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ECON 305
INTERNATIONAL ECONOMICS I **17 December 2007**
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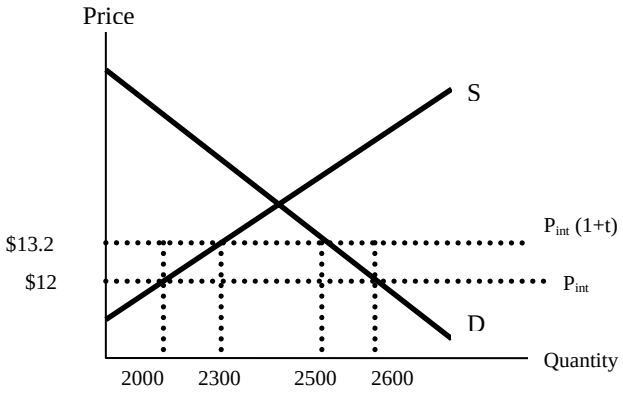
Key to Exercise 08
Welfare Implication of Trade Policies

1. Suppose that free trade price of a good is $12 and a 10 percent ad valorem tariff is put in place. As a result, domestic production in a small country rises from 2000 units to 2300 units and imports fall from 600 units to 200 units. Who are the winners and losers? What is the size of their gains and losses? What is the net effect on society? (Question #1 in Chp.14, p.298).

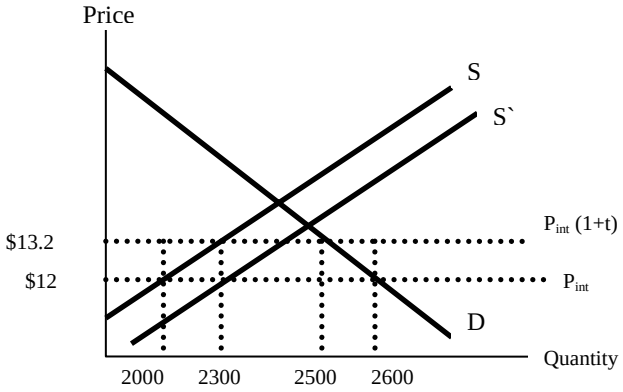
Answer:



CS = -3060 PS = +2580 GR = +240 DWL = -240

2. Using the example in Question 1, how does an equivalent subsidy to the import-competing producer affect the market? What is the cost to the government of this subsidy? Which policy would consumers prefer, the tariff or a subsidy? (Question #2 in Chp.14, p.298).

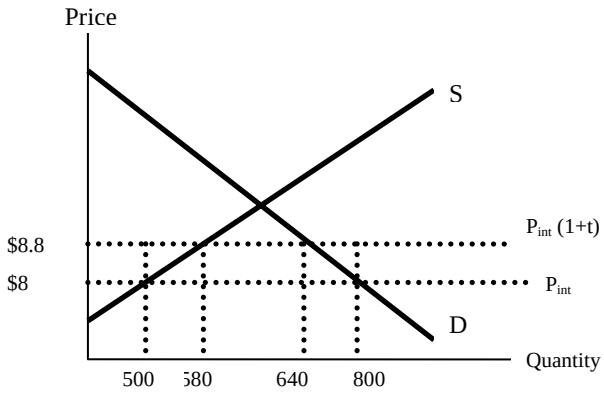
Answer:



CS = Does not change PS = +2580 GR = -2760 DWL = -180

3. Suppose that a (small) country is an importer of good X, for which the current world price is $8. At that price with free trade, home producers are supplying 500 units of good X and the country is importing 300 units. It is now rumored that a 10 percent import duty will be imposed on good X. Estimate the welfare impacts that would occur with such a tariff, given that the elasticity of demand by consumers for good X is -2.0 and that the elasticity of home supply is 1.6. (Question #10 in Chp.14, p.299).

Answer:



Price elasticity of demand is -2 ➔ 10% rise in P would lead to 20% rise in quantity demanded. Hence,

$$(Q^d-800)/800=-0.20 \rightarrow Q^d=640$$

Price elasticity of supply is 1.6 ➔ 10% rise in P would lead to 16% rise in quantity supplied. Hence,

$$(Q^s-500)/500=0.16 \rightarrow Q^s=580$$

CS = -576 PS = +432 GR = +48 DWL = -96

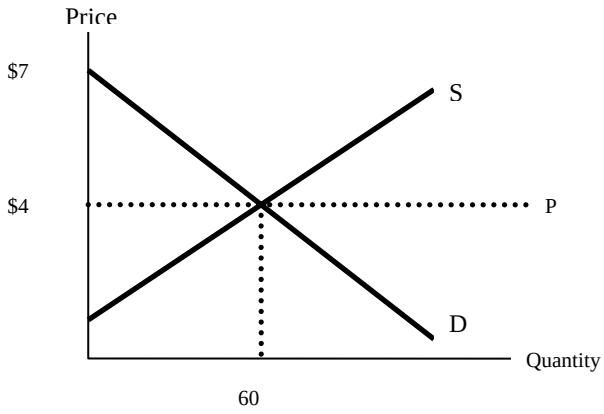
4. Suppose the demand and supply functions for a good X in a country are given respectively by

$$\mathbf{Q^d = 140 - 20P} \text{ and } \mathbf{Q_s = 20P - 20}$$

where P is the price in monetary units.

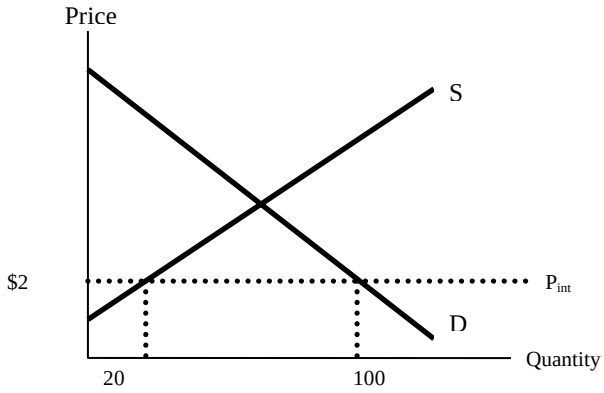
(i) Illustrate graphically the demand and supply curves of good X. Indicate the equilibrium price and the quantities produced and consumed *without* trade.

Answer:



(ii) Suppose the country enters free trade. The world price is P = 2. The world supply of good X is infinitely elastic at P = 2. There are no trade costs.
-a- What is the equilibrium price in the country?
-b- What are the amounts of good X *produced*, *consumed* and *traded*?
-c- Calculate the value of how the consumer and producer surplus change.

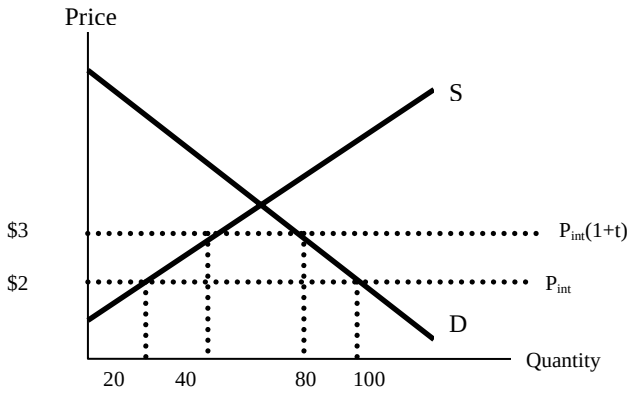
Answer:



a. Equilibrium price is $2.
b. X produced ➔20, X consumed ➔100, and X traded (imported) ➔80,
c. CS = 250 PS = 10

(iii) The government of the country sets an ad valorem tariff of 50% on its imports of good X.
-a- Determine graphically the new equilibrium price in the country. Give the impact of the tariff on consumption, production, trade and income.
-b- Calculate and show graphically how the consumer and producer surplus change.
-c- Calculate the level of tariff for which there would be no imports.

Answer:



a. X produced 20➔40, X consumed 100➔80, and X traded (imported) 80➔40,
b. CS = -90 PS = +30 GR = +40 DWL = -20
c. 140 − 20[2(t+1)] = 20[2(t+1)] − 20 ➔ t=1 (100%). That is, if the international price 2 is raised by 100% to 4, the domestic market reaches equilibrium without any trade.

(iv) The government sets a quota on imports equal to 40 units of good X.
-a- Evaluate and discuss the consequences of the quota on the different agents.
-b- Compare with the effects of the tariff.

Answer:
The best way to answer "quota problems" is to note that domestic supply plus quota must be equal to domestic demand. Hence,
140 − 20P = [20P − 20] + 40 ➔ 120 = 40P ➔ P = 3
Note that $Q^d = 140 - 20(3) = 80$ and $Q_s = 20\ (3) - 20 = 40$ and $Q^d - Q_s = 80 - 40 = 40$, the quota.
Note also that the figure that applies to question (iii) is also valid for "quota problem". The only difference is the vagueness beforehand whom will collect quota rents.

5. A country is 'small', i.e. unable to affect world prices. It imports peanuts at the price of $10 per bag. The country's demand curve for peanuts is D = 400 - 10P. Its domestic supply curve is S = 50 + 5P. Determine the free trade equilibrium. Then calculate and graph the following effects of an import quota that limits imports to 50 bags.

Since this question is no different than the previous one, we will only give results. Firstly, closed economy equilibrium is **P = 23.33** and **Q = 166.67**. The free market equilibrium is **P = 10** (given) and **Q = 300**. Recall that the best way to answer "quota problems" is to note that domestic **supply plus quota** must be equal to domestic demand. Hence, you will found that **P = 20** and **Qs = 150 and that Qd = 200**. Note that the difference between demand and supply is exactly 50, the quota. Compared to free-trade equilibrium:
(i) The increase in the domestic price 20-10=10
(ii) The quota rents 10x50 = 500
(iii) The change in consumer surplus 10x200 + 10 x 100 x (0.5) = -2500
(iv) The change in producer surplus 10x100 + 10 x 50x (0.5) = 1250