

**Brigham Young University Department of Economics**  
**Economics 458 - International Trade**  
 Dr. Phillips (section 1) Winter Semester 2006

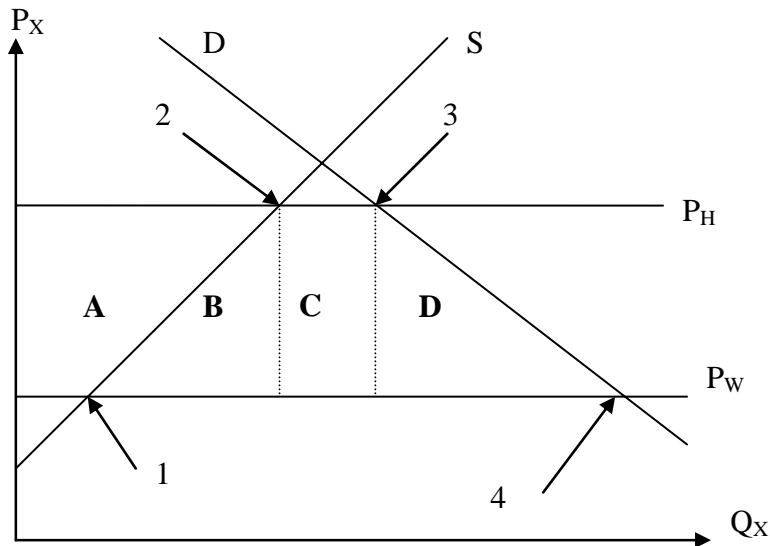
**Final Exam key**

This exam is closed book and closed notes, though you may use a calculator. Read all questions carefully before answering. Write your answers legibly in the space provided. Keep your answers concise and correct. Points will be deducted for answers which are irrelevant to the question.

You have been employed as an intern for the summer at the Ministry of International Trade in the small country of Zalchistan. Since the Minister of Trade, Sir Mori Opda, has a Ph.D. in economics from the University of Utah, he knows absolutely nothing about market economies and is relying heavily on your advice. You need to answer his questions and explain your answers to him.

1. "Our borax mines need protection from ruinous foreign competition. Should we protect them with a tariff or a production subsidy? I remember learning about supply and demand and consumer surplus and producer surplus. Can you use them in your explanation?"

**A production subsidy would provide the same level of benefit to producers with a smaller deadweight loss. Intuitively, this is because a tariff distorts both the producer and consumer decisions, but a production subsidy distorts only the producer decision.**



Consider the figure above, which shows the domestic supply and demand for borax. In the absence of a tariff or subsidy, producers & consumers face the world price,  $P_W$ . Producers produce at point 1 and consumers consume at point 4.

When an import tariff is imposed the domestic price rises to  $P_H$ , and producers produce at point 2, while consumers consume at point 3. The gain in producer surplus is A, the loss of consumer surplus is (ABCD), and the gain in government tariff revenue is C. This leaves a net deadweight loss of (BD) for the economy.

When a production subsidy is imposed the price producers receive rises to  $P_H$ , while consumers face the price  $P_W$ . Producers produce at point 2 and consumers consume at point 4. This leads to an increase in producer surplus of A, just like the tariff. The change in consumer surplus is zero, and the change in government revenue is the cost of the subsidy,  $-(AB)$ . This leaves a net deadweight loss of B for the economy. Hence, the subsidy is a more efficient way to provide A to producers.

2. "I read the other day about this 'optimal tariff' stuff. It sounds great! I want impose an optimal tariff on imports of oil. Explain to me how high this optimal tariff should be for a small country like ours."

**An optimal tariff can be imposed only if a country can force the world price to fall when it imposes the tariff. When an optimal tariff is imposed the deadweight efficiency losses associated with distorting the producer and consumer decisions are outweighed by an implicit transfer of tariff revenue from foreign producers to the domestic government. The size of this transfer is equal to the number of foreign exports times the difference in the free trade world price and the foreign price with the tariff.**

**Since Zalchistan is a small economy with respect to imports or exports of oil, it cannot force the world price of oil down by imposing an import tariff. Hence the difference between the free trade world price and the foreign price with the tariff is zero, leading to an implicit revenue transfer of zero. This means the only effects are the negative deadweight losses.**

**Zalchistan would do best by having no tariff. Or in other words, the optimal tariff on oil is zero.**

3. "It is inevitable now that we are members of the WTO that we will have to lower tariffs on all sorts of items. Zalchistan is a labor-abundant, capital-poor country. I'm expecting lots of lobbying here at the ministry from various parties. Isn't there some prediction or theorem from international trade theory that would help me predict who is going to be lobbying for and against lower tariffs?"

**The Stolper-Samuelson Theorem says that if the price of a good rises, the factor that intensively uses that good will have a more than proportional increase in its price, and the price of the other factor will fall. Since Zalchistan is labor-abundant and capital-poor, the Heckscher-Ohlin Theorem predicts it will export labor intensive commodities when it trades with the rest of the world and import capital intensive commodities. Hence, with freer trade, the price of labor intensive goods will rise and the price of capital intensive goods will fall. By Stolper-Samuelson this will lead to a rise in wages to labor and a drop in rental rates on capital.**

**So, expect laborer and labor groups to lobby in favor of meeting WTO obligations to lower tariffs, while owners of capital will lobby to delay implementation of lower tariffs, or to not lower them at all.**

4. "The Foreign Minister from Locolumbia visited last week and proposed a free trade between our two countries. They are just as labor-abundant and capital poor as we are. I don't see any possible gains from trading with them. Can you think of any? Give me at least two."

**Even though Zalchistan and Locolumbia have very similar factor endowments there are still other grounds for gains from trade.**

**1) There could be differences in preferences. If Zalchistanis have a relative preference for some goods compared to Locolumbians, we could import the goods we like from Locolumbia and export the goods they like.**

**2) There could be differences in technology. The Ricardian model shows that countries with similar factor endowments could gain if their relative productivities for different goods differ. We could export the goods for which we have a comparative advantage, and import the goods for which Locolumbia has a comparative advantage.**

**3) There could be increasing returns to scale (IRS). If some goods have significant IRS we could specialize in producing some of them and produce at low cost, while Locolumbia could specialize in others with similar gains. It is impossible to predict right now which goods we would specialize in and which Locolumbia would.**

**4) There could be difference in types of labor or capital. As in the specific factors model, some types of labor or capital could be specific to particular goods. Just because our overall endowments of labor and capital look similar, it does not follow that our endowments of specific types of labor and capital are the same.**

**Other correct answers may also exist.**

5. "I'm sick of developed countries and their elitist attitudes. I want to dump something in the U.S. or Europe. They constantly complain about dumping, so it must be harmful to them, and therefore beneficial to us. How do I go about dumping? I want to do this, but is there anything wrong with my reasoning?"

**There is basically nothing right with your reasoning, oh mighty minister.**

**If you really want to dump goods you need to either sell them in the US/Europe below the cost of producing them, or below the price they sell for in Zalchistan. Since markets here are mostly competitive, this means producers must make losses on goods they sell in US/Europe by either definition. This will actually make consumers in US/Europe better off and our producers worse off.**

**US/European producers may be harmed by our dumping, but their loss is smaller than the gain to US/European consumers, so on net they gain.**

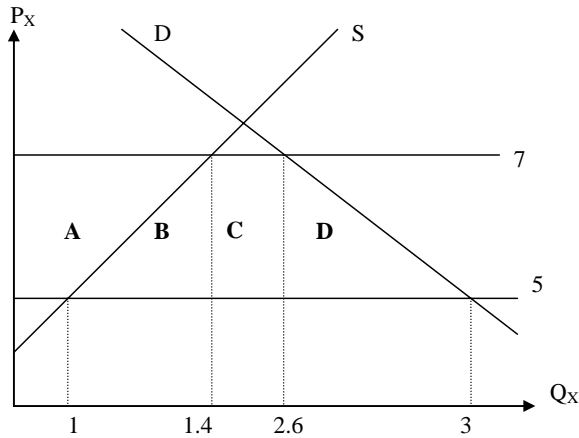
**Realistically, the only way to induce Zalchistani producers to sell in the US/Europe below cost is to offer them a production or export subsidy. This will lead to deadweight losses that make us worse off on net.**

**So, bottom line, you could arrange for dumping, but there is a clear efficiency cost if you do so. You should encourage dumping only if you think the net satisfaction to all Zalchistani citizens from sticking it to US/Europeans is greater than this cost. Since, on net, these despicable foreigners actually gain from our dumping, it is probably the case that there will be little of this satisfaction felt by the average Zalchistani.**

6. “The WTO is on my case again. They want estimates of welfare loss from our proposed tariff on imports of fry pans. The Central Statistical Agency just sent me the following figures. Domestic demand for frying pans in Zalchistan can be written as  $P = 20 - 5Q$  and domestic supply is given by  $P = 5Q$ , where  $P$  is measured in dollars and  $Q$  is measured in millions of fry pans. The world price of fry pans is \$5 and the proposed import tariff is 40%.

**With no tariff the quantity demanded is  $Q_d = (\$5 - \$20)/(-5) = 3$  million fry pans**  
**The quantity supplied is  $Q_s = \$5/5 = 1$  million fry pans**

**With a 40% tariff the domestic price will be  $\$5(1.4) = \$7$**   
**Quantity demanded will be  $Q_d = (\$7 - \$20)/(-5) = 2.6$  million fry pans**  
**Quantity supplied will be  $Q_s = \$7/5 = 1.4$  million fry pans**



The WTO wants the following estimates in \$:

Change in producer surplus:  $+A = \$2(1 \text{ million}) + \frac{1}{2}\$2(.4 \text{ million}) = \underline{\$2.4 \text{ million}}$

Change in consumer surplus:  $-(ABCD) = -[\$2(2.6 \text{ million}) + \frac{1}{2}\$2(.4 \text{ million})] = \underline{-\$5.6 \text{ million}}$

Change in government revenue:  $+C = \$2(1.2 \text{ million}) = \underline{\$2.4 \text{ million}}$

Net welfare change:  $\$(2.4 - 5.6 + 2.4) \text{ million} = \underline{-\$0.8 \text{ million}}$