Quiz #4 (answers)
ECNS 432
Spring 2017

Name_____

1.) A widget factory faces the following private marginal cost schedule

Q	MC ($)
1	25
2	50
3	75
4	100
5	125
6	150
7	175

During the production process, the widget factory generates pollution. A farmer who lives downwind from the factory suffers $25 in pollution damages for each widget the widget factory produces. The market price for a single widget is P = $150.

a.) (5 points) Suppose transactions costs are prohibitively high such that the widget factory and the farmer do not communicate with one another. In this case, how many widgets will be produced? Is this outcome socially efficient?

Q = 6 widgets will be produced. This outcome is socially inefficient because MCsoc > MBsoc.

b.) Now, suppose the farmer owns the right to clean air. As a result, the widget factory is held liable for any damages they cause during the production process. In the absence of transaction costs, how many widgets will be produced? Is this outcome socially efficient?

Q=5 widgets will be produced. This outcome is socially efficient because MCsoc. = MBsoc.

2.) Consider the primary market for good X. Suppose a policy is implemented such that the perfectly elastic MC of X falls. Now, consider that good Y is complimentary to good X and the policy change causes the below outward demand shift in the secondary market for good Y:
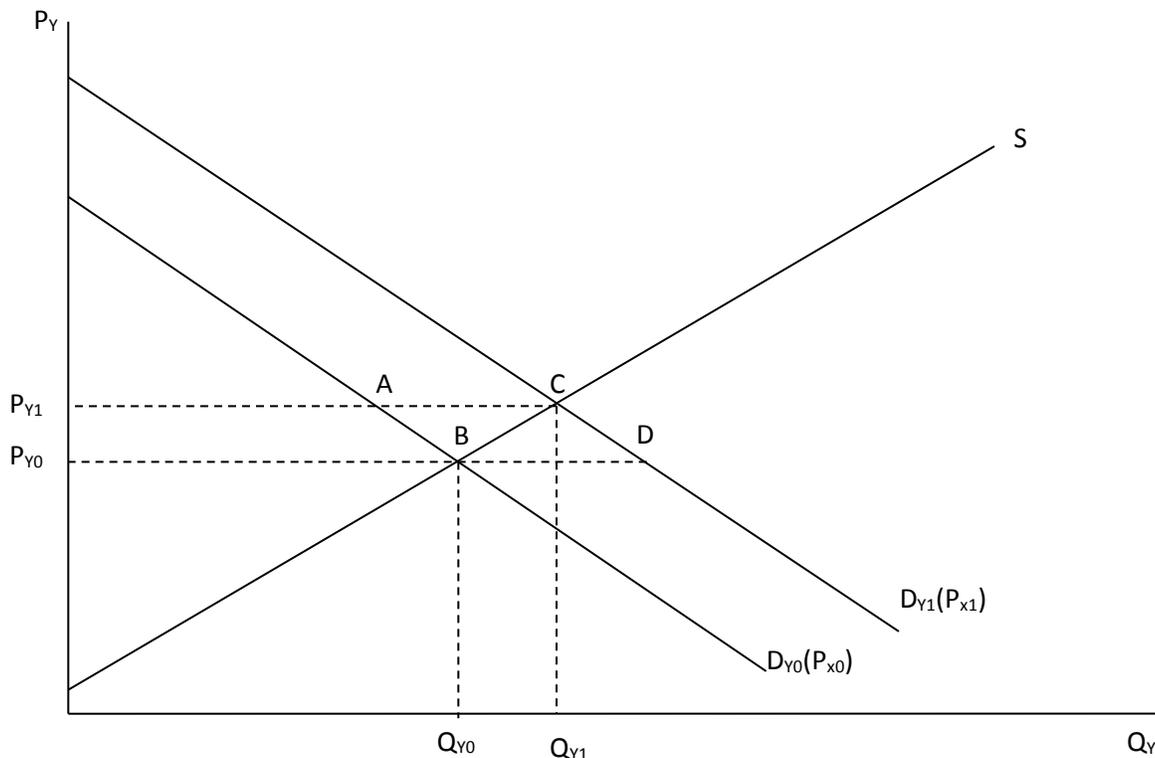
a.) (7 points) Assume no market failures exist in the market for good Y. When conducting a CBA on the policy change implemented in the market for good X, what is the net change in surplus between producers and consumers in the secondary market for good Y that should be counted in a welfare analysis from a theoretical point of view? For your answer, show ΔPS, ΔCS, and the net change in social surplus (i.e. $\Delta SS = \Delta PS + \Delta CS$).

$\Delta PS = P_{Y1}CBP_{Y0}$
$\Delta CS = -P_{Y1}CDP_{Y0}$
$\rightarrow$ net change in surplus = -CDB

b.) (3 points) Consider your answer to part a.). In practice, why is it often the case that this change in surplus does not need to be counted in a CBA? What assumptions does your answer rely on?
If we measure changes in CS in the primary market based on an *observed* demand curve, then we will understate CS. This understated amount will be approximately equal in magnitude to the area CDB in the secondary market if price effects are relatively small and no income effects exist. Therefore, these amounts offset each other.