Homework 4

ECON 5332 Government, Taxes, and Business Strategy
Spring 2008

Due Tuesday, February 12, at 7:00 pm

1. Bills demand for hamburgers (a private good) is $Q = 20 - 2P$ and Teds demand is $Q = 10 - P$.

   (a) Write down an equation for the marginal social benefit of the consumption of hamburgers.

   (b) Now suppose that hamburgers are a public good. Write down an equation for the marginal social benefit of hamburger consumption.

2. The town of Springfield has two residents: Homer and Bart. The town currently funds its fire department solely from the individual contributions of these residents. Each of the two residents has a utility function over private goods (X) and total fire-fighters (F) of the form $U = 4\ln(X) + 2\ln(F)$. It follows that the marginal utility of private goods is $MU_X = 4/X$ and the marginal utility of fire-fighters is $MU_F = 2/F$. The total provision of fire-fighters hired, F, is the sum of the number hired by each of the two persons: $F = F^H + F^B$. Homer and Bart both have income of \$100, and the price of both the private good and a fire-fighter is \$1. Thus, they are limited to providing between 0 and 100 fire-fighters.

   (a) How many fire-fighters are hired if the government does not intervene? How many are paid for by Homer? By Bart?

   (b) What is the socially optimal number of fire-fighters? If your answer differs from your answer to part (a), why?

3. The town of Musicville has two residents: Bach and Mozart. The town currently funds its free outdoor concert series solely from the individual contributions of these residents. Each of the two residents has a utility function over private goods (X) and total concerts (C) of the form $U = 3\ln(X) + \ln(C)$. It follows that the marginal utility of private good is $MU_X = 3/X$ and the marginal utility of concerts is $MU_C = 1/C$. The total number of concerts given, C, is the sum of the number paid for by each of the two persons: $C = C^B + C^M$. Bach and Mozart both have income of 70, and the price of both the private good and a concert is \$1. Thus, they are limited to providing between 0 and 70 concerts.

(a) How many concerts are given if the government does not intervene?

(b) Suppose the government is not happy with the private equilibrium and decides to provide 10 concerts in addition to what Bach and Mozart may choose to provide on their own. It taxes Bach and Mozart equally to pay for the new concerts. What is the new total number of concerts? How does your answer compare to your answer to part (a)? Have we achieved the social optimum? Why or why not?

(c) Suppose that an anonymous benefactor pays for 10 concerts instead of the government. What is the new total number of concerts? Is this the same level of provision as in part (b)? Why or why not?

4. In your own words, state the two hypotheses that Brunner (1998) tests and explain the intuition motivating them.

5. According to Brunner (1998), what are the arguments of an individual's utility function in the impure altruist model? What two special cases does this model include and what are the arguments of an individual's utility function in each case?

6. Based on the intuition provided by Brunner (1998), are individuals motivated by altruism more or less likely to contribute to the provision of a public good than individuals motivated by egoism, all else being equal? Explain.

7. With which model does Brunner (1998) say his results are consistent and why?

References

Eric J. Brunner. Free riders or easy riders?: An examination of the voluntary provision of public radio. *Public Choice*, 97:587–604, 1998. Available on EconLit.