

Chapter #3: Welfare Economics

<u>Contents:</u>	General Analysis Overview Welfare under Monopoly	Welfare under Monopsony Welfare under Middlemen
-------------------------	---	--

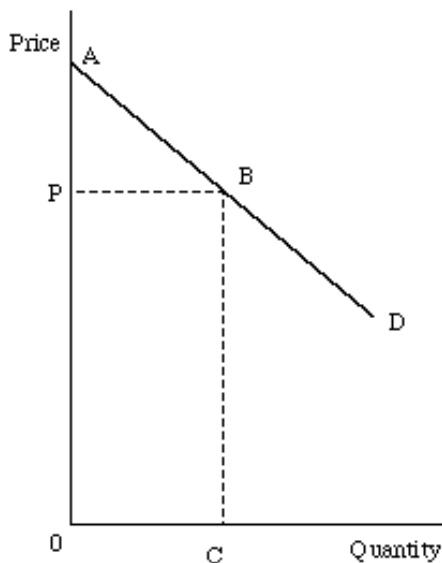
General Analysis Overview

Welfare analysis is a systematic method of evaluating the economic implications of alternative allocations. Welfare analysis answers the following questions:

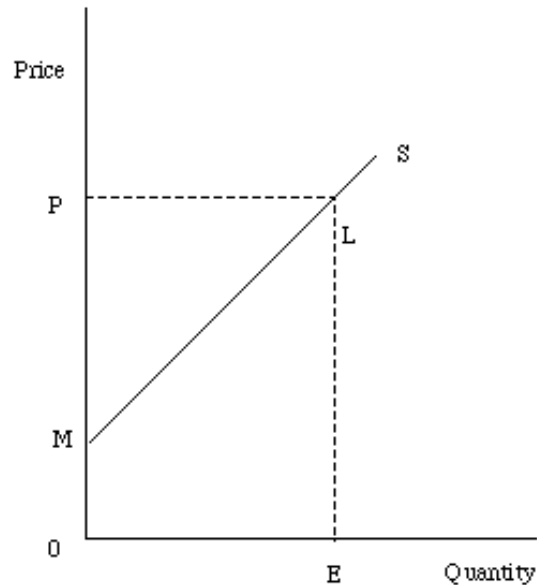
1. Is a given resource allocation efficient?
2. Who gains and who loses under various resource allocations? By how much?

Welfare economics: A methodological approach to assess resource allocations and establish criteria for government intervention.

Partial analysis: Evaluates outcomes in a subset of markets assuming efficiency in others.

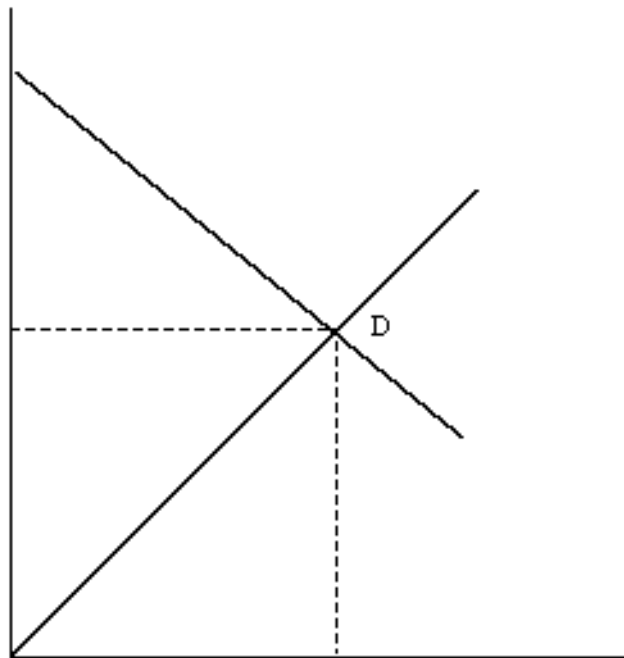


D = demand curve
 Area under demand curve $ABC0$ = gross benefits from consumption.
 ABP = consumer surplus area between demand and price.



S = supply curve
 Area under supply curve $0ELM$ = cost of production.
 PLM – area between price and supply = producer surplus.

When there are no externalities, an efficient outcome occurs where the sum of consumers' and producers' surplus is maximized.



- Area under demand = gross benefits
- Area under supply = gross cost
- Social surplus = gross benefit – cost.
- A competitive equilibrium is efficient. It maximizes sum of consumer and producers surplus.

Welfare under Monopoly

A monopoly is the only seller in a market. The basic condition for a monopoly is below:

Maximizes $P(Q)Q - C(Q)$

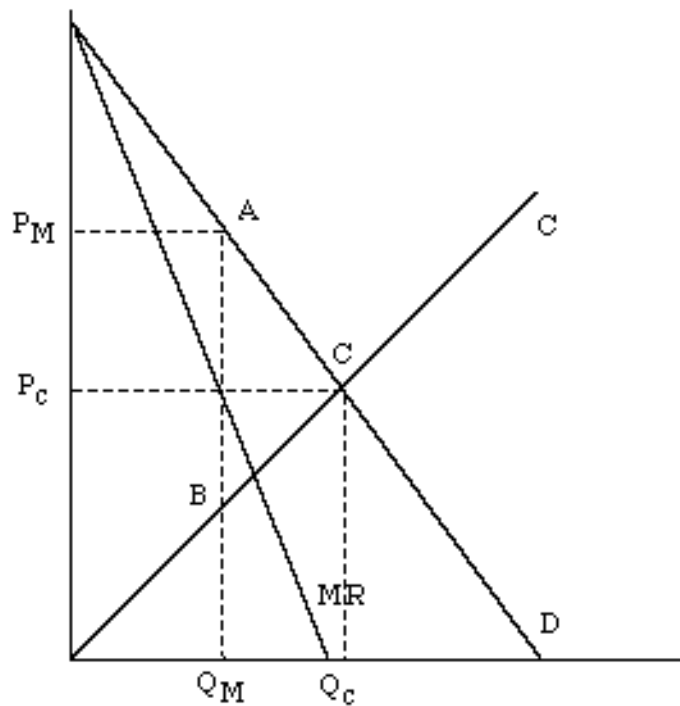
$P(Q)$ = Inverse demand: price as a function of quantity
 $C(Q)$ = quantity.

Optimality occurs where:

$$P + Q \frac{P}{Q} - \frac{C}{Q} = 0$$

$$MR(Q) - MC(Q) = 0$$

MR = marginal revenue
 MC = marginal cost.

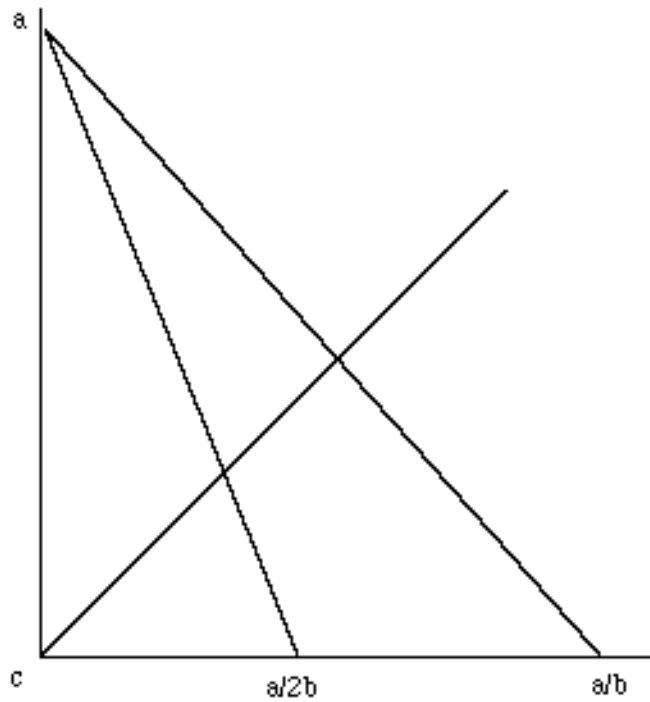


Q_c = quantity under competition
 P_c = price under competition

P_M = price under monopoly
 Q_M = quantity under monopoly.

A monopoly produces too little and charges too much. Welfare loss under monopoly is ABC .

Linear Example of Monopoly



inverse demand = $P(Q) = a - bQ$
revenue = $(a - bQ)Q = aQ - bQ^2$
supply = $c + dQ$
competitive outcome = $a - bQ = c + dQ$

$$Q_c = \frac{a - c}{b + d}$$

$$P_c = a - \frac{ba - bc}{b + d}$$

$$P_c = \frac{ad + bc}{b + d}$$

Under monopoly,

$$a - 2bQ = c + dQ$$

$$Q_M = \frac{a - c}{2b + d}$$

$$P_M = a - \frac{b(a-c)}{2b+d}$$

$$= \frac{a(b+d) + bc}{2b+d}$$

demand = $10 - Q$

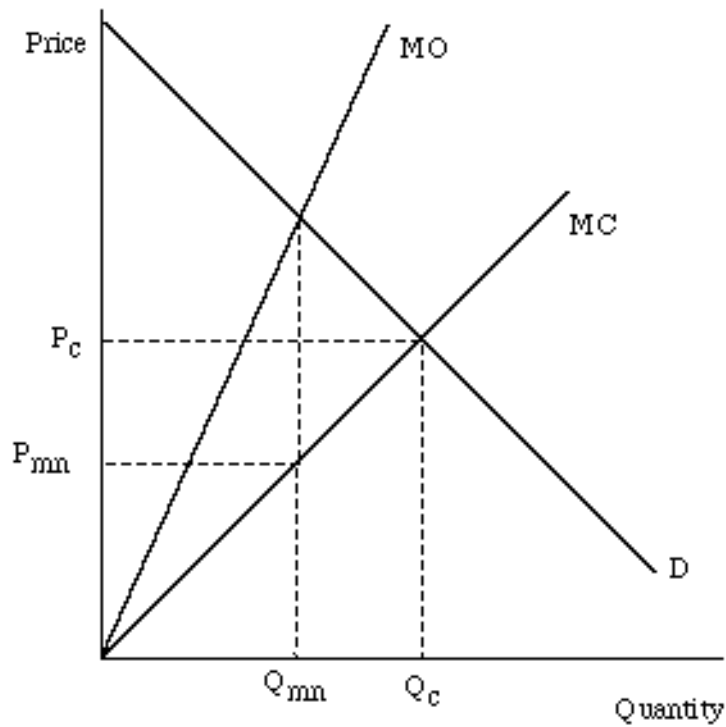
supply = $1 + Q$

$$Q_c = \frac{10-1}{2} = 4.5 \quad P_c = \frac{10+1}{2} = 5.5$$

$$Q_M = \frac{9}{3} = 3 \quad P_M = 7$$

Welfare under Monopsony

A monopsony is the only buyer in a market.



Maximize $B(Q) - QMC(Q)$

$B(Q) = \int_0^Q P(z)dz = \text{area under demand}$. The optimality condition is:

$$\frac{B}{Q} = Q \frac{MC}{Q} + MC(Q)$$

P_{mn} = price paid by monopsonist

Q_{mn} = quantity produced by monopsonist

$MC(Q)$ = marginal cost of producers.

Price paid by monopsony

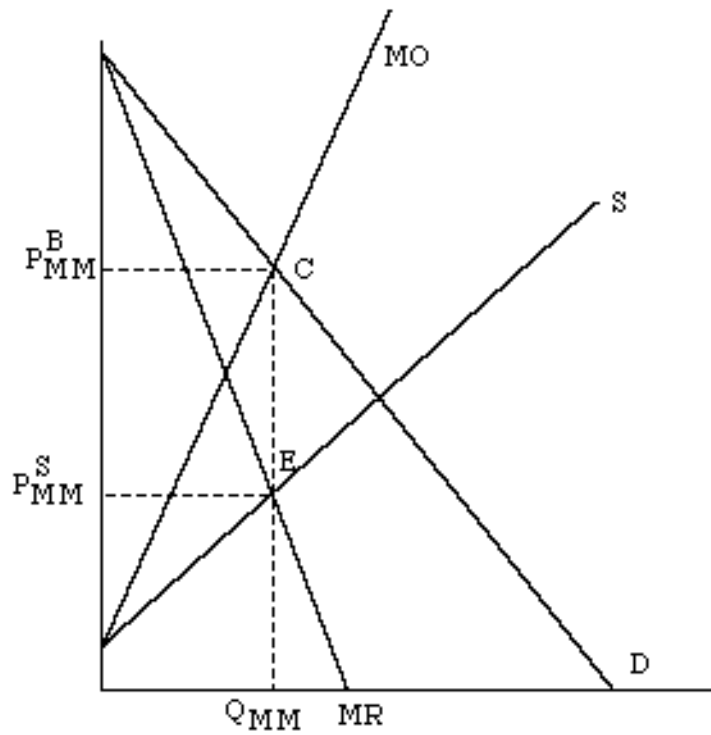
$$MO = \text{marginal outlay} = MC(Q) + \frac{MC}{Q}.$$

=> **Monopsonist:** Underbuys and underpays.

Monopolist: Underbuys and oversells.

Welfare under Middlemen

A middleman is the only buyer and seller of product.



Q_{MM} = middlemen output

P_{MM}^S = price paid by middlemen to suppliers

P_{MM}^B = price paid to middlemen by buyers

$P_{MM}^B - P_{MM}^S$ = middlemen profit

