

Economics 3250  
Spring 2009

Dr. Lozada  
Exam 1

**Do Not Turn This Page Over Until You Are So Instructed!**

This exam has 25 points. There are six questions on the exam. The questions are worth four points each, except for Question 5, which is worth five points.

Put your answers to the exam in a blue book.

You have **one hour** (that is, until **2:25pm**) to take this test. After the test is over, I'll lecture until the regular class period ends.

Answer the questions using as much precision and detail as the time allows. Correct answers which are unsupported by explanations will not be awarded points.

**Answer all of the following six questions.**

1. [4 points] In the *Wealth of Nations*, Adam Smith wrote:

It is not from the benevolence of the butcher, the brewer or the baker, that we expect our dinner, but from their regard to their own self interest. We address ourselves, not to their humanity but to their self-love, and never talk to them of our own necessities but of their advantages.

and

As every individual, therefore, endeavours as much as he can both to employ his capital in the support of domestic industry, and so to direct that industry that its produce may be of the greatest value; every individual necessarily labours to render the annual revenue of the society as great as he can. He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it. By preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Nor is it always the worse for the society that it was no part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it.

What importance do these ideas (or this idea) have for environmental economics?

2. [4 points] Illustrate with a graph a situation in which the production of a good causes pollution and the socially optimal level of output of that good is less than the level of output which an unregulated firm would choose.
3. [4 points] Attached to this exam is a copy of your textbook's Box 6.1. Explain its "Panel (a)," and, in particular, explain the "Inefficient Production" label. Why is this production inefficient? Why is it being produced? Who produces it? Why do they produce it?

4. **[4 points]** Explain connections between neoclassical cost-benefit analysis and “environmental racism” (perhaps better referred to as “environmental classism”).
5. **[5 points]** While discussing Chapter 8 of your textbook, we mentioned:
  - (a) total economic value
  - (b) use values
  - (c) nonuse values
  - (d) direct use value
  - (e) indirect use value
  - (f) option value
  - (g) bequest value
  - (h) existence value.

Define each of these terms. Also, discuss all relationships which may exist between them.

6. **[4 points]** Consider this proposition:

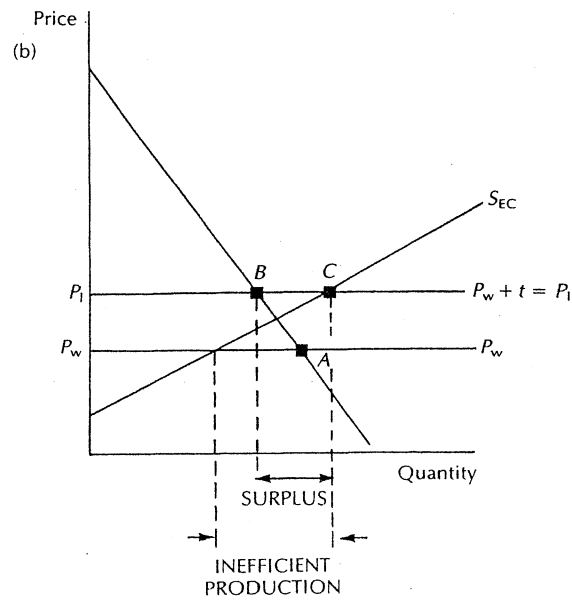
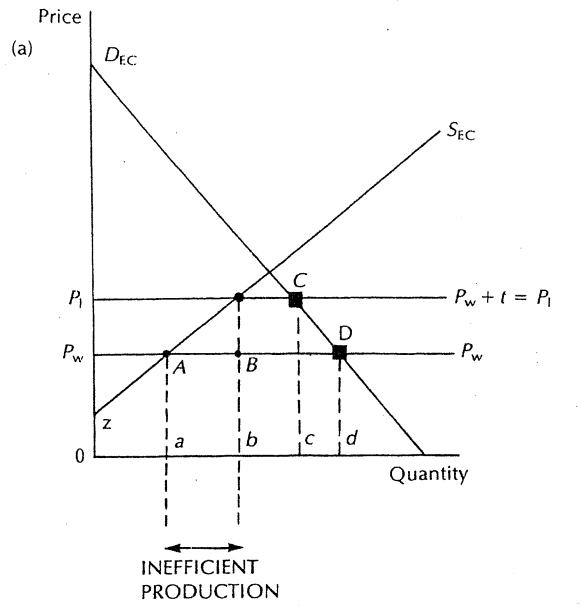
“Disaster aversion” is irrational, and society should ignore it.

  - (a) Argue in favor of this proposition. Then
  - (b) argue against this proposition.

The causes of environmental degradation

**Box 6.1** Overproduction under the Common Agricultural Policy and the effect on the environment

Panels (a) and (b) Supply and demand for agricultural produce in the EC.



Panels (a) and (b) show the supply and demand for agricultural produce in the EC. Panel (a) shows the supply and demand for agricultural produce in the EC. Panel (b) shows the supply and demand for agricultural produce in the EC. Panel (c) shows the supply and demand for agricultural produce in the EC. Panel (d) shows the supply and demand for agricultural produce in the EC. Panel (e) shows the supply and demand for agricultural produce in the EC. Panel (f) shows the supply and demand for agricultural produce in the EC. Panel (g) shows the supply and demand for agricultural produce in the EC. Panel (h) shows the supply and demand for agricultural produce in the EC. Panel (i) shows the supply and demand for agricultural produce in the EC. Panel (j) shows the supply and demand for agricultural produce in the EC. Panel (k) shows the supply and demand for agricultural produce in the EC. Panel (l) shows the supply and demand for agricultural produce in the EC. Panel (m) shows the supply and demand for agricultural produce in the EC. Panel (n) shows the supply and demand for agricultural produce in the EC. Panel (o) shows the supply and demand for agricultural produce in the EC. Panel (p) shows the supply and demand for agricultural produce in the EC. Panel (q) shows the supply and demand for agricultural produce in the EC. Panel (r) shows the supply and demand for agricultural produce in the EC. Panel (s) shows the supply and demand for agricultural produce in the EC. Panel (t) shows the supply and demand for agricultural produce in the EC. Panel (u) shows the supply and demand for agricultural produce in the EC. Panel (v) shows the supply and demand for agricultural produce in the EC. Panel (w) shows the supply and demand for agricultural produce in the EC. Panel (x) shows the supply and demand for agricultural produce in the EC. Panel (y) shows the supply and demand for agricultural produce in the EC. Panel (z) shows the supply and demand for agricultural produce in the EC.

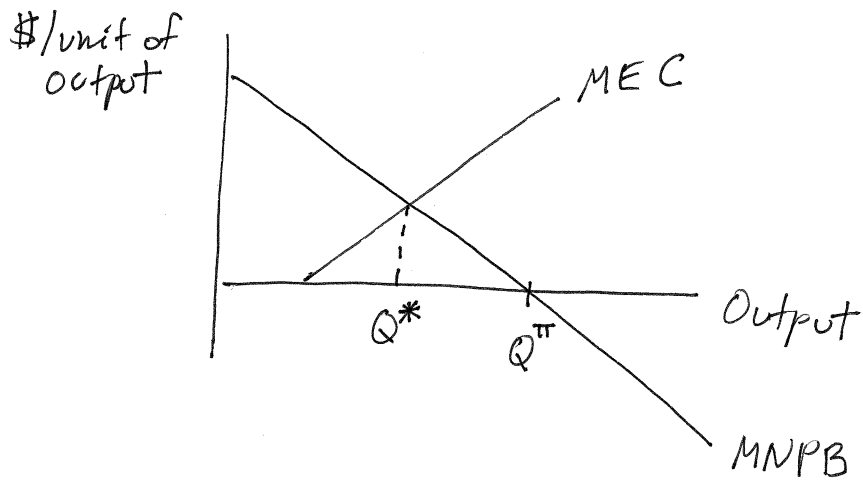
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Answers to Econ. 3250 exam 1,  
Spring 2009

- ① The basic idea of these passages, perhaps the most famous in economics, is the "invisible hand." Economic agents acting solely on the basis of (selfish) self-interest actually benefit society as a whole. As a policy implication, government could only make matters worse.

It turns out that if production has externalities such as pollution, the "invisible hand" does not lead to socially optimal outcomes (ignoring Coase-Theorem-based arguments). So in environmental economics, "invisible hand" arguments are not very important, and government intervention — appropriate government intervention — is needed to obtain socially optimal pollution levels.

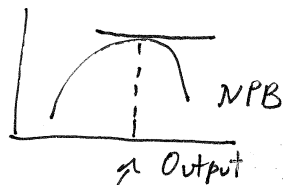
(2)



MNPB: Marginal Net Private Benefit.

In this class, it is Marginal Revenue minus marginal cost, "MR-MC."  
[In more advanced classes, it includes "consumer surplus."]

The firm wants to go to  $Q^\pi$ , where  $MNPB = 0$ , because this maximizes (total) NPB, "net private benefit."



at maximum NPB, NPB's slope, which is MNPB, is zero

MEC: Marginal External Cost.

External Cost is the cost of pollution.

Net social benefit is (at the margin)  $MNPB - MEC$ . At  $Q^*$ , this is zero, which maximizes Net Social Benefit. So society wants output to be  $Q^*$ .  $Q^* < Q^\pi$ , as the question described.

③

This is the market for food, where a tariff " $t$ " is imposed on imports, thereby adding " $t$ " to the world price of food " $p_w$ " to get the resulting domestic price of food,  $p_w + t$ .

With no tariff, imports are  $AD$  and domestic production is  $Oa$ , satisfying domestic demand  $D$  at price  $p_w$ .

With a tariff, domestic demand falls to  $C$ , imports fall to  $bc$ , and domestic production rises to  $Ob$ .

Hence  $ab$ , which used to be supplied by the low-cost foreign producers, is now supplied by the high-cost domestic producers.

This is inefficient. (Indeed, one could show that it is not Pareto optimal.)

④

Neoclassical cost-benefit analysis measures demands based on the current income distribution. So, for example, the "demand" for clean water is based on respondent's willingness and ability to pay for clean water. In such a scheme, poor people's demands are, other things equal, less than rich people's demands, so they have less weight (at least per capita).

Rich people's "effective demands" (including willingness to pay) for a clean environment around them exceeds the poor people's effective demands, so cost-benefit analysis concludes that it is socially optimal for rich people's surroundings to be cleaner than poor people's surroundings. Hence "environmental racism / classism."

(A cost-benefit analysis which controlled for income would not have this effect.)



⑤

a) the sum of all values of a commodity or environmental amenity .  $(a) = (b) + (c)$

b) the value of consuming ("using" up) something, or obtaining a tangible benefit from it  
 $(b) = (d) + (e)$

c) a value independent from using the commodity, or even being in its presence.

$$(c) = (g) + (h)$$

d) the value of consuming something, e.g., a tree for lumber

e) a tangible benefit obtained from something without using it up, e.g., a wetland providing flood control

f) the value of the possibility of having one of the other values in the future

g) the value of being able to give one of the other values to someone else, especially to future generations

h) the value of knowing an environmental amenity exists

⇒ Note: (f) could be part of (b) or (c), depending on what the option is on.

⑥ "Disaster aversion" refers to the fact that most people consider, say, the loss of 100 lives in a single disaster worse than the loss of 100 lives separately (that is, due to many various causes).

a) A lost life is a lost life; they are all equal, regardless of what killed them. Potential disaster victims are no more deserving of protection than potential victims of things which are not disasters.

b) Since disasters, due to disaster aversion, cause more distress among survivors and observers (especially observers, who can be very numerous), society seeking, as appropriate, to limit distress among its members will seek to reduce disasters more than in proportion to the lives lost.

In other words, lives lost is not the only cost; distress and fear are costs too.