Microeconomics 3

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Agenda for today

- class organization, information & contact
- course requirements
- readings
- introduction – partial equilibrium: demand, supply, consumer/producer surplus, efficiency
- what will follow…?

Class organization

- **seminar** class – active participation is expected!
- short theoretical introductions – reading specified chapters before class is expected!
- problem-solving – volunteers
- case studies – discussion – if time permits
- short tests – 5 per semester (dates not announced)
- debate

Class information & contact

- 15:00 Group 4, room A101
- 16:45 Group 5, room A101
- http://www.microeconomics.wne.uw.edu.pl (Micro 3)
- kmetelska@wne.uw.edu.pl
- office hours: Mon 12:00-13:00 (with some exceptions), room B005 (email in advance is required!)

Course requirements

- maximum total score = 100 points
- 3 elements:
  A) active participation in class (25%)
  B) participation in a group debate (15%)
  C) final exam (single-choice test) (60%)
- details: www.microeconomics.wne.uw.edu.pl

Active participation in class

- 5 short tests
  - 5 minutes at the beginning of class
  - without prior announcement
  - 5 x 4 points (max)
- problem-solving as volunteers on the board
  - 4 points (max) / problem
- total: max 25 points

Participation in a group debate

- proposed topics (decision next week) :
  - Should marihuana be legal?
  - Should vaccination be obligatory?
- detailed organization (discussed next week)
  - check material on course website, moderator and 6 groups
  - proposed date: **JAN 13, 2025**
- assessment:
  - Microeconomics3-related content of the argumentation presented by the participant's subgroup (max 10 points)
  - individual participant's presentation method (max 5 points)
  - moderator – quality of the moderation and effective organization of the debate
- total: max 15 points

Course requirements contd.

- to pass the course it is required to obtain:

  at least 50% of the maximum exam score

  AND

  at least 50% of the maximum total score

- it is only allowed to retake the exam
- presence in class is obligatory (>2 absences without formal justification = failing the course)
- grading scale:

<90,100>	5	<60,70)	3+
<80,90)	4+	<50,60)	3
<70,80)	4	<0,50)	2

Readings

- Handbook: Varian Hal R. (2019), Intermediate Microeconomics: a modern approach, W. W. Norton (also in ebook format).
- Workouts: Bergstrom T.C., H.R. Varian (2009), Test bank for Intermediate Microeconomics A Modern Approach, W. W. Norton.

- Additional handbooks: Borland (2008); Masfield and Yohe (2003); Mansfield and Peoples (2003); Pindyck and Rubinfeld (2004)…
- Additional workouts: Bergstrom and Varian (2014)

Partial equilibrium

- partial equilibrium in the (purely competitive) market for good *x* is the point, where at a given price (equilibrium price) quantity demanded becomes equal to quantity supplied

$\Downarrow$

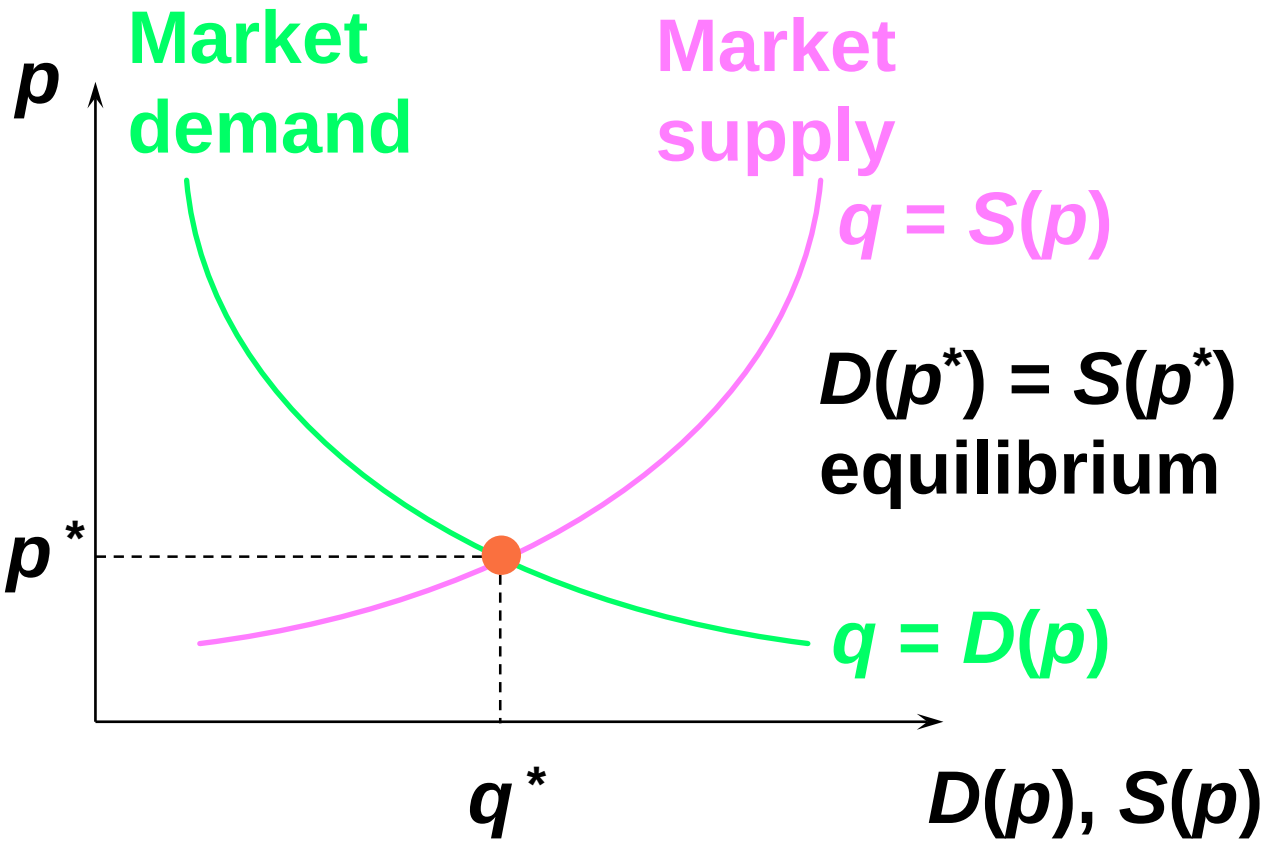
the quantity that consumers are willing to and can buy is equal to the quantity that producers are willing to and can supply

- we can find the equilibrium point by equalizing the demand and supply functions, i.e.:

$$D(p^*) = S(p^*) \text{ or } P_D(q^*) = P_S(q^*)$$

- in the equilibrium point the demand and supply curves intersect

Example – graph



This equilibrium is a *partial* equilibrium because we omit relationships between prices and quantities in other markets.

Demand and supply

Supply (upward-sloping)

- ↑S (shift to the right) => ↑Q ↓P
- Changes in supplied quantity – movement along the supply curve caused by price changes
- Changes of supply – shifts of the supply curve caused e.g. by changes in production costs

Demand (downward-sloping)

- ↑D (shift to the right) => ↑Q ↑P
- Changes in demanded quantity – movement along the demand curve caused by price changes
- Changes of demand – shifts of the demand curve caused e.g. by changes in consumer income or preferences

Algebraic example

- Assume linear demand and supply curves:

$$D(p) = a - bp, \; S(p) = c + dp$$

Find optimal p* and q*.

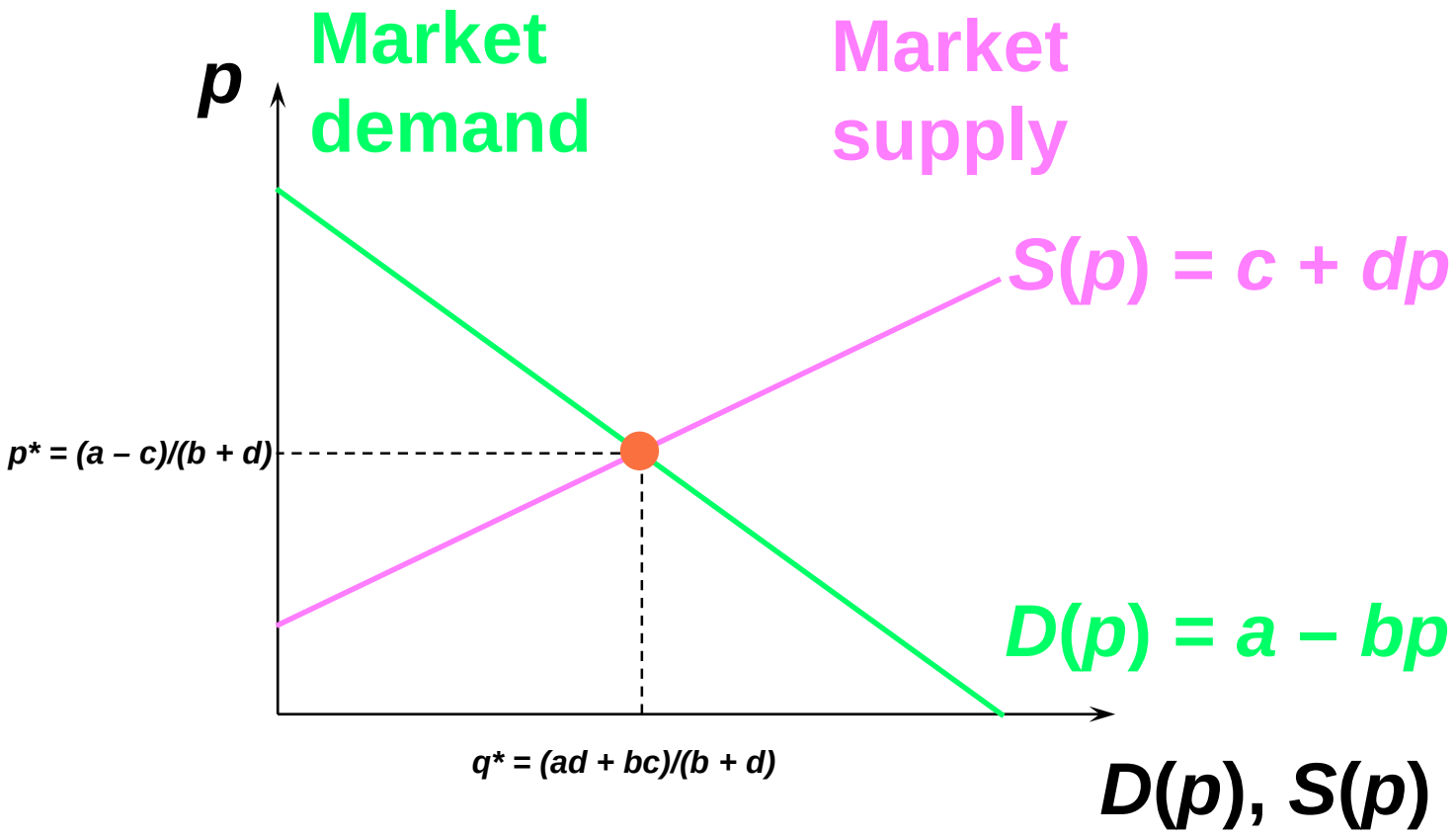
- We equalize:

$$a - bp^* = c + dp^*$$

- We obtain: $p^* = (a - c)/(b + d)$

$$q^* = D(p^0) = S(p^0) = (ad + bc)/(b + d)$$

Example – graph contd.



Example contd.

- We can do the same for inverted functions:

$$q = D(p) = a - bp \Leftrightarrow p = \frac{a-q}{b} = D^{-1}(q),$$

(inverted market demand curve)

$$q = S(p) = c + dp \Leftrightarrow p = \frac{-c+q}{d} = S^{-1}(q),$$

(inverted market supply curve)

$$\Downarrow$$

$$\frac{a-q^*}{b} = \frac{-c+q^*}{d}$$

Example contd.

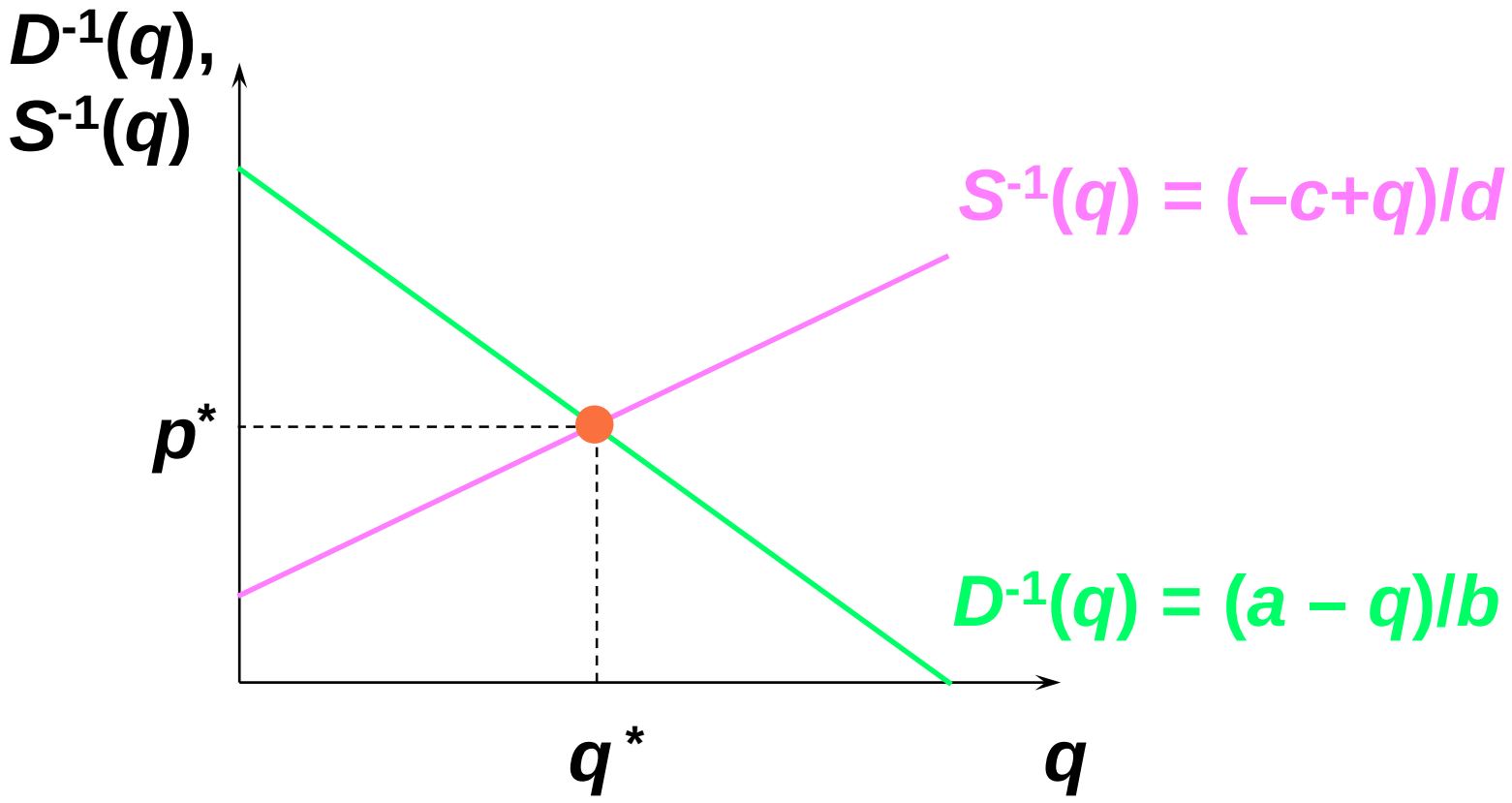
$$\frac{a - q^*}{b} = \frac{-c + q^*}{d}$$

Solution:

$$q^* = \frac{ad + bc}{b + d}$$

$$p^* = D^{-1}(q^*) = S^{-1}(q^*) = \frac{a - c}{b + d}.$$

Example – graph contd.

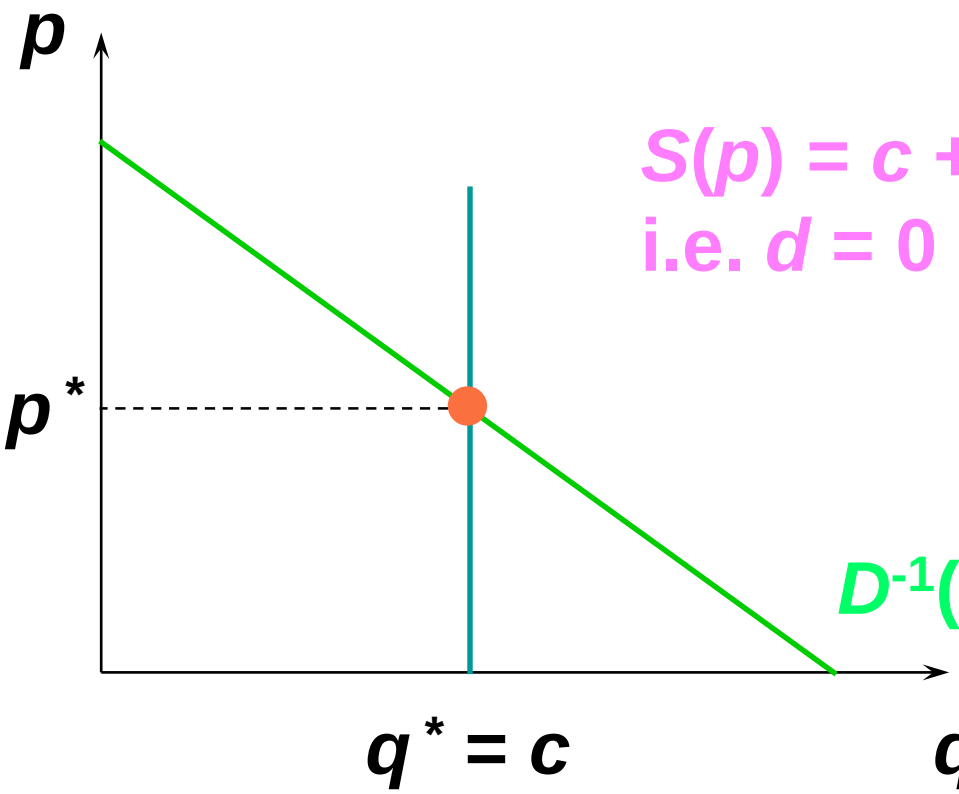


in equilibrium: $D^{-1}(q^*) = S^{-1}(q^*)$

Special cases

- The supply curve is perfectly inelastic (vertical), i.e. supply is constant and does not depend on the market price
- The supply curve is perfectly elastic (horizontal), i.e. supply is extremely sensitive to market price changes (this is the case of pure competition in the long run)

Special case #1

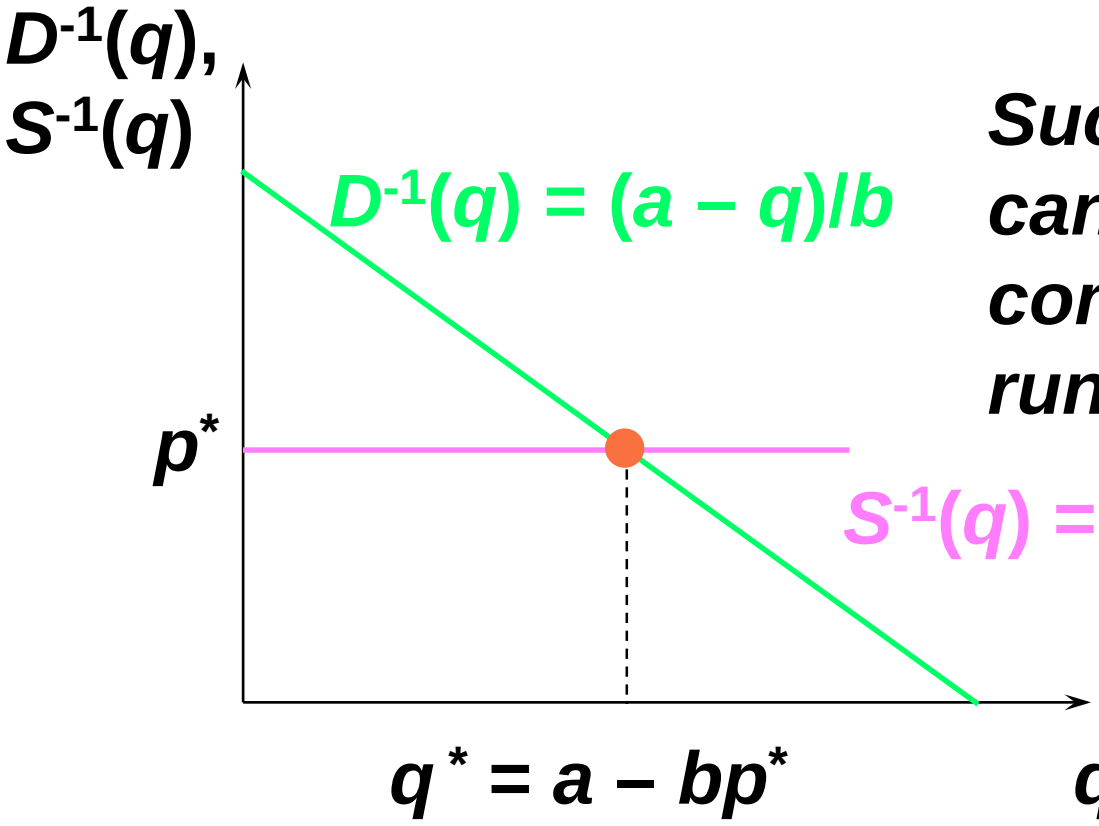


$S(p) = c + dp$,
i.e. $d = 0$ and $S(p) \equiv c$.

$D^{-1}(q) = (a - q)/b$

Market supply is constant and does not depend on price.

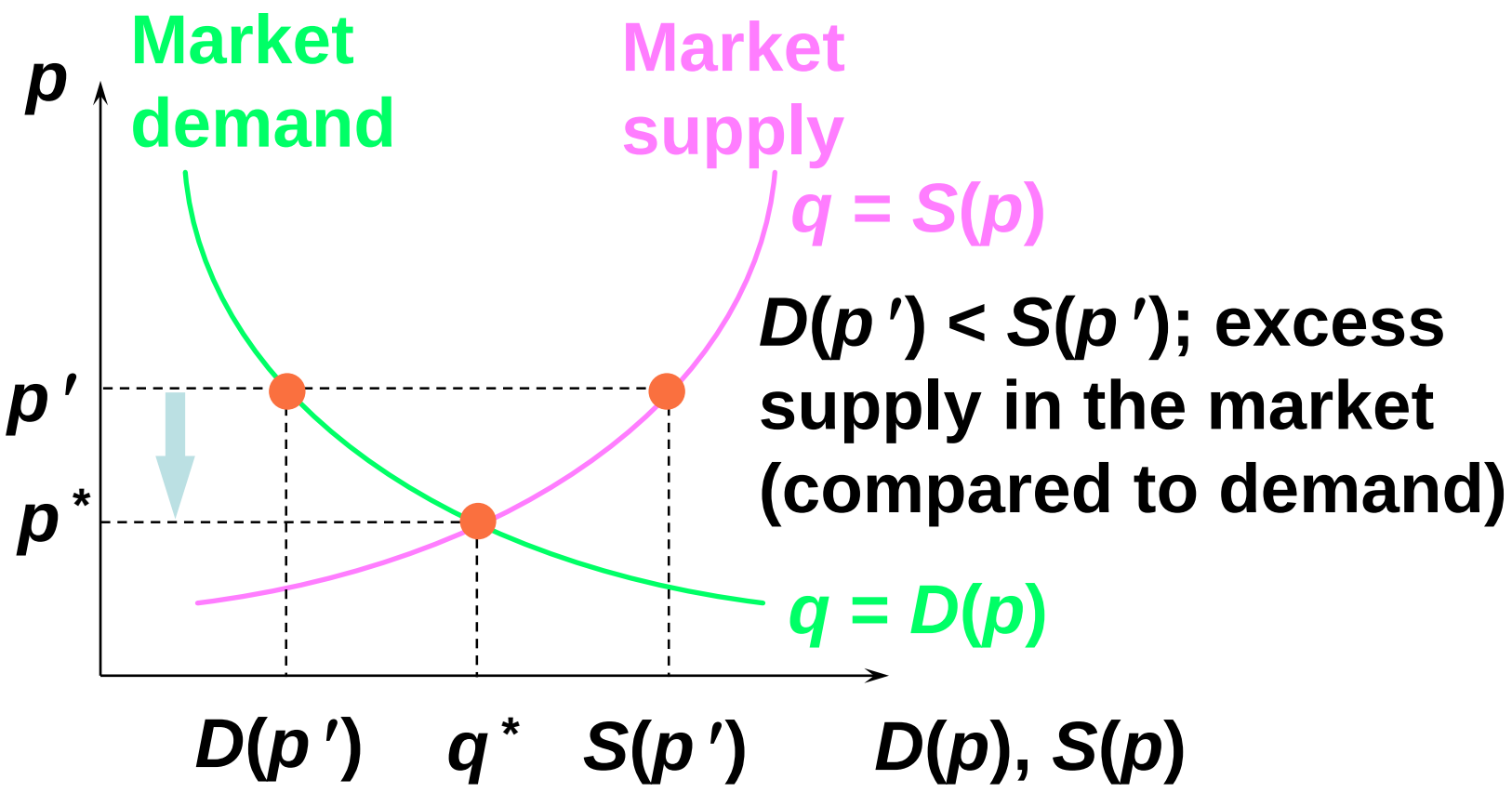
Special case #2



Such a supply curve can be found in pure competition in the long run

Market supply is extermely sensitive to price changes.

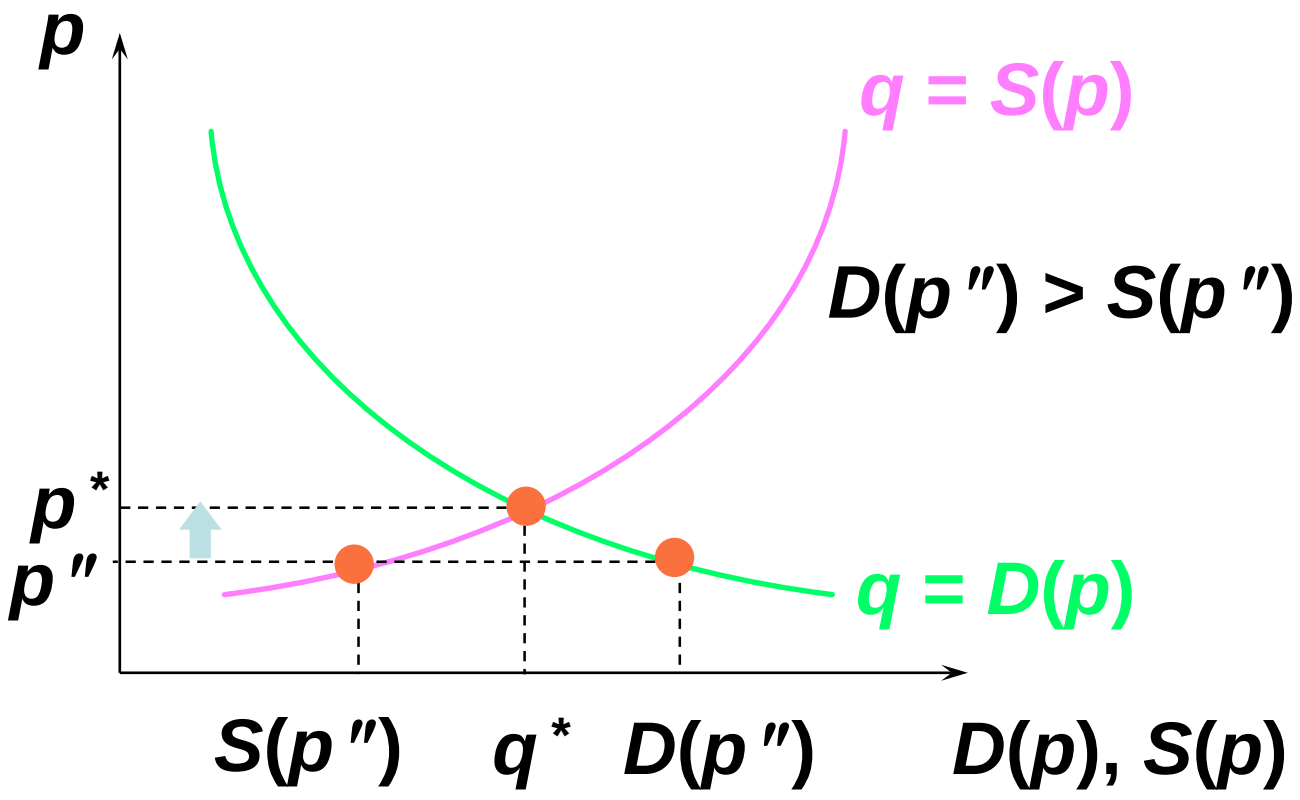
Excess supply



The market price must decrease to p^*.

Excess demand

(shortage in the market)



The market price must increase to p^*.

Surplus

- Since there is no discrimination, all consumers pay the same price and, simultaneously, all producers receive the same price for a given good: P*.
- However, some consumers would be willing and could buy this good for higher prices: P’ > P*. Because the market price is lower they obtain benefits, i.e. consumer surplus.
- Similarly, producers would be willing to and could supply some units for lower prices: P” < P*. They also obtain benefits, i.e. producer surplus.

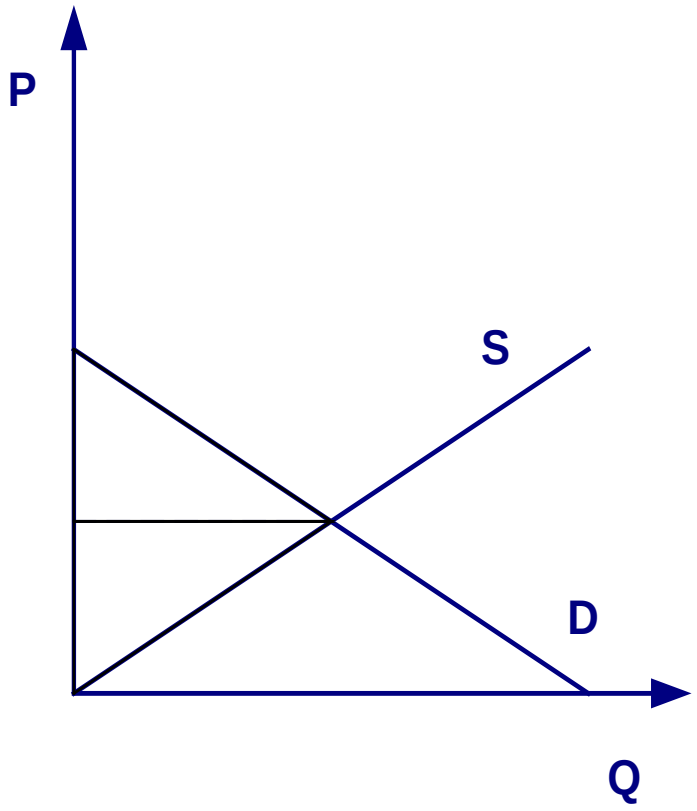
Reservation price

- Reservation price – the highest price that the buyer is willing to pay or the lowest price that the seller is willing to accept
- Having the possibility to buy or sell at the reservation price we are indifferent.
- Reservation prices determine the shape of demand and supply curves.

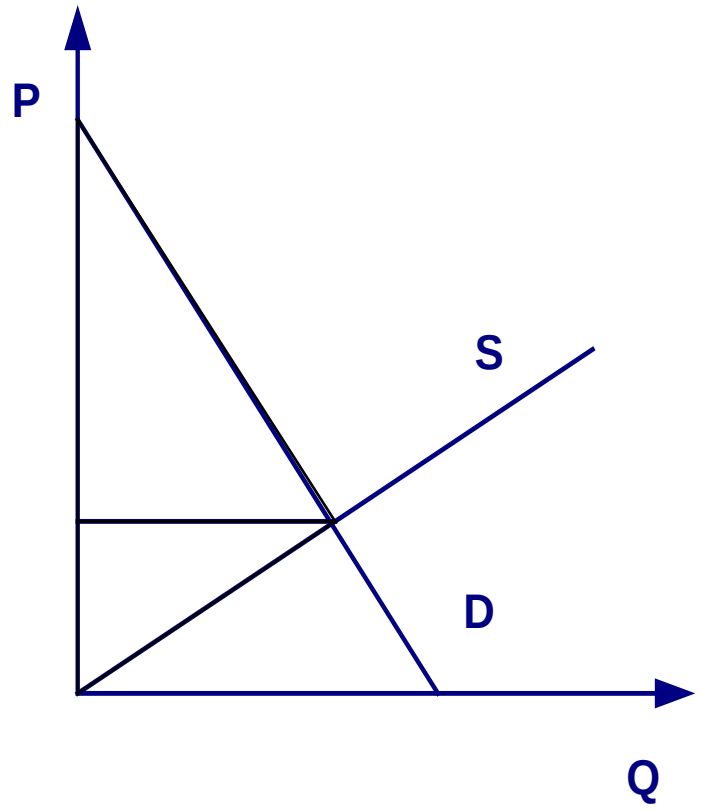
Consumer and producer surplus

- Consumer surplus (CS) – the total benefit for the consumer from a given good after substracting the costs of buying it. Represented by the area between the demand curve and the market price.
- Producer surplus (PS) – the total benefit for the producer from selling a given good after substracting the costs of manufacturing it. Represented by the area above the supply curve and below the market price.
- Economic surplus (ES) – the sum of the consumer surplus and the producer surplus; the sum of the differences between reservation prices of buyers and sellers of consecutive units of a good exchanged in the market; the difference between total social benefits and total social costs – a (simplified) measure of welfare

(Consumer) surplus depends on elasticity (of demand)

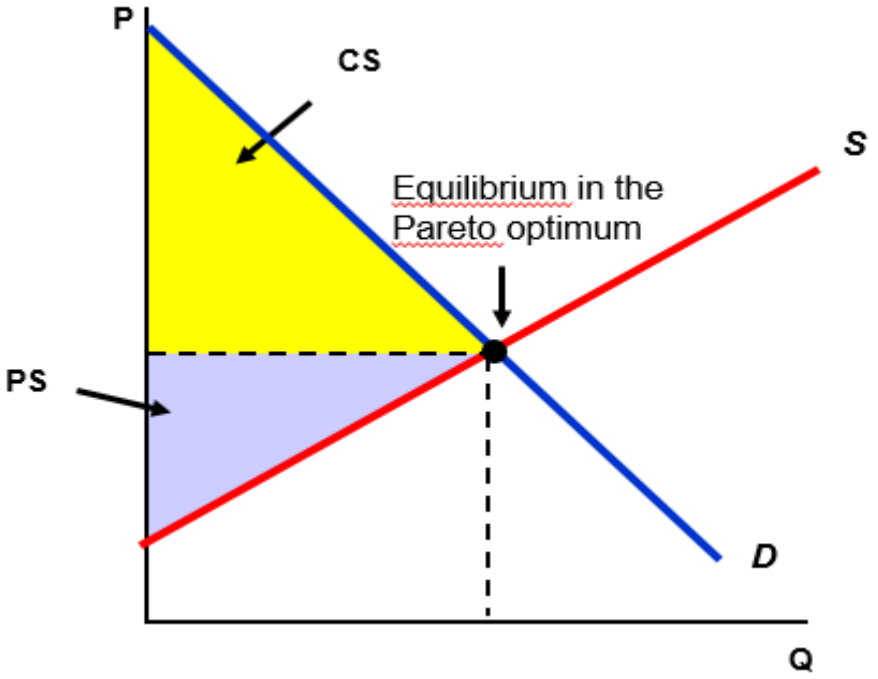


Relatively high elasticity of demand (~elastic demand)



Relatively low elasticity of demand (~inelastic demand)

Optimality criterion

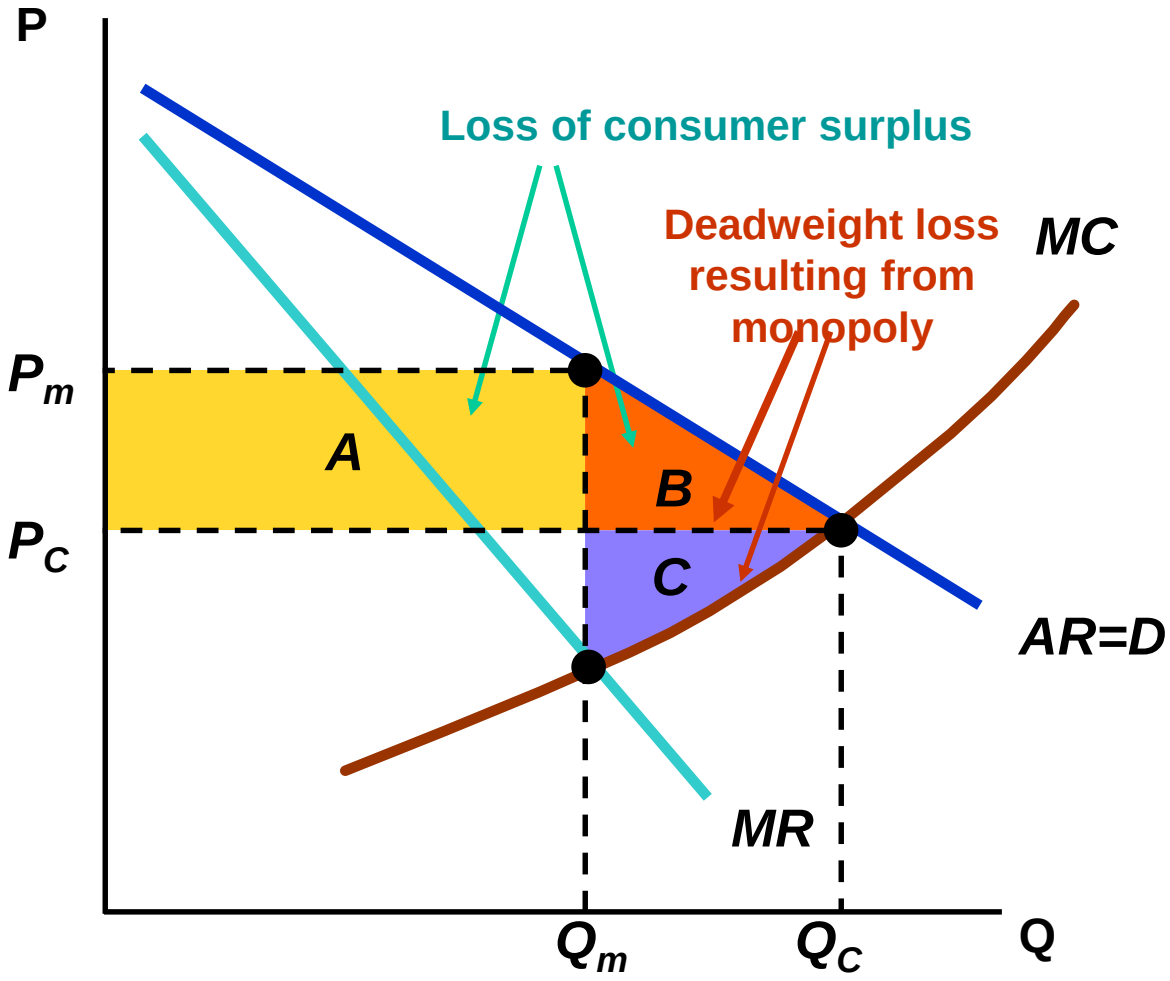


Pareto optimum – improving the situation of any economic agent must necessarily lead to worsening the situation of another agent

In the case of simultaneous changes of demand and supply their effect on market price and quantity is determined by:

- the size and direction of changes of demand and supply
- the shape of demand and supply curves (elasticity)

Deadweight loss resulting from monopoly



As a result of a higher equilibrium price the consumer loses *A*+*B*, while the producer gains *A*-*C*.

What will follow…?

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