

Week 10: Externalities, I: Market Failure

- I. Return to the Tragedy of the Commons: Negative Externalities
 - A. Previously, we discussed the "tragedy of the commons." Basic idea: when no one owns a resource, it gets over-used.
 - B. Question: But what exactly does "over-use" mean in economic terms?
 - C. Answer: It means that there are costly side effects that selfish agents don't factor into their decisions. Economists call these costly side effects "negative externalities."
 - D. How do you diagram negative externalities? In addition to the demand curve, draw a "social benefits curve." With negative externalities, the social benefits curve will lie below the demand curve.
 - E. Applying standard Cost-Benefit Analysis, the social optimum is at the intersection of the social benefits curve and the supply curve, but market equilibrium is at the intersection of the demand curve and the supply curve.
 - F. Economists call this a **market failure**, since self-interested behavior leads to inefficient results.
 - G. Negative externalities are also often called "public bads," especially when the externalities are large relative to demand (so the socially optimal quantity is close to zero).
 - H. Ex: Pollution. People value better air, but polluters normally have no incentive to care.
 - I. The key: non-excludability.
 1. There is no feasible way to exclude non-payers from the cleaner air.
 2. Since you do not *have to* pay to use it, selfish people *will not* pay to use it.
 3. And if no one will pay for it, why would selfish producers provide it?
- II. Positive Externalities
 - A. Positive externalities are the other side of the coin. Positive externalities are **beneficial** side effects that selfish agents don't factor into their decisions.
 - B. How to diagram? Draw a social benefits curve *above* the demand curve.
 - C. Again applying CBA, the social optimum is at the intersection of the social benefits curve and the supply curve, but market equilibrium is at the intersection of the demand curve and the supply curve.

- D. Positive externalities are also often called "public goods," especially when the externalities are large relative to demand (so the equilibrium quantity is close to zero).
 - E. Non-excludability is once again the key attribute. If you can't exclude, there is no incentive to pay; if there is no incentive to pay, there is no incentive to produce.
 - F. Ex: Defense. People value defense, but how can suppliers be paid to provide it?
- III. Correcting for Negative Externalities
- A. A common initial reaction people have to negative externalities is: "Ban it!"
 - B. Obvious objection: The cure is worse than the disease. Many valuable activities (like driving) – and even many activities essential to life (like breathing!) - have negative externalities.
 - C. If they grasp this point, many people's next impulse is to set quantitative limits – like emissions inspections, or technological mandates - like new emissions standards for cars.
 - 1. Particularly crazy variants: "Best Available Technology" and ALARA for nuclear power.
 - 2. Perverse effects of technological mandates: Since they raise the price of new cars, they encourage people to keep driving old cars that pollute a lot more.
 - D. *These approaches are highly inefficient.* Quantitative limits and technological mandates ignore heterogeneity: Some firms can reduce pollution more cheaply than others; some people may value polluting more than others; some technologies may cost more than they are worth.
 - 1. Application: Carpool lanes.
 - E. *More efficient regulatory solutions that take heterogeneity into account exist:*
 - 1. Taxes
 - 2. Tradable permits
 - F. Advantage: This gets you the same pollution level at a lower price. Firms that can easily switch to less polluting technologies sell their permits to firms where reducing pollution is expensive.
 - G. Complication: Getting the margin right. A tax on cars reduces the number of cars produced, but does nothing to discourage people who own cars from polluting.
- IV. Correcting for Positive Externalities
- A. A common initial reaction people have to positive externalities is: "This is a job for government, not the market."
 - B. Obvious objection: Overkill. There is no need for government to take over the whole industry just because of some positive externalities.
 - C. A much less intrusive option is for government to subsidize activities with positive externalities.

- D. Getting the margin right: Suppose there are positive externalities of voter education, but not math. If you subsidize ALL education, adjusting for the externalities of voter education leads to an inefficiently high level of mathematical education.
- V. The Logic of Pigovian Taxes and Subsidies
 - A. According to CBA, how high should these taxes and subsidies be?
 - B. The economist Pigou explained the logic:
 - 1. Tax goods with negative externalities until the SB and S curves intersect. (This is called a Pigovian tax).
 - 2. Subsidize goods with positive externalities until the SB and S curves intersect. (This is called a Pigovian subsidy).
 - C. Key ideas:
 - 1. The bigger the externality, the bigger the optimal tax or subsidy.
 - 2. As long as you're willing to pay the new market price, you can produce and consume as much as you like.
 - 3. Other than collecting the taxes and sending the subsidies, there is no additional role for government!
 - D. Friedman's caveats:
 - 1. Must distinguish benefits from external benefits. (E.g. education).
 - 2. Must include both positive and negative externalities in your calculations. (Important case: "pecuniary externalities").
 - E. Bigger picture: "Positive externalities" are not the same as "Anything politically popular" and "negative externalities" are not the same as "Anything politically unpopular." Similarly, "corrections" are not the same as "However government responds."