

Economics 3250
Spring 2014

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. Most of the questions are worth 4 points, but one is worth 5 points.

Put your answers to the exam in a blue book or on blank sheets of paper.

You have the entire class period (that is, until **1:10pm**) to take this test.

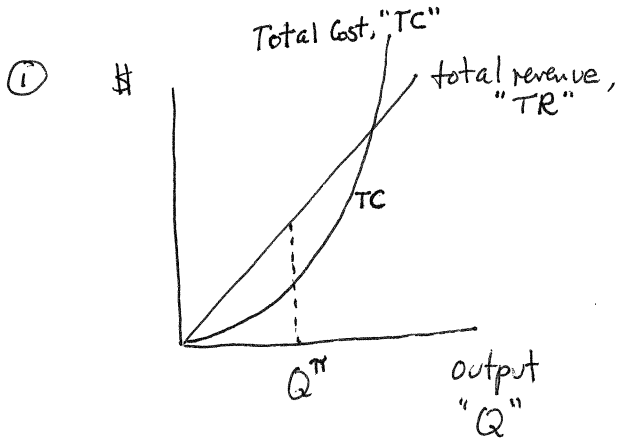
Answer the questions using as much precision and detail as the time allows. Correct answers which are unsupported by explanations will not be awarded points.

Answer all of the following six questions.

1. **[4 points]** Draw a graph of a perfectly competitive firm's "total revenue" curve. On that graph, draw a "total cost" curve, and indicate at which point the firm would want to produce.
Next, add in a "total external cost" curve and explain where society would want the firm to produce.
Note: I am *not* asking you to "draw marginal revenue and marginal cost (or marginal net private benefit), and marginal external cost, and showing at which point the firm would want to produce and where society would want the firm to produce."
2. **[4 points]** In the context of "government failures," we discussed "agency problems." Describe that discussion.
3. **[4 points]** How does income distribution affect neoclassical "cost-benefit analysis"?
4. **[4 points]** Define
 - (a) existence value;
 - (b) bequest value.
5. **[4 points]** Illustrate the the Coase Theorem using a graph, supposing that polluters have full property rights.
6. **[5 points]** Show the inefficiency of tariffs using the graph attached to the exam.

Answers to Exam 1, Econ 3250,

Spring 2014



The total cost curve is upward-sloping because total costs go up when output goes up (even though average costs could go down when output goes up - which is not the way I drew TC above). The shape of TC above is typical but there are many other correct answers for the shape of TC.

$TR = \text{price} \times \text{output}$. For a competitive firm, price appears to be fixed (outside of the firm's control). The equation is thus

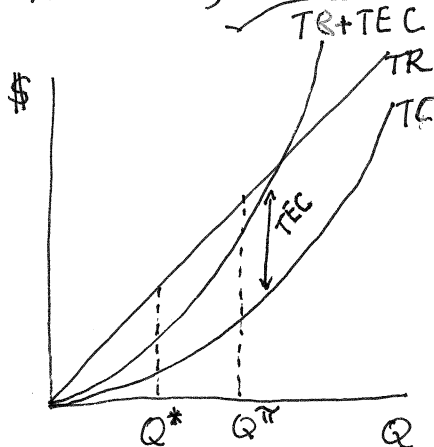
$$TR = p \cdot Q$$

↑
constant

which is the equation of a straight line. It goes through the origin because when $Q = 0$, $TR = 0$: if you sell nothing, consumers give you no money.

The firm wants to maximize profit " π " = $TR - TC$. The profit maximum occurs

approximately at Q^π .



Next I added Total External Cost "TEC" (often just called External Cost and abbreviated "EC") to the TC curve. Society wants to maximize $TR - (TC + TEC)$. This is achieved at approximately Q^* .

② Voters choose political leaders to act in the voters' best interests. So the voters are the principals and the political leaders are their agents. However, sometimes political leaders act to benefit themselves, not the voters. Voters often don't know this is happening. This imperfect monitoring gives rise to a principal-agent problem, known also as an agency problem.

Similarly, both voters and political leaders act as principals vis-a-vis civil servants ("bureaucrats"), who are their agents but who might not act as the principals wish they would. Asymmetric information is crucial here too, because if the principals knew what was going on, the agents would have to act in the principals' interest (or else lose their job).

③ One example (there are others): the cost to society of air pollution is the amount of money its victims are willing and able to pay to reduce it.

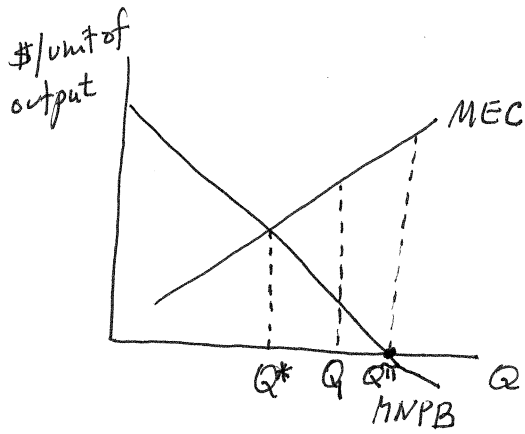
If the victims are poor, they are able to pay little to reduce pollution, so the neoclassical measure of the social cost of this pollution is low. If the victims are rich, their ability to pay to reduce pollution is large, so the neoclassical measure of the social cost of this pollution is high. A cost-benefit analysis done in a neoclassical way would therefore recommend siting polluting facilities near where poor people live, not near where rich people live.

(An income-distribution-free measure of costs and benefits could be designed but hasn't.)

④ a) The willingness and ability of people to pay for ensuring the continued survival of a species for its own sake — not for, say, ecotourism, which would be a different value.

b) The willingness and ability of people to pay for ensuring that an environmental amenity (or other amenity) will exist for their descendants (or other future people) to enjoy.

5



Q : amount of a polluting output

MNPB: Marginal Net Private Benefit

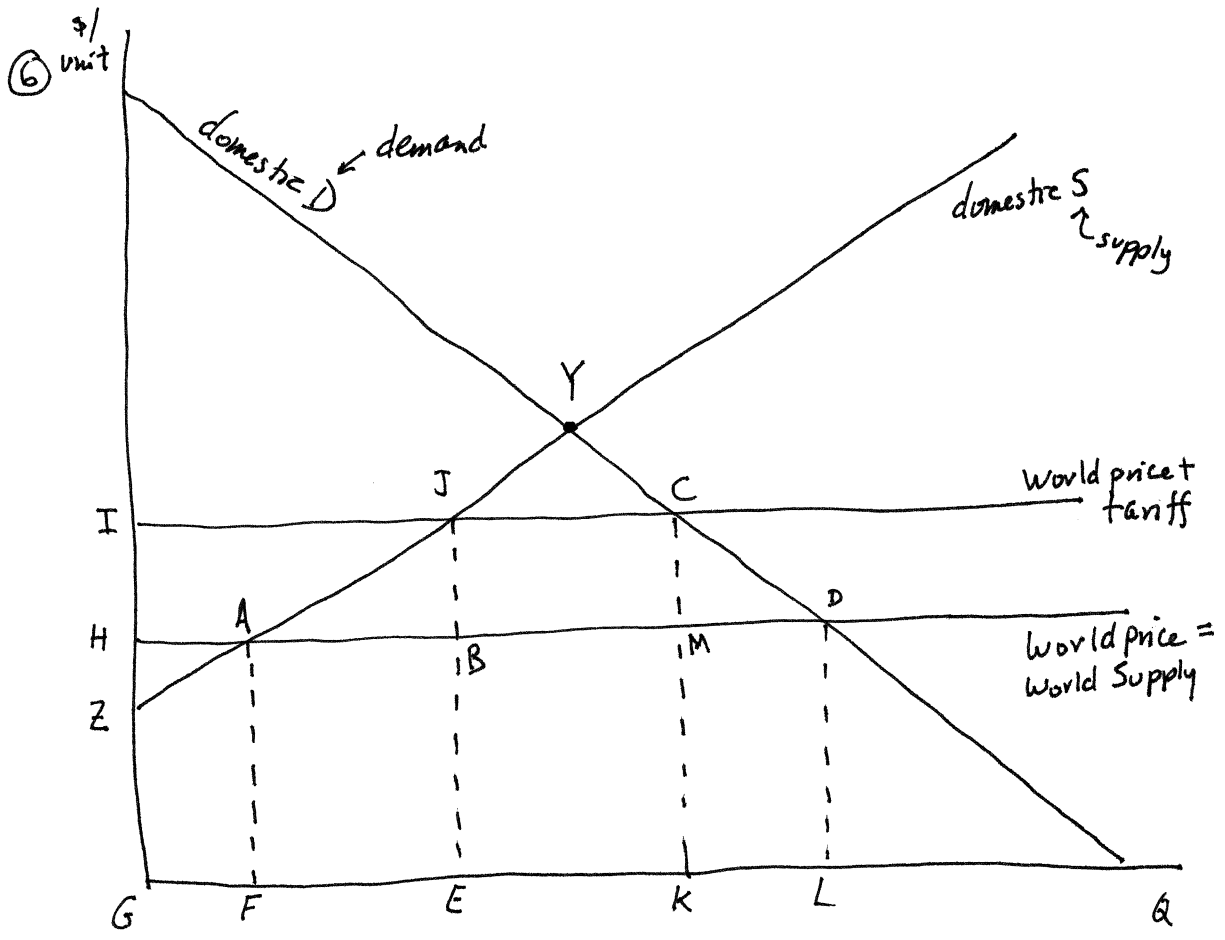
MEC: Marginal External Cost

Q^π : Q chosen by the firm initially

Q^* : socially optimal output

MEC gives the marginal amount of money pollution victims are willing and able to pay to reduce pollution. If victims offer the firm more than its MNPB, the firm will accept the victims' offer of money more than MNPB in return for output which is earning the firm only MNPB. As long as $MEC > MNPB$, victims and the firm will want to trade with each other, pollution (output) reductions in exchange for money. This process stops when it gets to Q^* . To the left of Q^* , $MNPB > MEC$, so firms demand more for output reductions than consumers are willing and able to pay.

The Coase Theorem says that with no transactions costs to bargaining, and other conditions (such as "firms do not behave strategically," that is, like they are in a repeated bargaining game), private negotiations between polluters and their victims will result in the socially optimal level of output, Q^* .



Domestic suppliers' marginal costs = "domestic S"
 Foreign " " " = "World S"

	Domestic D	Domestic S	Foreign Supply to this country = Domestic D - Domestic S
No Tariff	point D	point A	AD
Tariff	C	J	JC

Regardless of whether or not there is a tariff, units to the right of J are supplied by foreign producers, whose marginal costs for those units (along BM D) are less than those of the domestic firms (along J Y). So units to the right of

J are always produced efficiently.

From now on, ignore the always-efficiently produced units. In other words, just analyze the graph to the left of JBE.

With tariff: Q is at J, domestic supply is at J, so domestic supply is also E, and the cost of production is the area under the marginal cost curve, ZJEG.

With no tariff, Q is at B, domestic supply is at A, domestic cost of production is ZAFG, foreign supply is AB, foreign cost of production is ABEF.

	Cost of producing the first, "GE" units
No Tariff	area under ZAB
Tariff	area under ZAJ

Since the area under ZAJ > area under ZAB, the tariff is inefficient: it entails more costs for the same output.