14.54 International Economics
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Problem Set 3 (Due on 10/18)

1. Tariffs and Quotas

In a small country the market for cars is described by the following demand and supply equations:

$$Q^D = 200p^{-1.2}$$
$$Q^S = 1.3p$$

where quantities are in millions and prices are in thousands of dollars.

1. What is the autarky price for cars, p^A, in this country?

2. Imagine the price of cars on the international market is $p^W = 9$. At this price how much would the country produce, how much would it demand and how much would it import?

3. Imagine the country imposes a quota for the import of cars. The government establishes that 1 million cars can be imported into the country. What is the amount of cars supplied and demanded under this regime?

4. Find the tariff that would yield exactly the same level of imports as established in part 3. Assume this tariff is on the form: t dollars per car.

5. Draw a graph that represents the autarky equilibrium, the free trade equilibrium and the two equivalent restricted trade equilibria.

6. Quantitatively assess welfare under the three regimes: free trade, import quota and tariff, under the assumption that the goverment doesn't auction off the quotas, but randomly assigns them to foreign countries. Calculate consumer surplus, producer surplus and government revenues under the three regimes and then compare welfare loss due to the two types of trade restriction.

2. Growth and Trade

Take two countries, Home and Foreign, that have different relative endowments of the two factors of production, capital and labor. These two factors are used in the production of two goods, airplanes, which use relatively intensively capital and textiles, which use labor relatively intensively. Assume that the Home country is relatively better endowed with capital than labor with respect to the Foreign country.

Describe qualitatively and draw the appropriate graphs to illustrate the impact on the two countries' terms of trade and welfare of the following growth patterns:

1. Increase in the capital stock in the Home country
2. Increase in the labor supply in the Home country
3. Increase in the capital stock in the Foreign country
4. Increase in the labor supply in the Foreign country

3. Transfers and Migration

Imagine you are analyzing the post-unification economies of East and West Germany. It is a realistic assumption that they didn't trade before reunification and there was no migration allowed.

1. Given the relative factor abundance of these two countries what should have happened to wages after reunification, given that migration was not allowed? You probably observed that migration happened. Why do you think migration happened? What assumptions in the model you used to answer the first question don't hold in this setting?
2. West Germany made large transfers to East Germany after reunification. What should be the effect of these transfers. Under which conditions should they make the receiving country, East Germany, better off?

4. Gobalization and Inequality (Matching Problem)

There are two countries and just one consumption good. The rich country (Home) has workers of two skill levels, A=4 and B=3. The poor country (Foreign) has workers of skill levels C=1.5 and D=1. There are many competitive firms in each country, but each firm is characterized by the same production process with constant return to scale, in which there are two tasks—a managerial (or skillsensitive) task, and an assistant's (or relatively skill-insensitive) task. A firm's output depends on the skill levels of the workers who undertake the two tasks. Thus if a worker of skill H is assigned the manager's task and a worker of skill L is assigned the assistant's task output is given by:H^2L.

First consider the autaky equilibrium in each country:

1. Why would it be more efficient to assign a high skilled worker to the manager's task and a lower skilled worker to the assistant task. For example, assume there 2 workes of the high type (H=4) and two workers of the low type (L=3). Show that it is more efficient for the workers to cross-match than to self-match.
2. Find what is the wage of the high skilled worker and the low skilled worker in each country in a competitive equilibrium. (Hint: you can normalize

output price to be equal to 1).

Now, returning to the two-country framework, we will assume that globalization means that workers from different countries can work together in the same firm. Now, all cross-matches are in principle possible.

3. Is it efficient for the least-skilled workers in the poor country to be crossmatched with any worker in the rich country? Give the intuition behind it.

4. Is it efficient for any rich country workers to match with any poor country workers? What does this implies for the wages in both countries for each type of worker? Would this be a realist case?