Tariffs: Practice Problems Key
International Trade
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Question 1

a) To solve for the equilibrium autarky quantity, set both the domestic supply and domestic demand equation equal to one another and solve for the quantity: $4 + Q = 100 - 2Q \Rightarrow Q = 32$. Next, evaluate either the domestic supply or domestic demand equation at the equilibrium autarky quantity to find the equilibrium autarky price: $4 + 32 = 36$. See Figure 1 below.

b) To find domestic production, use the domestic supply equation evaluated at the price of 10: $10 = 4 + Q_1 \Rightarrow Q_1 = 6$. To find domestic consumption, use the domestic demand equation evaluated at the price of 10: $10 = 100 - 2Q_2 \Rightarrow Q_2 = 45$. Imports are then equal to domestic consumption minus domestic production: $45 - 6 = 39$. See Figure 1 below.

c) Consumer surplus increases by B, E, C, D, F, G, H, and I. Producer surplus decreases by B and E. As a result, total welfare increases by C, D, F, G, H, and I. See Figure 1 below.

d) The price, now inclusive of the 20% tariff, is 12. Using the domestic supply equation, domestic production is 8. Using the domestic demand equation, domestic consumption is 44. Imports are then 36. Government revenue equals the quantity of imports multiplied by the tariff wedge between the world price and the world price inclusive of the tariff: $36(2) = 72$. See Figure 1 below.

e) Consumer surplus decreases by E, F, G, H, and I. Producer surplus increases by E. Government revenue raised from the tariff equals G and H.

The resulting decrease in total welfare, or deadweight loss, is F and I. See Figure 1 below.

f) The deadweight loss from the tariff is calculated as $.5(2)(2) + .5(2)(1) = 3$.

Question 2

Note the following tariffs: blouses 19.7%, sunglasses 2%, Irish or Scotch whiskies 0%, and cars 2.5%.

a) Unweighted $= \frac{19.7 + 2 + 0 + 2.5}{4} = 6.05\%$

b) Weighted $= \frac{19.7(10) + 2(15) + 0(50) + 2.5(300)}{375} = 2.61\%$

c) The value added under free trade is $300 - 50 = 250$, whereas the value added under the tariff is the following:

$$(1 + .025)300 - (1 + 0)50 = 257.5,$$

which means the effective rate of protection is

$$\frac{257.5 - 250}{250}100 = 3\%.$$

Figure 1: