, the amount of capital stays fixed.

From the production functions of both goods, e.g. cloth (the bottom right side of the graph) and food (the top left side of the graph), and the economy's allocation of labour, the economy's production possibility frontier (PPF) can be derived (the top right side of the graph).

The economy's allocation of labour is a straight downward sloping line (see the bottom left side of the graph) since an increase in employment in



one sector must mean that less labour is available for the other sector, keeping the labour force constant.

In the Ricardian model, the production possibility frontier was a straight line, due to constant opportunity costs of one good in terms of the other. When other factors of production are added, i.e. the model is changed to the specific factors model, the shape of the PPF becomes a concave curve. The crucial difference between the specific factors and Ricardian model is diminishing returns.

The **slope of the production possibility frontier (PPF)** is given by:

$$\text{Slope of PPF} = -\frac{MPL_F}{MPL_C}$$

In each sector, profit-maximizing employers will demand labour up to the point where the value produced by an additional person-hour equals the cost of employing that hour. In the cloth sector, for example, the value of an additional person-hour is the marginal product of labour in cloth multiplied by the price of one unit of cloth: $MPL_C \times P_C$. If w is the wage rate of labour, employers will therefore hire workers up to the point where:

$$MPL_C \times P_C = w$$

Consequently, the equation above can be defined as the demand curve for labour in the cloth sector. 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

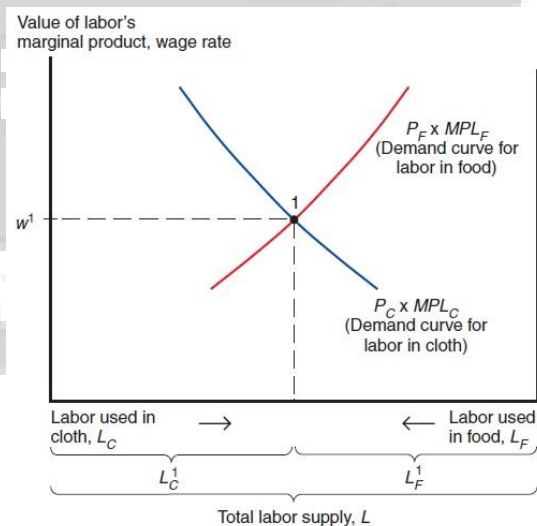
$$MPL_F \times P_F = w$$

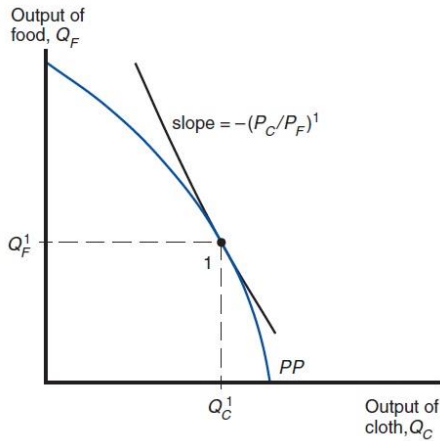
In short, the demand curve for labour can be defined as $w = MPL \times P$.

The wage rate w must be the same in both sectors because of the assumption that labour is freely mobile between sectors. That is, because labour is a mobile factor, it will move from the low-wage sector to the high-wage sector until wages are equalized. The wage rate, in turn, is determined by the requirement that total labour demand (total employment) equals total labour supply.

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

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





The point where the economy produces is thus given to the point where the slope of the PPF, $-\frac{MPL_F}{MPL_C}$, is tangent to the line with a slope of $-\frac{P_C}{P_F}$.

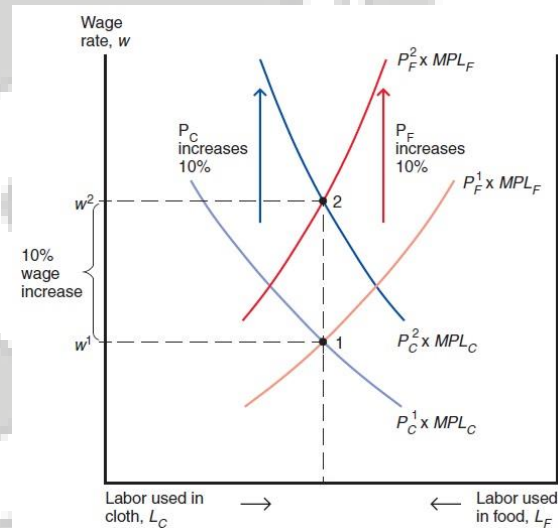
Equal proportional change in prices

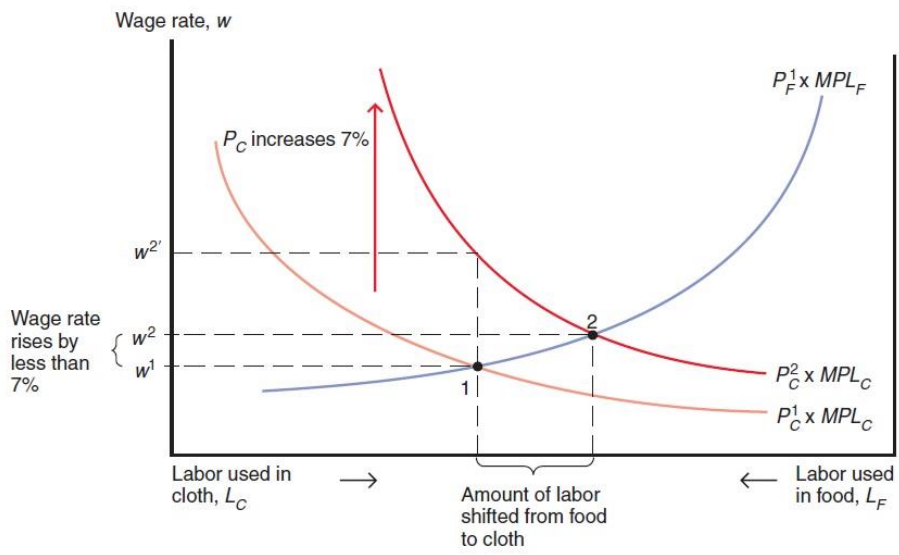
When prices of both goods increase proportionally, the labour demand curves will both shift up by the same percentage. Also, the wage rate increases with this percentage. This results in an unchanged real wage rate.

Consequently, the allocation of labour between the sectors and the output of both goods does not change. So, the general principle is that changes in the overall price level have no real effects, i.e. physical quantities in the economy does not change.

Change in relative prices

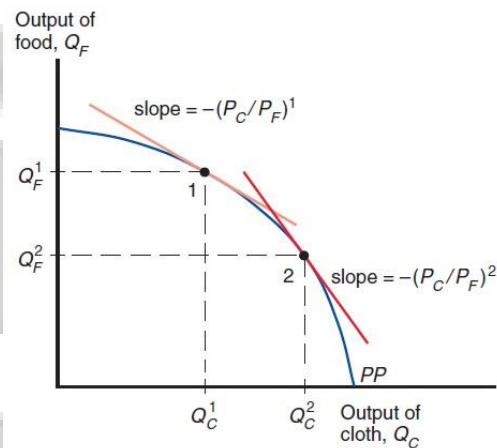
If the price of one good changes, the relative price changes too. The wage rate also rises but less than the increase in price. Since labour will move from the low-wage sector to the high-wage sector, the marginal productivity of labour will increase in the low-wage sector and decrease in the high-wage sector. As a result, the wage rate does not rise from w^1 to w^2 , but from w^1 to w^2 in the graph below.



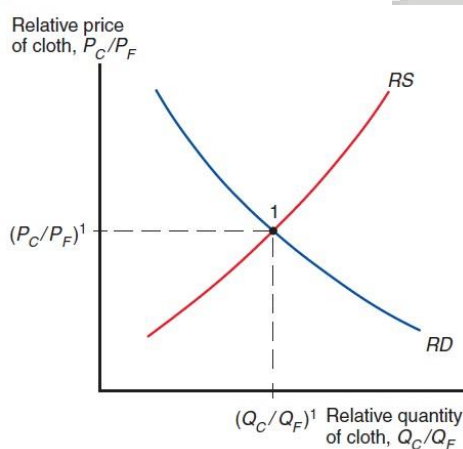


The effect of the price increase in the graph above, is ambiguous for the (home) labourers since it depends on their consumption patterns. For the (home) owners of the specific good in the sector or the price increase, the real wages needed to pay out decline and consequently their welfare increases. Next to that, the (home) owners of the specific good in the sector without the price increase have a declining welfare, due to an increase in the real wage needed to be paid out. The effect of the price increase for foreigners is the other way around.

In addition, the point where the economy produces changes. Since the relative price $\frac{P_C}{P_F}$ alters, the point where the slope of the PPF, $-\frac{MPL_F}{MPL_C}$, is tangent to the line with a slope of $-\frac{P_C}{P_F}$ differs after the price change. In this specific case, it moves from point 1 to point 2 in the graph. The output of the good, of which the price has increased, rises.



It can be thus concluded that the supply curve is upward sloping and the demand curve is downward sloping. This is illustrated in the graph below.

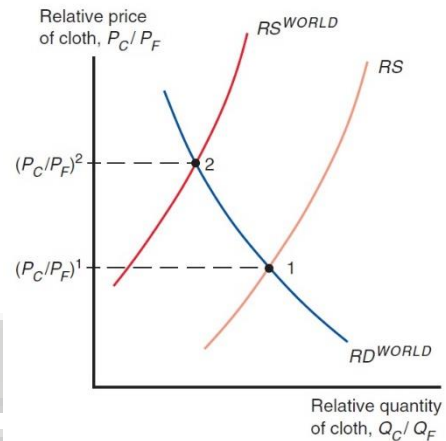


Only changes in the relative prices affect welfare or the allocation of resources. The factor specific to the sector whose relative price increases is definitely better off. The factor specific to the sector whose relative price decreases is definitely worse off. The change in welfare for the mobile factor is ambiguous.

Difference between a country's relative supply and the world relative supply can be due to technology differences or resource differences. When an economy is open for international trade, the relative price will change.

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 mobile factors.

In a country that cannot trade, production and consumption for a good are the same. International trade makes it possible that the mix of goods consumed differ from the mix of goods produced. But a country cannot spend more than it earns, since value of consumption equals value of production.
value of consumption = value of production
 $P_C \times D_C + P_F \times D_F = P_C \times Q_C + P_F \times Q_F$

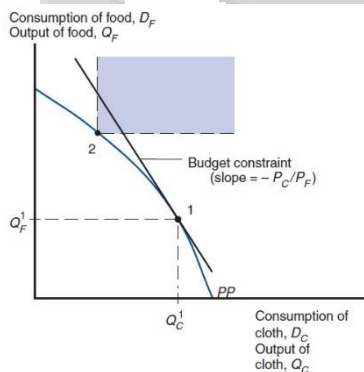


Budget constraint

The budget constraint is given by:

$$D_F - Q_F = \left(\frac{P_C}{P_F}\right) \times (Q_C - D_C)$$

The left side is the amount of imported food, and the right side is the value of exported cloth. This equation shows that the amount of import is limited by the amount of export.



The fundamental reason why trade potentially benefits a country is that it expands the economy's choices. This expansion in trade means that it is always possible to redistribute income in such a way that everyone gains from trade. Even though, everyone could gain but in the real world not everyone actually does. That is the reason that trade is not always free.

Chapter 5

Resources and Trade: The Heckscher-Ohlin Model

The **Heckscher-Ohlin model** is in fact the long-run version of the previous model. All factors are mobile across sectors in the long run, and thus in this model. Resource abundance is the reason for comparative advantage in the Heckscher-Ohlin model. The model allows for an investigation of the (long run) income distribution effects of international trade.

The Heckscher-Ohlin model is a 2-2-2 general equilibrium model.

- 2 countries.
- 2 goods.
- 2 production factors.

The assumptions of the HO-theory

- Countries have identical production technologies that are constant returns to scale (CRS) and there is perfect competition in goods and factor markets.
- Full employment of resources and factors of production internationally immobile.
- Preferences are the same in both countries and only depend on relative prices.
- Cloth L-intensive, Food K-intensive – this holds for all conceivable factor prices (by assumption) and it is reason for increasing opportunity costs in HO-model.
- **The only difference between countries is that they have different amounts of factor endowments.**

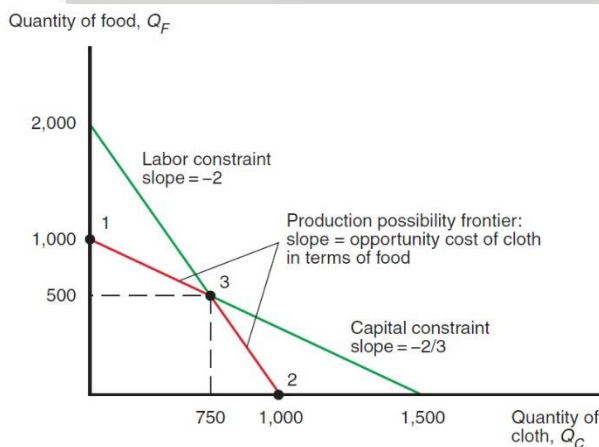
No factor substitution

The resource constraints are given by:

- $a_{K1} \times Q_1 + a_{K2} \times Q_2 \leq K$
- $a_{L1} \times Q_1 + a_{L2} \times Q_2 \leq L$

a_{K1} = capital used to produce one unit of good 1.

The PPF is a kinked line, it bows at the point where all the resources are used.



If capital cannot be substituted for labour or vice versa, the production possibility frontier in the factor-proportions model would be defined by two resource constraints:

The economy can't use more than the available supply of labour (2,000 work-hours) or capital (3,000 machine-hours). So the production possibility frontier is defined by the red line in this figure. At point 1, the economy specializes in food production, and not all available work-

hours are employed. At point 2, the economy specializes in cloth, and not all available machine-hours are employed. At production point 3, the economy employs all of its labour and capital resources. The important feature of the production possibility frontier is that **the opportunity cost of cloth in terms of food isn't constant**: it rises from 2/3 to 2 when the economy's mix of production shifts toward cloth.

Factor substitution

If capital can be substituted for labour and vice versa, the production possibility frontier no longer has a kink. But it remains true that the opportunity cost of cloth in terms of food rises as the economy's production mix shifts toward cloth and away from food.

The PPF has a bowed shape, i.e. there is no kink in the production possibility frontier.

It depends on the prices where on the PPF the economy produces. The economy produces at the point that maximizes the value of production (V), which is the point where the PPF touches the highest possible isovalue line.

The value of production is described by the formula $V = P_1 \times Q_1 + P_2 \times Q_2$.

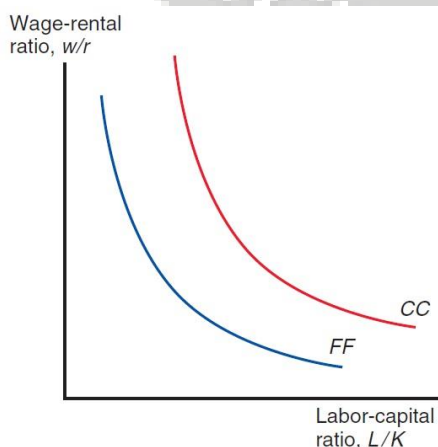
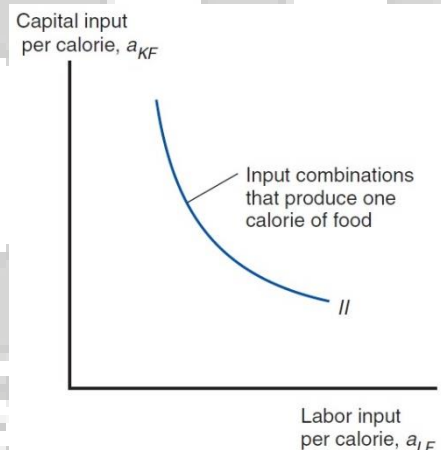
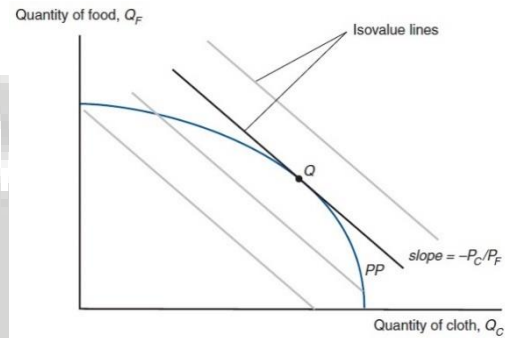
An isovalue line has a slope of $-\frac{P_1}{P_2}$.

Producers have the possibility to choose combinations of input to produce a unit of the product. All those combinations are on the blue line in the graph.

What input they choose depends on the prices of capital and labour, rental cost (r) and wages (w).

Labour/capital ratio = w/r

A good is labour or capital intensive, shown by relative factor demand curves.

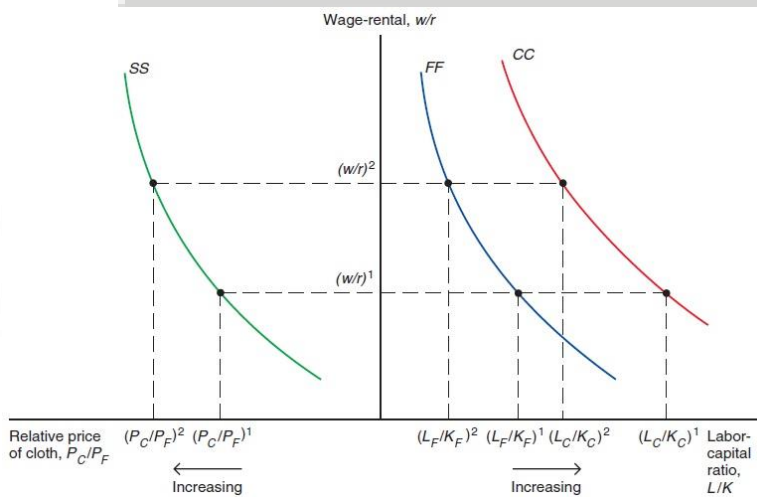


The intensity depends on the ratio of labour to capital used in production, not a production factor to output. Thus a good can not be capital and labour intensive. The curves are downward sloping, this represents the substitution effect in the producers' factor demand. When wages rise relative to the rental rate, producers will use more capital instead of labour.

There is a one to one relationship between the ratio of the wage rate to the rental rate, and the ratio of the price of the labour intensive good to the capital intensive good.

An increase in the price of the labour intensive good relative to that of the capital intensive good will raise the income of workers relative to that of capital owners. So, the purchasing power of workers increases and the purchasing power of capital owners decreases by raising real wages and lowering real rents in terms of both goods.

In the HO-model changes in relative prices have strong effects on income distribution. It changes the income distribution so much that owners of one factor of production gain while others lose.

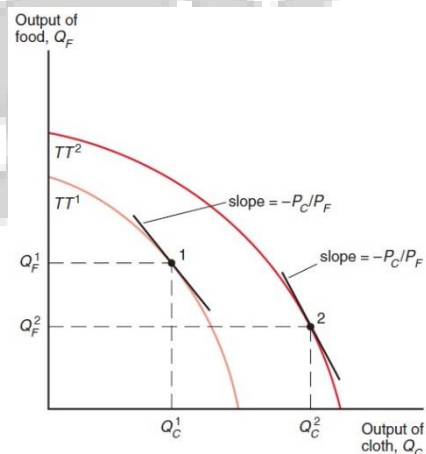


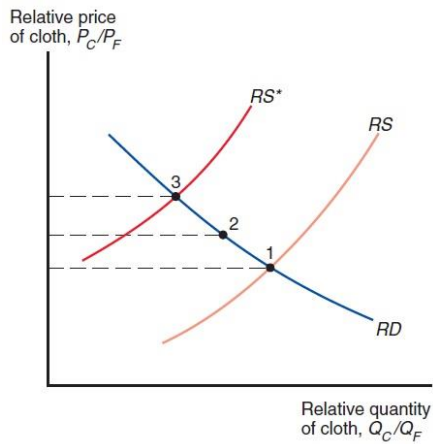
Given the relative price of cloth $\left(\frac{P_C}{P_F}\right)^1$, the ratio of the wage rate to the capital rental rate must equal $\left(\frac{w}{r}\right)^1$. This wage-rental ratio then implies that the ratios of labour to capital employed in the production of cloth and food must be $\left(\frac{L_C}{K_C}\right)^1$ and $\left(\frac{L_F}{K_F}\right)^1$. If the relative price of cloth rises to $\left(\frac{P_C}{P_F}\right)^2$,

the wage-rental ratio must rise to $\left(\frac{w}{r}\right)^2$. This will cause the labour-capital ratio used in the production of both goods to drop.

Biased expansion of production possibilities occurs when the PPF shifts out much more in one direction than in the other. An economy will tend to be relatively effective at producing goods that are intensive in the abundant factor.

When two countries trade, their relative prices converge; **factor price equalization**. The world relative prices is somewhere between the pre-trade relative prices.





Heckscher-Ohlin theorem:

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

So with multiple countries, countries tend to export goods whose production is intensive in factors with which the countries are abundantly endowed.

Owners of a country's abundant factors gain from trade, but owners of a country's scarce factors lose.



Lecture 7

International Trade and Trade Policy

Chapter 7

Extern Economies of Scale and the International Location of Production

Production that is more efficient, the larger the scale is at which it takes place, is called **economies of scale**. (increasing returns to scale (IRS))

The comparative advantages discussed in the previous section, were based on constant returns to scale (CRS).

Internal economies of scale occur when the cost per unit depends on the size of an individual firm but not necessarily on that of the industry. Large firms have a cost advantage over small firms and which results in an imperfectly competitive market.

Characteristics of internal economies of scale:

- Single firm.
- High fixed costs.
- Lower average costs, since the fixed costs are spread over a higher number of products.
- Location is flexible.
- Monopolistic competition, and differentiated products.

External economies of scale occur when the cost per unit depends on the size of the industry but not necessarily on the size of any firm. The industry mostly will consist of many small firms and be perfectly competitive.

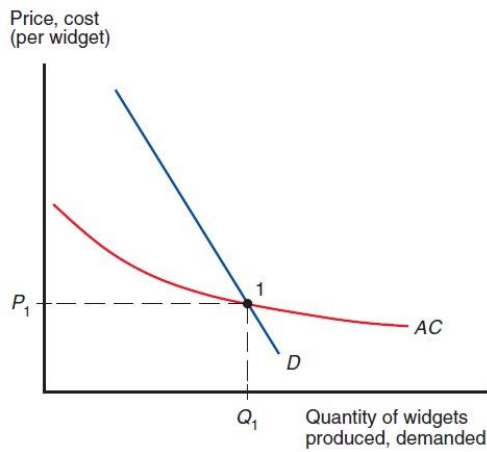
Characteristics of external economies of scale:

- Industry.
- Knowledge spill overs.
- Specialized suppliers.
- Labour market pooling.
- Industry cluster/hub (location).
- Lower average costs, and thus lower prices.
- Perfect competition (or approaching perfect competition).

A cluster, which is one of the characteristics of external economies of scale, may be more efficient than an individual firm in isolation. This can be explained by the following three reasons.

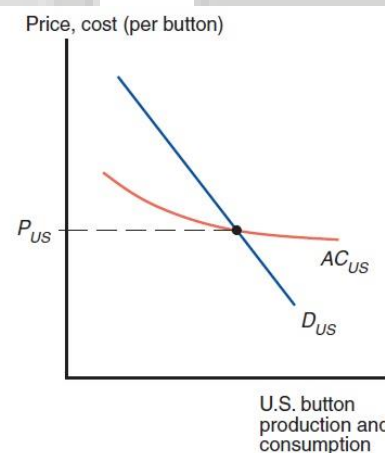
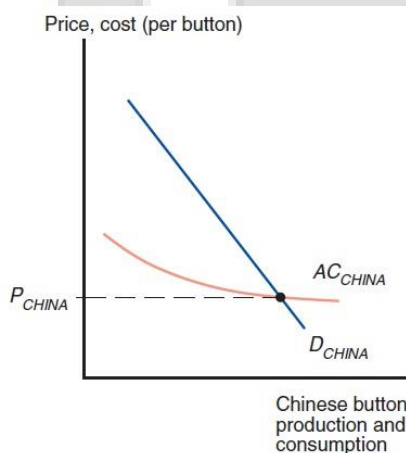
- **Specialized suppliers:** many firms together on a location can provide a large enough market to attract a wide range of specialized suppliers (to that area).

- **Labour market pooling:** a cluster of firms can create a pooled market for workers with highly specialized skills. Producers will not have labour shortages and workers are less likely to become unemployed.
- **Knowledge spill overs:** knowledge is very important in highly innovative industries, in a district with many firms they can all learn from each other's products and developments.



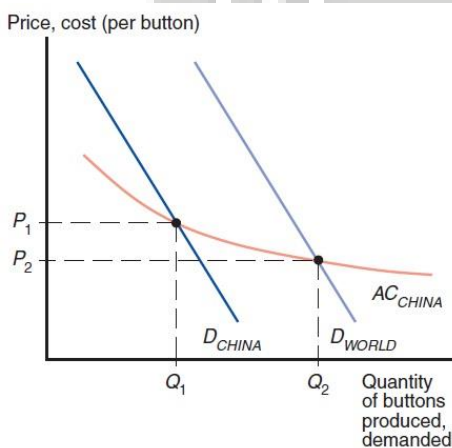
When there are external economies of scale, the average cost of producing a good falls as the quantity produced rises. So, the larger the industry's output, the lower the price at which firms are willing to sell.

Given competition among many producers, the downward-sloping average cost curve AC can be interpreted as a forward-falling supply curve. As in ordinary supply-and-demand analysis, market equilibrium is at point 1, where the supply curve intersects the demand curve, D. The equilibrium level of output is Q1, the equilibrium price P1.



In the absence of trade, the price of buttons in China, P_{CHINA} , is lower than the price of buttons in the United States, P_{US} .

When trade is opened, China ends up producing buttons for the world market, which consists both of its own domestic market and of the U.S. market. Output rises from Q1 to Q2, leading to a fall in the price of buttons from P1 to P2, which is lower than the price of buttons in either country before trade.



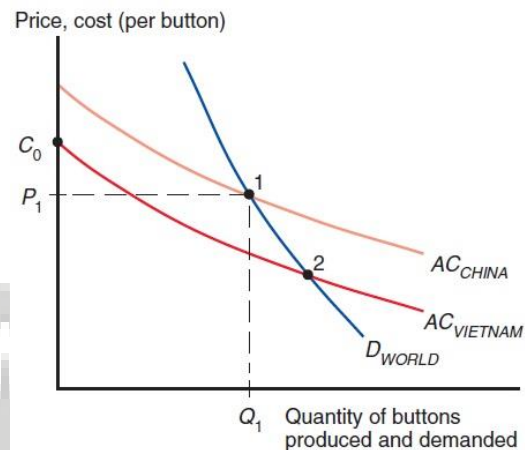
This is very different from the implications of models without increasing returns.

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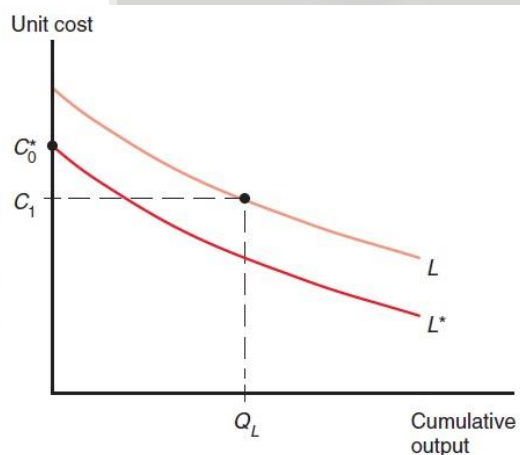
In industries characterized by external economies of scale, the pattern of trade can be explained by comparative advantages (only a small part) and historical contingency, which means that something gives a particular location an initial advantage in a particular industry. Once a country has established an advantage in an industry it will retain even if a product can be produced cheaper somewhere else.

particular industry. Once a country has established an advantage in an industry it will retain even if a product can be produced cheaper somewhere else.

For example, the average cost curve for Vietnam, $AC_{VIETNAM}$, lies below the average cost curve for China, AC_{CHINA} . Thus Vietnam could potentially supply the world market more cheaply than China. If the Chinese industry gets established first, however, it may be able to sell buttons at the price P_1 , which is below the cost C_0 that an individual Vietnamese firm would face if it began production on its own. So a pattern of specialization established by historical accident may persist even when new producers could potentially have lower costs.



External economies of scale arising from the accumulation of knowledge are a bit different.



Industry costs depend on experience (not on current output). The greater the output of the total industry, the lower the unit cost. This is shown by the learning curve.

The learning curve is downward sloping because of the effect on costs of the experience gained through production. There are dynamic increasing returns when costs fall with cumulative production rather than with the current rate of production.

The learning curve shows that unit cost is lower the greater the cumulative output of a country's industry to date. A country that has extensive experience in an industry (L) may have a lower unit cost than a country with little or no experience, even if that second country's learning curve (L^*) is lower – for example, because of lower wages.

Trade based on external economies has an ambiguous effect on (inter)national welfare: There may be gains to the world economy by concentrating production of industries with external economies. However, there is no guarantee that the right country will produce a good subject to external economies.

It is even possible that a country is worse off with trade than without trade. A country may be better off if it produces everything for its domestic market rather than pay for imports

Chapter 8

Firms in the Global Economy: Export Decisions, Outsourcing and Multinational Enterprises

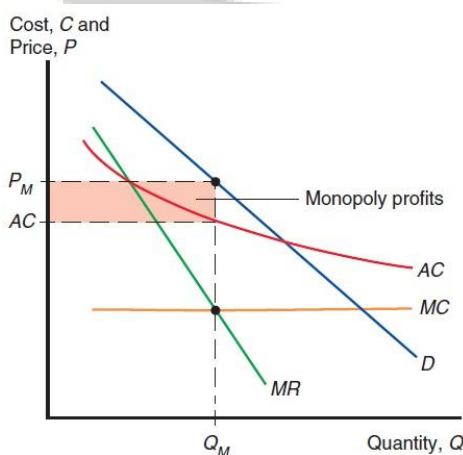
In a **perfectly competitive market**—a market in which there are many buyers and sellers, none of whom represents a large part of the market—firms are price takers. That is, they are sellers of products who believe they can sell as much as they like at the current price but cannot influence the price they receive for their product.

In **imperfect competition**, firms are aware that they can influence the prices of their products and that they can sell more only by reducing their price. This situation occurs in one of two ways: when there are only a few major producers of a particular good, or when each firm produces a good that is differentiated (in the eyes of the consumer) from that of rival firms.

Monopoly

A monopoly is characterised by a downward sloping demand curve.

A monopolistic firm chooses an output at which marginal revenue (MR), the increase in revenue from selling an additional unit, equals marginal cost (MC), the cost of producing an additional unit. This profit-maximizing output is shown as Q_M ; the price at which this output is demanded is P_M . The marginal revenue curve MR lies below the demand curve D because, for a monopoly, marginal revenue is always less than the price. The monopoly's profits are equal to the area of the shaded rectangle, the difference between price and average cost times the amount of output sold.



The gap between marginal revenue and price depends on:

- How much output is the firm already selling: a firm will not lose much by cutting the price if they were not selling many units.
- The slope of the demand curve: this tells how much the price has to fall to sell an additional unit. When the curve is flat, only a small price cut is necessary.

average costs of production = total costs/output

If the average cost curve is downward sloping, there are economies of scale. The more output is produced, the lower the costs per unit are.

In the figure above, the marginal cost curve is a straight line, i.e. MC is constant, so the economies of scale come from a fixed production cost. This fixed cost pushes the average cost above the constant marginal cost of production. Therefore, average costs is always greater than the marginal costs and declines with increasing output produced.



$$C = F + c \times Q$$

C = Total cost

F = Fixed cost

c = marginal cost

Q = Firm's output

$$AC = \frac{C}{Q} = \frac{F}{Q} + c$$

A monopolist maximizes profit when marginal revenue is equal to marginal cost. The profit is the difference between the price and the average costs.

In practice, a pure monopoly is rare. Industries characterized by internal economies of scale, usually have an oligopoly. The several firms in the industry are each large enough to affect prices but they have no uncontested monopoly.

Pricing policies in oligopoly are interdependent. Firms do not only take the responses of consumers but also the expected responses of competitors in consideration by setting its price.

Monopolistic competition

The model can capture the key elements of imperfect competition based on internal economies of scale and product differentiation at the firm level.

Assumptions of the model:

- Each firm is able to differentiate its product from that of its rivals; ensures that each firm has a monopoly in its particular product.
- Each firm is assumed to take the prices charged by its rivals as given; ignores the impact of its own price on the prices of the other firms.

Even though each firm is in reality facing competition, each firm behaves if it were a monopolist

Demand

A firm sells more the larger the total demand for its product and the higher the price charged by its rivals. On the other hand a firm sells less the greater the number of firms in the industry and the higher its own price.

$$Q = S \times \left[\frac{1}{n} - b \times (P - \bar{P}) \right]$$

Q = quantity output demanded

S = total output of industry

n = number of firms

b = constant

P = price charged by the firm itself

\bar{P} = average price charged by its competitors

If all firms charge the same price, each will have a market share of $1/n$. A firm charging more than the average of other firms will have a smaller market share and vice versa. S is the market size and if all firms charge the same price, each sells $\frac{S}{n}$ units.

Number of firms and the average cost

Average cost depends on the size of the market and the number of firms in the industry:

$$AC = \frac{F}{Q} + c = \left(n \times \frac{F}{S} \right) + c$$

The more firms there are in the industry, means less production for every firm, so the higher is the average cost. Consequently, the average cost curve is upward sloping in this case.

Number of firms and the price

The more firms, the more intense the competition and hence the lower the price.

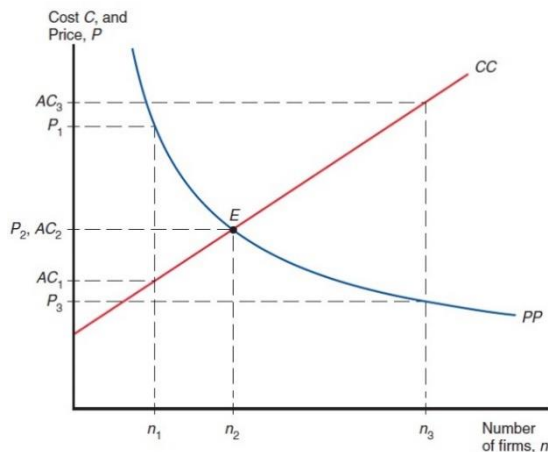
$$P = c + \frac{1}{b \times n}$$

The curve represented by the equation above is downward sloping, because each firm's markup over marginal cost, $P - c = \frac{1}{b \times n}$, decreases with the number of competing firms.

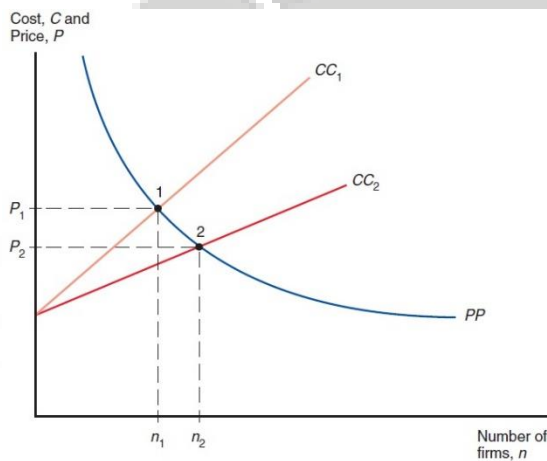
Equilibrium in a monopolistically competitive market

When the size of a market increases but the number of firms is held constant, the output will increase and average cost will decrease. The average cost curve will shift downward, the number of firms increases, the variety of goods increases and the price decreases. The number of firms in a monopolistically competitive market, and the prices they charge, are determined by two relationships.

On one side, the more firms there are, the more intensely they compete, and hence the lower is the industry price. This relationship is represented by PP.



On the other side, the more firms there are, the less each firm sells and therefore the higher is the industry's average cost. This relationship is represented by CC. If price exceeds average cost (that is, if the PP curve is above the CC curve), the industry will be making profits and additional firms will enter the industry; if price is less than average cost, the industry will be incurring losses and firms will leave the industry. The equilibrium price and number of firms occurs when price equals average cost, at the intersection of PP and CC.



Consumers will prefer a larger market, since the price is lower and the variety of goods is higher.

Integrating markets through international trade supports more firms, each producing at a larger scale and selling at a lower price than either national market does on its own. Therefore, everyone is better off.

Two new features of the model comparing to previous models:

- Product differentiation and internal economies of scale lead to trade between similar countries with no comparative advantage differences between them.
- Consumers benefit from a greater variety of the same good at a lower price.

	Home Market, Before Trade	Foreign Market, Before Trade	Integrated Market, After Trade
Industry output (# of autos)	900,000	1,600,000	2,500,000
Number of firms	6	8	10
Output per firm (# of autos)	150,000	200,000	250,000
Average cost	\$10,000	\$8,750	\$8,000
Price	\$10,000	\$8,750	\$8,000

Intra industry trade: two-way exchanges of similar goods

Inter industry trade: exchange of different types of goods

Terminology regarding FDI and MNEs

Flows/stocks of FDI: distinction between investments during a particular period and the investment position abroad at a particular point in time.

Brownfield/greenfield FDI: distinction between merging with or acquiring a foreign firm (M&A) (brownfield FDI) and investing abroad by setting up a new production facility (greenfield FDI).

Horizontal/vertical: distinction between replicating the entire production process abroad (horizontal) and relocating part of the production process abroad (vertical).

FDI/outsourcing: distinction between operating an own production facility abroad (local subsidiary) and subcontracting production to an independent firm abroad.

Offshoring: the decision to do part of the production abroad, either through FDI or through outsourcing.

Reshoring: the decision to relocate previously offshored activities back home.

Theory of MNE: location

Costs of geographical dispersion:

- Lower (plant level) economies of scale when duplicating activities.
- Lower economies of integration when moving parts of production elsewhere (increased monitoring and transportation costs).

Benefits of geographical dispersion:

- Improved access to markets and/or resources.
- Improved competitiveness abroad and at home.
- More favourable factor costs.
- Specific costs and benefits depend on type of FDI (horizontal or vertical).

Theory of MNE: internalization

Conducting transactions and production within a single organization or in separate organizations → what is the boundary of your firm?

Relevant issues for MNEs:

- Ease of knowledge/technology transfer abroad → not all knowledge can be 'packaged and sold'.
- Dissipation of proprietary knowledge/technology if weak or non-existent patent or property rights.
- Dissipation of reputation due to agency issues → will the foreign agent produce the quality and quantity that the MNEs expects?

If all these issues can be solved with a contract, foreign outsourcing is appropriate. Else, keep it within your firm.

Effects of FDI on welfare and trade

FDI should benefit the countries involved for reasons similar to why international trade generates gains:

- FDI takes advantage of (factor) cost differentials of particular locations (comparative advantage).
- FDI is similar to the relocation of production that occurred across sectors when opening to trade (specialization according to comparative advantage).

For the same reasons, FDI is expected to lead to similar income distribution effects as in for instance the HO-model of international trade.

Lecture 8

International Trade and Trade Policy

Chapter 6

The Standard Trade Model

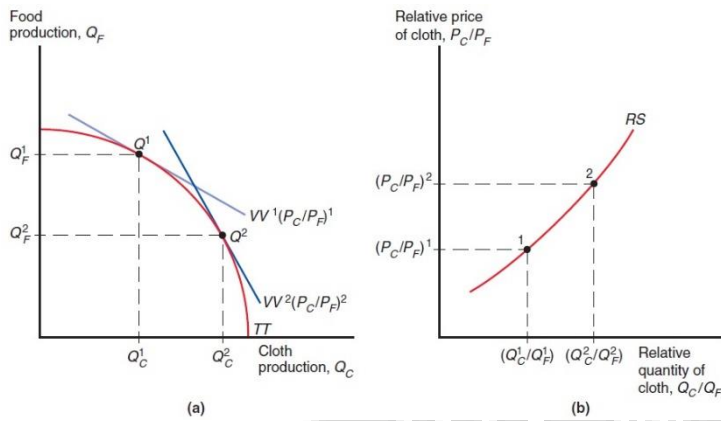
The **standard trade model** is built on four key relationships:

1. The relationship between the production possibility frontier and the relative supply curve.
2. The relationship between relative prices and relative demand.
3. The determination of world equilibrium by world relative supply and world relative demand.
4. The effect of the terms of trade on a nation's welfare.

Terms of trade (ToT) is the price of a country's exports divided by the price of its imports.

An **isovalue line** is a line along which the value of output is constant.

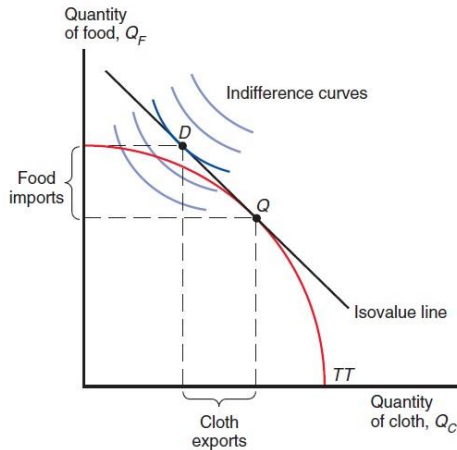
At given market prices, the economy will produce at the production level that maximizes the value of its output. When the relative price of a good changes, supply of that good increases.



In panel (a), the iso-value lines become steeper when the relative price of cloth rises from $(\frac{P_C}{P_F})^1$ to $(\frac{P_C}{P_F})^2$ (shown by the rotation from VV^1 to VV^2). As a result, the economy produces more cloth and less food and the equilibrium output shifts from Q^1 to Q^2 .



Panel (b) shows the relative supply curve associated with the production possibilities frontier TT. The rise from $\left(\frac{PC}{PF}\right)^1$ to $\left(\frac{PC}{PF}\right)^2$ leads to an increase in the relative production of cloth from $\frac{Q_C^1}{Q_F^1}$ to $\frac{Q_C^2}{Q_F^2}$.



This graph shows the relationship among production, consumption and trade in the standard model. Production and consumption must lie on the same iso-value line. The economy's choice of a point on the iso-value line depends on the tastes of its consumers.

The economy produces at point Q, where the production possibility frontier is tangent to the highest possible iso-value line. It consumes at point D, where that iso-value line is tangent to the highest possible indifference curve. The economy produces more cloth than it consumes and therefore exports cloth; correspondingly, it consumes more food than it produces and therefore imports food.

The taste of a consumer can be represented by an **indifference curve**.

- The indifference curve is downward sloping. Consequently, less of one good means more of the other good.
- The higher an indifference curve, the higher the level of welfare.
- Each curve gets flatter when moved to the right of the horizontal axis. This indicates that one extra unit of the good which is consumed less is more valuable than one extra unit of the goods which is consumed most.

When $\frac{P_1}{P_2}$ increases it has two effects:

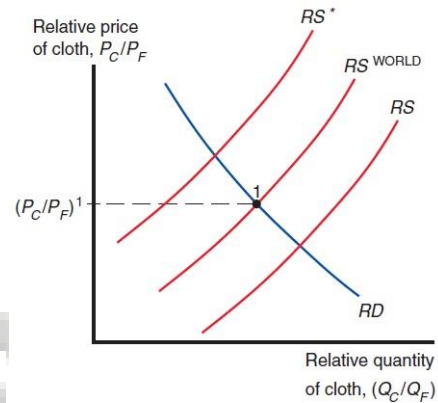
- **Income effect:**
The economy moves to a higher indifference curve and is better off. This is a rise in welfare. The consumption of both goods increases.
- **Substitution effect:**
There is a shift along the indifference curve, away from the good that became more expensive. Consumption of one good increases and of the other decreases.

If the income effect is large enough, consumption of both goods increases.

A rise in the terms of trade increases a country's welfare, while a decline in the terms of trade reduces its welfare. But changes in the terms of trade can never decrease the country's welfare below the level of welfare in the absence of trade.

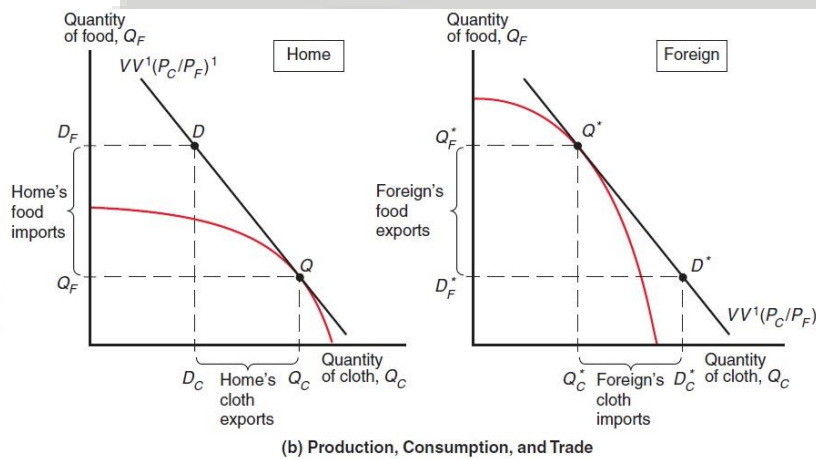
Trade patterns are induced by differences in production capabilities of a country, you can see the difference in the relative supply curves.

Panel (a) shows the relative supply of cloth in Home (RS), in Foreign (RS^*), and for the world. Home and Foreign have the same relative demand, which is also the relative demand for the world. The equilibrium relative price $\left(\frac{P_C}{P_F}\right)^1$ is determined by the intersection of the world relative supply and demand curves.



(a) Relative Supply and Demand

Panel (b) below shows the associated equilibrium trade flows between Home and Foreign. At the equilibrium relative price $\left(\frac{P_C}{P_F}\right)^1$, Home's exports of cloth equal Foreign's imports of cloth; and Home's imports of food equal Foreign's exports of food.



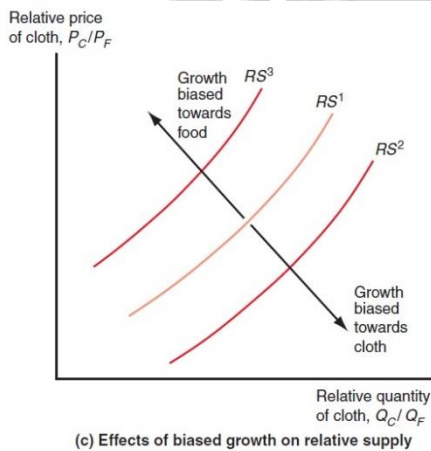
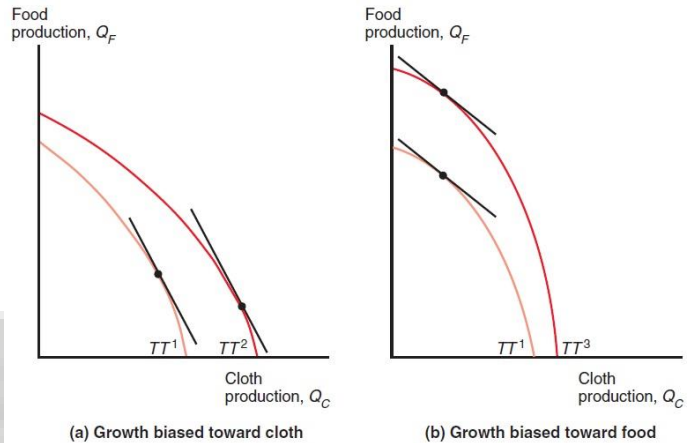
(b) Production, Consumption, and Trade

The relative supply for the world is given by the equation $\frac{(Q_1+Q_1^*)}{(Q_2+Q_2^*)}$. This relative supply curve of the world must lie between the relative supply curves of both countries.

The relative demand for the world is given by the equation $\frac{(D_1+D_1^*)}{(D_2+D_2^*)}$. There are no differences in preferences so the world relative demand curve is the same as for each country.

Economic growth means an outward shift of a country's production possibility frontier (PPF). This can be caused by an increase in resources or by improvements in the efficiency of using these resources.

Biased growth is when the PPF shifts out more in one direction than the other.



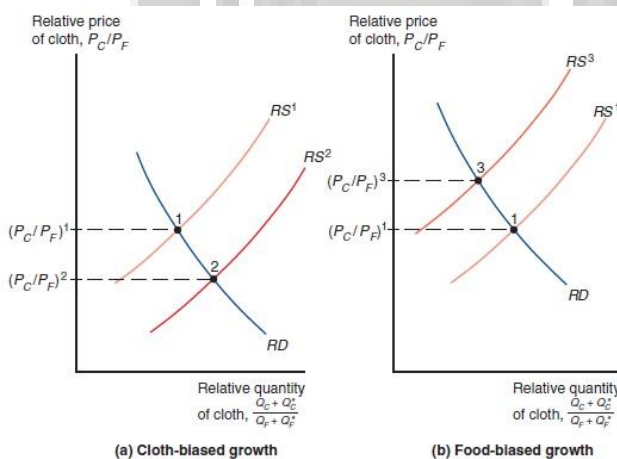
The associated shifts in the relative supply curve are shown in panel (c): shift to the right (from RS^1 to RS^2) when growth is biased toward cloth, and shift to the left (from RS^1 to RS^3) when growth is biased toward food.

The Ricardian model shows that technological progress in one sector will expand the production possibilities more in one sector than in the other.

The Heckscher-Ohlin model shows that an increase in a country's supply of a factor of production will produce biased growth. The production possibilities

increases of the specific factor or the good whose production is intensive in the factor whose supply has increased.

An important consideration is not which economy grows but rather the bias of that growth.



Export-biased growth:

Growth biased toward the good a country exports.

Tends to worsen a growing country's terms of trade, to the benefit of the world.

Import-biased growth:

Growth biased toward the good a country imports.

Tends to improve a growing country's terms of trade, at the rest of the world's expense.

Immiserizing growth:

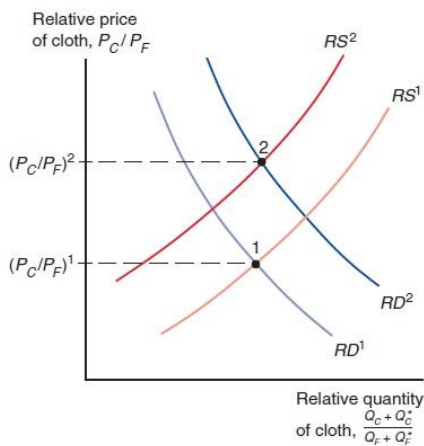
Export-biased growth in poor nations would worsen their terms of trade so much that they would be worse off than if they had not grown at all.

Import tariffs & export subsidies

Import tariffs and export subsidies are used for income distribution, promotion of industries or balance of payments. They affect the terms of trade and create a difference between prices at which goods are traded on the world market (external price) and prices at which those goods can be purchased within a country (internal price).



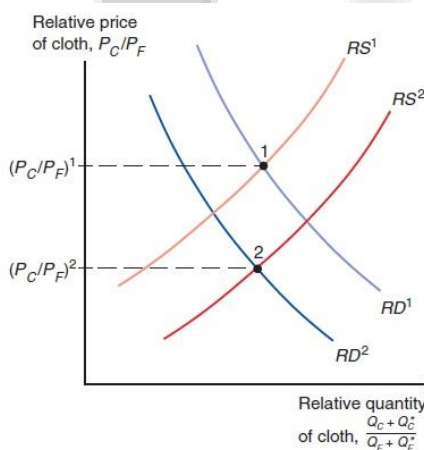
Effects of a tariff on the terms of trade



An import tariff on food imposed by Home both reduces the relative supply of cloth (from RS^1 to RS^2) and increases the relative demand (from RD^1 to RD^2) for the world as a whole. As a result, the relative price of cloth must rise from $\left(\frac{P_C}{P_F}\right)^1$ to $\left(\frac{P_C}{P_F}\right)^2$.

The extent of this terms of trade effect depends on how large the country imposing the tariff is relative to the rest of the world.

Effects of a subsidy on the terms of trade



An export subsidy on cloth has the opposite effects on relative supply and demand than the tariff on food. Relative supply of cloth for the world rises, while relative demand for the world falls. Home's terms of trade decline as the relative price of cloth falls from $\left(\frac{P_C}{P_F}\right)^1$ to $\left(\frac{P_C}{P_F}\right)^2$.

It depends on the change of the terms of trade and costs by distorting production and consumption if a country gains or losses from trade.

Chapter 9

The Instruments of Trade Policy

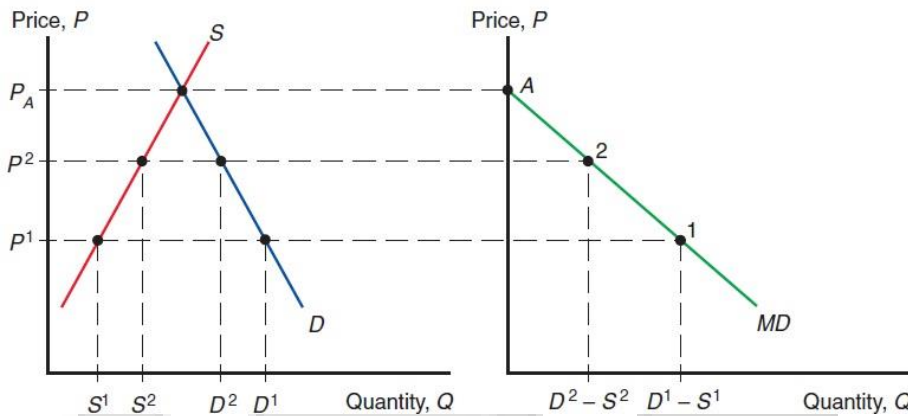
Specific tariffs are levied as a fixed charge for each unit of goods imported (for example, \$3 per barrel of oil). **Ad valorem tariffs** are taxes that are levied as a fraction of the value of the imported goods (for example, a 25 percent U.S. tariff on imported trucks). In either case, the effect of the tariff is to raise the cost of shipping goods to a country.

Tariffs are set up to provide revenue and to protect particular domestic sectors. Nowadays **nontariff barriers**, such as **import quotas** (limitations on the quantity of imports) and **export restraints** (limitations on the quantity of exports – usually imposed by the exporting country at the importing country's request), are preferred.

An import tariff or export subsidy lowers the world market price of a good if set by a large country. What is a “large country” in this context? A country that is big enough in the market (of a specific good) to affect the world market price of that good.

Two curves to determine the world price and the quantity traded

Home import demand curve



As the price of the good increases, Home consumers demand less, while Home producers supply more, so that the demand for imports declines.

Foreign export supply curve



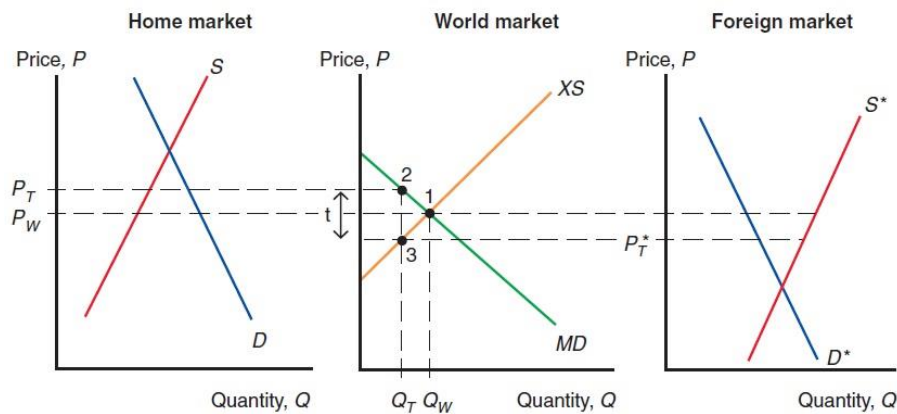
As the price of the good rises, Foreign producers supply more while Foreign consumers demand less, so that the supply available for export rises.

Equilibrium

Home demand - Home supply = Foreign supply - Foreign demand
 Home demand + foreign demand = Home supply + Foreign supply
 World demand = World supply

Effect of a tariff

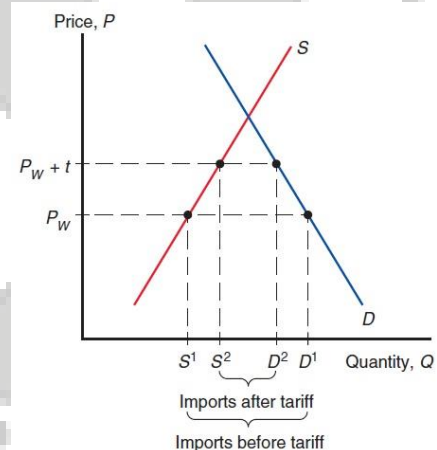
The price including the tariff has to exceed the price in the other country. If that is not the case, there will be excess demand in one country and excess supply in the other. So price in one country will rise and price in the other will decline until the price in the country with the tariff including tariff exceeds the price of the other country.



In the figure, a tariff raises the price in Home while lowering the price in Foreign. The volume traded thus declines.

When a small country imposes a tariff, its share of the world market for the goods it imports is usually minor to begin with, so that its import reduction has very little effect on the world (foreign export) price. It is only negative for the own country.

The **effective rate of protection** is how much protection a tariff or other trade policy actually provides, when both intermediate and final goods are imported.



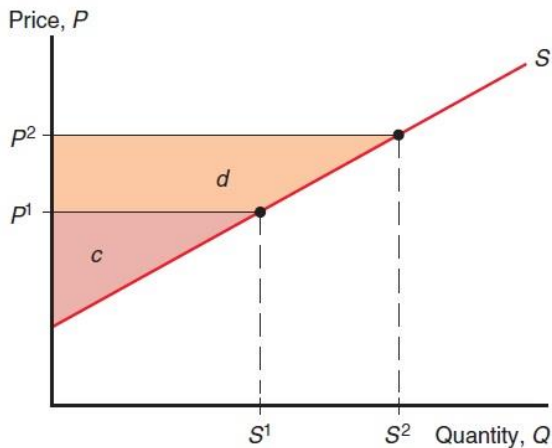
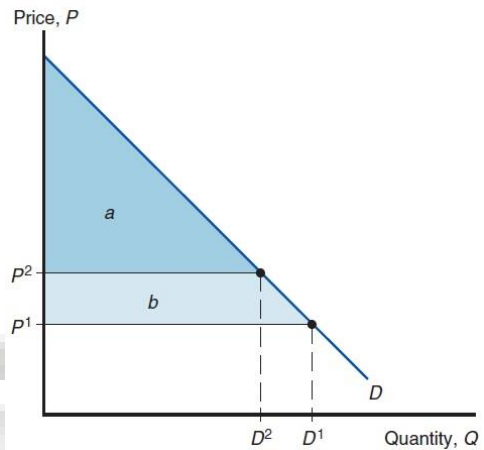
$$\text{effective rate of protection} = \frac{V_T - V_W}{V_W}$$

$$\frac{V_T - V_W}{V_W} = t_A + P_C \left(\frac{t_A - t_C}{P_A - P_C} \right)$$

- V_T = value added in the presence of trade policies
- V_W = value added in the sector at world prices
- t_A = ad valorem tariff rate on imported final goods
- t_C = ad valorem tariff rate on components
- P_A = world price of a final good
- P_C = world price of components

Consumer surplus is the difference between the price the consumer actually pays and the price the consumer would have been willing to pay.

Producer surplus is the difference between the price the producer actually gets and the price at which the producer would have been willing to sell.



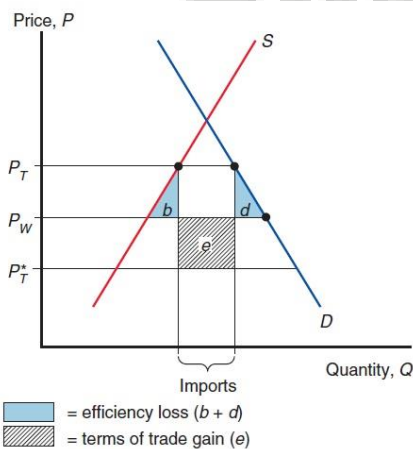
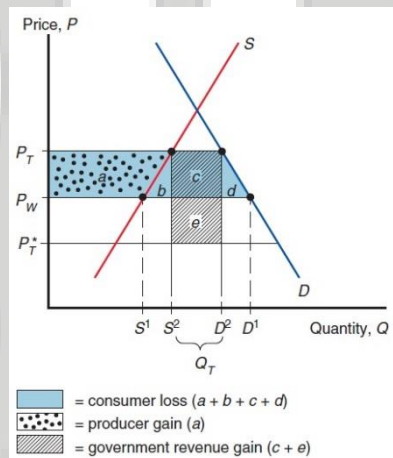
A tariff results in a rise of domestic price, a decline of foreign price, a rise of domestic production while domestic consumption falls. Producers receive a higher price and therefore have a higher producer surplus. Consumers have to pay a higher price and therefore have a lower consumer surplus. The government gains because they receive tariff revenues ($t \times$ volume of imports).

Costs and benefits of a tariff for the importing country

The costs and benefits to different groups can be represented as sums of the five areas a, b, c, d, and e.

Net welfare effects

the net cost of a tariff = consumer loss – producer gain – government revenue



There is an efficiency loss because a tariff distorts incentives to consume and produce.

- **Production distortion loss:**
Tariff leads domestic producers to produce too much of the good.
- **Consumption distortion loss:**
Tariff leads consumers to consume too little of the good.

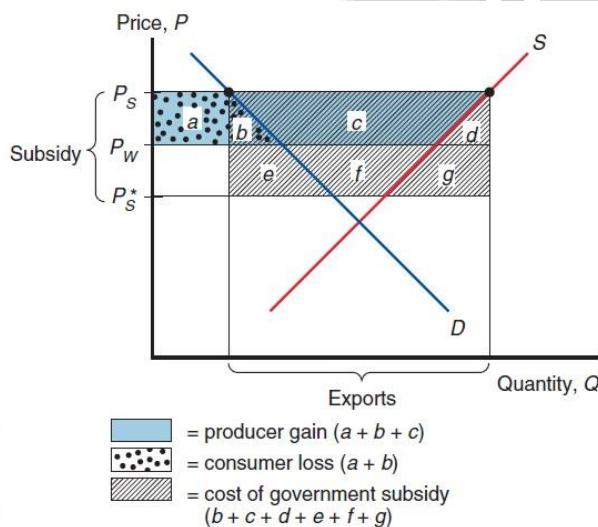
A terms of trade gain arises since a tariff lowers foreign export prices.



Effect of a subsidy

An **export subsidy** is a payment to a firm or individual that ships a good abroad. It can be specific or ad valorem. The good will be exported up to the point at which the domestic price exceeds the foreign price by the amount of the subsidy.

Subsidy results in a rise of the prices in the exporting country and a fall in the prices in the importing country. In the exporting country, consumers are hurt, producers gain and the government loses because it must expend money on the subsidy.



Effects of an export subsidy

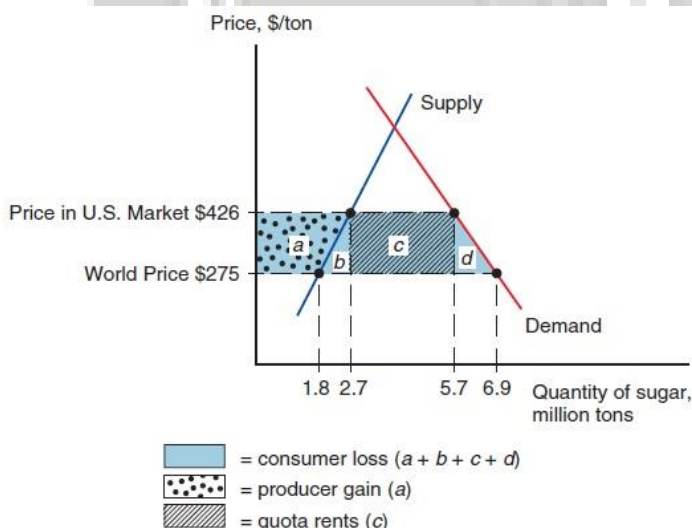
An export subsidy raises prices in the exporting country while lowering them in the importing country

Net welfare effects

Production and consumption distortion losses are the same.

Terms of trade are worsened because the price of export in foreign market is lowered.

An **import quota** is a direct restriction on the quantity of some good that may be imported. An import quota always raises the domestic price of the imported good. Imports are limited so the demand exceeds the supply; this causes the price to grow.



The government receives no revenue by using a quota. License holders can buy imports and resell them at a higher price in the domestic market, their profits are quota rents.

Other trade policy instruments:

- Voluntary export restraints
- Local content requirements
- Export credit subsidies
- National procurement
- Red-tape barriers

Chapter 10

The Political Economy of Trade Policy

The efficiency case for free trade states that a trade restriction, such as a tariff, leads to production and consumption distortions (losses). Tariff rates are generally low and import quotas are relatively rare.

Why free trade?

Protected markets limit gains from external economies of scale by inhibiting the concentration of industries; when the economies of scale are internal, they not only fragment production internationally, but by reducing competition and raising profits, they also lead too many firms to enter the protected industry.

Another argument for free trade is that by providing entrepreneurs with an incentive to seek new ways to export or compete with imports, free trade offers more opportunities for learning and innovation than are provided by a system of 'managed' trade, where the government largely dictates the pattern of imports and exports.

The **rent seeking** declines. That is when a company, organization or individual uses their resources to obtain an economic gain from others without reciprocating any benefits back to society through wealth creation.

It also leads to an efficient allocation of resources. National welfare of small country is highest with free trade. With restricted trade, consumers pay higher prices. Protection diverts resources away from comparative advantage industries, lowering the gains from trade. Trade leads to more choice and lower prices.

A political argument for free trade reflects the fact that a political commitment to free trade may be a good idea in practice even though there may be better policies in principle.

Why no free trade?

For a large country that is able to affect the prices of foreign exporters, a tariff lowers the price of imports and thus generates a terms of trade benefit, but only with a sufficiently small tariff. The optimum tariff maximizes national welfare and is less than the prohibitive rate that would eliminate all imports. Like the optimum tariff, the optimum export tax is always positive but less than the prohibitive tax that would eliminate exports completely. A subsidy will always be negative.

Domestic market failures may cause free trade to be a suboptimal policy because it would be an economic reason for government intervention, persistently high under-employment due to labour market rigidities. Technological benefits for society discovered through private

production, but from which private firms cannot fully profit. Environmental costs for society caused by private production, but for which private firms do not fully pay. Property rights that are not well defined or well enforced. There are simply interventions that could raise national welfare.

Who gets protected?

Agriculture:

There are not many farmers in modern economies so they get subsidies to make it more desirable.

Clothing:

Apparel industry (assembly of cloth into clothing).

International negotiations

Why is it easier to lower tariffs as part of a mutual agreement than to do so as a unilateral policy? A mutual agreement helps mobilize support for free trade if they believe export markets will expand. Negotiated agreements on trade can help governments avoid getting caught in destructive trade wars.

Prisoner's dilemma: each government, making the best decision for itself, will choose to protect. If both can establish a binding agreement to maintain free trade, both can avoid the temptation of protection and both can be made better off.

In the past it was necessary to reduce tariff rates (the tariffs became too high and the trade fell). But to reduce them, tariff reduction needed to be linked to some concrete benefits for exporters: the bilateral tariff negotiations. *"I will lower the tariffs, if you lower the tariffs for us"*. Countries who did not have to make concessions also gain from the higher price because of the lower tariffs.

Negotiations were set under a provisional set of rules: **General Agreement on Tariffs and Trade (GATT)**. Out of this, the **World Trade Organization (WTO)** established.

The principal ratchet in the system is the process of binding. When a tariff rate is bound, the country imposing the tariff agrees not to raise the rate in the future. A country can raise a tariff only if it gets the agreement of other countries, which usually means providing compensation by reducing other tariffs. Export subsidies are not allowed.

The lever used to make forward progress is the somewhat stylized process known as a trade round, in which a large group of countries get together to negotiate a set of tariff reductions and other measures to liberalize trade.

The Uruguay Round, like previous GATT negotiations, cut tariffs rates around the world. An important trade action was a new set of rules concerning government procurement, purchases made not by private firms or consumers but by government agencies.

The GATT and the Organization for Economic Cooperation and Development both suggest a gain to the world economy as a whole of more than \$200 billion annually, raising world income by about 1 percent.

People claim that the estimated gains are exaggerated, because the estimates assume that exports and imports responded strongly to the new liberalizing moves.

The Doha disappointment

For the first time since the creation of the GATT, a round of trade negotiations appeared to have broken down with no agreement in sight. But Doha's apparent failure owes a lot to the success of previous trade negotiations. Because previous negotiations had been so successful at reducing trade barriers, the remaining barriers to trade are fairly low, so that the potential gains from further trade liberalization are modest.

Chapter 12

Controversies in Trade Policy

There are new arguments for government intervention in trade during the last decades:

- The theory of **strategic trade policy** gave reasons why countries profit from the promotion of particular industries.
- In the nineties there was new critic on globalization. This critic focused on the effects from globalisation on employees in developing economies.
- A possible action on climate changes gave trade issues, including the desirability and legality of **carbon tariffs**.

The arguments of trade policy activists are based on two ideas:

- The argument that governments should promote industries that provide technological **externalities** (benefits for parties, other than the company that produces these benefits).
- **The Brander-Spencer** analysis suggests that strategic intervention can enable nations to generate **excess returns** (gains that are greater than a similar risk of generating investment elsewhere in the economy).

These arguments are theoretically acceptable, but many economists are too specific and require too much information to be useful in practice.

Globalization and low-wage labour

With the growth of manufactured exports from developing countries, a new move is going on, which is contrary to globalization. The central concern of this movement is the low wage paid to exporters. The reaction of many economists is that workers from developing countries may earn low wages at Western standards, but due to trade they earn more than they would otherwise deserve.

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