

# **Supply Continued & Markets**

World Food Week 9

# Firms Objective Function

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## P Maximize Profits

- ▶ Maximize distance between total revenue curve & total cost curve
- ▶ Occurs where price = marginal costs

## P Firm's supply curve

- ▶ Marginal cost above and to the right of the intersection with average cost curve

# Average Costs & Marginal Costs

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P Average costs are derived from Total Cost Curve

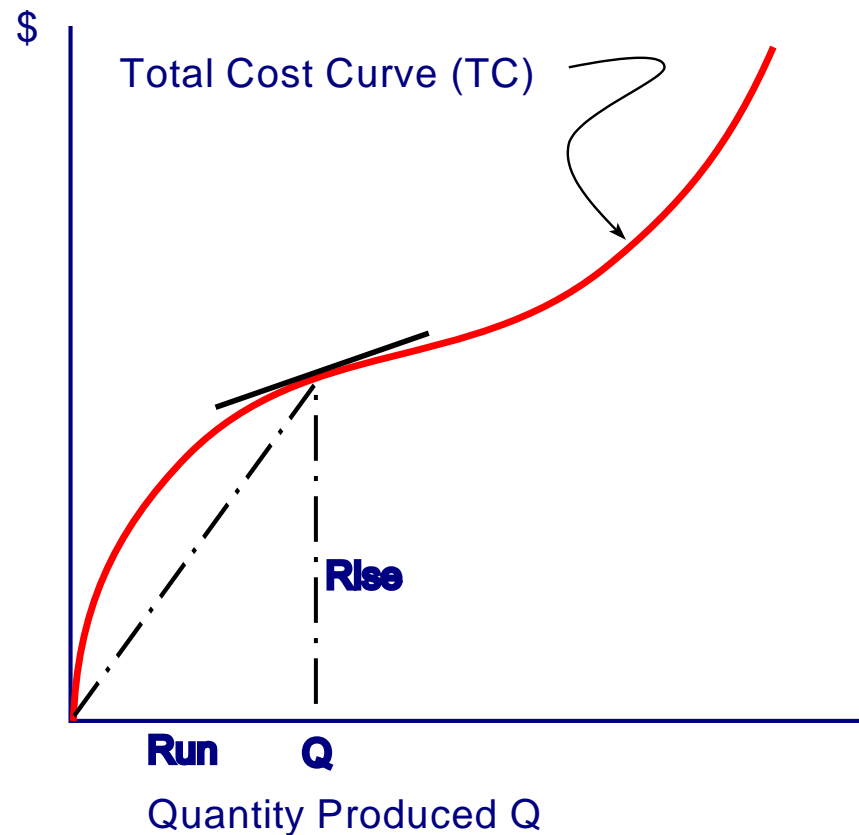
- ▶ Line from the origin to a point on the curve
- ▶ Average = Rise/Run
- ▶ Tells us average cost per unit to produce Q

P Marginal costs are derived from the Total Cost Curve

- ▶ Line tangent to a point on the curve
- ▶ Tells us marginal cost to produce a marginal unit at Q

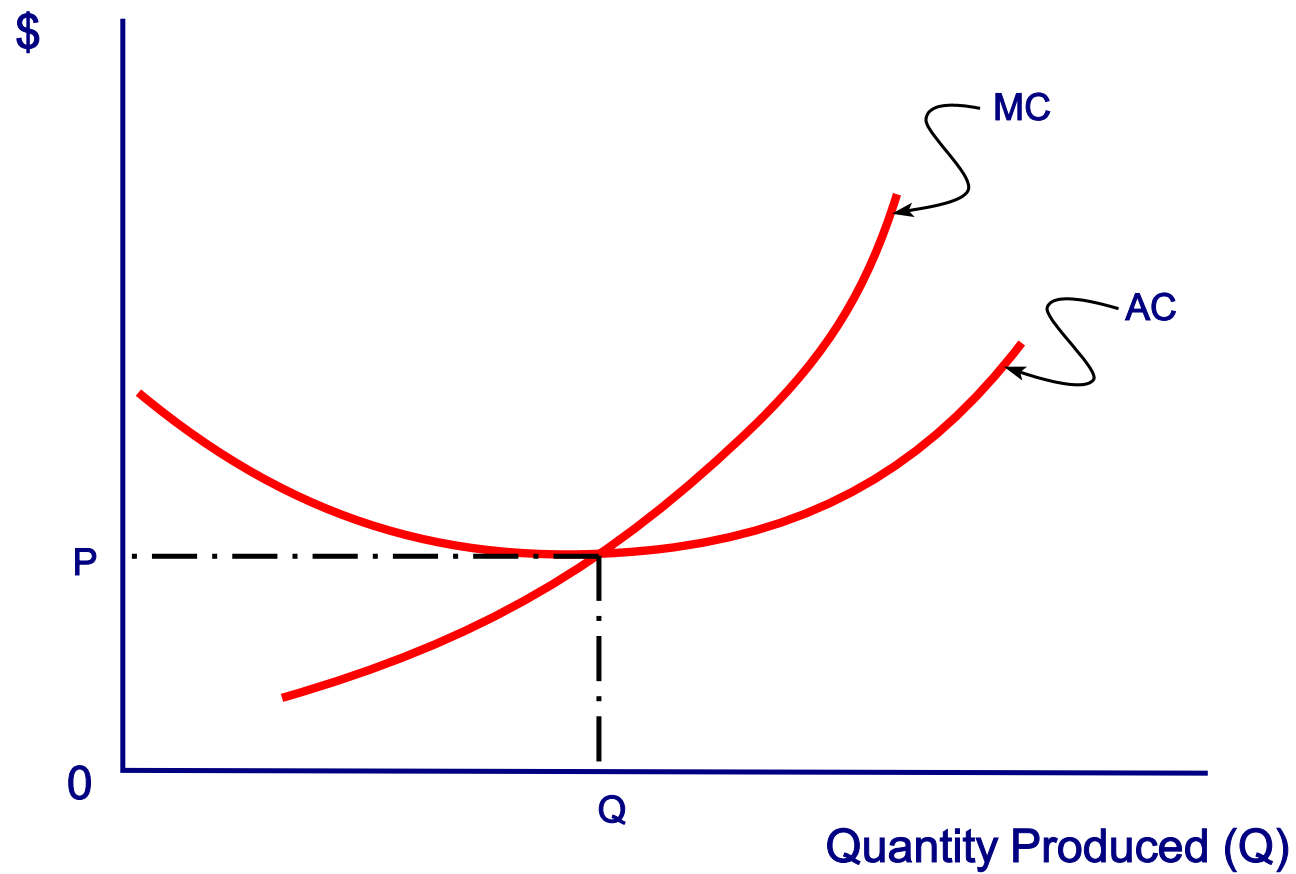
# Derivation of Average & Marginal Cost Curves

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# Average & Marginal Cost Curves

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# Producer's Surplus

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P Total benefit to producer

- ▶ Area below price line & to left of a vertical line at supply-demand intersection

P Total cost

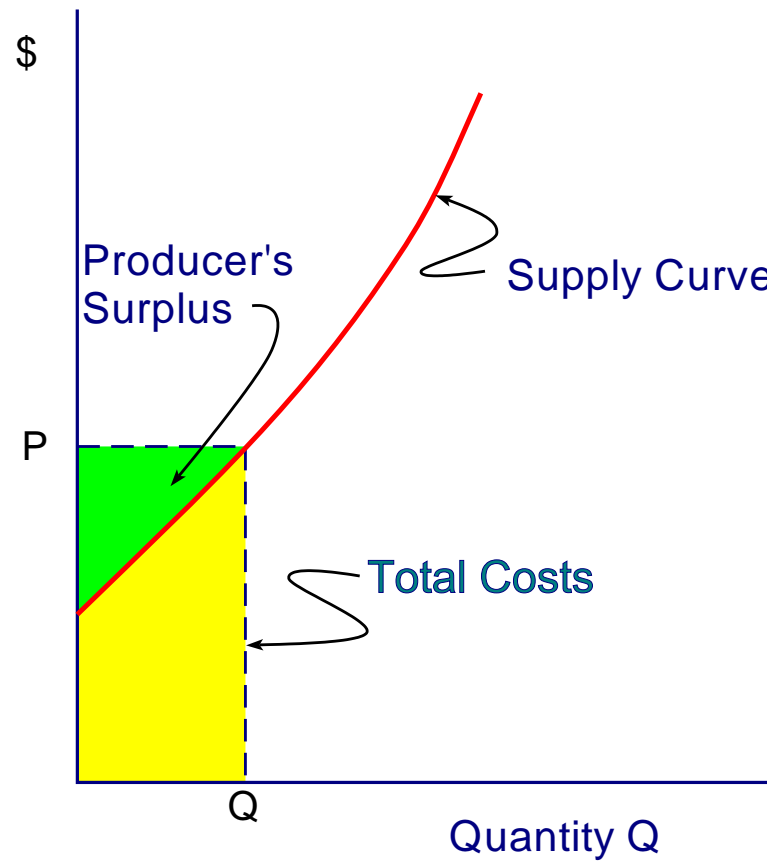
- ▶ Area below the supply curve & to left of vertical line

P Area above the supply curve & below the price line is producer's surplus

- ▶ Analogous to consumer's surplus
- ▶ Reflects scarcity & economic profits

# Producer's Surplus

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# Market Supply Curve

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P Aggregated just like demand

- ▶ Individual supply curves of each producer
- ▶ Aggregated horizontally

P Individual producer doesn't have to have the same supply curve (i.e., marginal cost curve)

- ▶ Reflect alternative technologies
- ▶ Market entry & exit

# Allocation of Production Between Plants

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P Firm may have more than one plant

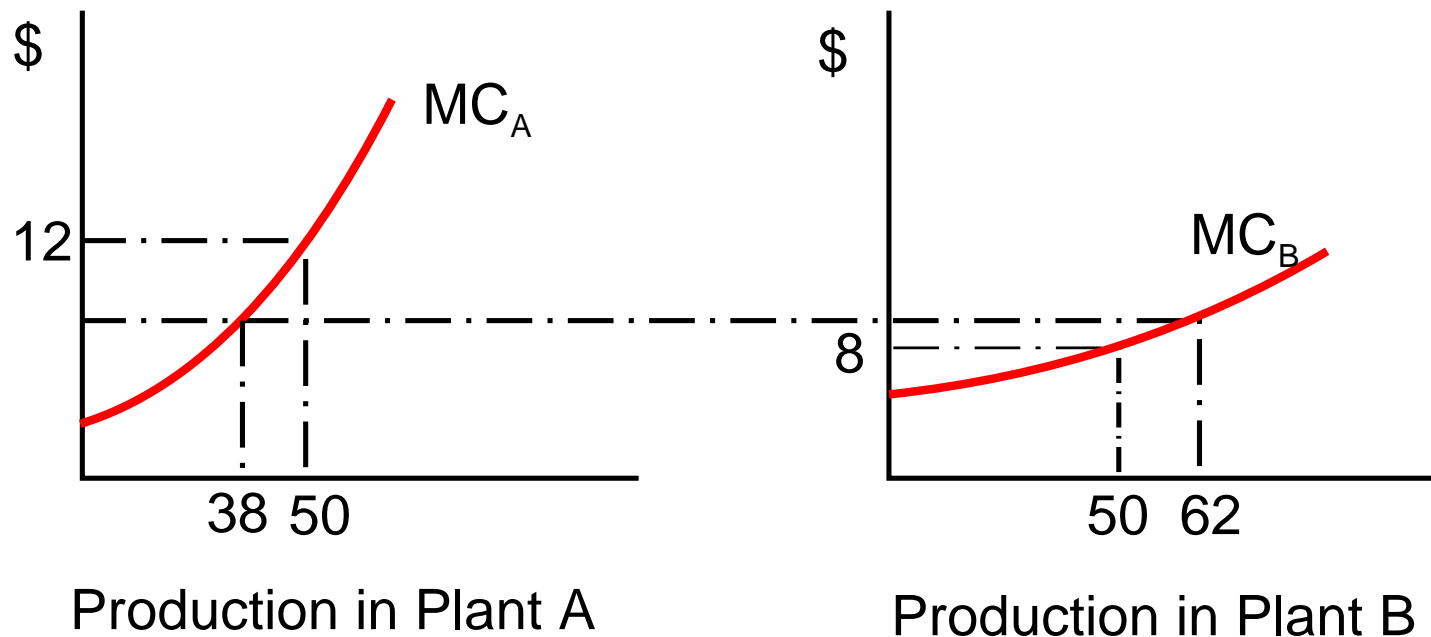
- ▶ Efficient allocation of production between two plants
  - Given a plants technology
    - Production determined by price = marginal cost
- ▶ Between plants equate marginal costs to price

P Concept is the equimarginal principle

- ▶ Important within firms & between firms

# Allocation Between Two Plants

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# Social Efficiency

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P An allocation is Pareto efficient if

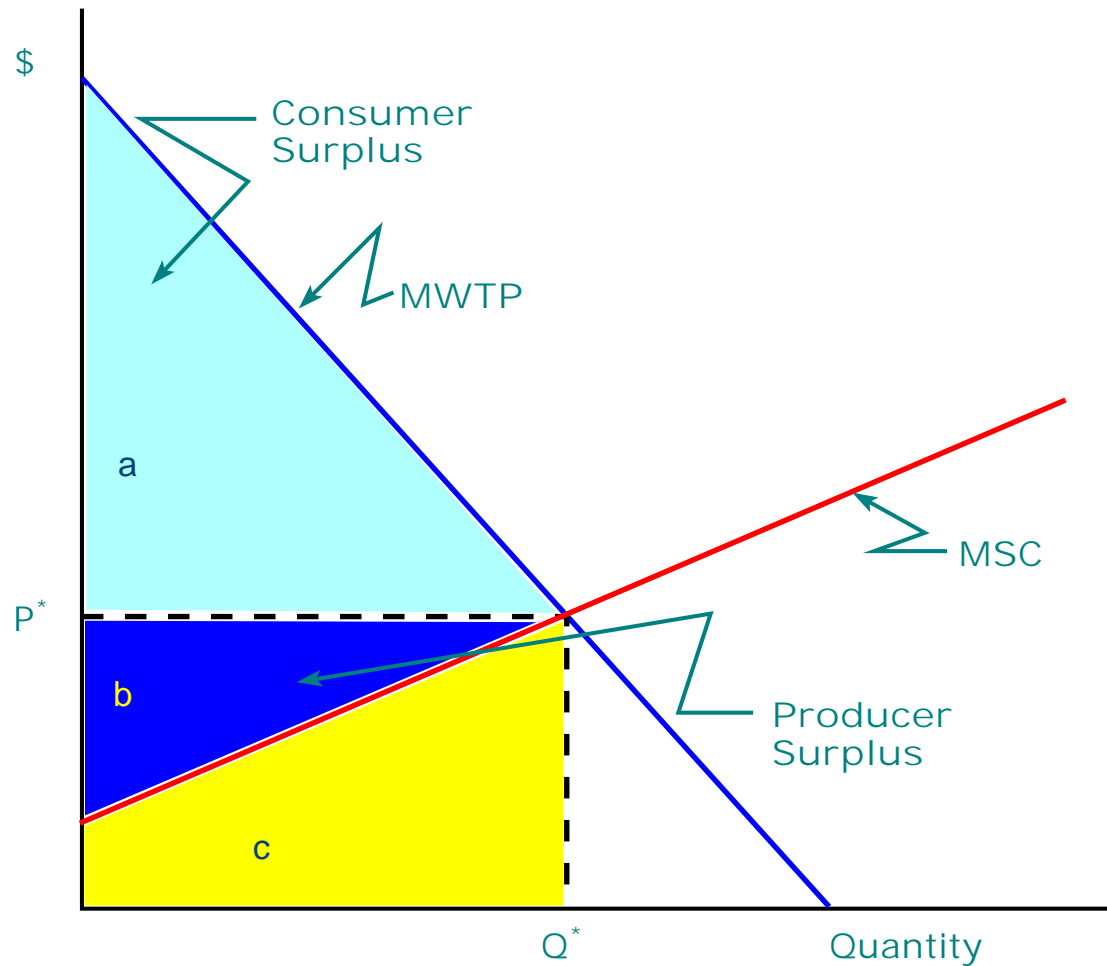
- ▶ In making one person better off
- ▶ Another individual is made worse off

P Modified Pareto principle

- ▶ If winner(s) could potentially compensate those who are worse off

# Social Efficiency

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# Perfect Competition

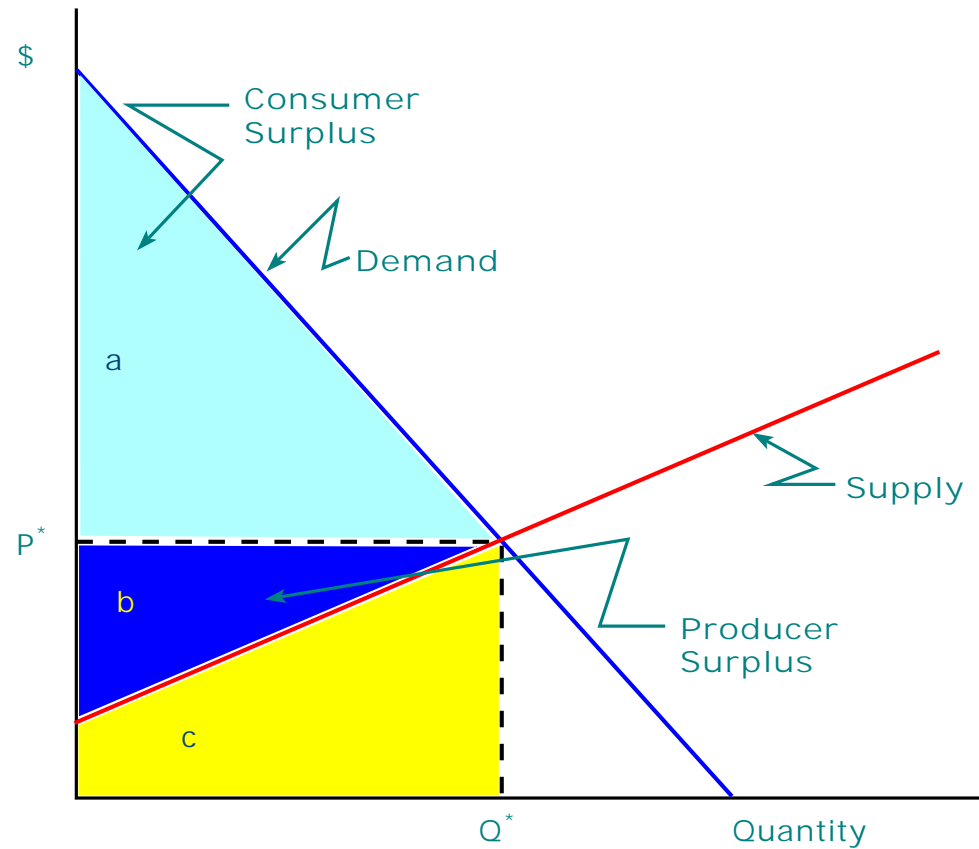
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## P Conditions

- ▶ Homogeneous goods
- ▶ Consumers maximize utility
- ▶ Producers maximize profits
- ▶ Perfect information
- ▶ Large numbers of producers and consumers
  - All economic agents are price takers

# Competitive Market

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# Elasticity Again

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P Price elasticity

*Demand*

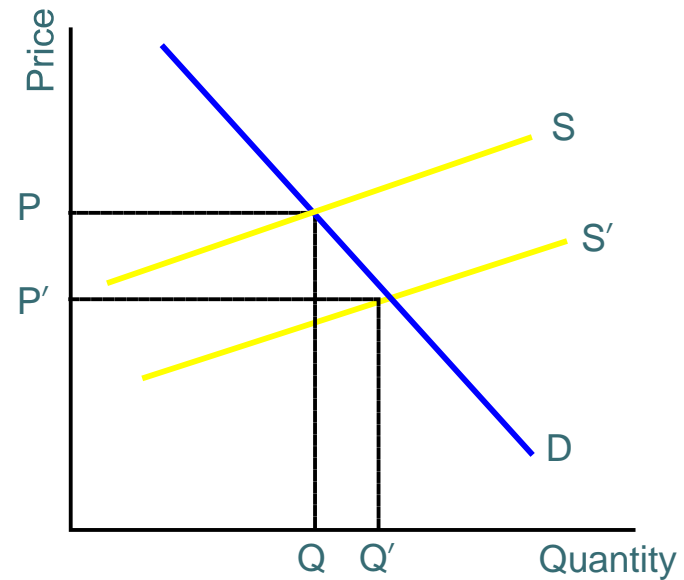
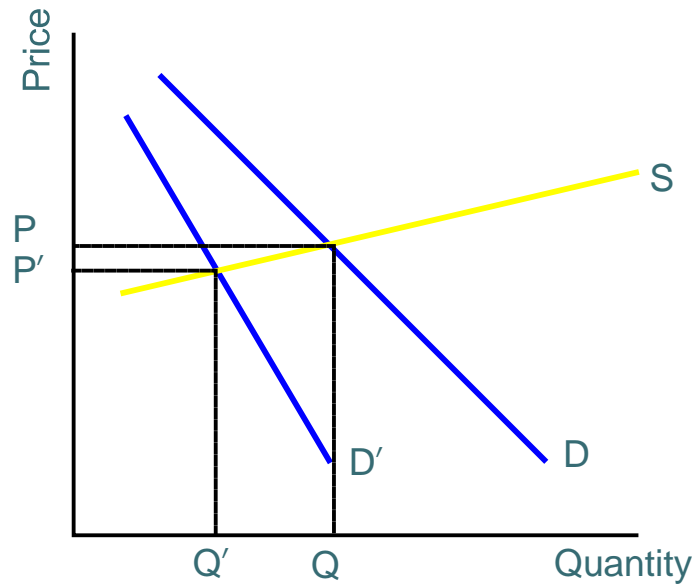
$$\varepsilon_D = \frac{\Delta Q_D}{\Delta P} \times \frac{P}{Q_D}$$

*Supply*

$$\varepsilon_S = \frac{\Delta Q_S}{\Delta P} \times \frac{P}{Q_S}$$

# Elasticity and Changes in the Market

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# What Is the Strength and Weaknesses of the Market

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P Market takes care of allocation

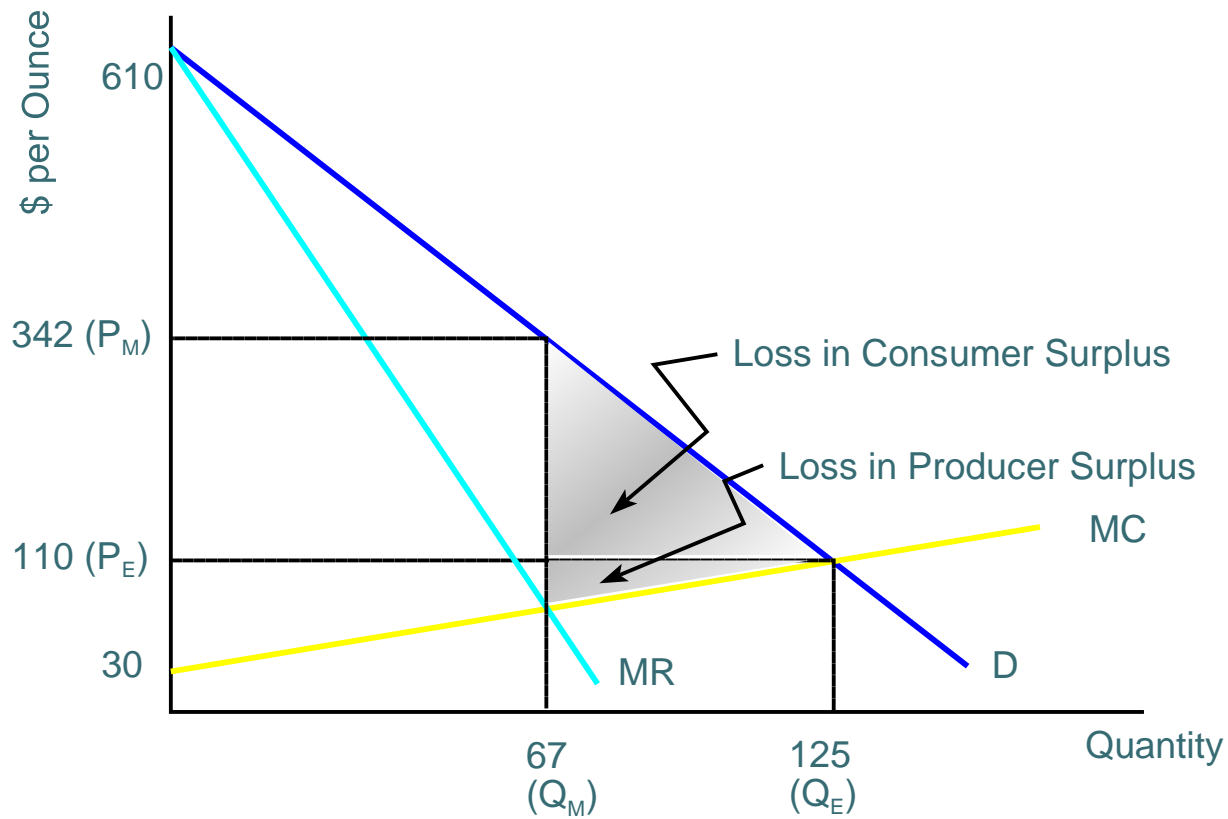
- ▶ Recognized by Adam Smith
- ▶ Need institutional framework
  - Concept of property
  - Concept of contract

P Doesn't deal with equity

P Problem of market failure

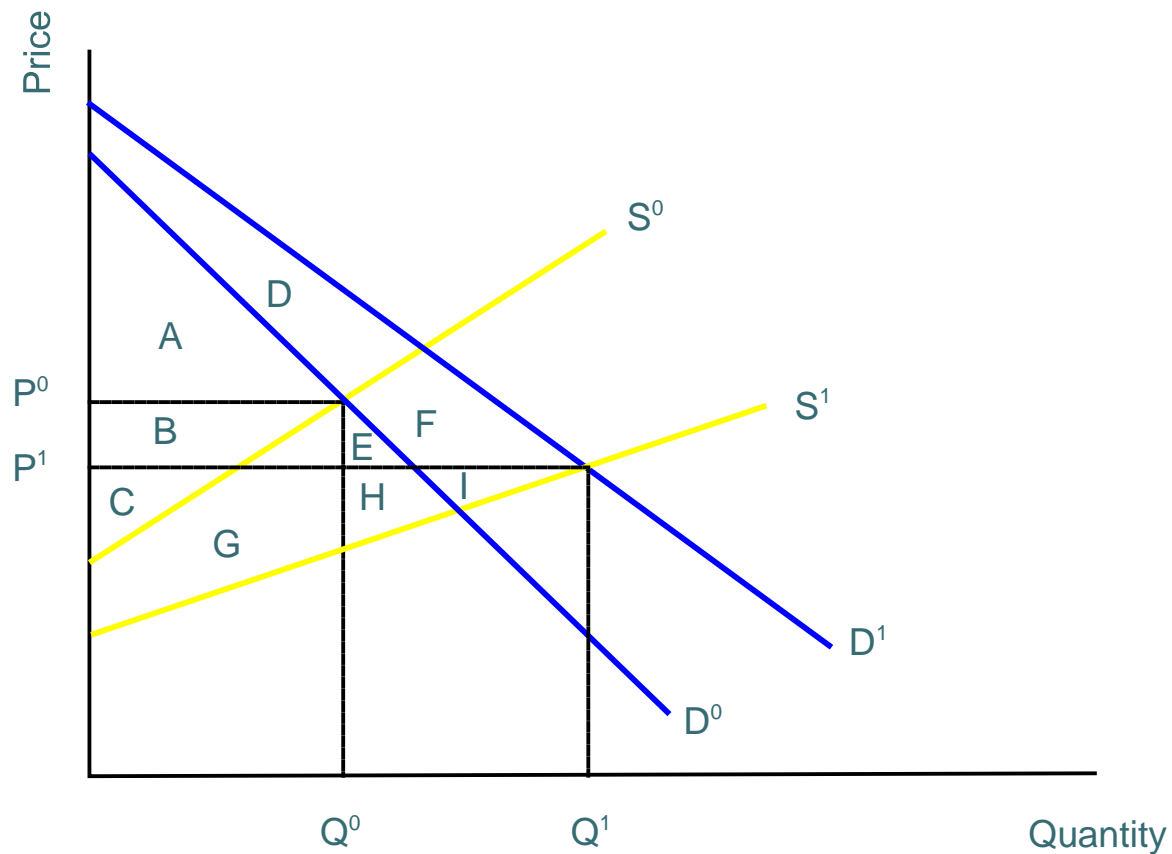
# Monopoly in Caviar

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# Different Growth Rates for Supply & Demand

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# Fundamental Challenges

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## P Demand side

- ▶ Reduction in the growth rate of population
  - Won't stop for a few decades
- ▶ Living standards increasing
- ▶ Rise at least 50% between 2000 and 2050
  - If population and incomes rise sufficiently could double

## P Supply side

- ▶ Extensification possible, but not much
- ▶ Intensification needed, but slowing down
- ▶ Need both

# Centralized vs Decentralized

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P Limited central planning

P Mostly decentralized

- ▶ Markets
  - Household decisions
  - Producer decisions
- ▶ Government needed
  - Influence decisions
  - Provide research
  - Provide information

# Markets

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P Bring supply and demand into balance

- ▶ Price signals

P Provide incentives for change

- ▶ Accommodate population growth
- ▶ Technological change
- ▶ Etc.

# Net Economic Value

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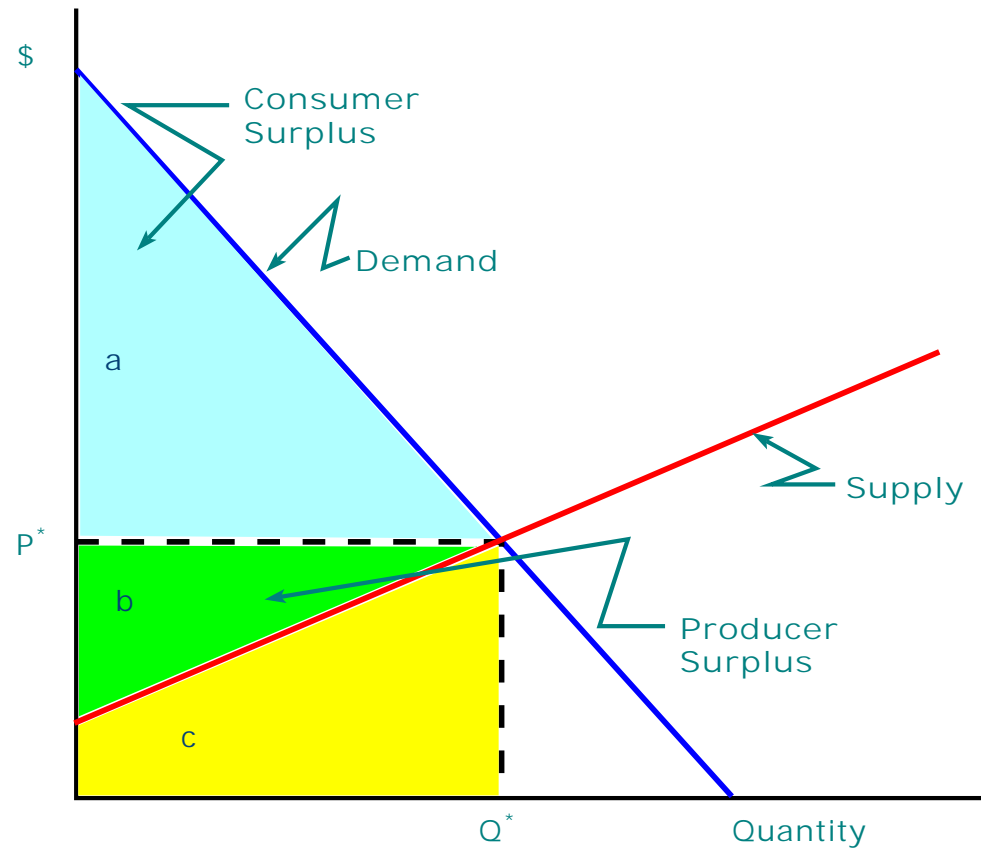
P Competitive markets and social efficiency

P Net economic value (NEV)

- ▶ Total surplus created in the market
  - Consumer surplus (CS)
  - Producer surplus (PS)
- ▶  $NEV = CS + PS$

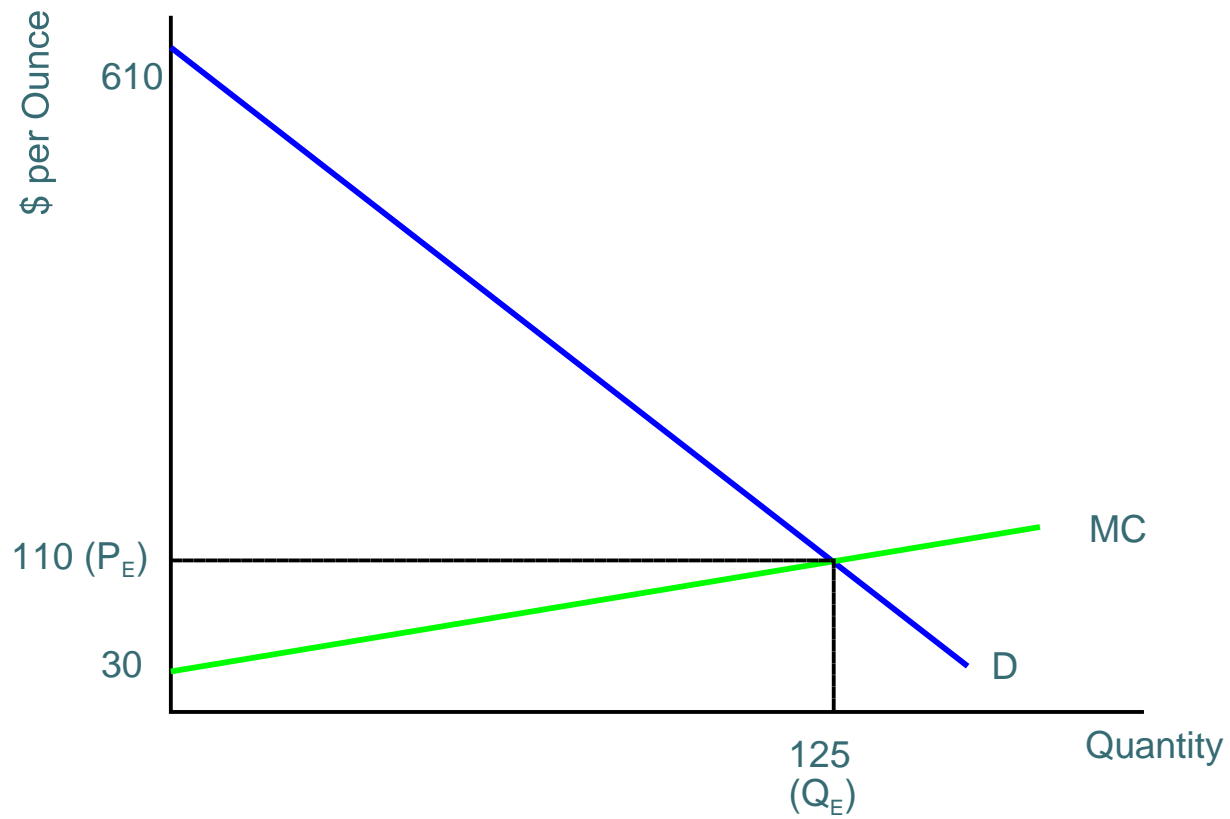
# Competitive Market

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# Calculating NEV

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# Calculating NEV

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P Consumer Surplus

$$\triangleright CS = [\frac{1}{2} \times ((610 - 110) \times 125)] = \$31,250$$

P Producers surplus

$$\triangleright PS = [\frac{1}{2} \times ((110 - 30) \times 125)] = \$5,000$$

P Net Economic Value

$$\triangleright NEV = CS + PS = \$31,250 + \$5,000 = \$36,250$$

# Government Intervention in Supply

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## P Supply problems

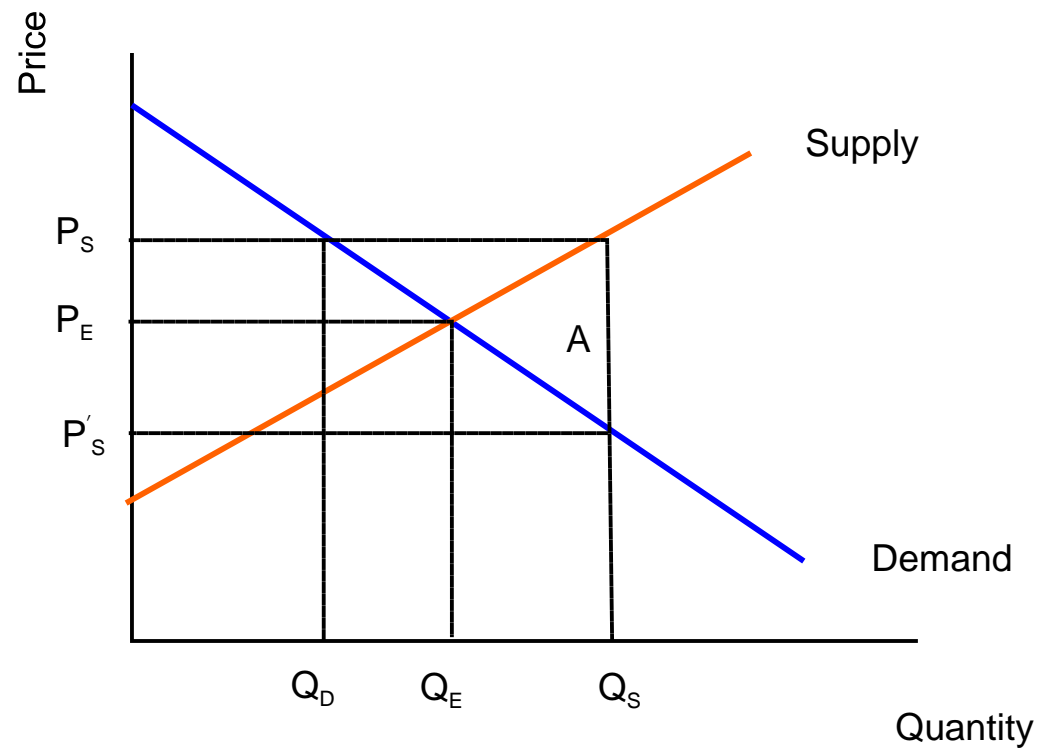
- ▶ Exposure to the environment (climate, storm events, etc.)
  - One of a number of reasons for price volatility
- ▶ Length of time between applying inputs and harvesting outputs
- ▶ Declining commodity prices

## P Government intervention

- ▶ Price supports
- ▶ Subsidies
- ▶ Supply management
- ▶ Market information
- ▶ Income supports
  - Decoupling

# Price Supports & Targets

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# Price Supports & Targets Continued

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P If price supported at  $P_s$

- ▶ Farmers want to Supply  $Q_s$
- ▶ Consumers demand  $Q_D$
- ▶ Government must buy difference
  - Also have to store commodity

P Price targets

- ▶ Government pays for difference between
  - Target price
  - Market price
  - Must offer surplus to consumers at lower price