# Final Exam - *Answers*
**December 20, 2001**

**Answer all questions on these exam sheets. There are four questions of different weights, with a total of 68 points on the exam. Look ahead at the indicated point values and budget your time accordingly.**

1. (10 pts.) Two countries, Axioma and Boobala, are initially in complete autarky. As it happens, both countries have currencies that are called the "dollar," which we will call the A-dollar (A$) and the B-dollar (B$). Only two goods are produced and consumed, xams and yams (xams are all-purpose sheets of a fabricated material that are used for clothing, housing, and non-electronic testing of students in courses on international trade policy; yams are food). In autarky, the prices of xams and yams in the two countries are

| | Axioma | Boobala |
|---|---|---|
| Xams | A$2.00 | B$0.50 |
| Yams | A$3.00 | B$1.50 |

   a. (2 pts.) Which country has a comparative advantage in xams? Which in yams? (Circle one in each row.)

   **Xams:** Axioma (Boobala) both neither

   **Yams:** (Axioma) Boobala both neither

   b. (2 pts.) Suppose that these two countries now open up to free trade with each other (and no one else) exchanging both goods and currencies. Suppose also (perhaps for this part only) that producers continue to be able to produce the goods at the prices above. What are the limits on the possible exchange rate?

   The B$ will be worth *no less* than 2 A$,

   and *no more* than 4 A$.

   c. (4 pts.) Suppose that you were now told that these countries have the technologies of a Ricardian Model. Which patterns of specialization would then be possible? That is, each row of the table on the next page has "yes" for each good that ***is*** produced in each country. Place a check mark (✓) in the last column of each row that ***is*** possible for these countries in a Ricardian Model (with the autarky prices shown above).

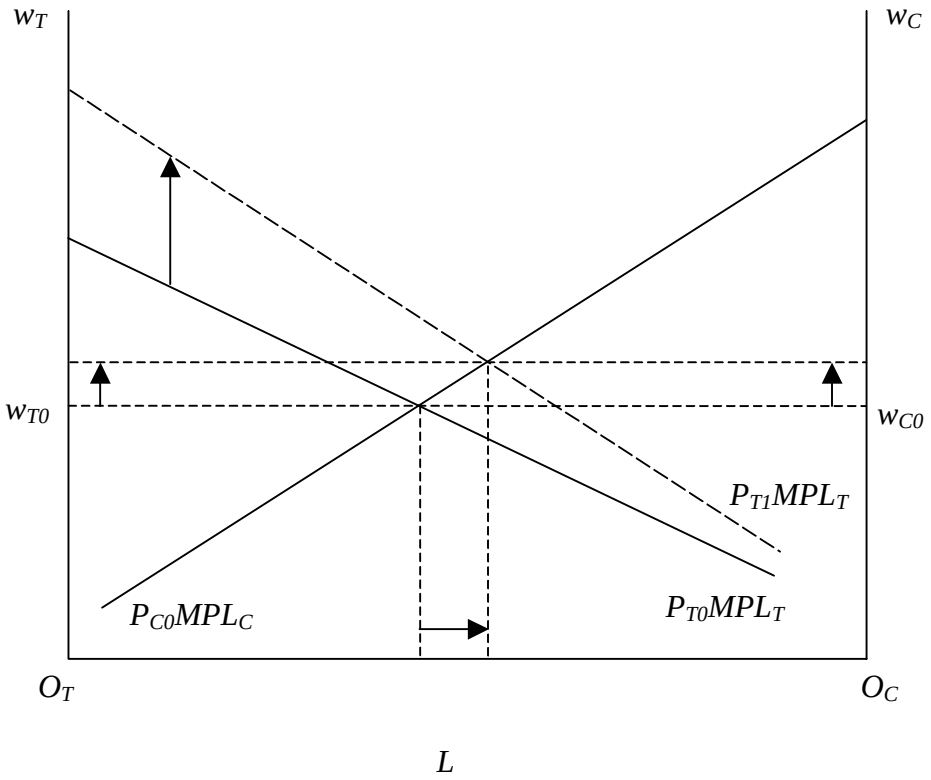
| | Axioma produces | | Boobala produces | | Possible? |
|---|---|---|---|---|---|
| | Xams | Yams | Xams | Yams | |
| 1. | | | | | |
| 2. | yes | | | | |
| 3. | | yes | | | |
| 4. | | | yes | | |
| 5. | | | | yes | |
| 6. | yes | yes | | | |
| 7. | yes | | yes | | |
| 8. | yes | | | yes | |
| 9. | | yes | yes | | ✓ |
| 10. | | yes | | yes | |
| 11. | | | yes | yes | |
| 12. | yes | yes | yes | | ✓ |
| 13 | yes | yes | | yes | |
| 14. | yes | | yes | yes | |
| 15. | | yes | yes | yes | ✓ |
| 16. | yes | yes | yes | yes | |

d. (2 pts.) Now suppose instead that the appropriate model to describe these same countries is the Heckscher-Ohlin Model, not the Ricardian model. Which pattern (or patterns) of specialization that were *not* possible in a Ricardian Model now *are* possible, if any? (Use the numbers of the rows above to answer in the space below.)

Pattern 16 becomes possible.

2. (14 points) A small open economy produces both computers, C, and textiles, T, both of which employ both capital and labor. In the short run, although labor is perfectly mobile between the sectors, capital is not. Instead, the capital that is initially installed in the computer industry is of no value outside it, and the same is true for capital in the textile industry.

   a. (4 points) On the axes below, illustrate an initial equilibrium for this economy facing initial world prices of the goods, $P_{C0}$, and $P_{T0}$, with free trade. Identify and label in your figure the initial amounts of labor employed in both sectors, $L_{C0}$, and $L_{T0}$, and the initial wages of labor in both sectors, $w_{C0}$, and $w_{T0}$.




   b. (4 points) Suppose now that the country is initially exporting computers and importing textiles, and that it now levies a tariff on imports of textiles. Show how the curve or curves in the figure change as a result, and indicate in the figure the changes in the allocation of labor and the wages paid in the two industries.

      The tariff raises the domestic price of textiles, shifting the textiles industry's demand for labor curve up. This moves the equilibrium in the figure to the right and up, indicating the labor employment in textiles rises, and employment in computers falls, while the wage rises in both industries.

c. (4 points) How does this tariff affect the payments to the capital that is installed in the two industries? That is, do owners of capital in computers gain or lose from the tariff on textiles, and do owners of capital in the textile industry itself gain or lose? You may answer this by referring to the above figure, if you wish, or you may state and explain your result in some other way.

Onwers of capital in the textiles industry gain, and those in the computer industry lose. This can be seen in the figure from the changes in areas under the labor demand curves and above the wage, which gets larger in textiles and smaller in computers due to the tariff. Or it can be inferred from the fact that capital now has more labor to work with in textiles, raising its marginal product, and less labor in computers.

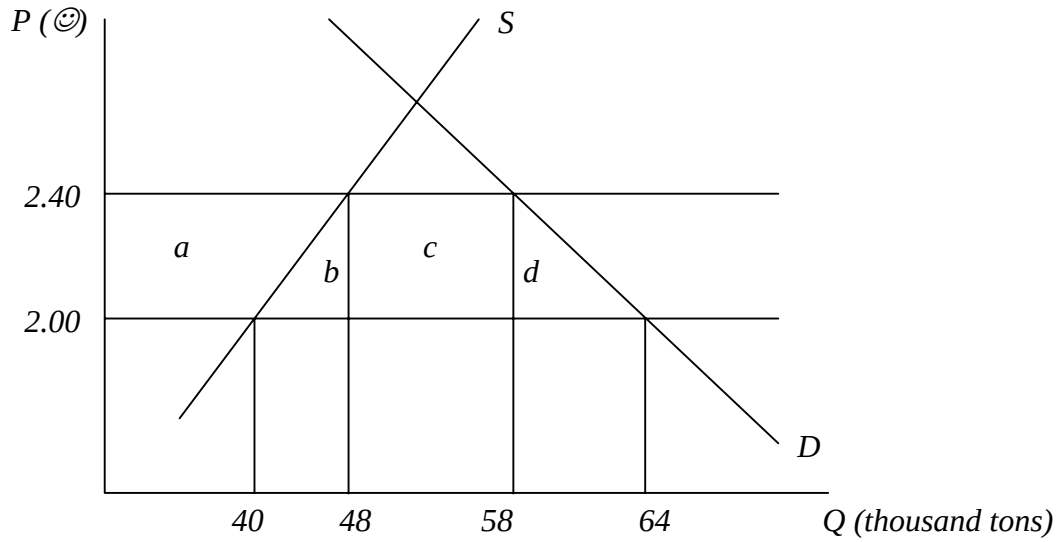
d. (2 points) Assume now that computers are relatively capital intensive and textiles are relatively labor intensive. In contrast to the results above, suppose that capital, as well as labor, is now perfectly mobile between sectors, so that this is the Heckscher-Ohlin Model. Without doing any formal analysis, explain how your answers to part (c) would change.

Now all capital will be affects in the same way by any change. In the case of this tariff on textiles, which is the labor intensive good, the Stolper-Samuelson Theorem tells us that the real wage of labor will rise, since it is the factor used intensively in textiles, and the real return to capital (in both industries) will fall. Thus, while the owners of capital in the computer industry are hurt by the textile tariff regardless of whether capital is mobile, the owners of capital in the textile industry are affected quite differently. They gain, in part (c), when capital is immobile, but they lose here when capital is mobile.

3. (24 pts.) You have been hired as an economic consultant to the tiny country of Malibubu, and, because it has wonderful beaches, you've accepted the job even though you know nothing else about the country, its economy, or even its language. Upon arrival, and before you can get to the beach, your hosts ask you to analyze the following situation: their economy is producing 48,000 tons of something they call yummigoop and importing 10,000 tons of it. The domestic price of yummigoop, they tell you, is ☺2.40 per ton (☺ is their currency), while it can be imported from abroad for ☺2.00 per ton. They say that the price difference is due to their policy of deterring imports using a "qrshme," but you don't want to admit that you don't know what that means. They also say that, without the qrshme, Malibubu would import 24,000 tons of yummigoop.

   a. (12 pts.) Assuming that the qrshme is in fact an *ad valorem* tariff, use a simple linear supply and demand model to work out the effects of **removing** it on the welfare of suppliers, demanders, government, and this tiny country as a whole. For this purpose, since you don't know otherwise and you want to get to the beach, assume that the elasticity of domestic supply is unity (1.0). Show your work, including your diagram, and then record your answers in the table at the top of the next page.

*With production of 48,000 tons and imports of 10,000, total domestic demand must be 58,000. The ad valorem tariff that would raise price from ☺2.00 to ☺2.40 is 20%. With a supply elasticity of 1.0, removing the tariff should reduce supply by the same percentage as the price, that is, from 48,000 to 40,000. Adding the stated imports of 24,000, domestic demand without the tariff will be 64,000. Thus:*




*a=(2.40–2.00)(40+48)/2=☺17.6 thousand; b=(2.40–2.00)(48–40)/2=☺1.6 thousand; c=(2.40–2.00)(58–48)=☺4.0 thousand; d=(2.40–2.00)(64–58)/2=☺1.2 thousand*

| Effects of removing the qrshme | |
|---|---|
| Domestic suppliers gain or lose: | *Lose: a = –☹17,600* |
| Domestic demanders gain or lose: | *Gain: a+b+c+d = +☺24,400* |
| The Malibubu government gains or loses: | *Lose: c = –☹4,000* |
| The country of Malibubu gains or loses: | *Gain: b+d = +☺2,800* |

b. (2 pts.) How would your answers to part (a) be different if the tariff were specific instead of *ad valorem*?

No difference at all. Since the world price remains fixed due to the smallness of the "tiny" country, a specific tariff of ☺0.40 has exactly the same effects as an *ad valorem* tariff of 20%.

c. (4 pts.) How would your answers to part (a) be different if you knew that the elasticity of domestic supply were larger than one?

Domestic supply would now fall by a larger amount, reducing the size of area a and thus the loss of producer surplus. So supplies would lose less. However, since we are told the new level of imports, this means that demand would also be smaller, therefore rising by less than before and reducing also the gain to demanders. So the first two results in the table above become smaller in absolute value. The cost to the government is unchanged, of course, since that just depends on the initial level of imports. The net gain to the country (equals the dead-weight loss due to the tariff) is also unchanged, since triangles b and d change by equal and opposite amounts.

d. (2 pts.) You are now told that a qrshme is an import quota. Assuming that the quota rights are given away free to foreigners, how would your answers to part (a) be different?

The government now loses nothing, since it was getting no revenue from the policy. The country as whole therefore gains ☺4,000 more than before, in the form of quota rents that are no longer lost to foreigners.

e. (2 pts.) You are now told that quota rights are *not* given to foreigners, but are auctioned off in a competitive market. The revenues from the auction, however, are given to domestic producers of yummigoop. Again, how would your answers to part (a) be different?

Again the government loses nothing, since although it loses revenues, it was giving them away. But now the tariff revenue losses of part (a) become larger losses to domestic suppliers. The loss to the country is the same as part (a).

f. (2 pts.) Finally, you learn that even though Malibubu is a tiny country, it is one of the very few countries in the world that consume yummigoop, so that your small-country assumption was not justified. How would this change your last answer (in part (e)) for the effect on the welfare of the country as a whole?

Since removing the policy increases imports, this will now cause the world price of yummigoop to rise above ☺2.40. The net gain to the country is reduced (the triangles, which have the same width, are not less tall, which the lost revenue from the policy is the same), and the country could even lose.

4. (20 pts.) In the news on December 8, 2001, the International Trade Commission recommended that President Bush impose tariffs of between 20 and 40 percent on most imports of steel into the United States for a period of up to four years, the purpose being (according to the *Financial Times*) "to give the steel industry time to consolidate, restructure and restore itself to profitability." Write an essay describing both the causes and the effects of this recommendation, being sure to touch on at least the following issues:

    a. What reason or reasons provide the legal justification for this recommendation, and under which provision of U.S. trade law?

    b. Does this recommendation appear to be consistent with, or a violation of, the rules of the World Trade Organization?

    c. Who will benefit and who will be hurt, both within the United States and elsewhere, from these tariffs if they are imposed?

    d. Are there other policies that you would recommend as better than these tariffs for serving the same purpose?

    *Your essay should touch on the following points:*

    1. *The legal justification for a steel tariff is provided by Section 201 of U.S. trade law, called the Escape Clause, which provides temporary, nondiscriminatory protection for industries that are being sufficiently injured by imports.*

    2. *This is permitted under the Safeguards Clause of the GATT and WTO.*

    3. *A steel tariff will help both the owners and the workers in the steel industry within the United States, which will be able to sustain higher profits and wages as a result of the tariff. It will harm those industries that use steel as an input, such as the automobile industry, whose costs will be higher as a result of the tariff and whose profits (and also wages of its workers) will suffer as a result. Consumers who buy cars may be hurt as well, to the extent that the cost of steel is passed on to them in the form of higher prices for cars (although competition with imported cars that do not have to pay more for steel may limit this damage). Because the United States is a large market for the world's steel, the steel tariff will also force down the price of steel outside the U.S., hurting foreign producers of steel but helping firms abroad that use steel as an input. Finally, the U.S. government will collect tariff revenue from these tariffs, contributing to the U.S. government budget surplus (or reducing its deficit).*

(Use this space to continue your answer to question 3.)

4. *If the tariff succeeds in its stated aim to "consolidate, restructure and restore" the U.S. steel industry to profitability, then this improved productivity by a U.S. industry could be beneficial in the longer run, not just to steel producers but to steel consumers as well.*

5. *A subsidy to production in the steel industry, instead of a tariff, would be more beneficial to the U.S. as a whole than the tariff, since it would provide the same help to steel producers without raising the price to demanders and distorting their choice. Even better, if one could figure out what is the underlying cause of the steel industry's lack of competitiveness, a policy that would address that cause directly would be even better.*

(Use this space, if necessary, to continue your answer to question 3.)