

Resource Economic Preliminary
Examination
January 20, 1984

You have four hours to complete this written examination, 8:00 to 12:00. Pace yourself in responding to questions. Exams will be collected after four hours; i.e., do not spend an undue amount of time on any specific question at the expense of the other questions. Sign your name on the sheet of paper passed around the room by the test administrator. The number next to your name on this sheet should be written by you on the top of each of your exam answers. Do not write, under any circumstances, your name anyplace on the materials you turn in for this exam.

A. Answer all three of the following questions.

1. It has been authoritatively proven that every drop of irrigation water presently consumed by agriculture in the Trinity River basin above Dallas would be more highly valued by private users in Dallas (Dallas lies on this river). That is, the private agricultural value of this water is exceeded by the water's private municipal and industrial value. In response to this finding the State's Department of Optimal Allocation (DOA) is contemplating a ban on irrigation in this region.

As a DOA welfare/resource economist your job is to present your administrators with the information they need to reach a decision. Assuming that no other policies are available, what criteria would you use, and how would you proceed to advise your leaders relative to the ban?

Now, relax this assumption and formulate some alternate policies, then use your training to select one or more preferred policies. That is, discuss all the policy alternatives in relation to the criteria that you presented above.

2. Assume that you are given the following explicit utility functions for individuals A and B: $U_A = f(\dots)$ and $U_B = g(\dots)$. Quantities of two different goods, X and Y, are the only goods which enter as arguments of f and g.
 - (a) For each of the following purported causes of market failure, provide a complete statement of the necessary relationship(s) which must hold for market failure to in fact be present.
 - (1) Positive externality (external economy)
 - (2) Detrimental externality (external diseconomy)
 - (3) Public good
 - (4) Public bad

(b) Choose one of the above cases. For this situation describe the processes used to identify the competitive equilibrium and the Pareto optima. Include an explicit listing of the additional information needed to complete these two processes. If all required information is available, what would you find and why?

3. Techniques for valuation of nonmarket commodities have been discussed in the economics literature and applied to practical problems for the past several decades. Define nonmarket commodities and discuss what conditions lead to their existence. Describe the alternative nonmarket valuation methods which have been employed and identify their respective strengths and weaknesses. What kinds of future research can you recommend in response to the following types of criticism: "ask a hypothetical question and you get a hypothetical answer" and "estimates inferred from market observations are obviously better"? Do you believe that there are circumstances in which market value should be rejected in favor of some value assigned by nonmarket techniques?

B. Answer one of the following two questions.

4. The Gulf of Mexico Management Council in coordination with the Texas Parks and Wildlife Department have proposed closing the Texas offshore shrimp fishery. This course would occur from the shoreline to 200 nautical miles for a 45 to 60 day period beginning in late May. The purpose of this closure is to protect small brown shrimp from being harvested. Biologists have suggested this will increase total pounds harvested and value of the harvest since larger shrimp weigh more and bring a higher price per pound. The State of Louisiana is protesting this closure since they claim Texas vessels will all fish in Louisiana grounds during the closure, particularly since Mexico has not permitted U.S. vessels to fish in their waters since 1980.

As the staff economist of the Gulf Council, you have been asked to make a presentation to the Gulf council detailing the possible economic consequences of this closure on all concerned. State below what you would explain to the council. Include both short- and long-term effects.

5. It has been stated that a system of "free" or "unhindered" markets will lead to the establishment of efficient outcomes. Acceptance of this view has led some economists to claim that existing events or "states of the world" are efficient. For, if they were not efficient, the market would have led to the establishment of other outcomes.

- (a) What arguments can be made for or against this viewpoint?
 (b) Given an efficient outcome, is a socially optimal use of society's resources being made?