

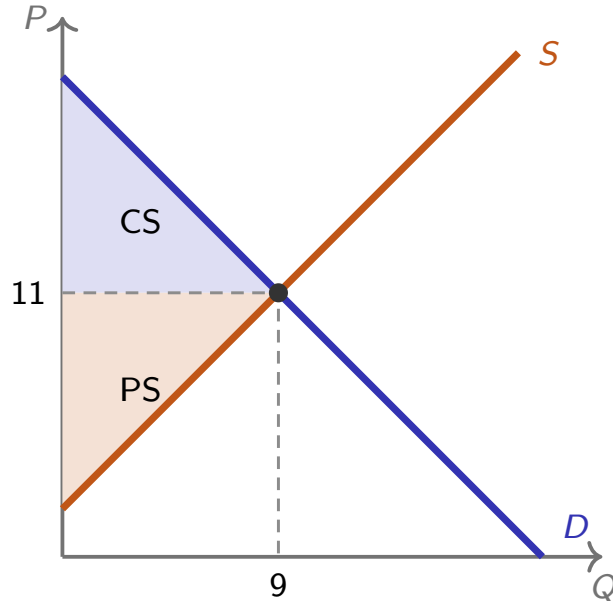
Exercise walk-through

2.7

Market Disequilibrium and Changes in Equilibrium

AP Microeconomics

Equilibrium, consumer & producer surplus



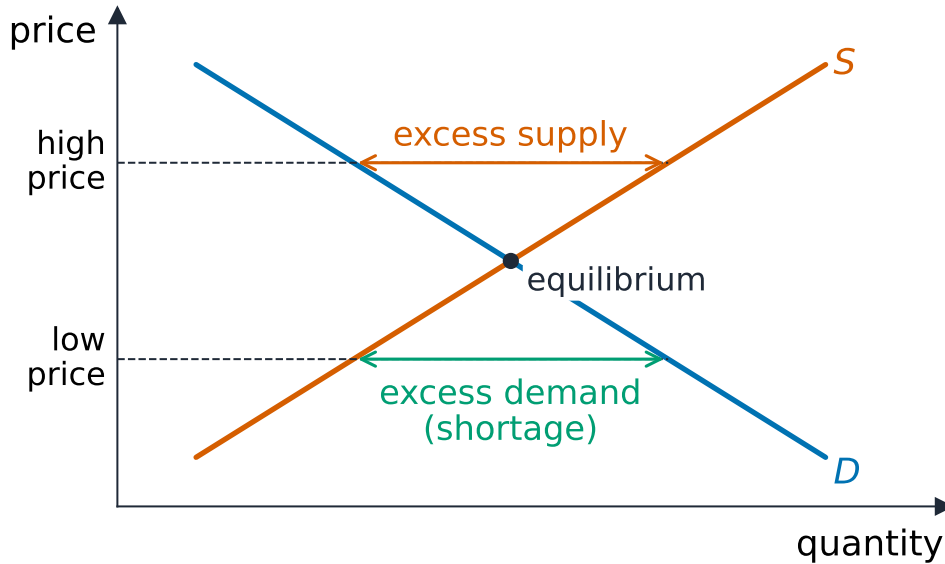
Equilibrium : $Q_d = Q_s$. Here
 $P = 11$, $Q = 9$.

Consumer surplus :
below D , above price.

Producer surplus :
above S , below price.

Competitive equilibrium maximizes surplus when private benefits and costs reflect social benefits and costs.

Above equilibrium there is excess supply; below it



Above equilibrium there is excess supply; below it, excess demand

Worked example – surplus

Fictional competitive market

Demand $P_D = 20 - Q$; supply $P_S = 2 + Q$.

$$P_D = P_S$$

$$20 - Q = 2 + Q$$

$$Q^* = 9, \quad P^* = \$11$$

$$CS = \frac{1}{2} Q^* (P_{D,0} - P^*)$$

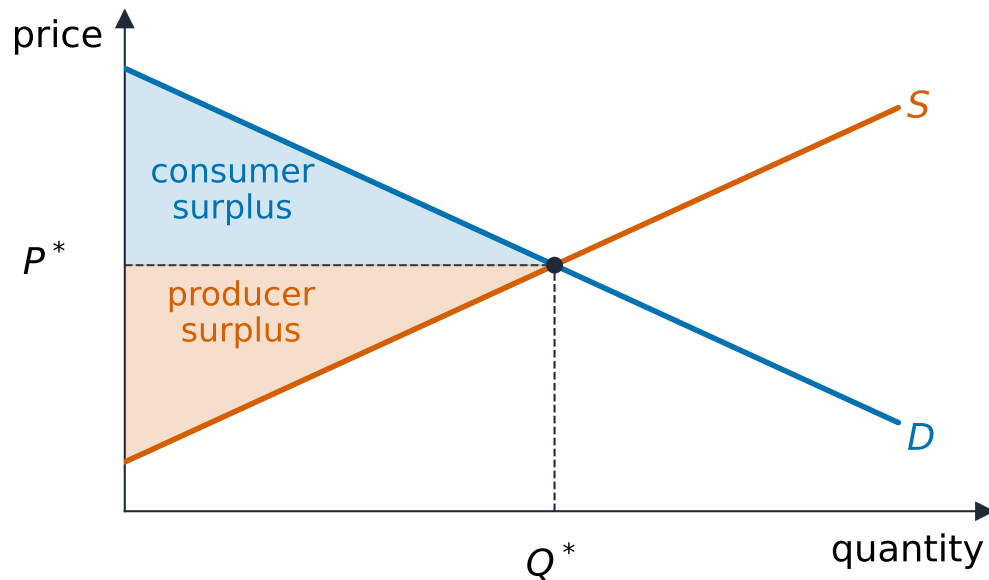
$$CS = \frac{1}{2} (9) (20 - 11) = \$40.50$$

$$PS = \frac{1}{2} Q^* (P^* - P_{S,0})$$

$$PS = \frac{1}{2} (9) (11 - 2) = \$40.50$$

Total surplus = $CS + PS = \$81$. Assume no external costs or benefits. These equations also define the following control and tax examples.

Worked example – surplus, in detail



Consumer surplus and producer surplus at the market equilibrium

Disequilibrium & shifts

Price too high $\Rightarrow$ surplus
 $\rightarrow$ price falls

Price too low $\Rightarrow$ shortage
 $\rightarrow$ price rises

Shift rules: D right $\rightarrow P \uparrow Q \uparrow$; D left $\rightarrow P \downarrow Q \downarrow$; S right $\rightarrow P \downarrow Q \uparrow$; S left $\rightarrow P \uparrow Q \downarrow$. When **both shift**, one result is **indeterminate**.

Exercises 2.1-2.3

2.1 State what happens at a price above the equilibrium price.

[1]

2.2 State the effect of an increase in supply on equilibrium price and quantity.

[2]

2.3 State what makes an equilibrium outcome indeterminate.

[1]

Exercises 2.1-2.3

2.1 State what happens at a price above the equilibrium price.

[1]

2.1

- a surplus forms and the price falls back toward equilibrium
-

2.2 State the effect of an increase in supply on equilibrium price and quantity.

[2]

2.2

- the price falls and the quantity rises
-

2.3 State what makes an equilibrium outcome indeterminate.

[1]

2.3

- when both curves shift, so the effect on one variable depends on the relative sizes of the shifts

Exercises 3.1-3.2

3.1 A price below equilibrium creates a

[1]

☐

A surplus

B shortage

C new equilibrium

D tax

3.2 If demand rises and supply falls at the same time, the change in equilibrium **quantity** is

[1]

☐

A definitely up

B definitely down

C indeterminate

D always zero

Exercises 3.1-3.2

3.1 A price below equilibrium creates a

[1]

☐

- A surplus
- B shortage
- C new equilibrium
- D tax

3.1 B

- shortage.

3.2 If demand rises and supply falls at the same time, the change in equilibrium **quantity** is

[1]

☐

- A definitely up
- B definitely down
- C indeterminate
- D always zero

3.2 C

- price definitely rises, but quantity is indeterminate

Exercise 3.3 (a)

3.3 In a market, demand increases.

(a) State the effect on the equilibrium price.

[1]

Exercise 3.3 (a)

3.3 In a market, demand increases.

(a) State the effect on the equilibrium price.

[1]

(a)

- it rises

Exercise 3.3 (b)

3.3 In a market, demand increases.

(b) State the effect on the equilibrium quantity.

[1]

Exercise 3.3 (b)

3.3 In a market, demand increases.

(b) State the effect on the equilibrium quantity.

[1]

(b)

- it rises

Exercise 3.3 (c)

3.3 In a market, demand increases.

(c) If supply **also** rises at the same time, state which variable becomes indeterminate.^[1]

Exercise 3.3 (c)

3.3 In a market, demand increases.

(c) If supply **also** rises at the same time, state which variable becomes indeterminate.^[1]

(c)

- the price becomes indeterminate