ECON 433: Advanced International Trade: Theory and Policy

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Problem set 3

due 1 May 2014 in class

I. Import tariffs and quotas under perfect competition

1. Rank the following in ascending order of Home welfare and justify your answers. If two items are equivalent, indicate this accordingly.

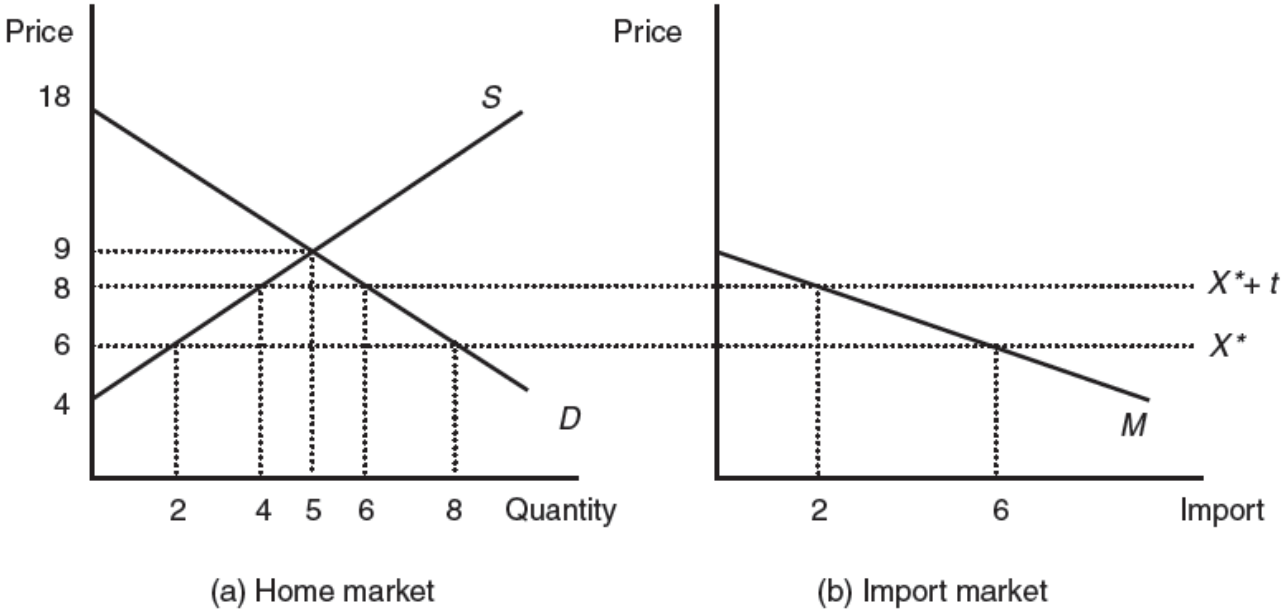
a. Tariff of t in a small country corresponding to the quantity of imports M.

b. Tariff of t in a large country corresponding to the same quantity of imports M.

c. Tariff of t' in a large country corresponding to the quantity of imports $M' > M$.

2. No U. S. tire producers joined in the request for the tariff on tires in 2009. Rather, the petition for a tariff on tires imported from China was brought by the United Steelworkers of American, the union who represents workers in the tire industry. Why did major tire manufactures operating in the United States, like Goodyear, Michelin, Cooper, and Bridgestone, not support the tariff?

3. Suppose Home is a small country. Use the graphs below to answer the questions.



a. Calculate Home consumer surplus and producer surplus in the absence of trade.

b. Now suppose that Home engages in trade and faces the world price, $P^* = \$6$. Determine the consumer and producer surplus under free trade. Does Home benefit from trade? Explain.

c. Concerned about the welfare of the local producers, the Home government imposes a tariff in the amount of \$2 (i.e., t=\$2). Determine the net effect of the tariff on the Home economy.

4. Refer to the graphs in problem 3. Suppose that instead of a tariff, Home applies an import quota limiting the amount foreign can sell to 2 units.

a. Determine the net effect of import quota on the Home economy if the quota licenses are allocated to local producers.

b. Calculate the net effect of the import quota on Home's welfare if the quota rents are earned by foreign exporters.

c. How do your answers to parts (a) and (b) compare with part (c) of problem 3?

II. Import tariffs and quotas under imperfect competition

5. Rank the following in ascending order of Home welfare and justify your answers. If two items are equivalent, indicate this accordingly.

a. Tariff t in a small country with perfect competition.

b. Tariff t in a small country with a Home monopoly.

c. Quota with the same imports M in a small country, with a Home monopoly.

d. Tariff t in a country facing a Foreign monopoly.

6. Suppose the home firm is considering whether to enter the foreign market. Assume that the home firm has the following costs and demand:

Fixed costs	=	\$140
Marginal costs	=	\$10 per unit
Local price	=	\$25
Local quantity	=	20
Export price	=	\$15
Export quantity	=	10

a. Calculate the firm's total costs from selling only in the local market.

b. What is the firm's average cost from selling only in the local market?

c. Calculate the firm's profit from selling only in the local market.

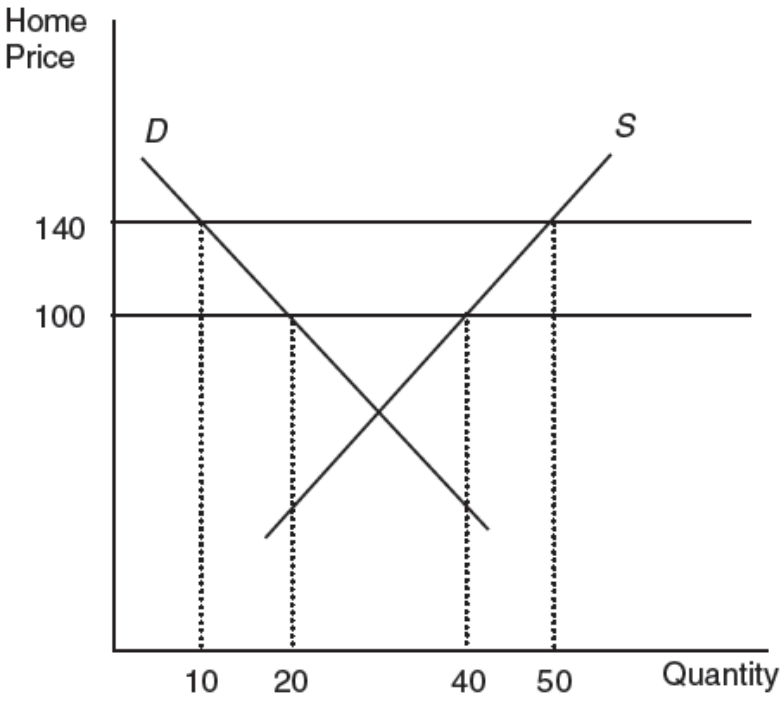
d. Should the home firm enter the foreign market? Briefly explain why.

e. Calculate the firm's profit from selling to both markets.

f. Is the home firm dumping? Briefly explain.

III. Export policies in agriculture and high-tech

7. Suppose Home is a small exporter of wheat. At the world price of \$100 per ton, Home growers export 20 tons. Now suppose the Home government decides to support its domestic producer with an export subsidy of \$40 per ton. Use the following figure to answer these questions.

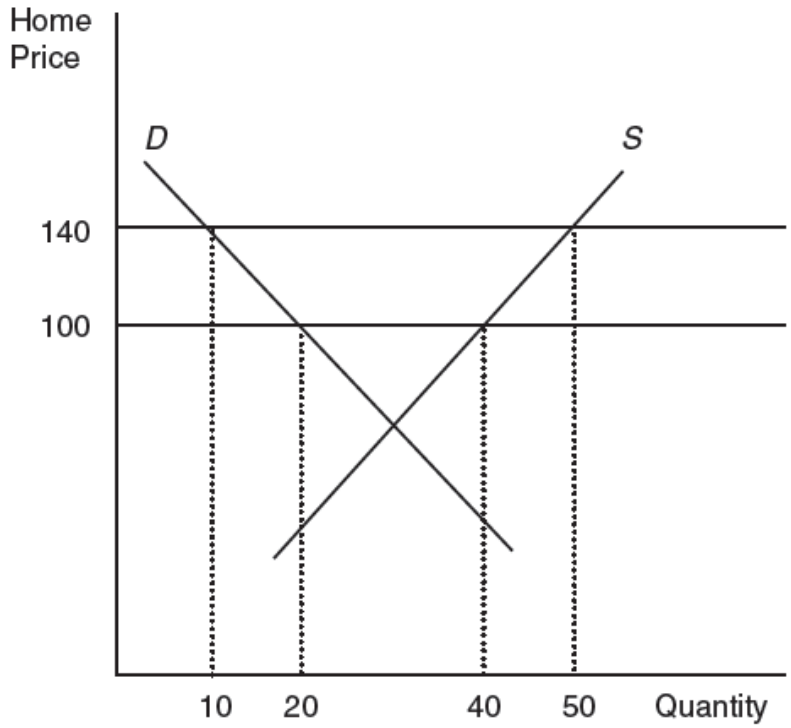


a. What is the quantity exported under free trade and with the export subsidy?

b. Calculate the effect of the export subsidy on consumer surplus, producer surplus, and government revenue.

c. Calculate the overall net effect of the export subsidy on Home welfare.

8. Refer to problem 7. Suppose Home is a small exporter of wheat. At the world price of $100 per ton, Home growers export 20 tons. But rather than an export subsidy, suppose the Home government provides its domestic producer with a production subsidy of $40 per ton. Use the following figure to answer these questions.



a. What is the quantity exported with the production subsidy?

b. Calculate the effect of the production subsidy on consumer surplus, producer surplus, and government revenue.

c. Calculate the overall net effect of the production subsidy on Home welfare. Is the cost of the production subsidy more or less than the cost of the export subsidy for the small country? Explain.

9. Boeing and Airbus are the world's only major producers of large, wide-bodied aircrafts. But with the cost of fuel increasing and changing demand in the airline industry, the need for smaller regional jets has increased. Suppose that both firms must decide whether they will produce a smaller plane. We will assume that Boeing has a slight cost advantage over Airbus in both large and small planes, as shown in the following payoff matrix (in millions of U.S. dollars). Assume that each producer chooses to either produce only *large*, *only small*, or *no planes at all*.

		Airbus		
		Large Planes	Small Planes	Not Produce
Boeing	Large Planes	10, -5	115, 125	115, 0
	Small Planes	150, 100	15, 0	150, 0
	Not Produce	0, 100	0, 125	0, 0

a. What is the Nash equilibrium of this game?

b. Are there multiple equilibria? If so, explain why. *Hint:* Guess at an equilibrium and then check whether either firm would want to change its action, given the action of the other firm. Remember that Boeing can change only its own action, which means moving up or down a column, and likewise, Airbus can change only its own action, which means moving back or forth on a row.

c. Now suppose the European government wants Airbus to be the sole producer in the lucrative small-aircraft market. What is the minimum amount of subsidy that Airbus must receive when it produces small aircraft to ensure that outcome as the unique Nash equilibrium?

d. Is it worthwhile for the European government to undertake this subsidy?

IV. International agreements

10. Consider the following variation of Table 11-1 in the textbook for the U. S. semiconductor market.

	U.S. Tariff		
	0%	10%	20%
From Canada, before NAFTA	$46	$*W*	$55.2
From Asia, before NAFTA	$42	$*X*	$*Y*
From Canada, after NAFTA	$46	$*Z*	$*Z*
From Asia, after NAFTA	$42	$*X*	$*Y*
From the United States	$47	$47	$47

a. Fill in the values for W, X, Y, and Z.

b. Suppose that before NAFTA the United States had a 20% tariff on imported semiconductors. Which country supplied the U. S. market? Is it the lowest cost producer?

c. After NAFTA, who supplies the U.S. market? Has either trade creation or diversion occurred because of NAFTA? Explain.

d. Now suppose that before NAFTA, the United States had a 10% tariff on imported semiconductors. Then repeat parts (b) and (c).

e. In addition to the assumptions made in (d), consider the effect of an increase in high-technology investment in Canada due to NAFTA, allowing Canadian firms to develop better technology. As a result, *three years after the initiation of NAFTA*, Canadian firms can begin to sell their products to the United States for $46. What happens to the U. S. trade pattern three years after NAFTA? Has either trade creation or diversion occurred because of NAFTA? Explain.