Center of Economic Research at ETH Zürich
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Problem Set III for International Trade

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MSc MTEC, MAS MTEC et al.

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1 Import tariffs and quotas under perfect competition

1. Consider a large country applying a tariff t to imports of a good like that represented in Figure 8.7.

   (a) How does the export supply curve in panel (b) compare with that in the small-country case? Explain why these are different.

   (b) Explain how the tariff affects the price paid by consumers in the importing country, and the price received by producers in the exporting country. Use graphs to illustrate how the prices are affected if (i) the export supply curve is very elastic (flat), or (ii) the export supply curve is inelastic (steep).

2. 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.

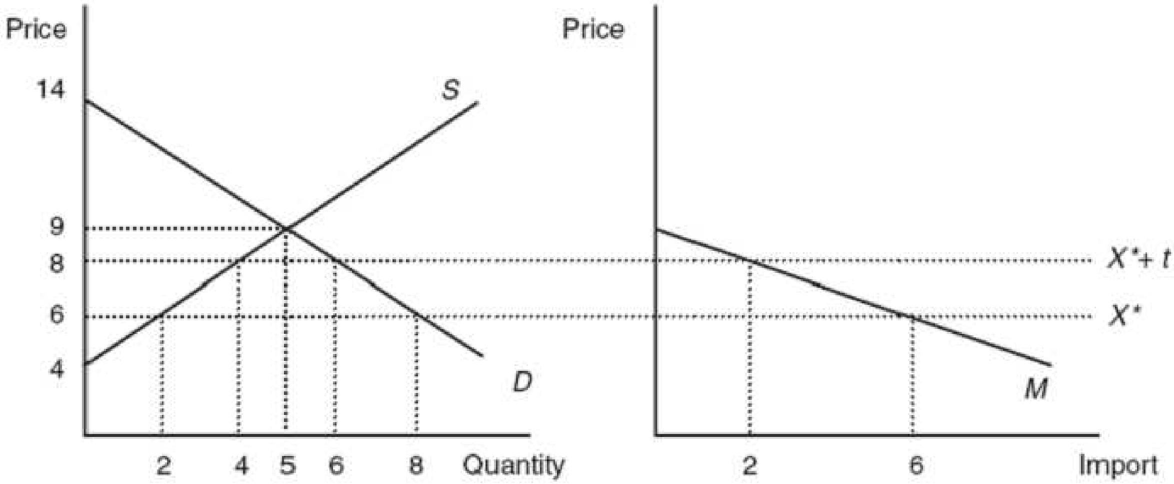
   (b) Quota with the same imports M in a small country, with quota licenses distributed to Home firms and no rent seeking.

   (c) Quota of M in a small country with quota licenses auctioned to Home firms.

   (d) Quota of M in a small country with the quota given to the exporting firms.

   (e) Quota of M in a small country with quota licenses distributed to rent-seeking Home firms.

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



(a) Home market

(b) Import market

(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. Explain the difference between a quota with a domestic import license auction and a Voluntary Export Restraint (VER). What are the domestic welfare effects in the case of a VER? Why would a country choose to reduce imports via a VER? Name a practical example of a VER.

2 Import tariffs and quotas under imperfect competition

1. Figure 9.1 shows the Home no-trade equilibrium under perfect competition (with the price P^C), and under monopoly (with the price P^M). In this question, we compare the welfare of Home consumers in these two situations.

   (a) Under perfect competition, with the price P^C, label the triangle of consumer surplus and the triangle of producer surplus. Outline the area of total Home surplus (the sum of consumer surplus and producer surplus).

   (b) Under monopoly, with the price P^M, label the consumer surplus and producer surplus (note that producer surplus is the same as the profits earned by the monopolist). Outline the area of total Home surplus with a Home monopoly.

   (c) Compare your answer with parts (a) and (b) and outline the difference between the two areas showing Home surplus. What is this difference called?

2. In this problem, we analyze the effects of an import quota applied by a country facing a Foreign monopolist and no own production. In Figure 9.10, suppose that the Home country applies an import quota of X_2, meaning that the Foreign firm cannot sell any more than that amount.

   (a) To achieve exports sales of X_2, what is the highest price that the Foreign firm can charge?

   (b) At the price you have identified in part (a), what is the Home consumer surplus?

   (c) Compare the consumer surplus you identified in part (b) with the consumer surplus under free trade. Therefore, outline in Figure 9.10 the Home losses due to the quota. *Hint*: Remember that there is no Home firm, so you do not need to take into account Home producer surplus or tariff revenue. Assume that quota rents go to Foreign firms.

   (d) Based on your answer to (c), which has the greater loss to the Home country: a tariff or a quota, leading to the same level of sales X_2 by the Foreign firm?

3. 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

4. Why is it necessary to use a market failure to justify the use of infant industry protection?

5. What is a positive externality? Explain the argument of knowledge spillovers as a potential reason for infant industry protection.

3 Export subsidies in agriculture and high-technology industries

1. What are export subsidies and why do countries use them? Name some examples of such support programs.

2. Consider a small exporting country. Compare the cost to the government and the net effect on welfare between an export and production subsidy in the amount of *s* per unit. Illustrate your points graphically.

3. Describe the impact of each of the following goals from the Hong Kong WTO meeting on (i) domestic prices and welfare of the country taking the action and (ii) world prices and welfare for the partner countries.

   (a) Elimination of agriculture export subsidies.

   (b) Reduction of agricultural tariffs.

   (c) Duty-free, quota-free access for 97% of goods originating in the world's least developed countries.

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4. Consider a large country with export subsidies in place for agriculture. Suppose the country changes its policy and decides to cut its subsidies in half.

   (a) Are there gains or losses to the large country, or is it ambiguous? What is the impact on domestic prices for agriculture and on the world price?

   (b) Suppose a small food-importing country abroad responds to the lowered subsidies by lowering its tariffs on agriculture by the same amount.Are there gains or losses to the small country, or is it ambiguous? Explain.

   (c) Suppose a large food-importing country abroad reciprocates by lowering its tariffs on agricultural goods by the same amount. Are there gains or losses to this large country, or is it ambiguous? Explain.

5. *Additional question*: Here we examine the effects of domestic sales taxes on the market for exports as an example of the "targeting principle". For example, in the domestic U.S. market, there are heavy taxes on the purchase of cigarettes. Meanwhile, the United States has several very large cigarette companies that export their products abroad.

   (a) What is the effect of the sales tax on the quantity of cigarette exports from the United States? *Hint*:Your answer should parallel the case of a production subsidy in a small country but for a consumption tax instead.

   (b) How does the change in exports, if any, due to the sales tax compare with the effect of an export subsidy on cigarettes?

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4 Multiple Choice

Mark the correct answer with a cross (only one answer is correct). *Hint*: Each correctly answered question gives one point. For each falsely answered question, one point will be deducted. Unanswered questions give no points. All in all, this exercise will not be rated with a negative score, i.e. at the least zero points will be allocated.

a) If a tariff is prohibitive, government revenue will
   - i) be welfare-maximizing for the Home country. ❑
   - ii) be zero. ❑
   - iii) exactly offset the loss in consumer surplus. ❑
   - iv) be equal to producer surplus. ❑
   - v) none of the above. ❑

b) If a small country with perfect competition imposes a tariff, then
   - i) the producers must suffer a loss. ❑
   - ii) the consumers must suffer a loss. ❑
   - iii) the demand curve must shift to the left. ❑
   - iv) the government revenue must suffer a loss. ❑
   - v) none of the above. ❑

c) If a good is imported into (small) country H from country F, then the imposition of a tariff in country H
   - i) raises the price of the good in both countries. ❑
   - ii) raises the price in country H and does not affect its price in country F. ❑
   - iii) lowers the price of the good in both countries. ❑
   - iv) lowers the price of the good in H and could raise it in F. ❑
   - v) raises the price of the good in H and lowers it in F. ❑

d) Consider a small open economy with perfect competition that wants to boost agricultural production. It is considering an export subsidy and a production subsidy. Which of the following statements is true?
   - i) The export subsidy leads to higher net Home welfare than the production subsidy. ❑
   - ii) Both an export subsidy and a production subsidy would increase Home demand for agricultural products. ❑
   - iii) The export subsidy would lead to a gain for Foreign consumers. ❑
   - iv) The production subsidy leads to higher net Home welfare than an export subsidy. ❑
   - v) None of the above. ❑

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e) When there is imperfect competition, an export subsidy could lead to welfare gains for the exporting country if
   - i) increased profits for the subsidized firm outweigh the costs of the subsidy. ❏
   - ii) the subsidized firm does not become a global monopolist producer. ❏
   - iii) the countries that buy the goods produced by the subsidized firm end up paying lower prices. ❏
   - iv) the Home consumers end up paying lower prices. ❏
   - v) none of the above. ❏

f) Non-tariff trade policies include
   - i) export subsidies. ❏
   - ii) Voluntary Export Restraints (VERs). ❏
   - iii) local content requirements. ❏
   - iv) national procurement regulations. ❏
   - v) all of the above. ❏

g) How is the amount of the antidumping duty determined?
   - i) It is the difference between the domestic producer's price and the world price. ❏
   - ii) It is the difference between the foreign firm's local price and its export price. ❏
   - iii) It is set through lobbying by domestic producers. ❏
   - iv) It is set by the WTO. ❏
   - v) None of the above. ❏