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Applied Systems Analysis  
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science for global insight

# Economic theory behind GLOBIOM

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# GLOBIOM

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- ▶ Partial equilibrium model on land use at a global scale: endogenous prices balance supply and demand
- ▶ Optimization of social welfare (consumer surplus + producer surplus)

# GLOBIOM – basic concepts

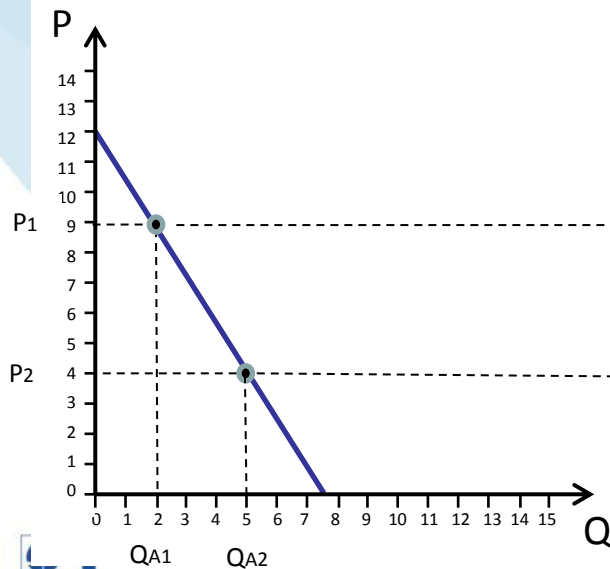
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- ▶ Demand and supply
- ▶ Market equilibrium with endogenous prices
  - ▶ Partial equilibrium
  - ▶ Closed economy
  - ▶ International trade
- ▶ Consumer surplus and producer surplus

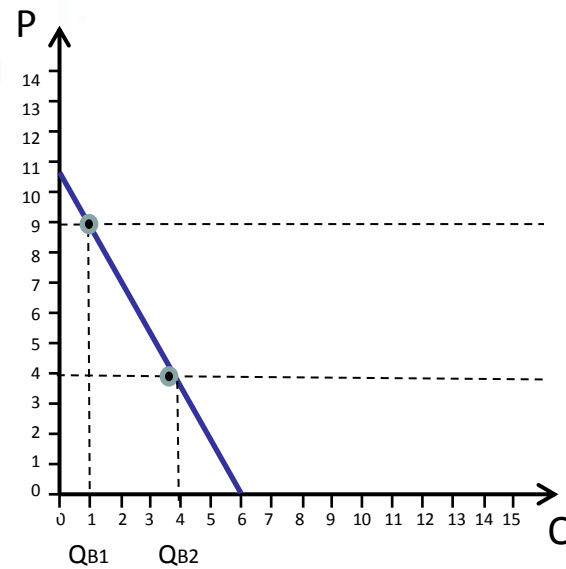
# Demand

- ▶ Consumers maximize their utility from the consumption of goods, taking into account
  - ▶ Prices
  - ▶ Income
  - ▶ Preferences
- ▶ Demand curves:

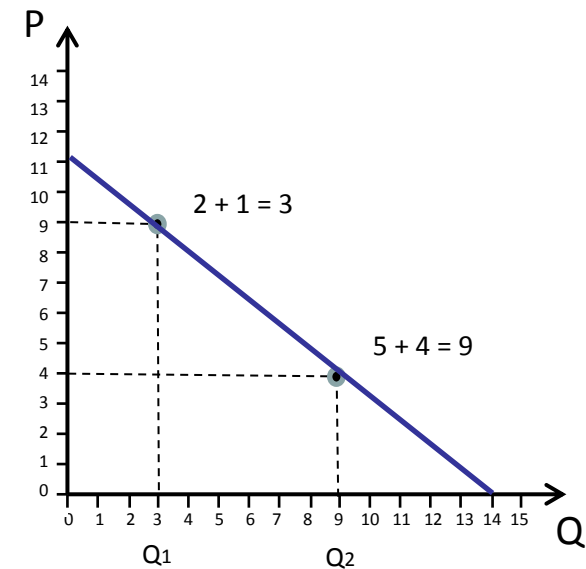
Individual A



Individual B

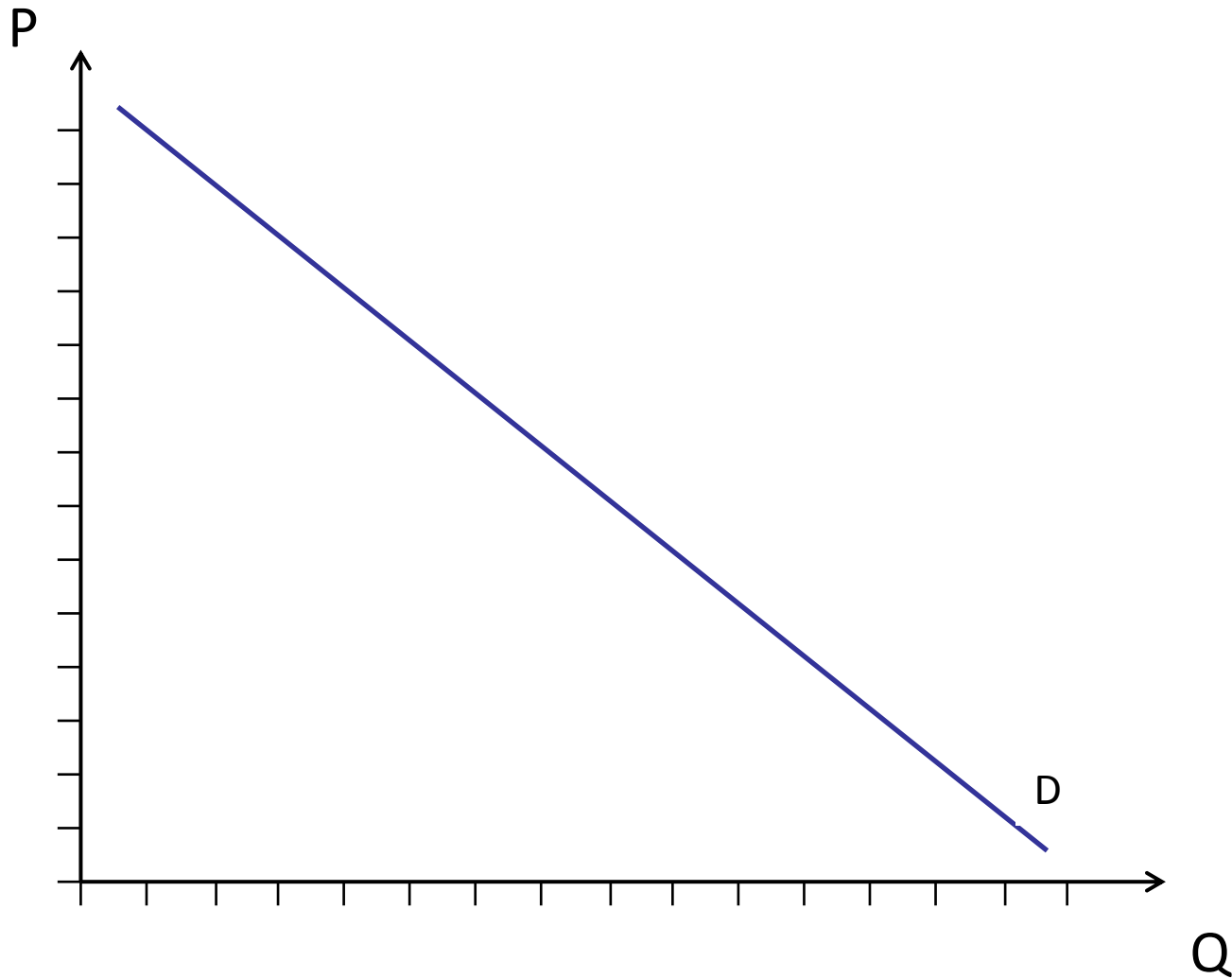


Market demand



# Demand

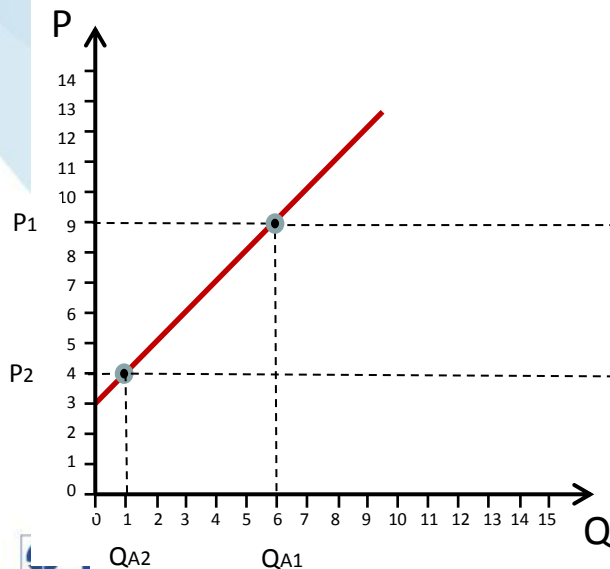
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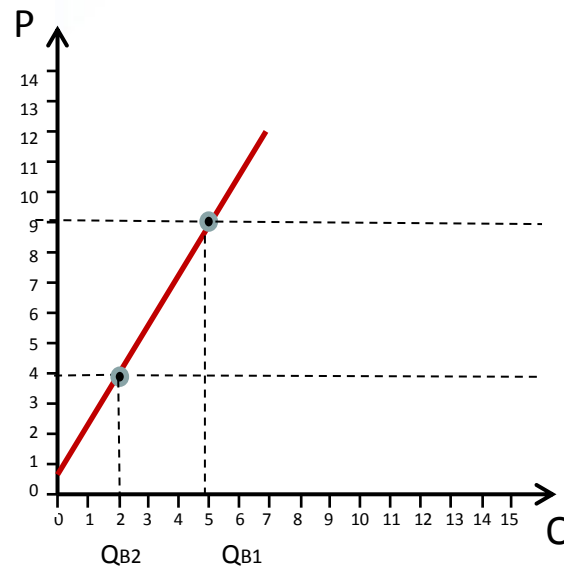
# Supply

- ▶ Producers (enterprises) maximize profits, taking into account
  - ▶ Product prices, prices of other products
  - ▶ Factor (input) prices
  - ▶ Technology/ technological progress
  - ▶ Subsidies and other policies
  - ▶ Weather, ...

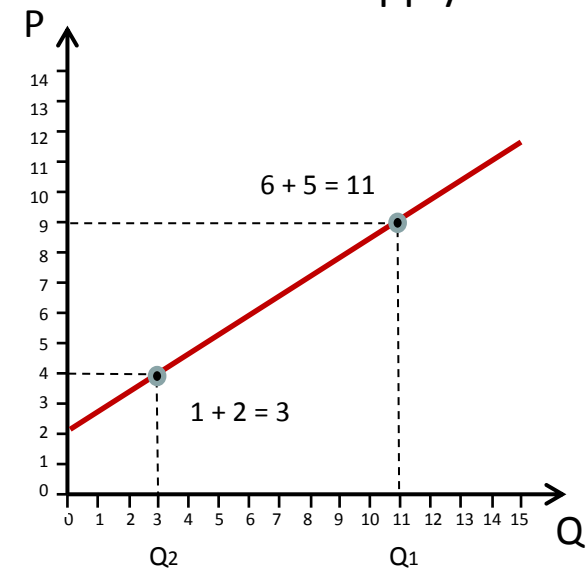
Producer A



Producer B

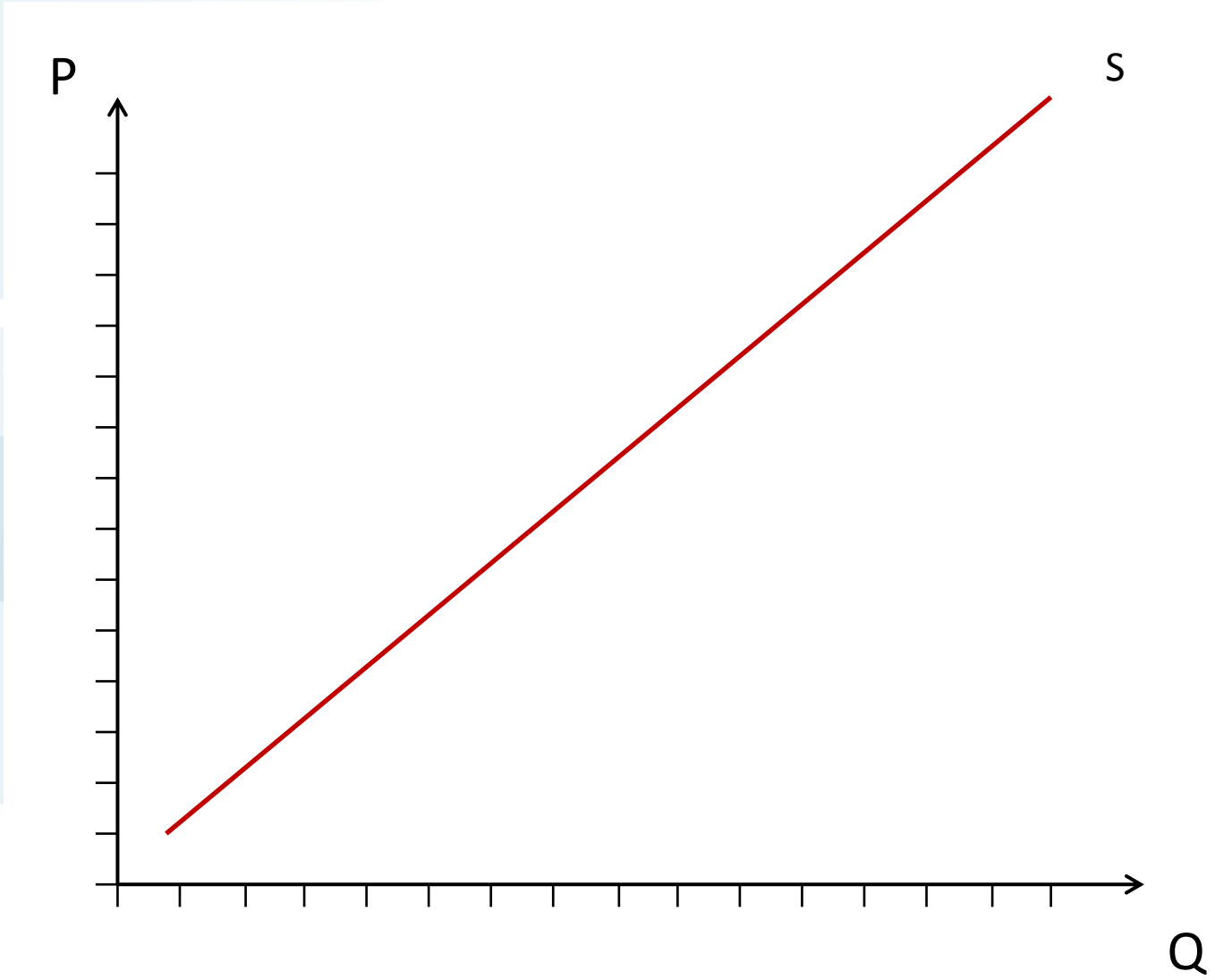


Market supply

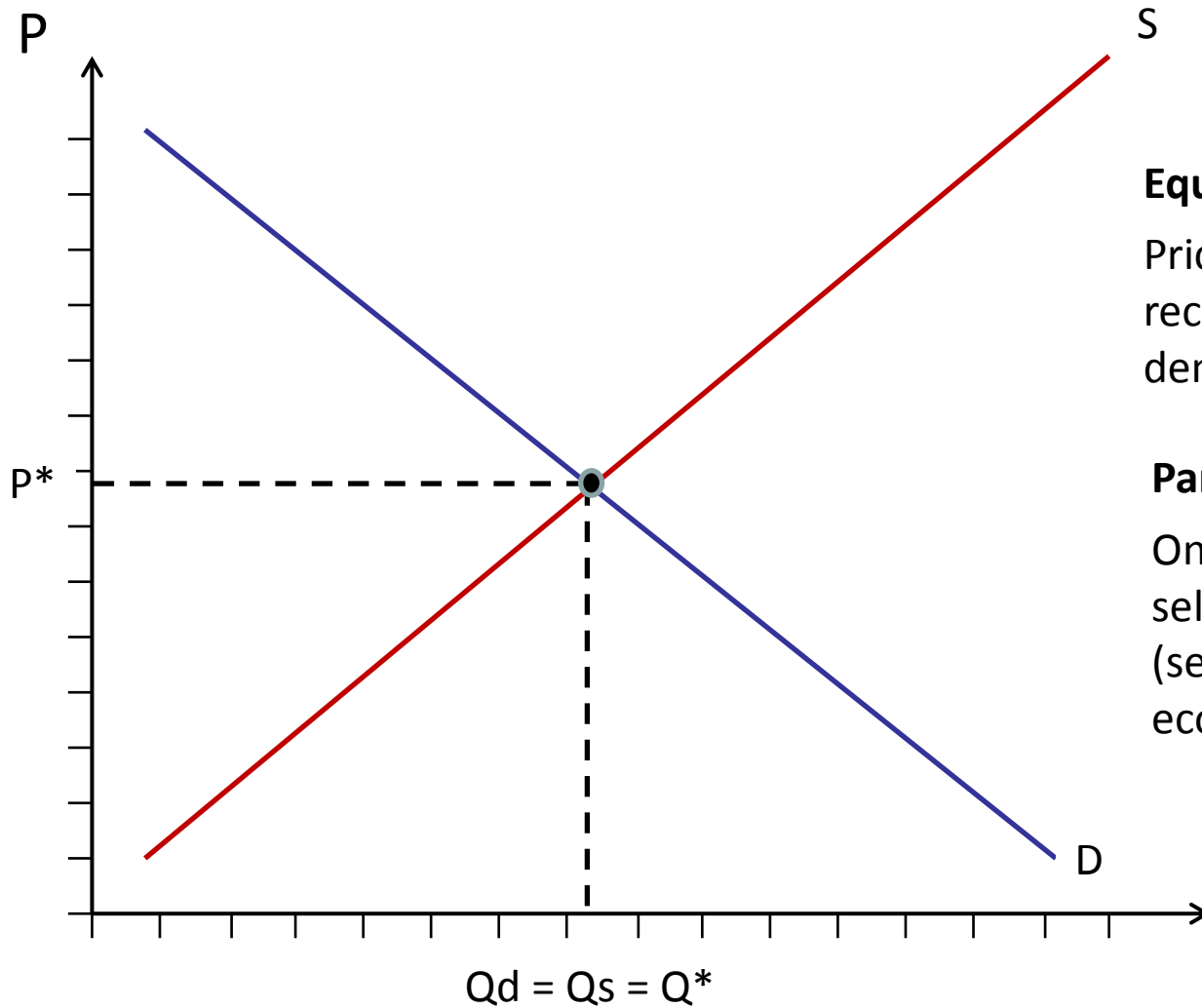


# Supply

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# Market equilibrium / partial equilibrium

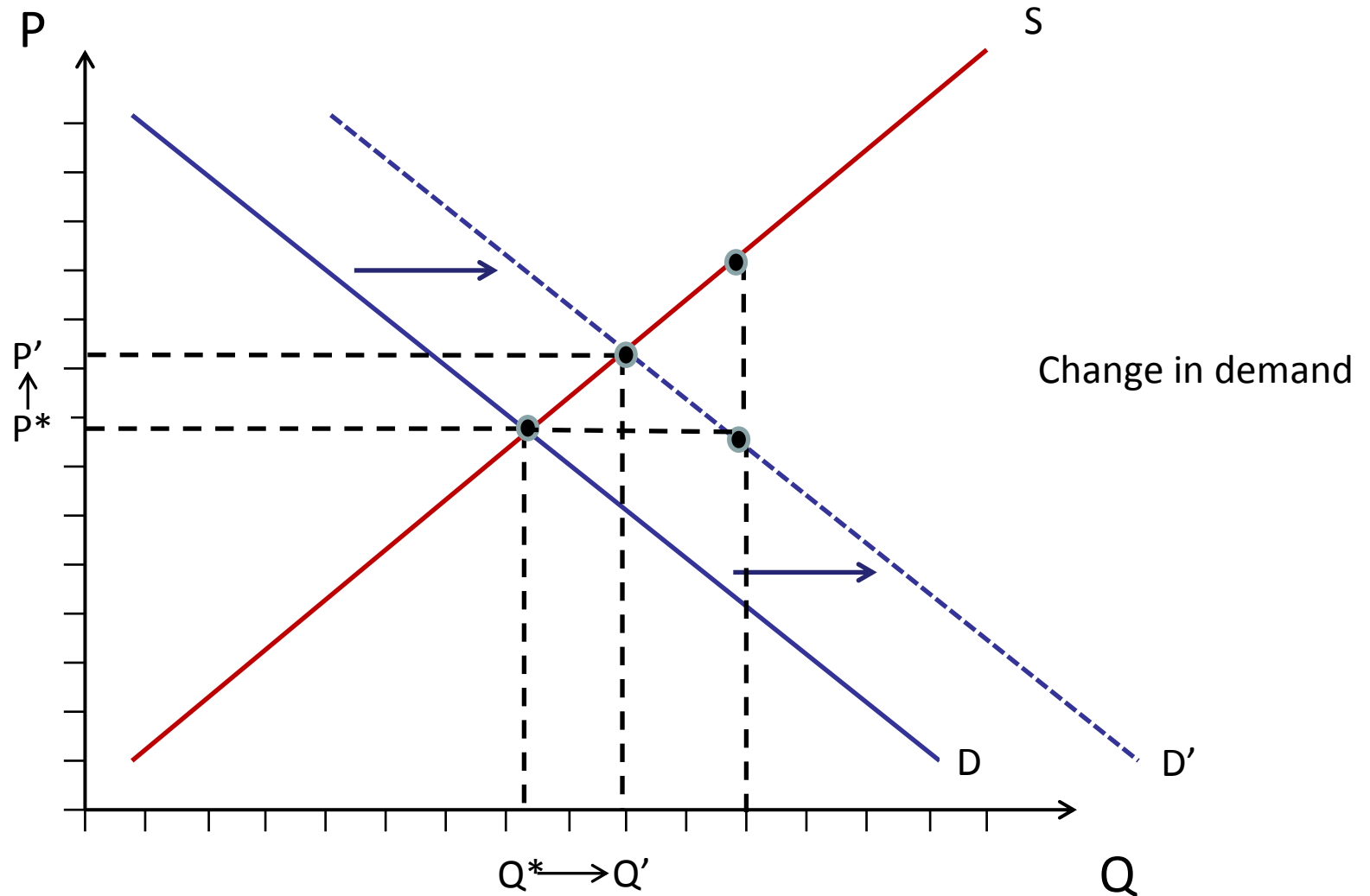


**Equilibrium price:**  
Price, which reconciles supply and demand

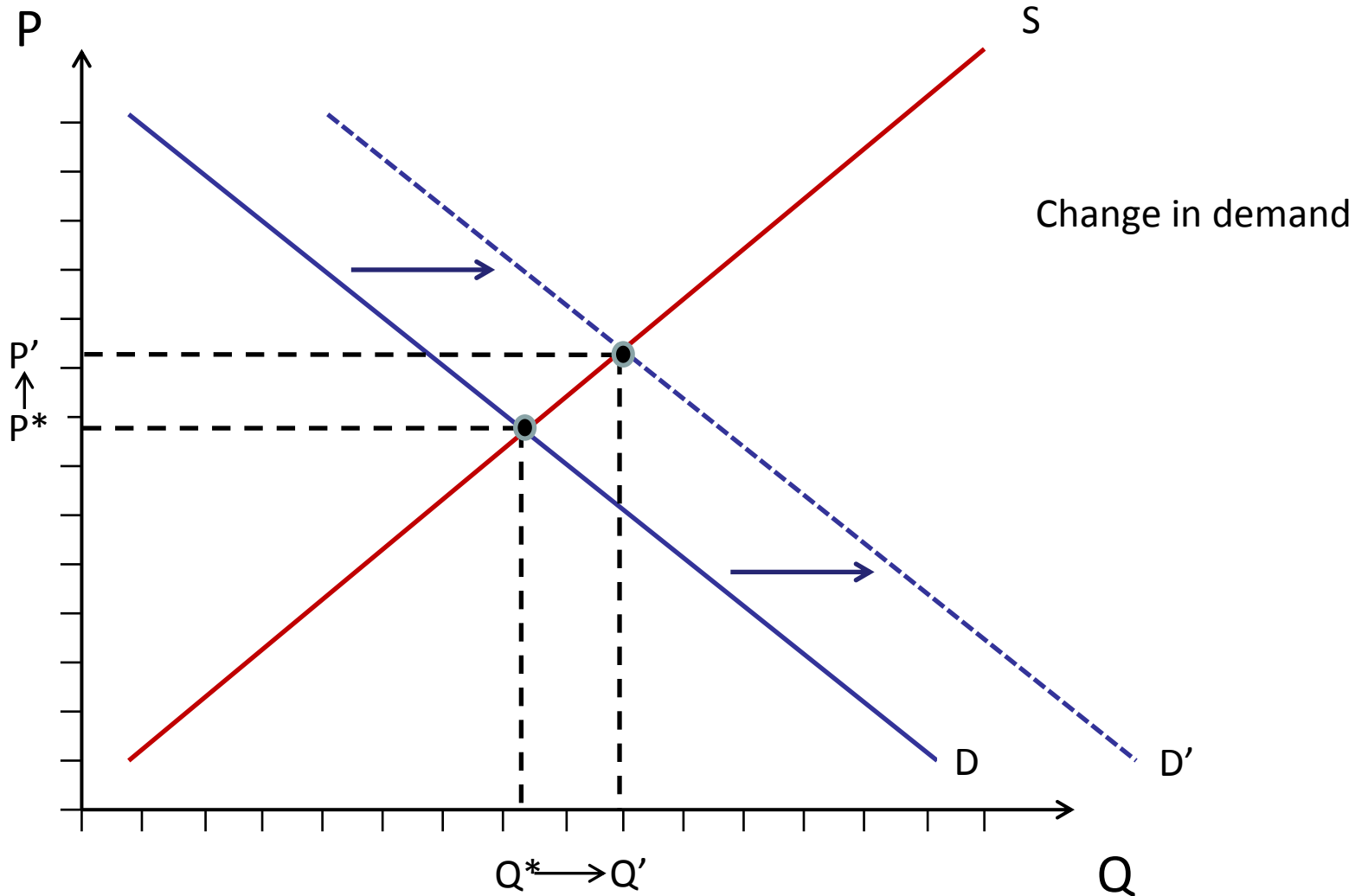
**Partial equilibrium:**  
Only one market or selected markets (sector) of an economy



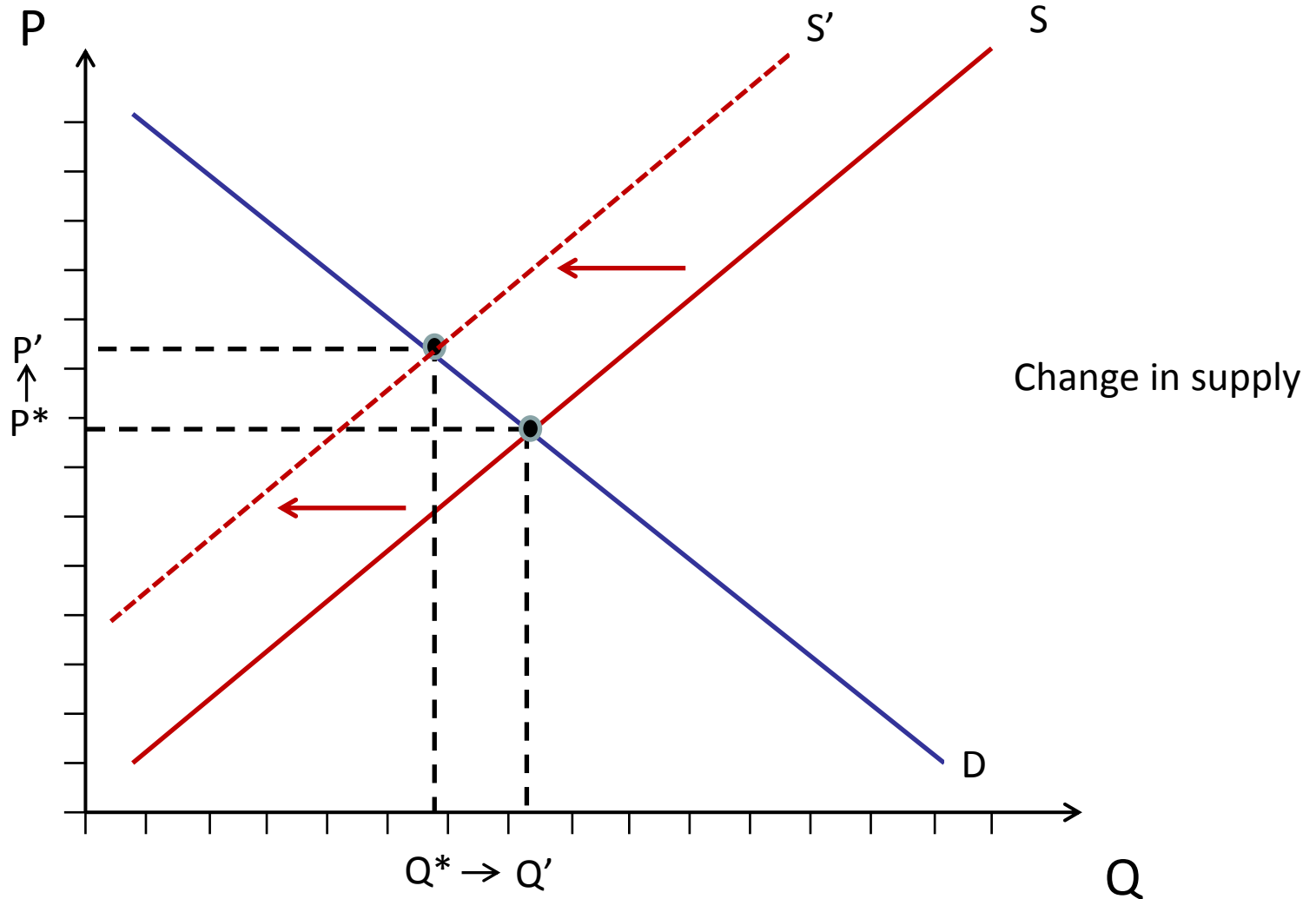
# Endogenous prices



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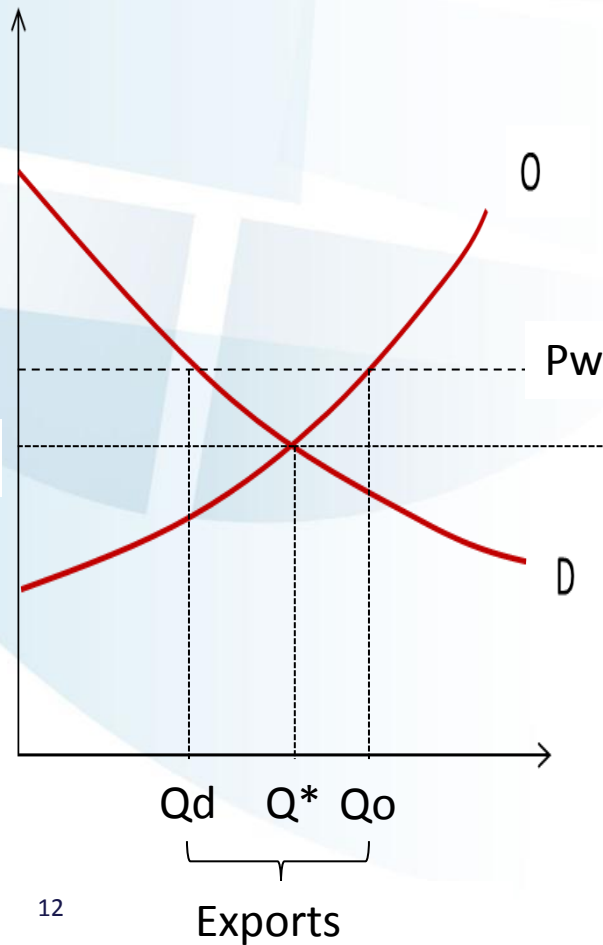


# Endogenous prices

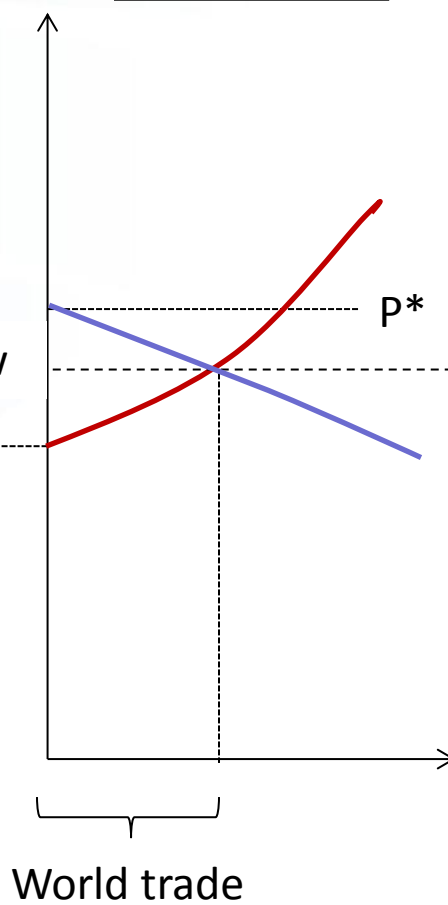


# International trade

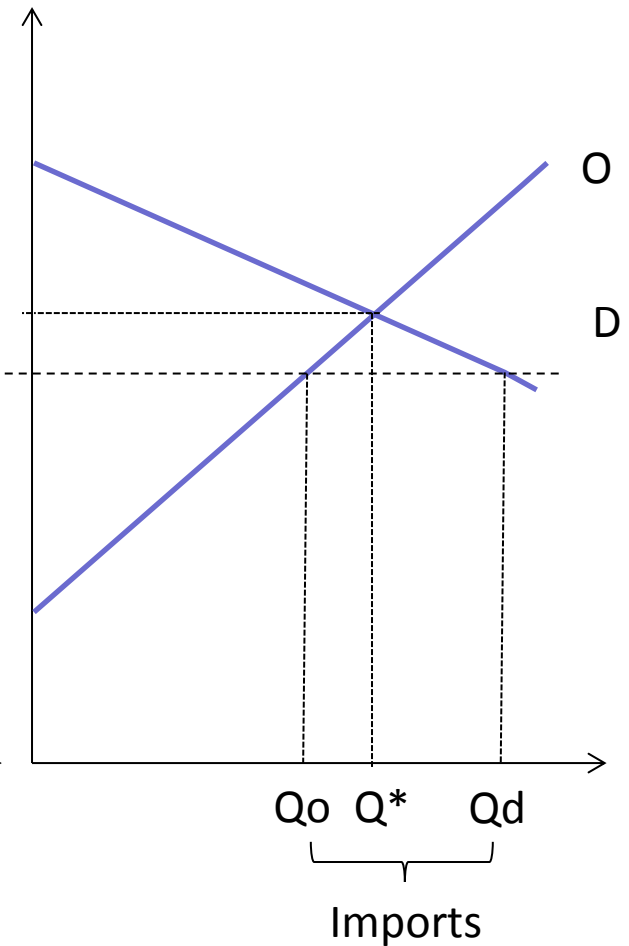
Region A



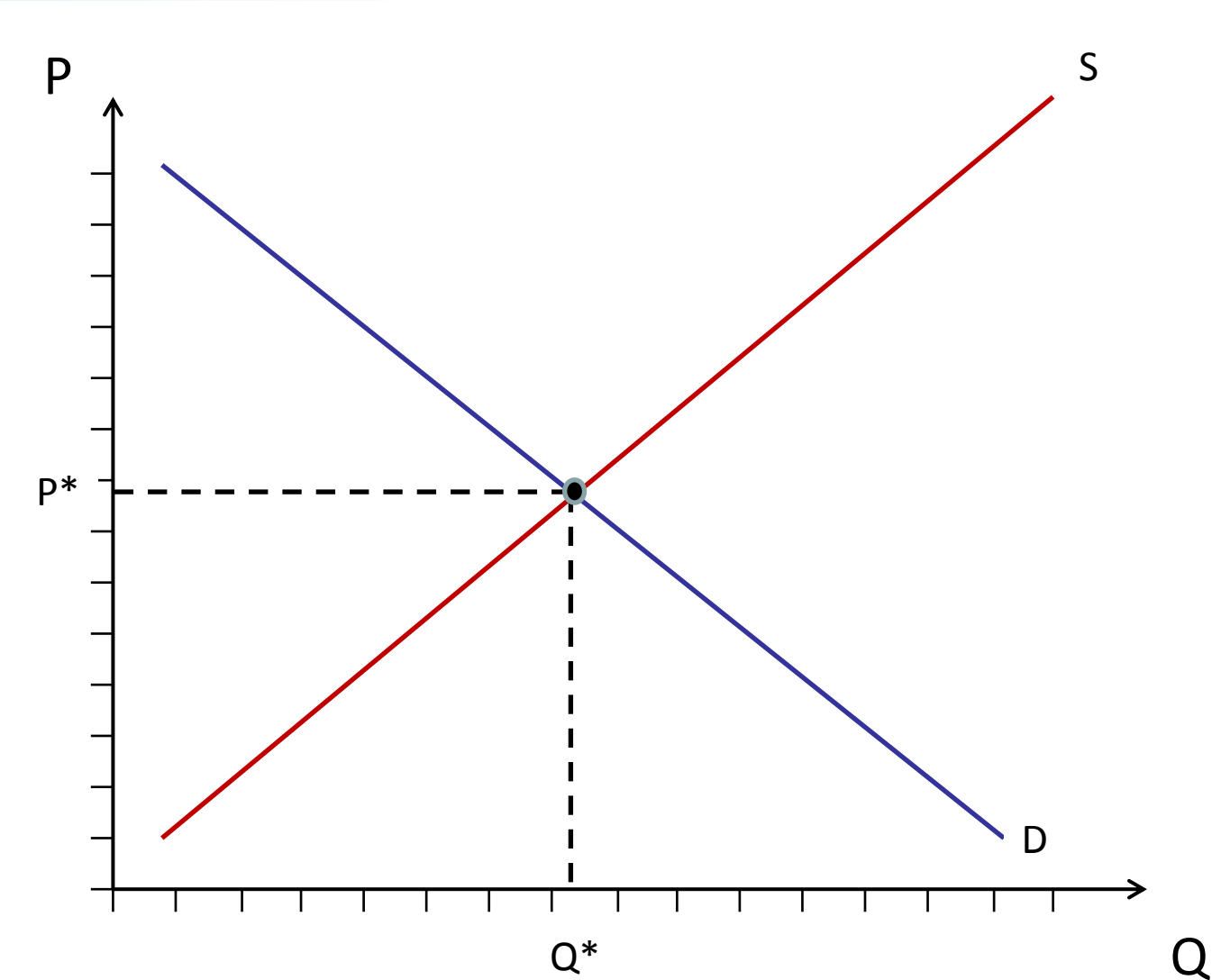
World Market



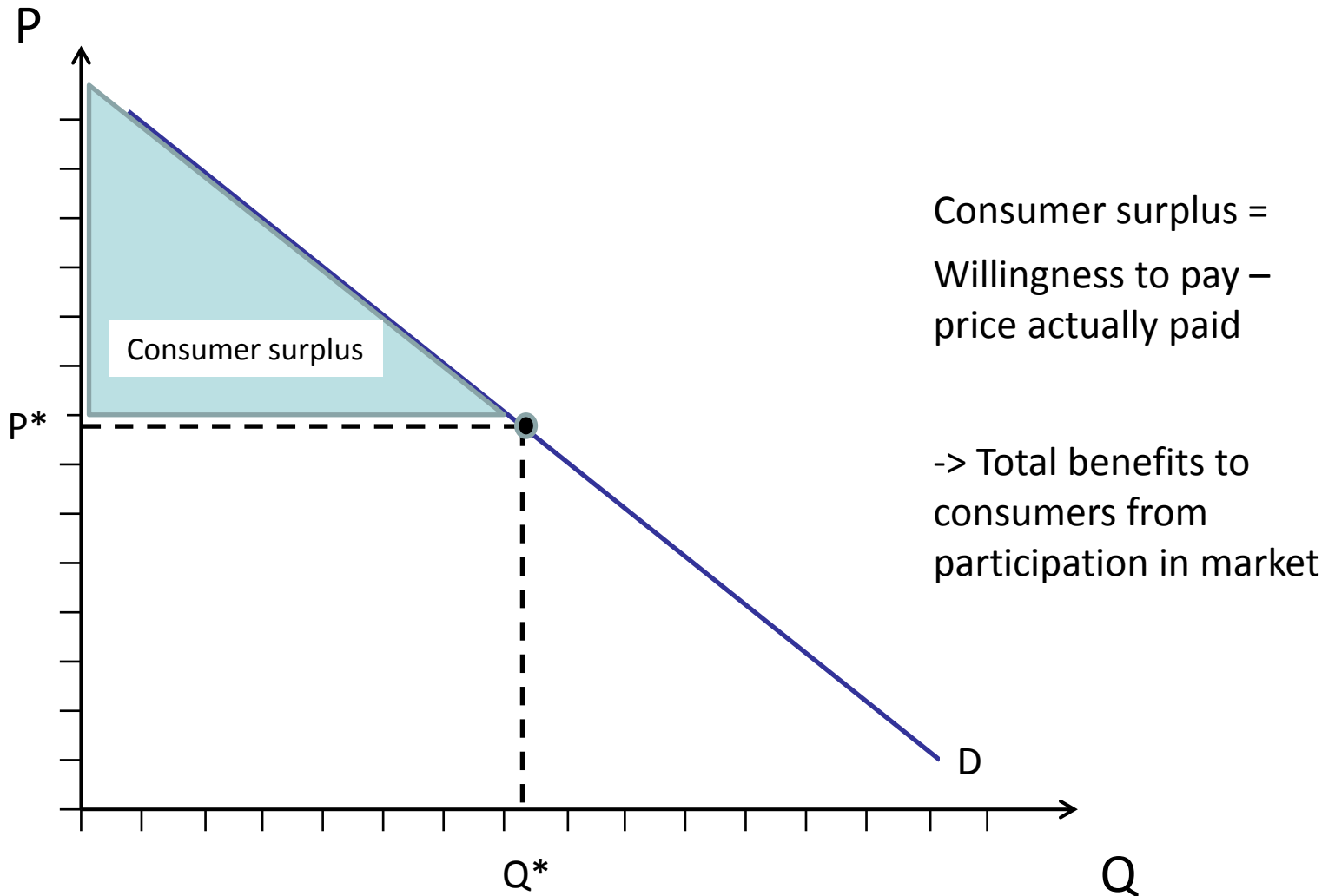
Region B



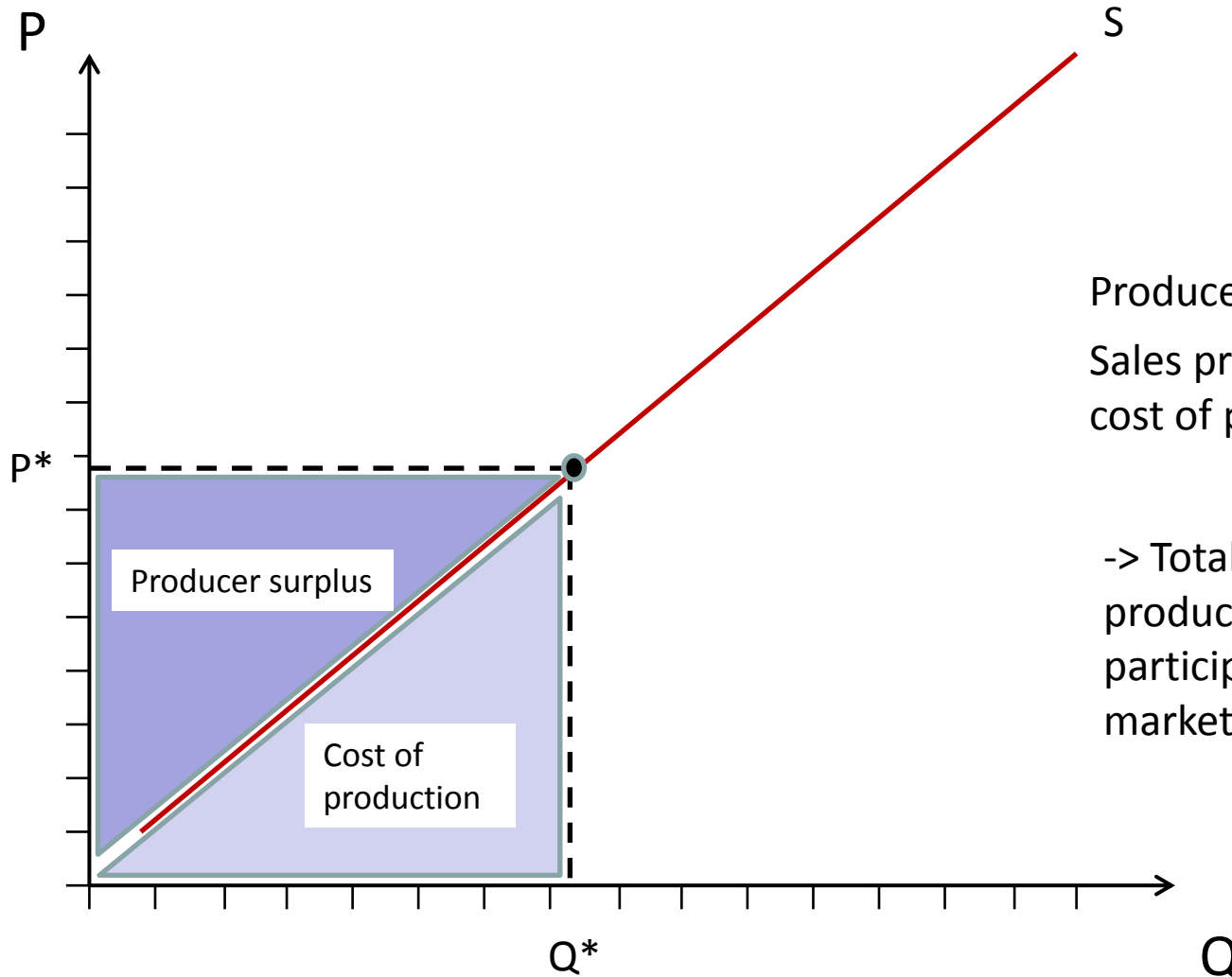
# Social welfare: Consumer and producer surplus



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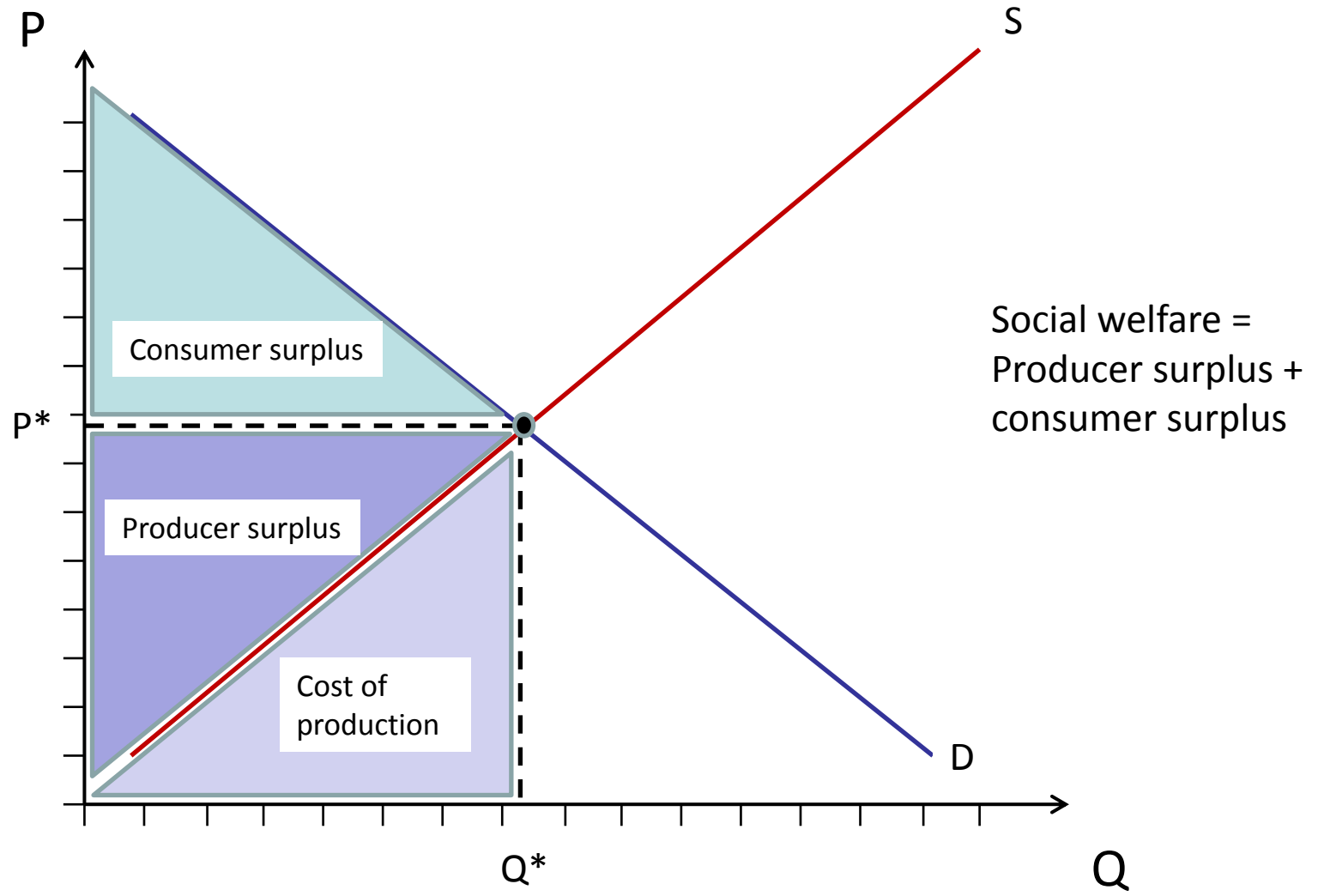
# Social welfare: Consumer and producer surplus



Producer surplus =  
Sales price –  
cost of production

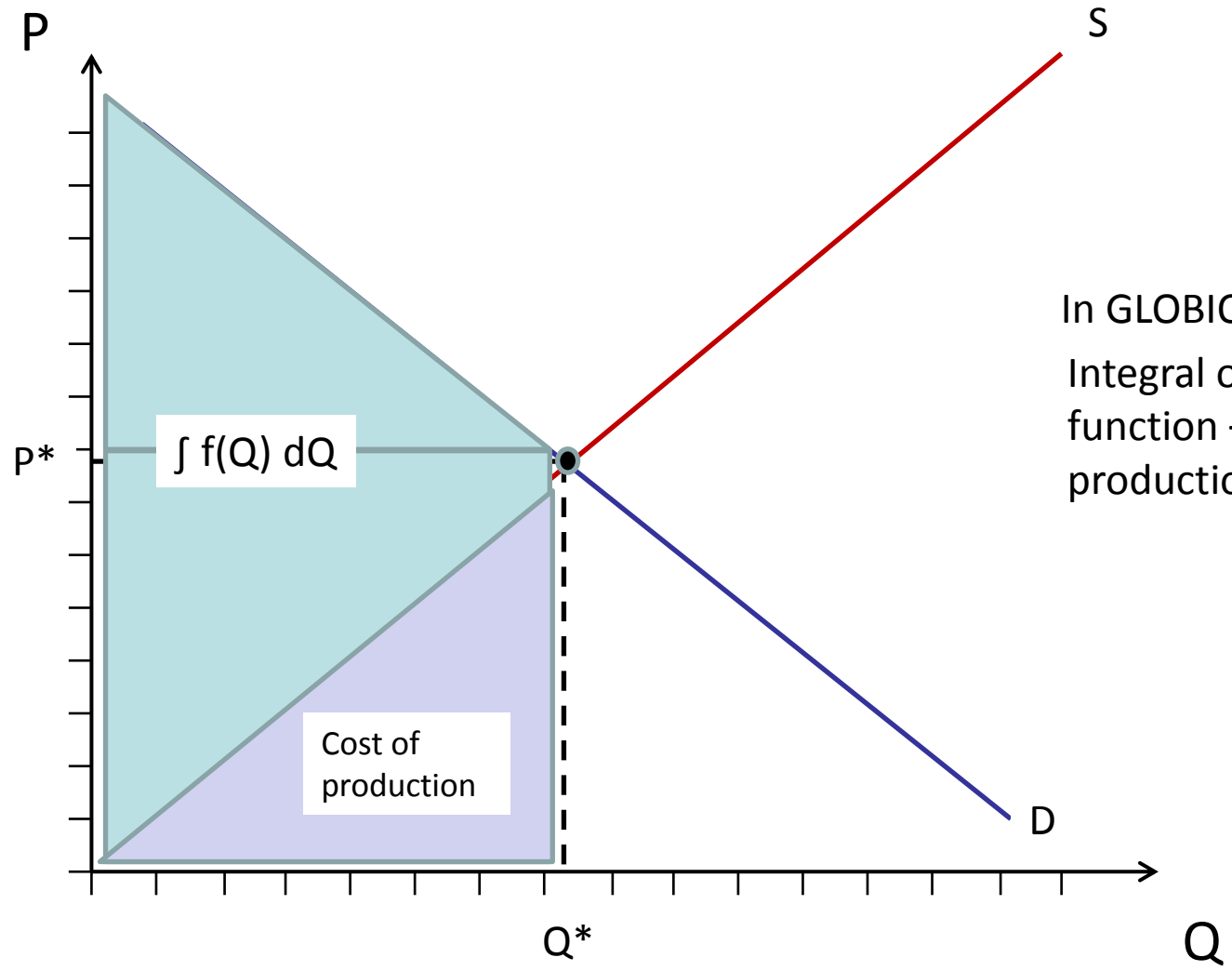
-> Total benefits to  
producers from  
participation in  
market

# Social welfare: Consumer and producer surplus





# Social welfare: Consumer and producer surplus



In GLOBIOM:  
Integral of demand  
function – cost of  
production

**Thank you !**