

14.472 Final, Spring 2004 - Diamond/Gruber

Directions: Please answer all questions. Each question receives equal credit. Partial credit will be given for math questions if explanations are clear.

Question 1:

The state of Massachusetts currently provides an explicit source of care for the uninsured through its "uncompensated care pool". Hospitals contribute to the pool in proportion to their revenues, and care delivered to the uninsured can be charged against the pool. Any uninsured person with an income under 100% of the poverty line is entitled to free hospital care; uninsured persons with incomes from 100-200% of the poverty line received subsidized care which is a decreasing function of their incomes; persons with incomes above 200% of the poverty line have to pay for care.

The state hires you to evaluate the operation of its uncompensated care pool. This evaluation is complicated by the fact that the New England states went into a large recession shortly after the introduction of the pool, with a large number of people losing their job and becoming uninsured.

- a) How would you evaluate the effects of this pool on the health of the uninsured? Consider the advantages and disadvantages of different empirical strategies. Discuss the type of data needed.
- b) What other effects on individual behavior might you expect from the existence of this pool? What empirical strategies would you test for the presence of these other effects? What sort of data would you use?
- c) Contrast this approach with the following alternative: health insurance is given free to those below the poverty line, and subsidized between once and twice poverty. What are the benefits and costs of this new proposal relative to the uncompensated care pool?

Question 2

Set up a model of a competitive economy with one private consumption good, x , (which is numeraire), one pure public good, g , and two types of households, who differ only in income, which is in units of the private consumption good. Denoting income by I , assume that I is strictly higher for type 1 than for type 2 (and strictly positive for both). Assume equal numbers of the two types. Assume that the technology is linear so that the producer price of the public good does not vary.

Assume that preferences for both types satisfy $U[x,g] = \log[x] + \log[g]$

- a) Derive the equations for the private contribution equilibrium and discuss the equilibrium allocation. Note there are several cases to discuss.
- b) Is equilibrium Pareto optimal? Explain your answer.
- c) For one of the cases you analyzed in a, sketch how your analysis would be different if

behavior reflected a warm glow from contributing to the public good. Be careful and explicit in your definition of Pareto optimality, including a discussion of why different definitions might be relevant.

Question 3

Consider a society in which each worker earns a wage of W when working. Each worker faces a probability a of losing their job. Losing their job leaves them with income gW , where g represents the generosity of friends and neighbors.

Each worker may purchase units of unemployment insurance (where a unit of insurance pays \$1 in the event of job loss) at a price of $\$x$ per unit.

The agent has log utility, and consumption equals income (no savings).

a) Solve algebraically for the optimal purchase of insurance (I) by this agent, as a function of W , g , a , and x . How do insurance purchases depend on the probability of job loss (a), the price of insurance (x), and their ratio, and why? How do insurance purchases depend on g and why?

b) Derive the change in consumption associated with job loss, as a function of W , g , a , and x .

c) Suppose that private insurance is actuarially unfair. Now, suppose that the government introduces public insurance that is actuarially fair. Solve for the new consumption change, and explain differences from (b). Compare the welfare of workers under the private and public insurance system, and explain differences (math may be helpful but is not necessary for this last step).

d) Suppose that individuals can leave this society and migrate to another society where there is no possibility of unemployment. They derive utility Z in that sector with certainty. Labor supply is perfectly elastic between the two sectors.

(i) Derive the equilibrium wage W that is now paid in this society (the one with unemployment possibilities)

(ii) In this labor market equilibrium, what is the impact on worker utility of moving from a private unfair to a public actuarially fair insurance system (no math necessary)

Question 4

You are hired by the state of Massachusetts to evaluate the welfare reform put in place by the state, which made it very unpleasant to be on welfare by imposing harsh training requirements on those on the program. Welfare is only available to single mothers in the state. Fortunately for you, welfare was reformed for residents of Boston in 1995, but not for residents of Springfield (a town in western Massachusetts) until 1997. For your evaluation, you are provided the following data on the average earnings, and population size, of different groups of women in the two cities for two years, 1994 and 1996.

City	Year	Marital Status	On Welfare	Earnings	Number (thousands)
Boston	1994	Single Mother	Yes	55	4
Boston	1994	Single Mother	No	300	4
Boston	1994	Married Mother	No	300	4
Boston	1996	Single Mother	Yes	10	2
Boston	1996	Single Mother	No	290	5
Boston	1996	Married Mother	No	290	5
Springfield	1994	Single Mother	Yes	40	4
Springfield	1994	Single Mother	No	200	4
Springfield	1994	Married Mother	No	200	4
Springfield	1996	Single Mother	Yes	40	4
Springfield	1996	Single Mother	No	200	4
Springfield	1996	Married Mother	No	200	4

Armed with this information, provide an evaluation of the impact of welfare reform on earnings. In particular, present at least two different approaches one might take to estimating the effect of welfare reform using these data, and discuss the strengths and weaknesses of each. Provide your best estimate of the impact of reform.