Environmental Econ 8545

Review Questions -2nd set.

The Evaluation of Recreational and Environmental Amenities

Note that this set of questions includes no questions about valuation in a world of uncertainty.

1. Define an individual's CV for the change in the quantity of an environmental amenity in terms of the
   a. expenditure function
   b. the indirect utility function
   and
   c. the area under some curve (or curves)

   Relate all three definitions and convince me that they are equivalent.

2. Convince me on an intuitive level that the Marshallian Consumer’s Surplus Measure is not well defined for multiple price changes.

3. Argue that it is useful to have a money measure of utility changes. Argue that it is misleading to calculate a money measure of utility changes. As part of your answer, define money measures of utility changes.

4. If the price of water decreases and an aggregate demand function for water exists, will the area under that curve, between the two prices, equal the sum of every individual's CV (or EV) associated with the price change? Convince me. Is there any need to calculate the aggregate CV (or EV) measure in this case? Argue yes. Argue no.

5. Use the expenditure function to explain what determines an individual's marginal willingness to pay for an amenity. Would you expect that marginal valuation to be the same for all individuals? Why or why not? Begin your answer be defining both in words, and in functional notation, an expenditure function that includes environmental amenities.

6. Use the expenditure function to explain what determines an individual's marginal willingness to pay for an amenity. Would you expect that marginal valuation to depend on the amount of the amenity that is currently being consumed? Why or why not? Begin your answer be defining both in words, and in functional notation, an expenditure function that includes environmental amenities.

7. Argue that one should rank the social desirability of projects by ranking the aggregate CVs (or EVs) for each project where the aggregate CV (or EV) for each project is obtained by summing each individual's CV (or EV) for that project. Argue that this method should not be used.
8. Do money measures of utility changes exist? Is this an important question? Why or why not?

9. What is a social welfare function? Relate the concept of a social welfare function to the consumer surplus concept.

10. Why do many politicians and economists want money measure of utility changes.

11. Plan a guest lecture for a first semester PhD micro theory class on the topic of consumer's surplus. Assume that the students have finished the section of the course on basic consumer theory so are familiar with direct utility functions, indirect utility functions and expenditure functions. Summarize your lecture in approximately three pages.

12. Define both in words, and in functional notation, a compensation function that includes nonmarket commodities. Varian defines and uses this function. Then define the compensating variation in terms of that compensation function. What are the advantages, and disadvantages of using the compensation function to define the compensating variation.

13. Write a brief (two or three pages) research proposal explaining how one might use market data to determine the benefits (exact CVs and EVs) different individuals would receive from an improved environmental amenity (not recreational sites). Choose your example carefully and then be as specific as you can.

14. Assume knowledge of all of Wilbur's market demand functions. Could one use these market demand functions to derives Wilbur's compensating variation associated with a change from \( A^0 \) to \( A^1 \) if Wilbur's indirect utility function can be written \( V(I, P, A) = v(I, P, A) + g(A) \). Explain.

15. Consider the designation of a new wilderness area in Colorado. Assume that the economics consulting firm of Snerd, Snerd, and Gomer has accurately determined the CV each hiker and backpacker would associate with designation and that the sum of all these individual CV's is $5 million. Snerd, Snerd, and Gomer included all the aspects of the change in their CV calculation for the hikers and backpackers. However, designation of this Wilderness Area will decrease the availability of water to grow Soy beans on the plains of Colorado. This reduction will cause the price of Tofu to rise by $1 a pound. Assume that before the change, four million pounds of Tofu was produced and sold. This price increase obviously makes Tofu consumers worse off. Note that hikers and backpackers are not in this group; i.e., they never consume Tofu. Convince me whether designating the Wilderness Area is a potential pareto improvement. What if the price increased by $1.50 rather than by $1?

16. Define Maler's "Weak Complimentarity Condition" and explain its relevance to applied welfare economics.

17. Discuss when it is, and is not, possible to estimate an expenditure function with
environmental amenities from market data.

18. The compensating variation for a change in the quantity of an environmental amenity is conventionally defined in terms of money. Define, using a direct utility function the compensating variation associated with a change in the quantity of an environmental amenity in terms of the numeraire good, where good 1 is defined as the numeraire good.

19. What is the difference between a market commodity and a nonmarket commodity? As part of your answer define both terms.

20. Argue that Marshallian consumer's surplus is a useful concept. Now argue that it is not a useful concept.

21. What is a random utility model? How does it differ from a conventional utility-theoretic demand model.

22. Is an estimated compensating variation a random variable? Explain, and explain why we care.

23. Discuss the derivation of consumer's surplus measures from systems of "demand" functions that do not meet the integrability conditions. As part of your answer define and discuss integrability conditions in demand theory.

24. If X is an inferior good, is the CV associated with a decrease in the price of X greater or less than the EV associated with that same price change?

25. Write a short paper explaining what an expenditure function is and how it can be utilized to derive money measures of changes in welfare. Assume the reader is familiar with MCS, CV and EV but has only seen the material presented using graphical indifference curve analysis. The reader knows what a direct utility function is but not what an expenditure function is. Your paper should relate the graphical indifference curve approach and the expenditure function approach.

26. Economist's tend to measure an individual's value of a commodity in terms of the individual's willingness-to-pay to have the commodity available. Discuss the equity implications of that tendency.

27. Write a critical response to the Mobil Ad that appeared in Time that addresses the ad's discussion of nonuse values. Your audience is the readers of Time.

28. Convince me that WTP and WTA for a change in the level of a nonmarket commodity can significantly differ.
29. For a given policy assume you know each individual's CV and EV. How can you use this information to evaluate policy in terms of social welfare, whether the policy is a Pareto improvement, and whether the policy is a potential Pareto improvement.