

## Exercise 4

**Problem 1:** Trade Policy Issues.

- a) Derive the optimal tariff in the large country, perfect competition case mathematically, and demonstrate it graphically. Also explain why the optimal tariff for a small country is zero.
- b) Show that there are Pareto gains from trade, using Dixit-Norman taxation. Briefly discuss the advantages and disadvantages of this scheme, compared to a lump-sum compensation.
- c) Demonstrate the strategic trade policy argument in the imperfect competition case, namely that an import tariff can shift rents in favor of the domestic firm.

**Problem 2:** Consider the Protection for Sale model as introduced by Grossman and Helpman (AER 94).

- a) Derive equations (13), (14), (15), and proposition 2 in the original article. In equation (13), please indicate where each term comes from, ie consumer surplus, tariff revenue etc.
- b) Whereas the original model is formulated in tariffs, many empirical implementations use non-tariff barrier (NTB) data. However, with NTBs, only a share  $\gamma < 1$  of the rent from protection (tariff revenue, if it were a tariff) is actually captured by the government. Modify your calculations in a) to account for this fact.