

Applications of Demand and Supply

EE311

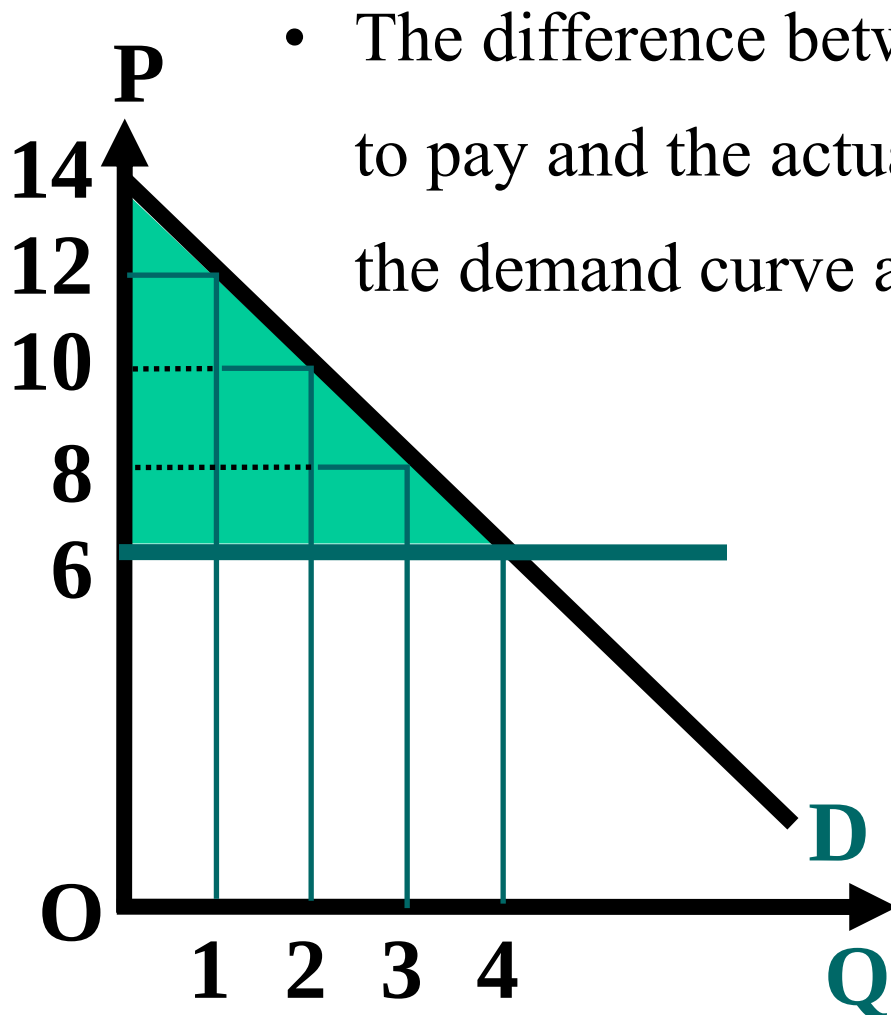
Chayun Tantivasadakarn

Faculty of Economics Thammasat University

Apply Demand and Supply

- Consumer and producer surplus
- Sale Taxes and Subsidies
- Price ceilings
- Price floors
- Price supports
- Import Tariffs and Quotas
- Cobweb model

Consumer surplus: CS



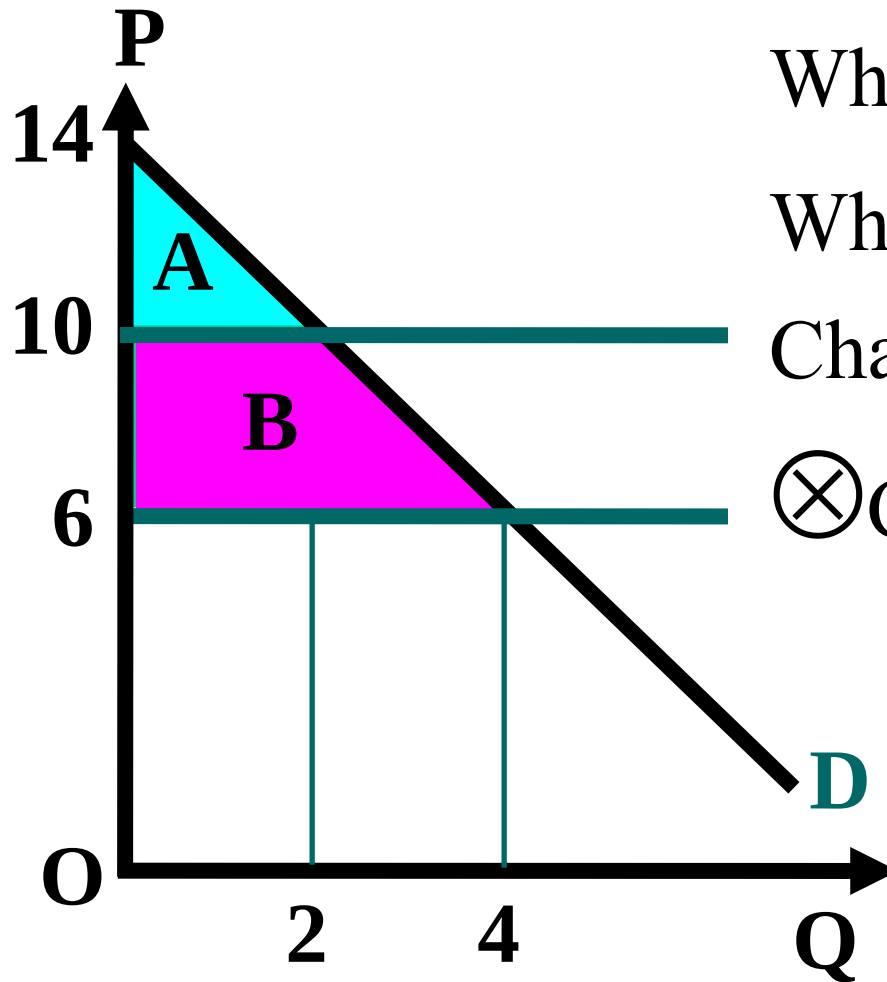
- The difference between the maximum willingness to pay and the actual price paid or area between the demand curve and the price

$$\begin{aligned} CS &= (12-6) + (10-6) \\ &\quad + (8-6) + (6-6) = 12 \end{aligned}$$

For continuous case

$$CS = .5(14-6)4 = 16$$

Change in Consumer's welfare



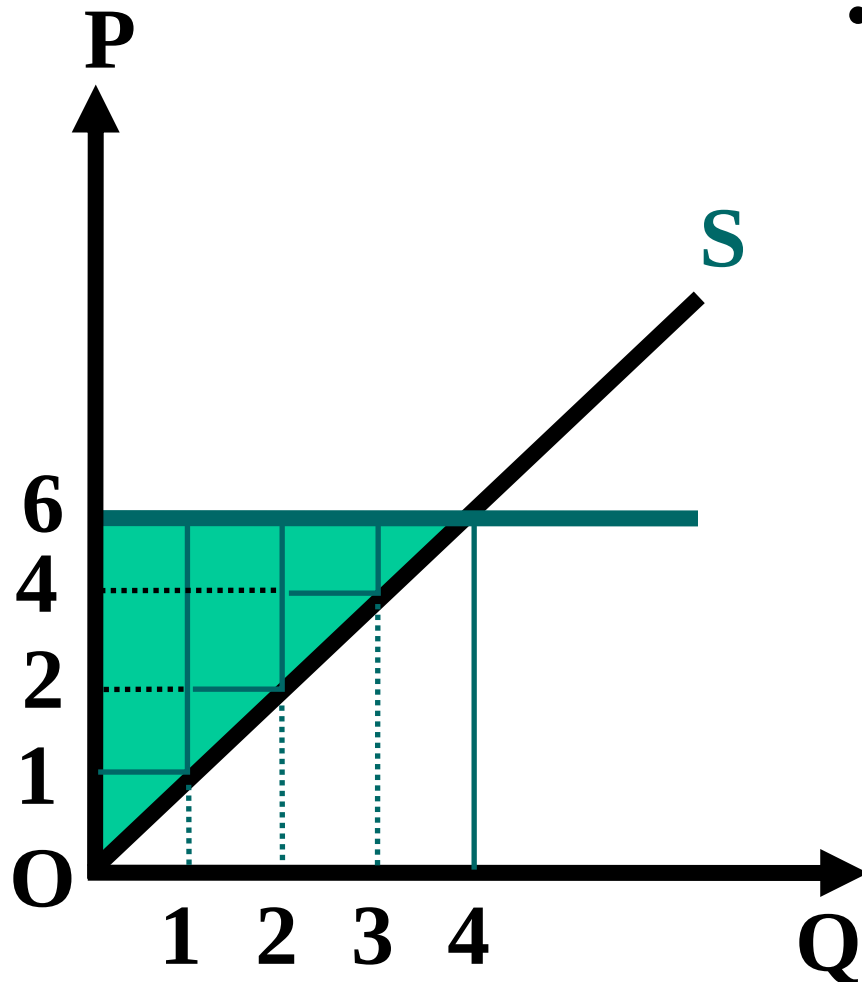
When $P = 6$, $CS = A + B$

When $P = 10$, $CS = A$

Change in welfare:

$$\begin{aligned}\otimes CS &= A - (A+B) = -B \\ &= -.5(10-6)(2+4) \\ &= -12\end{aligned}$$

Producer surplus: PS



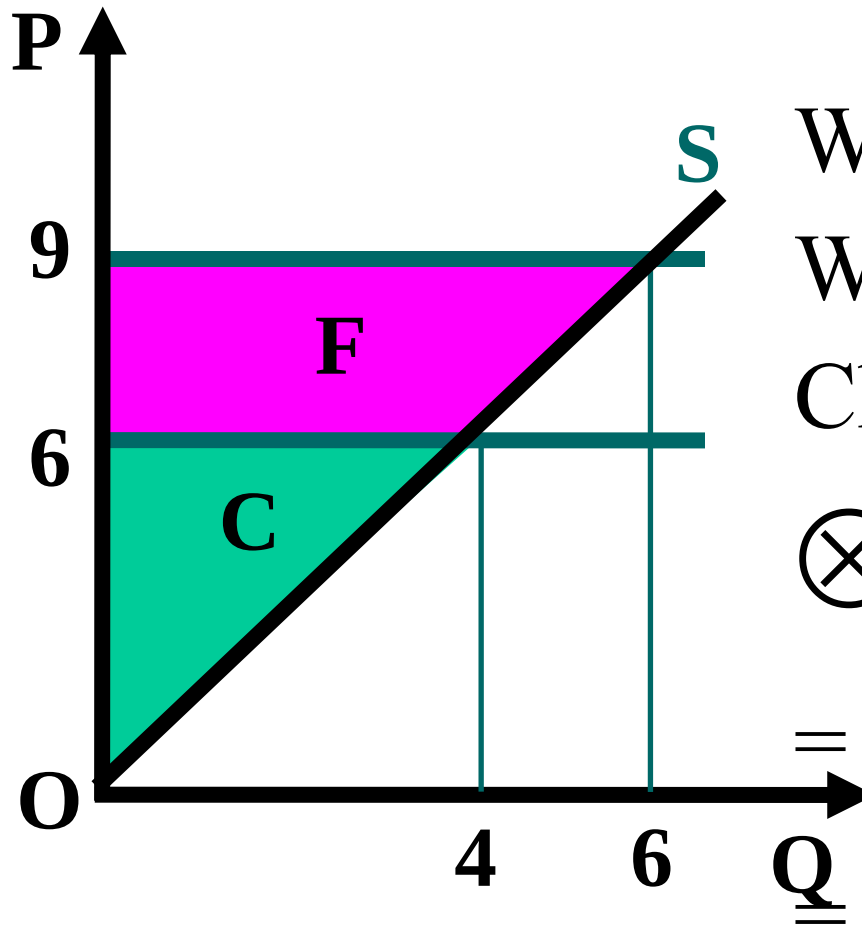
- The difference between the minimum acceptable price and the price actually received or area between the price and the supply curve.

$$PS = (6-1) + (6-2) + (6-3) + (6-4) = 11$$

For continuous case

$$PS = .5(6-0)4 = 12$$

Change in Producer's welfare



When $P = 6$, $PS = C$

When $P = 9$, $PS = C + F$

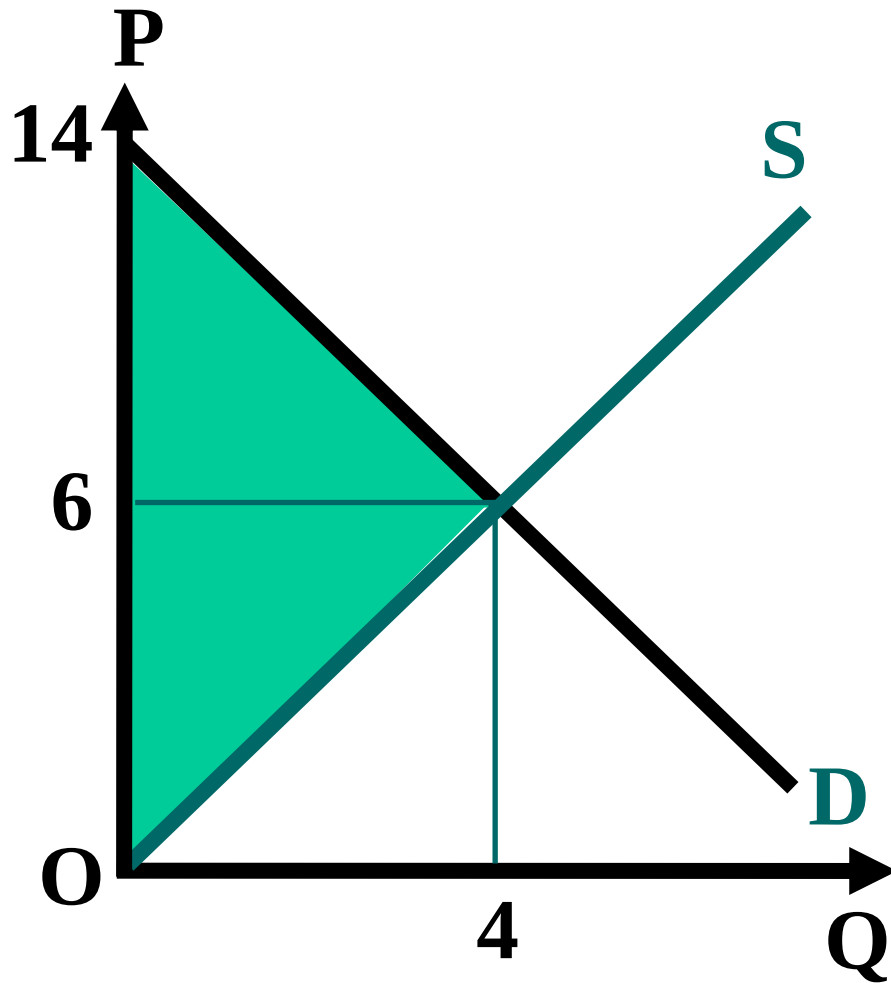
Change in welfare:

$$\otimes PS = C + F - C = F$$

$$= .5(9-6)(4+6)$$

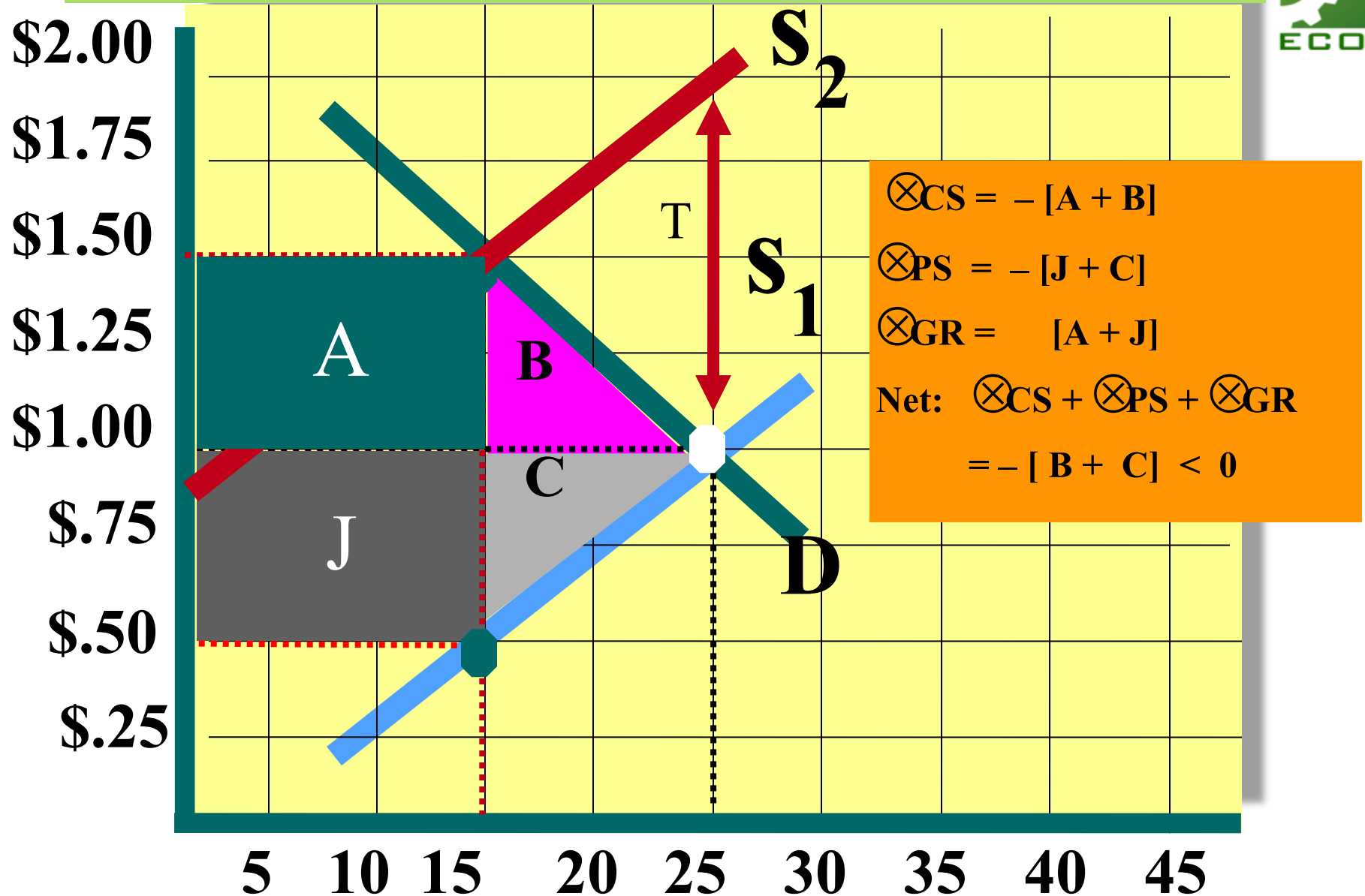
$$\underline{\underline{15}}$$

Social welfare



- Social welfare define by the summation of CS and PS is maximize under free market condition with perfect competition
- Consumers and producers are given the same weight

Tax incidences and inefficiency



Domestic taxes and subsidies

- If the tax is imposed on the producer, the S curve shifts upward by the size of the tax rate.
- Depending on the relative sizes of the price elasticities of demand and supply, consumers and producers share the tax burden.
- The side that has lower (absolute) price elasticity bears more tax incidence.
- Domestic taxes generate tax revenue but create consumption distortion (B) and production distortion (C) which are deadweight losses.

Domestic taxes and subsidies

- If the tax is imposed on the consumer, the D curve shifts downward by the size of the tax rate.
- If the tax is a unit tax, which side pay the tax first does not change neither the tax incidence borne by each side, nor the deadweight losses.
- Subsidies are negative taxes, hence the impacts are the opposite of the taxes.
- Exercise: Analyze the impacts of a tax imposed on the producer when the S curve is vertical and the D curve is downward sloping.

Exercise



1. Analyze the impact of a specific sale tax imposed on the supplier with a normal downward sloping demand curve. Which side should bear more tax burden? What kind of distortion is created? Explain.
2. Analyze the impact of a specific production subsidy on equilibrium price and production, welfare change of the consumer, producer, and the society. What kind of distortion is created? Explain.

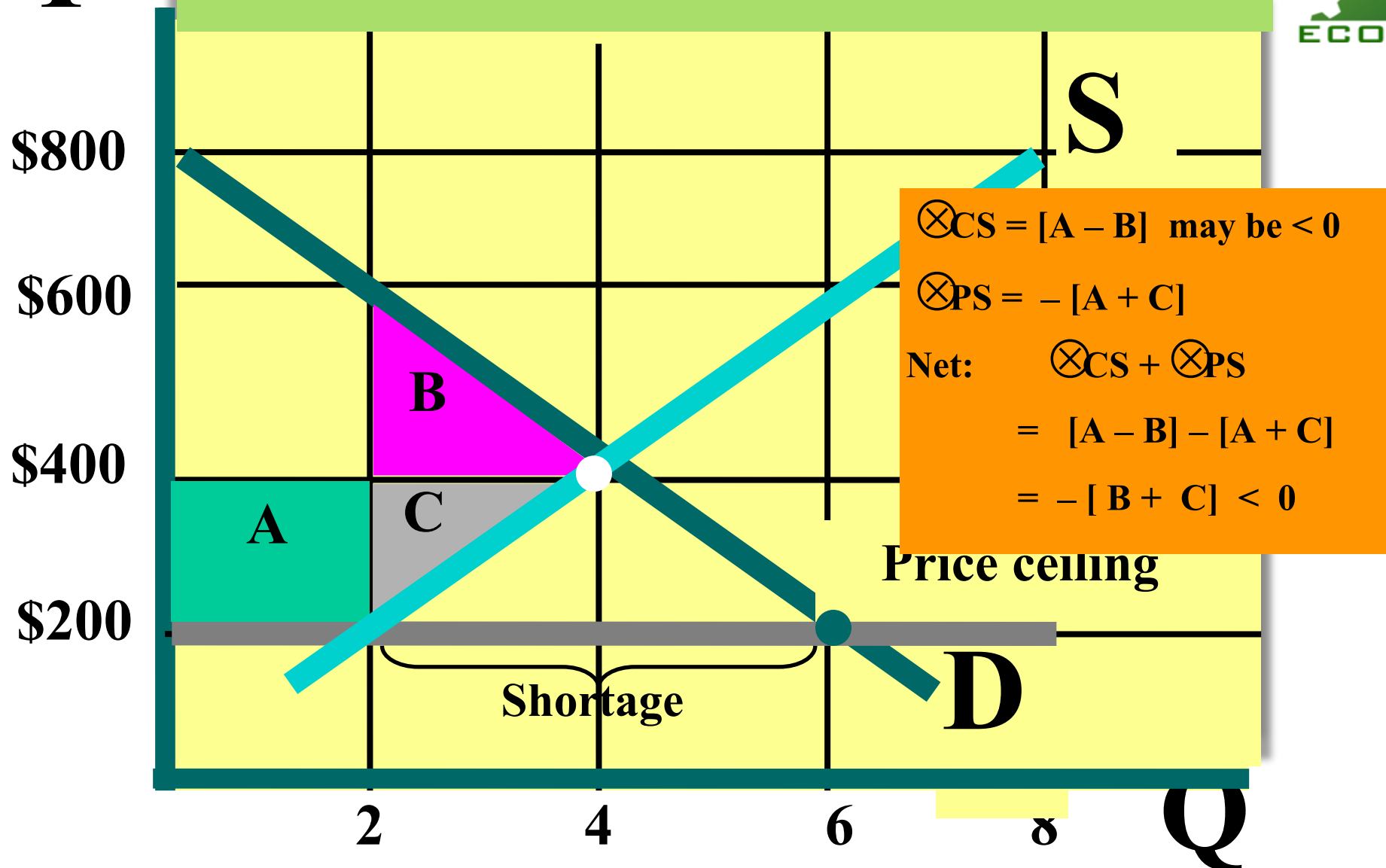
Price ceilings

- Legally established maximum prices sellers can charge.
- They are used to help consumers.
- A price ceiling will have no impact when it is set above the equilibrium price.
- Examples: Tuition fees and bus fees.



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Price Ceiling Set Below Equilibrium Price



Price ceilings are counterproductive



- If $B > A$, consumers are worse off.
- Deadweight losses: B = consumption distortion, C = production distortion
- Black markets: economic rents
- Less maintenance
- Less investment
- Discrimination



Exercises

1. What is the purpose of price ceilings on bus fees?
2. Why may bus fee controls be counterproductive?



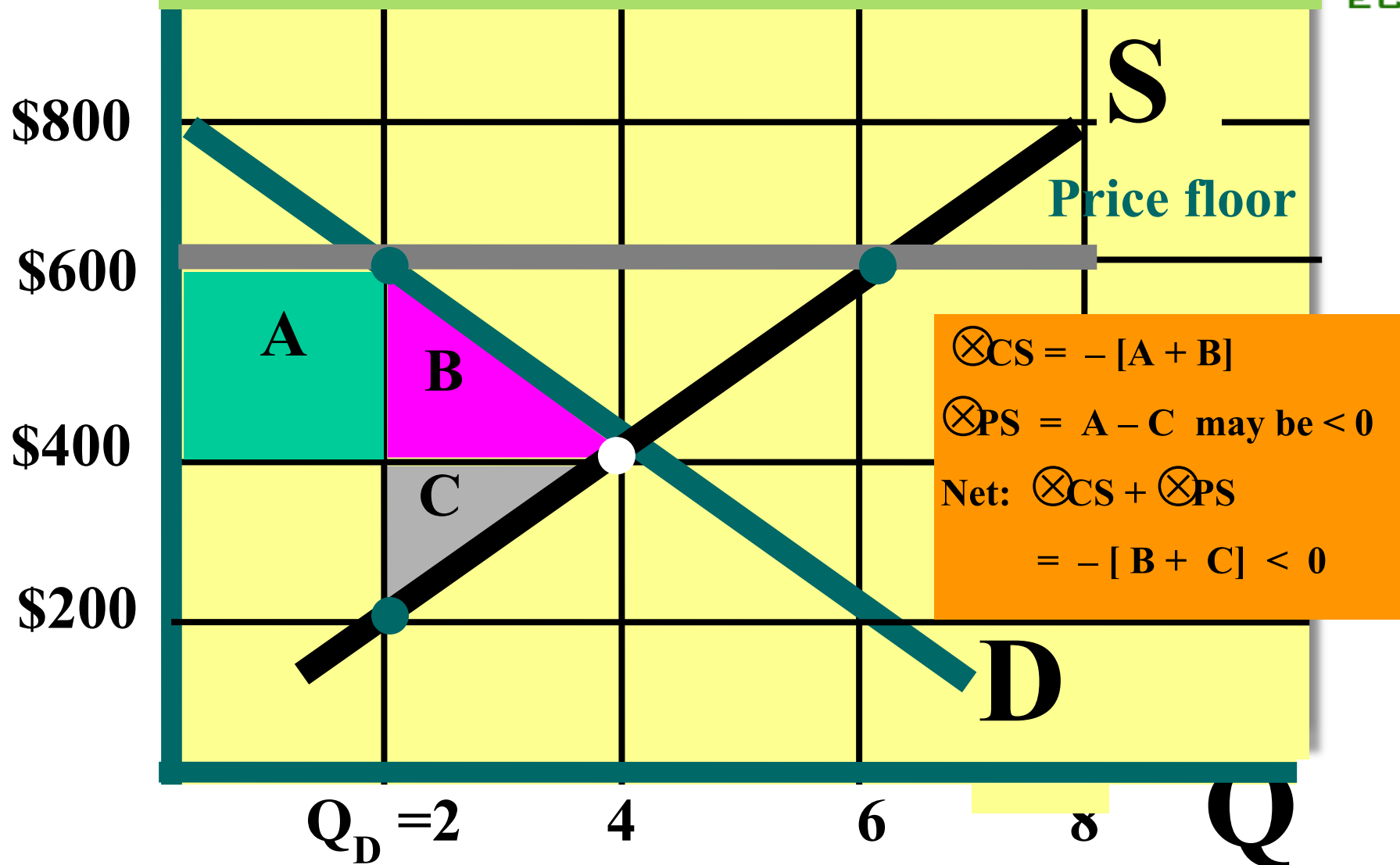
Price floors

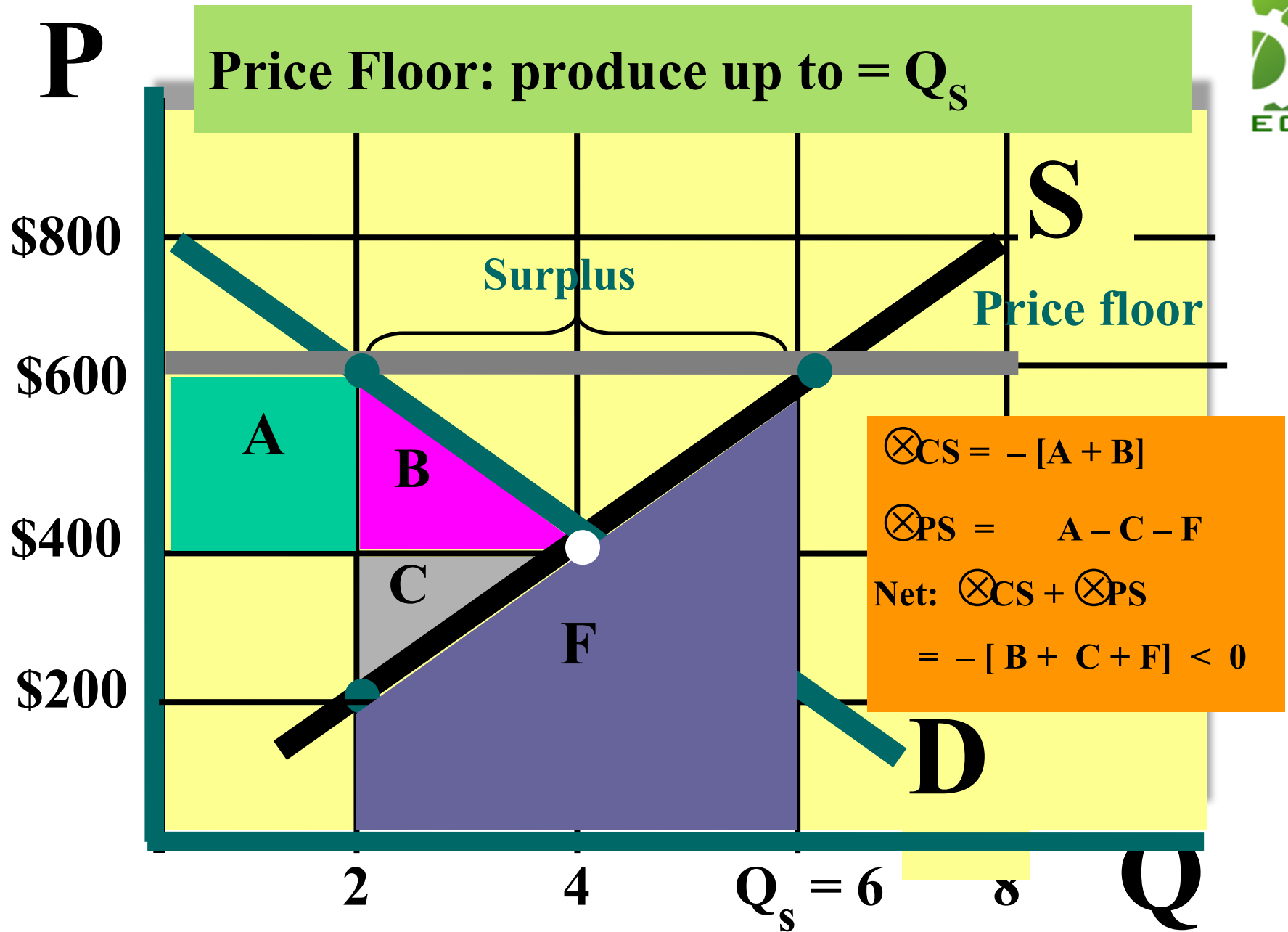
- A legally established minimum price a seller can be paid
- They are used to help producers.
- Examples: Minimum wage, Agricultural price supports, Agricultural pledging program



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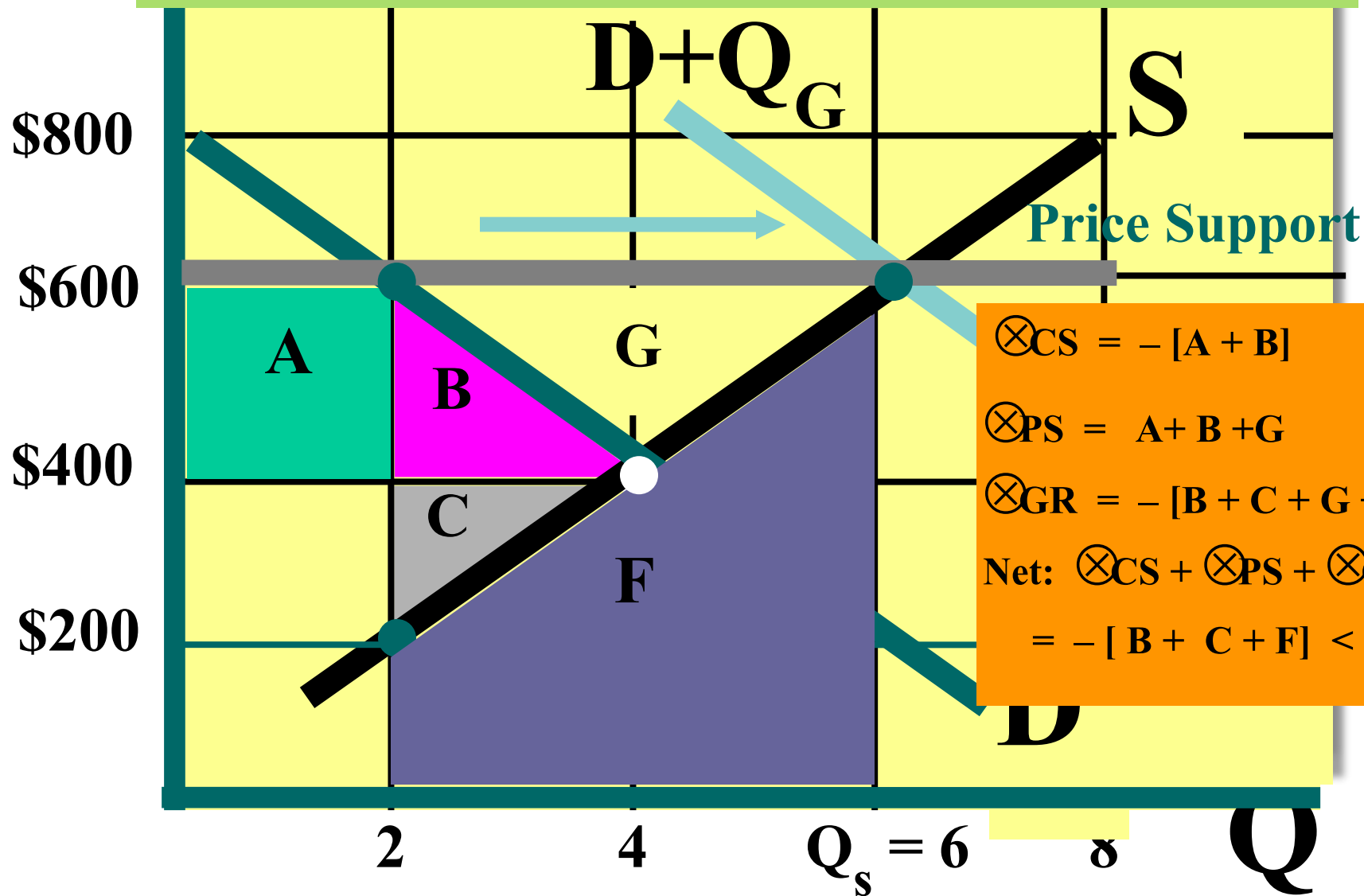
Price Floor: produce only = Q_D





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Price Support: government buys the surplus



Exercises

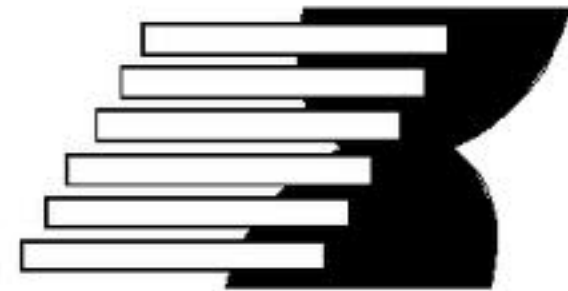
1. Why may rice pledging program be inefficient?
2. Compare its impacts with the price guarantee program



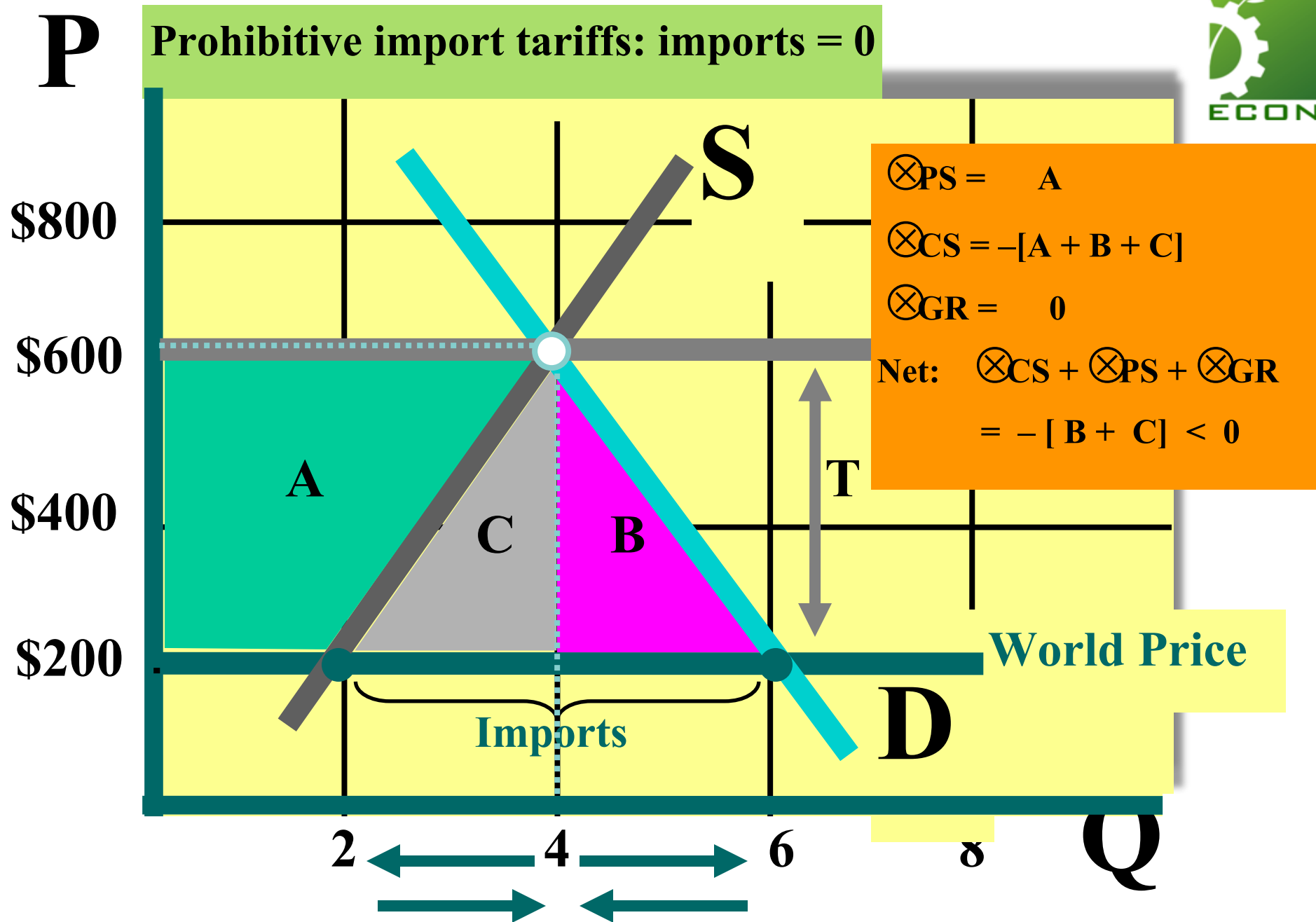
Import tariffs



- Import tariffs are taxes imposed on imported goods to protect domestic producers
- An import tariff will increase the price of the imported good by the size of the tax.
- Domestic producers will charge their price at the same level as the imported good and can produce more.
- Consumer will consume less since the price is higher and imports are less.

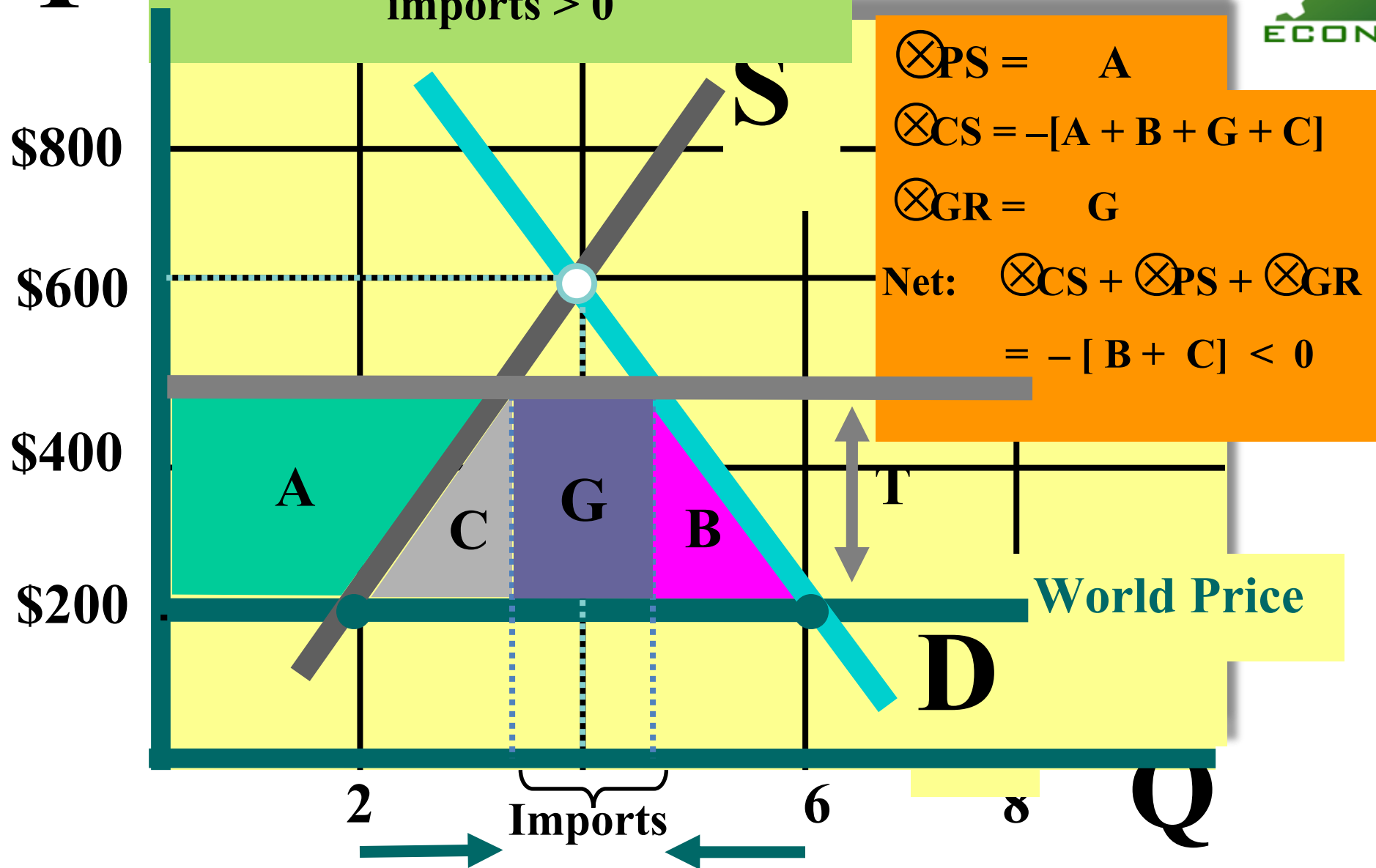


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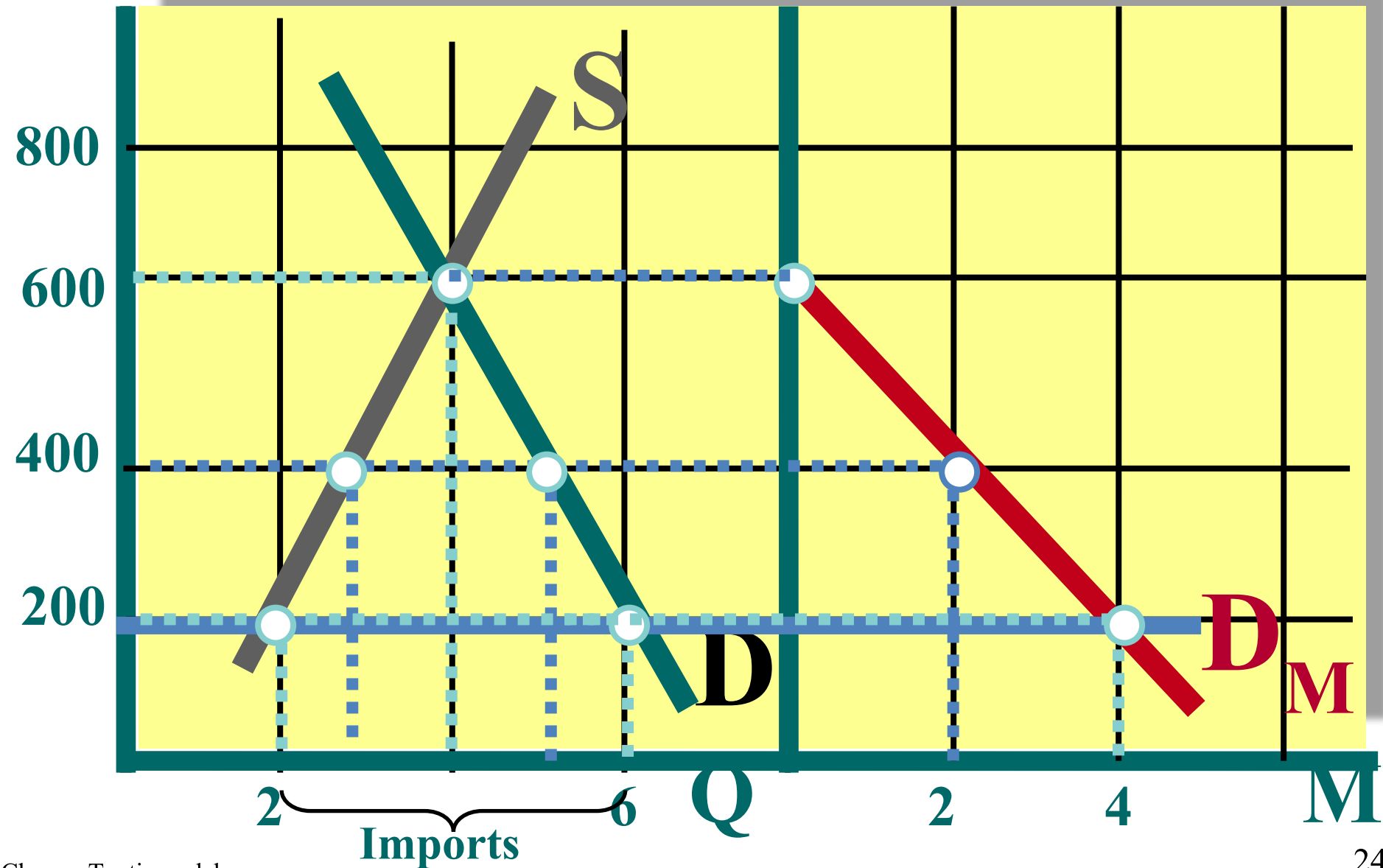
Non-prohibitive import tariffs:

imports > 0

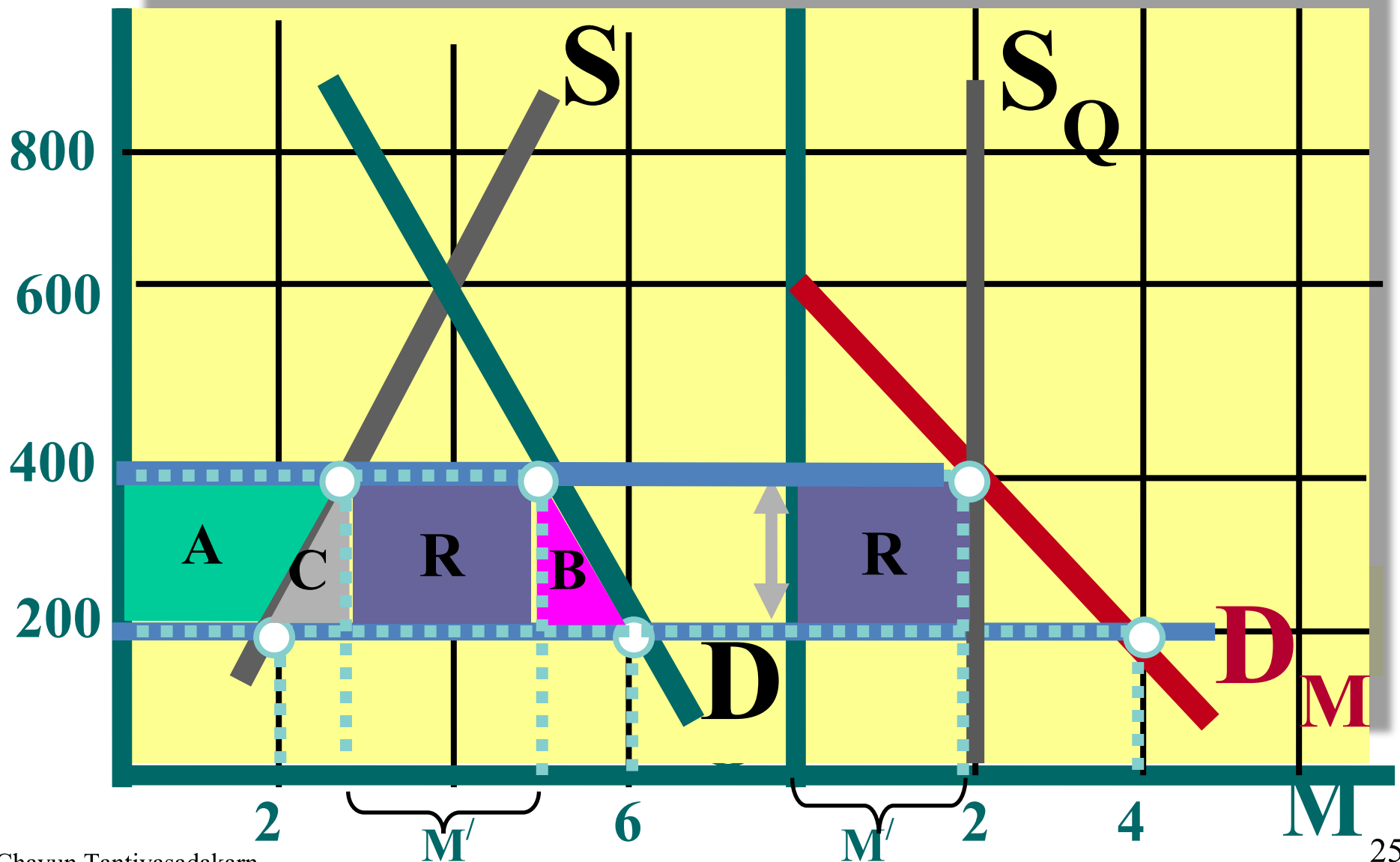


Derivation of import demand curve

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Impacts of an import quota



Impacts of import quotas

- $\Delta PS = A$
- $\Delta CS = -[A + C + R + B]$
- $\Delta GR = 0$ if the quota is given freely
 $= R$ if the government uses open bid
- Lucky importers welfare $= R$ or 0
- Net welfare $= -[C + B]$
- Rent seeking activities and corruption
- Worsening distribution of income