

Economics 164
Problem Set 2

1. Consider the 2-good production-and-trade model developed in class.
 - (a) Draw an initial free-trade equilibrium for a small country facing world prices that are fixed by a large rest-of-the-world, depicting the small country's production possibilities frontier, its relevant indifference curves, and its free-trade production and consumption of each good.
 - (b) Now suppose that the country imposes a non-prohibitive tariff on its imports (i.e., a tariff that is strictly positive but not high enough to drive the country's imports to zero). Depict the impact of the tariff on the country's production of each good, and on the country's consumption of each good, assuming that the government takes the tariff revenue and donates it to the poor in the rest of the world.
 - (c) Next suppose that, as in (1b) above, the country imposes a non-prohibitive tariff on its imports, but that rather than donating the tariff revenue to the poor in the rest of the world, the government gives the tariff revenue back to its own citizens to spend. Show that the small country's budget constraint – which requires that the value of its national consumption be equal to the value of its national income – can be expressed in terms of world prices only (i.e., written in a manner that eliminates all domestic prices from the expression), and using this information depict the impact of the tariff on the country's production and consumption of each good for this case.
 - (d) Describe with reference to your graph in (1c) above the cost of the producer distortion, the cost of the consumer distortion, and the tariff revenue associated with the imposition of a tariff for the small country, and relate these to the partial equilibrium tariff analysis for the small country that we discussed in class.
2. Consider the 2-good production-and-trade model developed in class.
 - (a) Draw an initial free-trade equilibrium for two large countries, A and B, depicting each country's production possibilities frontier, its relevant indifference curves, and its free-trade production and consumption of each good, and draw as well a graph depicting the determination of the equilibrium free-trade prices.
 - (b) Now suppose that country A imposes a non-prohibitive tariff on its imports, and that the government of country A gives the tariff revenue back to its own citizens to spend. Show that country A's budget constraint – which requires that the value of its national consumption be equal to the value of its national income – can be expressed in terms of world prices only (i.e., written in a manner that eliminates all domestic prices from the expression), and using this information depict the impact of the tariff on country A's

production and consumption of each good *at the original world prices*.

- (c) Next depict the impact of the tariff described in (2b) above on country A's production and consumption of each good *at the new equilibrium world prices*.
- (d) Describe with reference to your graph in (2c) above the cost of the producer distortion, the cost of the consumer distortion, and the tariff revenue associated with the imposition of a tariff for the large country, and relate these to the partial equilibrium tariff analysis for the large country that we discussed in class.

3. Consider two large countries, A and B. A imports good x and exports good y , while B imports good y and exports good x . We showed in class that a *reciprocity rule* implies a fixed terms of trade if the rule requires that negotiated tariff changes must induce changes in a country's import volume that are equal to the changes in its export volume, in the particular sense that

$$p^{w0}[M_x^{A1} - M_x^{A0}] = E_y^{A1} - E_y^{A0},$$

where p^w is the relative price of x to y on world markets, and where "0"- and "1"- superscripts denote "pre-negotiation" and "post-negotiation" magnitudes, respectively (and where $M_x^{A1} > 0$ by assumption).

- (a) Suppose instead that we define the reciprocity rule so that negotiated tariff changes must induce changes in each country's import volume that are equal across countries, in the particular sense that

$$p^{w0}[M_x^{A1} - M_x^{A0}] = M_y^{B1} - M_y^{B0}.$$

Is a fixed terms of trade still implied?

- (b) Next, suppose instead that we define the reciprocity rule in terms of changes in import-competing *production* rather than imports, so that negotiated tariff changes must satisfy

$$p^{w0}[Q_x^{A0} - Q_x^{A1}] = Q_y^{B0} - Q_y^{B1}.$$

Is a fixed terms of trade still implied?