Econ 165 | Stanford University
Winter 2001/02 | Gerald Willmann

Homework 2

Problem 1: Consider the monopolistic competition model. Say we are looking at sailboat producers. Each producer has fixed costs of 10 million and marginal costs of 20,000 per boat. Each faces demand of the form $Q = S(1/n - (P - \bar{P})/100000)$ where S is total quantity of boats sold. Suppose 2,500 sailboats are sold in the U.S. every year.

a) Derive the marginal revenue of each producer (assuming that they are too small to affect the average price $\bar{P}$). Set $MR = MC$ as a profit maximizing monopolist does and use the symmetry assumption to derive the price P as a function of the number of firms n.

b) In a diagram with P and average cost AC on the vertical axis and the number of firms on the horizontal axis, graph the relationship derived in a) as well as the average costs. Explain the intuition behind the slopes of these curves.

c) Why does their intersection represent the equilibrium? Calculate the equilibrium number of firms and the equilibrium price of a sailboat.

d) Suppose there are six smaller countries with sales of 400 sailboats each. Calculate the equilibrium for one of them. Now, let the world trade and calculate the equilibrium for the U.S. trading with those six countries. Are there gains from trade?

Problem 2: Consider the market for steel. Home's (foreign's) inverse demand function for steel takes the form $p = 170 - Q^D$ ($p = 110 - Q^D$) and its inverse supply is $p = 70 + Q^S$ ($p = 10 + Q^S$).

a) Derive the autarky equilibria for both countries, i.e. the equilibrium prices and quantities when they do not trade. Which country will export which will import steel once trade is allowed?

b) Suppose home is a small country that can import steel from the world market at a price of 90. Consider an import tariff of 10 per unit of steel. What will be the domestic price and the quantity imported? What will be the effects on producer profits, consumer surplus and government revenue? Does this policy raise national welfare?

c) Repeat b) if home is not small but large and imports steel from the foreign country. Explain the concept of an optimal tariff. Find the optimal tariff.

d) Consider an export subsidy of 10 per unit of steel in the foreign country. Analyze the effects of this subsidy for the large country case and contrast them with the effects of an export tax. Do you see any possibility of an optimal export subsidy or perhaps an optimal export tax?

Problem 3:

a) List different forms of regional economic integration and explain their characteristics.

b) Research what type of regional arrangement is Mercosur (or Mercosul). Can you find anything special about its internal trade that does not fit our definition?

c) Explain trade creation and trade diversion in the context of preferential trading arrangements. What does the existence of these two forces suggest for the global welfare effect of PTAs?