

# VWL Lernzettel state and market intervention

## Price determination on different kinds of markets:

A)

-> market is place where supply and demand meets

-> role of every market is to balance out sellers and buyers interest by a price

B)

**Equilibrium price** (= Gleichgewichtspreis) is where demand and supply "meet" -> quantity and supply are exactly the same

**Consumer surplus** (= Konsumentenrente) is the difference between what consumers are willing to pay and the equilibrium price -> the saved money because the price is lower than expected

**Producer surplus** is the difference between what producers had accepted as a price and the equilibrium price

=> calculated with the formular for the surface of a triangle!

## Mathematical determination of the equilibrium price:

$$Q_s = Q_d$$

$$10\,000p - 5\,000 = -10\,000p + 15\,000 \quad | + 5\,000$$

$$20\,000p = 20\,000$$

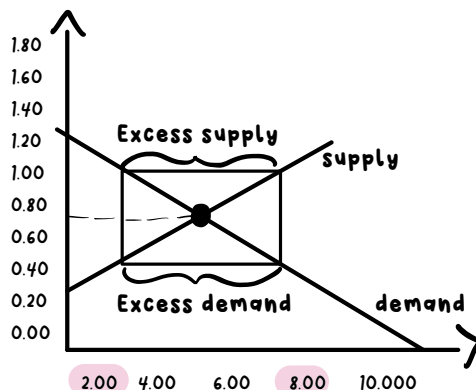
$$p^* = 1,00 \text{ Euro}$$

$$\rightarrow Q_s = 10\,000 \quad | \quad -5\,000 = 5\,000 \text{ units}$$

$$q^* = 5\,000$$

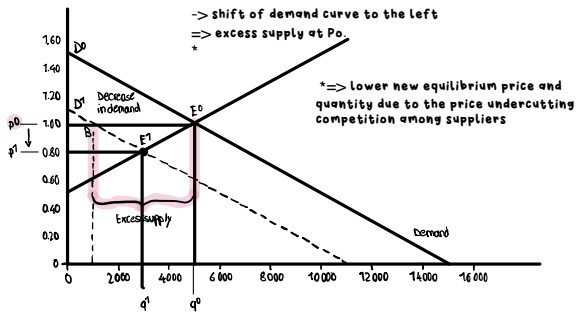
## Adjustment towards equilibrium price and excess demand/ excess supply

- the price is temporarily above the equilibrium price if the supply is bigger than demand -> excess supply
- the price is temporarily below the equilibrium price if the supply is too little -> excess demand

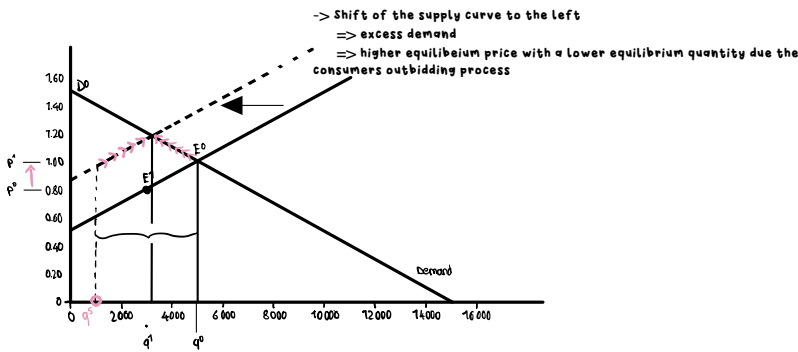


## Equilibrium pricechanges:

### Decrease in demand:



### Decrease in supply:



### Governmental intervention:

In a free market economy, the main function of the price is to balance out the selling plans of the suppliers and the buying plans of the consumers. In the model of a perfectly competitive market the result will be the formation of an equilibrium price.

**BUT**

Sometimes, people and/or the government are not happy with the result:

e.g maybe wages are too low

maybe rent for flats is too high

maybe the consumption of sugar/cigarettes/alcohol is too high -> health problems

As a consequences, the government will intervene in the market:

#### two possible intervention measures

##### Market-based/-compliant intervention (= marktkonforme Staatseingriffe)

the price mechanism is not disabled by the intervention, e.g quantity taxes, subsidies, duties

##### Non market-based intervention (=marktkontraere Staatseingriffe)

The price mechanism does not work anymore due to the state intervention, e.g floor price, ceiling price

### Impact on the welfare:

Governmental interventions influence the consumer and producer surplus. Often the market participants face a loss in the general/total welfare.

## The governmental market interventions:

The government wants to reduce energy consumptions with regard to the ever increasing global warming. There are different measures that could help to realise this objective.

The government has decided to introduce energy taxes in the form of quantity taxes. Thus, the producers have to pay a certain amount of money for each quantity unit of energy produced (e.g. per litre or kWh)

1) What impact do the planned taxes have on the market supply and / or market demand curves?

-> Market supply shifts to the left due to the compulsory higher price they have to use for every quantity offered

-> Market demand: no shift (there will be a movement, see 2)

2) How are equilibrium price and equilibrium quantity affected by the planned taxes?

-> Equilibrium price increase, equilibrium quantity decrease

-> Shift of supply curve to the left -> excess demand at the original price -> outbidding process of consumers (upward movement along the demand curve) -> simultaneously an increase in the quantity supplied due to rising price (=upward movement along the supply curve) -> new equilibrium is achieved

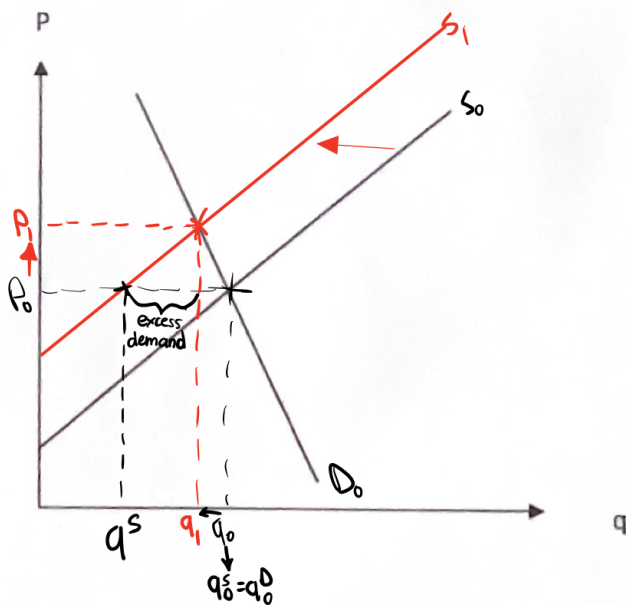


diagram 1: market before tax imposed

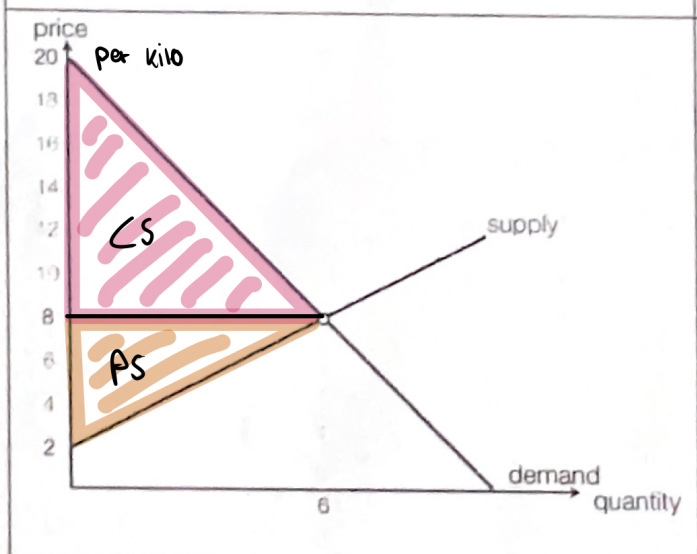
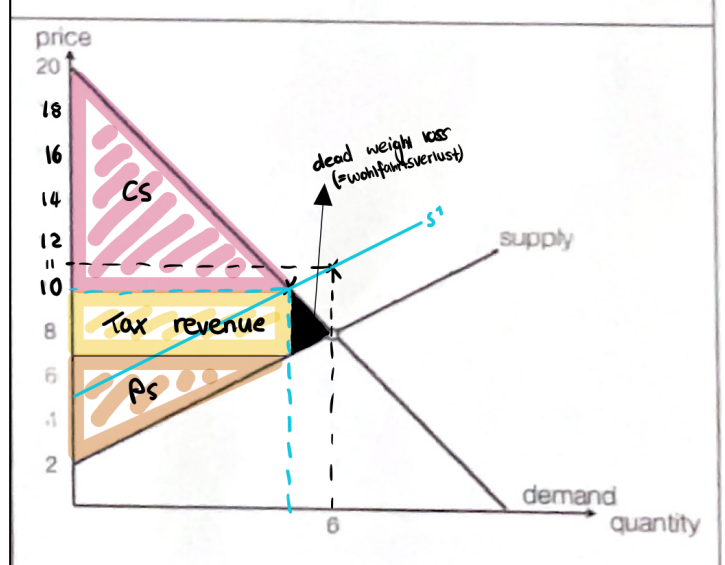


diagram 2: market after tax imposed



$$\text{consumer surplus} = \frac{(20-8) \cdot 6}{2} = 36 \text{ Euro}$$

$$\text{Producer surplus} = \frac{(8-2) \cdot 6}{2} = 18 \text{ Euro}$$

$$\begin{aligned} \text{Total welfare} &= \text{cons. surplus.} + \text{prod. sur.} \\ &= 36 + 18 \\ &= 54 \text{ Euro} \end{aligned}$$

$$\text{consumer surplus} = \frac{(20-10) \cdot 5}{2} = 25$$

$$\text{producer surplus} = \frac{(7-2) \cdot 5}{2} = 12,5$$

$$\text{tax revenue} = (10-7) \cdot 5 = 15$$

$$\begin{aligned} \text{total welfare} &= \text{CS} + \text{PS} + \text{tax revenue} \\ &= 52,5 \text{ Euro} \end{aligned}$$

### Welfare effects through quantity and profit taxes:

The producers have to bear the bigger share of the tax burden compared to the consumer. The reason for this is that the consumers elasticity of demand is higher than the elasticity of supply. Due to this, consumers can easily substitute the offered product by another one and the tax can only partly be passed onto them.

formulas:

- $\text{producer surplus} = \frac{(50-10) \cdot 40}{2}$

- $p-10 = -2p+140$

### Definition of 'Deadweight Loss' Description:

Deadweight loss can be stated as the loss of total welfare or the social surplus due to reasons like taxes or subsidies, price ceilings or floors, externalities and monopoly pricing.

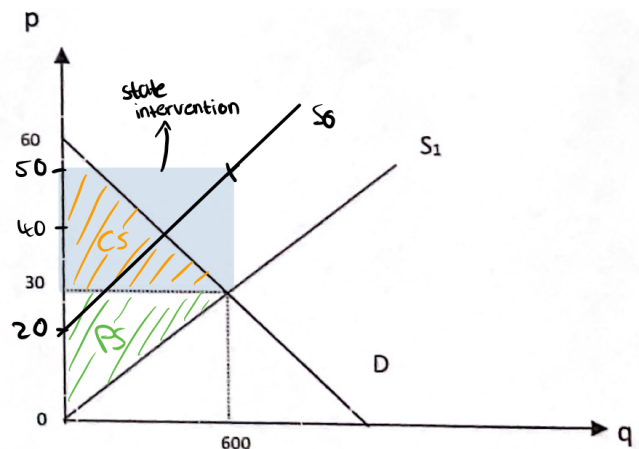
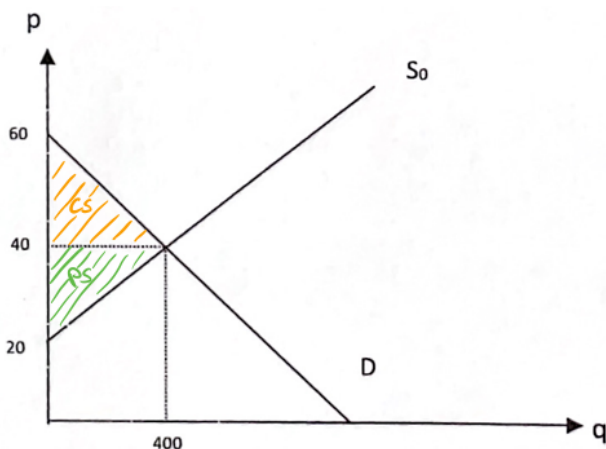
When supply and demand are out of equilibrium, creating a market inefficiency, a deadweight loss is created. Deadweight losses primarily arise from an inefficient allocation of resources, created by various interventions, such as price ceilings, price floors, monopolies, and taxes.

### Subsidy:

- financial payments from the government to companies -> aim to secure existence of those companies

1) What impact do the planned subsidy have on the market supply and / or market demand curve?

-> Market supply shifts to the right due to the lower production costs which make it possible to the product to a lower production costs



### Market before subsidy payment:

$$\text{consumer surplus} = \frac{(60-40) \cdot 400}{2} = 4.000 \text{ euro}$$

$$\text{producer surplus} = \frac{(40-20) \cdot 400}{2} = 4.000$$

$$\text{total welfare} = 8.000 \text{ Euro}$$

### market after subsidy payment:

$$\text{consumer surplus} = \frac{(60-30) \cdot 600}{2} = 9.000$$

$$\text{producer surplus} = \frac{(30-0) \cdot 600}{2} = 9.000$$

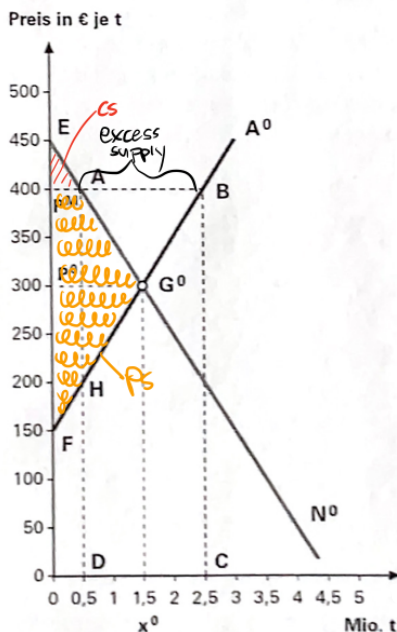
$$\text{State expenditure} = 20 \text{ euro/unit} \cdot 600 = 12.000$$

$$\text{Total welfare} = \text{CS} + \text{PS} - \text{SE} = 6.000$$

### Minimum price:

The state may set minimum prices which cannot be undercut, that means that the minimum price must be higher than the equilibrium price. The intention of setting a minimum price is to promote a certain group of producers or suppliers, .g. in the agricultural market or the labour market (minimum wage).

"Farming can see volatile prices because supply can vary and demand is price inelastic. This means that one season could lead to an increase in supply and falling prices. This could risk putting farmers out of business because low prices lead to low incomes. In this case, the government may wish to intervene.



### Market before minimum price:

$$\text{Consumer surplus} = \frac{(450-300) \cdot 1,5}{2} = 112,5 \text{ mio Euro}$$

$$\text{Producer surplus} = \frac{(300-150) \cdot 1,5}{2} = 112,5 \text{ mio Euro}$$

$$\text{Total welfare} = 224 \text{ mio Euro}$$

### Market after minimum price:

$$\text{Consumer surplus} = \frac{(450-400) \cdot 0,5}{2} = 12,5 \text{ mio Euro}$$

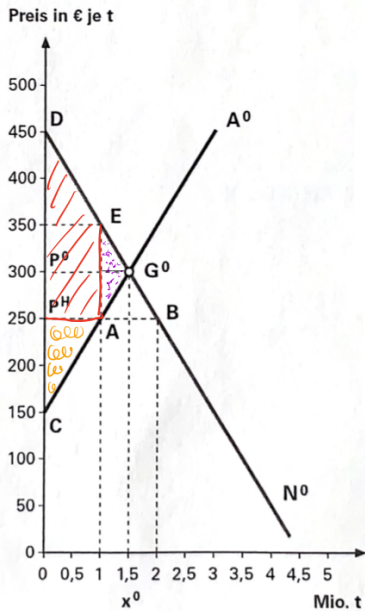
$$\text{Producer surplus} = \frac{(400-150) \cdot 2,5}{2} = 312,5 \text{ mio Euro}$$

$$\text{State expenditure} = (2,5 - 0,5 \text{ mio}) \cdot 400 = 800 \text{ mio Euro}$$

$$\text{Total welfare} = (\text{S} + \text{PS} - \text{State exp}) = - 475 \text{ mio Euro}$$

## Maximum price:

The state may set maximum prices which may not be exceeded, that means that the maximum price must be lower than the equilibrium price. Typical cases for ceiling prices are rent restrictions and price control for important basic foodstuff.



## Effects of a maximum price:

price below equilibrium price  
> quantity supplied decreases and quantity demanded increases

> excess demand -> „normal reaction of market“? => increase of price - Problem: price mechanism of market cannot work due to maximum price

## Consequences:

-> state has to interfere further in the market to distribute the scarce supply fairly (allocation & control system)  
-> emergency of black market

## Market before maximum price

Consumer surplus = 112,5 m. €

Producer surplus = 112,5 m. €

Total welfare = 225 m. €

## Market after maximum price

Consumer surplus =  $\frac{(450-350) \cdot 1 + (50-250) \cdot 1}{2} = 150 \text{ mio } €$

Producer surplus =  $\frac{(250-150) \cdot 1}{2} = 50 \text{ m } €$

State expenditure = zero

Total welfare = 200 m. €

## Profit maximum in a perfect monopoly:

Definition: Price-sales-curve (PSC) (=Preis - Absatzfunktion)

The price-sales curve shows which quantity a monopolist can sell at a certain price that is set by himself as single supplier -> price maker.

(difference to a perfect polypoly: sellers cannot set the price, they are price takers)

=> In a monopoly the price-sales curve is identical to the market demand (=Nachfrage)

Total Revenue = price • quantity

Total Fixed cost = stay the same

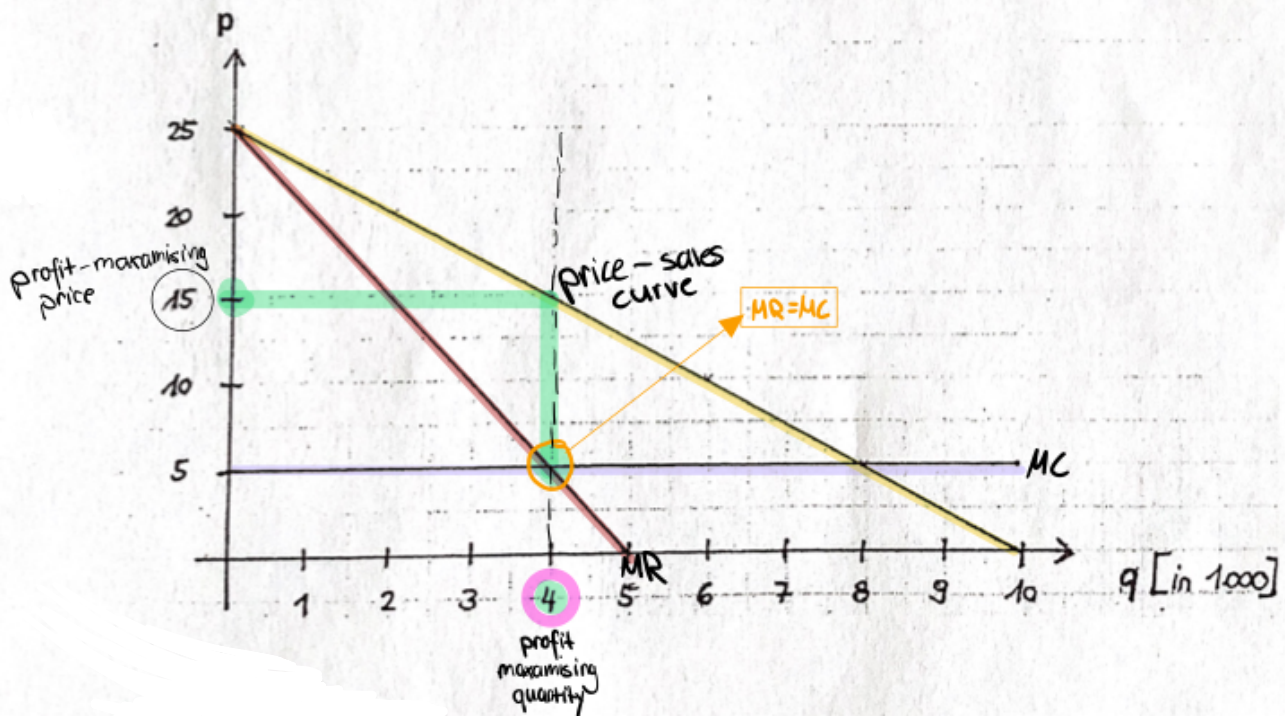
Total variable cost =

Total cost = TFC + TVC

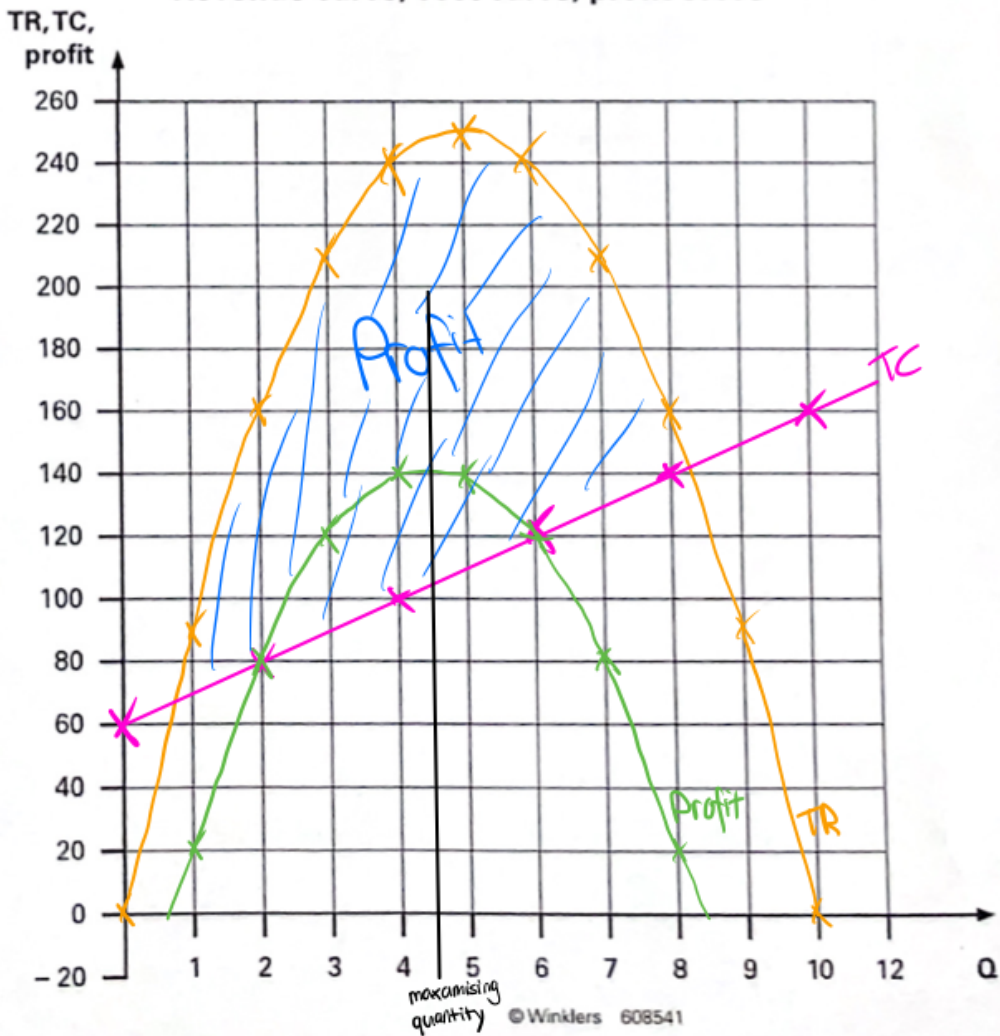
Profit/Loss = TR - TC

Marginal Revenue = Difference TR / Difference Q

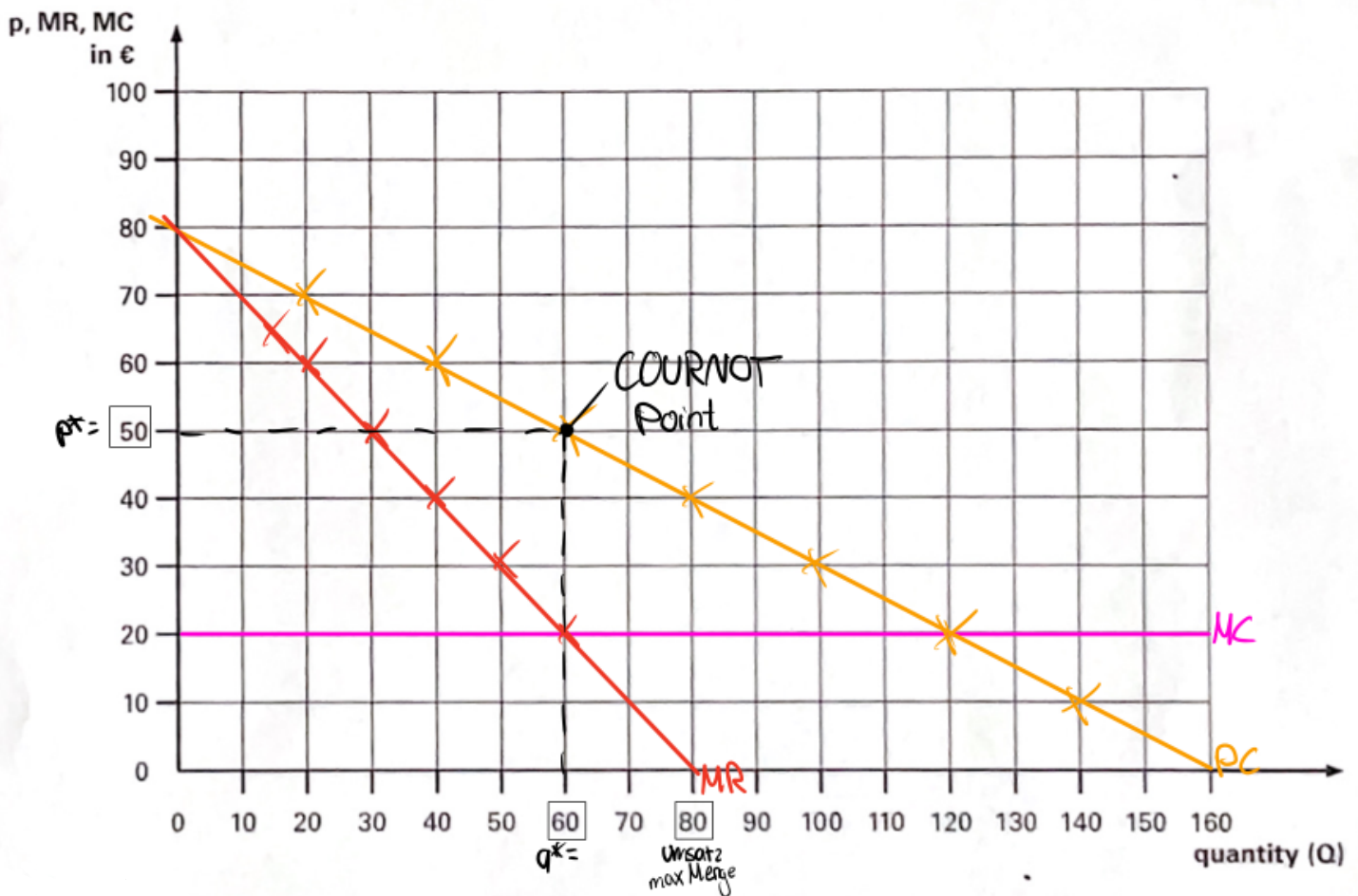
Marginal Cost = Difference TC / Difference Q



Revenue curve, cost curve, profit curve



## Price-sales curve, marginal revenue curve, marginal cost curve



### What is a Monopoly?

A monopoly is a dominant position of an industry or a sector by one company, to the point of excluding all other viable competitors.

- A monopoly consists of a single company that dominates an industry.
- A monopoly can develop naturally or be government-sanctioned for particular reasons.
- However, a company can gain or maintain a monopoly position through unfair practices that stifle competition and deny consumers a choice.

### What is a polypoly?

The presence of a large number of relatively small buyers and sellers, none of whom can influence the price of commodities.

### What is an Oligopoly?

An oligopoly is a market structure with a small number of firms, none of which can keep the others from having significant influence. The concentration ratio measures the market share of the largest firms.

- The term "oligopoly" refers to a small number of producers working, either explicitly or tacitly, to restrict output and/or fix prices, in order to achieve above normal market returns.
- Economic, legal, and technological factors can contribute to the formation and maintenance, or dissolution, of oligopolies.
- The major difficulty that oligopolies face is the prisoner's dilemma that each member faces, which encourages each member to cheat.
- Government policy can discourage or encourage oligopolistic behavior, and firms in mixed economies often seek government blessing for ways to limit competition.



