

time : 60 minutes

Do all 3 questions. All count equally.

1. How would the addition of one more person into a country affect the well-being of the people already in the country, if the country provided a pure public good to its citizens, and used “Lindahl”, or “benefit” taxation to pay for it?

[You may assume that each person in this country knows everyone else’s preferences (including the new entrant’s). Under Lindahl taxation, the quantity provided of a public good is the quantity for which the sum of people’s marginal benefits of the public good equals the marginal cost of providing one more unit of the public good. And each person’s tax bill is her own marginal benefit, times the quantity provided.]

2. How much tax revenue would be collected by the following “pivot tax” mechanism, if each person tries to use the mechanism to make herself as well off as possible?

The indivisible (“all or nothing”) public project costs \$10000. There are 5 people : each person knows how much she values the project (but nobody else knows her valuation). Person #1 values the project at \$5000, person #2 and person #3 each value the project at \$1500, and person #4 and person #5 each value it at \$500.

The rules of the tax are : the project will be undertaken if and only if the average of people’s announced valuations exceeds the cost per person of the project, \$2000. If the project is undertaken, each person will pay the same share, \$2000, of the cost. In addition, if any person is “pivotal” (that is, if her valuation alters the overall result), then she will have to pay a pivot tax, equal to the (absolute value of the) difference between the sum of everyone else’s announced valuations and the sum of the shares of the cost (8000) which they must pay.

3. Suppose there is some input  $Z$  to production with the following properties : increases in firm 1’s own purchases  $Z_1$  of the input lead to increased profits for firm 2, and increases in firm 2’s own purchases  $Z_2$  of the input lead to increased profits for firm 1.

Is the equilibrium allocation efficient, when each firm chooses its own input quantities so as to maximize its own profit?

Explain briefly.