

# Chapter 9: Applying the Competitive Model

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# Learning Objectives

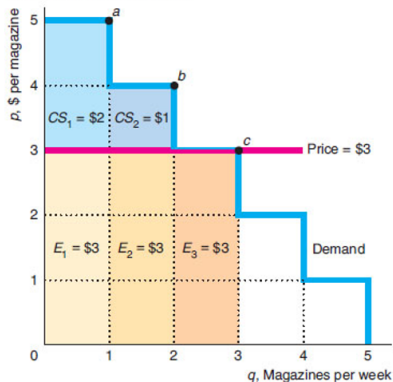
- Consumer Welfare
- Producer Welfare
- Competition Maximizes total Welfare
- Various policies, markets and welfare changes

# Welfare Under Competition: Consumer Surplus (CS)

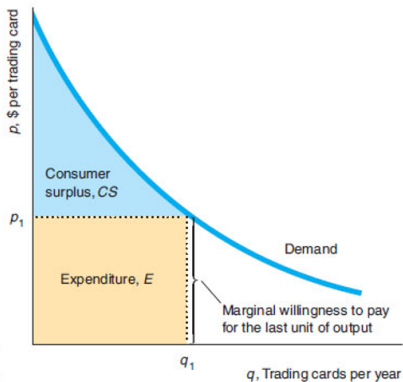
- **Consumer surplus (CS):** the monetary difference between what a consumer is willing to pay for the quantity of the good purchased and what the consumer actually pays.
- it is the area below the individual demand curve and above the market price up to the quantity the consumer buys
- The Market consumer surplus is the area under the market demand curve above the market price up to the quantity all consumers buy

# CS for Demand for step function (with few consumers) and Smooth Demand (Many consumers)

(a) David's Consumer Surplus



(b) Steven's Consumer Surplus



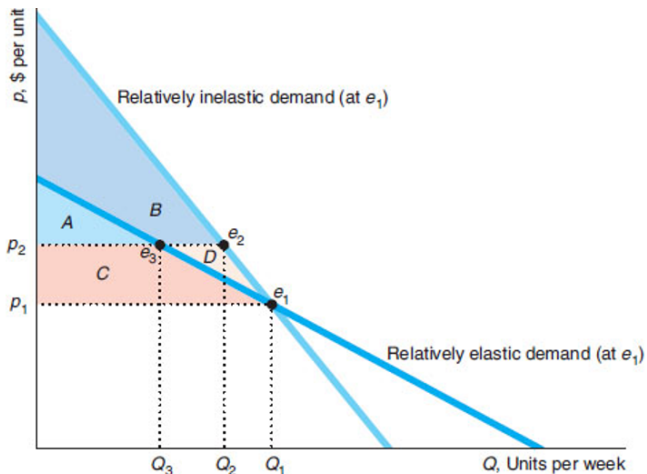
# Effect of a Price Change on Consumer Surplus

- With this, it is not difficult to see that an increase (decrease) in price reduces (increases) CS
- If the supply curve shifts upward or a government imposes a new sales tax, the equilibrium price rises, reducing consumer surplus.

## Application: Elasticity and Loss of CS

- Suppose that two linear demand curves go through the initial equilibrium,  $e_1$ . One demand curve is less elastic than the other at  $e_2$ . For which demand curve will a price increase cause the larger consumer surplus loss?

# Application: Elasticity and Loss of CS



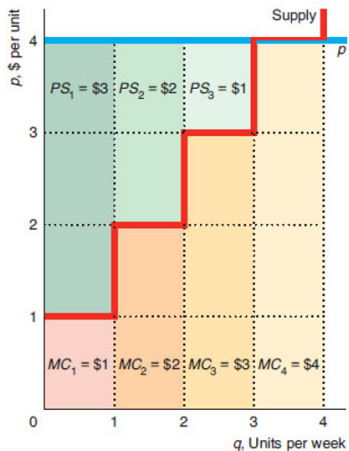
# Producer Welfare

- **Producer surplus (PS):** is the difference between the what the seller actually receives and what the seller is willing to receive.
- it is the area above the supply curve and below the market price up to the quantity sold.

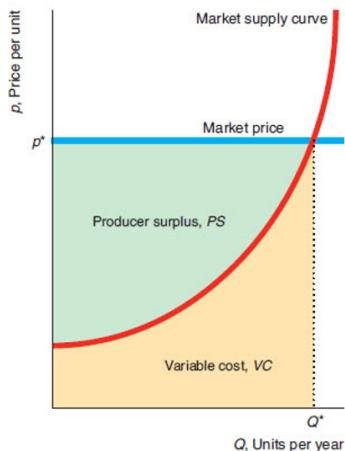
$$PS = Profit + FC$$

# Producer Surplus

(a) A Firm's Producer Surplus



(b) A Market's Producer Surplus



- an increase (decrease) in price increases (decreases) PS

# Total Welfare

- Commonly used welfare is the Total Surplus (TS):

$$TS = CS + PS$$

- it is un-weighted sum of welfare of all participants in the market

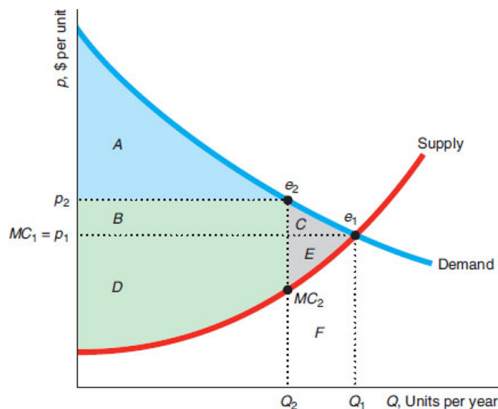
# Competition Maximizes Welfare

- Under absence of market failure, the competitive output given by equilibrium point maximizes welfare- yield that highest TS
- This is because at the competitive equilibrium:

$$P = MC \Rightarrow \text{Marginal Value of the good} = \text{Marginal Cost}$$

- If an allocation results in a welfare that is less than the maximum welfare one, then the difference is called ***Deadweight Loss (DWL)***

# Both lower and higher output than the Competitive Level Lowers Welfare!



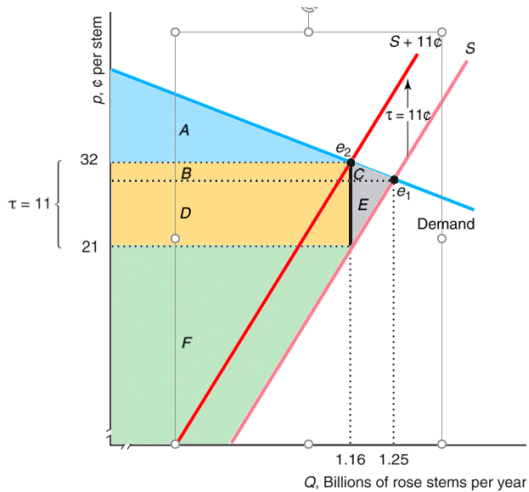
- Marginal Value to the society  $>$  Marginal Cost to the society
  - So more should be produced!



## Welfare Effects of a Sales Tax (1 of 2)

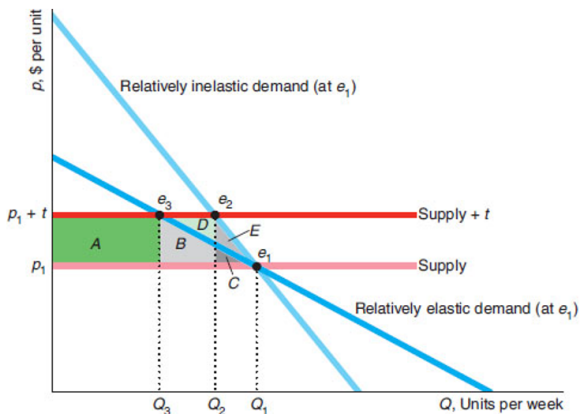
- assume the government tax revenue given to the society as benefit (road, school, etc); then
- $TS = CS + PS + T$
- $\Delta TS = \Delta CS + \Delta PS + \Delta T$

# Welfare Effects of a Sales Tax (2 of 2)

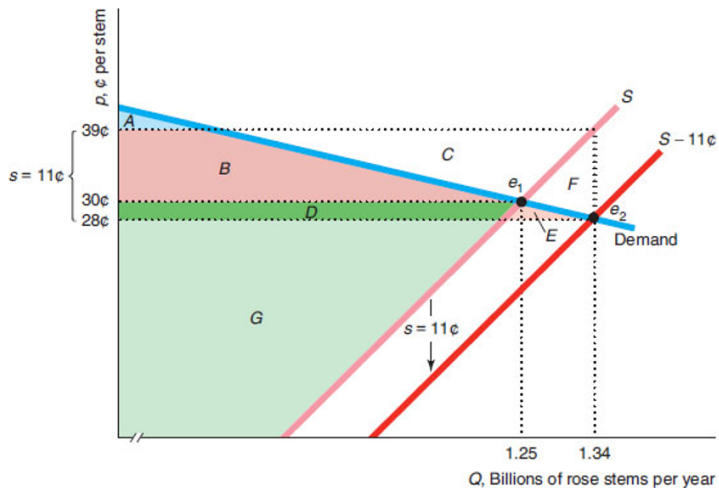


# Price Elasticity of Demand and CS Loss and Gain

- Starting from the same  $p$  and  $Q$ , a per unit tax will result in higher DWL loss for consumer with relatively elastic demand

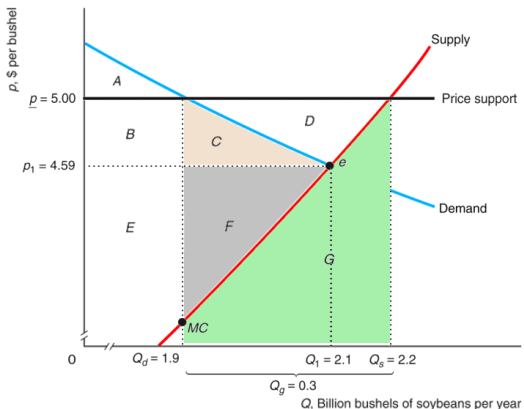


# Welfare cost of Subsidy 11 ¢ per unit



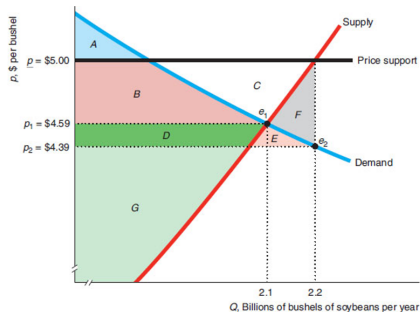
# Effect of Price Supports on Soybeans (Traditional price support)

- Govt guarantees \$5 price, firms sell  $Q_d$ , resulting govt buying and paying  $\$5(Q_s - Q_d)$



# Effect of Price Supports on Soybeans (“The New” Price Support)

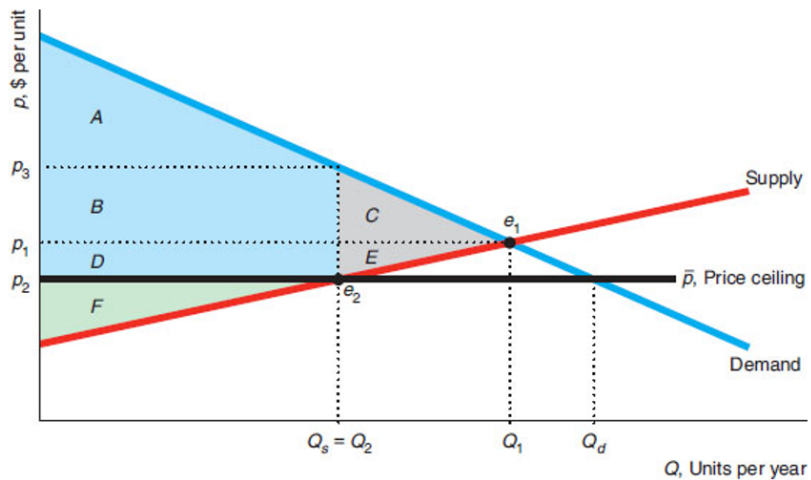
- Govt guarantees \$5, consumers buying  $Q_S$  at \$4.59 and govt ends paying only  $\$(5 - 4.59)Q_S$



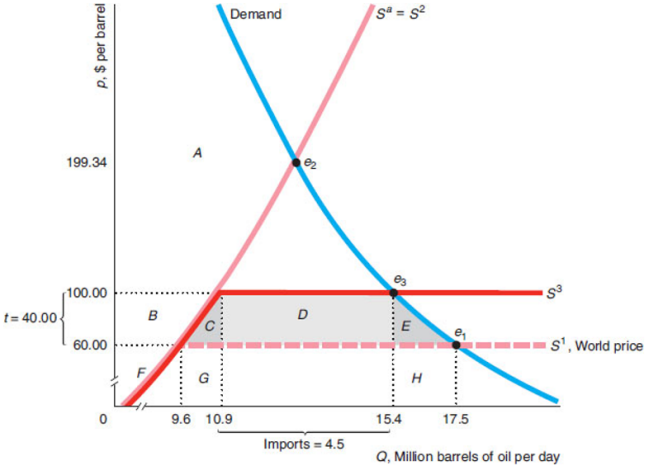
# Price Ceiling and DWL

- **Price ceiling** the highest price that a firm can legally charge.
- it is binding (effective to alter quantity) if set below the market price
- No effect if set above the equilibrium

# Price Ceiling and DWL



# Effect of Tarrif or Quota

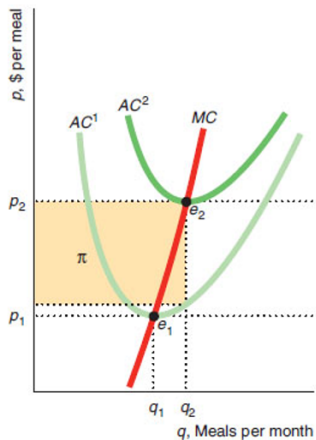


# Rent Seeking

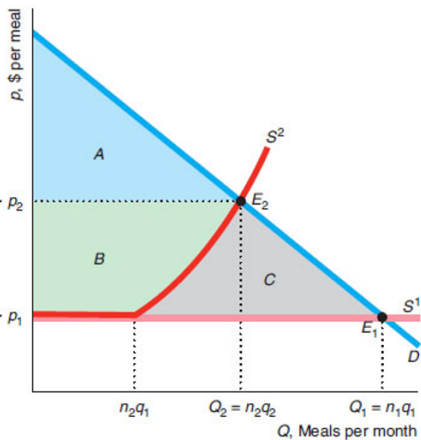
- Given that tariffs and quotas hurt the importing country, why do the Japanese, U.S., and other governments impose tariffs, quotas, or other trade barriers?
- Domestic producers stand to make large gains from such government actions .
- **Rent seeking**: efforts and expenditures to gain a rent or a profit from government actions.

# Liquor Licenses

(a) Restaurant



(b) Market



# Summary