Lapan Econ 455
Fall 2008

Midterm Exam 2

Answer Any **Two Questions.** Answer all parts to each question.

1. Answer all parts to this question.

a) ("Standard trade model", Ch 5) Consider a small country (Costa Rica) that consumes and produces two goods (food and clothing); production takes place under increasing costs (increasing marginal rate of transformation).

i. Use the production possibility frontier and indifference curves to illustrate how autarky equilibrium prices and outputs are determined. **(6 points)**

ii. Suppose autarky relative prices in Costa Rica are given by: $\left(P_c^a / P_f^a\right) = 2\,(bushes / shirt)$. Further, suppose Costa Rica is a small country, and that world relative prices are given by: $\left(P_c^w / P_f^w\right) = 4\,(bushes / shirt)$. Assuming free trade, show graphically how production changes in Costa Rica and show that, with free trade, the country can consume more of both goods than it did in autarky. (If you cannot show this graphically, then give a verbal explanation). **(8 points)**

iii. Starting from free trade, suppose Costa Rica imposes an import tariff of 25%. Show graphically – or discuss – how this import tariff affects Costa Rican: (1)production of clothing and food; (2)consumption of each good; and (3)welfare. **(10 points)**

iv. **In addition** to the import tariff, suppose Costa Rica – to encourage exports – also enacts an export subsidy of 25%. What is the overall effect of this import tariff and export subsidy on Costa Rican production, consumption and welfare? Explain your results. **(8 points)**

b) (Chapter 4) Consider the Heckscher Ohlin model, with two goods (food, clothing) and two inputs (labor, land), and in which goods are produced under constant returns to scale. Further, assume that the production of food is land-intensive (clothing is labor-intensive). Finally, assume that the US and China are the only two (trading) countries in the world.

i. If the two countries have identical technology and preferences (demands), but the US has more land per worker, what does the model predict about: (1)the pattern of trade between the US and China; (2)how trade affects factor prices in each country; and (3)whether trade will equalize factor prices between the two countries? Be specific. **(9 points)**

ii. How will a U.S. import tariff affect factor prices and welfare in the U.S.? Will everybody in the U.S. lose, or will there be those who favor tariffs? Explain. **(9 points)**

2. Answer all parts to this question.

(Labor movements). Consider a simplified model with two countries (US, Mexico) that use two inputs (land, labor) to produce a single identical good. Because there is just one good (and because we ignore time) there is no role for trade in goods. Let $\left\{T^{us}, L^{us}\right\}$ denote the endowments of land and people in the US, and $\left\{T^{mex}, L^{mex}\right\}$ denote the endowments of land and people in Mexico (each person works the same amount of time, so the number of people equals the number of workers). Assume the two countries have the same amount of labor $\left(L^{us} = L^{mex}\right)$, but the US has more land $\left\{T^{us} > T^{mex}\right\}$. Finally, assume the **US has a more productive technology**, as described by:

$$Q^{us} = 40\left(T^{us}\right)^{1/2}\left(L^{us}\right)^{1/2}; \quad Q^{mex} = 20\left(T^{mex}\right)^{1/2}\left(L^{mex}\right)^{1/2}$$

(you only need to use these functions in part *f*, but you should assume that inputs are complements, which means as more of one input is used, the marginal productivity of the *other* input increases.)

a) Assuming no labor mobility between countries, compare the wage rates, return on land and per capita income $\left\{\left(Q^{us}/L^{us}\right);\left(Q^{mex}/L^{mex}\right)\right\}$ in the two countries (a verbal answer suffices. Pay attention both to the differences in technology and to the differences in endowments). **(8 points)**

b) Assume a guest worker program is implemented that allows workers to move between the two countries. Let I represent the number of people from Mexico who work in the US (if people from the US work in Mexico then $I < 0$), so that the US work force becomes $\left(L^{us} + I\right)$ and the Mexican work force is $\left(L^{mex} - I\right)$. If people choose where to work based solely on where net wages are higher, and if all workers were free to move between countries, then: **(1)**What determines how many workers move between the countries? **(2)**How does this labor movement affect wages, the return on land, and per capita income in each country? and **(3)**How does this labor movement affect world output? {Again, you do **not** need numerical answers here} **(12 points)**

c) Will the labor flow of part (ii) benefit the US? Would your answer change if guest workers automatically received free benefits (such as free medical care) but paid no taxes? Be specific.**(6 points)**

d) Suppose the guest workers to the US paid more in income taxes than they received in benefits. Does the inflow of guest workers benefit the US in this case? **(6 points)**

e) Assume there are no benefits for, nor income taxes paid by, guest workers but that the US government can charge them an annual fee (***F***) for a pass that allows them to work in the US. If guest workers receive the same wage as US workers, can the US benefit from charging a positive fee? How would you determine the optimal fee? Carefully justify your answer. **(8 points)**

f) Use the production functions given at the beginning of this question, and assume $T^{us} = 125$, $T^{mex} = 100$, $L^{us} = L^{mex} = 72$. Assuming guest workers can move freely between the US and Mexico, find the equilibrium number of guest workers in the US. **(10 points)**

3. Answer all parts to this question.

Consider the market for blouses (or shirts) in a small country (e.g., Iceland). The domestic supply and demand curves are given by:

$$S = 10P^f; \quad D = 600 - 20P^c$$

where P^f is the price blouse producers in Iceland receive for their output and P^c is the price blouse consumers in Iceland pay for blouses (if there are no production subsidies or taxes, and no consumption subsidies or taxes then $P^f = P^c$).

a) Assuming no domestic taxes or subsidies, find the autarky price in Iceland. **(6 points)**

b) Assume Iceland can trade at the world price $P^w = 5$ and that its imports (or trade policy) have no affect on world prices. Find the number of blouses Iceland imports under free trade. **(6 points)**

c) Suppose Iceland imposes an import tariff of $t = 10$ on blouses. **Calculate** how this tariff affects Iceland's imports and prices in Iceland. **Compared to free trade, calculate** the changes in consumer surplus, producer surplus and overall Icelandic welfare due to this tariff. {If you cannot do the calculations, then show the areas graphically. However, this will not get you full credit}. **(12 points)**

d) Suppose the import tariff is replaced by an import quota of 150 (this represents the maximum number of blouse imports the government would allow). Compare the effects of this import quota to the import tariff. What differences, if any, are there between the two policies? **(6 points)**

   i. Suppose the government of Iceland, instead of giving the fixed quota licenses away (without charge) to potential importers, decides to auction off these quotas (importers, to bring blouses in to the country, now have to buy the quota license as well as the blouse). If the size of the quota is unchanged (the number of imported blouses does not change due to this policy), will auctioning the quota licenses change domestic price? Explain. **(6 points)**

e) Suppose the main political goal of the import tariffs (or quotas) used by the Icelandic government is to **limit imports**. If international agreements prevent Iceland from directly limiting imports through tariffs or quotas and also prevent Iceland from subsidizing domestic producers, would a domestic consumption tax on all blouses (both imports and domestic production) reduce imports? If so, **find** the consumption tax that reduces imports to the same level as would the import tariff of 10. **(6 points)**

   i. Find the deadweight loss associated with this consumption tax and compare that loss to the loss with the tariff. Which policy is the better way to limit imports? **(8 points)**