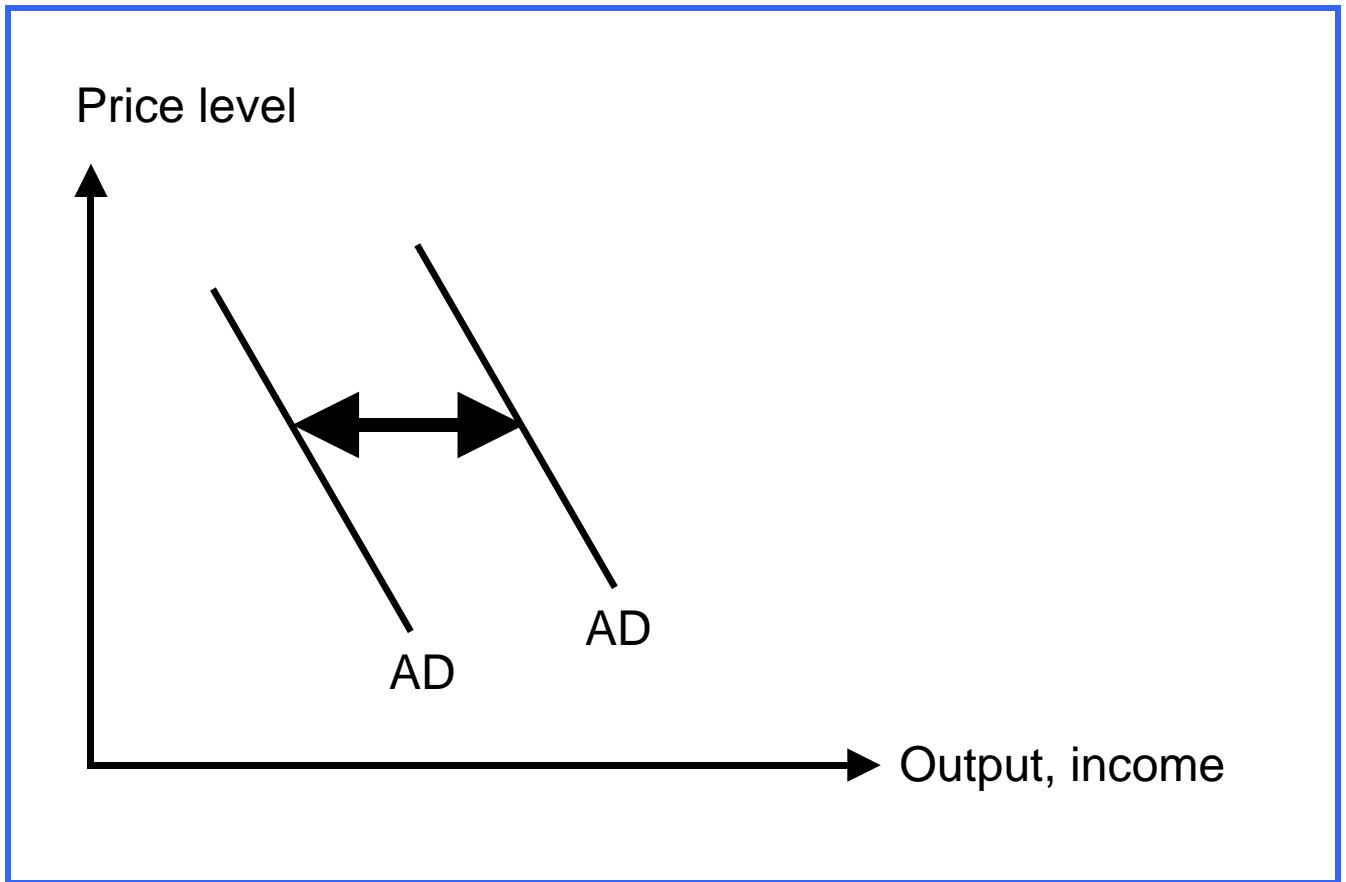


Aggregate demand - shifts



AD = Aggregate demand

Possible reasons for shifts

Change in the following items:

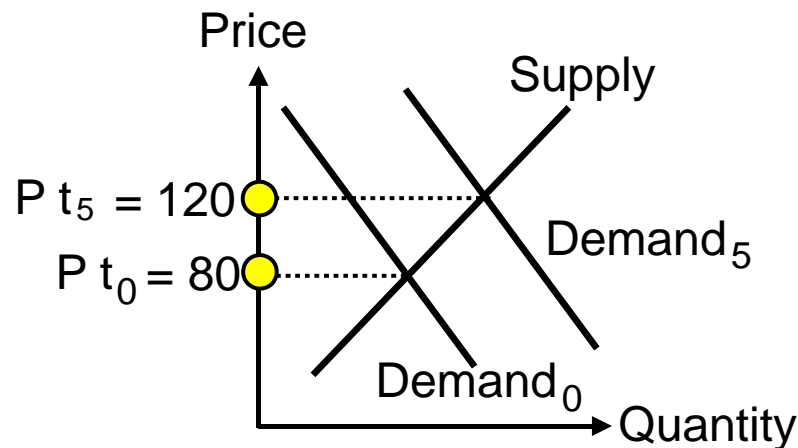
- Consumption
- Investment
- Government spending
- Net exports

Analysis of markets - comparative static and dynamic

Comparative static analysis of markets

→ Different equilibrium positions are displayed without taking notice of the adjustment process.

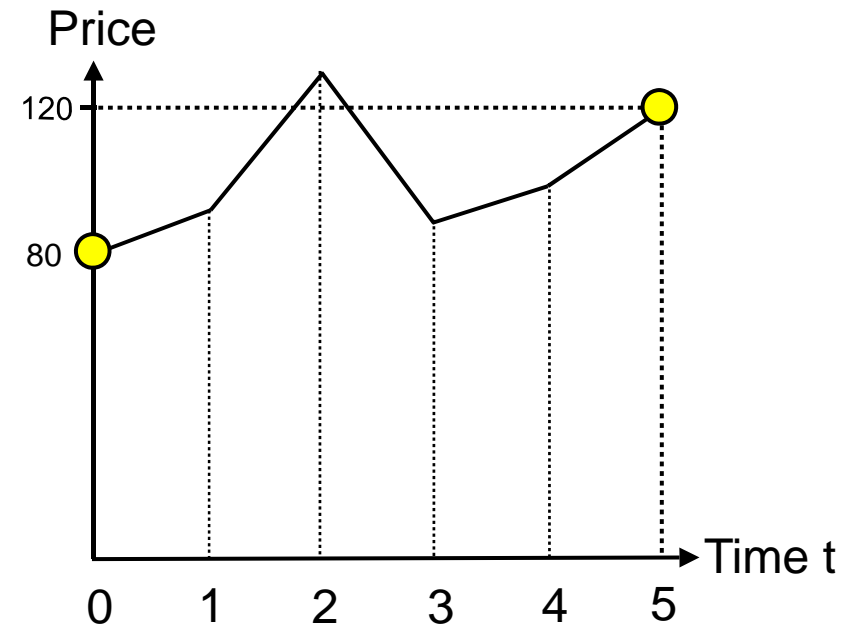
Ex.: Market for oil at time t_0 and t_5 ; the change is due to an increase in demand



Dynamic analysis of markets

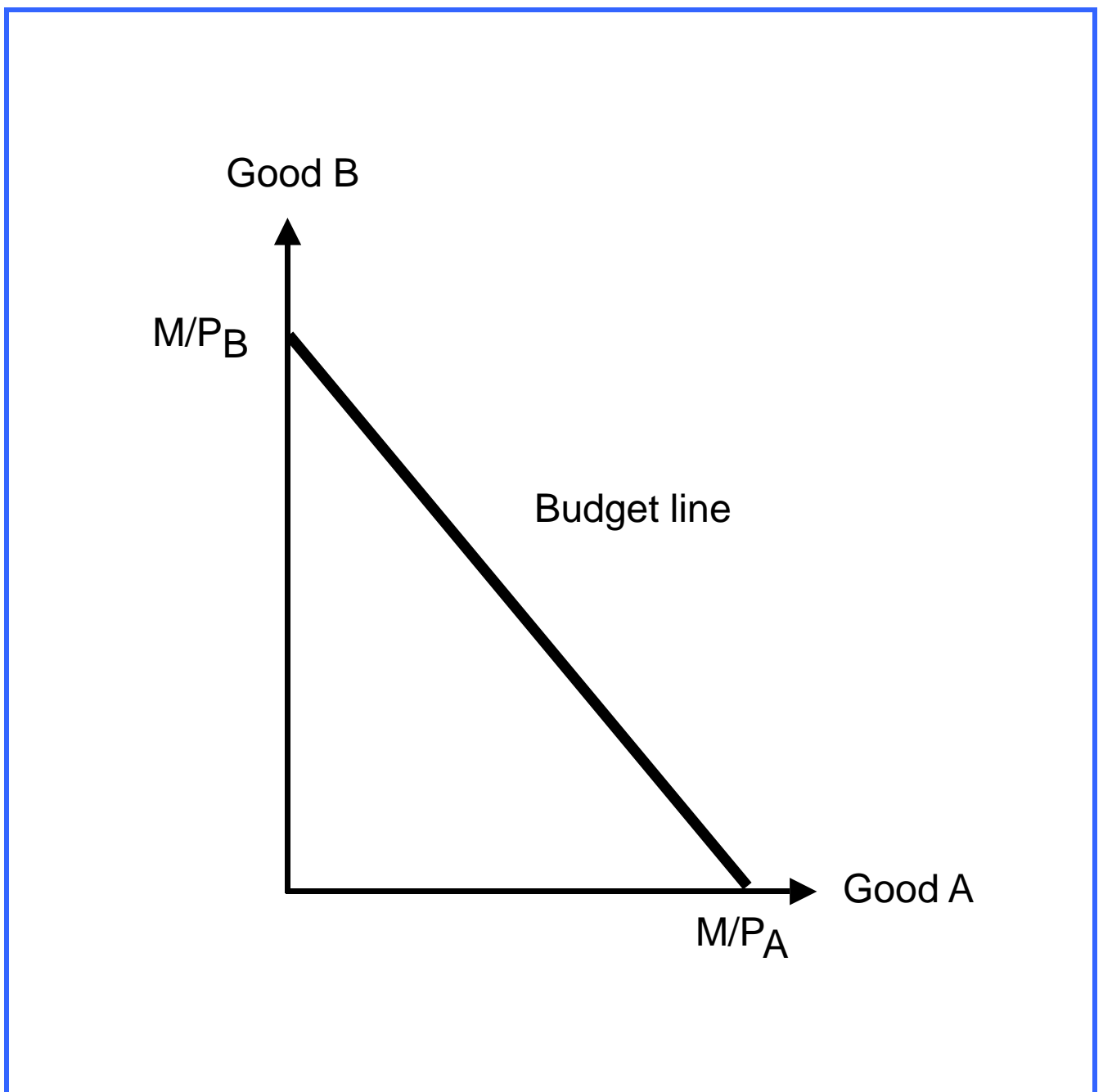
→ Analysis of a market during a period of time

Ex.: Price trend of oil from t_0 to t_5

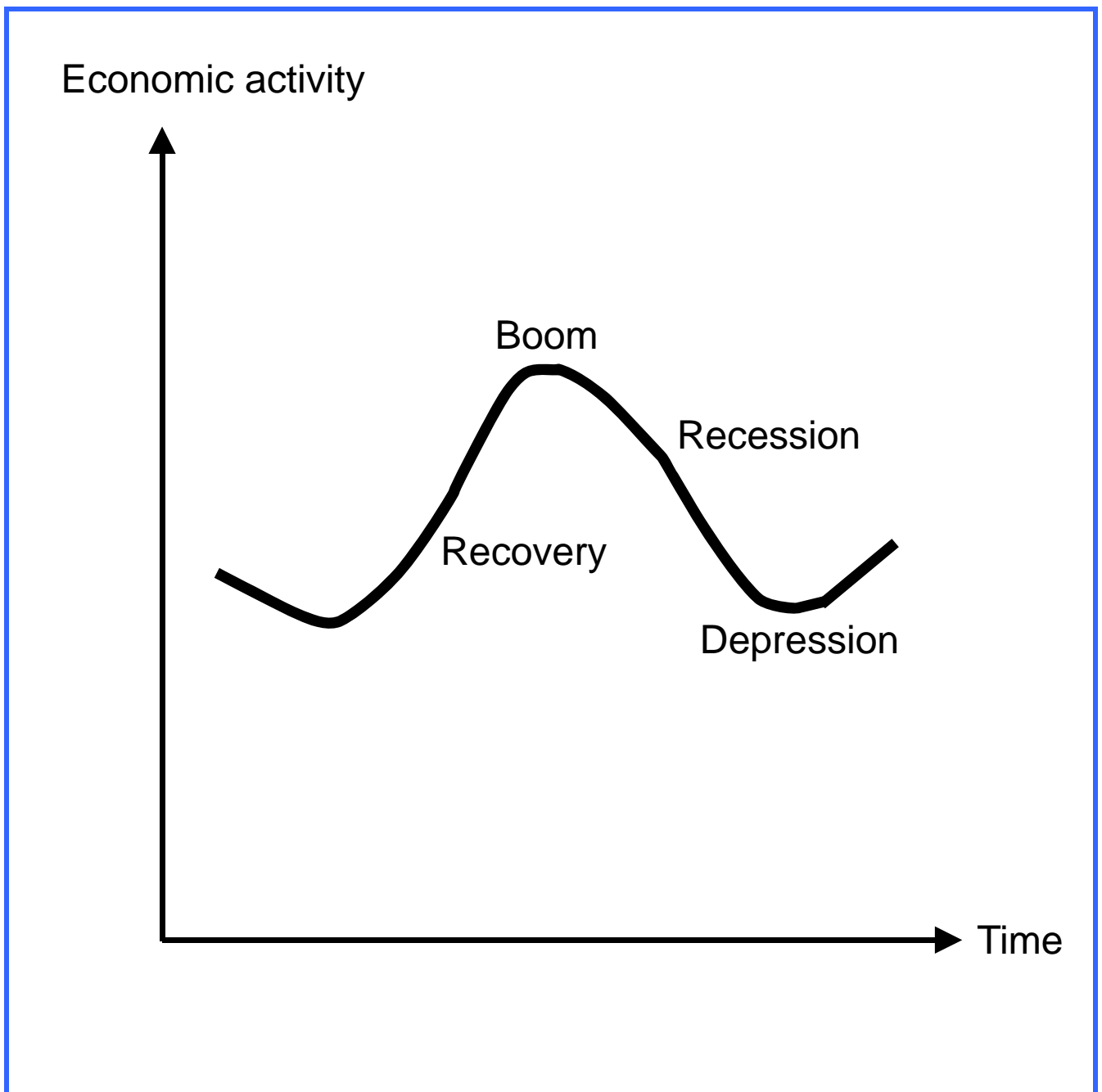


Budget line

A consumer with an income of M can choose between two goods, A and B, at the prices of P_A and P_B . The budget line shows the possible combinations with regard to the 2 divisible goods A and B.



Business cycle



Choice

Many wants

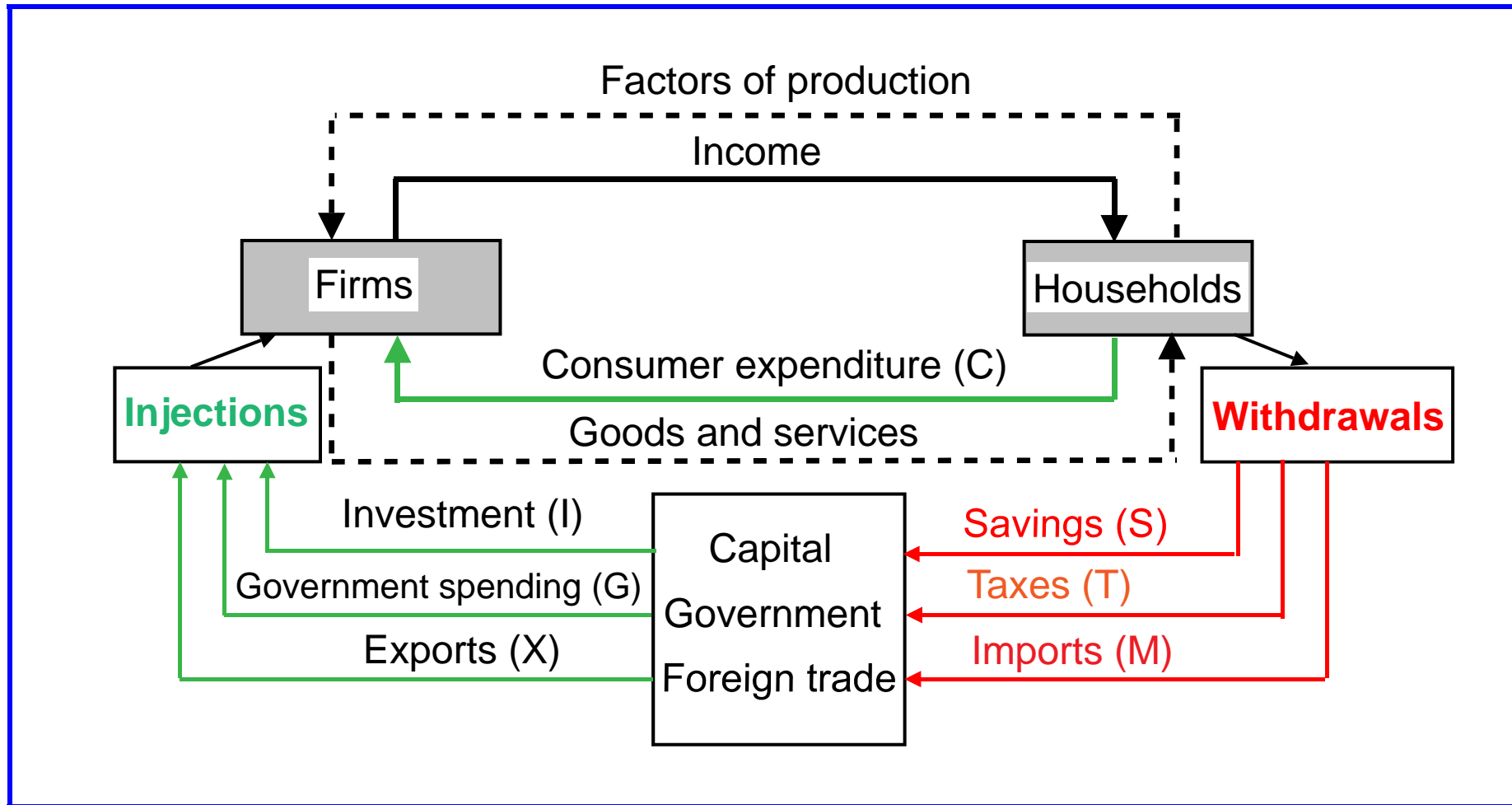
Choice is necessary.

Scarce
resources

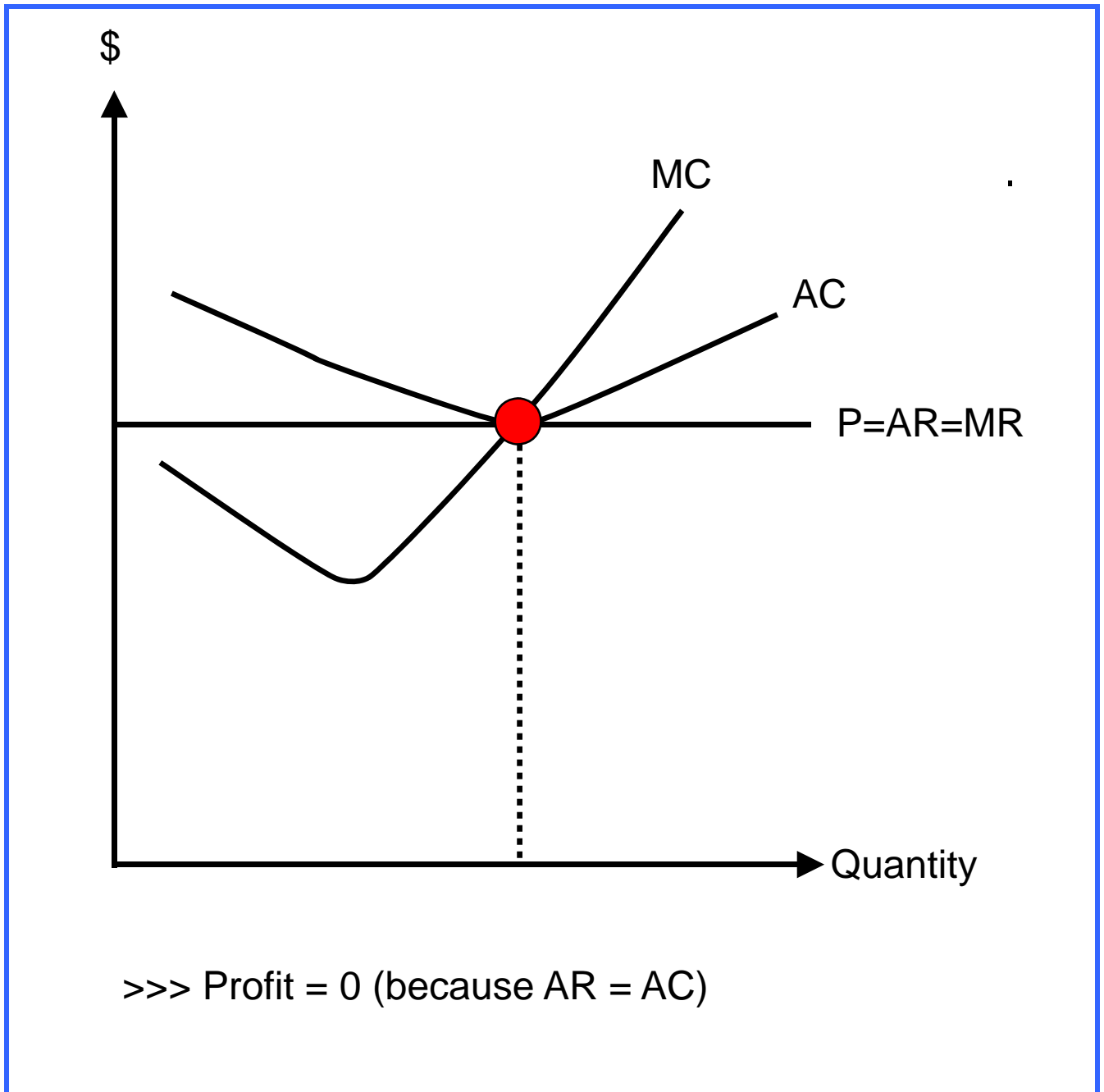
Behaviour to optimize such
a choice:

- Rational behaviour
- Taking into consideration
opportunity costs
- Decisions at the margin

Circular flow



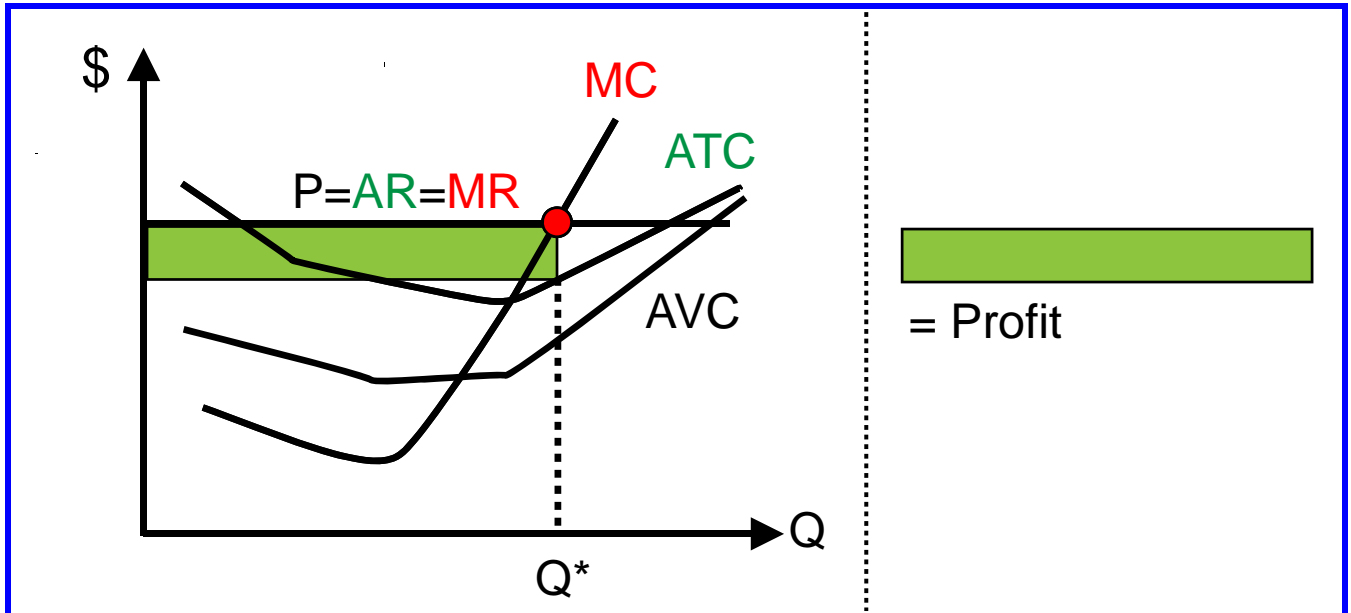
Competitive firm - long run



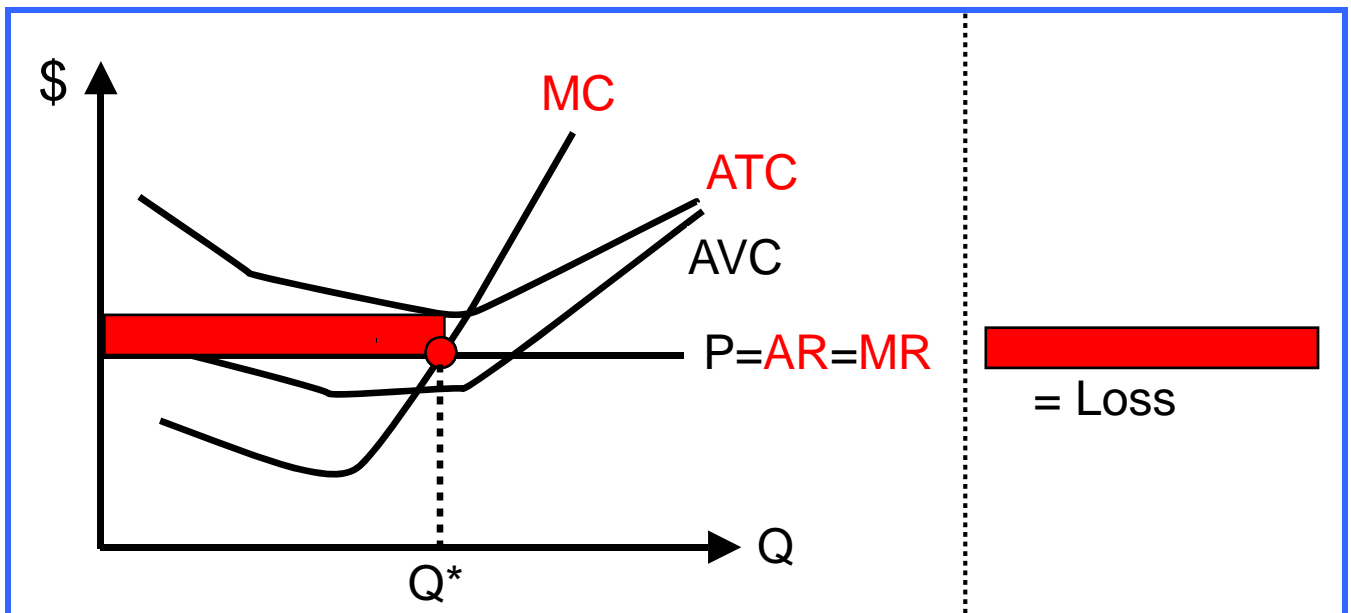
P = Price	
AC = Average cost	AR = Average revenue
MC = Marginal cost	MR = Marginal revenue

Competitive firm - short run

① Situation of a **profit**



② Situation of a **loss**

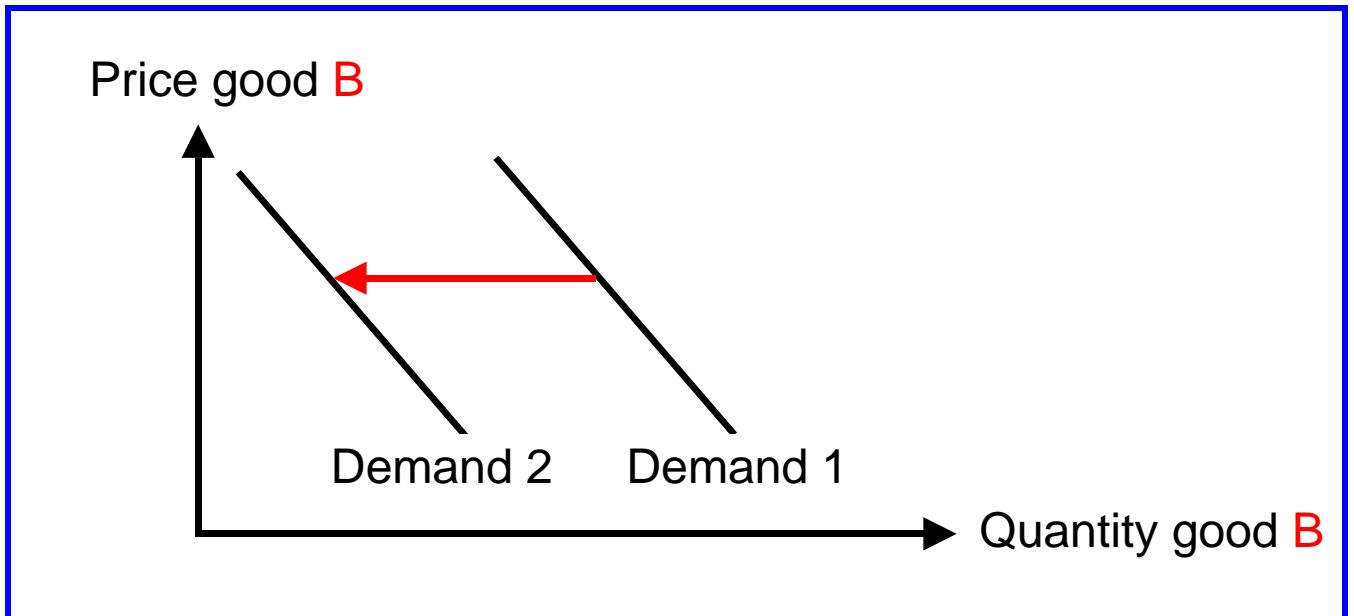


P = Price	Q = Quantity
ATC = Average total cost	AR = Average revenue
AVC = Average variable cost	MR = Marginal revenue
MC = Marginal cost	

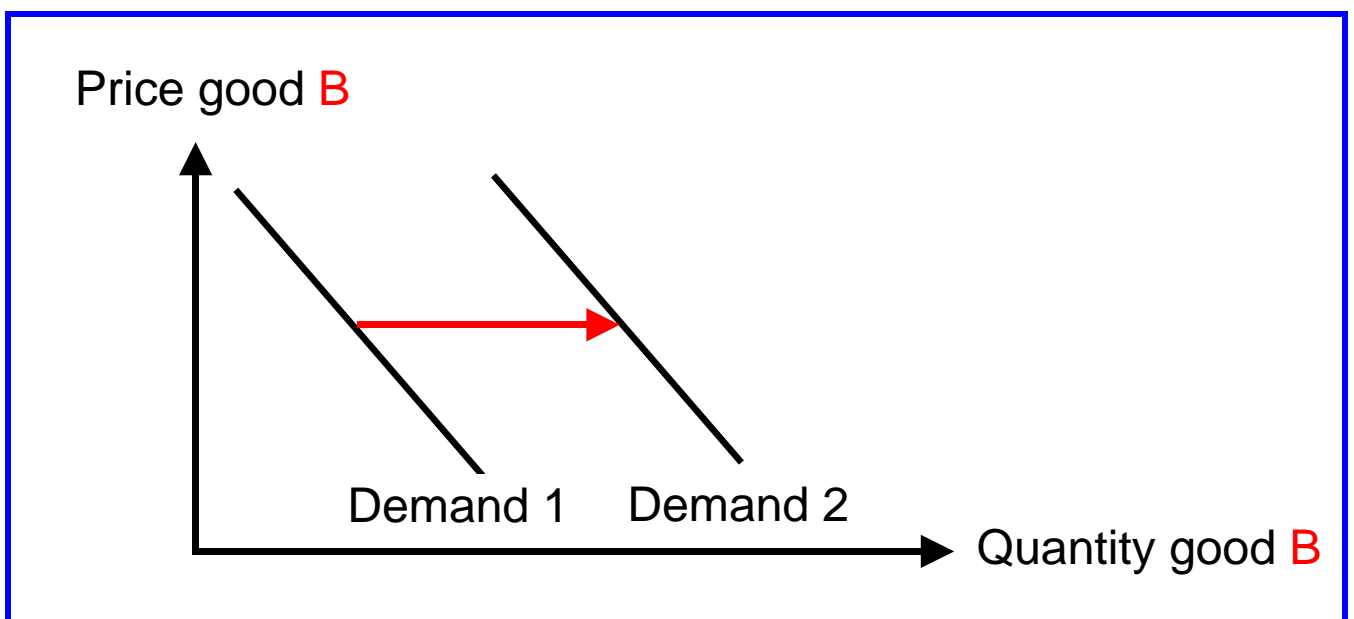
Complements

The goods A and B are complements.

① **The price of good A rises.**



② **The price of good A falls.**

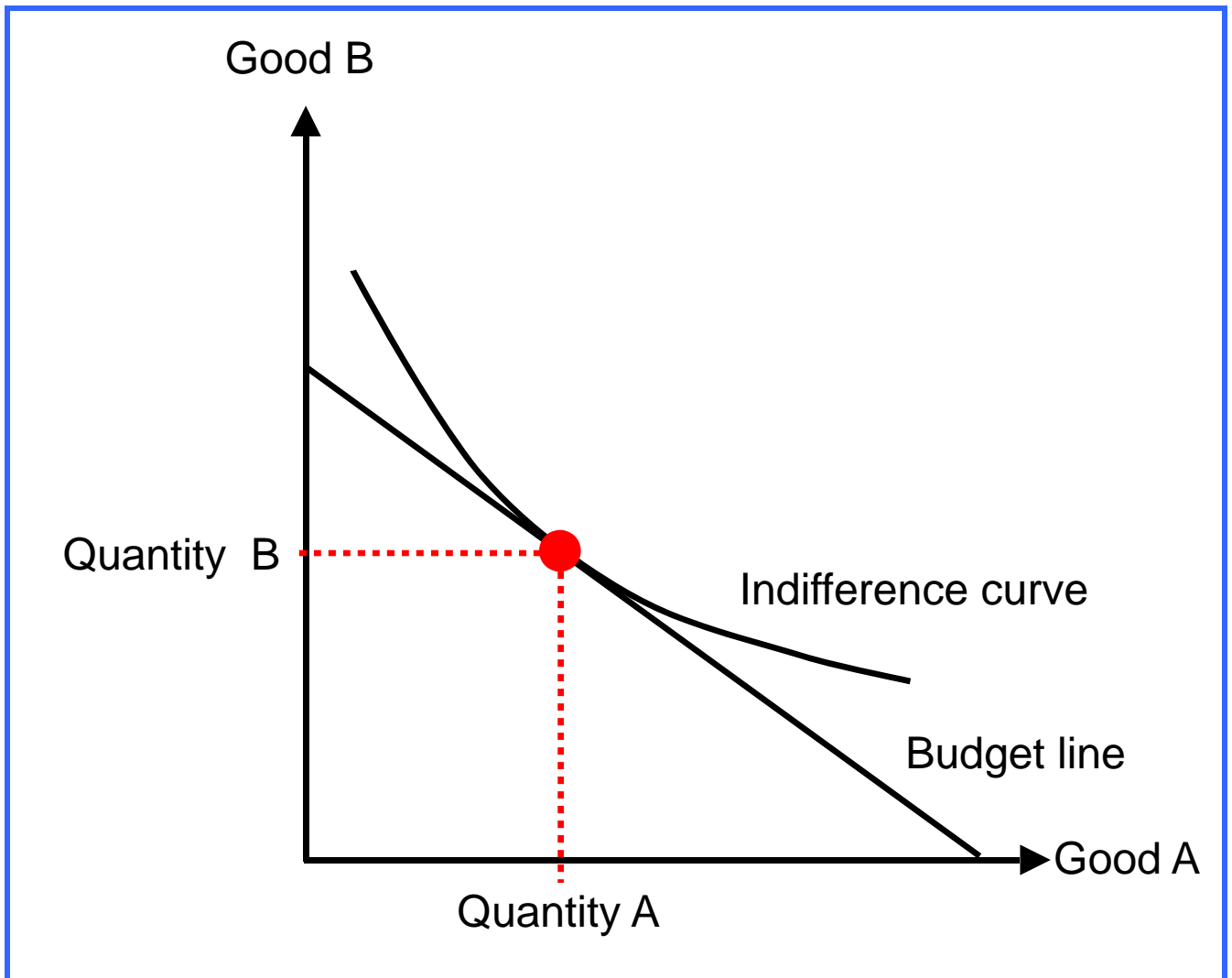


Consumer choice

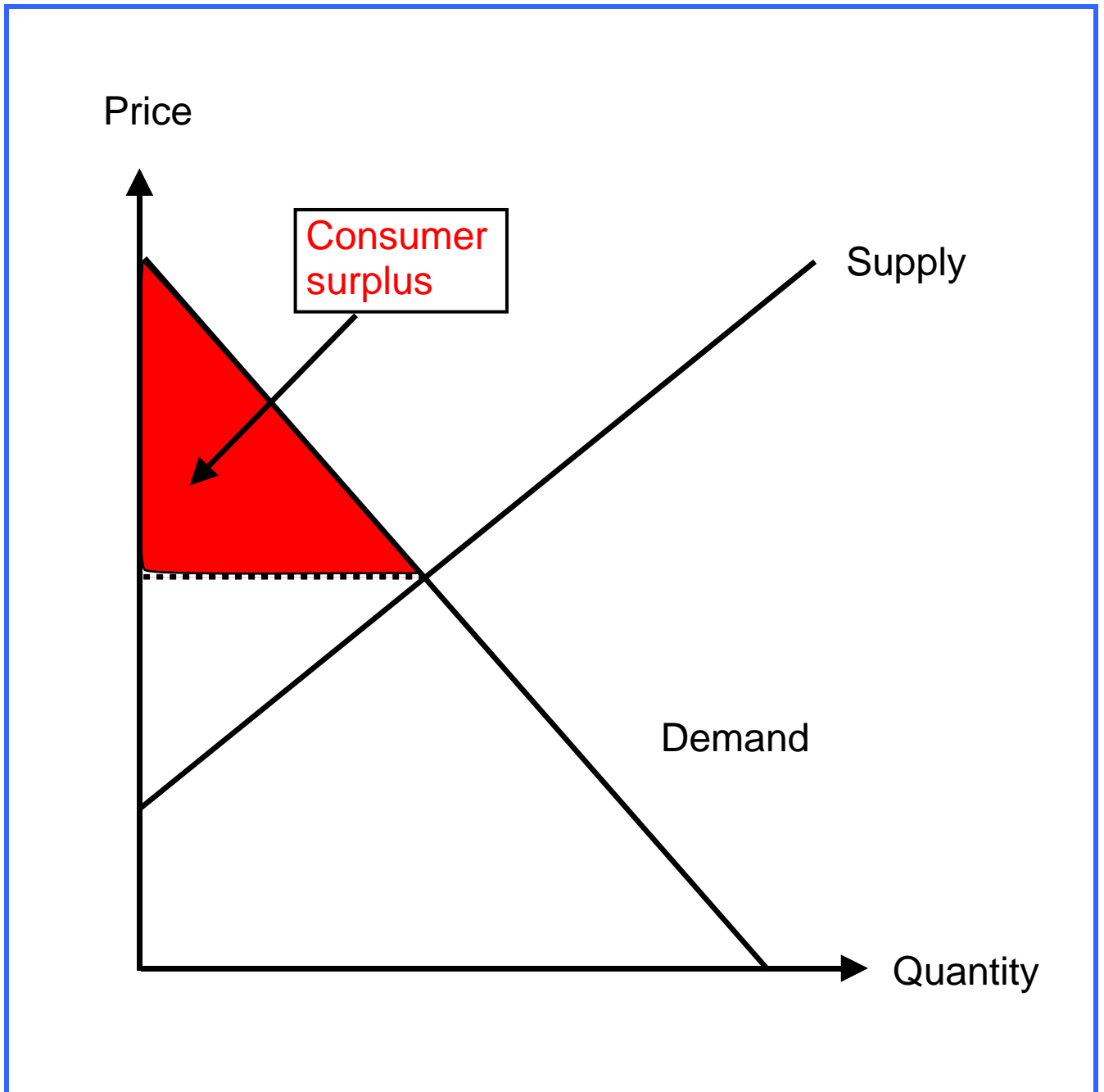
The consumer chooses the highest possible indifference curve. This is the case where the budget line touches this indifference curve.

Information about

- the budget line. [Click here!](#)
- the indifference curve. [Click here!](#)



Consumer surplus



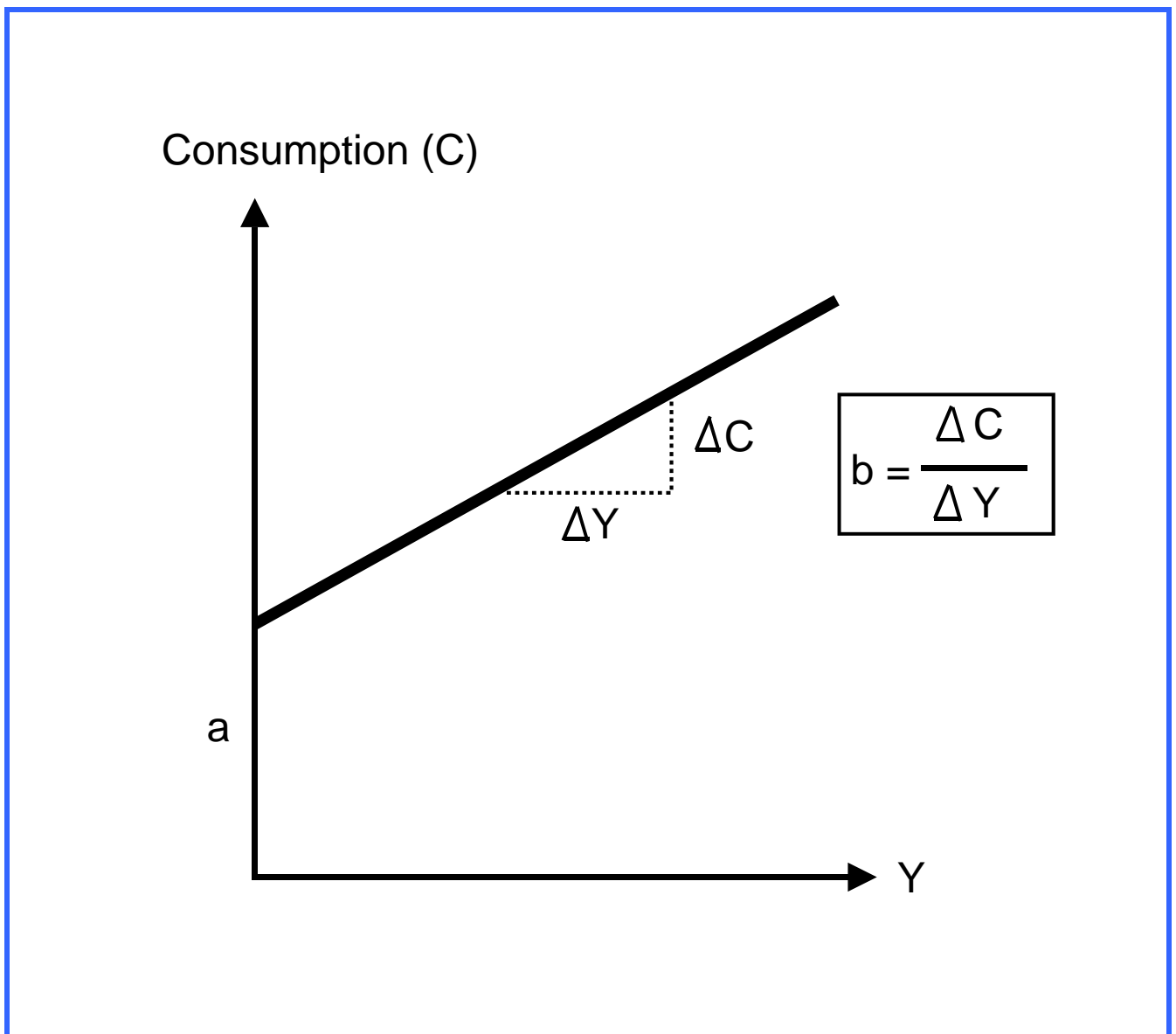
Consumption function

Consumption function: $C = a + bY$

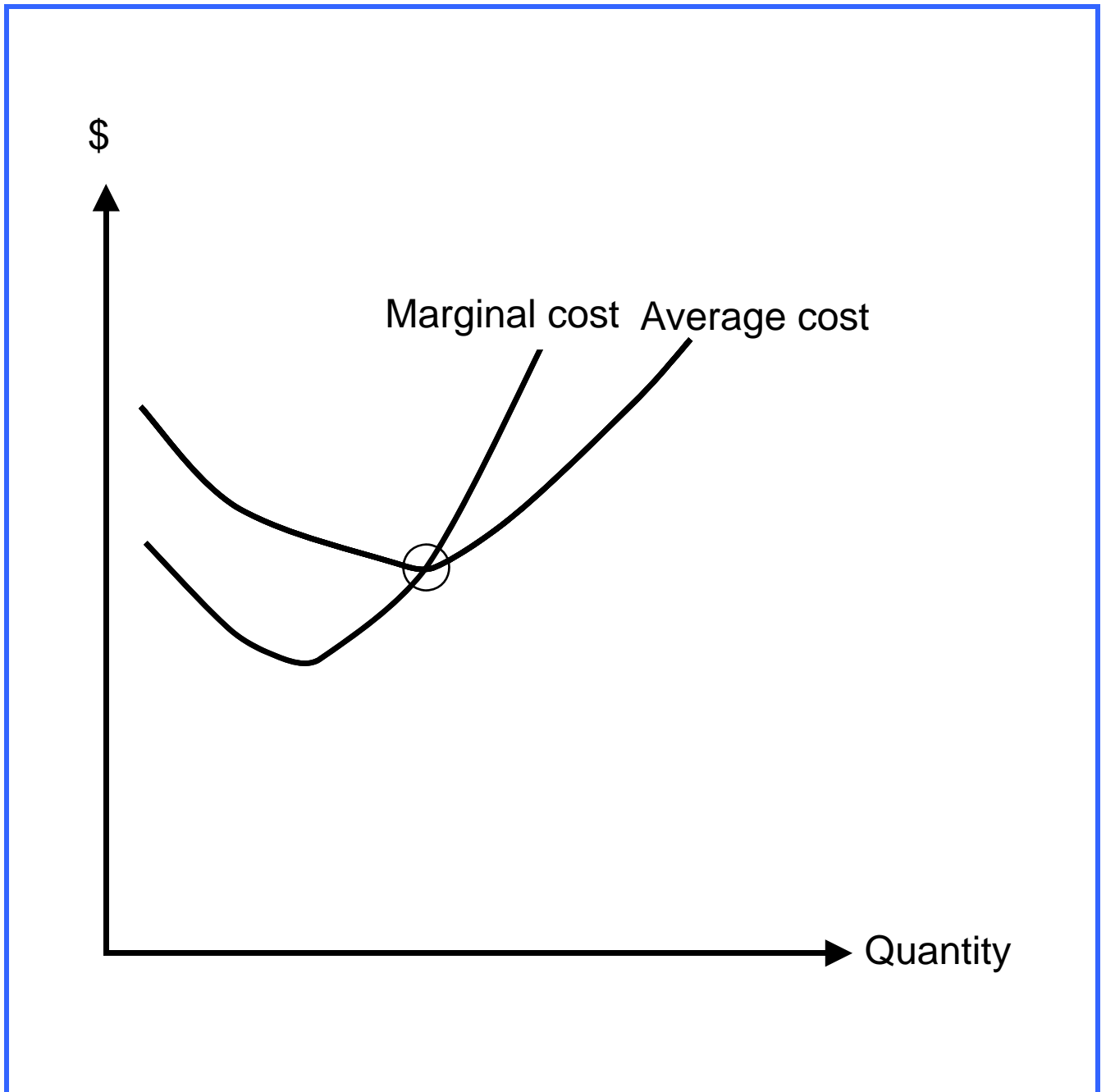
a = Autonomous consumption (C if $Y = 0$)

b = Marginal propensity to consume

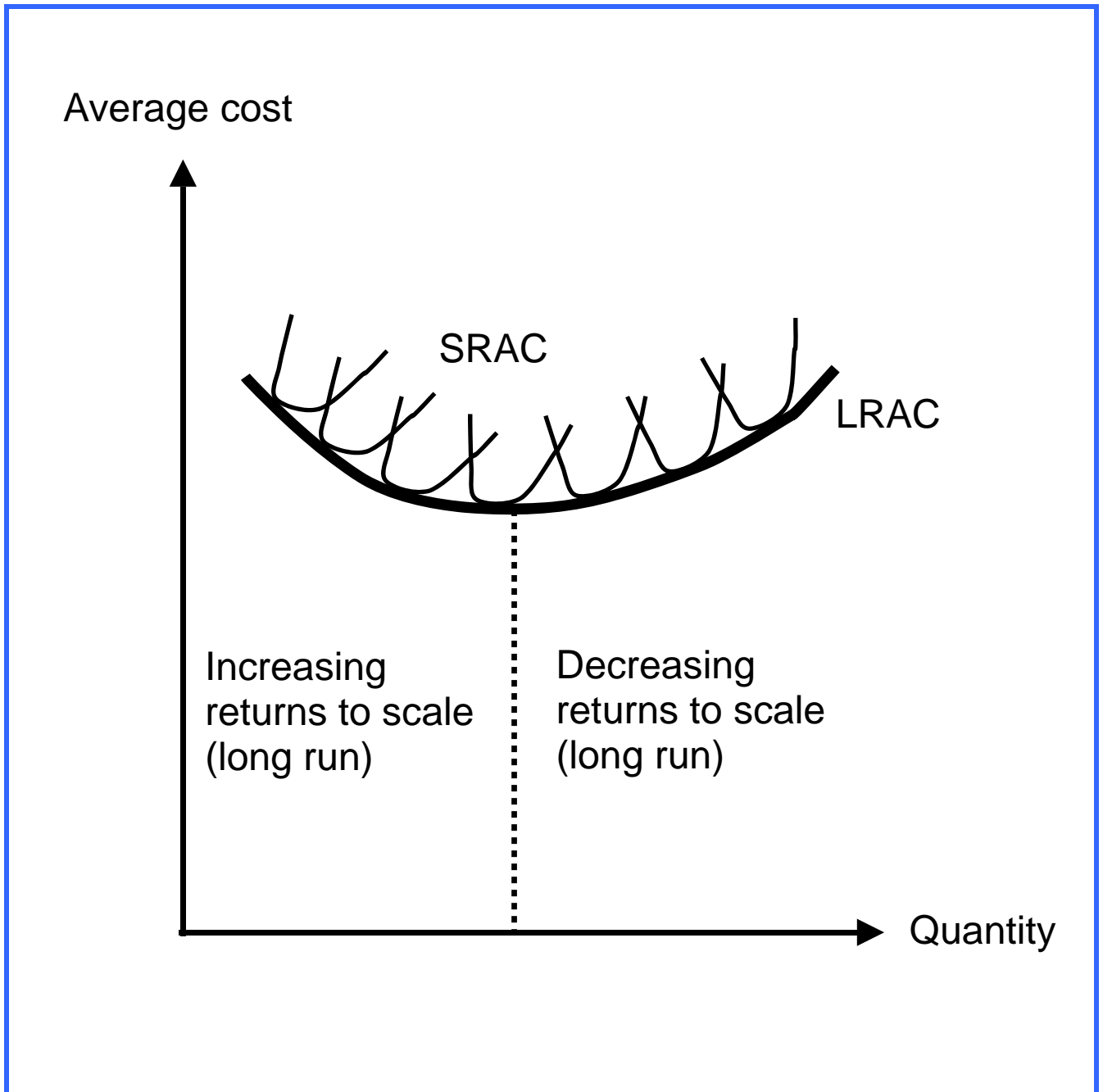
Y = Output, income



Cost - average and marginal

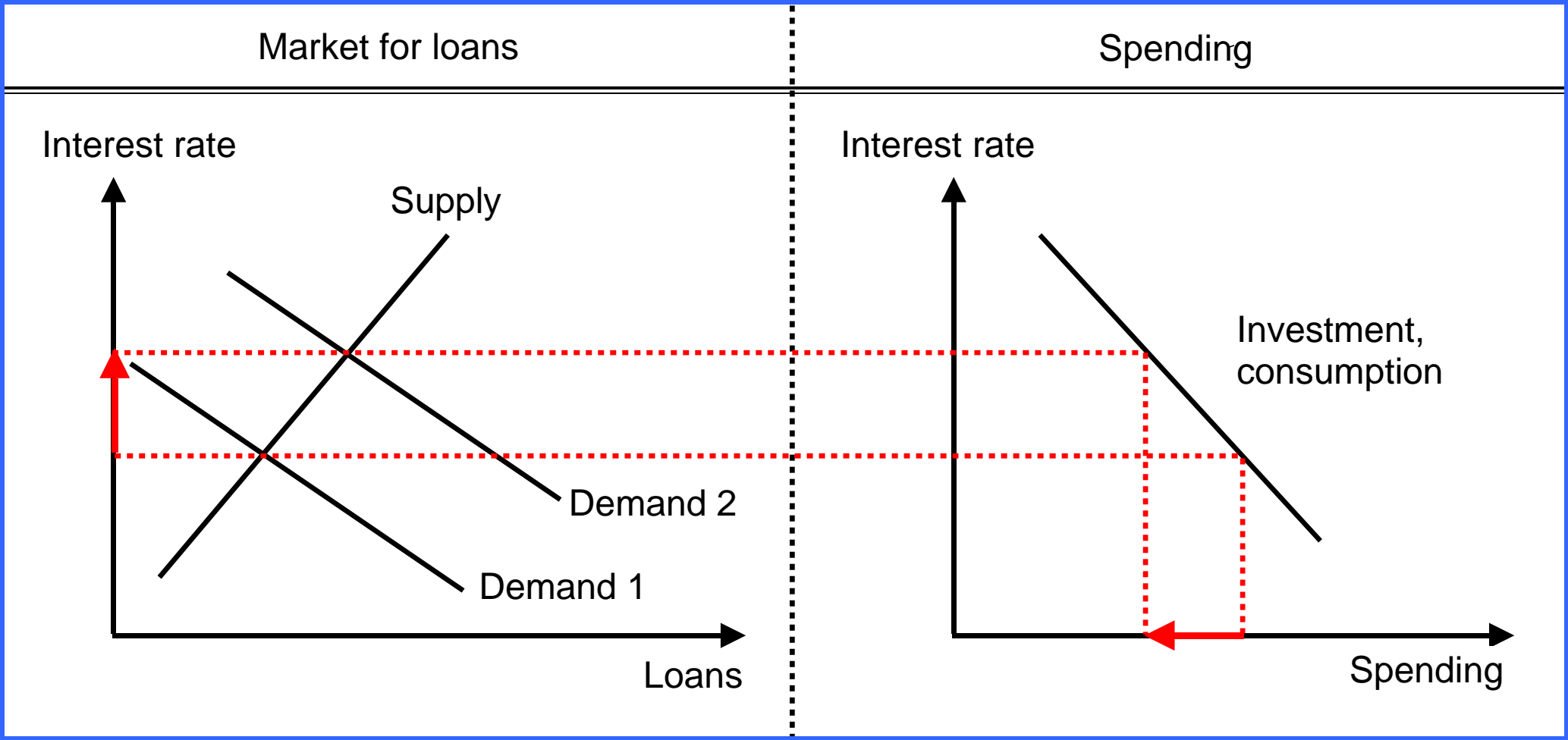


Cost curves - short run and long run

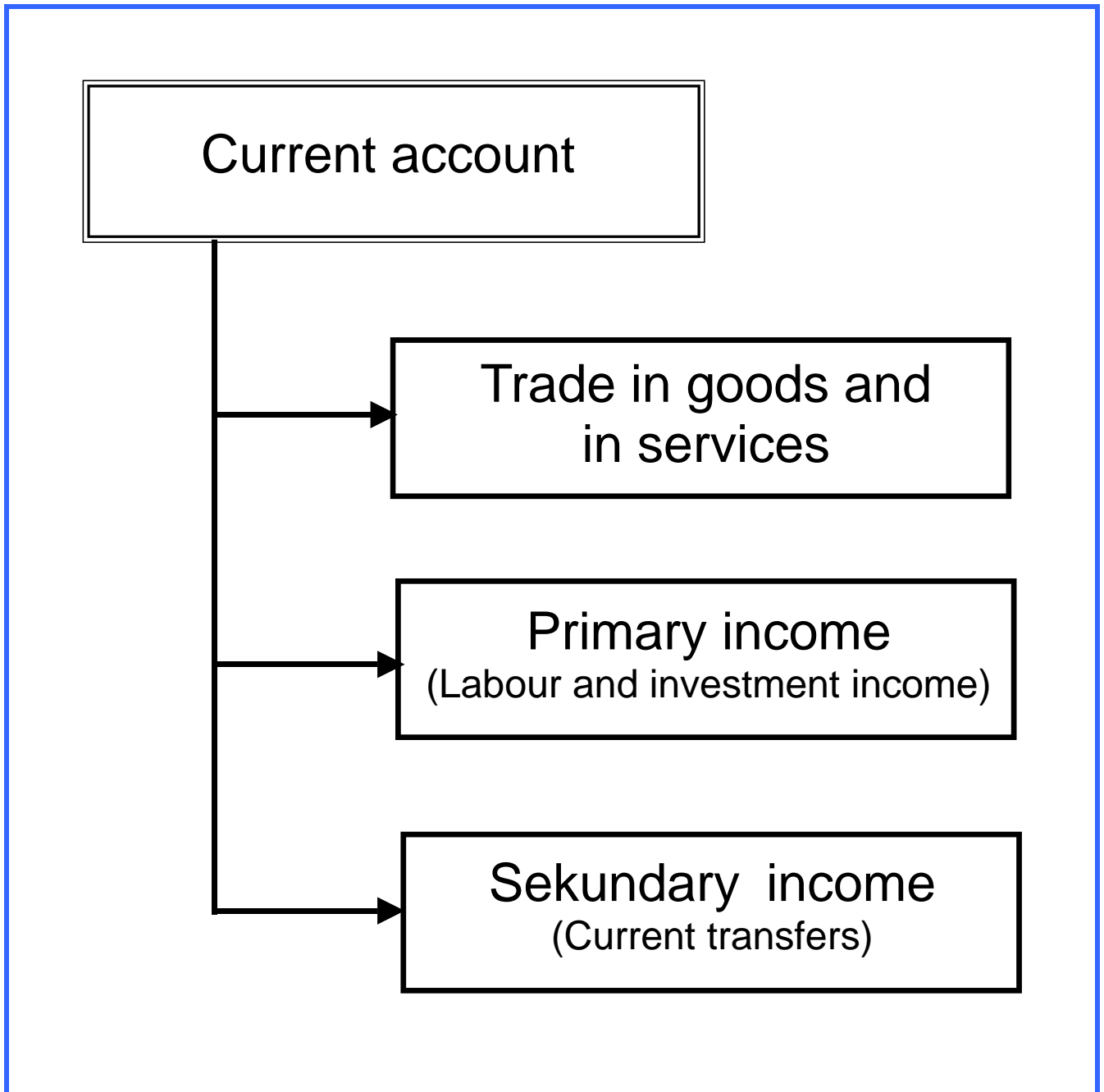


SRAC = Short run average cost
LRAC = Long run average cost

Crowding-out effect

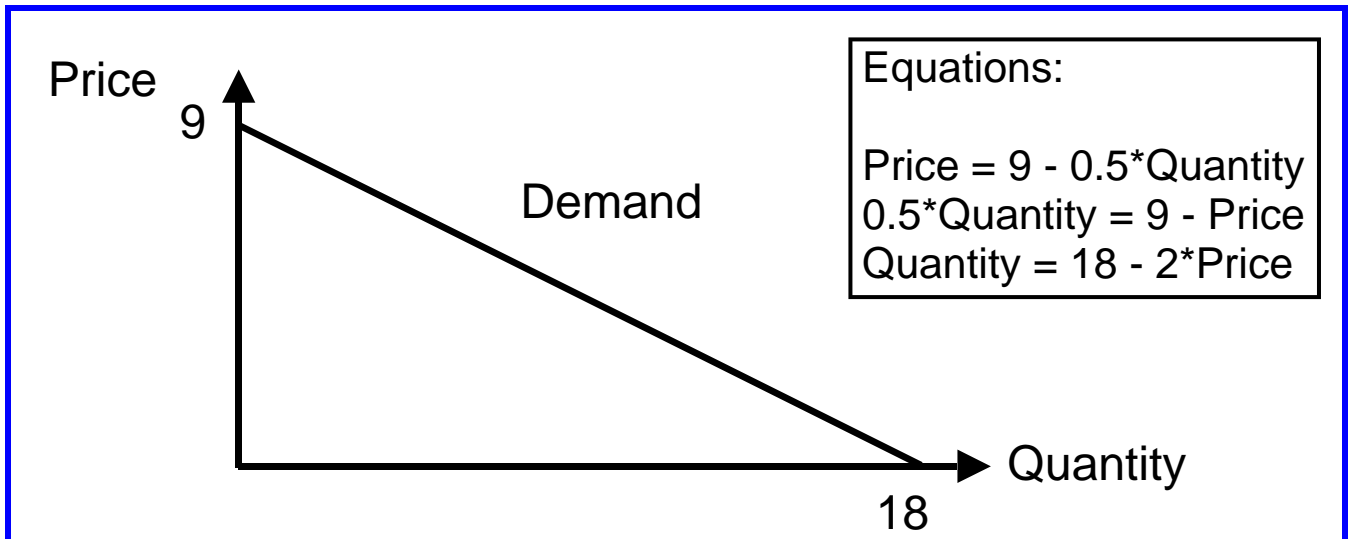


Current account

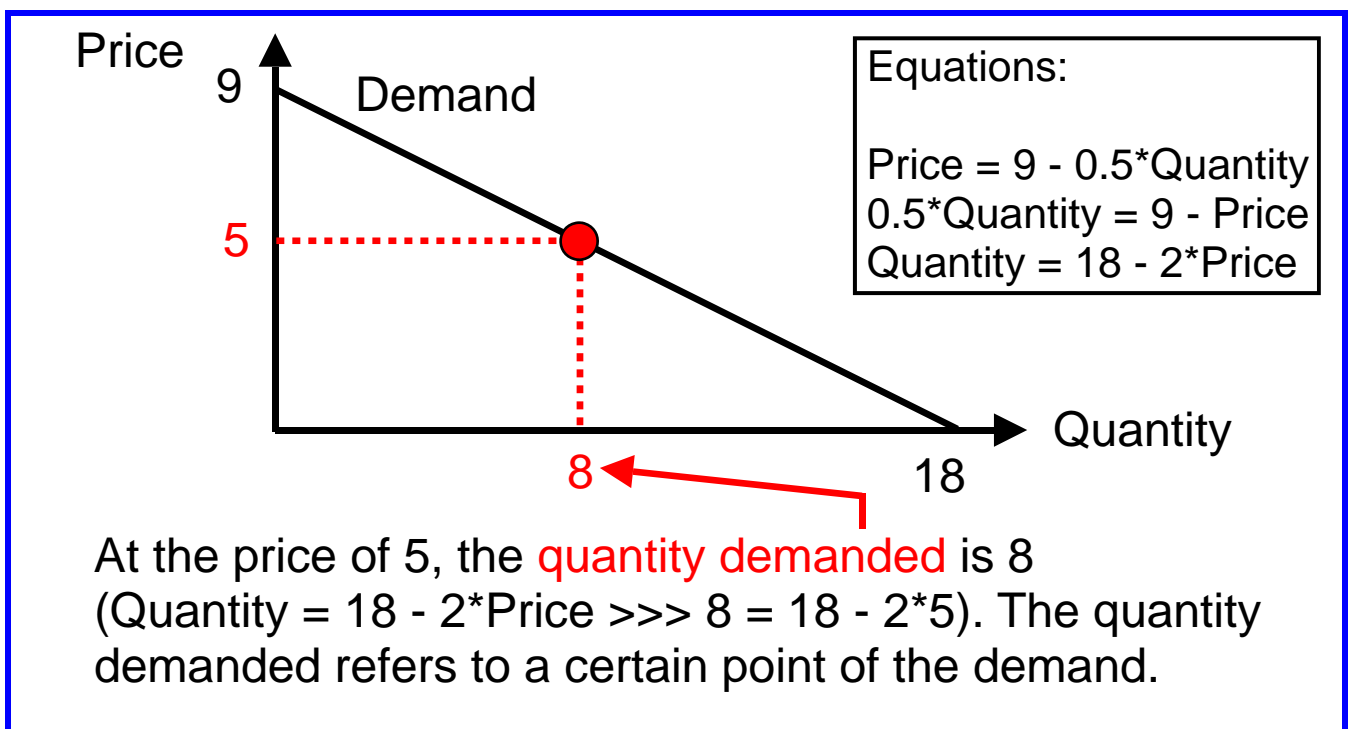


Demand and quantity demanded

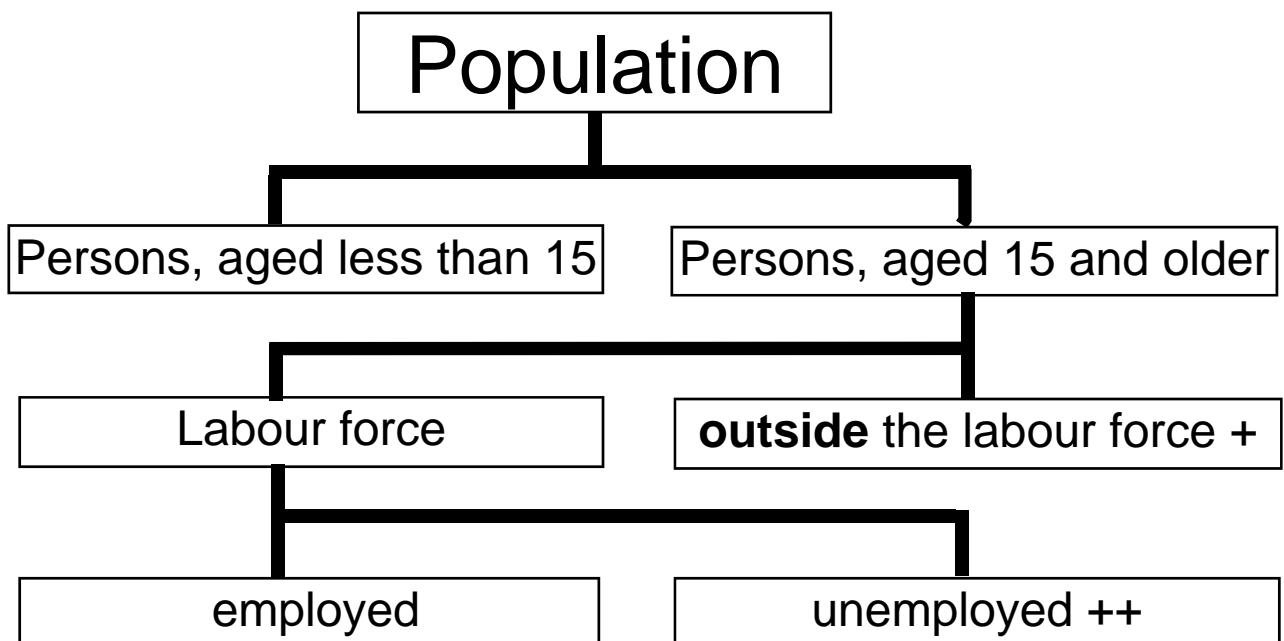
① Demand



② Quantity demanded



Employment and unemployment (ILO)



$$\text{Labour force participation rate (\%)} = \frac{\text{Employed and unemployed}}{\text{Working-age population}} * 100$$

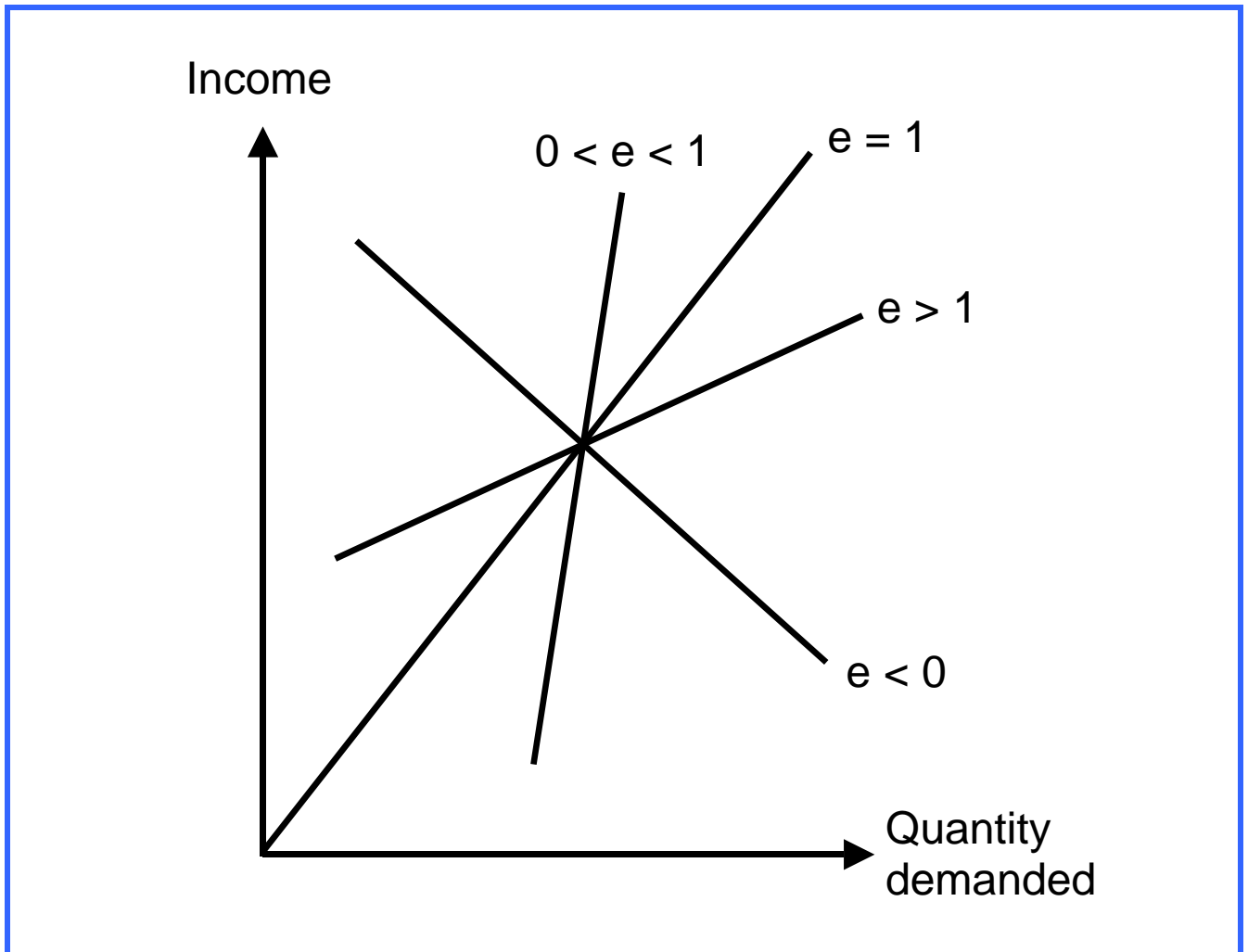
$$\text{Unemployment rate (\%)} = \frac{\text{Unemployed}}{\text{Labour force}} * 100$$

- + - students
- retired persons
- sick persons
- persons without a job, not looking any more for one

++ persons without a job, but actively looking for one

There are countries using upper age limits.

Engel curves



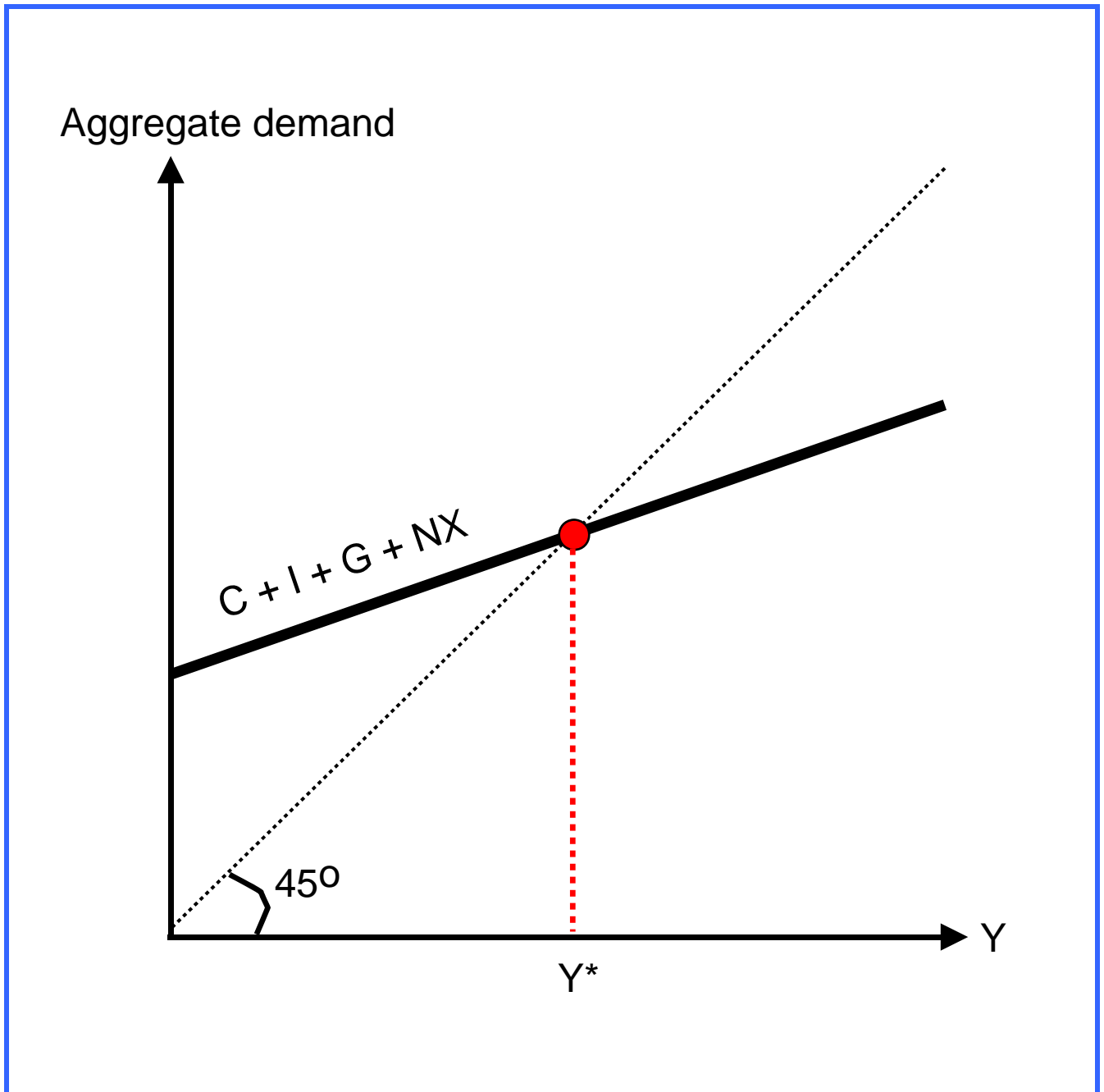
e = Income elasticity of demand

$$= \frac{\% \text{ change in quantity demanded}}{\% \text{ change in income}}$$

Types of goods:

- Luxuries: $e > 1$
- Necessities: $0 < e < 1$
- Inferior goods: $e < 0$

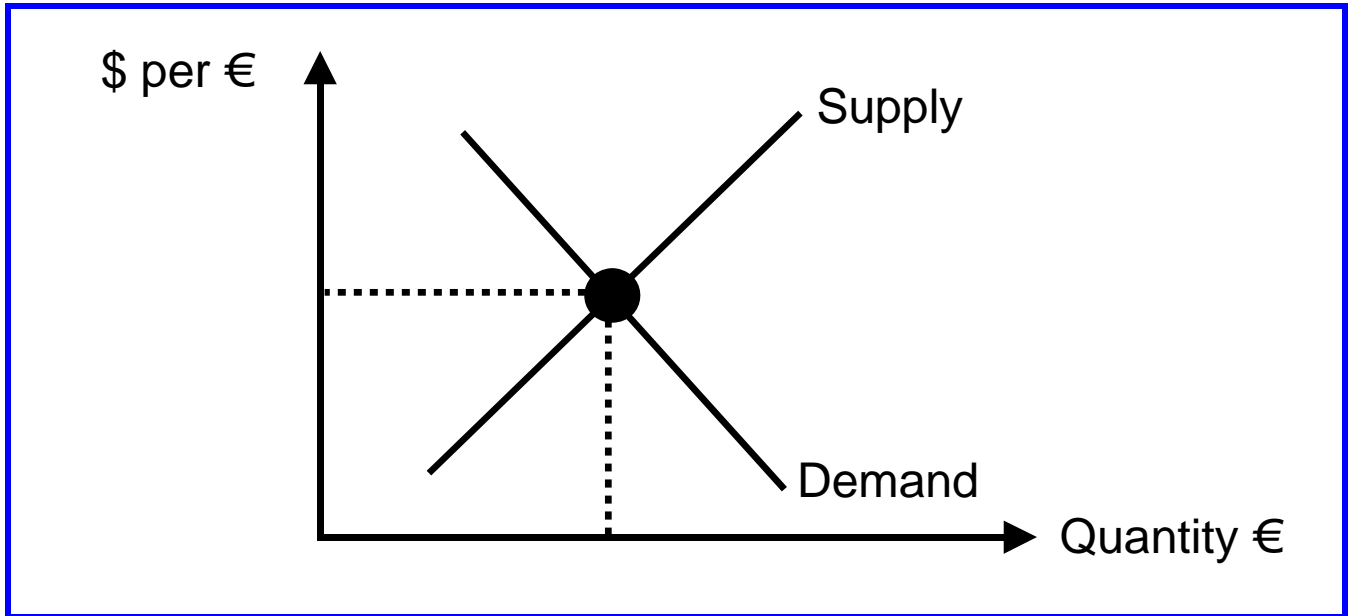
Equilibrium - Keynes



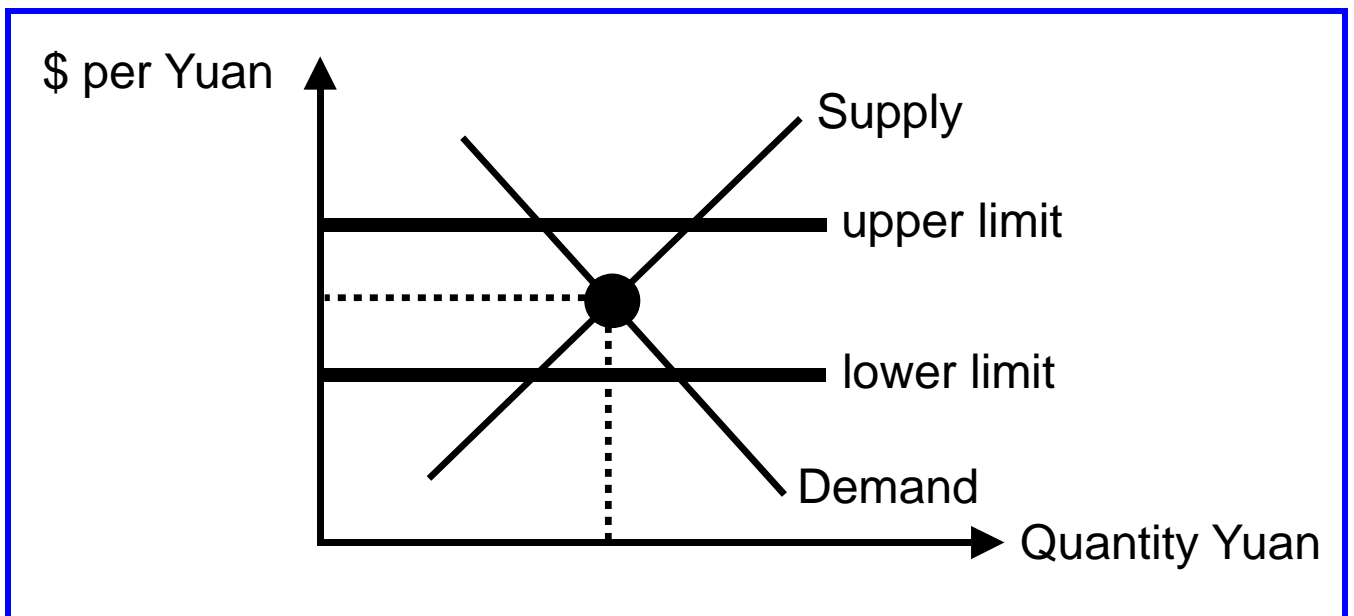
Y = Output, income	I = Investment
Y^* = Equilibrium of Y	G = Government spending
C = Consumption	NX = Net exports

Exchange rate

① **Flexible** exchange rate

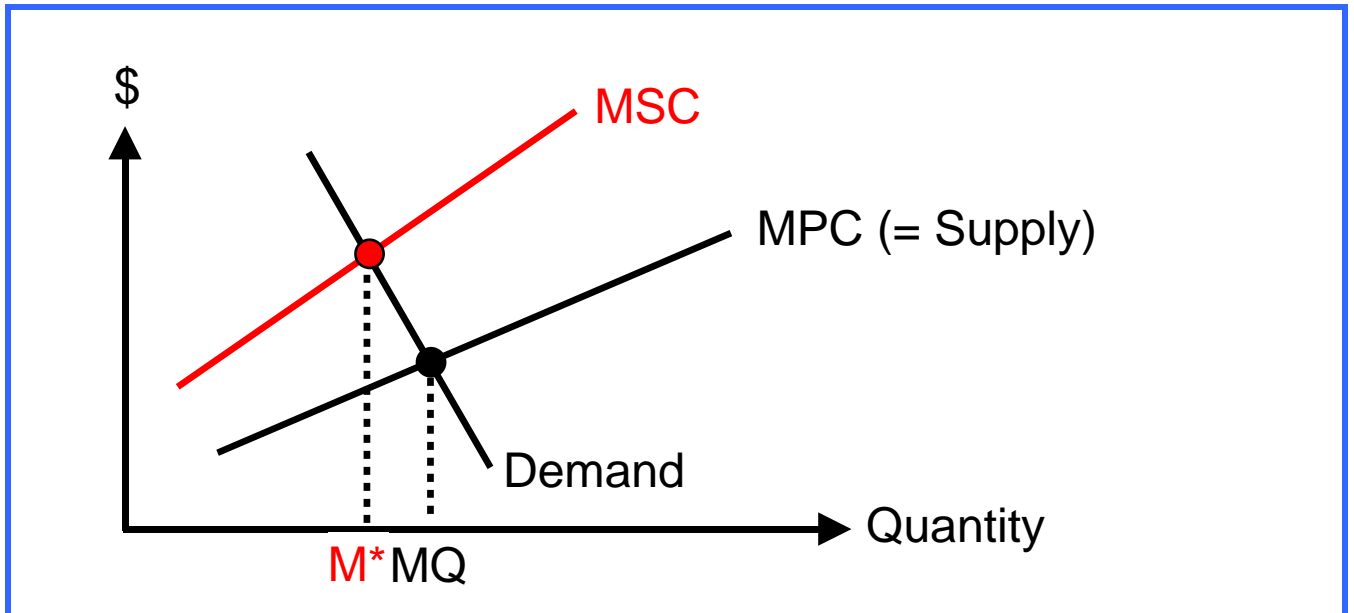


② **Fixed** exchange rate

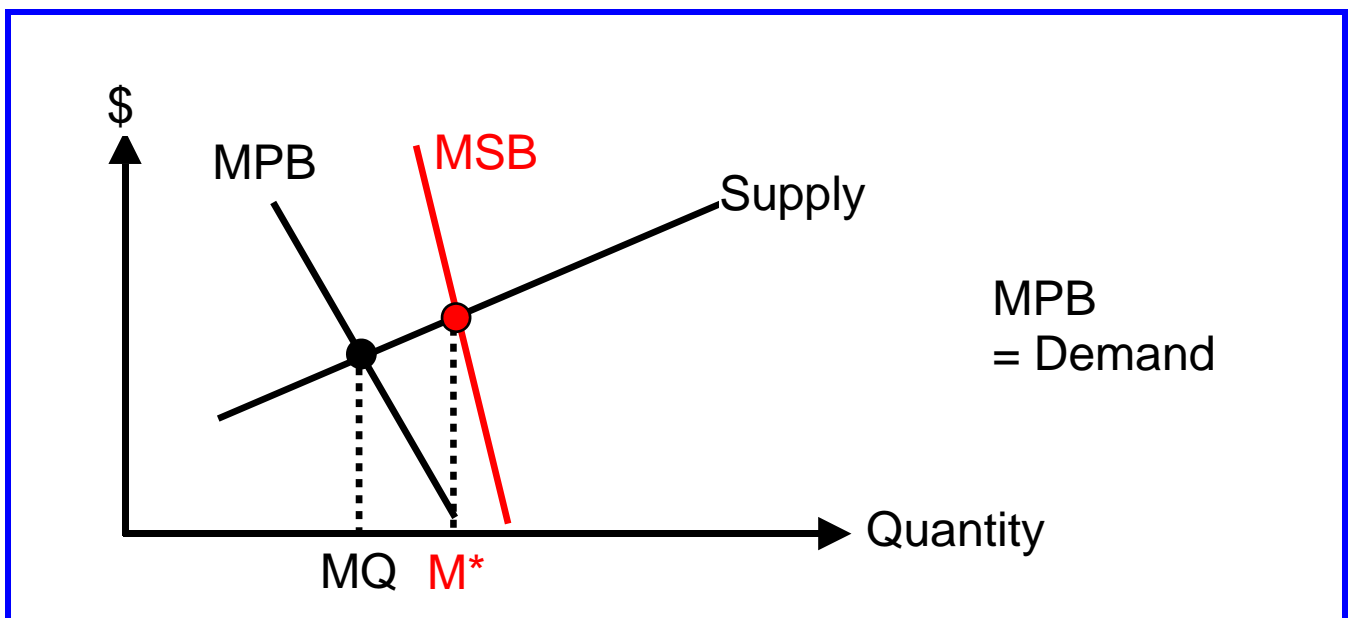


Externality

① Negative externality (with external costs)



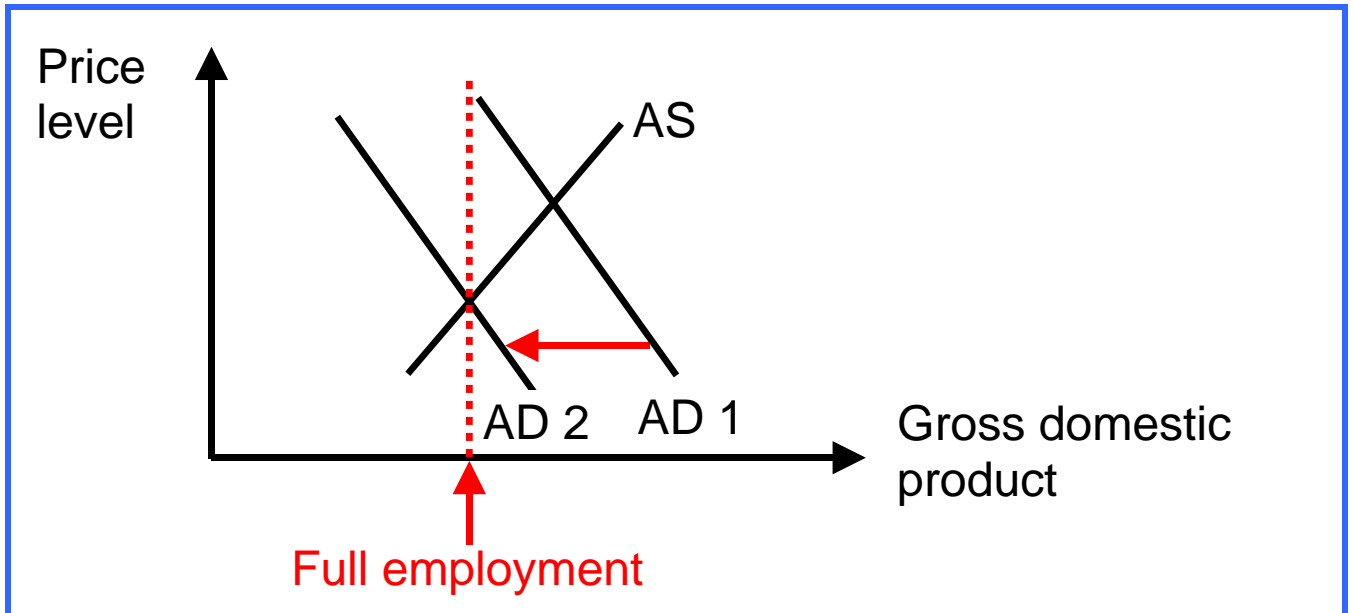
② Positive externality (with external benefits)



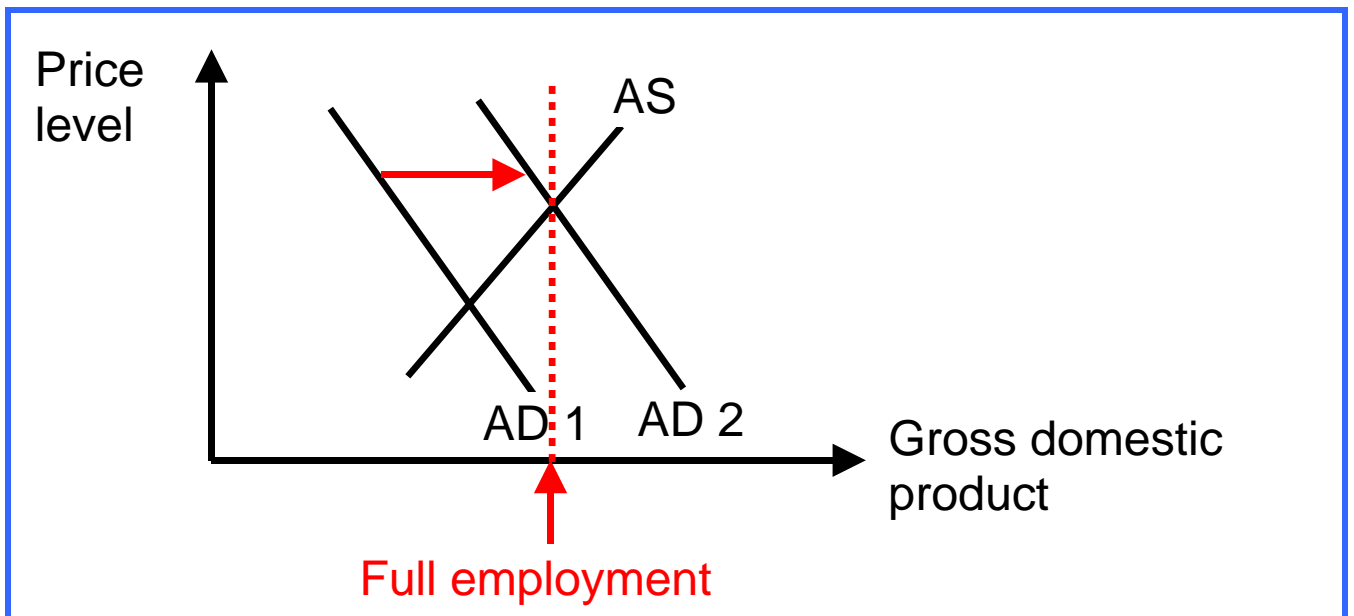
MPC = Marginal private costs	MSB = Marginal social benefits
MPB = Marginal private benefits	MQ = Market quantity
MSC = Marginal social costs	M* = Optimal quantity

Fiscal policy

① Situation of **overheating**



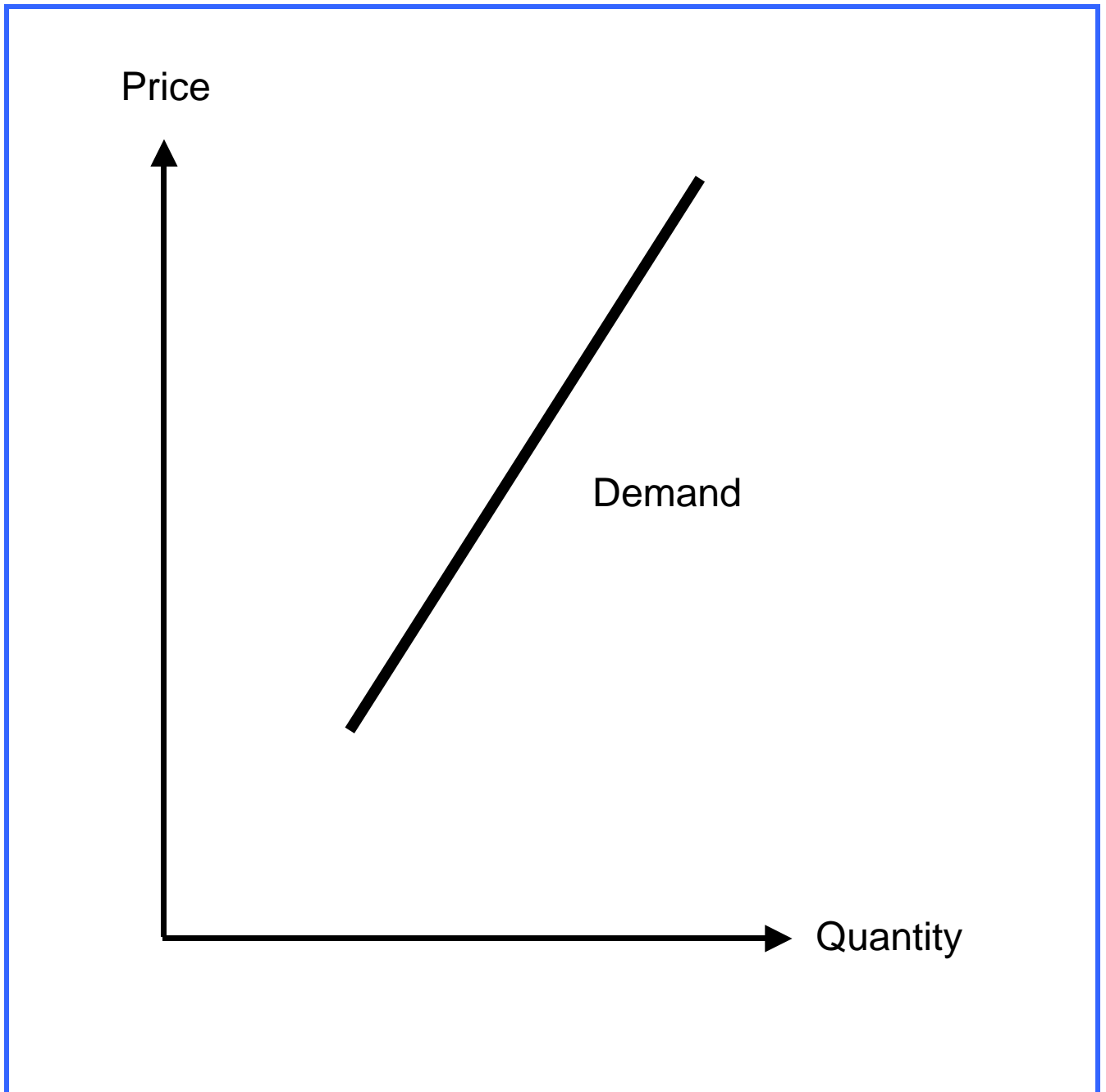
② Situation of **underemployment**



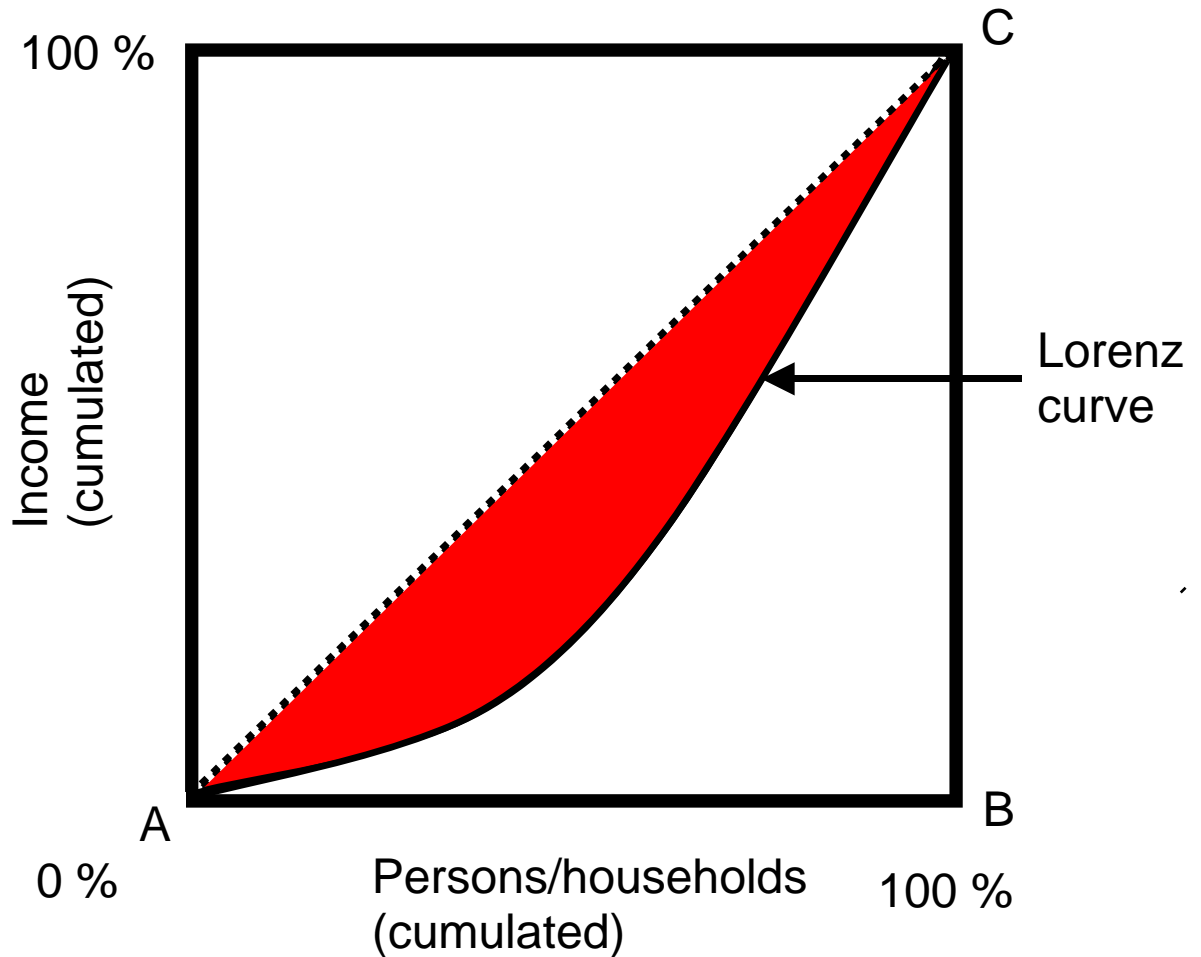
AD = Aggregate demand (Consumption, investment, government spending, etc.)

AS = Aggregate supply

Giffen good



Gini coefficient



Gini coefficient =

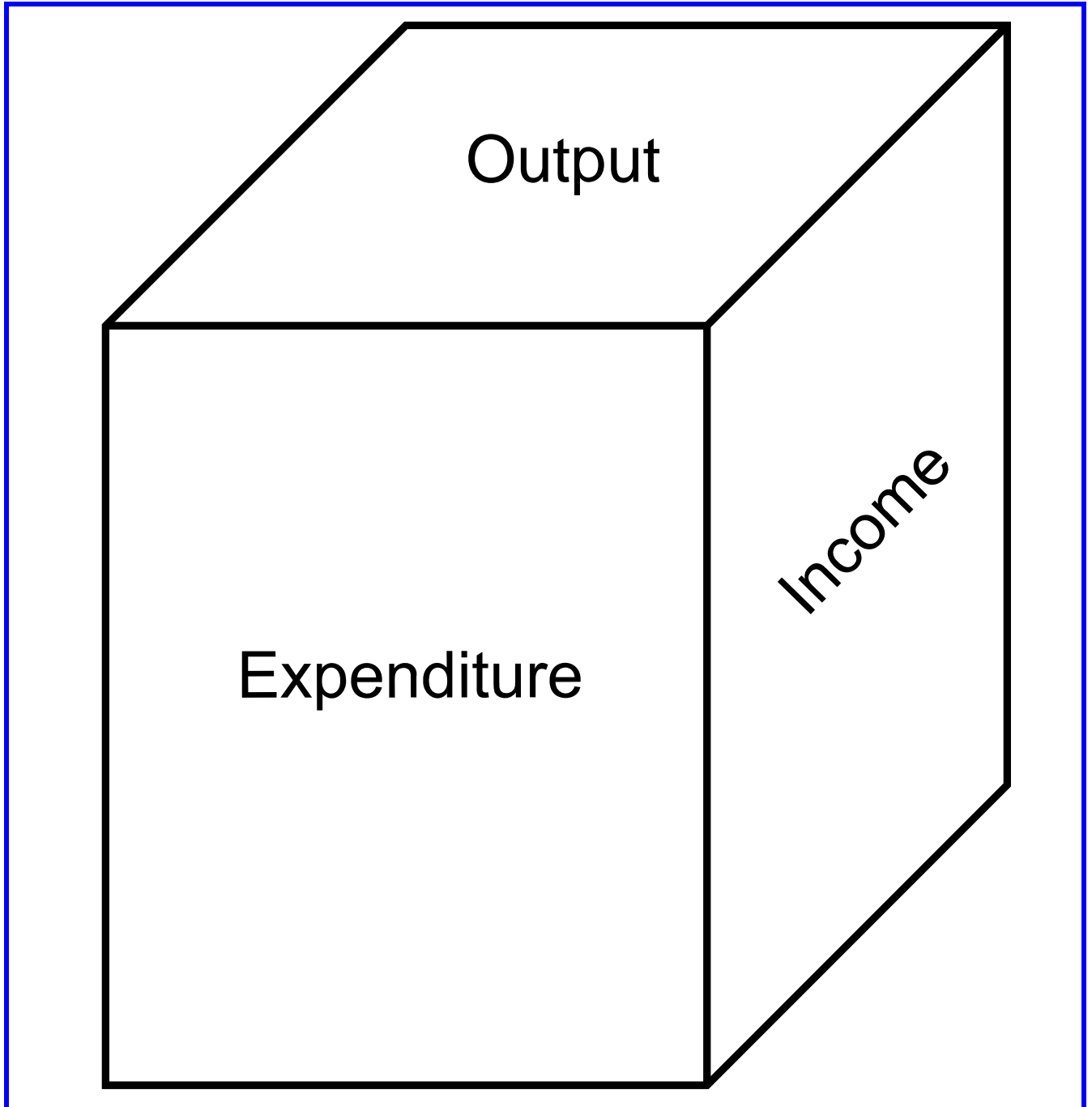
$$\frac{\text{Red area}^*}{\text{Triangle ABC}}$$

* Red area = Area between the Lorenz curve and the 45⁰-diagonal line

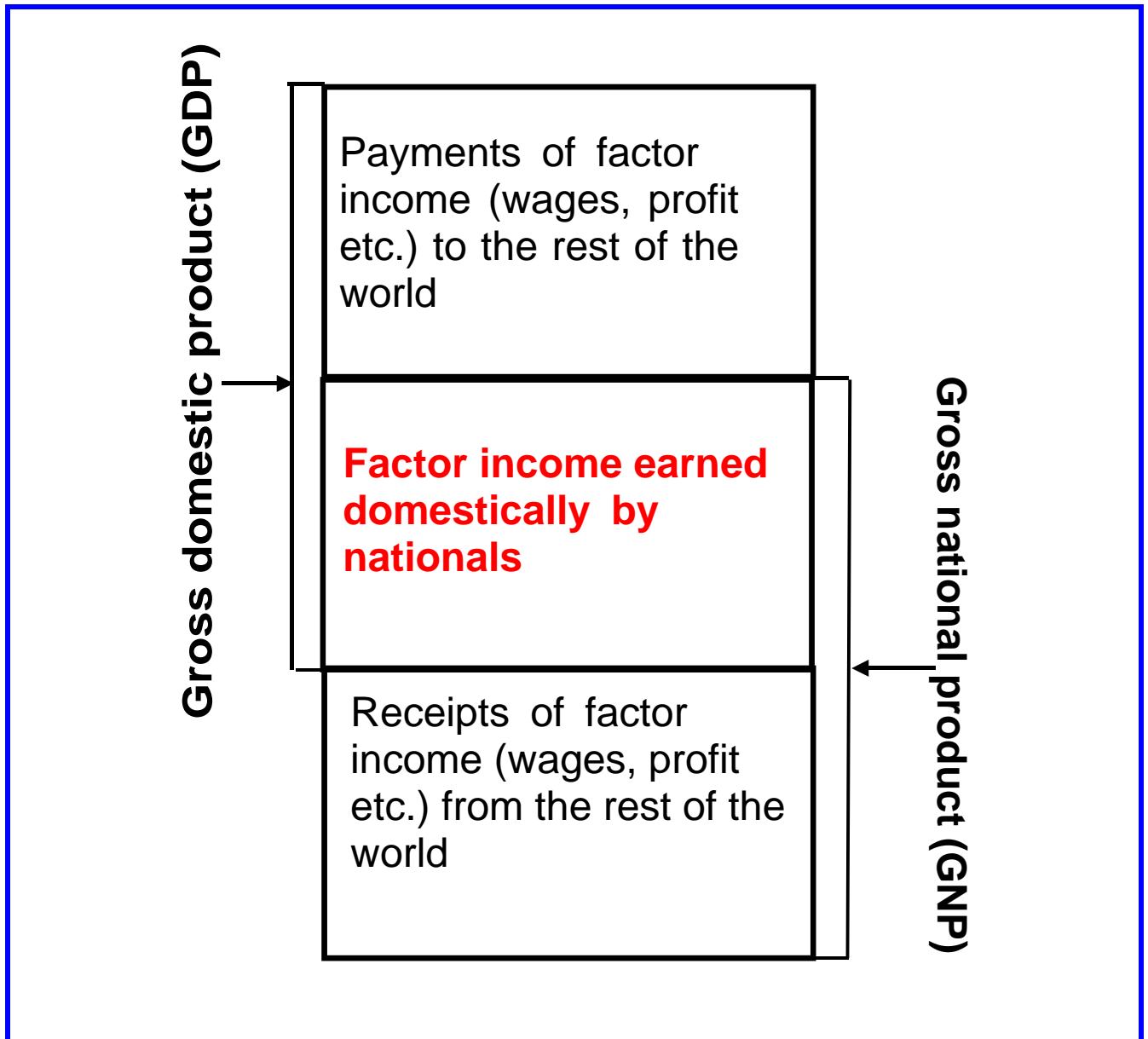
Goods - private and public

		Rival?	
		yes	no
Excludable?	yes	Private goods	Goods by natural monopolies
	no	Common goods	Public goods

Gross domestic product - methods of calculating



Gross domestic product and gross national product

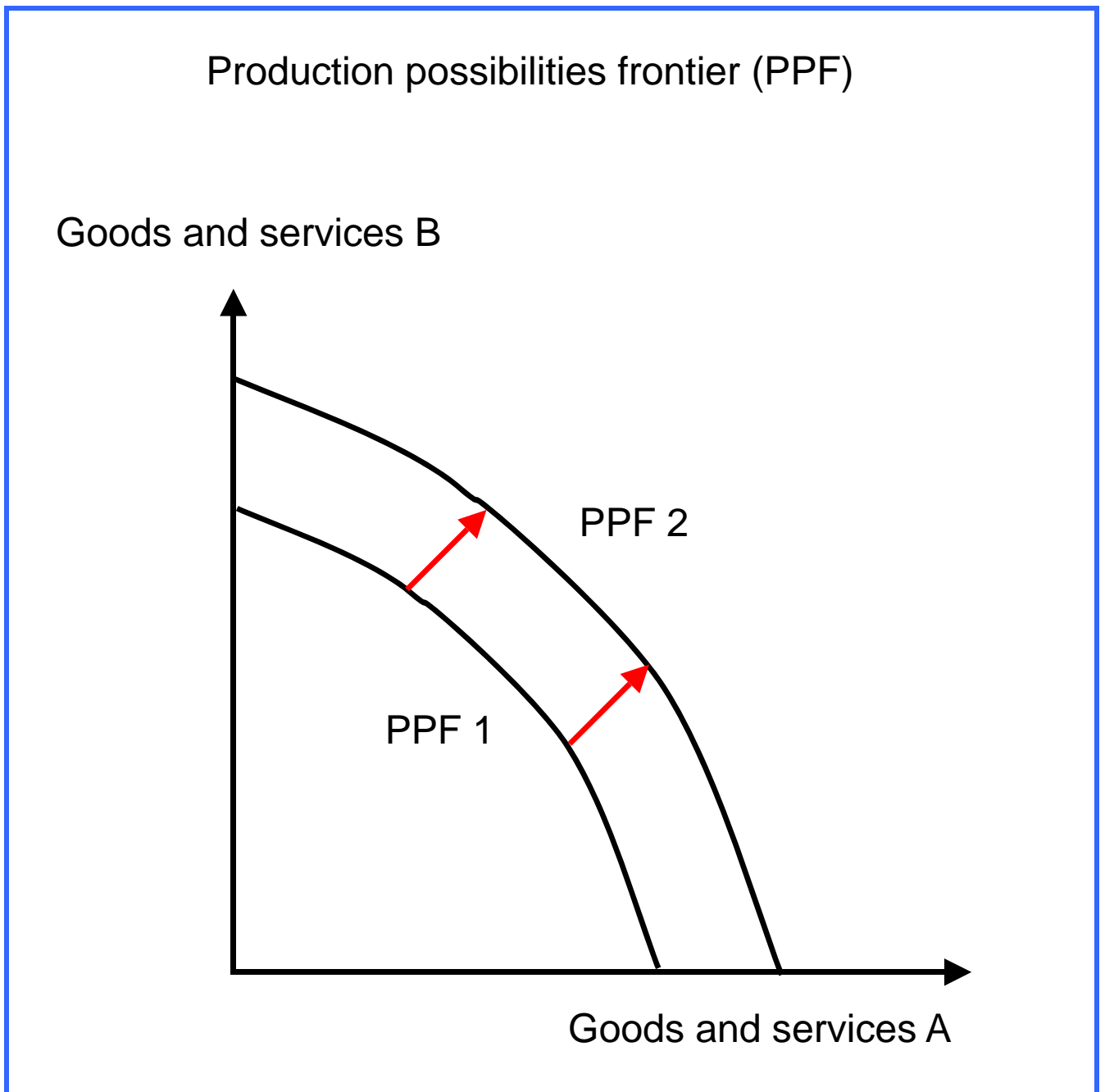


GDP → total income **produced domestically**

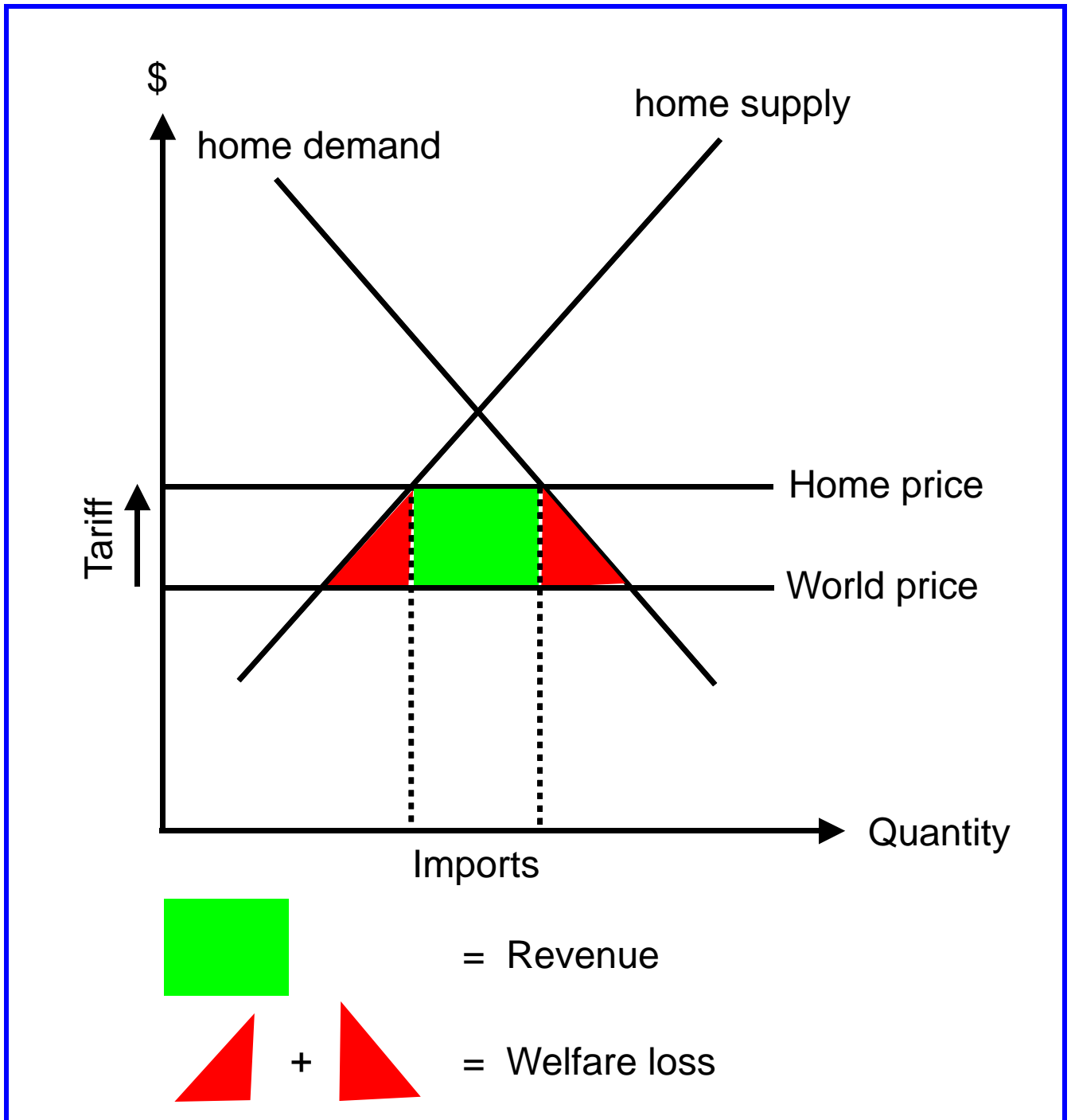
GNP → total income **earned by nationals**

Growth

When there is economic growth, then the production possibilities frontier shifts outward.

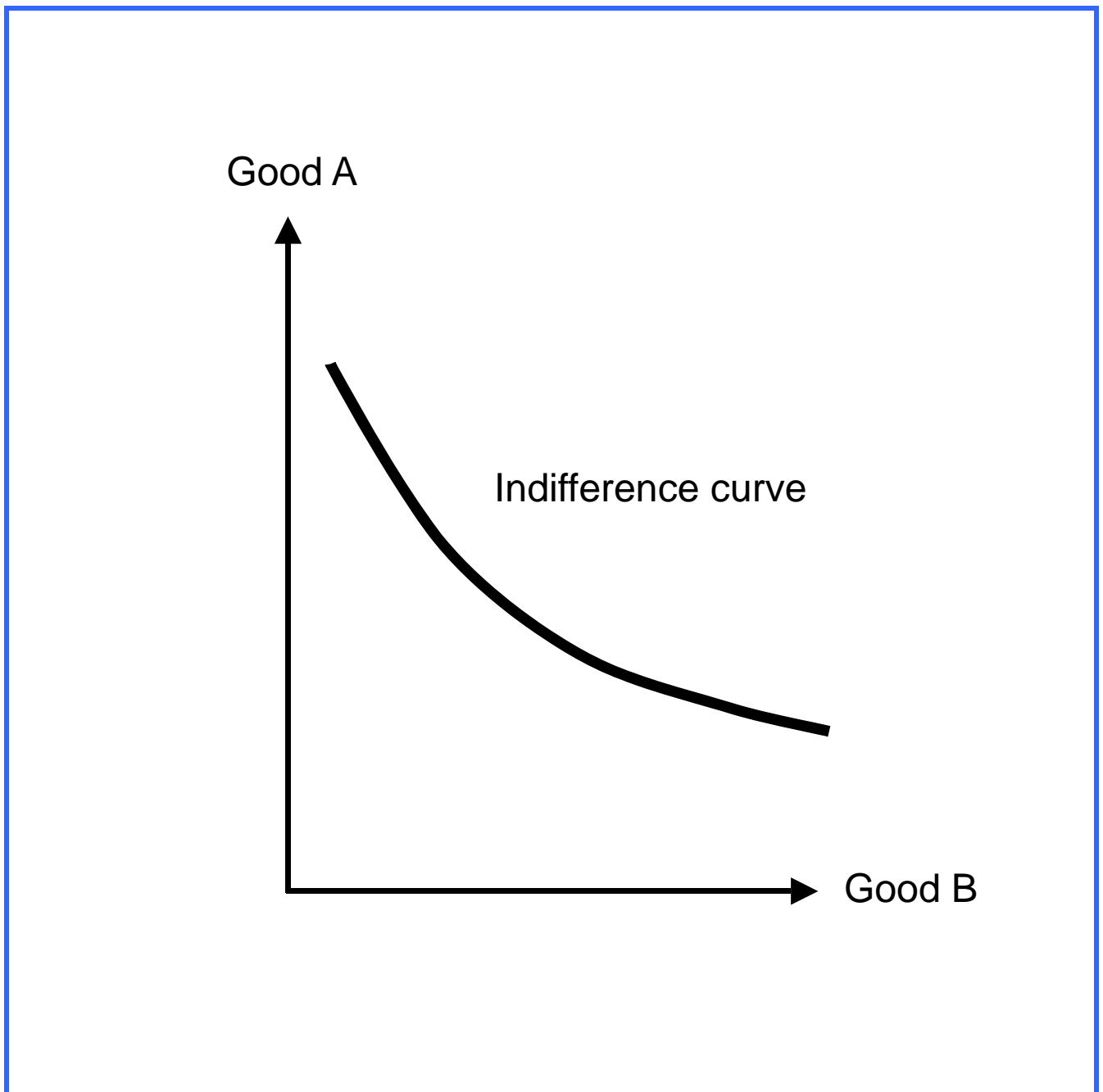


Import tariff - revenue and welfare loss



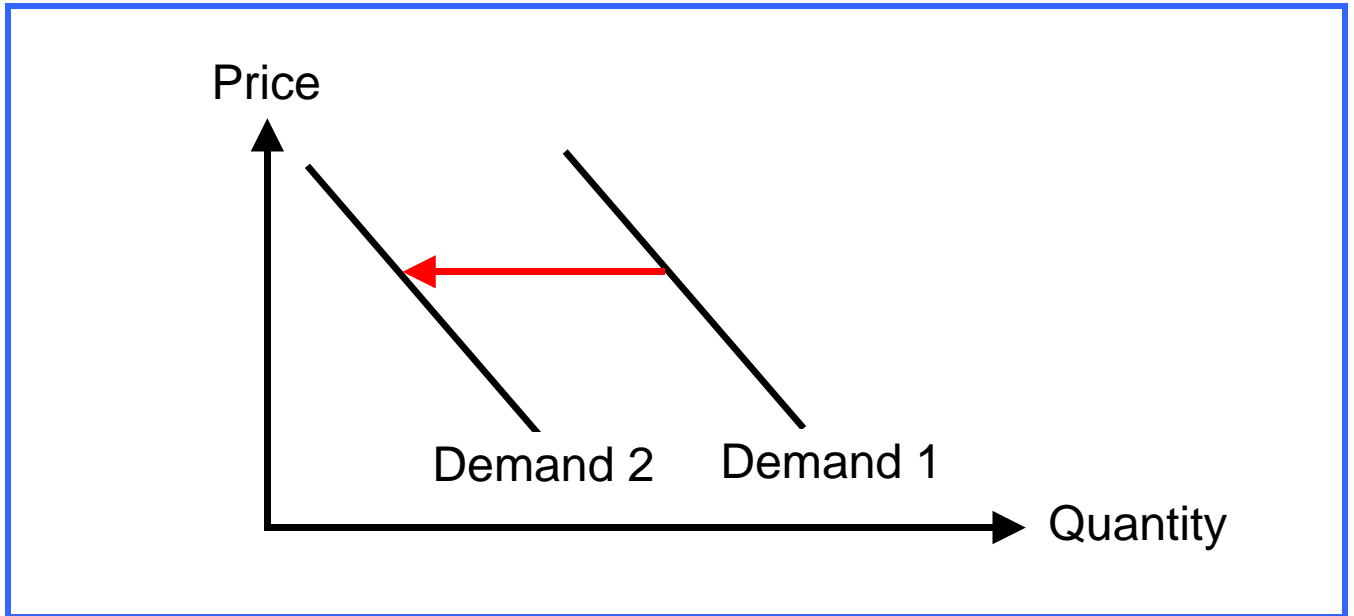
Indifference curve

An indifference curve shows the combinations of 2 divisible goods, A and B, which result in the same utility for the consumer. Along an indifference curve **total utility** is thus **constant**.

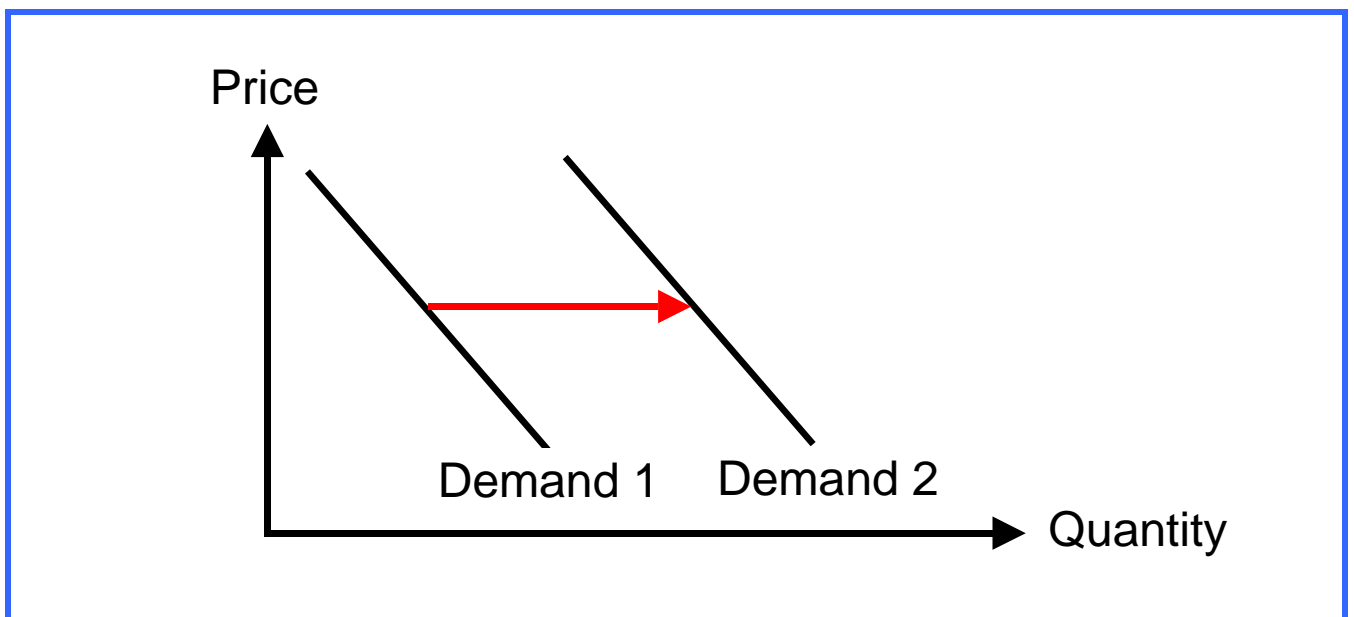


Inferior good

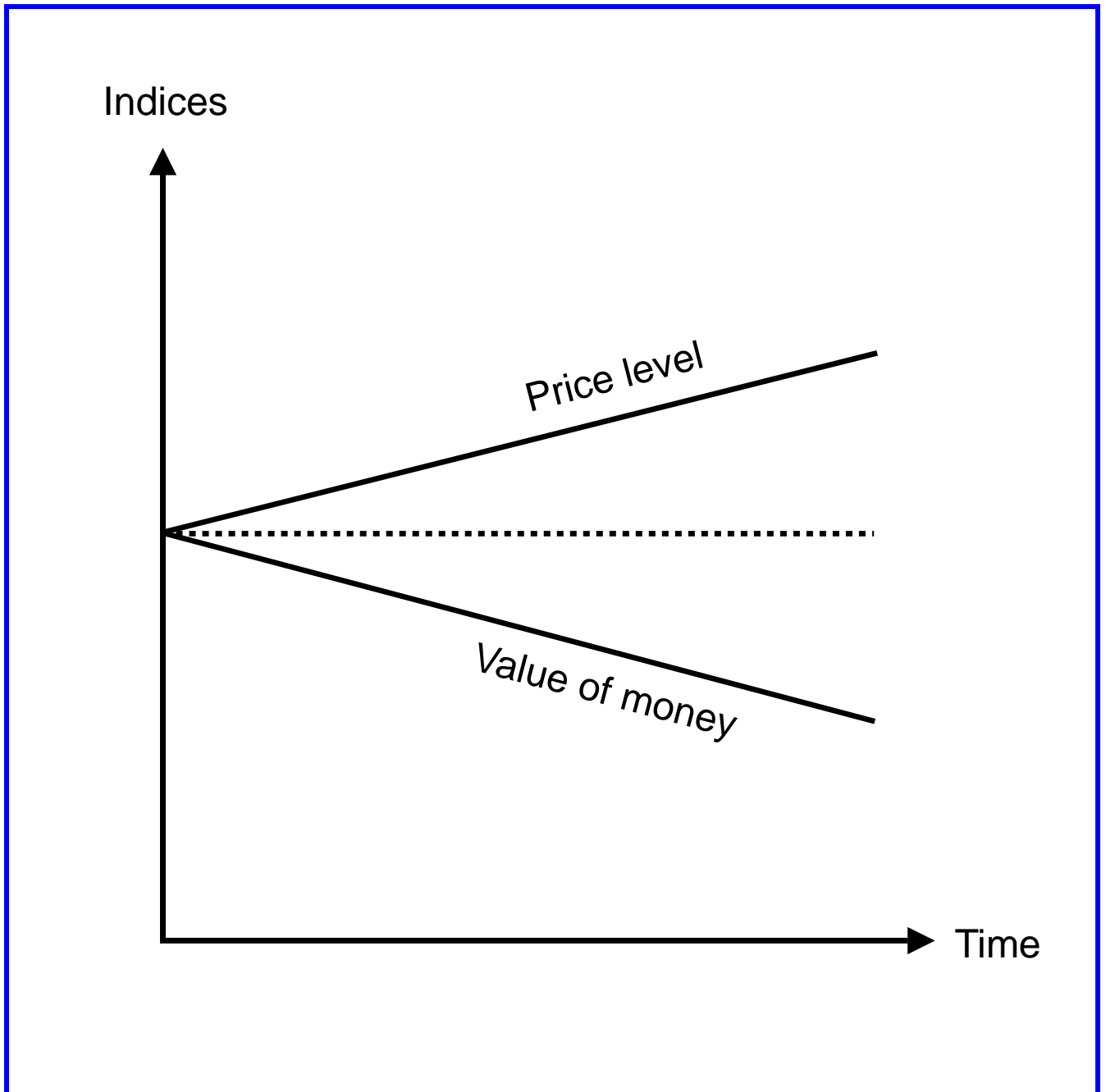
- ① **Income rises.** What happens to an inferior good?



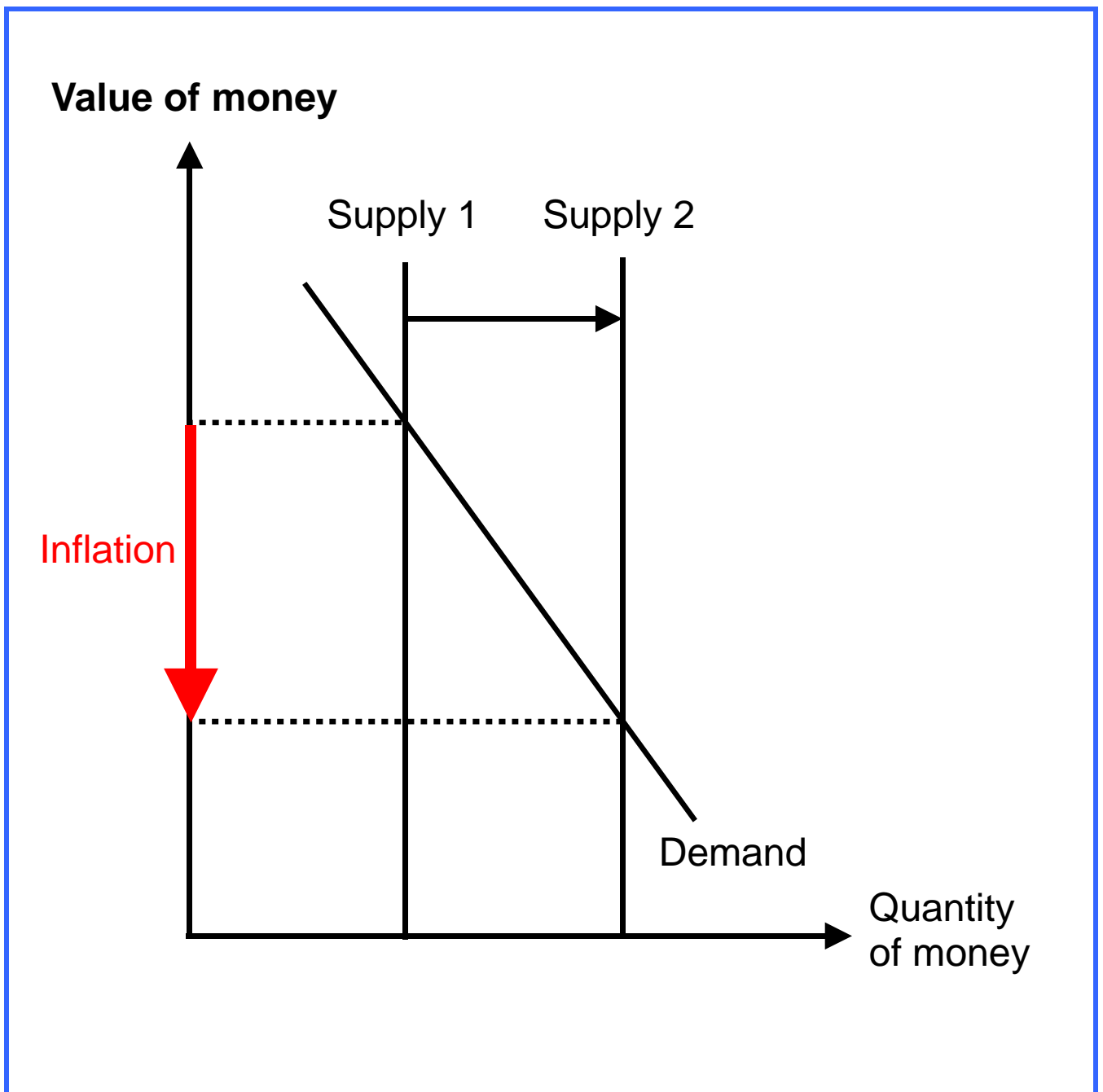
- ② **Income falls.** What happens to an inferior good?



Inflation 1 - characteristics

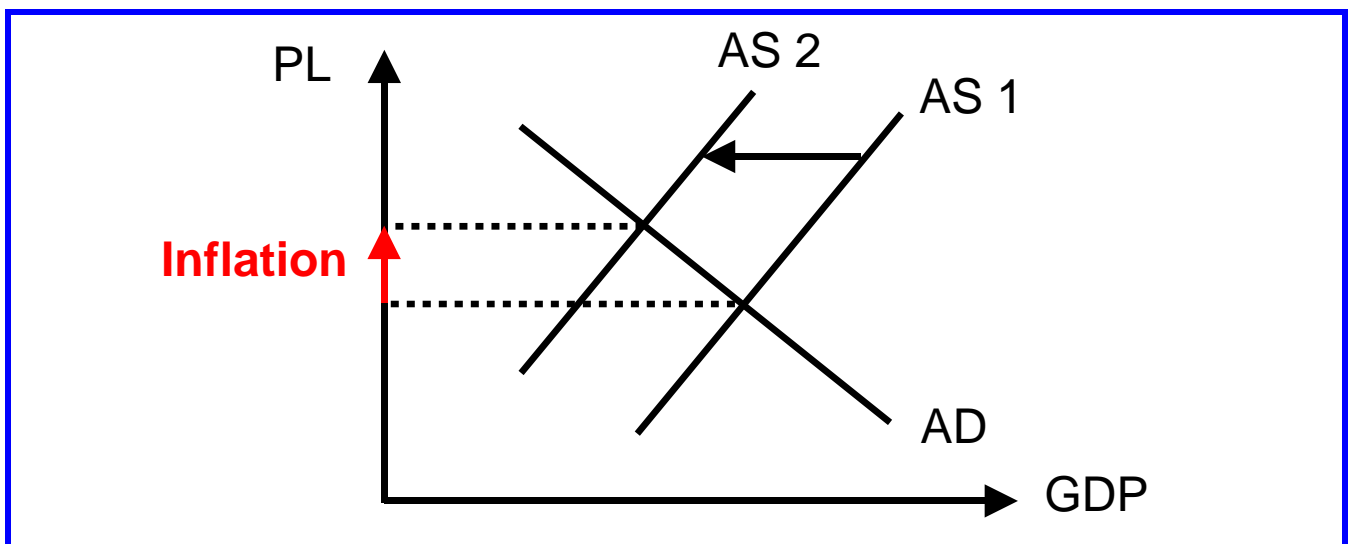


Inflation 2 - monetary inflation

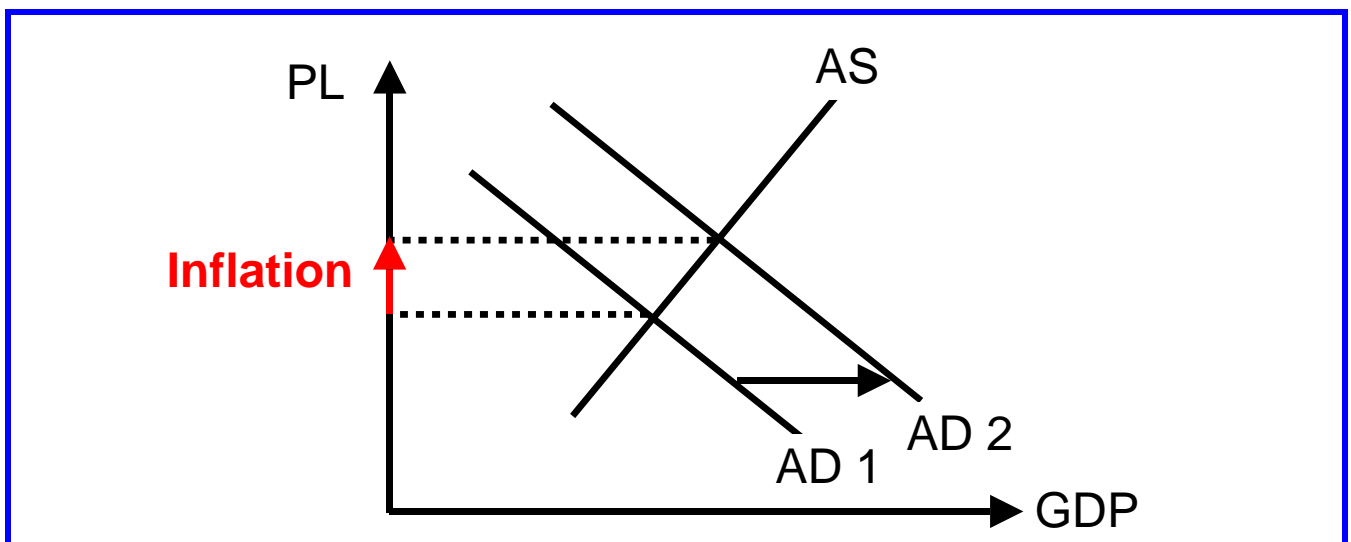


Inflation 3 - cost-push inflation and demand-pull inflation

① Cost-push inflation

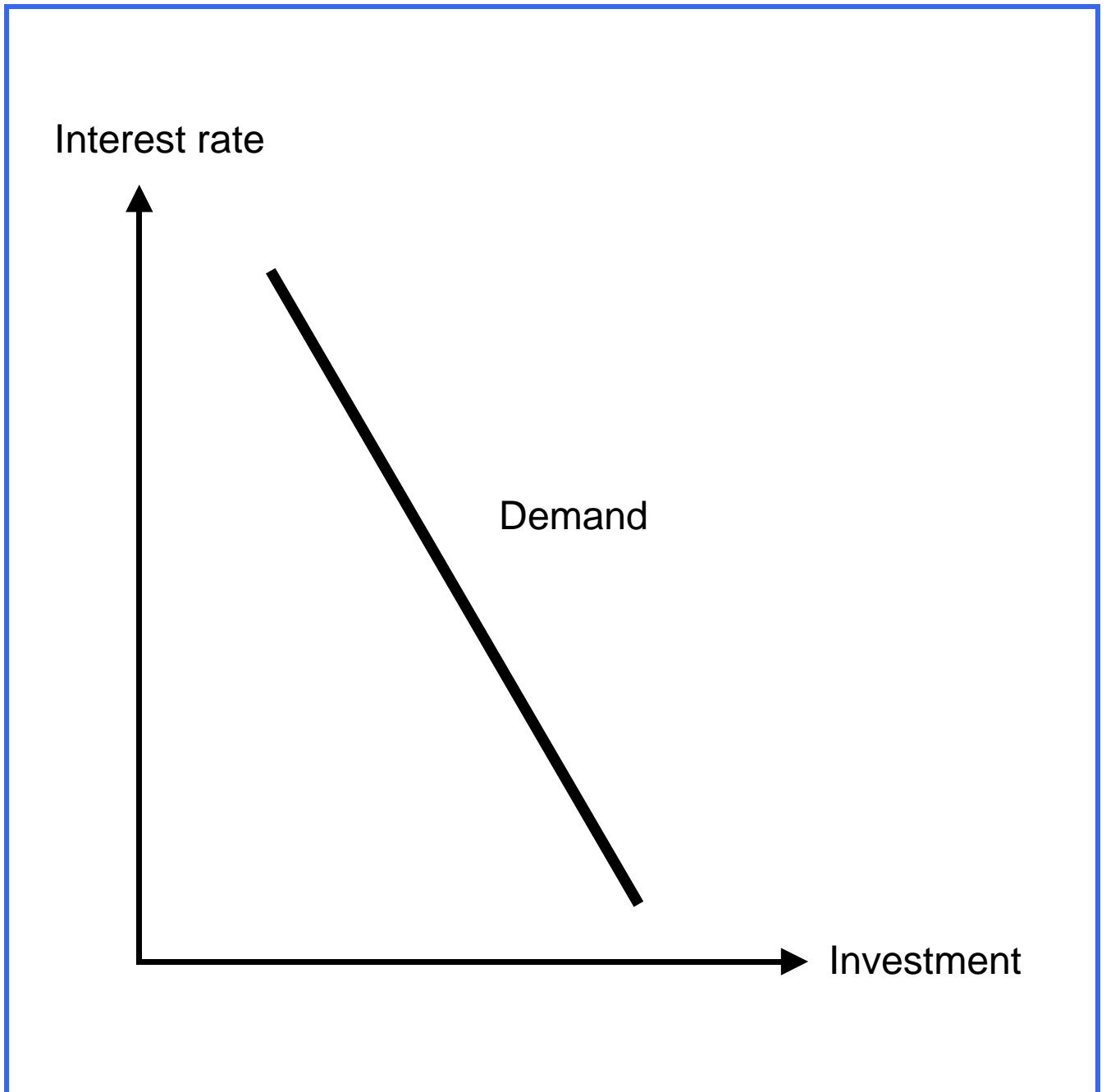


② Demand-pull inflation



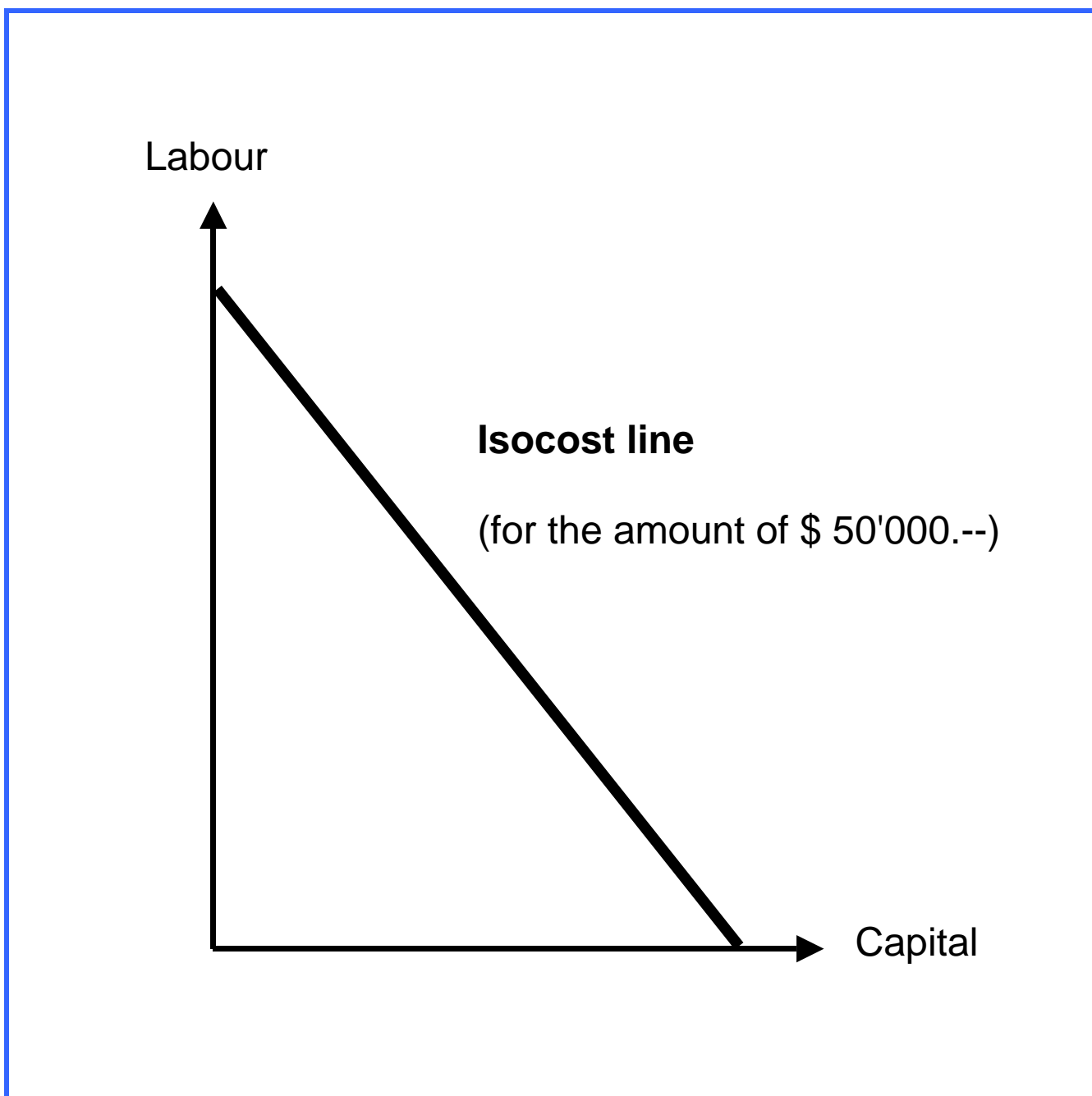
AS = Aggregate supply	PL = Price level
AD = Aggregate demand	GDP = Gross domestic product

Investment demand



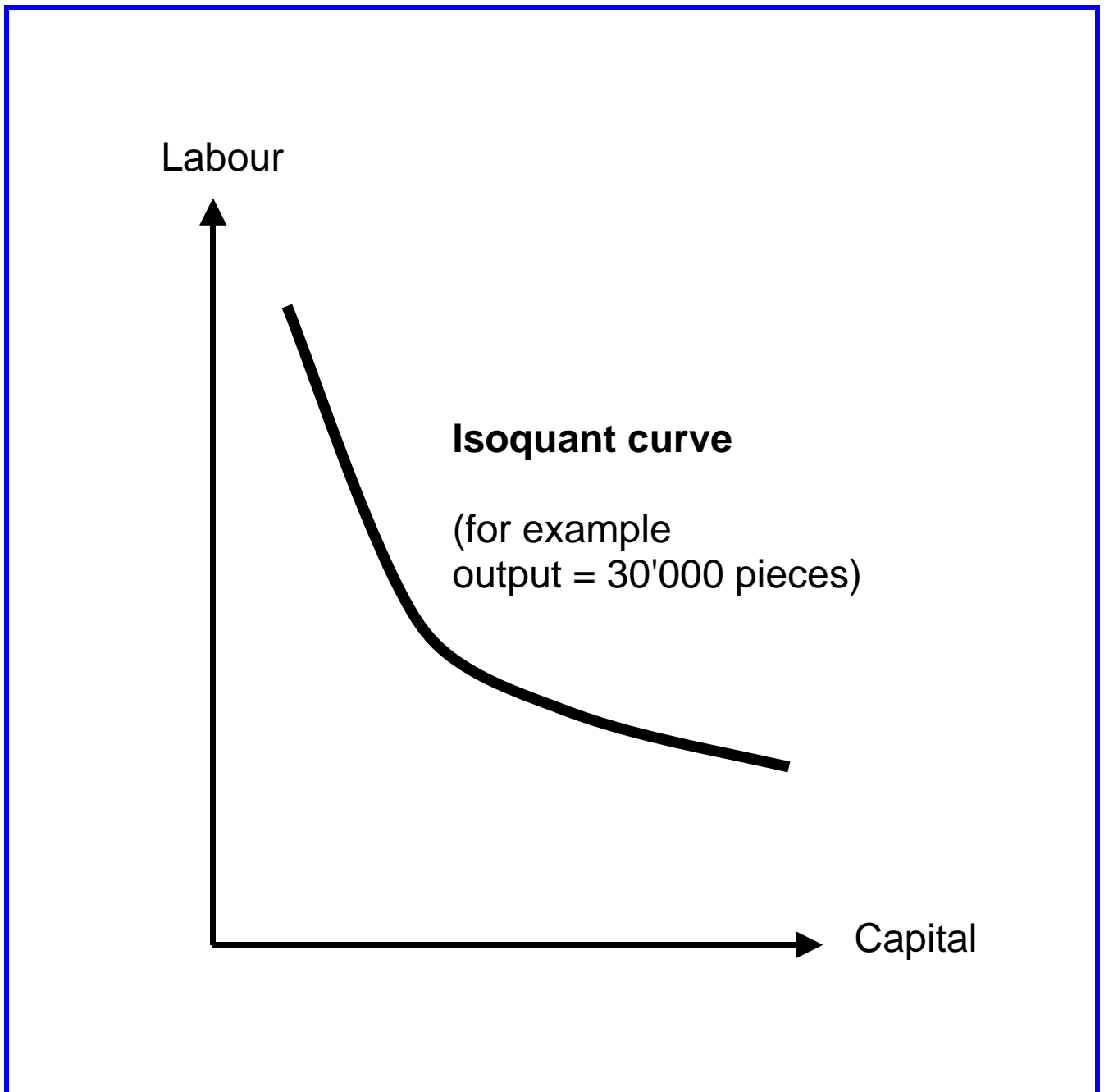
Isocost

An isocost line shows the combinations of divisible factors of production (labour, capital) that a firm can choose for a given amount of money.

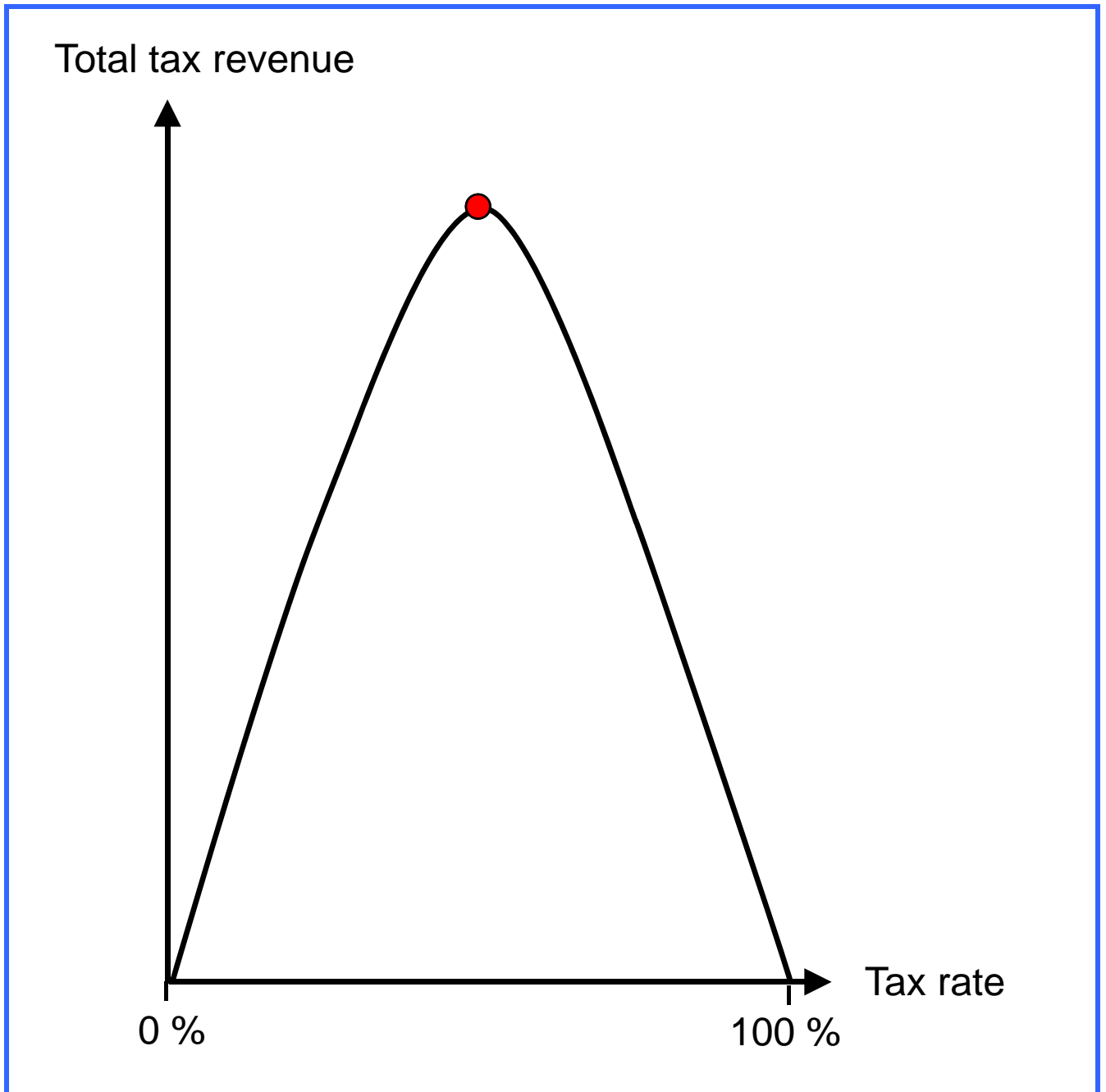


Isoquant

An isoquant curve shows the combinations of divisible factors of production (labour, capital) which are necessary for the production of a given output.

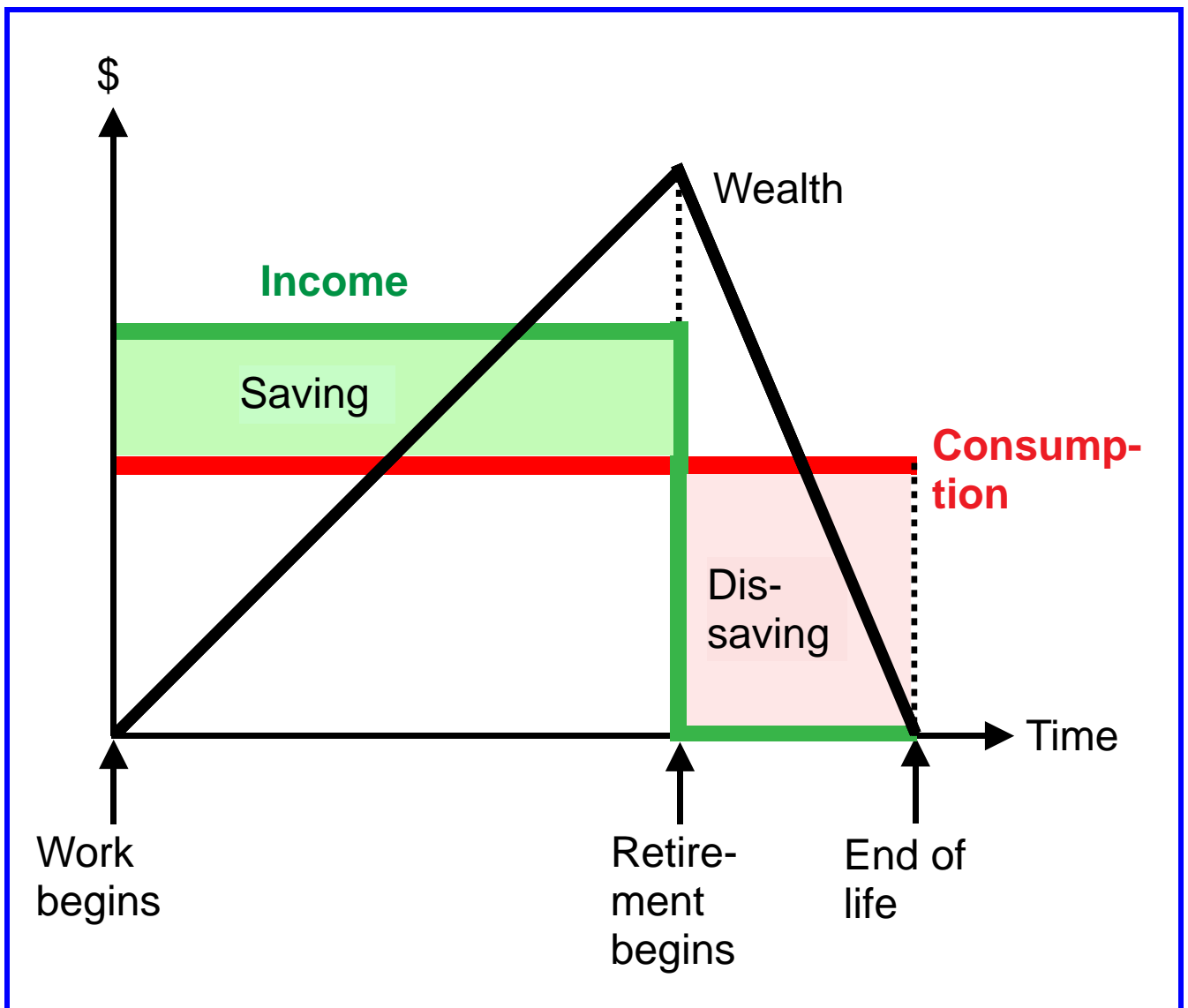


Laffer curve

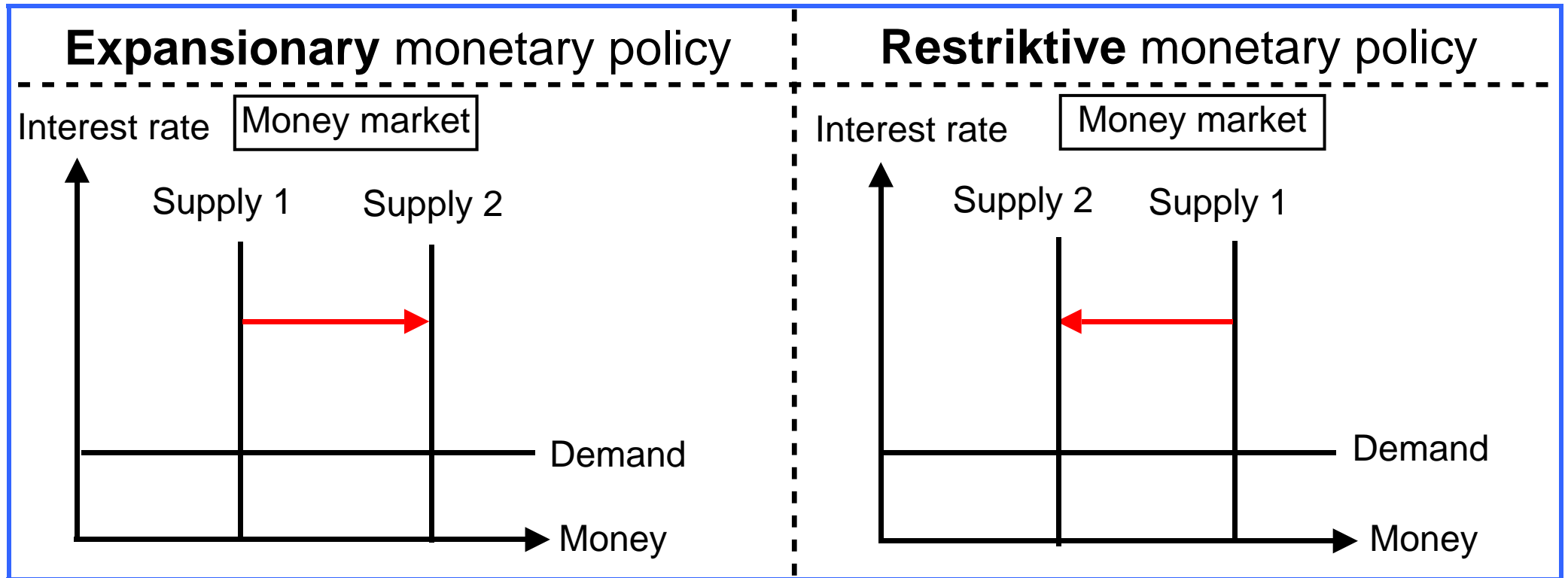


Life-cycle hypothesis

According to the life-cycle hypothesis, consumption does not depend on current income, but on **lifetime income**. Wealth is built up by saving out of income to enable consumption during retirement.

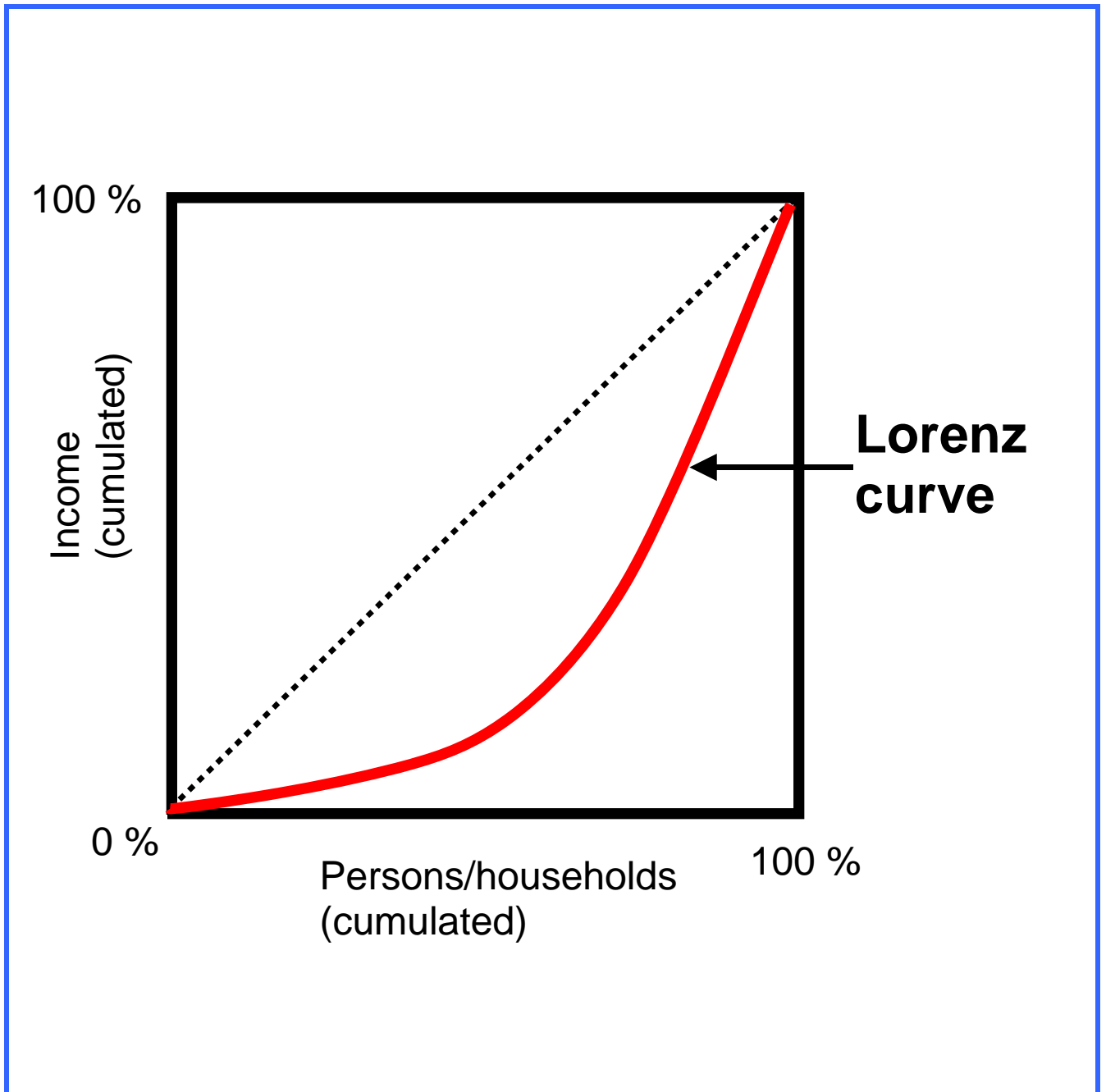


Liquidity trap

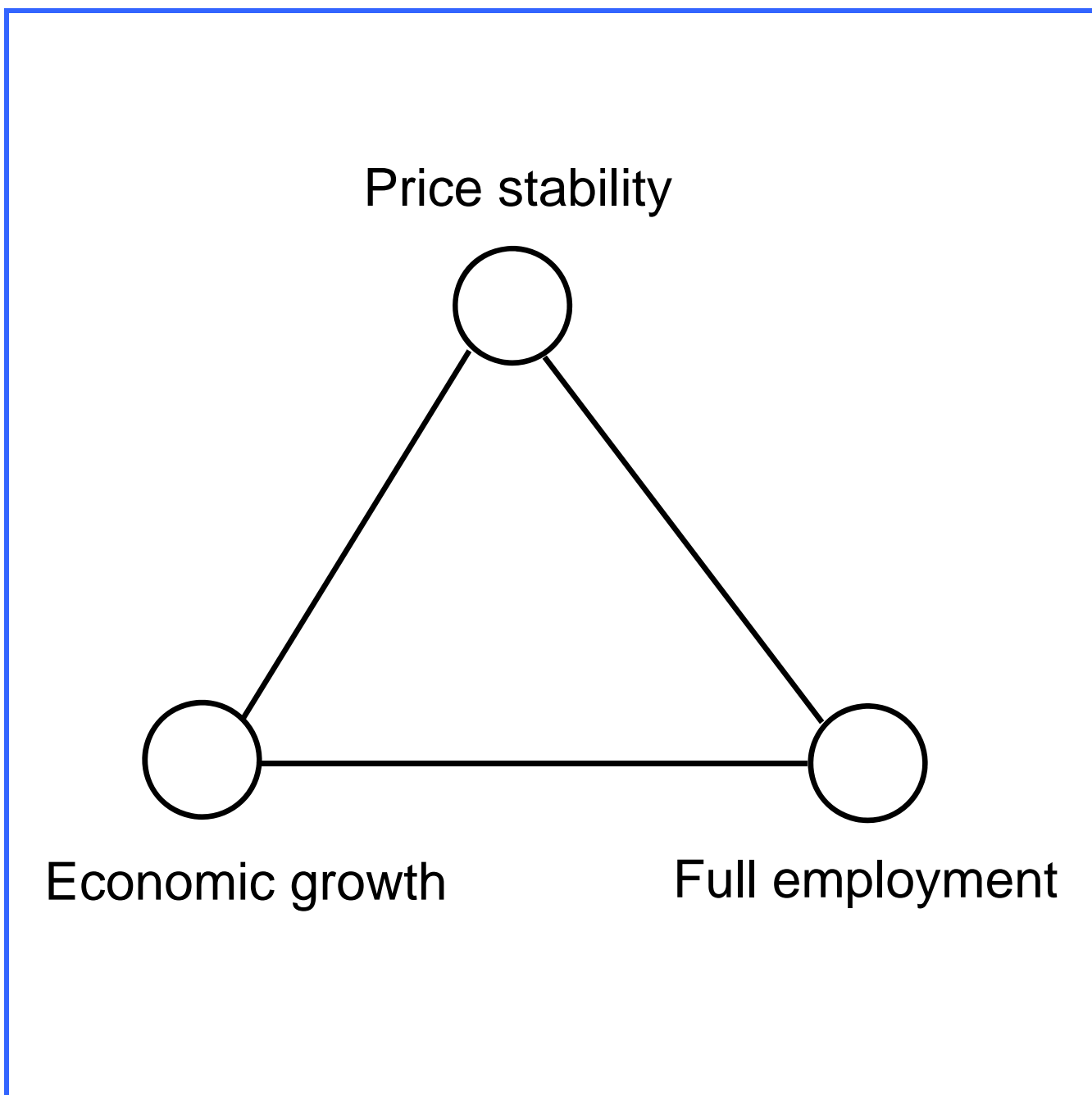


In both situations, neither the interest rates nor the corresponding investments will change.

Lorenz curve

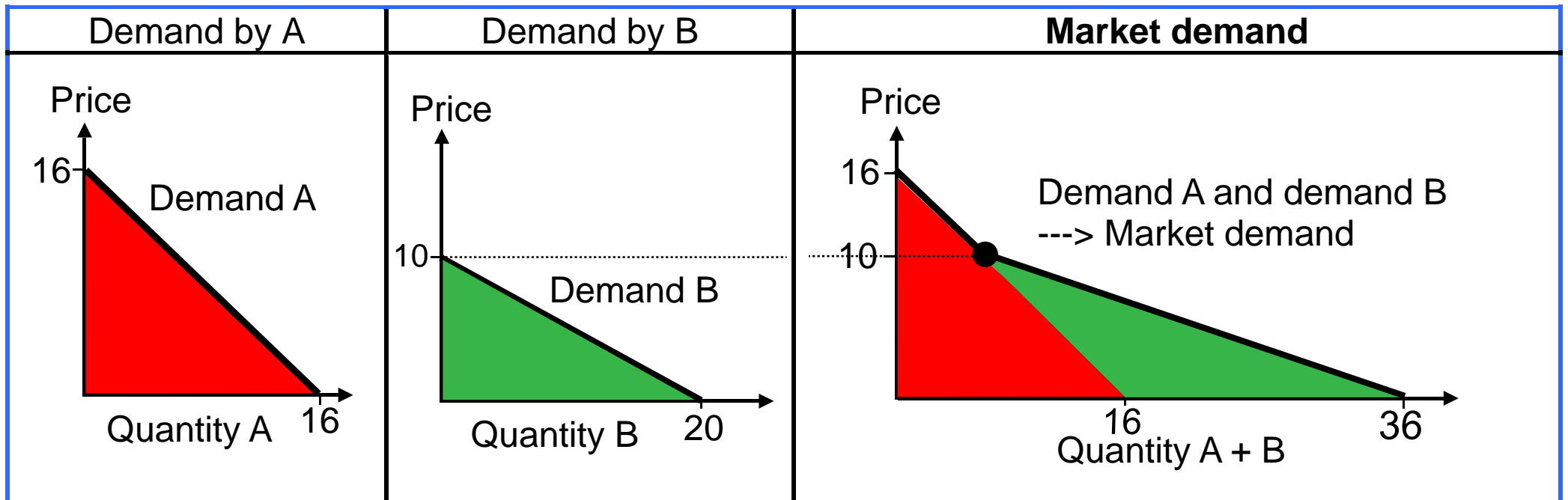


Macroeconomic objectives



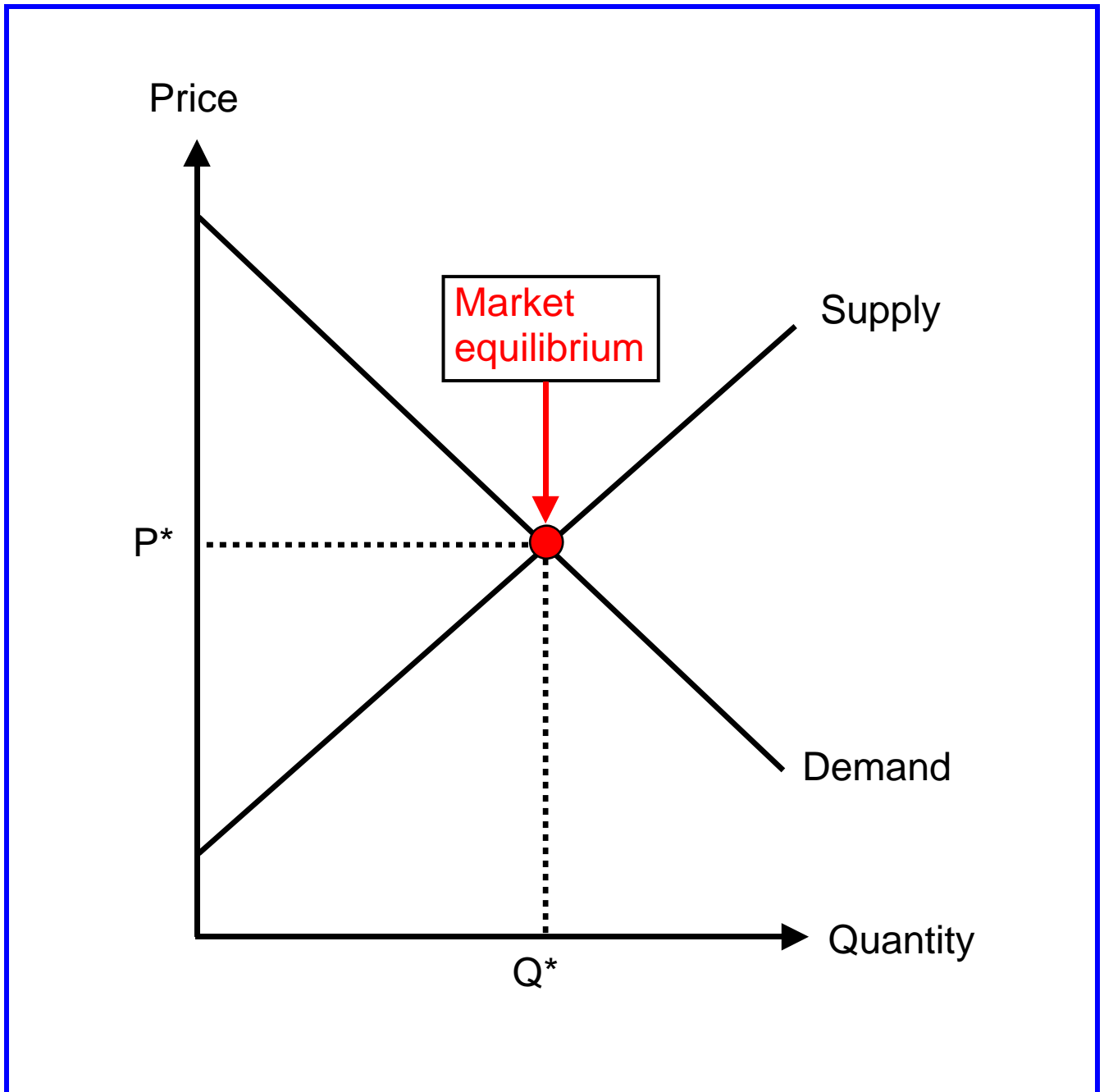
Market demand (derivation)

A market consists of 2 consumers, A and B. The market demand is derived from the individual demand curves by adding them horizontally.



Similarly, the market supply can be derived.

Market equilibrium

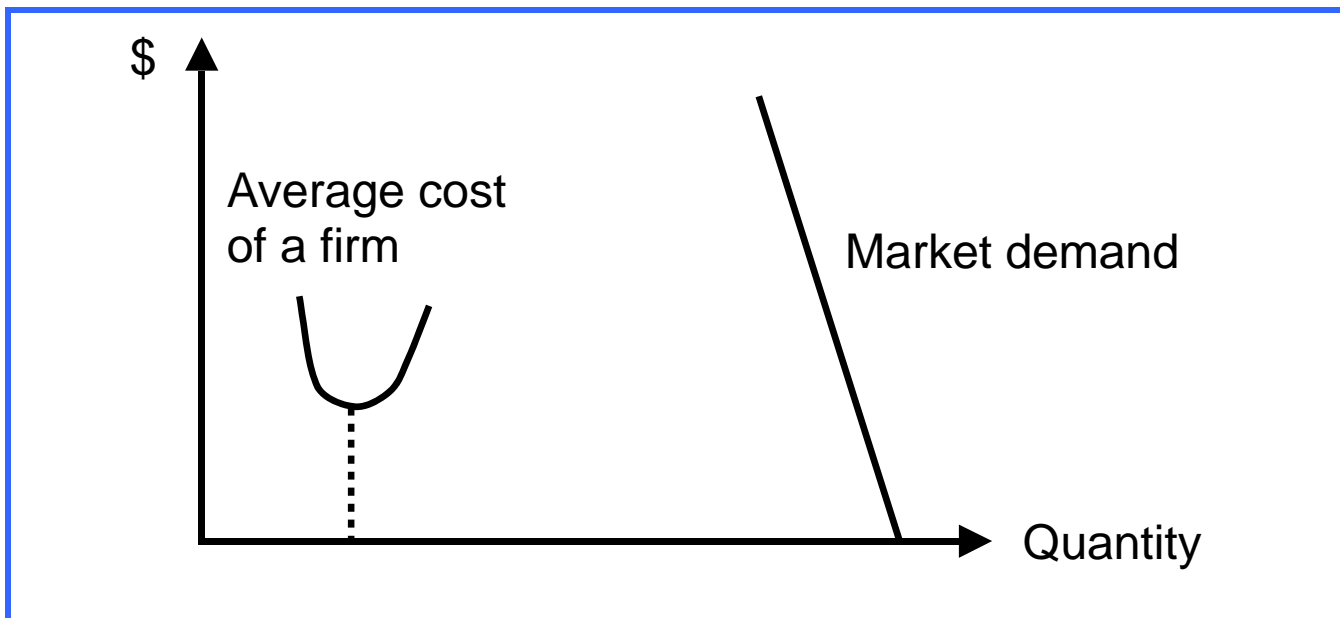


Q^* = Equilibrium quantity

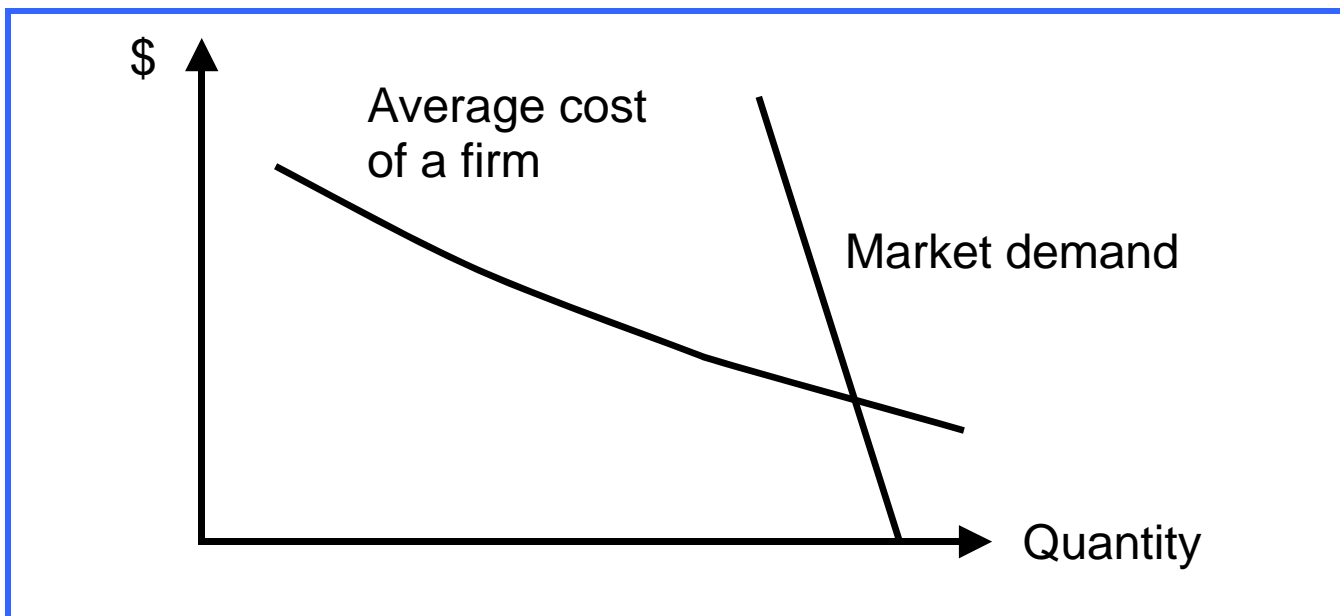
P^* = Equilibrium price

Market structure and cost

- ① **A few firms** offer the product.

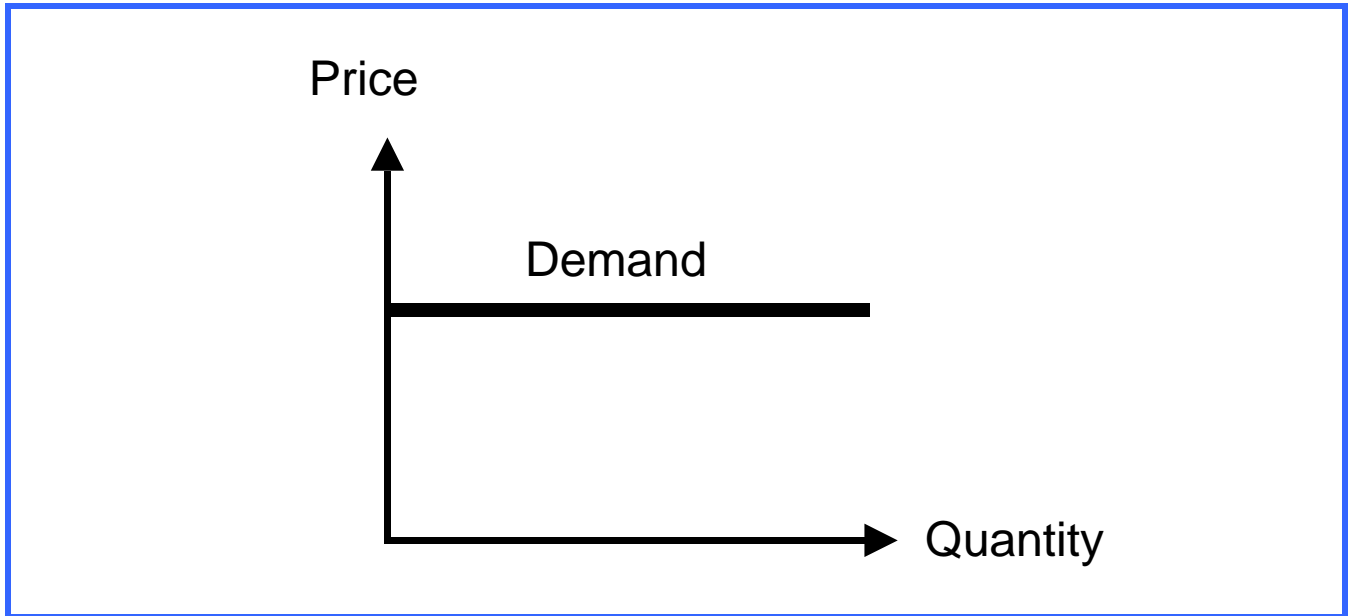


- ② **A monopoly** (as a natural monopoly) is probable.

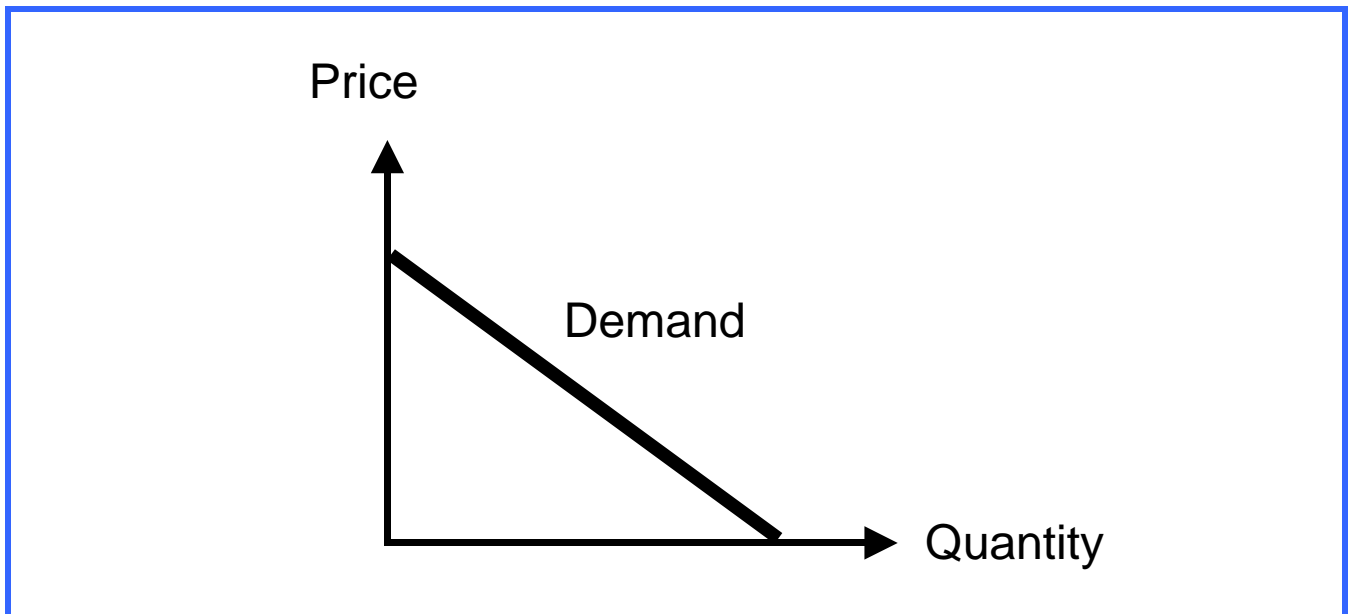


Market structure and demand

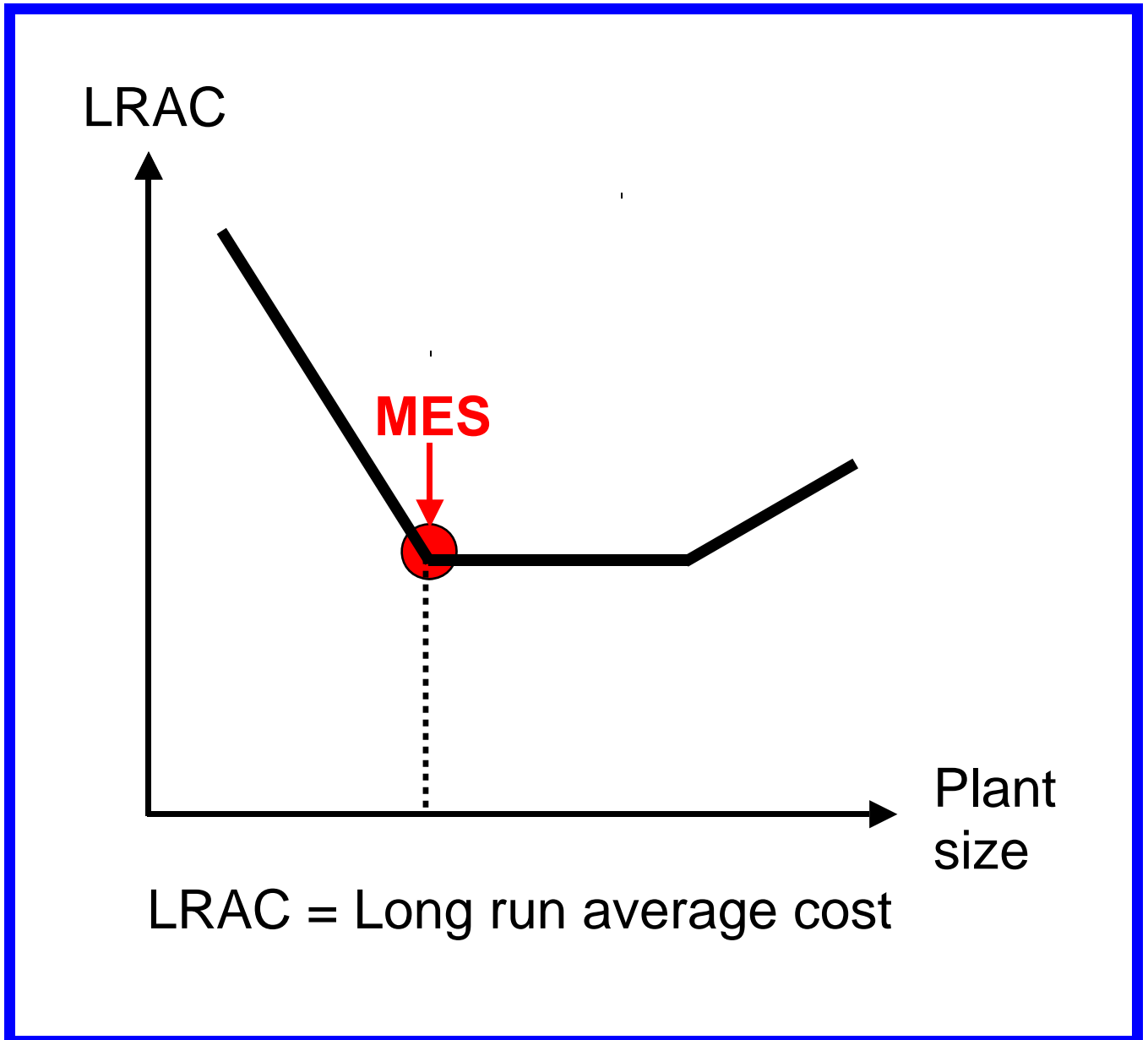
① Perfect competition



② Monopoly



Minimum efficient scale (MES)

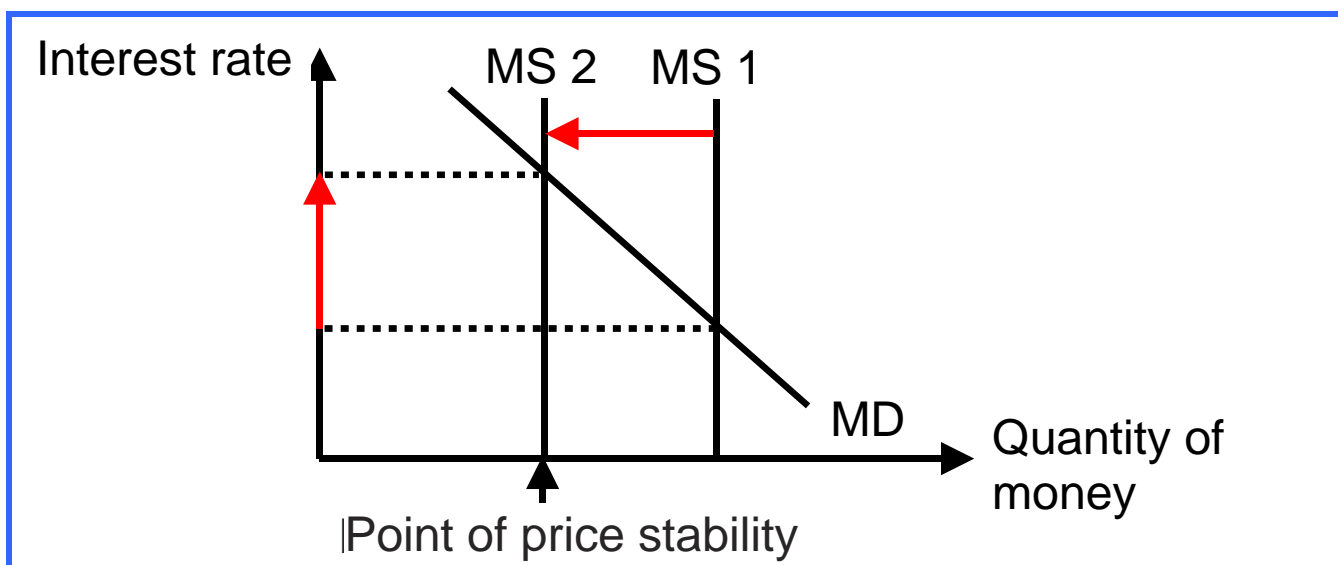


MES is the quantity of production whose further increases would not lead to lower long run average cost.

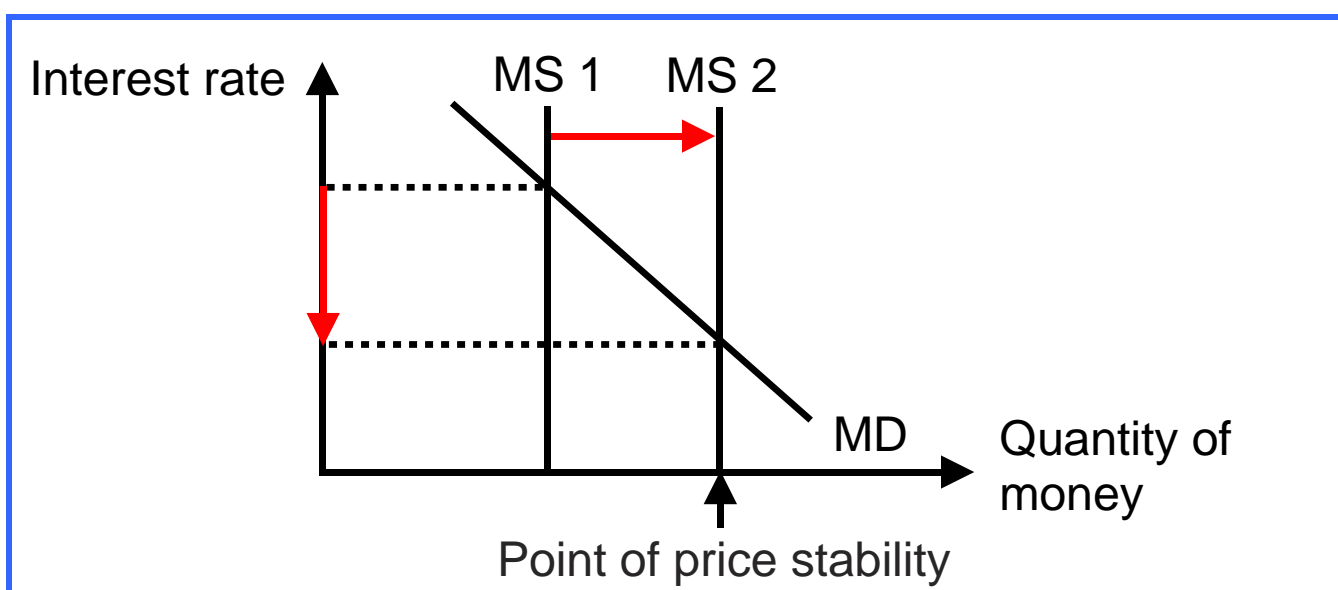
Monetary policy

We assume that the **price stability** is the primary goal of the monetary policy.

① Situation of **inflation**

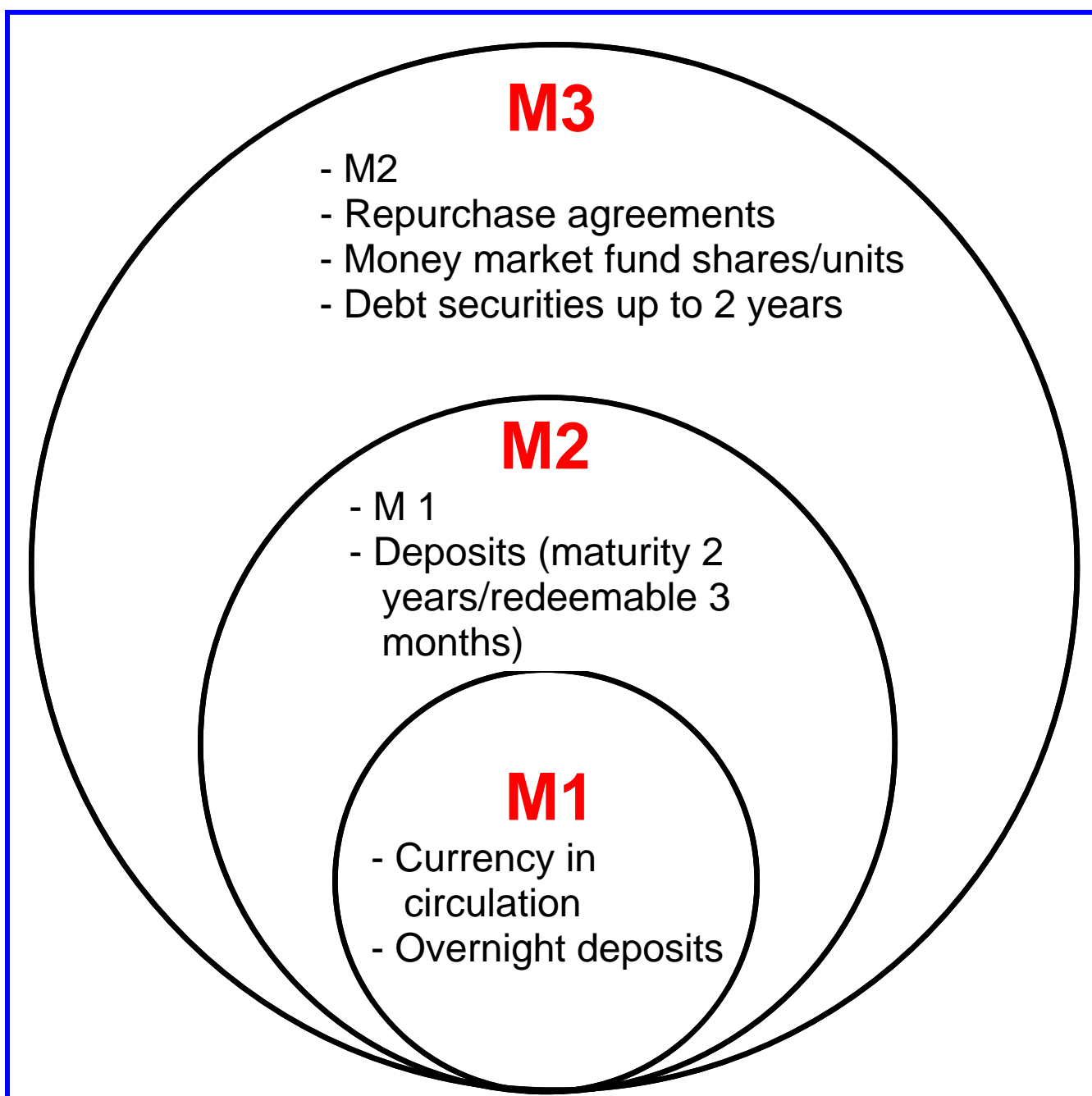


② Situation of **deflation**



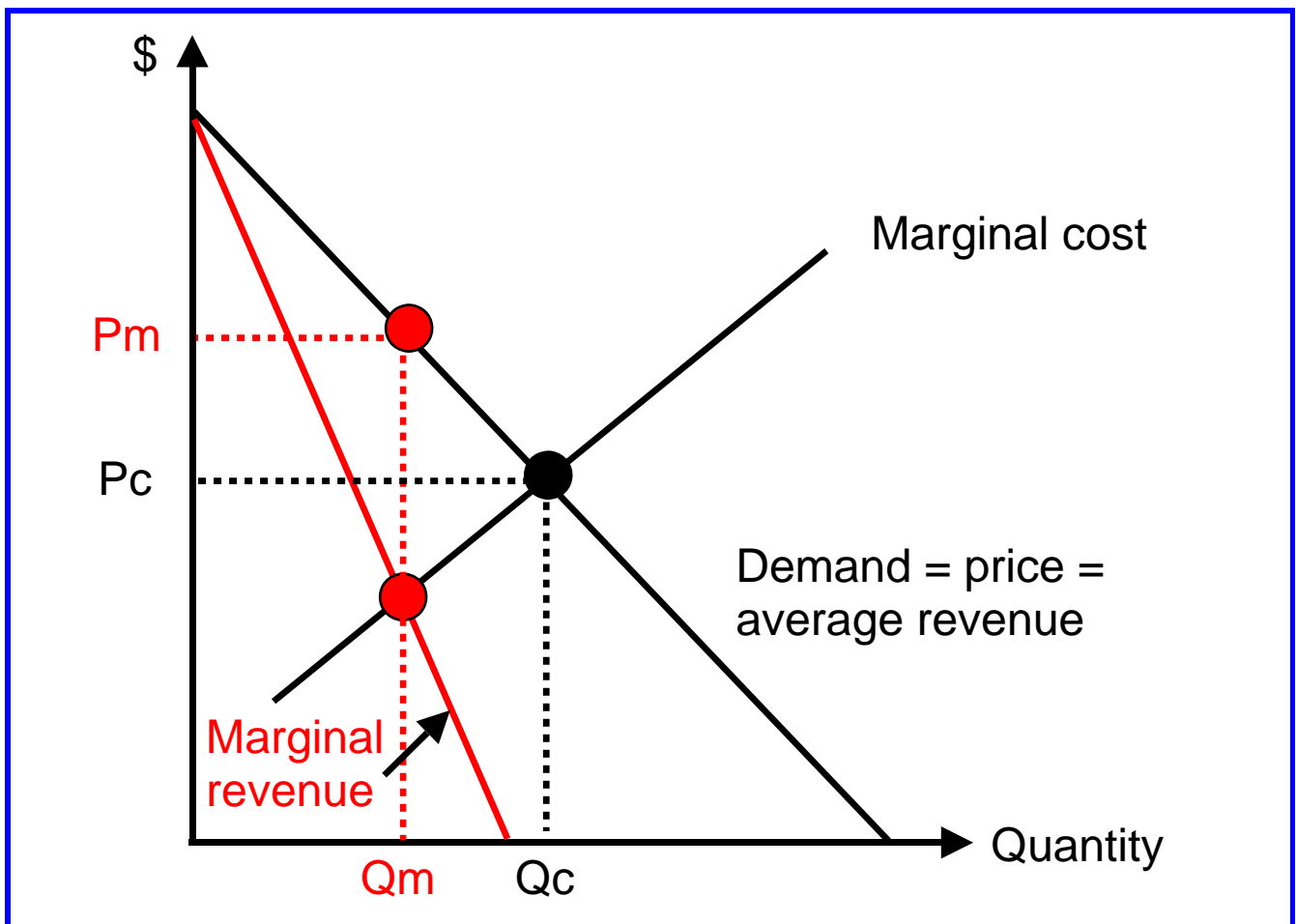
MS = Money supply
MD = Money demand

Monetary aggregates ECB



Source: www.ecb.europa.eu (21.1.18)

Monopoly and perfect competition - a comparison



$P_m / P_c = \text{Price monopoly} / \text{Price perfect competition}$

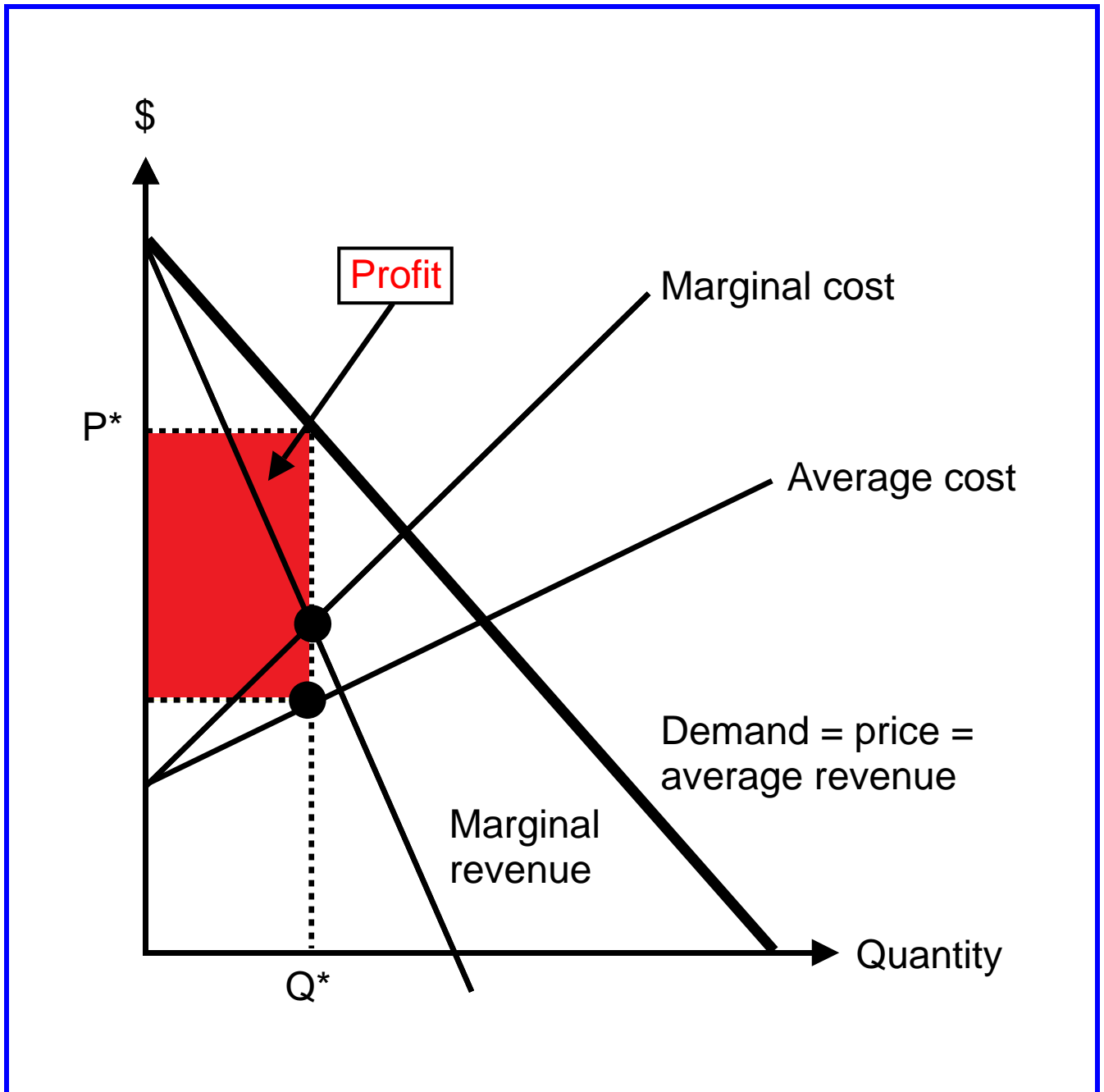
$Q_m / Q_c = \text{Quantity monopoly} / \text{Quantity perfect competition}$

- The monopoly is choosing the following point:
MR = MC; but price > MC
- The firm in the competitive market is choosing the following point:
Price* = MC (* equally MR = MC, since price = MR)
- Result: The monopoly is choosing a higher price and a smaller quantity than the firm in the competitive market.

MC = Marginal cost

MR = Marginal revenue

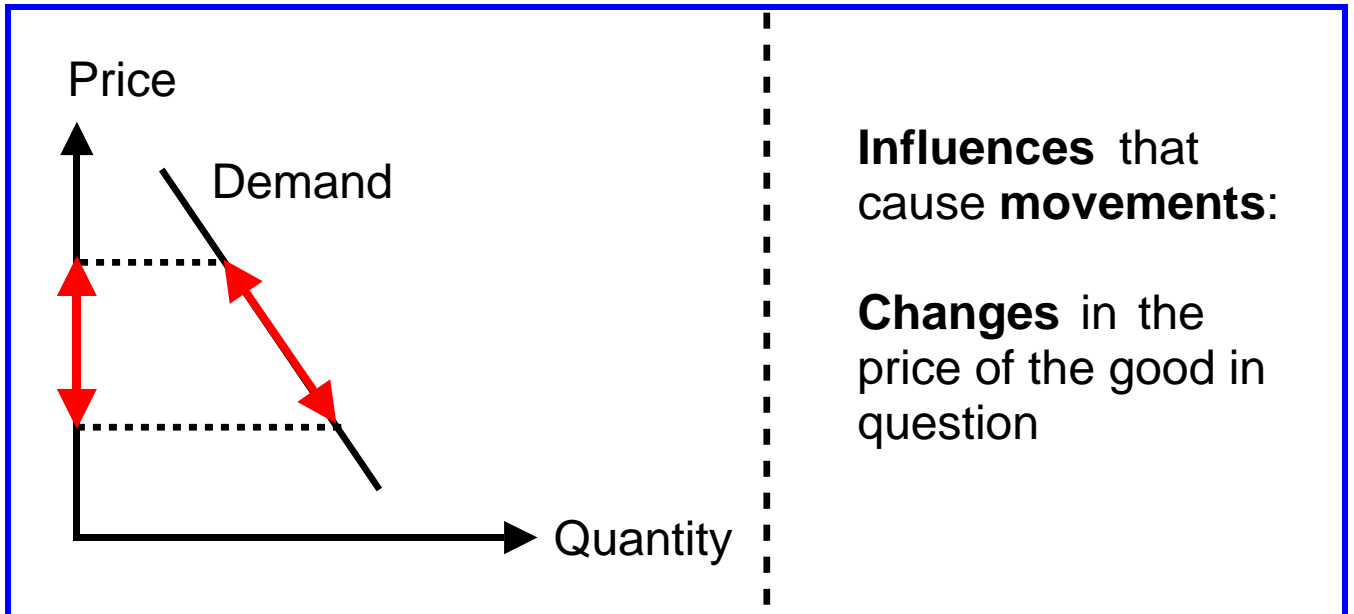
Monopoly



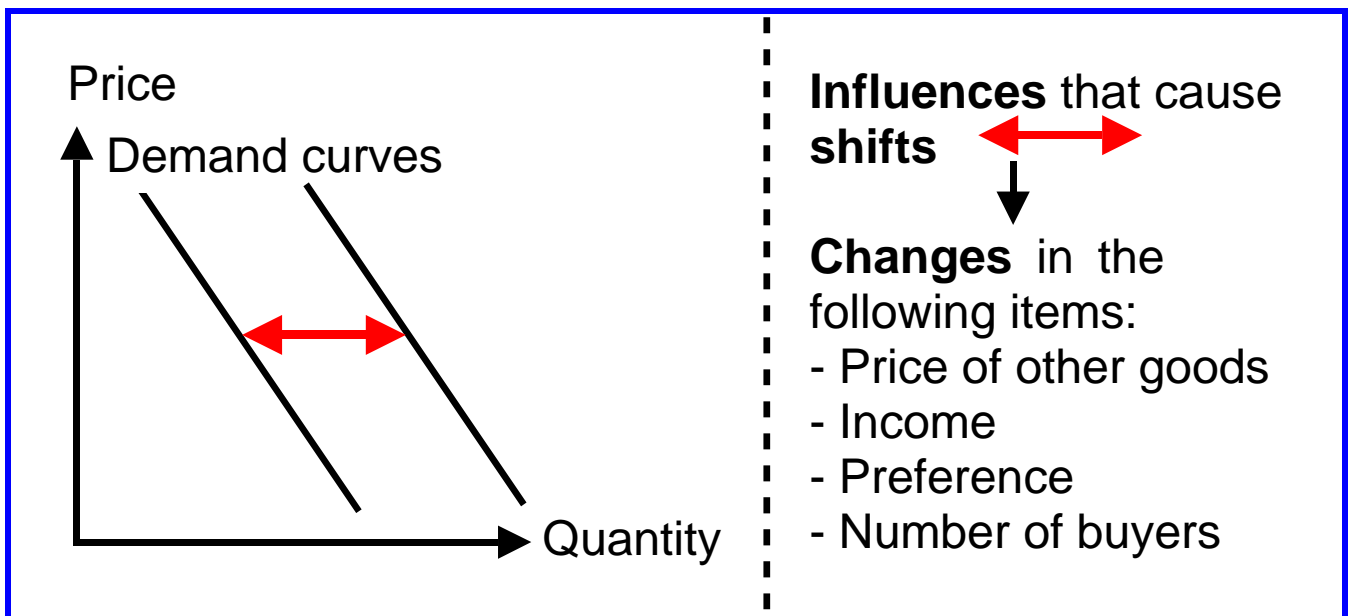
Q^* = Quantity, supplied by the monopoly
 P^* = Price, charged by the monopoly

Movements and shifts - demand

① **Movements** along the demand curve

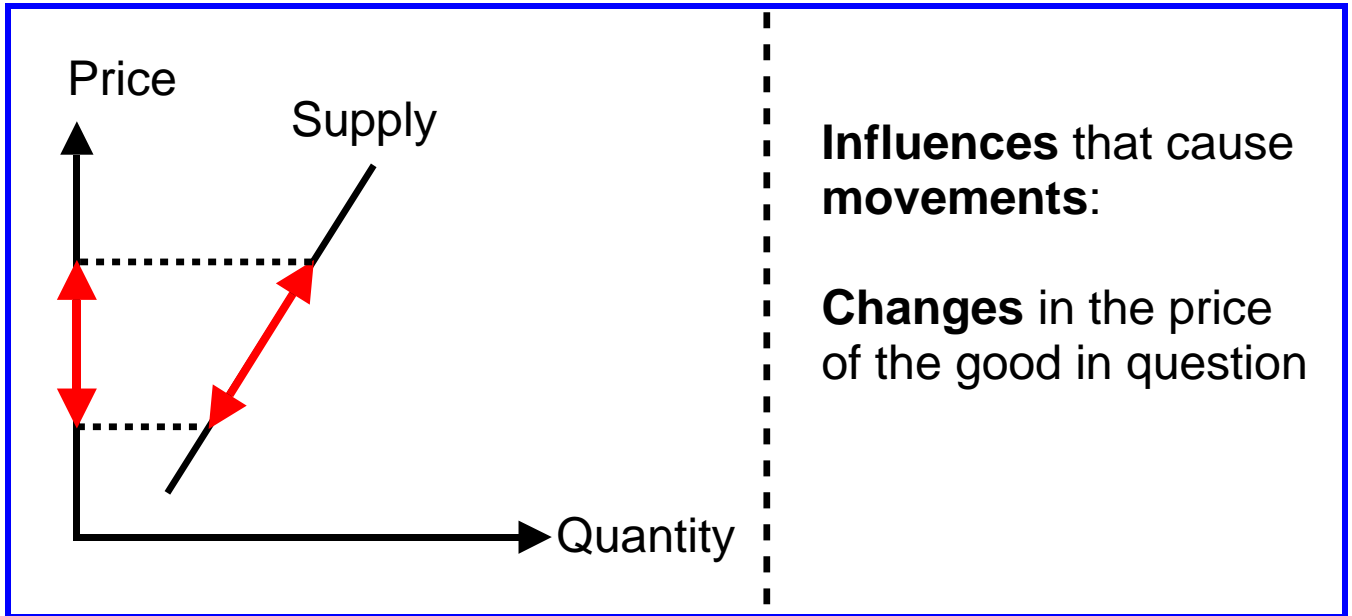


② **Shifts** of the demand curve

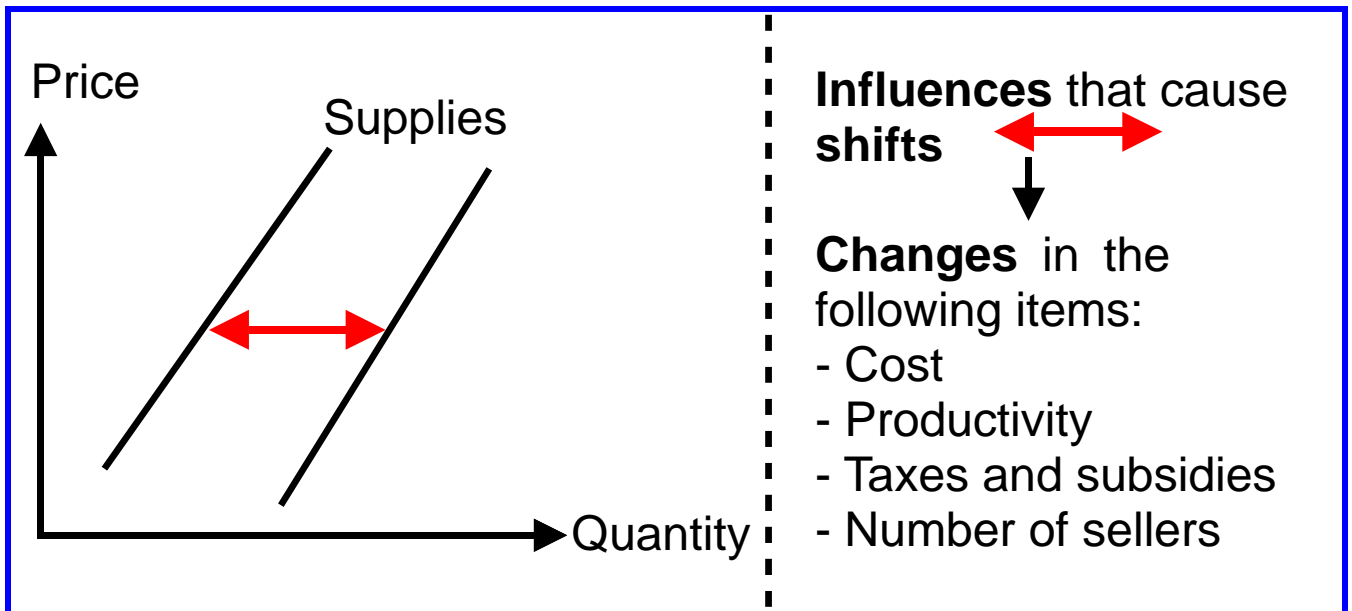


Movements and shifts - supply

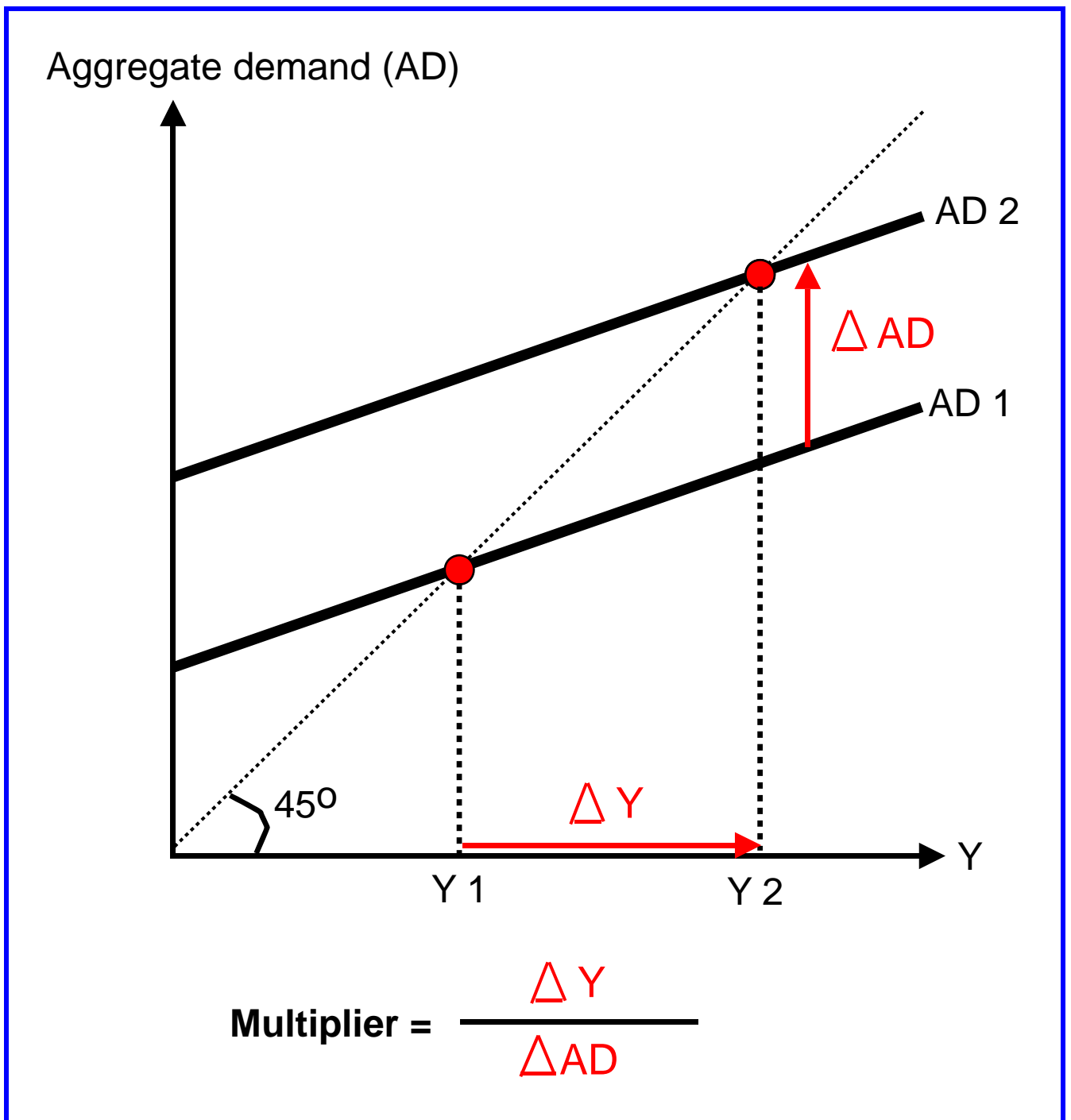
① **Movements** along the supply curve



② **Shifts** of the supply curve



Multiplier

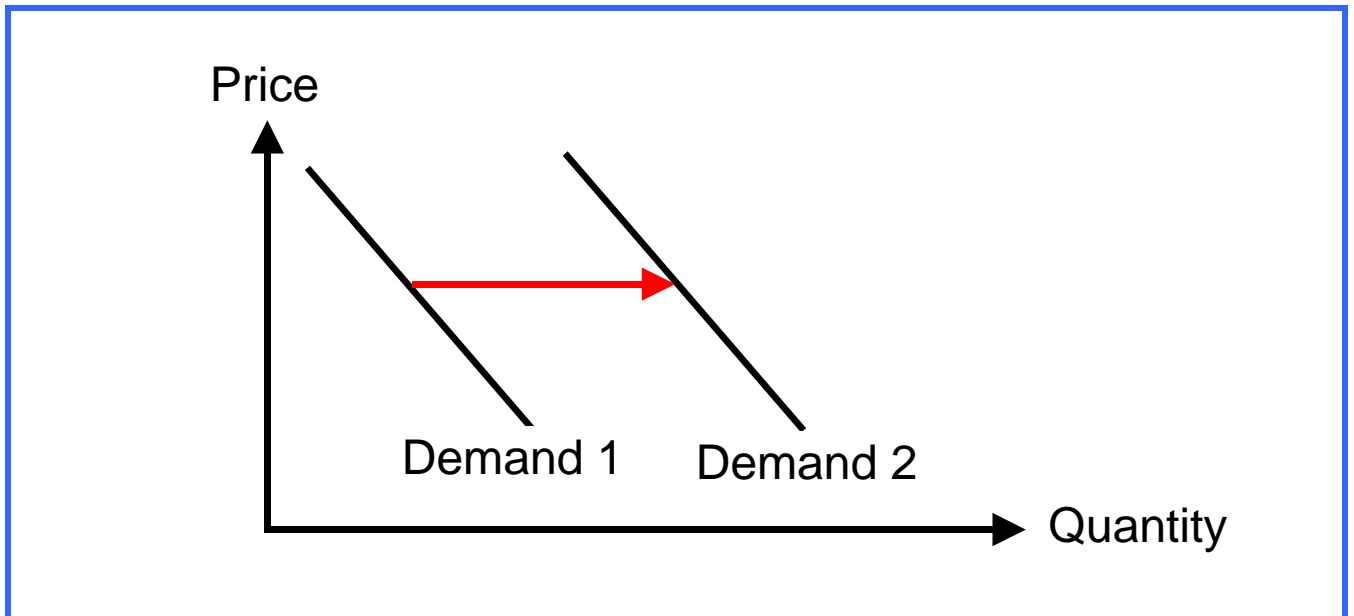


Y = Output, income

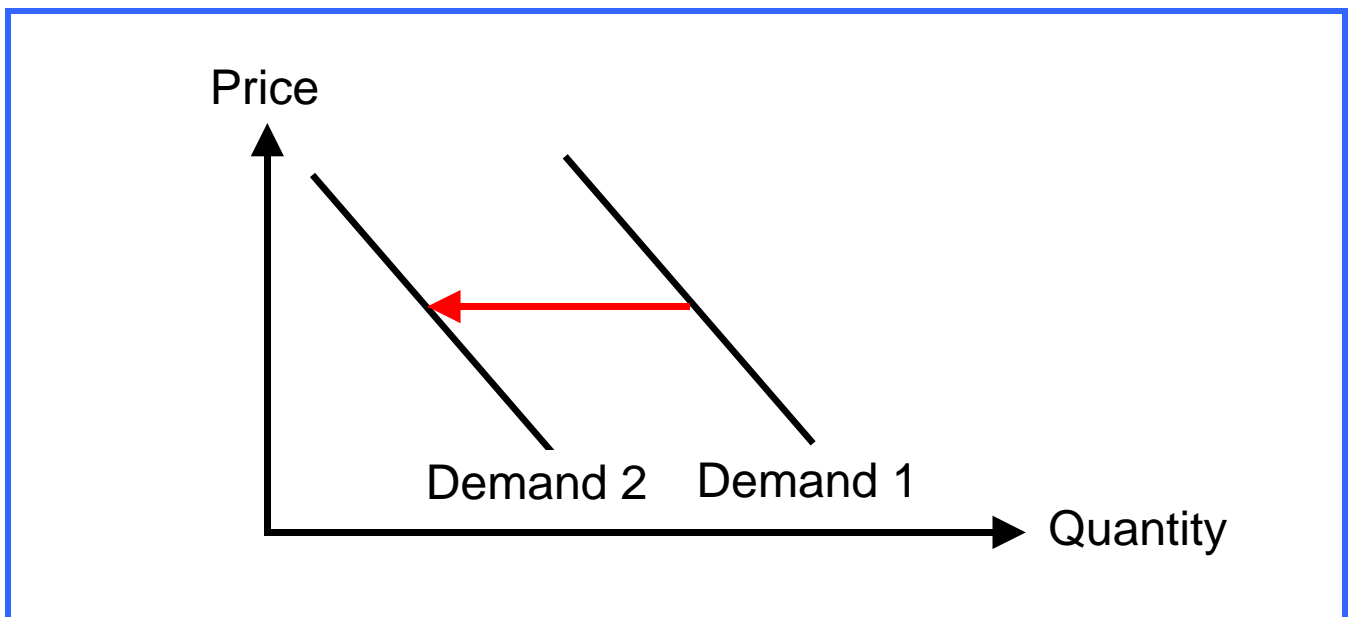
Normal good

What happens to a normal good if ...

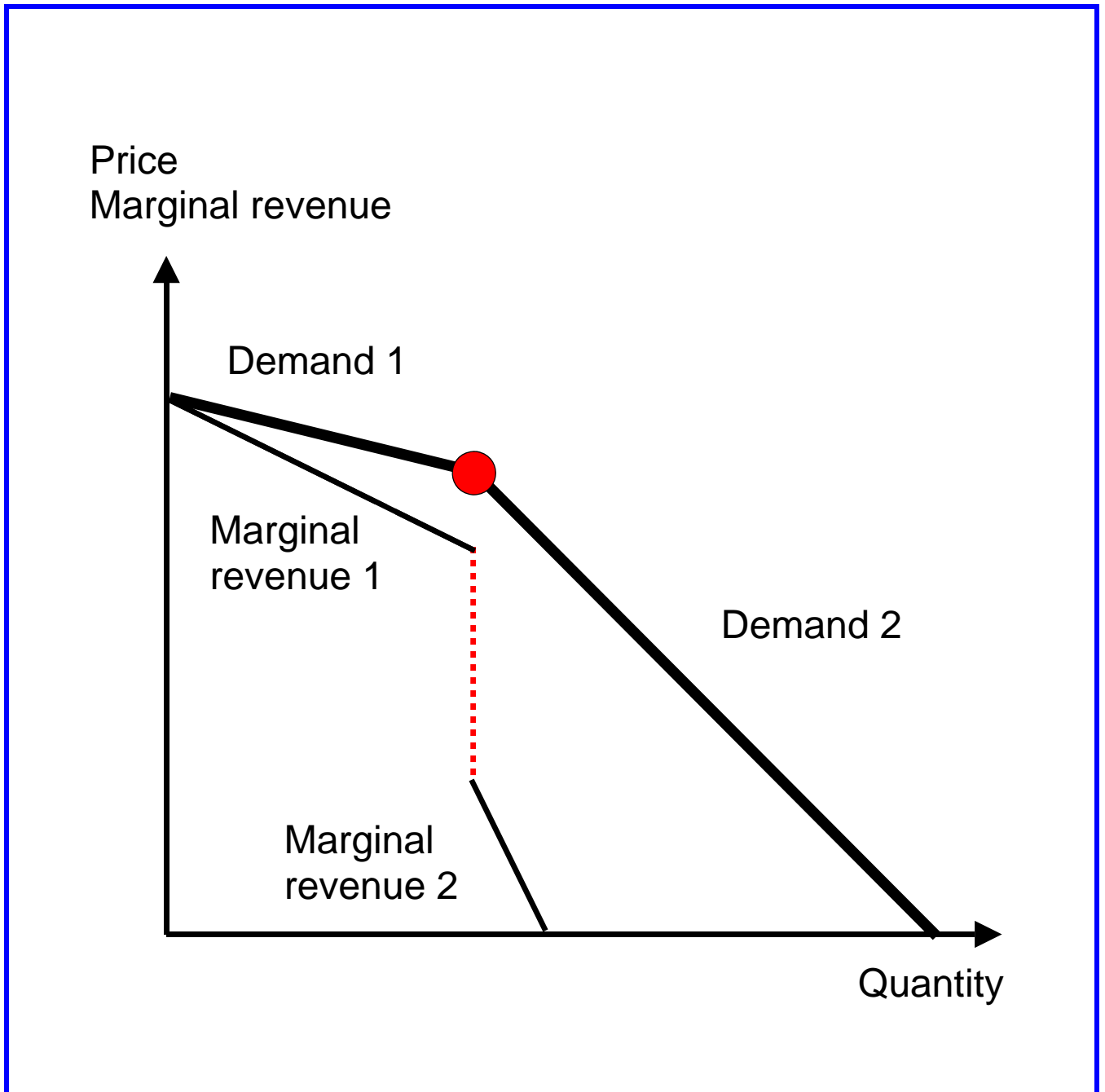
① **income rises;**



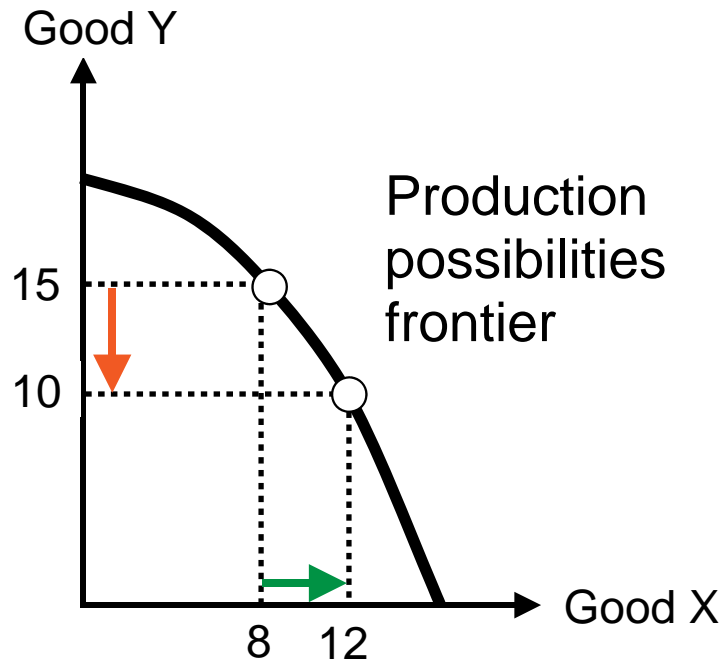
② **income falls?**



Oligopoly - kinked demand curve

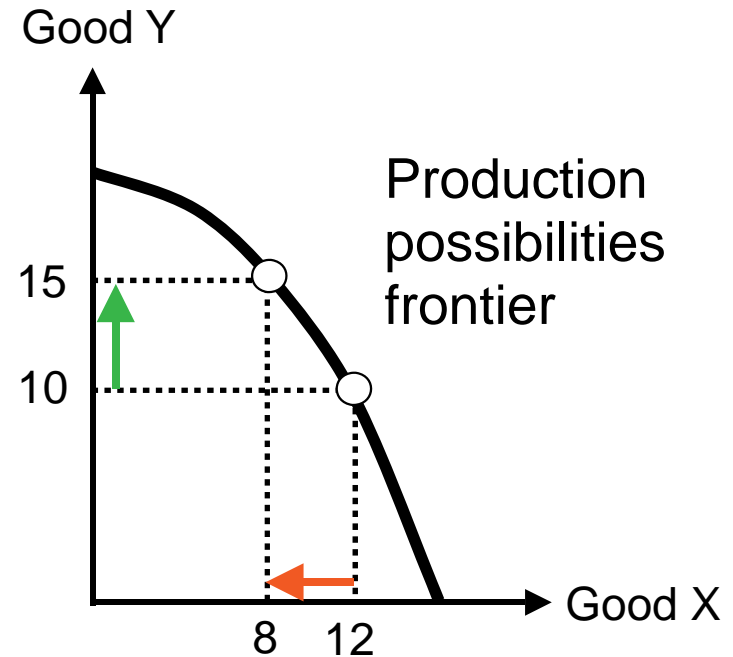


Opportunity cost (in the case of 2 goods)



$$OC_x = \frac{\text{Loss of Y}}{\text{Gain of X}} = \frac{5}{4} = 1.25$$

OC_x = Opportunity cost of the production X

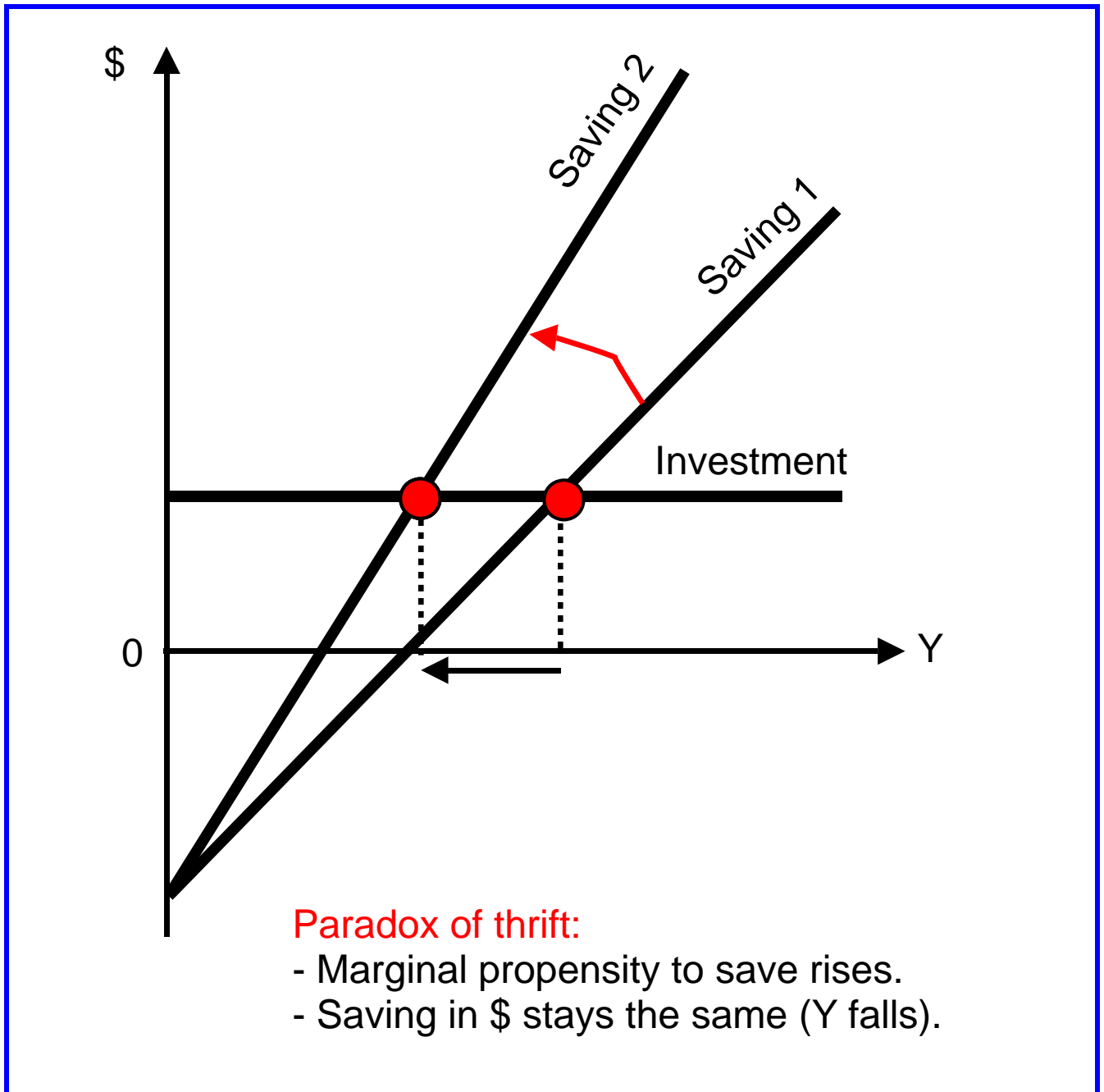


$$OC_y = \frac{\text{Loss of X}}{\text{Gain of Y}} = \frac{4}{5} = 0.8$$

($OC_y = 1/OC_x = 1/1.25 = 0.8$)

OC_y = Opportunity cost of the production Y

Paradox of thrift

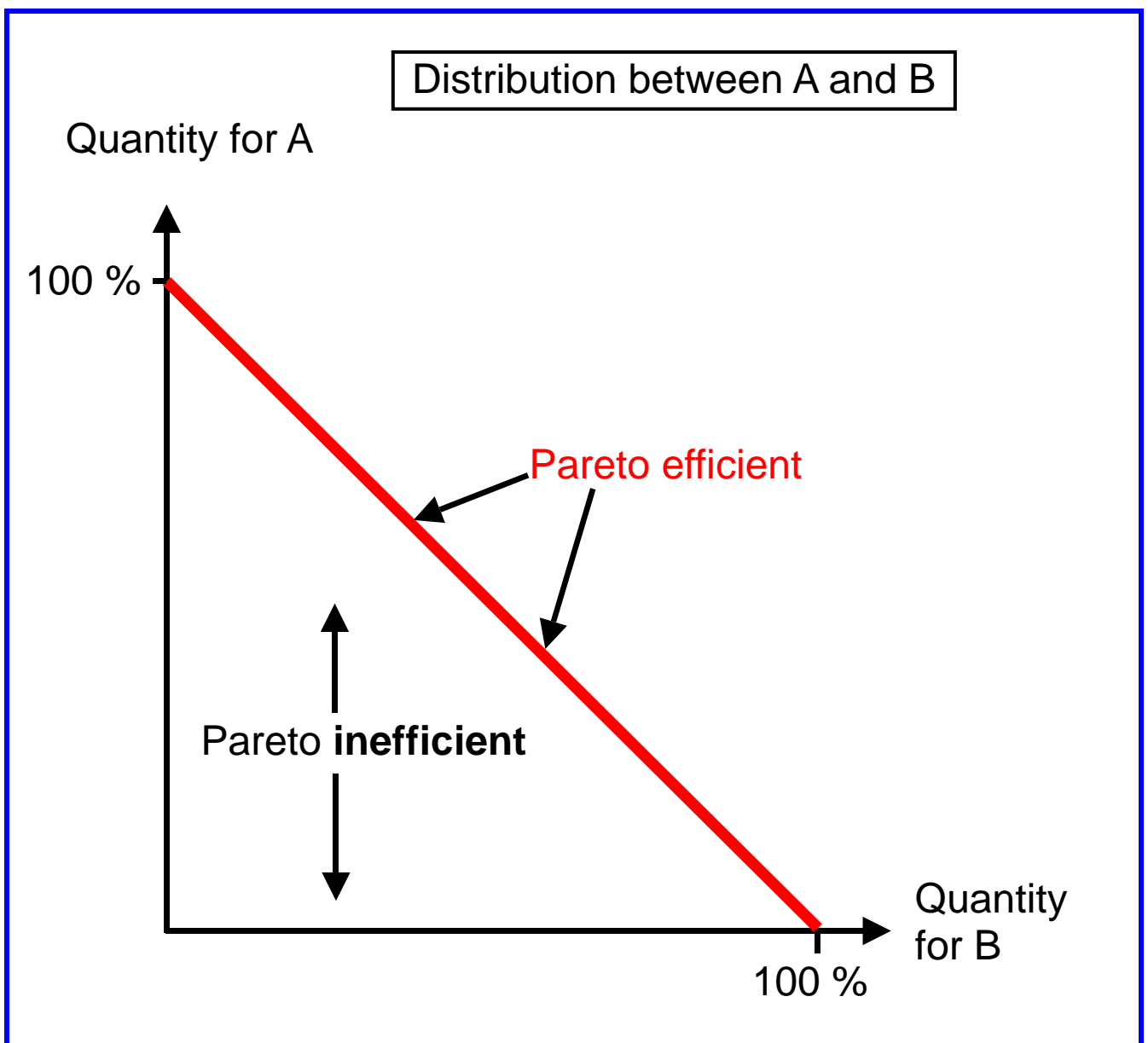


Y = Output, income

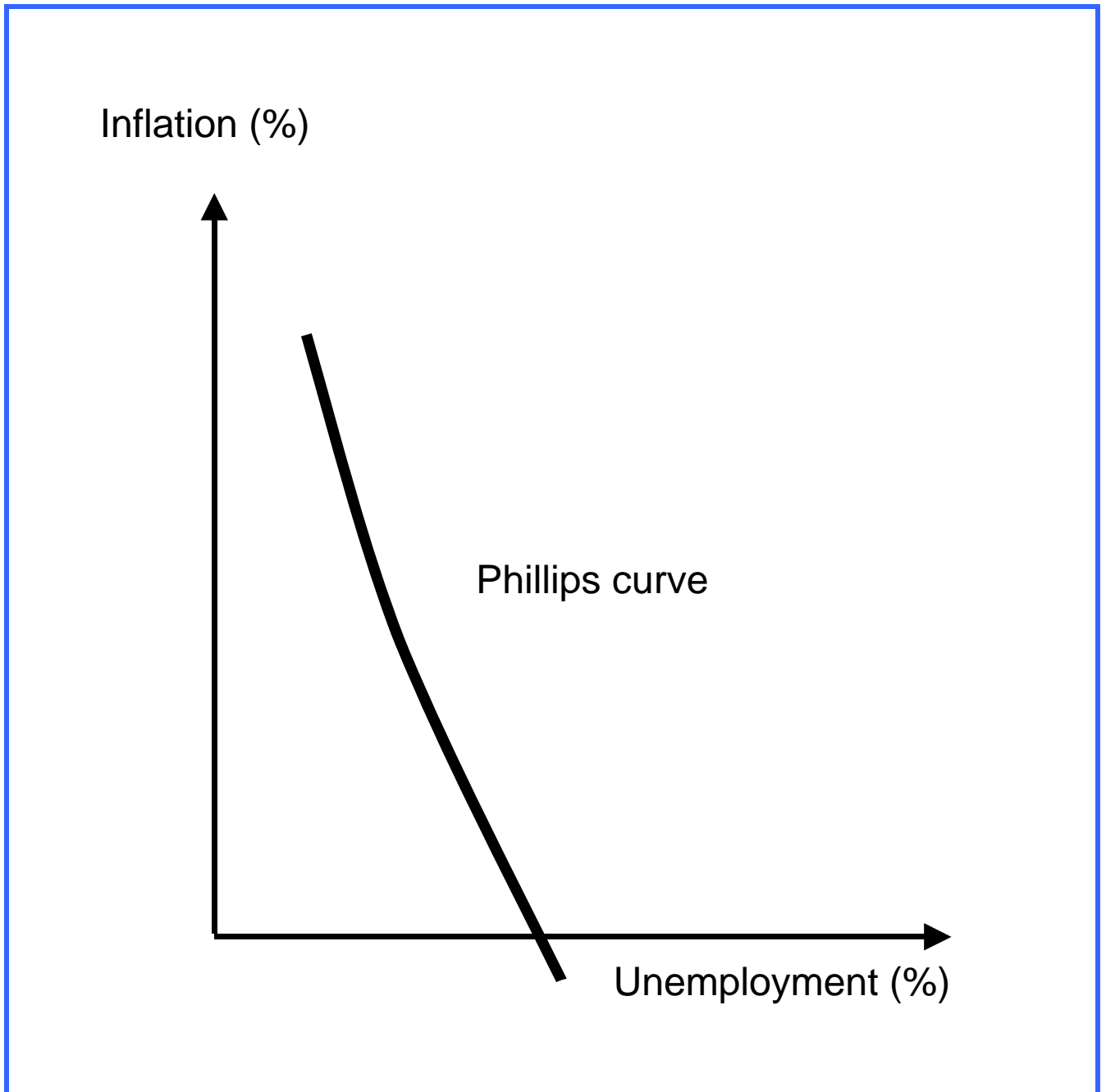
Pareto efficiency

Introduction:

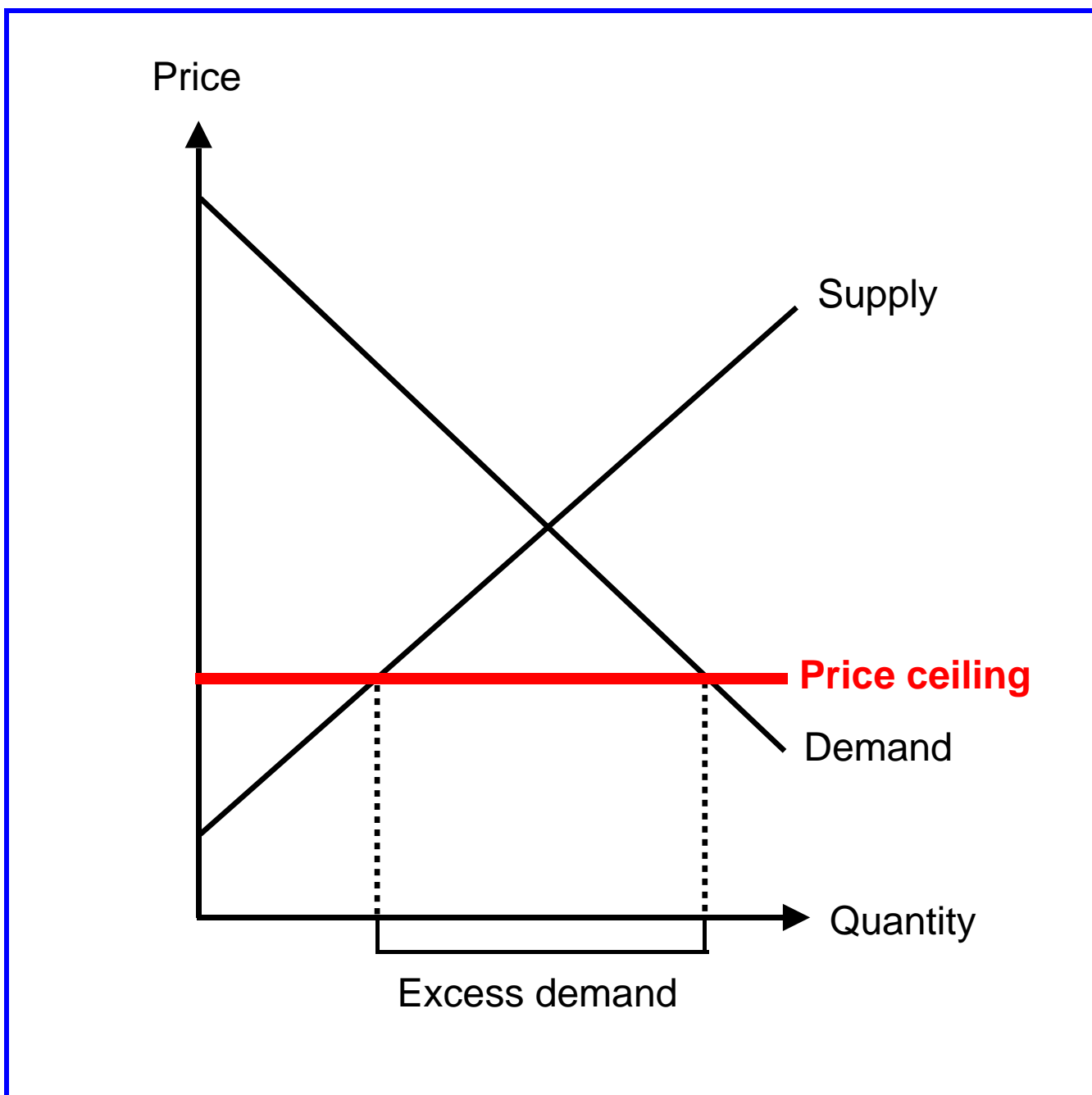
- 2 persons (A and B), distribution of 1 divisible good
- Which possibilities of distribution between A and B are feasible, irrespective of utility and income? What can be said about Pareto efficiency?



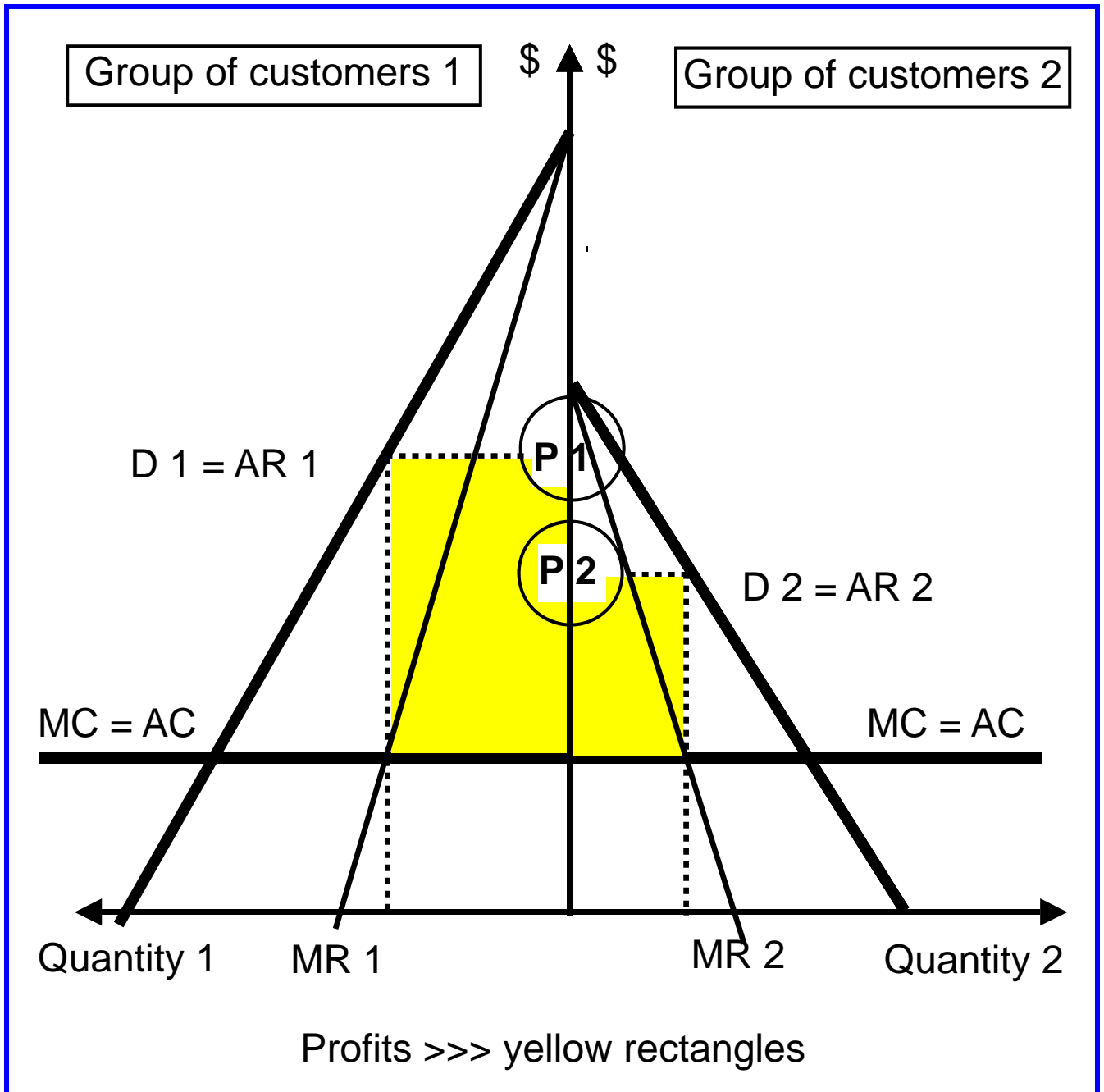
Phillips curve



Price ceiling (maximum price)

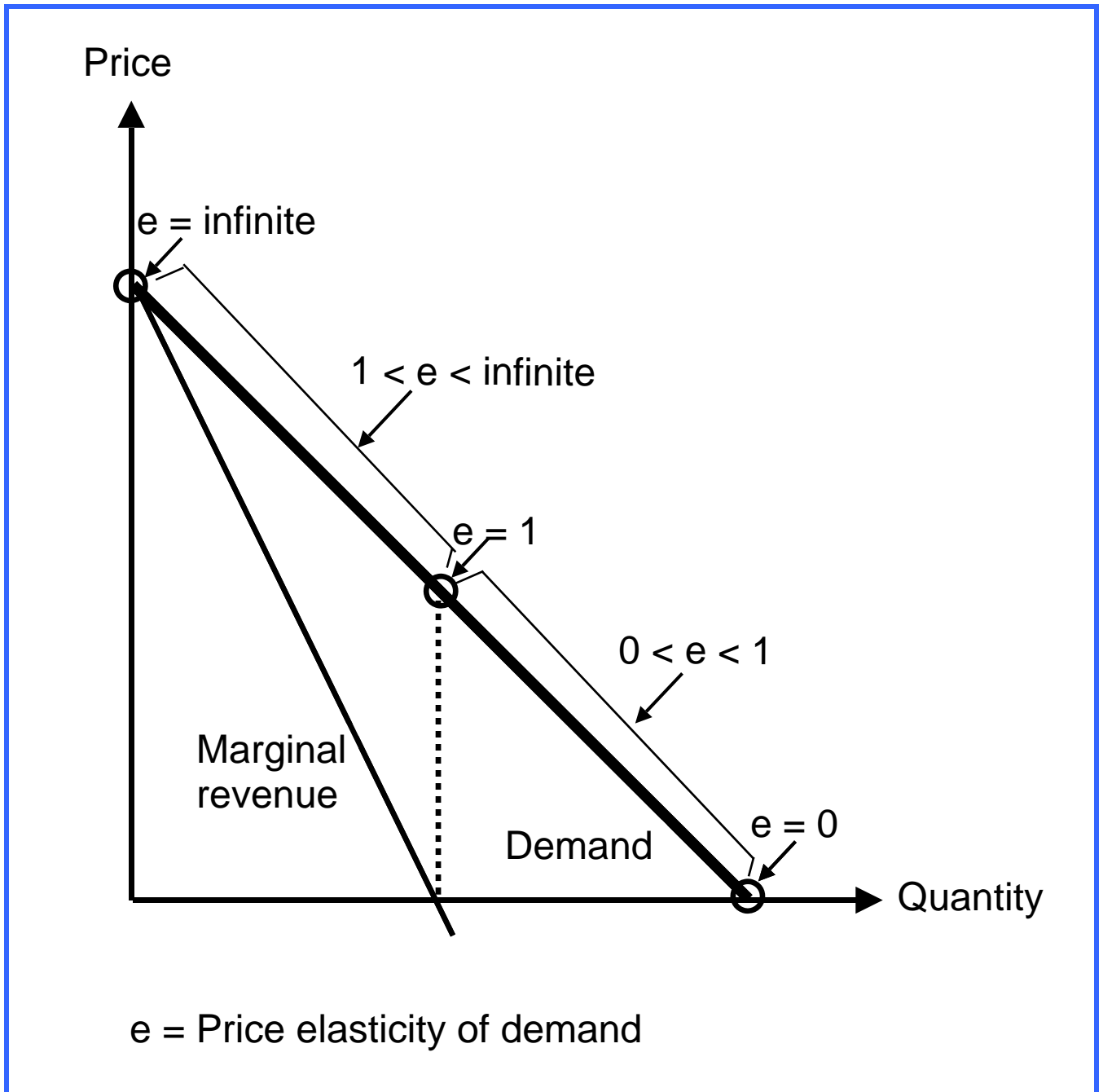


Price discrimination



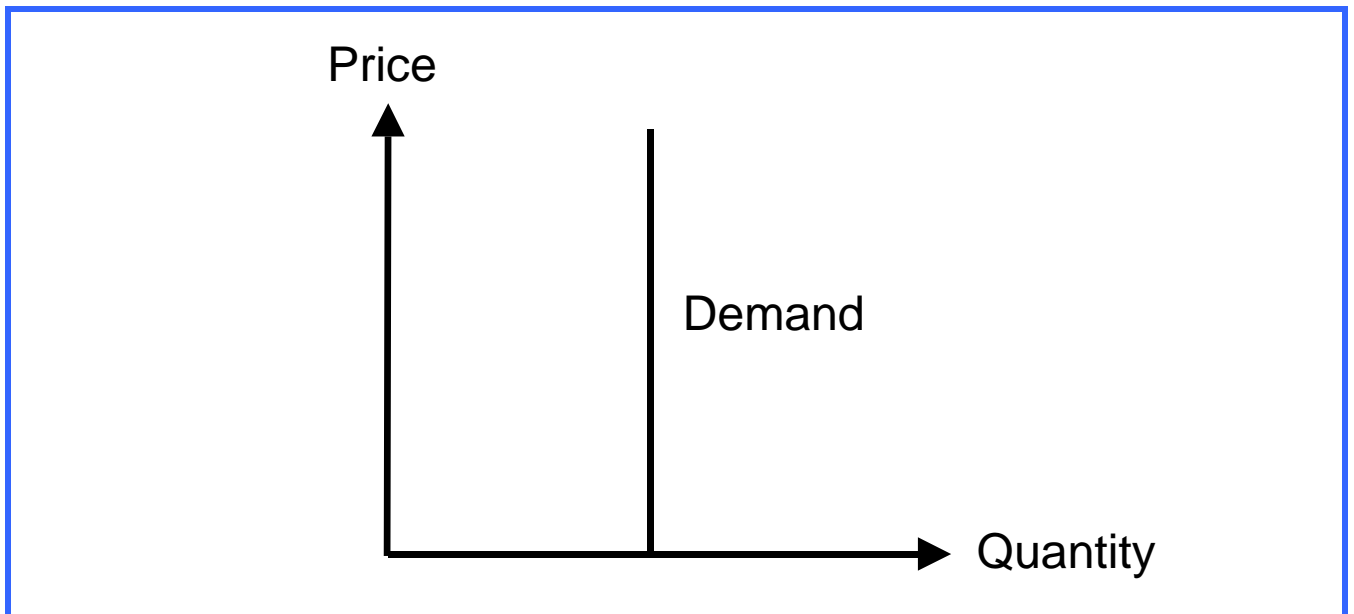
D = Demand	AC = Average cost
P = Price	MR = Marginal revenue
AR = Average revenue	MC = Marginal cost

Price elasticity of demand 1 - linear demand

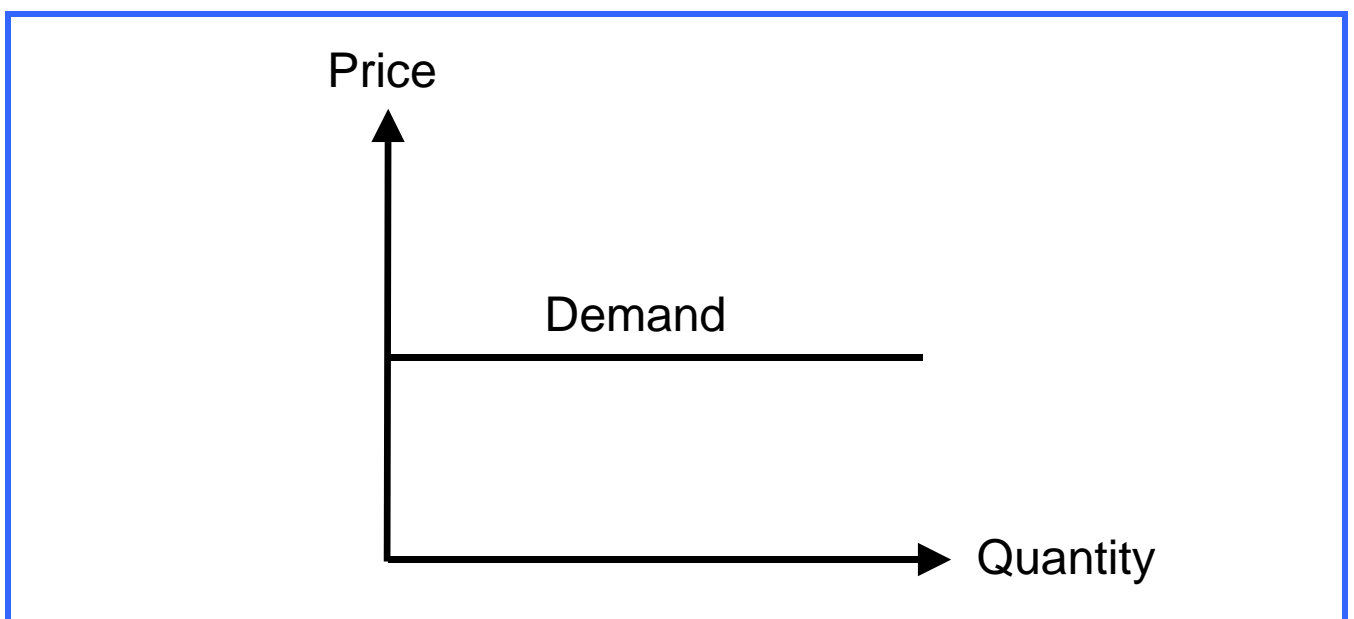


Price elasticity of demand 2 - extreme cases

① Price elasticity of demand = 0

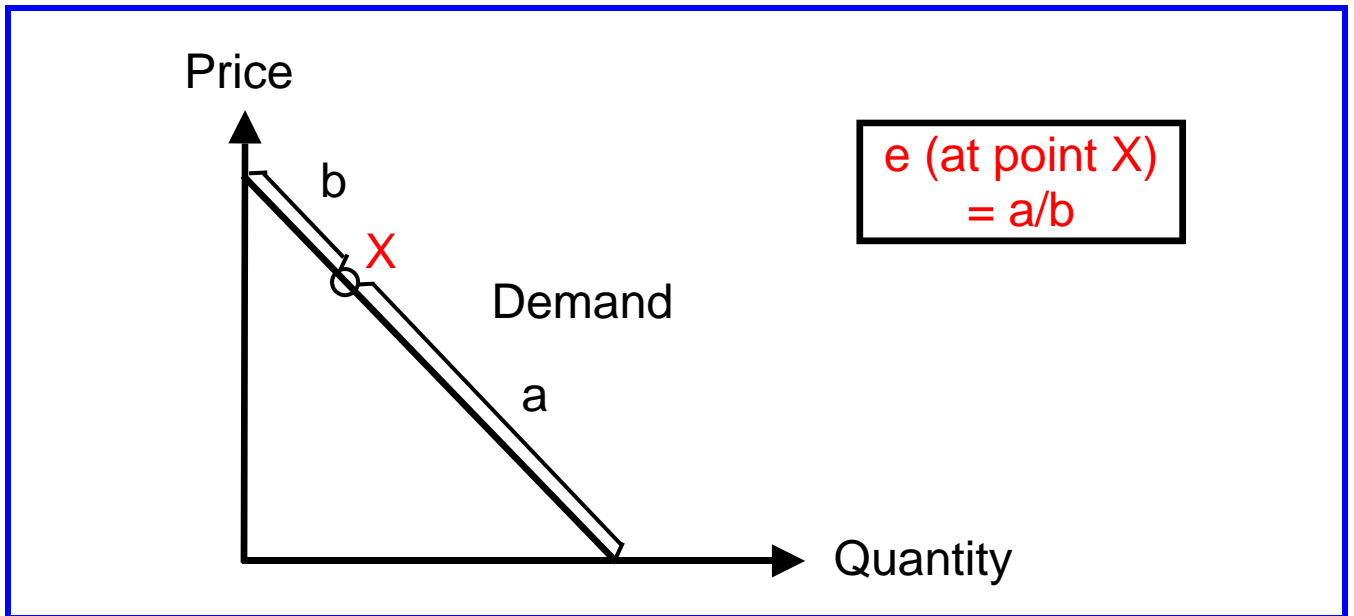


② Price elasticity of demand = infinite

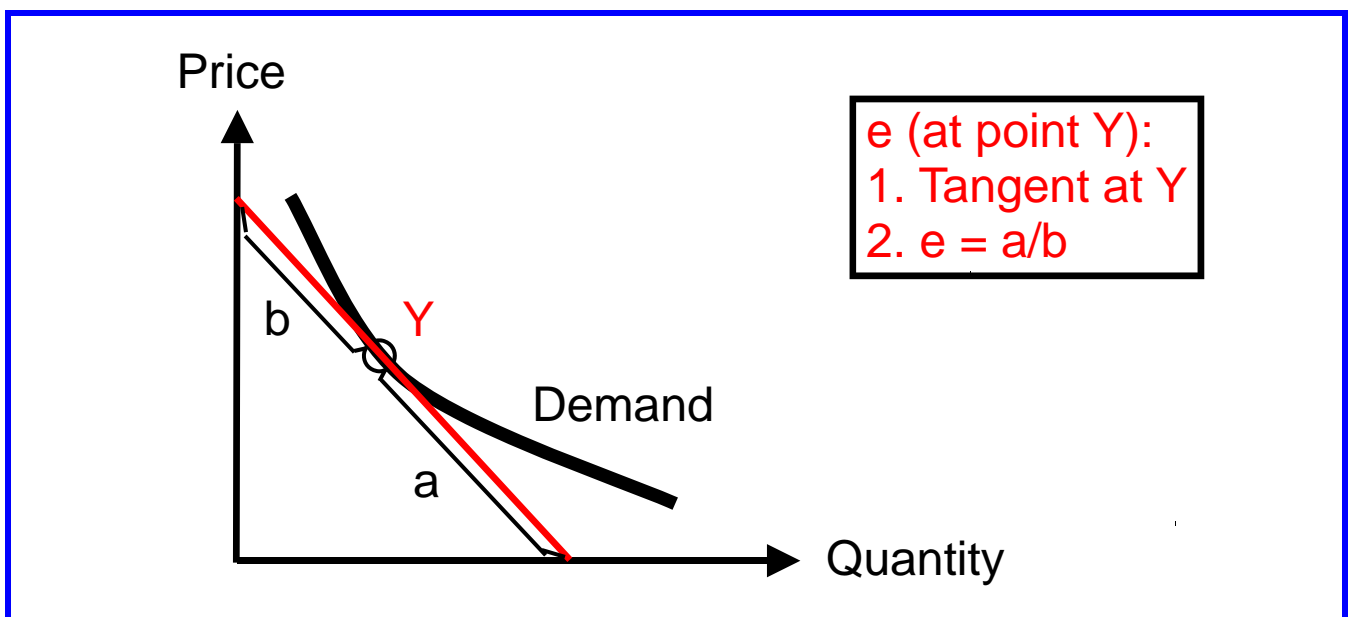


Price elasticity of demand 3 - given point

① Linear demand

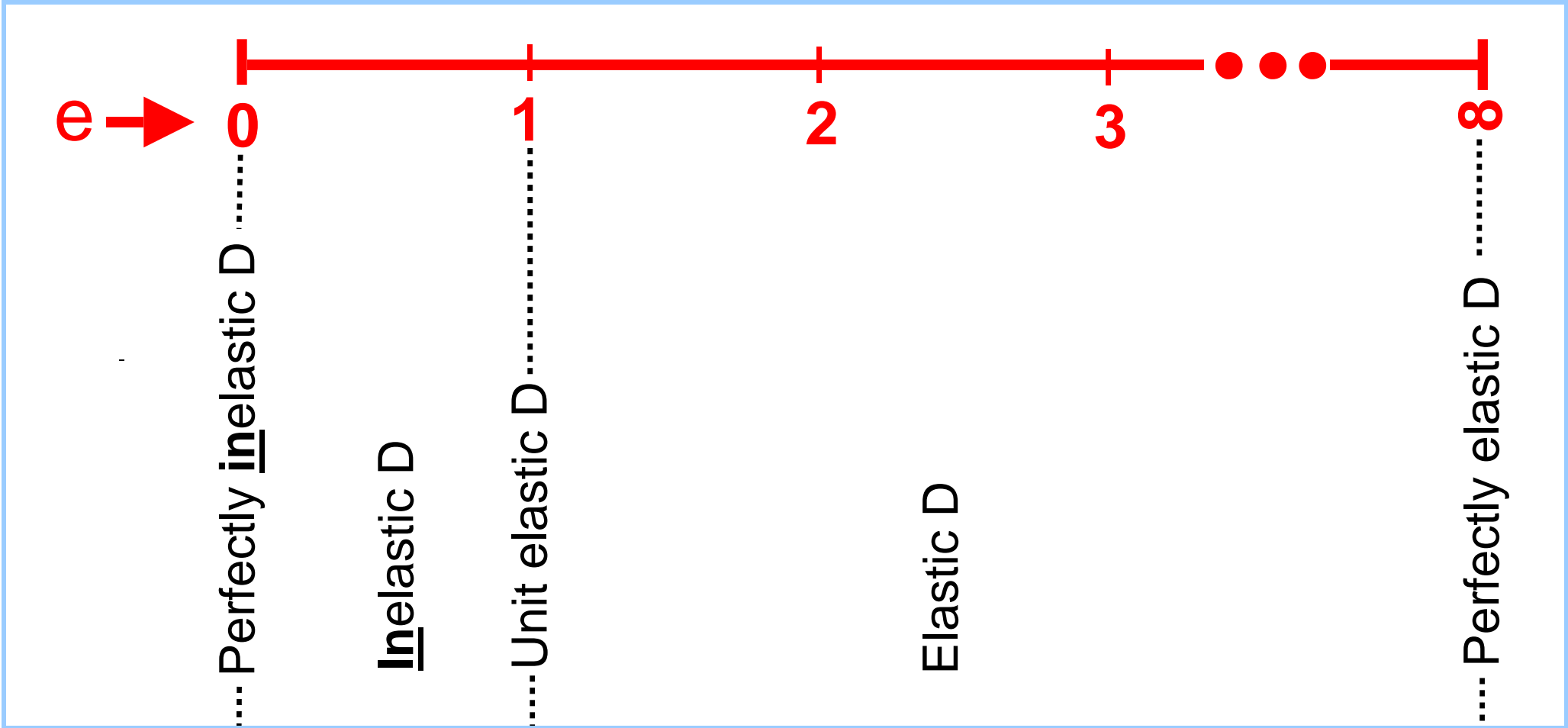


② Demand curve

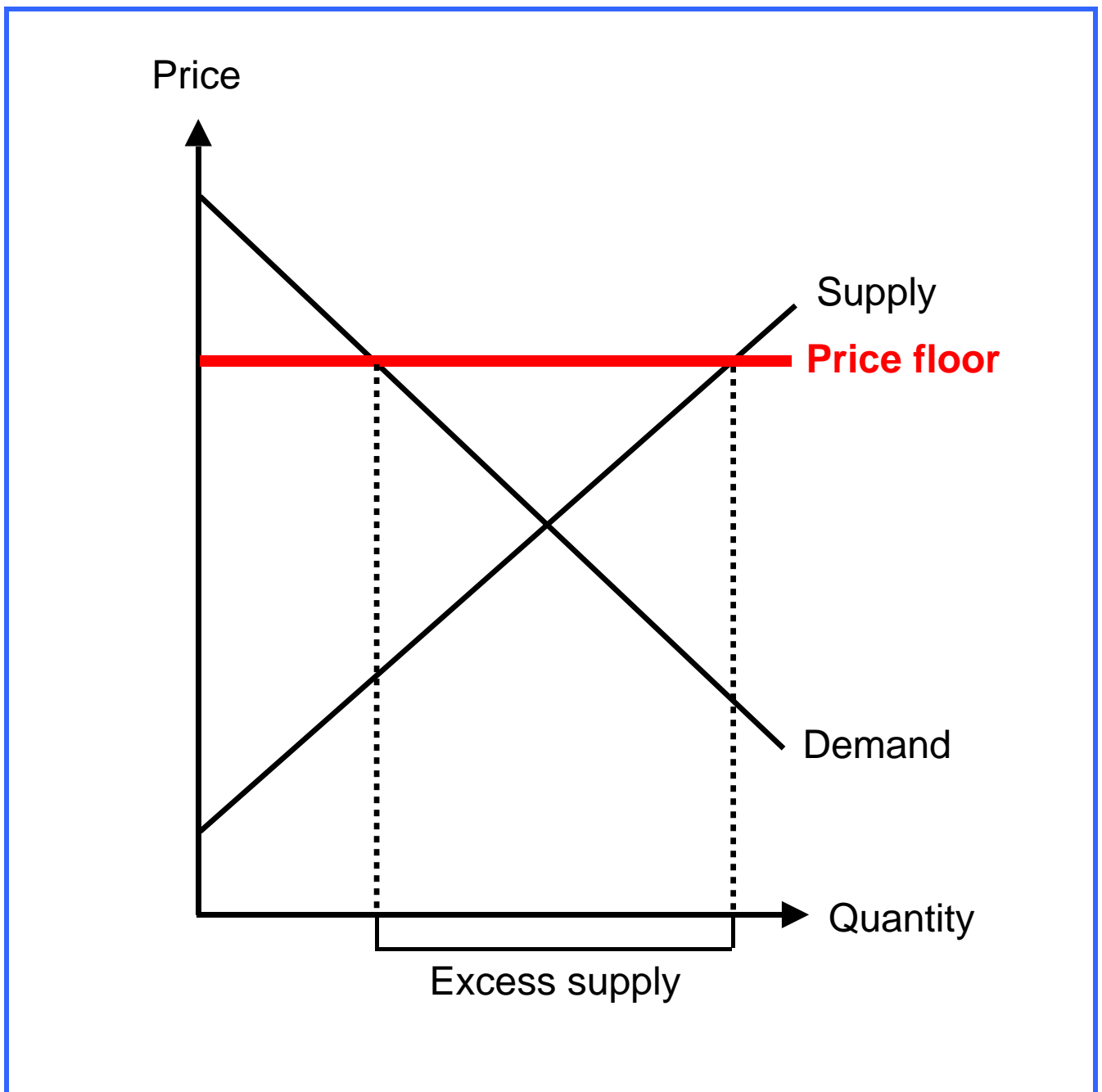


e = Price elasticity of demand

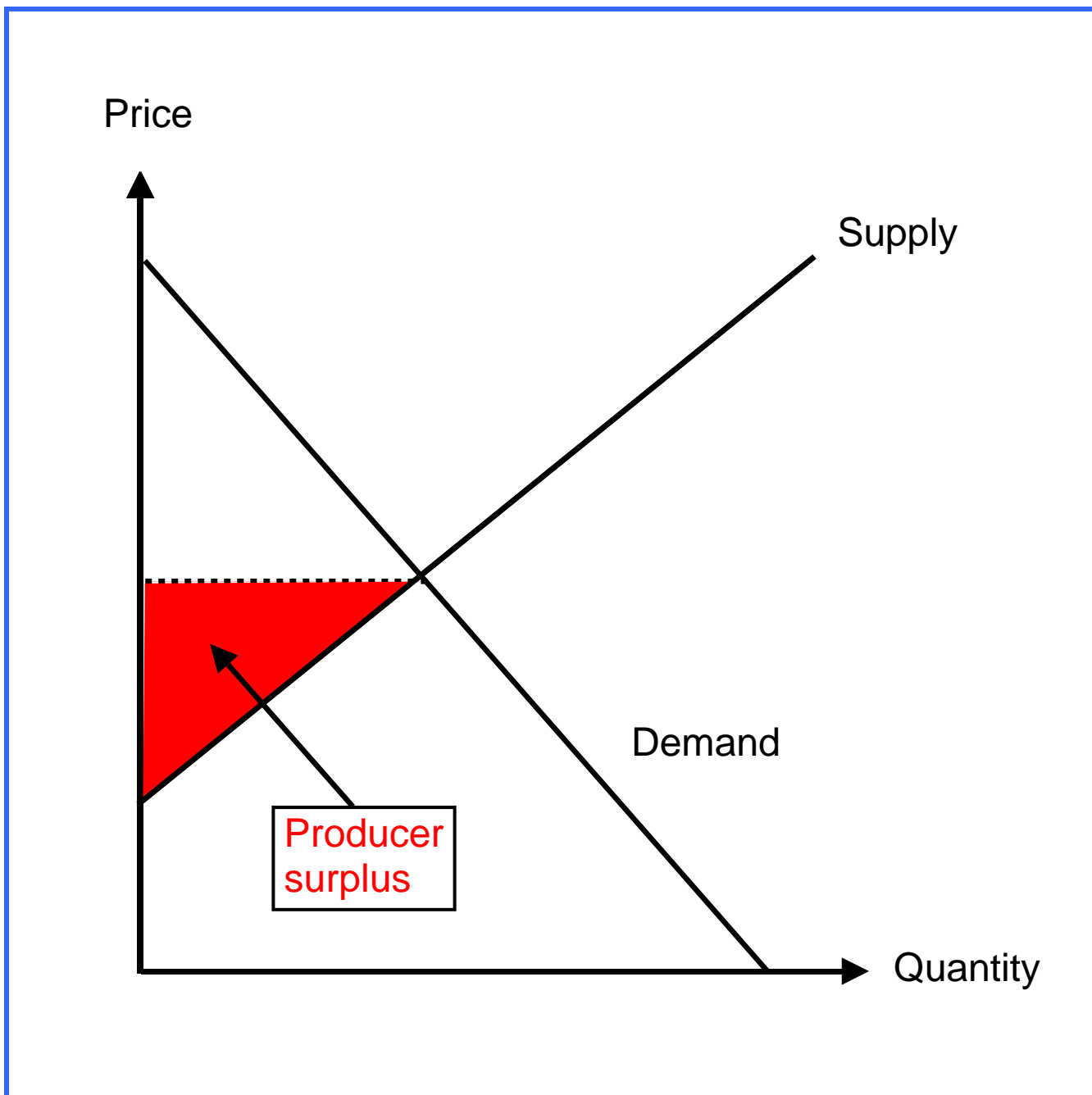
Price elasticity of demand 4 - Elasticity (e) and demand (D)



Price floor (minimum price)



Producer surplus

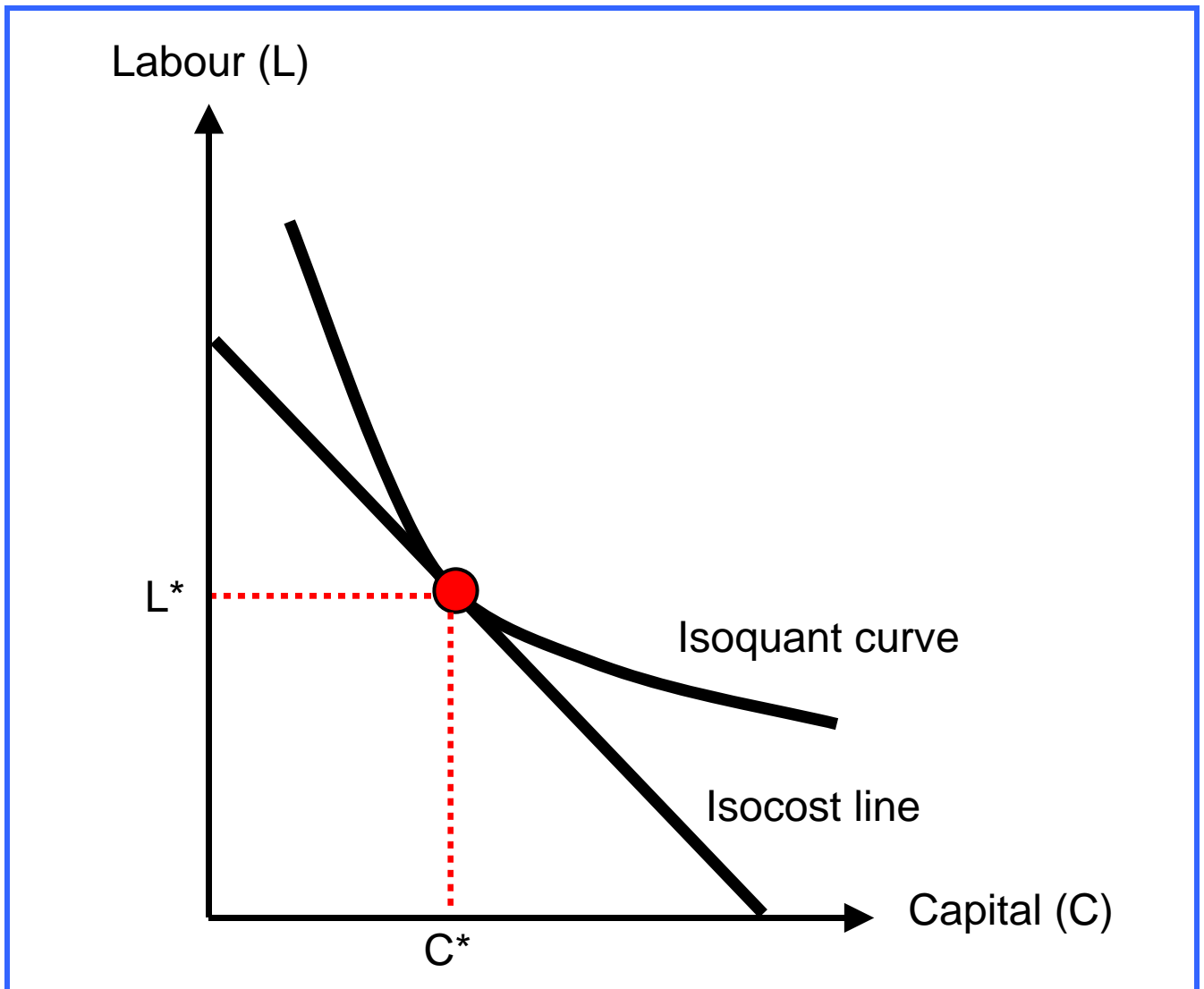


Production - minimum cost

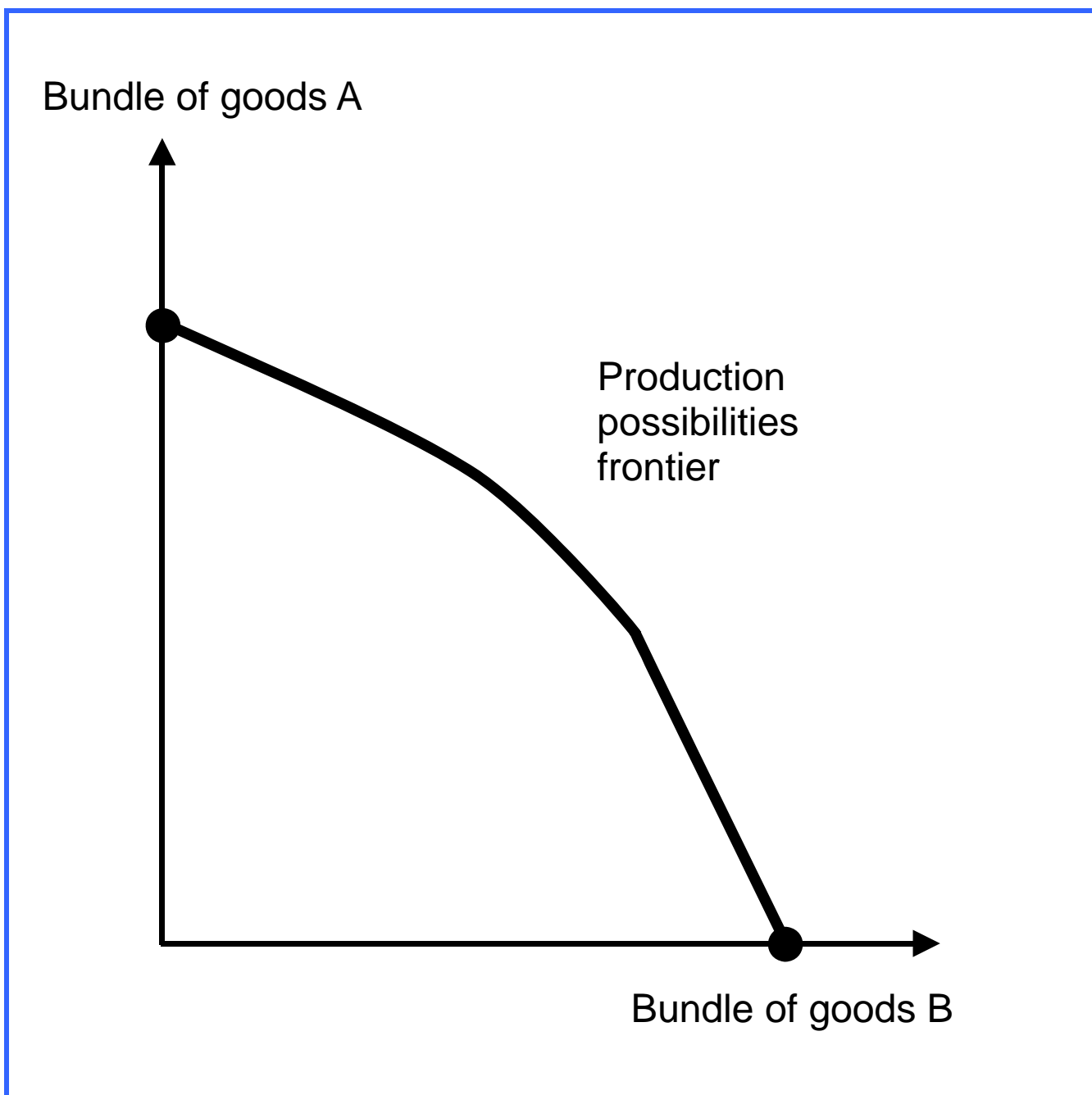
The minimum cost of production is at the point where the isocost line and the isoquant curve have the same slope, that is, where the isocost line touches the isoquant curve.

Information about

- the isoquant. [Click here!](#)
- the isocost. [Click here!](#)

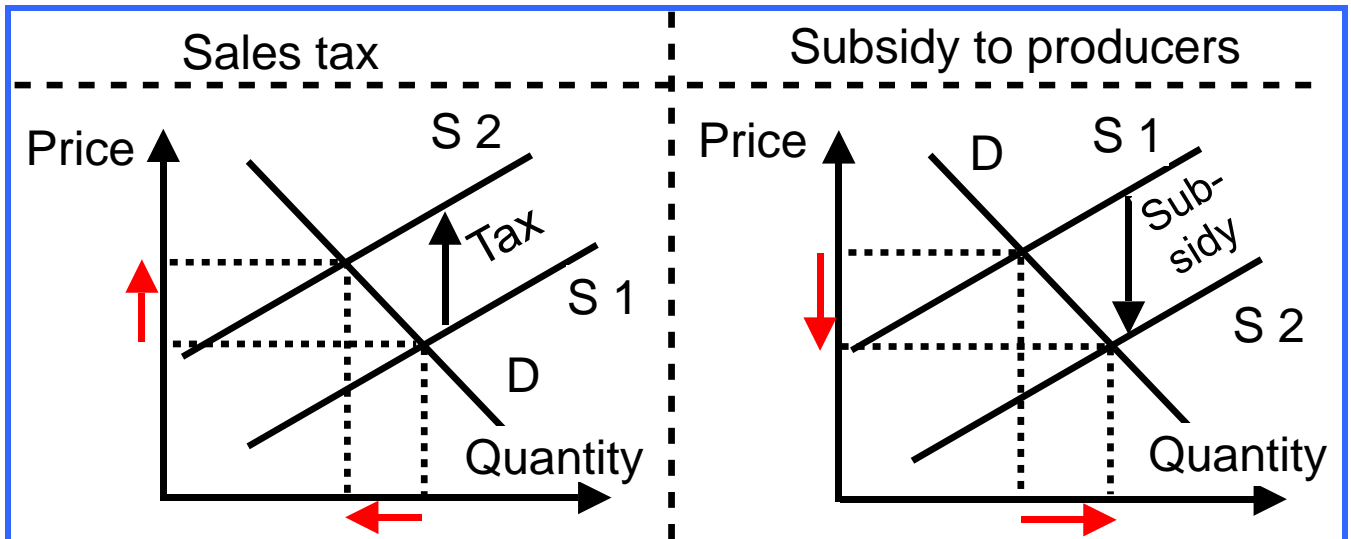


Production possibilities frontier

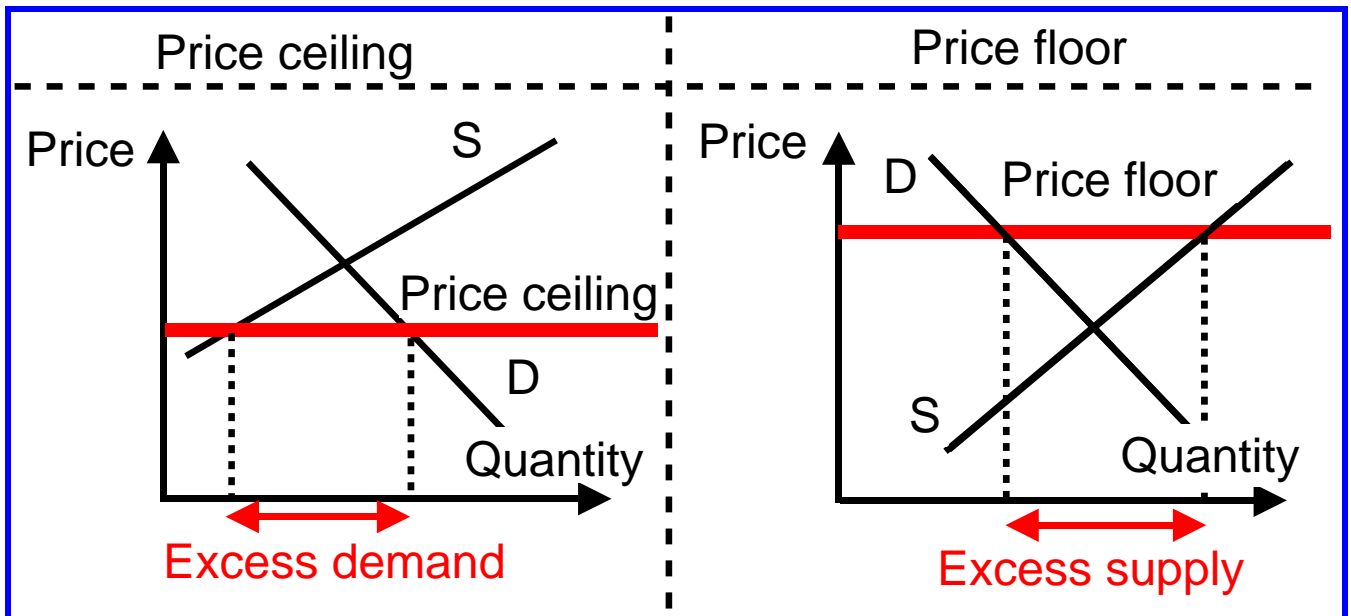


Public interference and market

① The public interference creates a **new equilibrium**.



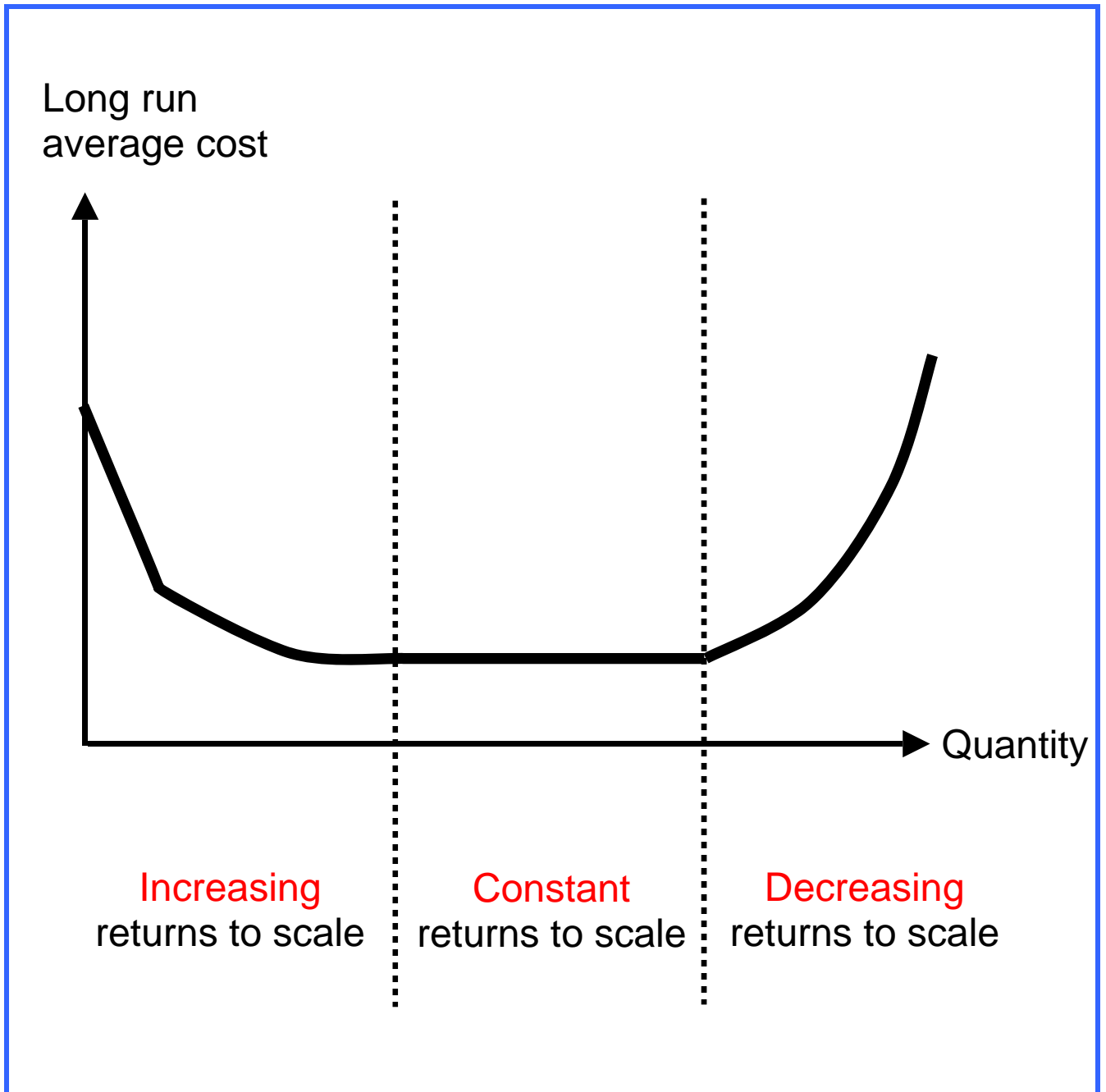
② The public interference creates a **disequilibrium**.



D = Demand

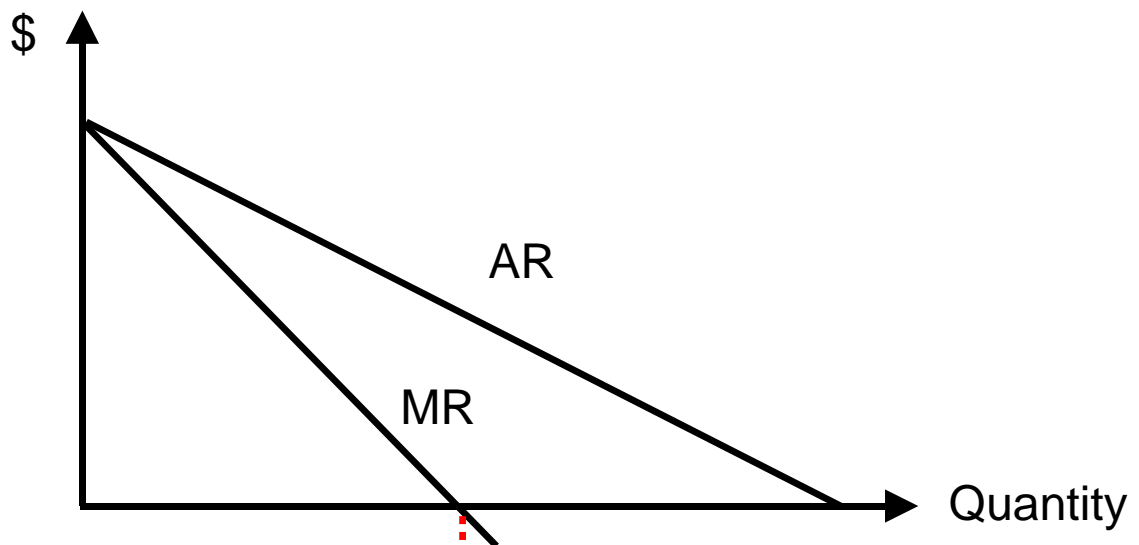
S = Supply

Returns to scale

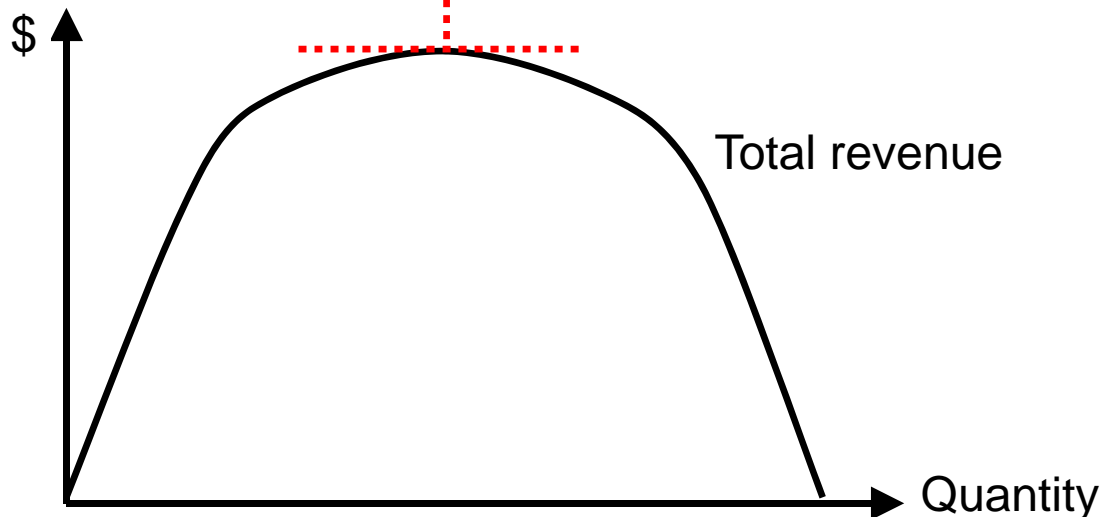


Revenue - marginal, average and total

1. Marginal revenue and average revenue

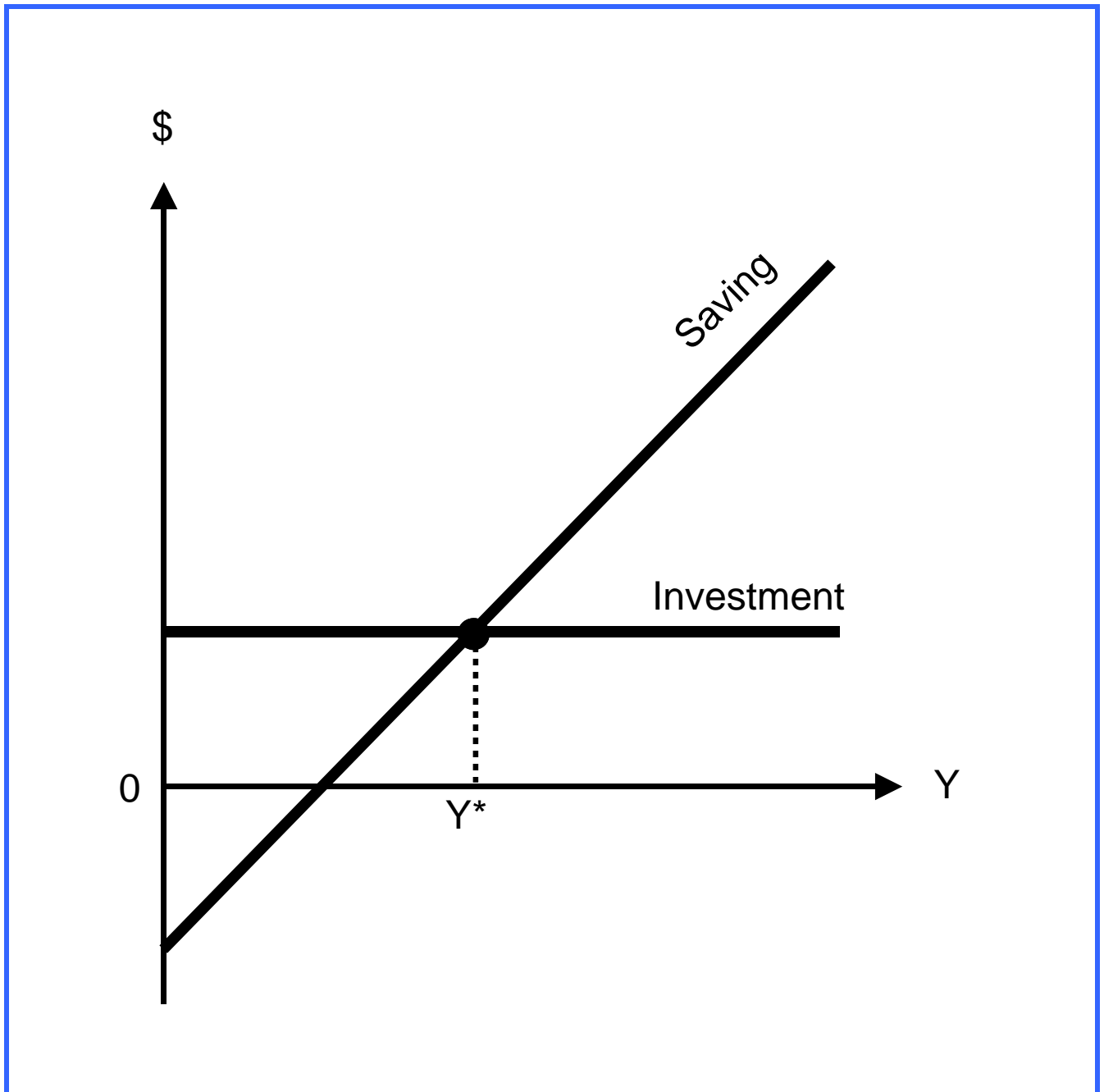


2. Total revenue



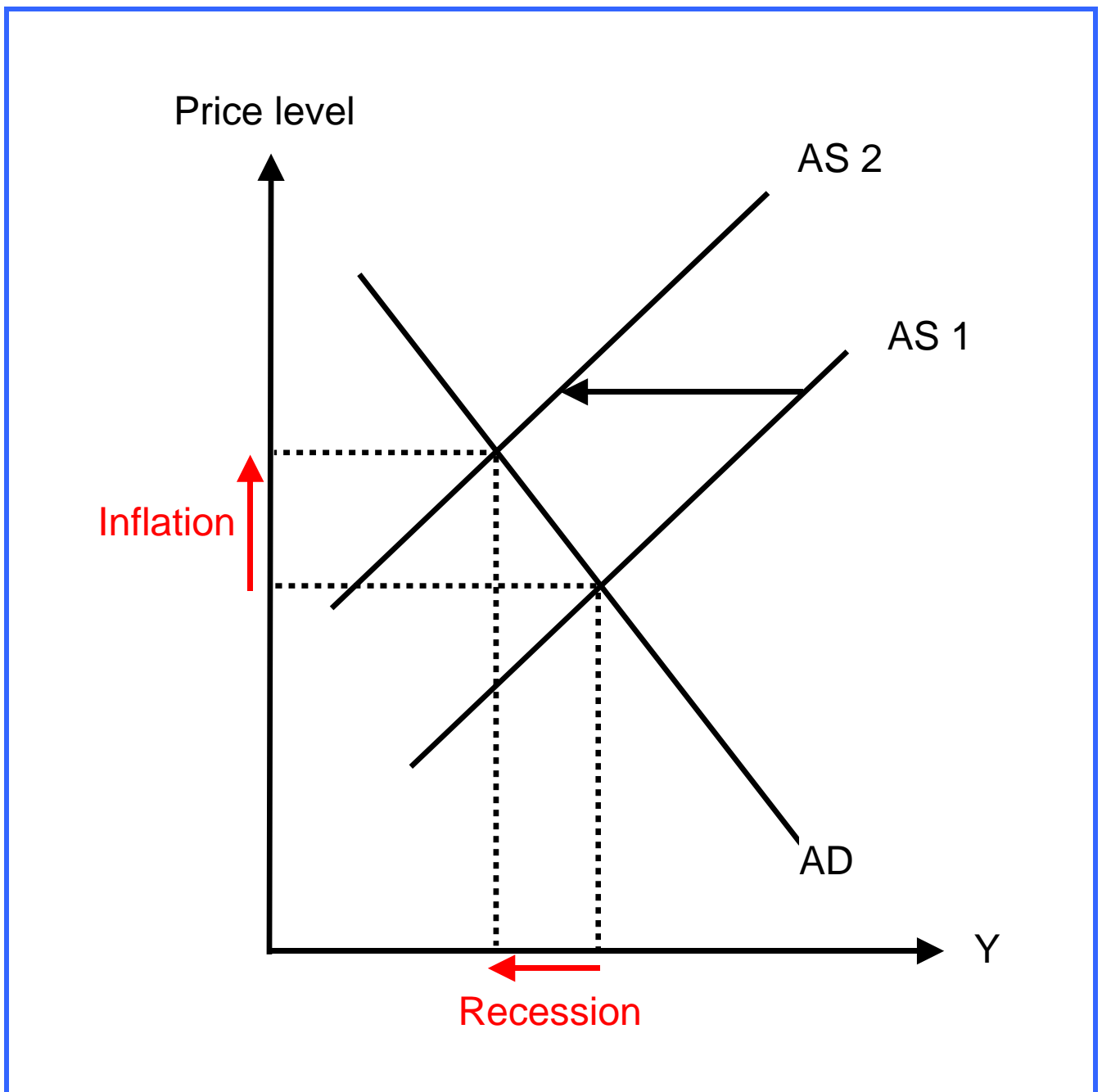
MR = Marginal revenue
AR = Average revenue

Saving and investment



Y = Output, income
 Y^* = Equilibrium of Y

Stagflation

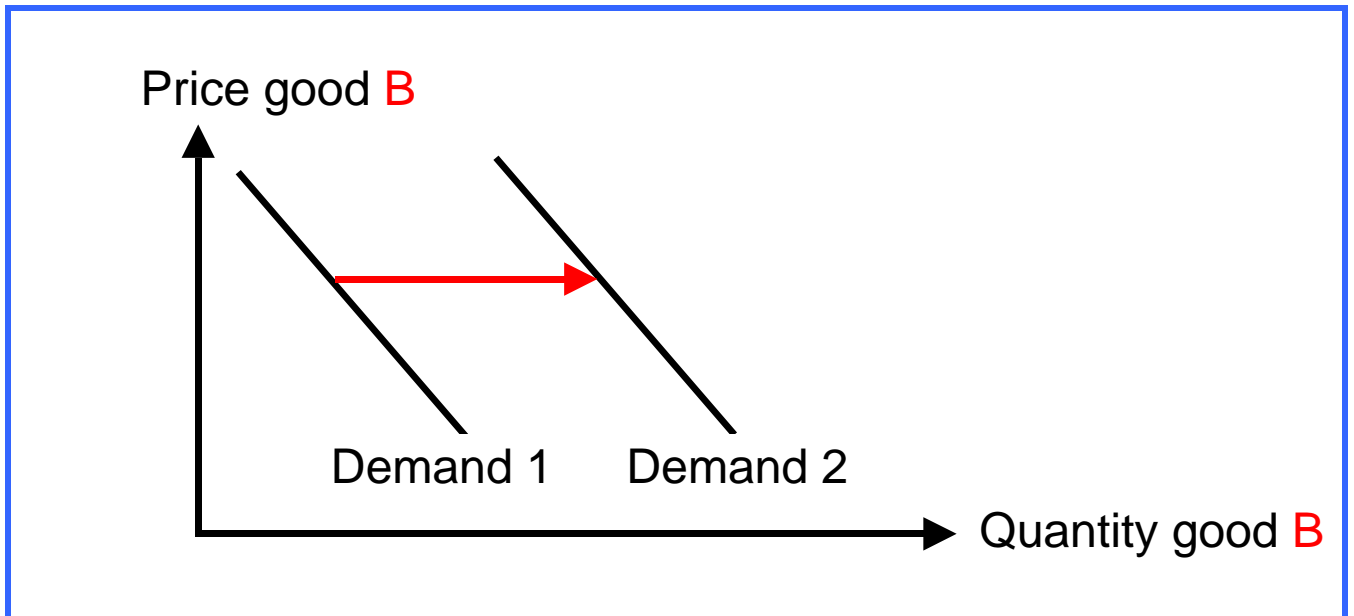


Y = Output, income
AD = Aggregate demand
AS = Aggregate supply

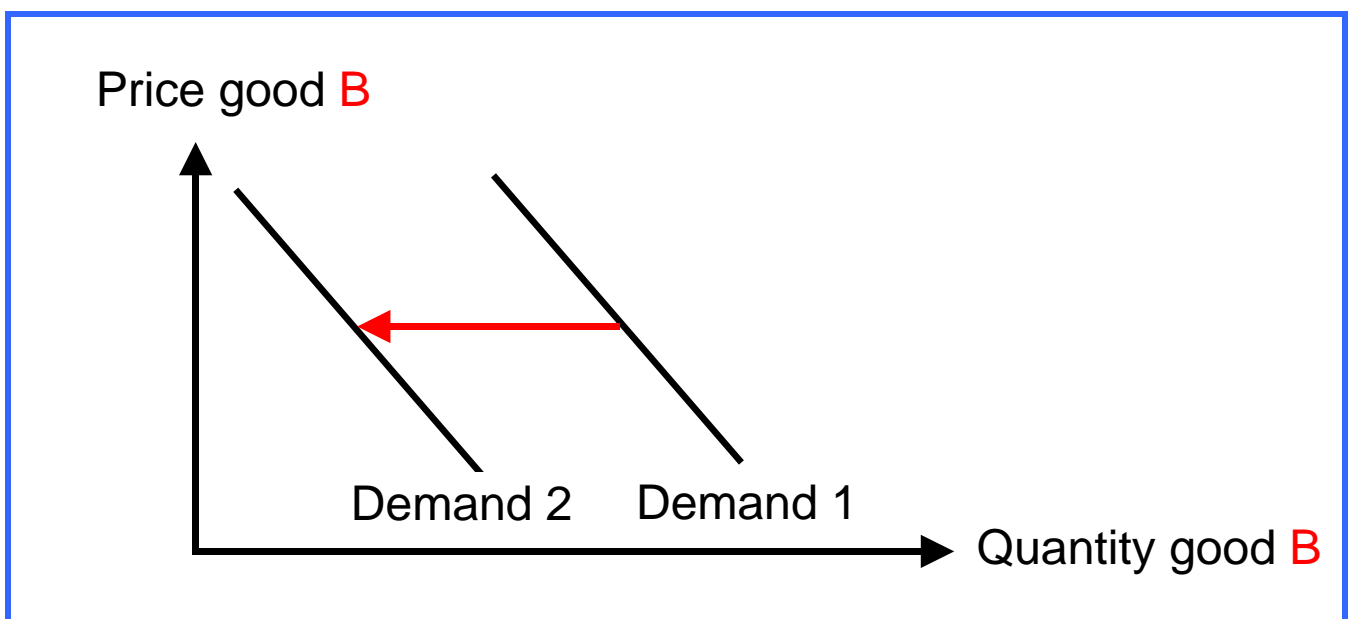
Substitutes

The goods A and B are substitutes.

- ① The price of good **A rises**. What happens to B?

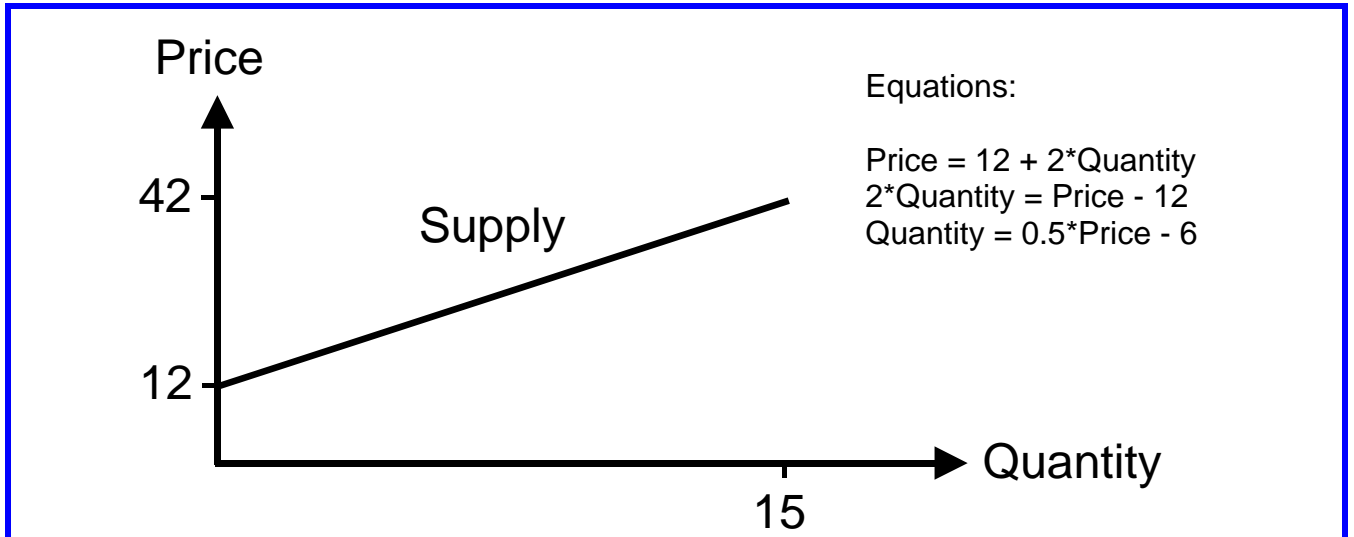


- ② The price of good **A falls**. What happens to B?

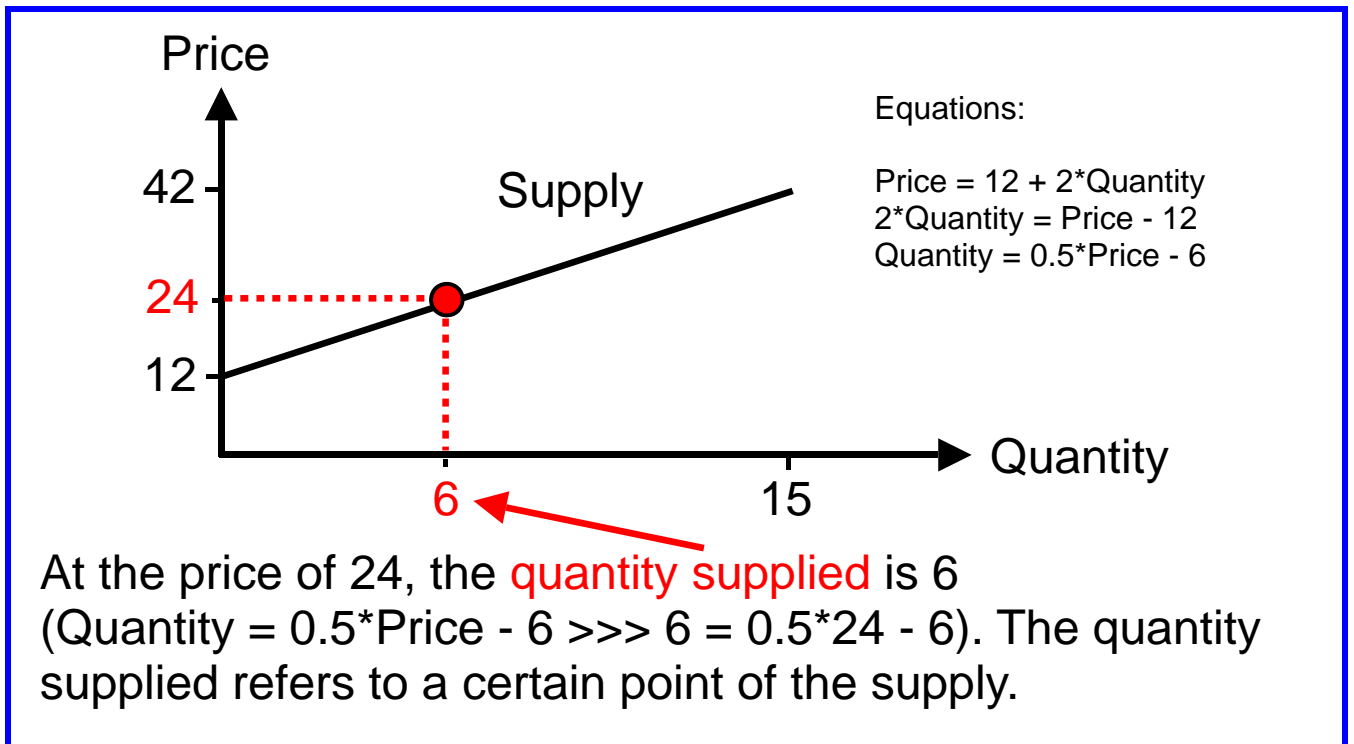


Supply and quantity supplied

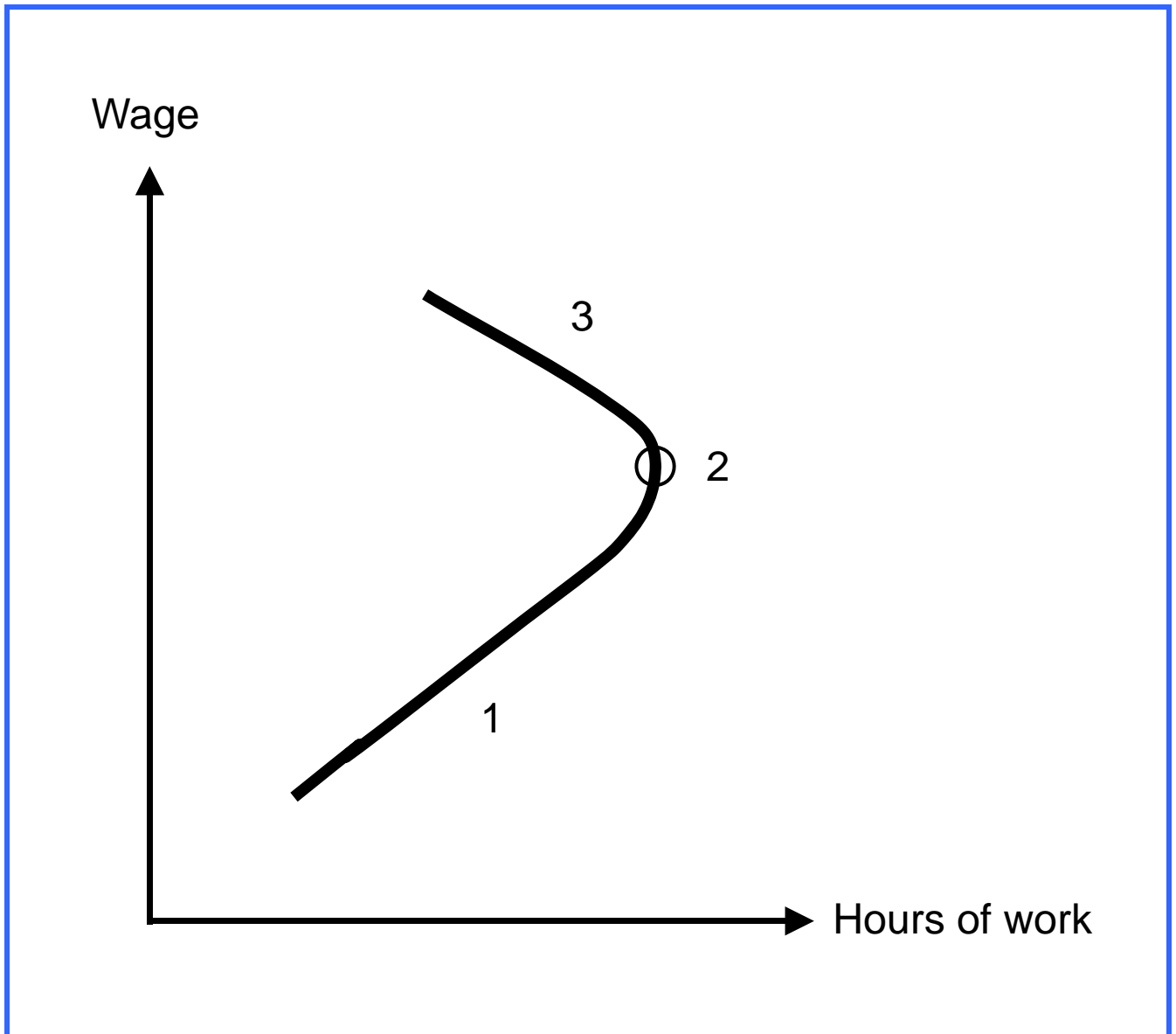
① Supply



② Quantity supplied

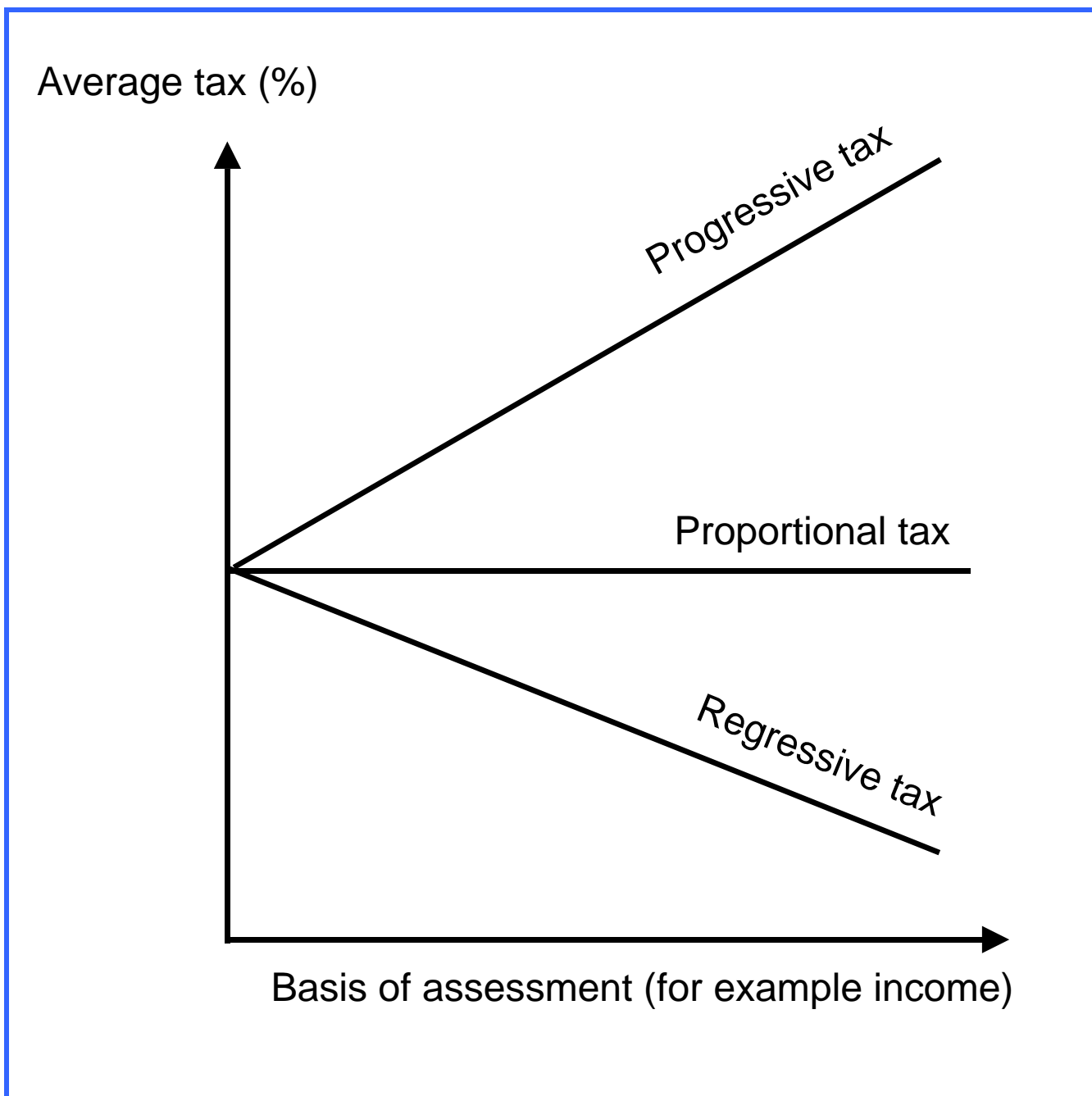


Supply of labour - individual



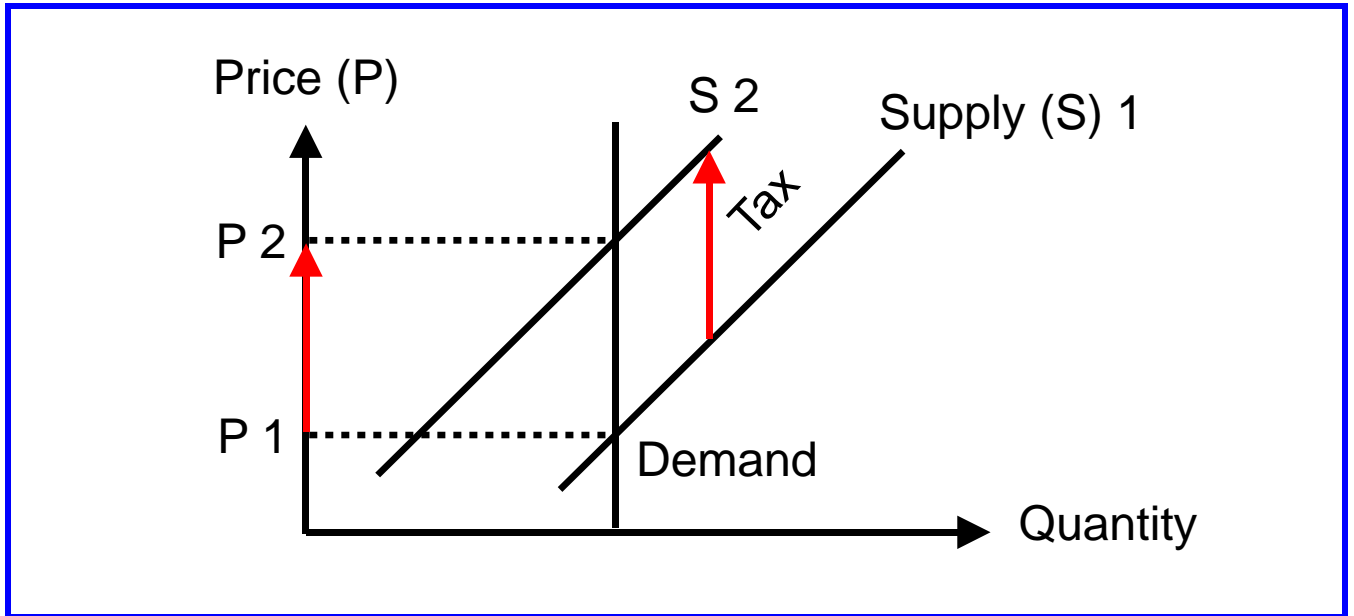
- 1 Substitution effect $>$ Income effect
- 2 Substitution effect = Income effect
- 3 Substitution effect $<$ Income effect

Tax - progressive, proportional and regressive

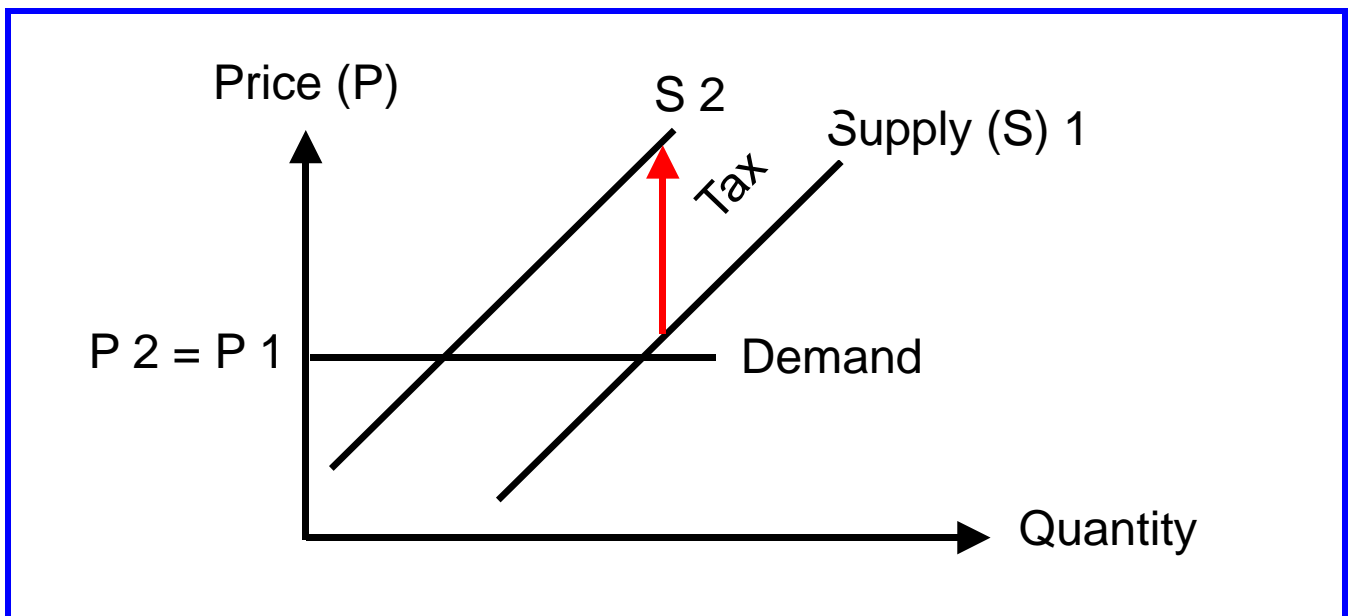


Tax incidence - extreme cases

- ① The tax is borne entirely by the **buyer**.

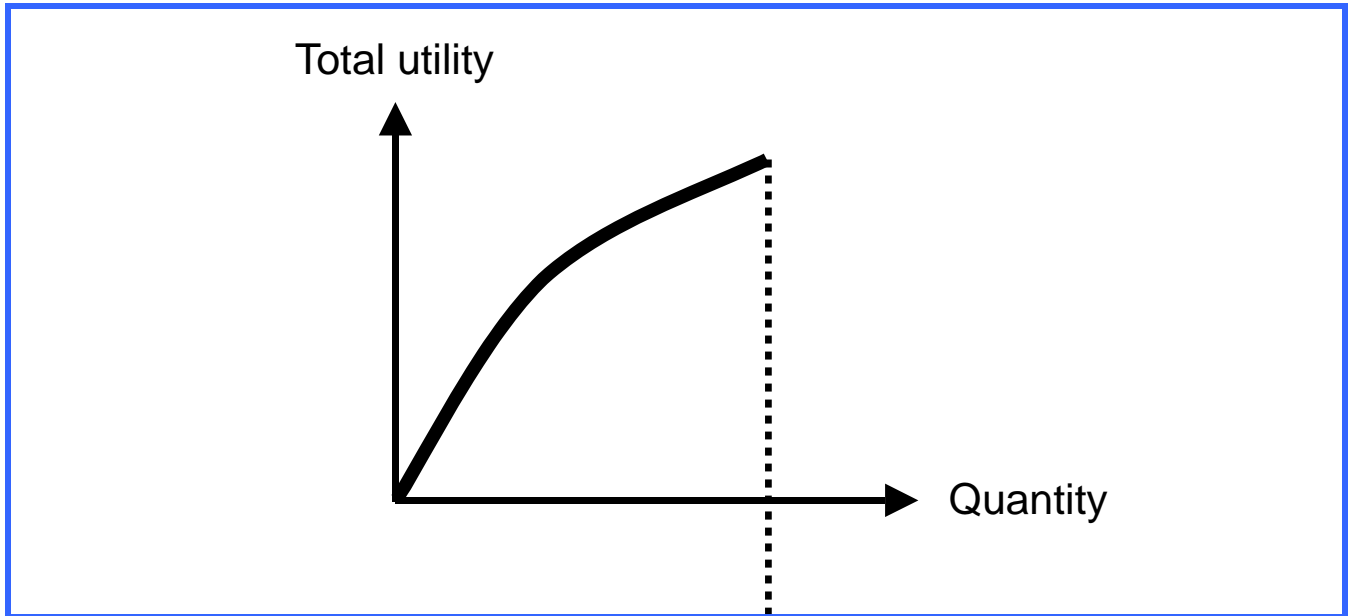


- ② The tax is borne entirely by the **seller**.

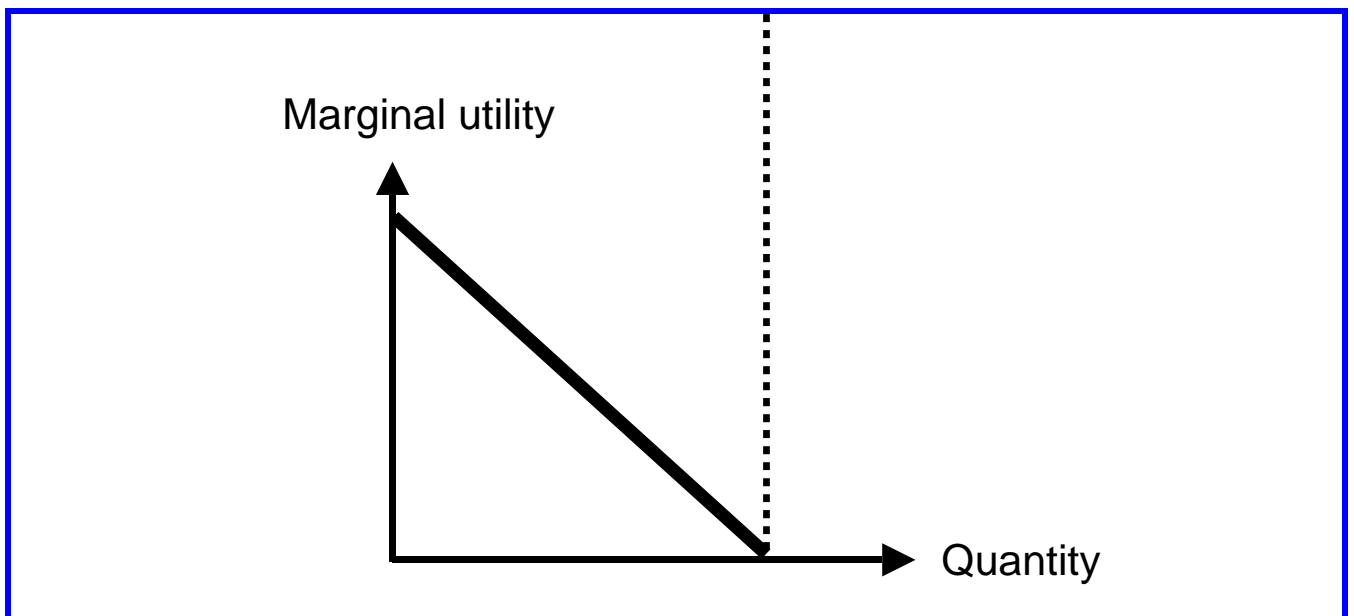


Utility - total and marginal

① Total utility



② Marginal utility



Welfare loss of a tax

