

Resources Economics Preliminary
Examination

Jan. 11, 1980

The examination is for a four-hour period, 8:00 to 12:00. Pace yourself in responding to questions considering this four hour restriction; i.e., do not spend an undue amount of time on any specific question at the expense of the other questions.

A. From the following set of two questions, answer any one.

1. In evaluating the producer, consumer, and net welfare impacts of a technological change that occurs in the production of cotton, an economist has recently argued that we should not consider the indirect impact of this change on consumers of grain sorghum, because "sorghum is not a substitute for cotton on the demand side, although it is a substitute in production". That is, he is saying that we should evaluate the net surplus effect as the change in producers surplus for both crops plus the change in consumer surplus only for sorghum. Carefully evaluate the theoretical validity of his statement.
 2. Graphically analyze the economic efficiency and equity implications of the current grain export embargo, considering effects on foreign and domestic consumers, domestic producers, governmental expenses, and net social cost excluding external effects. Consider the following two cases: (1) no governmental intervention; and (2) the government purchases grain to keep the price at a specified level which exceeds the free market level. For your graphical analysis, consider only the immediate (current crop year) effects, but discuss likely future consequences and how you would measure their welfare effects.
- B. Answer all of the following questions:
3. Carefully show the relationship between surpluses in vertically related markets, as measured by partial and general equilibrium supply and demand curves. For simplicity, you may assume a single factor market and a single product market. You may show the relationships graphically.

4. Secondary benefits and costs are often included in benefit/cost ratio. Conceptually define secondary benefits and costs. Under what conditions is it appropriate to include such benefits and costs in an overall benefit/cost ratio?
5. Discuss the following quotation from a soon-to-be published resource economics text.

"If (a) all resource-related decisions were made by the decentralized, profit-seeking entrepreneurs of competitive microeconomic theory, and (b) the outcomes of such decisions were regularly and predictably efficient and just ... there would be no need for applied resource economics."

In discussing this quote, recall that applied resource economics is a sub-discipline evolved in response to perceived weaknesses in traditional economic theory when applied to questions regarding natural resource and environmental policy.

C. Answer one of the following questions.

6. What is the "theory of the second best"? What does it mean in practical terms?
7. There is currently a great deal of interest in the ability of agriculture to produce alcohol (ethanol) as a substitute for fossil fuels. Carefully explain how you would evaluate the production of various quantities of alcohol from grains and/or crop residues. Discuss data needs, possible modeling approaches, theoretical background for such an analysis, and the type of results you would present to Congress on this issue.
8. The cost to reclaim land where coal or lignite is mined is estimated to be between \$4,000 and \$8,000 per acre. The productive value of this land is about \$250 per acre. From an economic efficiency viewpoint, this appears to be a massive over-investment in reclamation. Critically evaluate this issue.