Intermediate Microeconomics

Chapter 11

Equilibrium in Competitive Markets

Assumptions

1. Sellers are price-takers
   - they don't believe they can influence the price
   - they don't believe they can influence the actions of other sellers
2. Sellers don't act strategically
3. *Free entry* = new suppliers can enter the market without any restrictions on the process
   - *blocked entry* = it is impossible for suppliers to enter the market at any reasonable cost
4. Buyers are price-takers

Market structure

- *Market structure* = economic environment in which buyers and sellers in an industry operate
  - the size and number of buyers: many and small (ensures price-taking behavior)
  - the size and number of suppliers: many and small (ensures price-taking and non-strategic behavior)
  - degree of substitutability of different sellers' products: *homogeneous goods* = perfect substitutes with MRS of 1 (considered identical by buyers)
  - the extent to which buyers are informed about prices and available alternatives: perfect information
  - conditions of entry: no barriers to entry

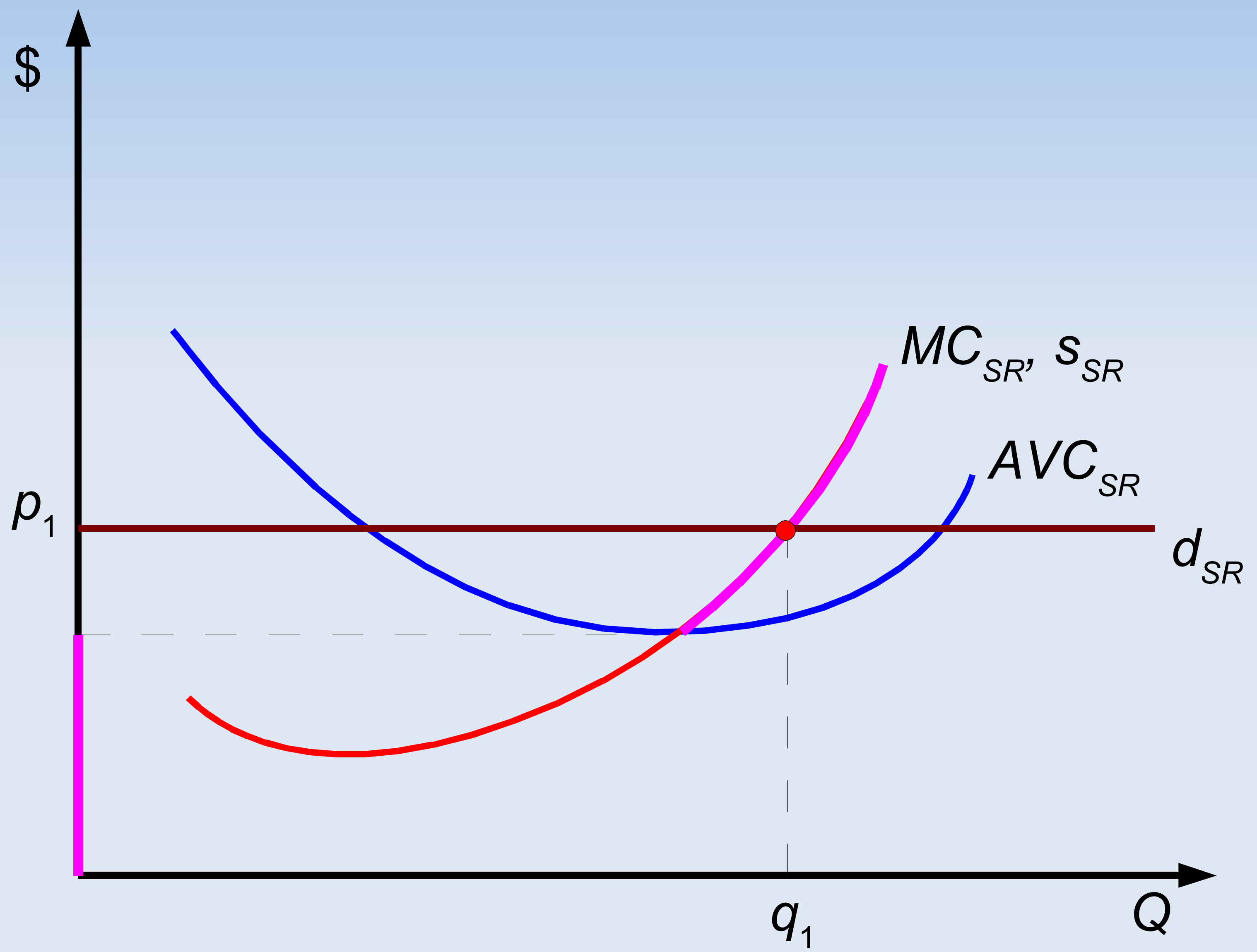
Finding a competitive equilibrium

- Until now, we focused on individual agents (consumers or firms) – now we need to consider the market as a whole
- Since firms behave differently in the short run versus the long run, we need to analyze them separately
  - Short run: new firms can't really enter ⇒ market supply is just the sum over existing firms
  - Long run: new firms can enter, existing firms can exit ⇒ number of firms determined in equilibrium

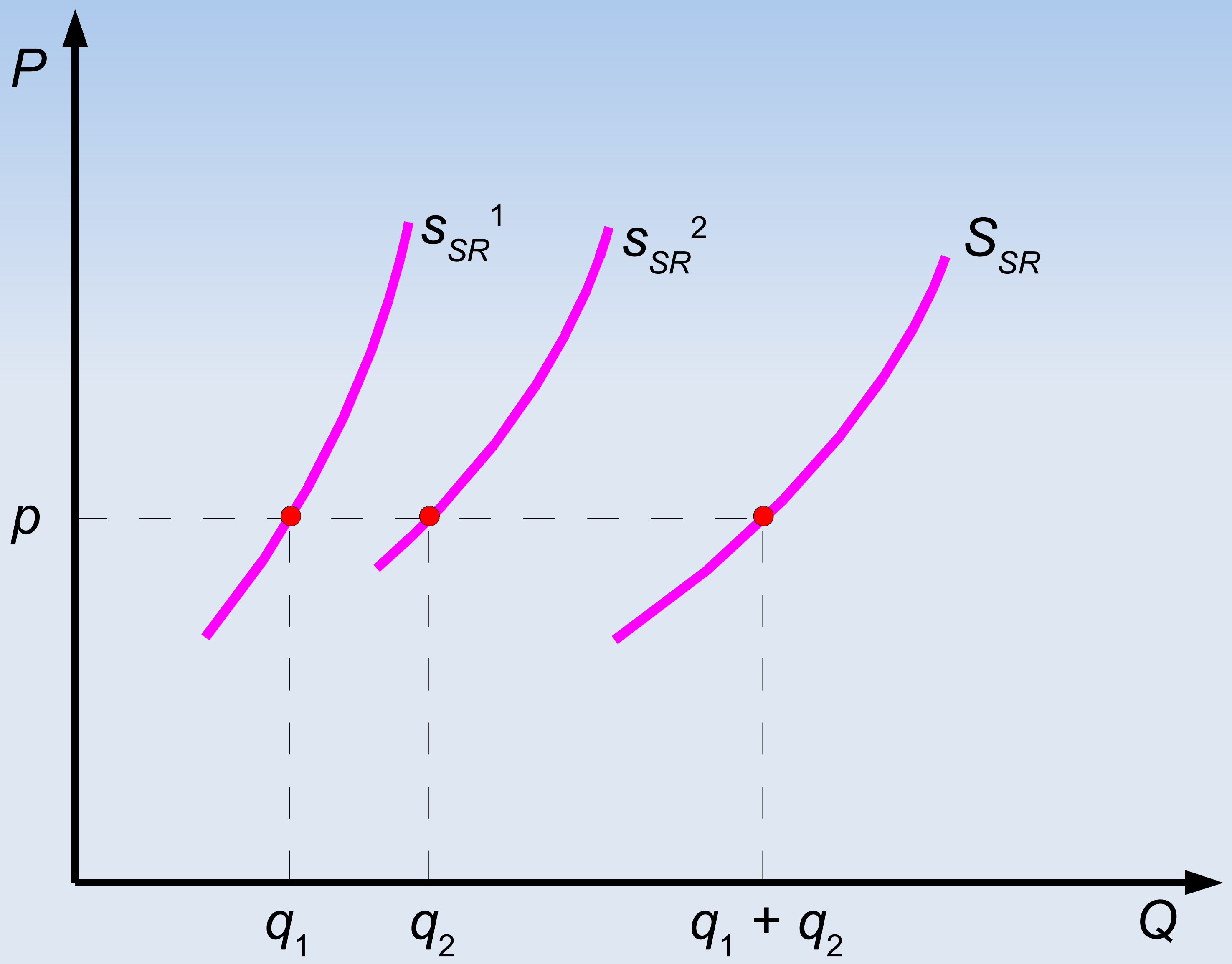
Short-run equilibrium

- Market supply is obtained by "horizontal summation" of individual supply curves
- From an individual seller's perspective, the demand faced is perfectly elastic (since they can't influence the price), i.e. horizontal line
- Market demand is obtained in the same way (horizontal summation)
- Equilibrium: the intersection of market demand and market supply
- Prices regulate the market (production and demand)

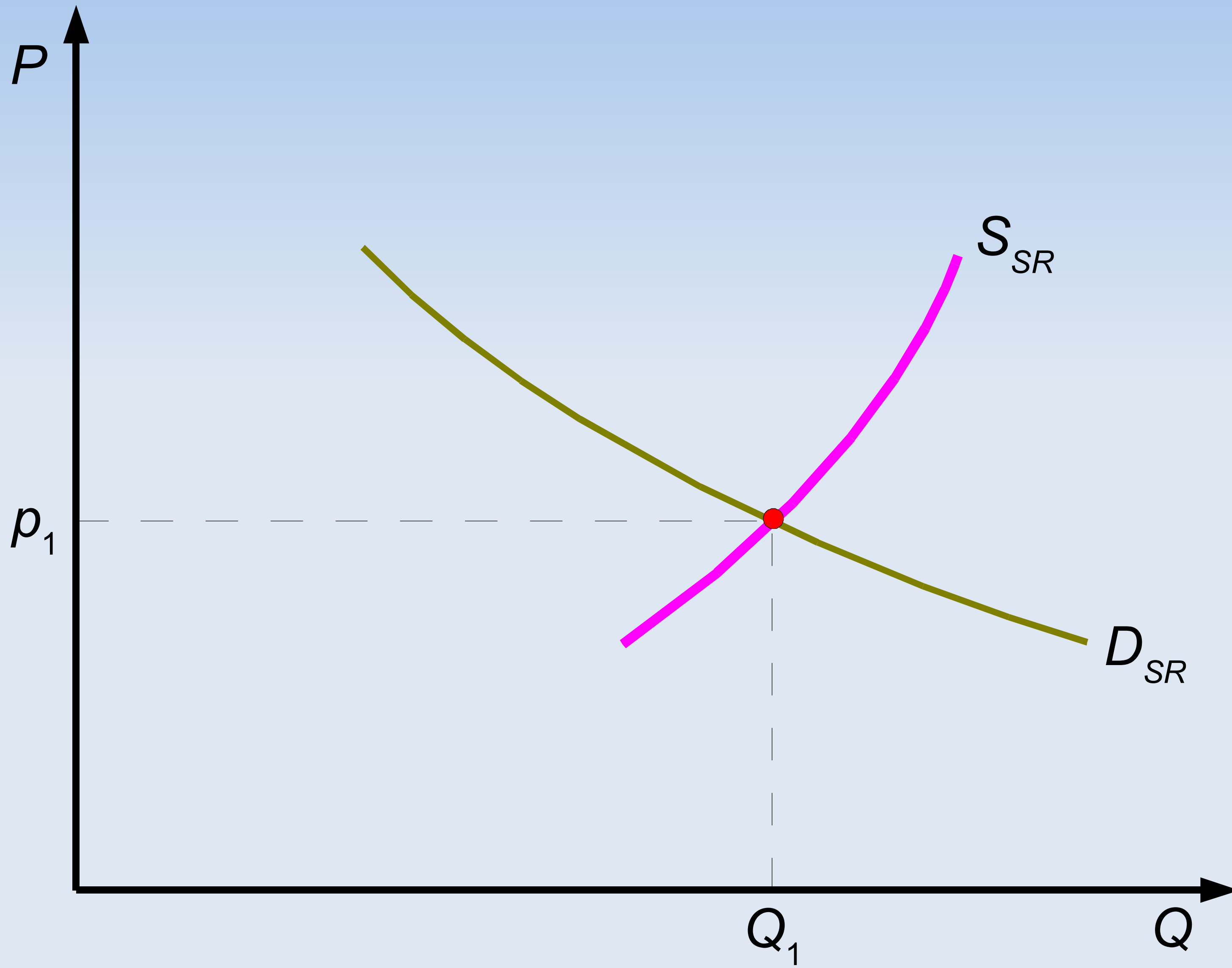
Short-run equilibrium: The firm



Horizontal summation



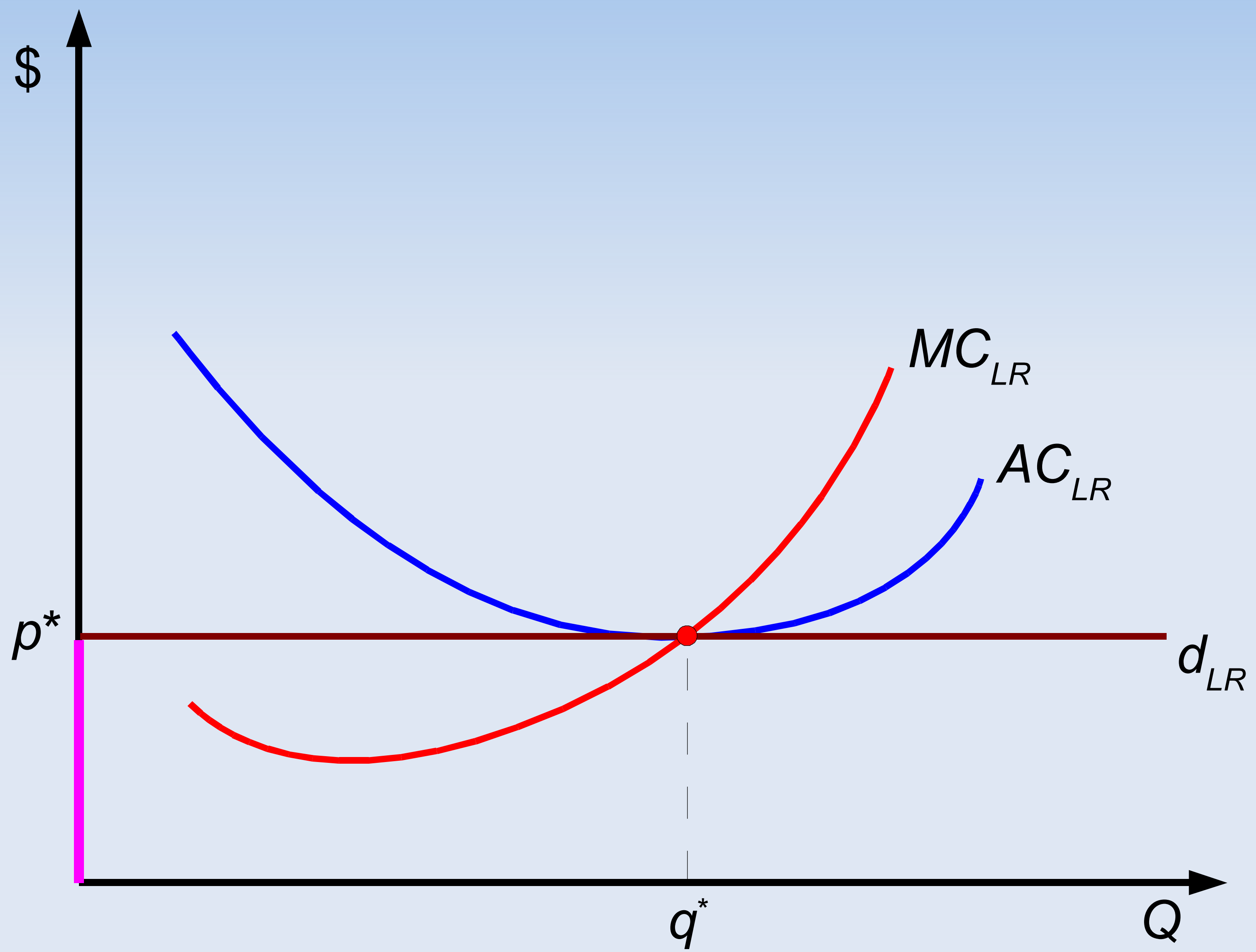
Short-run equilibrium: The market



Long-run market supply

- In the long run, all factors are variable *and* firms can freely enter the market
- If market price > p^* (price where MC = AC), then firms make profits ⇒ an infinite number of firms will enter the market ⇒ market supply is infinite
- If market price < p^*, then firms make losses ⇒ all firms will exit the market ⇒ market supply is zero
- Hence, firms will produce only when the market price is equal to p^* (constant-cost industry), when they actually make zero profit! ⇒ horizontal supply line

Long-run supply: The firm



Long-run equilibrium: The market

Long-run market equilibrium

- Market supply is horizontal (no production if price < p^*, infinite production if price > p^*)
- Long-run market demand is more elastic than short-run market demand (more possibilities for substitution)
- Equilibrium is again given by the intersection of the long-run market demand and supply
- Equilibrium number of firms:

$$N = \frac{Q^*}{q^*}$$

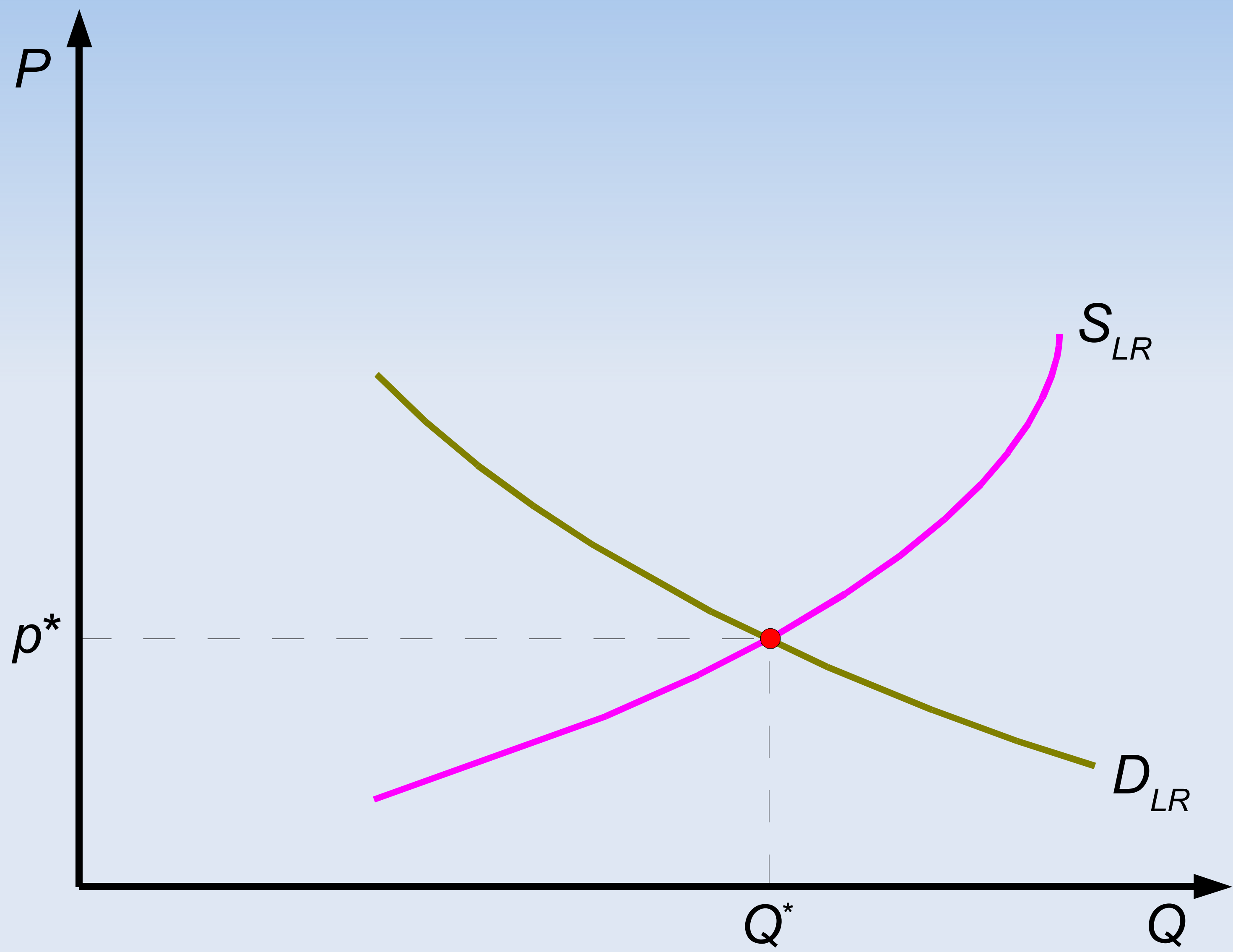
Comparison of long- and short-run

- Any long-run equilibrium is a short-run equilibrium as well (no incentives to enter/exit or change production decisions)
- *But*: not all short-run equilibria are long-run equilibria:
  - some firms make profits or losses
  - not the optimal number of firms

More on long-run equilibrium

- Even though firms are price-takers, the industry as a whole might be a price-maker
- For example, if *all* the firms in the industry decide to increase production and thus their demand of a factor, the price of that factor will also go up (*increasing-cost industry*)
- Higher factor price leads to higher output price
- Therefore, supply is upward sloping rather than horizontal

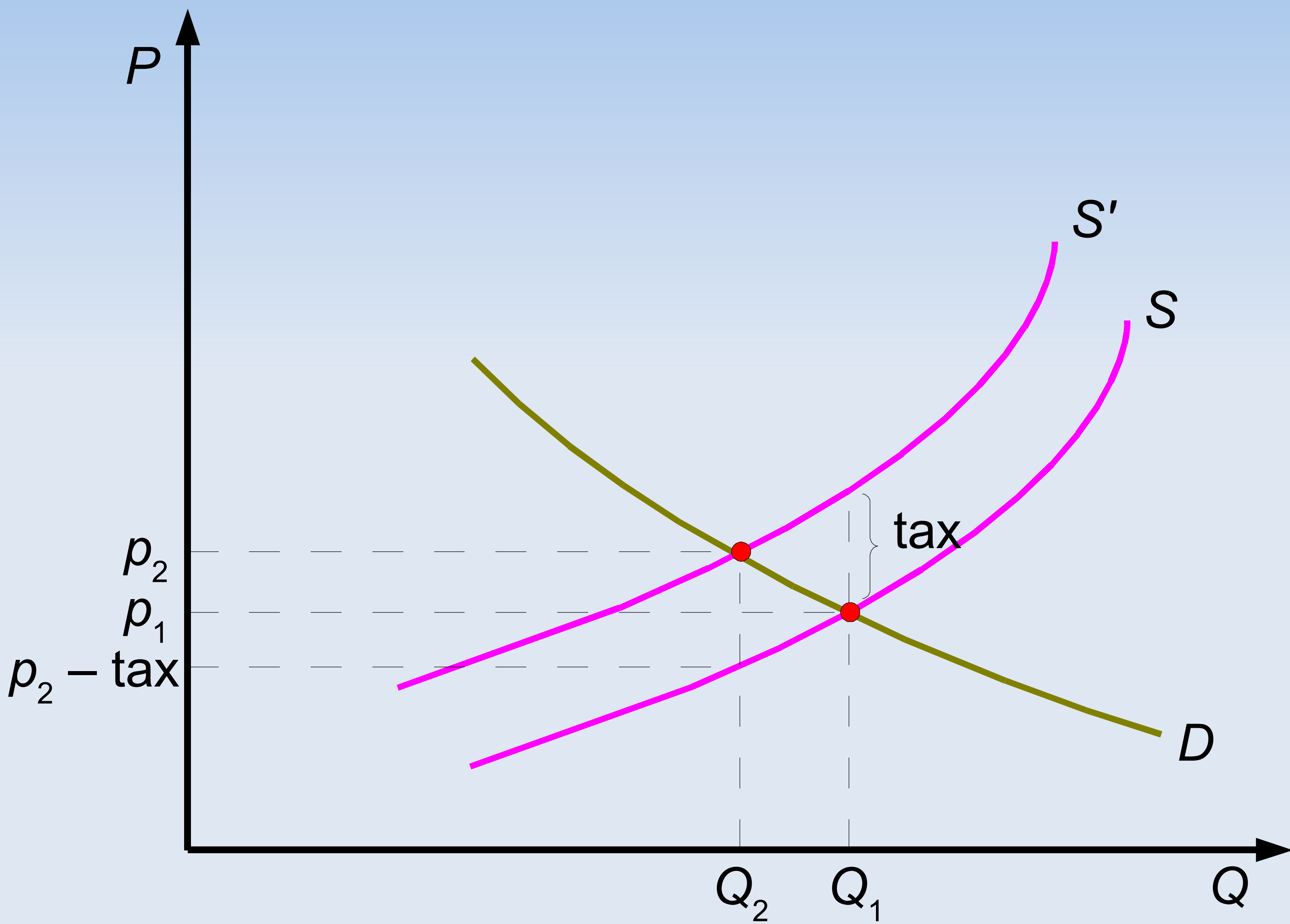
Long-run equilibrium in increasing-cost industry



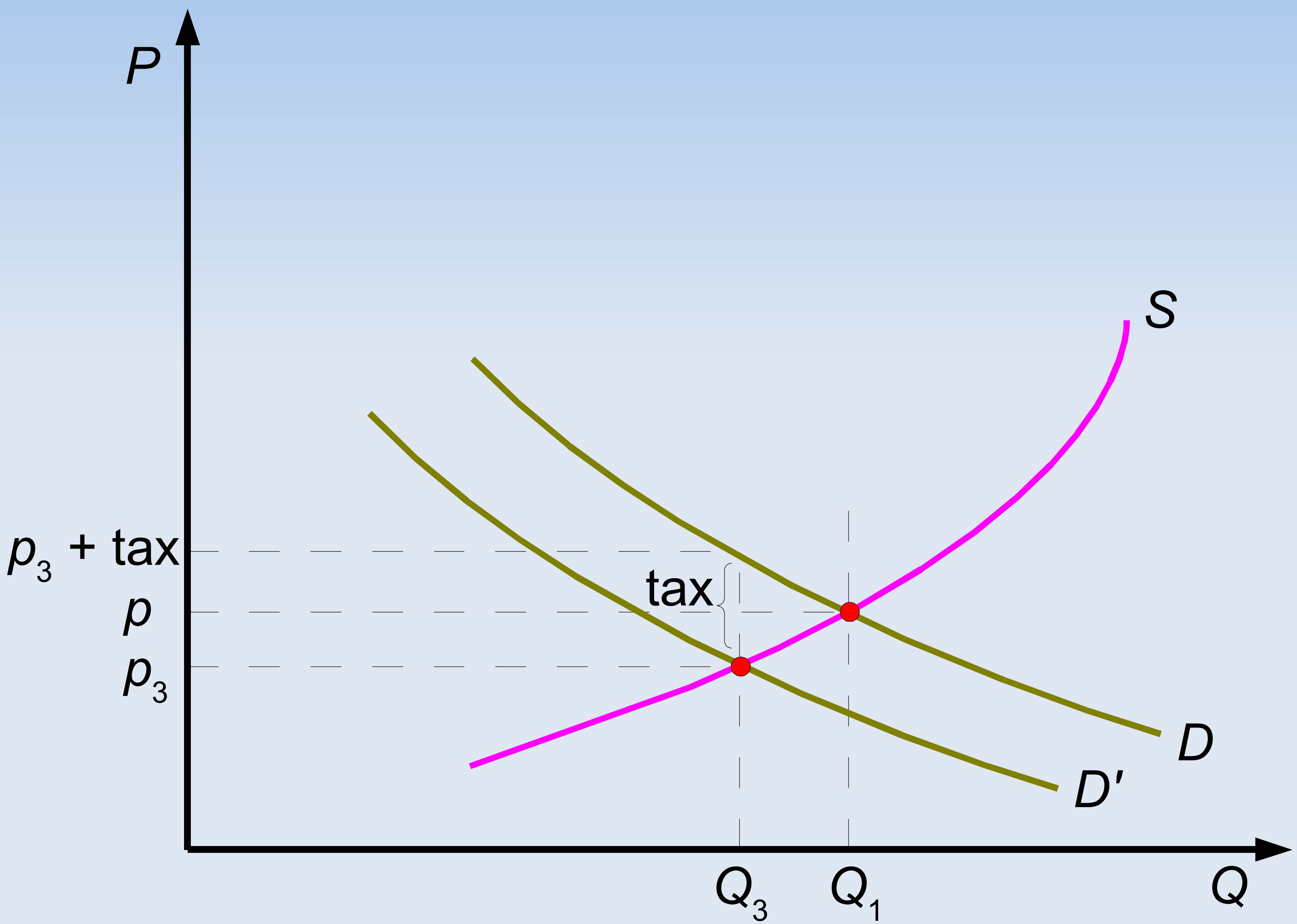
Using the model: the effect of taxes

- *Ad valorem tax* = tax whose amount depends on the value of the transaction being taxed
- *Unit tax* = tax levied as a fixed amount per unit of the item subject to taxation
- *Statutory incidence of a tax* = economic agent who is legally responsible for payment of the tax
- *Economic incidence of a tax* = change in the distribution of income brought about by the imposition of the tax (can be different from statutory incidence because of *tax shifting*)

Effect of tax levied on suppliers



Effect of tax levied on consumers



Effects of the tax

- Whether the tax was levied on the suppliers or the consumers, the final effect was:
  - price paid by the consumers increased
  - price received by producers fell

⇒ statutory incidence does not tell us anything about economic incidence

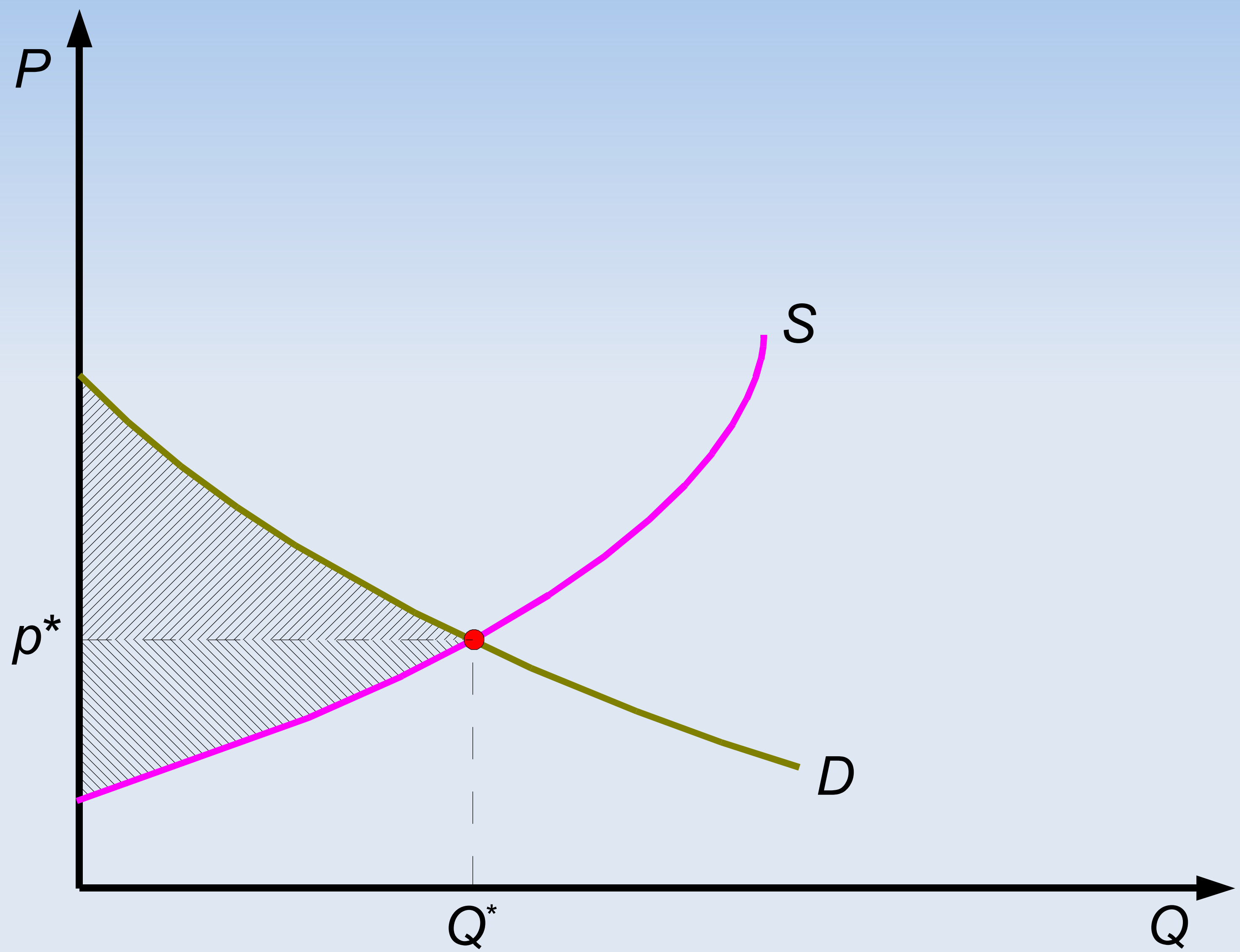
- Note that, in both cases, the new equilibrium was at the point where the difference between quantity supplied and demanded equaled the tax

⇒ it doesn't matter on whom the tax is levied!

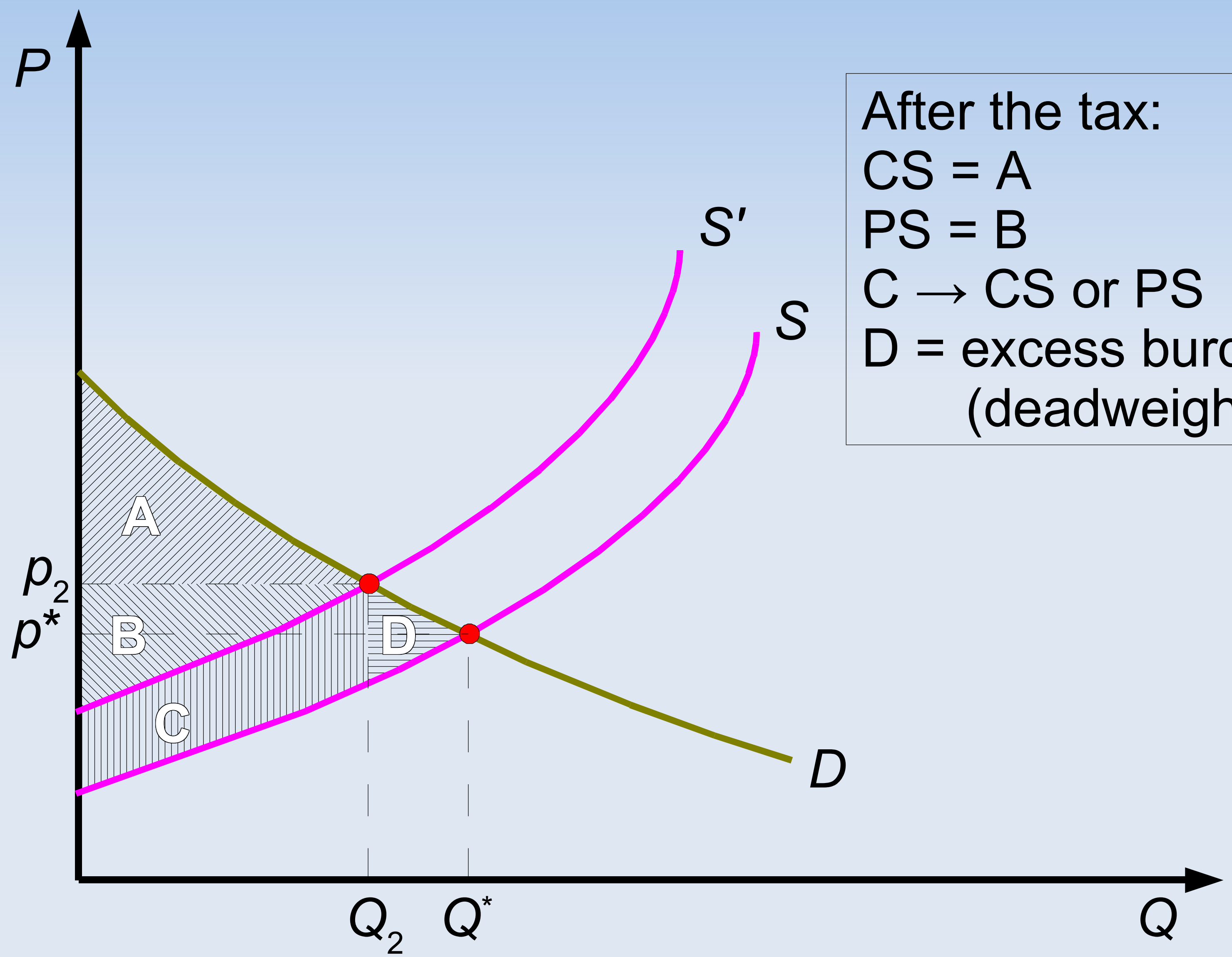
Total surplus

- *Total surplus* = sum of consumer and producer surplus
- Recall:
  - consumer surplus = area below the demand curve and above the price level
  - producer surplus = area above the supply curve and below the price level
- The competitive equilibrium maximizes total surplus (note: we made *no evaluation* of the distribution of the surplus!)

Total surplus



The effect of a tax revisited



After the tax:
CS = A
PS = B
C → CS or PS
D = excess burden
(deadweight loss)