

ECNS 432

Ch. 4

# Ch. 4: Valuing Benefits and Costs in Primary Markets

- Check out problem #3 from Ch. 4 exercises.
- Primary Markets: Those markets that are directly affected by a policy or a project.
  - Ex. Suppose a city builds a new subway system
    - Primary markets
      - Market for public transportation
      - Market for materials used to build the subway
    - Secondary markets
      - Market for gasoline if some commuters switch from driving to riding subway

# Ch. 4: Valuing Benefits and Costs in Primary Markets

- What we want to cover
  - Why conceptually correct measures of benefits and costs are often not used in CBA
  - Examine how effects of policies in primary markets can be valued
  - Describe the valuation of resources purchased in primary markets as inputs, stressing opportunity cost

# Ch. 4: Valuing Benefits and Costs in Primary Markets

- Q. Why might conceptually correct measures of benefits differ from the measures used in CBA?
  - Consider first that the true MV for a good is reflected in the mkt. price
    - The conceptually correct measure
  - But, why might observing this price in practice be difficult?
    - Examples
      - When gov't policy involves producing a public good
      - When an externality exists
      - Monopoly pricing
      - Non-market goods
  - For most of the first half of the class we will focus on the conceptually correct measures of benefits and assume the necessary demand curves are known.

# Valuing Benefits in Efficient Markets

- Relatively straightforward when a policy impacts supply curves of goods in *efficient* mkts.
  - Rule: Gross social benefits of a policy equal the net gov't revenue generated by the policy plus the resulting changes in CS and PS
- Two cases to consider:
  - (i) Policies that directly affect the quantity of a good available to consumers
  - (ii) Policies that shift the supply curve down by altering the price or availability of some input used to produce the good in question

## Case (i): Direct Increases in Supply Available to Consumers

- Suppose a gov't project increases the supply of a good in a well-functioning market, but the increase is so small the price is unaffected.
- If gov't sells additional units at mkt. price, then this may be treated like added producers in an efficient market.
  - Q. What does the demand curve look like in this example?
  - Q. What happens to supply?

[show graphically]

- Q. Are CS and PS affected?
- Ans. No, because demand is horizontal, P is unaffected and, thus, CS and PS are unaffected (PS is unaffected because pvt sector continues to operate on original supply curve)
- Q. How much does the government collect in revenue?
- Ans.  $q_0abq_1$  (this also represents a cost to consumers (taxes) that is offset by benefits that those persons enjoy in consuming the good.)
- So, revenues received by the government are the only gross benefits from the project...but, what have we ignored???
  - Costs of project inputs to the government.

# Case (i): Direct Increases in Supply Available to Consumers

- Suppose gov't adds a sufficiently large quantity of a good to a mkt. such that the price decreases.

[show graph]

- Q. What is the gain/loss to consumers?
- Ans. B/c price falls there is a gain to consumers =  $P_0abP_1$
- Q. What is the gain/loss to producers?
  - Q. What happens to output they sell? Why?
  - Ans. Falls from  $q_0$  to  $q_2$  because they now only receive  $P_1$
- Ans. B/c they continue to operate on original supply curve, they lose PS =  $P_0acP_1$
- Q. What is the net surplus among pvt actors?
- Ans. abc
- Q. What is the gov't surplus?
- Ans.  $q_2cbq_1$
- Q. Social surplus?
- Ans.  $q_2cabq_1$
- Q. Again, what have we ignored?
- Ans. Costs of project inputs to the government.

## Case (ii): Reductions in Costs to Producers

- Similar figure as the last one, but now the supply curve shifts because decreases in MC allow pvt-sector producers to offer  $q'$  additional units profitably at each price.
- Q. What is the gain/loss to consumers?
- Ans. Same as last time
- Q. What is the gain/loss to producers?
- Ans. Difference b/w areas of triangle  $P_0ae$  and  $P_1bd$ .
- Q. What is the net gain to producer and consumers?
- Ans. abde
  - B/c no project revenue is generated, abde is the **gross** benefit of the project
  - This is gross benefits and not net benefits b/c we have ignored gov't expenditures in purchasing inputs needed to undertake the project.

# Valuing Benefits in Distorted Mkts

- If market or government failures distort the relevant product mkt, then project benefits should continue to be measures as changes in CS, PS, and net gov't revenues
- Will consider
  - Monopoly
  - Info Asymmetry
  - Externalities
  - Public Goods (may not get to)
  - Addictive Goods (may not get to)

# Monopoly

- In contrast to competitive firms, monopolistic firms are not price takers.
- Monopolies decide, on the basis of how much output they choose to produce, what the price of the product will be.
- To better illustrate, consider the following demand schedule

# Monopoly

- See that total expenditure is total revenue received by the monopolist
- Q. If a firm was the sole supplier of a good and faced this demand schedule, how would it max rents from its monopoly position?
- Ans. If it could, it would perfectly price discriminate and charge \$10 for first unit, \$9 for 2<sup>nd</sup>, \$8 for 3<sup>rd</sup>, etc.
  - Q. But, why is this rare in practice?
  - Ans. Must have perfect info on how much consumers are WTP for each succeeding unit.

Schedule of prices	Quantity	Total Revenue	Marginal Revenue
10	1	10	10
9	2	18	8
8	3	24	6
7	4	28	4
6	5	30	2
5	6	30	0
4	7	28	-2
3	8	24	-4
2	9	18	-6
1	10	10	-8
0	11	0	-10

# Monopoly

- Suppose MC of production are constant at \$4.
- Q. What is the monopoly outcome?

[insert standard monopoly graph]

- Q. what is the DWL
- Ans. abc
- If it were possible to break up monopoly into a large # of competitive firms, then we would reach the competitive equilibrium (i.e. point c)
  - $\Rightarrow$  social surplus would increase by abc
  - In CBA, this would count as a benefit of the government's actions
  - Also, b/c the competitive price is less than the monopoly price, consumers would capture the monopoly producer surplus
    - Q. Is this a benefit we count?
    - Ans. No, just a transfer.

# Information Asymmetry

- Ex. Sellers may have more info about the safety of a product than buyers
- Ex. Doctors may know more about medical care than patients
- Lets consider the case where sellers of a product have more info than buyers

[show graph]

- Q. What is the implication for PS under imperfect info?
- Ans. Increases by  $P_u \Delta P_i$
- Q. Is there a DWL?
- Ans. Yes, abc
  - Suggests a rationale for gov't intervention to provide info and reduce DWL
    - Will also transfer surplus back from sellers to buyers

# Information Asymmetry

- Q. Why is this situation not so clear cut?
- Ans. There are costs associated with the gov't obtaining and disseminating information
  - These costs do not explicitly appear in our diagram and could be large
- The circumstances under which info asymmetry is sufficiently important such that gov't intervention may improve social welfare vary greatly
  - Case 1: **Search goods**
    - Products w/ characteristics that consumers can learn about through pre-purchase examination. Here, information asymmetry is unlikely to be serious
    - Q. What would be a good example?
    - Ans. Student who needs a notebook for class can go to bookstore and easily learn about alternative notebooks

# Information Asymmetry

- Case 2: Experience goods:

- Consumers can obtain full knowledge...but only after purchase

- Q. Some examples?

- Ans. Tickets to a movie

- Meal at a new restaurant

- House

- Q. But, does the market mitigate these types of info asymmetry to an extent?

- Ans. Yes! Online movie and restaurant reviews, warranties for durable goods, etc.

- The market demand for information provides incentives for 3<sup>rd</sup> parties to provide info for a fee (e.g. Consumer Reports)

# Information Asymmetry

- Case 3: **Post-experience goods**

- Situation where intervention may be most likely to enhance welfare
- Learning through individual action likely to not occur
- Ex. Adverse health effects from prescription drug use

Employee exposure to unhealthy chemicals at work

- Here, the required info is expensive to obtain and individuals may be unwilling to pay for it, and 3<sup>rd</sup> parties may not provide the necessary info.

# Externalities

- Can be positive or negative
- Can result from
  - A particular type of manufacturing technology (e.g. air pollution caused by a smokestack industry)
  - Interdependencies b/w consumers and producers or different groups of producers
    - E.g. beekeepers who unintentionally provide pollination services for nearby fruit growers
  - Caused by networks
    - E.g. the larger the number of persons who purchase a particular type of car, the greater the number of qualified service garages available to each owner.

# Externalities

- Lets consider the case of a negative externality

[show graph]

- The vertical distance between the two curves is the amount those subjected to the neg. externality would be WTP to avoid it.
  - i.e. it represents the costs imposed by the externality on 3<sup>rd</sup> parties
  - This distance also depends on how well the mkt. compensates 3<sup>rd</sup> parties for the negative externality
    - Ex. Q. how might the mkt. compensate homeowners who live next to a pollution source?
    - Ans. With lower house prices

# Externalities

- Q. What is the standard technique for decrease DWL due to a neg. externality
- Ans. Impose taxes
  - E.g. the supplier of the good could be required to pay  $t$  on each unit they sell...effectively shifting the supply curve of sellers to reflect the marginal social cost

[show welfare analysis on board]

Work through another externality  
problem

Work through quiz