

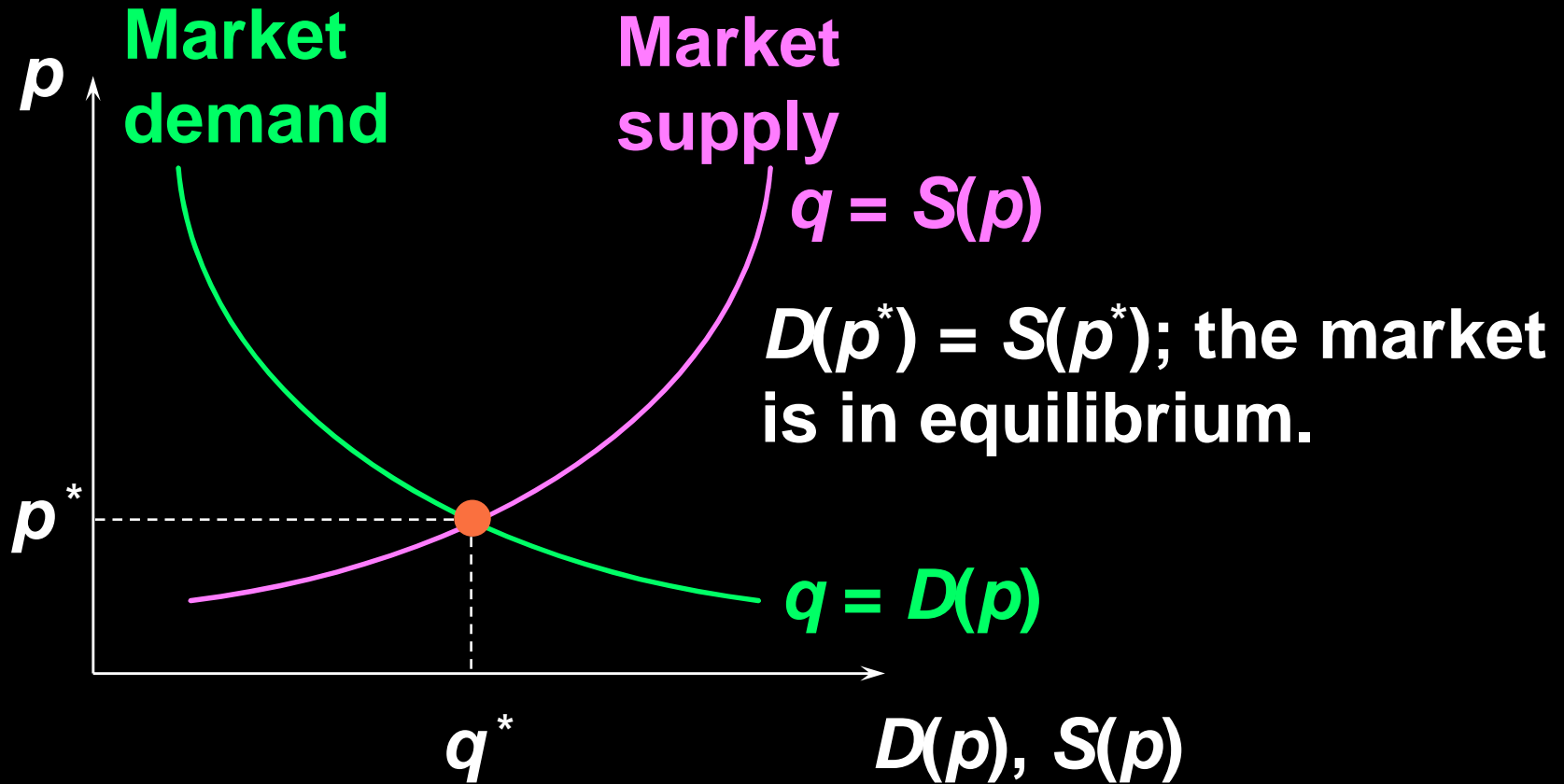
Microeconomics

Lecture 1

Market Equilibrium

- ◆ A market is in **equilibrium** when total quantity demanded by buyers equals total quantity supplied by sellers.

Market Equilibrium



Equilibrium

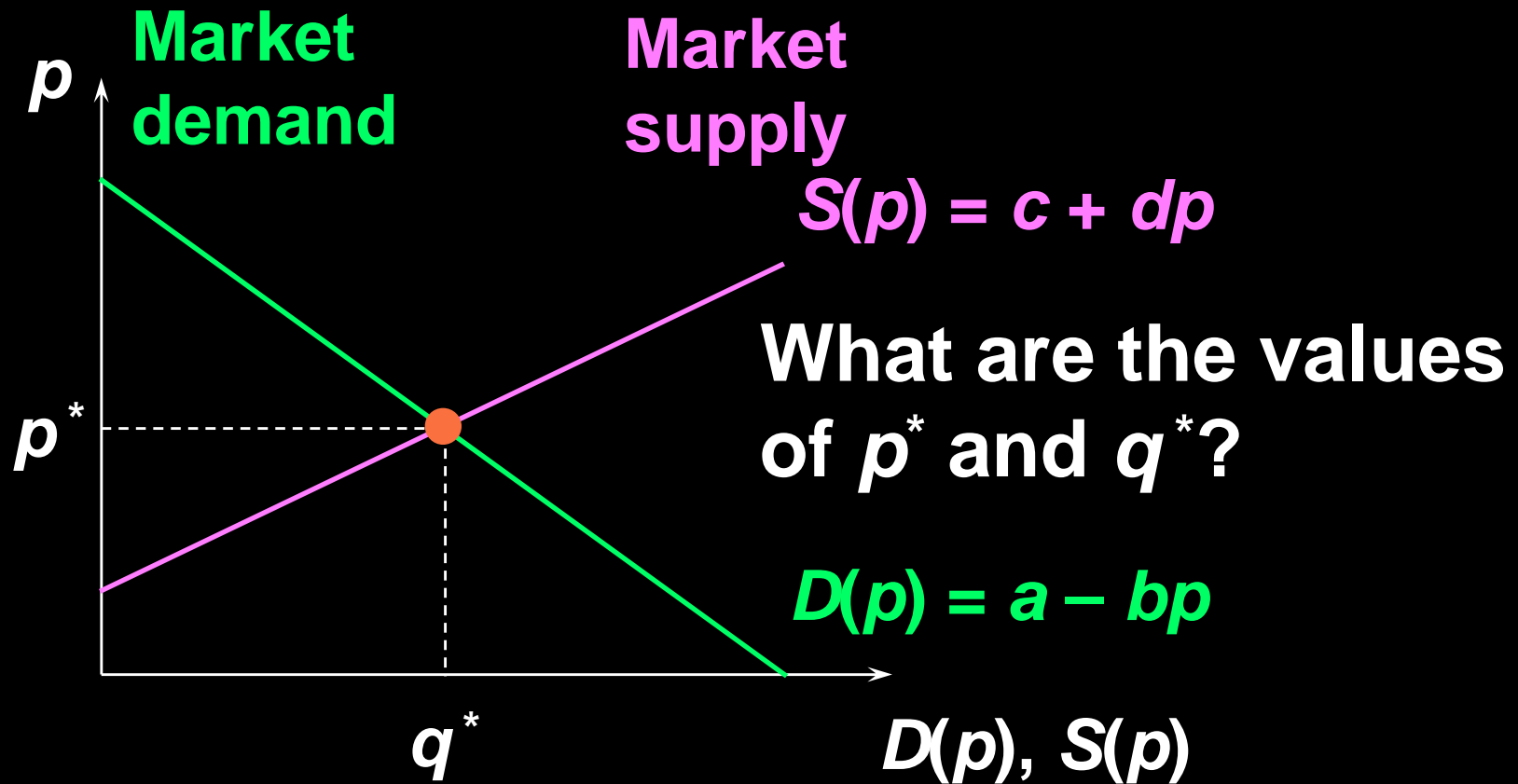
Market Equilibrium

- ◆ An example of calculating a market equilibrium when the market demand and supply curves are linear.

$$D(p) = a - bp$$

$$S(p) = c + dp$$

Market Equilibrium



Equilibrium

Market Equilibrium

$$D(p) = a - bp$$

$$S(p) = c + dp$$

At the equilibrium price p^* , $D(p^*) = S(p^*)$.

That is, $a - bp^* = c + dp^*$

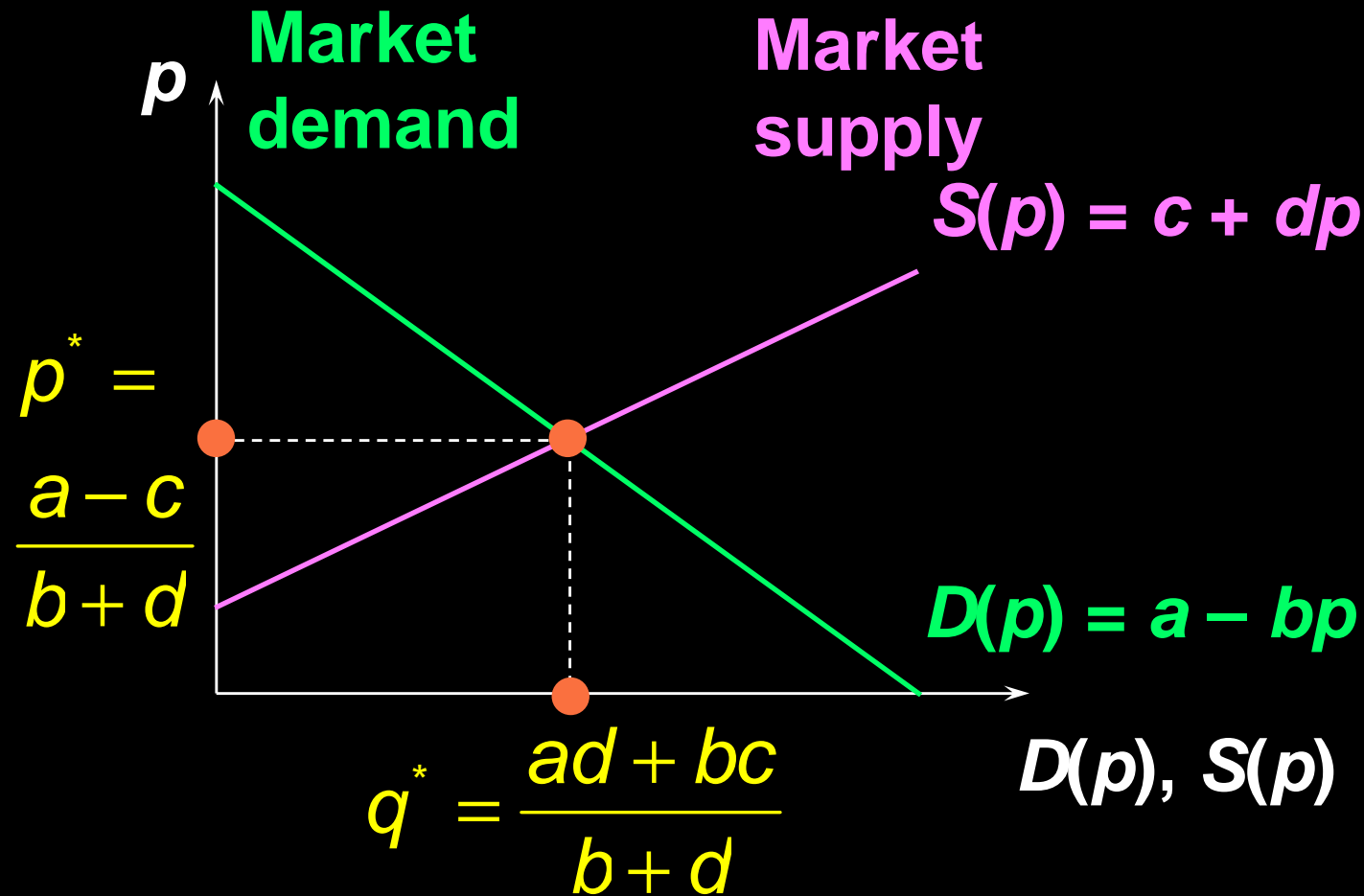
which gives

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

and

$$q^* = D(p^*) = S(p^*) = \frac{ad + bc}{b + d}.$$

Market Equilibrium



Equilibrium

Market Equilibrium

- ◆ Can we calculate the market equilibrium using the inverse market demand and supply curves?
- ◆ Yes, it is the same calculation.

Market Equilibrium

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

the equation of the inverse market demand curve.

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

the equation of the inverse market supply curve.

Market Equilibrium

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

At the equilibrium quantity q^* , $D^{-1}(p^*) = S^{-1}(p^*)$.

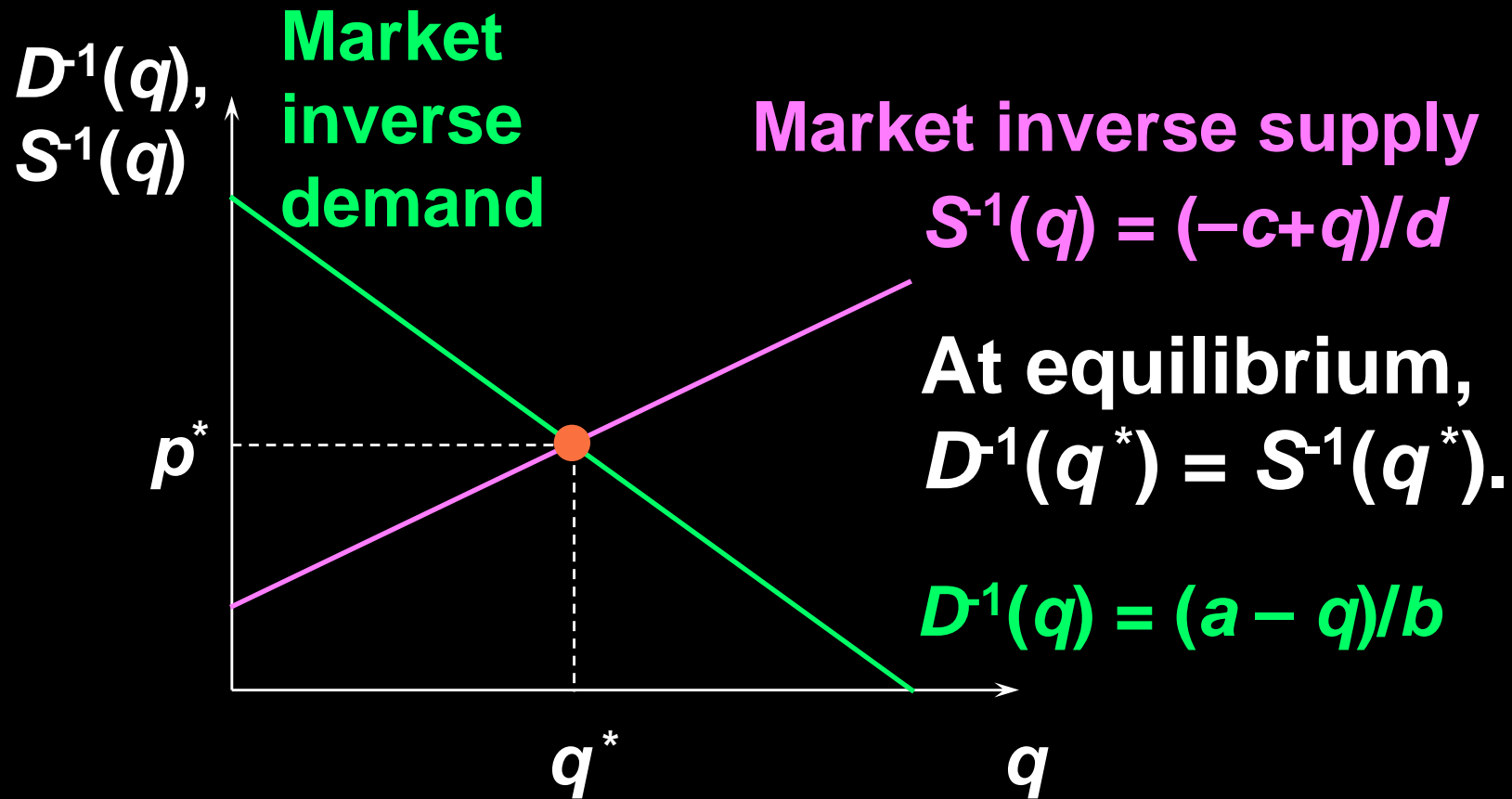
That is,

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

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

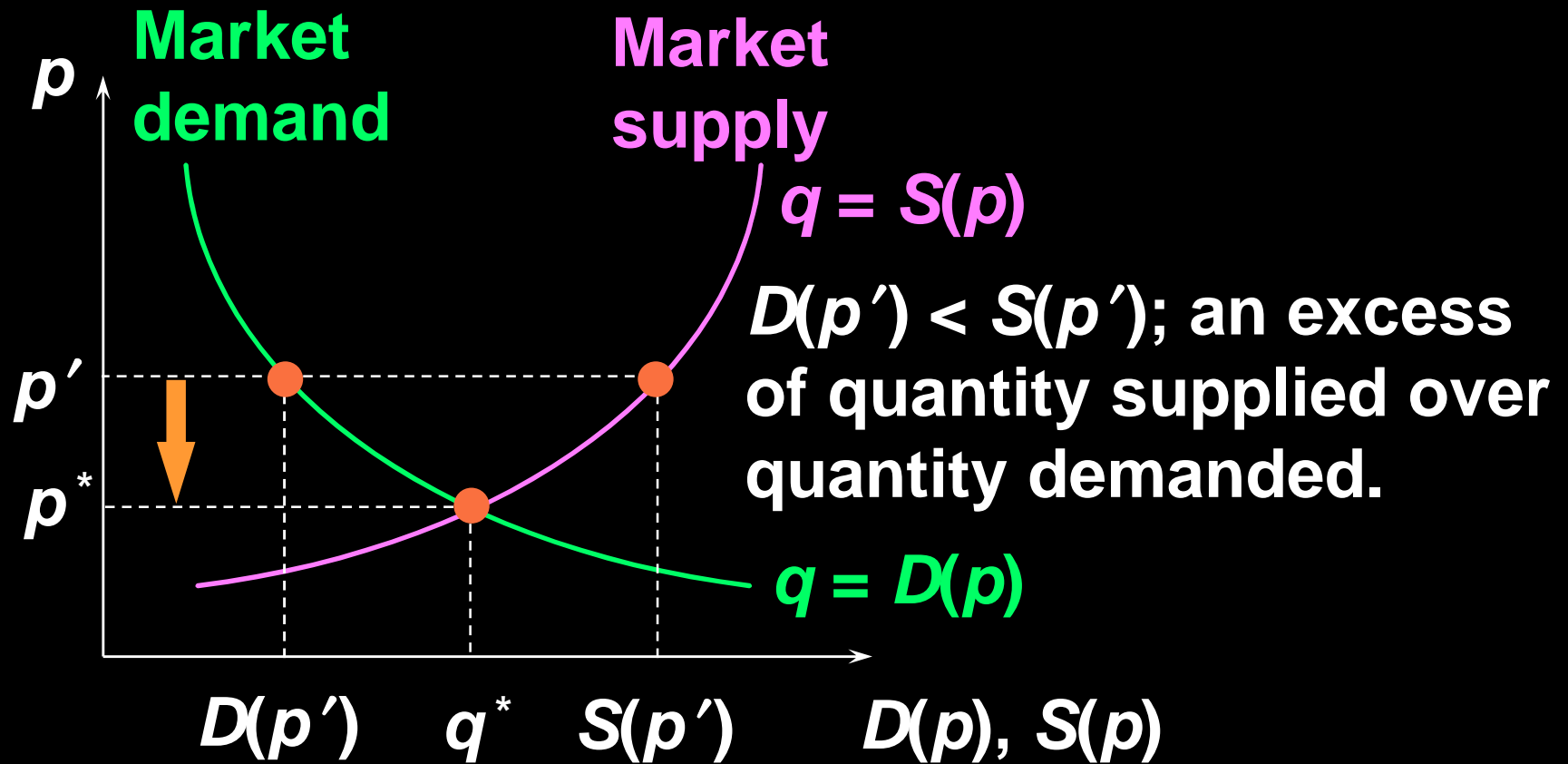
$$\text{and } p^* = D^{-1}(q^*) = S^{-1}(q^*) = \frac{a - c}{b + d}.$$

Market Equilibrium



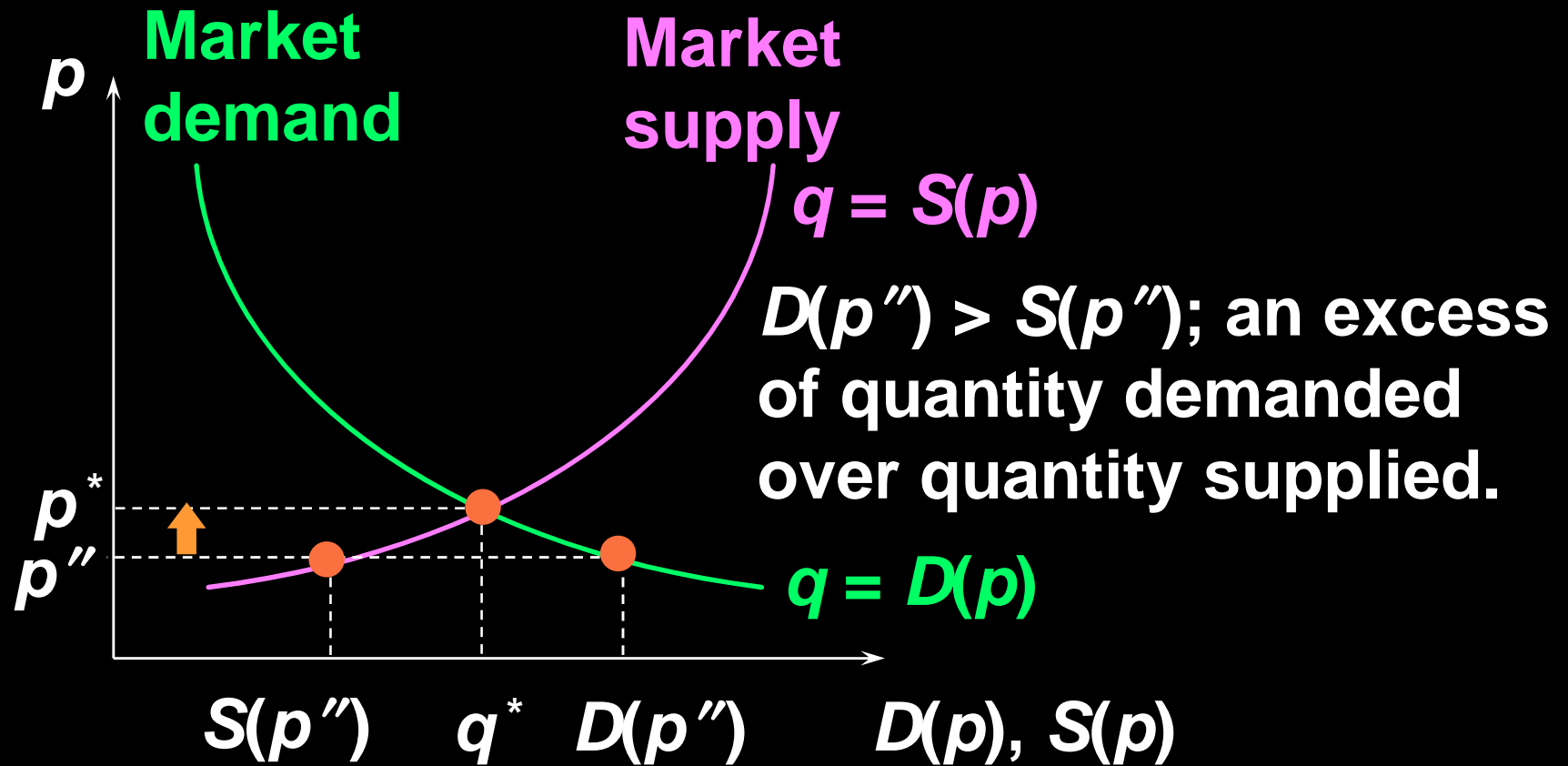
Equilibrium

Market Equilibrium



Market price must fall towards p^* .

Market Equilibrium

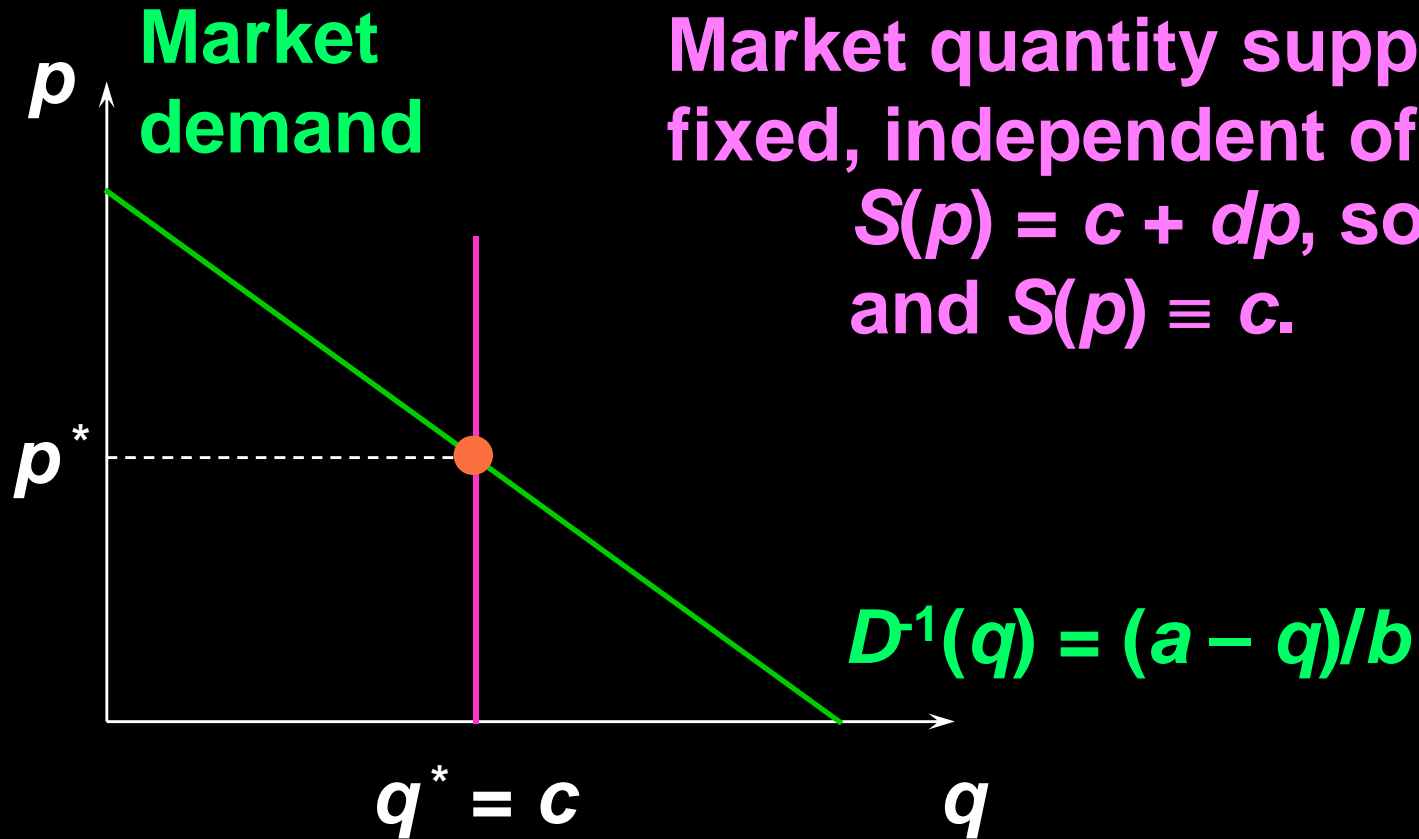


Market price must rise towards p^* .

Market Equilibrium – two special cases

- **when quantity supplied is fixed, independent of the market price**
- **when quantity supplied is extremely sensitive to the market price (long-run supply of competitive industry)**

Market Equilibrium – special case



Equilibrium

Market Equilibrium – special case

$D^{-1}(q),$
 $S^{-1}(q)$ **Market demand**

Market quantity supplied is extremely sensitive to price.
 $S^{-1}(q) = p^*$

It is a long-run supply of competitive industry

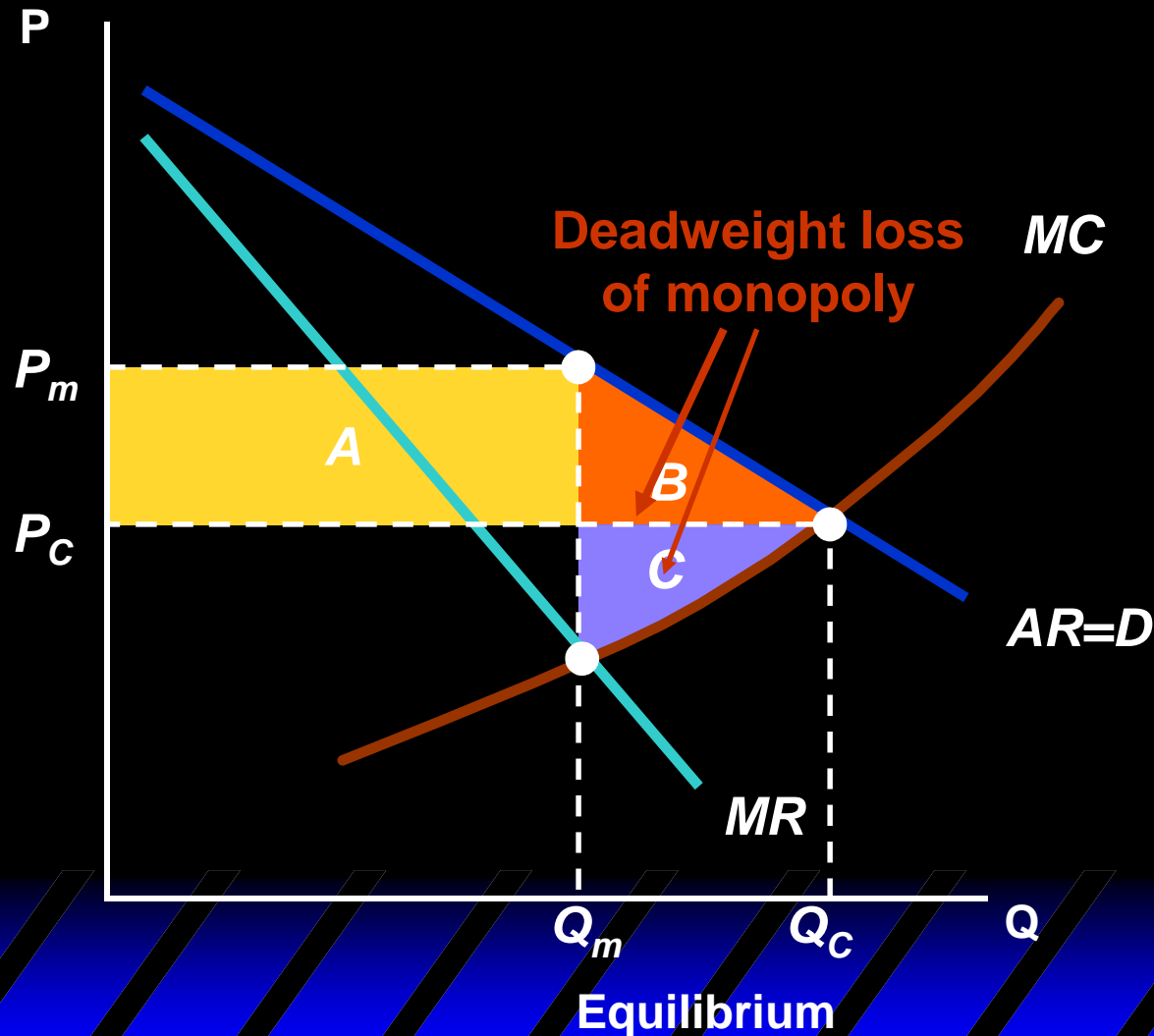
p^*

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

$$q^* = a - bp^*$$

Equilibrium

Market equilibrium - monopoly



As a result of higher price of equilibrium:

- consumers lose $A+B$
- producer benefits $A-C$.