First Quiz Econ. 6535 -Natural Resource Economics -Spring 00

I. An Introduction to NR Economics

1. (5 points) I live in the woods with Goldilocks and three bears. Goldilocks and I recently inherited a bunch of stuff. After receiving the UPS boxes of stuff, we traded our dead relatives' trinkets until the only exchanges between the two of us that would make one better off would make the other worse. However, if either Goldilocks or I then trade some trinkets for honey both parties to that trade can be made better off without hurting the non-trading person.

   Before the trade with the bears, is society's allocation of stuff efficient? Yes or No and explain.

Answer: No - By trading with the bears it is possible to make Goldilocks or I better off without making the bears or the other person worse off. So, the allocation of stuff before the trade with the bears is inefficient independent of whether the bears are members of society.

Remember when we talk about the allocation of resources or stuff we have to consider all of the stuff. Honey is stuff too. I kept saying one cannot judge the allocation of one resource independent of other resources.

Would you have answered differently, if I renamed the bears the Guber family?

Now consider another scenario.

I live in the woods with Goldilocks and three bears. Goldilocks and I recently inherited a bunch of stuff. After receiving the UPS boxes of stuff, we traded our dead relatives' trinkets until the only exchanges between the two of us that would make one better off would make the other worse. However, if either Goldilocks or I then give the bears some trinkets for some honey, the bears are made better off, but the person is not made better off or worse off by the exchange.

Before the exchange with the bears, is society's allocation of stuff efficient? Yes or No and explain.

Answer: It depends on whether the bears are members of society. If the bears are not members of society, the allocation before the exchange with the bears is efficient in that it is not possible to increase the welfare of Goldilocks or I without decreasing the other's welfare. If the bears are members of society, then the allocation before the exchange with the bears is inefficient because the exchange with the bears would make some members of society (the bears) better off without making any other members worse off.

Recollect question 3 from the review questions:

3. Who should be included in the definition of society when one considers equity and efficiency? Why?

This question covers the issue of how whether an allocation of resources is or is not efficient can depend on who one includes in society.

Why did I ask the first question? We typically think of efficiency as a positive concept and equity as a normative concept, which is correct. But, we must keep in mind that whether an allocation is efficient often depends on who is included in society and who is excluded, and this is a normative decision.

Should we include foreigners? Would Serbs include ethnic Albanians? How about future generations? bears? Rover? plants? Is there anything fundamental to economics that excludes non-humans from society, or is that just a normative judgement that we typically make.

Some additional notes:

Efficient does not imply happy and happy does not imply efficient.

Sustainability and efficiency are two different things. Neither implies the other.

2. (5 points) What is an externality? Give an example of an action by one economic agent that affects another economic agent that is not an externality. Explain why your example is not an externality.

Answer: Externalities are a class of market failure. There is an externality if an economic agent(s) does something that directly influences (not indirectly through market prices) some other economic agent(s), but the agent that produced the effect has no incentive to take the effect into account because there is no requirement, incentive, or penalty in place that causes that agent to fully account for the effect.

Make sure you provided a definition of an externality rather than just an example.

A market trade that only affects the trading parties is not an externality but is a voluntary transaction between two (or more) economic agents where both parties are affected. The purchaser of the market good compensates the seller for his or her loss by paying the seller money. In a world of certainty, no parties to a trade can be made worse off by the trade because trades are voluntary and no one would voluntarily do something that made them worse off.

However, a market transaction can involve an externality if the trade affects agents that are not parties to the trade. Such externalities are referred to as *third-party externalities*. An example of

a third-party externality is second-hand cigarette smoke.

Social interactions between two people (e.g. dates) that do not affect third parties are actions between two parties that effect both parties, but there is no externality. However, if the social interaction makes some third party better or worse off there is a potential externality.

S**ome further thoughts on externalities** (but not a necessary part of you answer at this time):

When the external effect is positive and the economic agents who produced the effect are compensated, it does not matter for efficiency whether the funds for that compensation are collected from the agents who benefitted from the action or from some other source. And, when the effect is negative, and the economic agents who produced the effect are forced to pay, on the margin, for the damages produced, it does not matter for efficiency whether the funds collected are paid to the damaged agents. If the producer of the external effect has the correct incentive to take the effects into account there is no externality.

The existence of a negative or positive non-price impact on others is necessary but not sufficient for the existence of an externality. If the allocation is efficient there is no externality, even though there are external effects. For example, if smoking is taxed such that the efficient amount of secondhand smoke is produced, the efficient amount of smoke is positive and the revenues collected from the smoking tax/fine are not paid to those damaged by the smoke, there is no externality even though some individuals continue to be injured by the secondhand smoke. Consider a second example. If the efficient amount of secondhand smoke is achieved through a regulation, there is no externality, and people are still adversely affected by the remaining secondhand smoke.

> Consider a world with two individuals: you and I, where smokers have the right to smoke, I smoke, and you hate secondhand smoke. If you bribe me to reduce the amount I smoke to an efficient amount, there is no externality, even though you are made sick by the remaining smoke.

Blowing cigarette smoke at your neighbor can be an externality, so can a factory polluting the neighborhood. Externalities result when property rights are not well defined.

We can talk about

producer - producer externalities
producer - consumer externalities
consumer - consumer externalities
consumer - producer externalities
and
spillovers (If everyone is affecting everyone else (e.g., car pollution).

Smoking is a good example of an externality. Suppose $U^A = U^A(X^A, Y^A)$, where Y^A is the

consumption of cigarettes by individual A and $U^B = U^B(X^B, Y^B, Y^A)$,
where $\frac{\partial U^B}{\partial Y^A} < 0$ individual

B is adversely affected by A's smoking (this could be the case even if individual B enjoys his own smoking). If individual B cannot control the amount of smoke he or she receives from individual A (that is, she lacks certain property rights), then a competitive market will not result in an efficient allocation of resources. The efficiency conditions in the presence of externalities are different from the efficiency conditions in the absence of externalities. Pollution and environmental problems are good examples of externality type market failures.

Some additional thoughts:

In the definition of an externality, I used the phrase “take into account”. Some of you substituted “take responsibility” or “recognize the effect”. Do they mean the same?

Sometimes simple examples are better, particularly when it comes to grading. The more complicated your example, the more likely it is incorrect.