AS/ECON 4070A Public Finance I Assignment 1

due : Wednesday October 11 2000 before class

Answer all 5 questions. All count equally.

1. Would the allocation resulting from the following economic system be Pareto efficient? Explain briefly.

The economic system : there are two goods in the economy, food and clothing ; there is no production ; goods are allocated by competitive markets ; people buy and sell the two goods, taking the prices of the goods as given ; each person has a given endowment of food and clothing ; there is a government, which takes 25 percent of any clothing sold ; the clothes taken by the government are distributed, in equal shares, to all the people in the economy ; the government does nothing else, except for taking and redistributing clothing.

2. Suppose that a person's utility function, from consumption of two goods, had the equation

$$U(x, y) = xy$$

where x was her consumption of one good, and y her consumption of the other, so that, for instance, her indifference curve through the consumption bundle $(12, 12)$ is the set of all consumption bundles (x, y) such that $xy = 144$.

Suppose that initially the prices of the two goods are $p_x = p_y = 1$, and that the person's income is 24. Suppose as well that the person chose the bundle $(12, 12)$ initially. Then a tax on \$1.25 per unit on good Y raises p_y to \$2.25. The person then chooses the consumption bundle $(12, 5\frac{1}{3})$.

i Check that $(12, 12)$ is the consumer's preferred consumption bundle if her income is 24, and if the prices she faces for the two goods are $(1, 1)$, and that $(12, 5\frac{1}{3})$ is her preferred consumption bundle if her income is 24 and if the prices she faces are $(1, 2.25)$.

ii How much would she be willing to pay to avoid the tax on good Y? (That is, what is the *equivalent variation* to the tax?)

iii How much would she have to be compensated, in order to undo the damage done by the tax? (That is, what is the *compensating variation* for the tax?)

3. What would the incidence be of a \$6 unit tax on cigars, if the market for cigars were perfectly competitive, if the demand curve for cigars had the equation

$$Q^D = 180 - 2P^D$$

where Q^D is the quantity demanded by consumers and P^D the price paid by buyers, and if the quantity supplied of cigars were

$$Q^s = 4p_s$$

where Q^s is the quantity supplied by sellers and p_s is the price received by sellers?

4. A perfectly price discriminating monopoly charges a different price for each unit sold. ("First degree price discrimination" is another way of saying "perfect price discrimination".) A perfectly price discriminating monopoly charges buyers exactly the maximum the buyers are willing to pay for each unit of the good sold.

i What would be the incidence of a unit tax levied on the monopoly, of \$1 for each unit that it sold?

ii What would be the incidence of the \$1 unit tax, if it were levied on buyers of the good?

5. Suppose firms in some industry set prices by using a simple "mark–up" rule. That is, they set the price of the good they sell equal to the average cost of the good, plus some positive fraction m of this average cost.

i What would be the incidence of a \$1 unit tax, levied on all firms in this industry, on each unit sold?

ii What would be the incidence of this \$1 unit tax, if it were levied on buyers of the good?