ECNS 432
Chapter 5

Ch. 5: Valuing Benefits in Secondary Markets

- Recall
  - Primary Markets: directly affected by a policy
  - Secondary Markets: indirectly affected by a policy

- Ex. Consider an improvement to public transportation
  - Primary market impacts
    - Changes in bus usage
    - Decreases in congestion
    - Decreases in pollution
  - Secondary market impacts
    - Demand for auto repairs
    - Demand for parking spots
- Secondary market impacts can often be ignored in CBA…we will show why

Valuing Benefits and Costs in Efficient Secondary Markets

- Complements and Substitutes
  - Secondary mkt. effects result because policies impact the prices of goods in primary markets, and this, in turn, noticeably affects the demand for **other goods.**
    - These **other goods** are either complements or substitutes
- Ex. Stocking a lake near a city with fish lowers the effective price of access to fishing grounds for the city's residents
  - The residents not only fish more often, but they demand more bait and fishing equipment
    - => Access to fishing grounds and fishing equipment are complements
  - However, fishing is a substitute for golfing because as the price of fishing falls, the demand for golf also falls

Efficient Secondary Mkt. Effects without Price Changes

- B/c most goods have many substitutes and complements, many gov't projects cause large #s of effects in secondary mkts.

- Fortunately, such effects can often be ignored without substantially biasing the estimates of net benefits

- Q. When can we ignore impacts in secondary markets?

- Ans. Can (& should) ignore secondary mkt. effects as long as changes in social surplus in the primary mkt. are measured *and* prices in the secondary mkt. do not change.

Efficient Secondary Mkt. Effects without Price Changes

- Consider the following example of stocking the lake near the city with fish

  - For simplicity, we assume the price of fishing = marginal social cost of fishing and this is a constant cost (i.e. no PS or externalities in mkt.)
  - Prior to stocking the price of a day of fishing was P_{F0} (primarily travel costs)
  - Now, with nearer access, the price has fallen to P_{F1}

    [Insert graph for days of fishing]

  - The number of fishing days has increased from Q_{F0} to Q_{F1}
  - $\Delta CS = P_{F0}abP_{F1}$

Efficient Secondary Mkt. Effects without Price Changes

- Now, consider the secondary mkt. for fishing equipment
  - The decline in the price of fishing days results in an increase in the demand for fishing (due to complementarity)
  - If supply schedule for equipment is perfectly elastic, then the shift in demand will not affect the price of fishing equipment.
    - Q. Is it reasonable to assume perfectly elastic supply for this case?
    - Ans. Yes, the local mkt. accounts for a very small fraction of the regional or global demand

[insert fishing equipment graph]

Efficient Secondary Mkt. Effects without Price Changes

- Q. Does the demand shift in mkt. for fishing equipment represent a change in consumer welfare that should be counted in CBA?

- Q. Is the increase in CS from efP_{E0} to cdP_{E0} an increase in social benefits that should be added to the increase in CS from the primary market?

- Ans. No, as long as there is no price change in secondary market, it should not be counted.

- To see this, first consider fishers who already own fishing equipment and will not purchase new equipment after the lake is stocked
  - These people contribute no demand to the mkt. for fishing equipment
  - Any added CS these people enjoy as a result of already owning equipment is already reflected in the primary mkt. demand for fishing days…which will be shifted further right than it otherwise would be.

Efficient Secondary Mkt. Effects without Price Changes

- Now consider people who do not own equipment but now decide to purchase equipment after the lake is stocked
  - The gap between the two demand curves in our secondary mkt. accurately reveals the increased value these people place on fishing equipment (i.e. their increased WTP)
  - The ONLY way they can realize surplus gains is by purchasing the equipment (couldn't go fishing otherwise)
    - BUT, this expenditure is NOT an added benefit of the stocking project
  - Similar to those who already have equipment, the increase in CS these consumers receive from the stocking is fully reflected by the primary mkt. demand for fishing days
    - This includes any CS they receive from equipment purchases
    - Counting the benefits from the secondary mkt. would be "double counting" and would result in an overestimate of the benefits due to stocking.

Efficient Secondary Mkt Effects with Price Changes

- Situation becomes more complex when the supply schedule in the secondary market is upward sloping

- Continue with fish stocking example

[insert fish and golf market graphs]

- *By itself, the shift in D_G does not represent a change in CS not already fully accounted for in the primary mkt.

  - Golfers are clearly NOT worse off by the stocking of the lake, although some may now place a relatively lower valuation on golf

  - The shift in demand (by itself) merely indicates that in the absence of golf, the CS from stocking the lake would be even higher.

  - The mere existence of golf is reflected in the location of D_{F0}…which is farther to the left than it would be if golf were not an available sub for fishing

- However, the shift of D_{G0} to D_{G1} causes golf course fees to fall from P_{G0} to P_{G1} …which has not been previously taken into account
  - This results in a decrease in PS = $P_{G0}gfP_{G1}$
  - And, an increase in CS = $P_{G0}efP_{G1}$
  - =>   net loss in social surplus = efg
  - *note: we are explicitly concerned with the changes in surplus due to the price change (not the shift in D)
  - Q. Should this loss in social surplus be subtracted from the gain in social surplus in the fishing market?
- Ans. It is often unnecessary to do so. To see why, consider the following:

Efficient Secondary Mkt Effects with Price Changes

- Back to our fishing mkt.

[insert fishing mkt. graph again]

- If golf and fishing are substitutes, the decrease in golf course fees will cause people to switch from fishing to golf, and the demand for fishing days will fall from D_{F0} to D_{F1}
  - Given points a and c in the graph (i.e. the original and final equilibrium points), we can derive a special type of demand, $D*$
  - $D*$ is often called the "observed demand schedule"
    - Indicates what demand for fishing days will be once prices in other markets (incl. golf mkt.) have fully adjusted to the change in prices in the fishing mkt.
  - Note: D_{F0} and D_{F1} indicate demand for fishing days *holding prices of all other goods constant*…but, in practice, this is difficult to do (and observe)

Efficient Secondary Mkt Effects with Price Changes

- Most often, the prices and quantities demanded we observe in practice are those reflected by D*

- Q. But, when we use D* does our measure of the gain in social surplus (here, it is just CS) over- or underestimate the truth?

- Ans. $P_{F0}acP_{F1}$ understates the conceptually correct measure of $P_{F0}abP_{F1}$ by amount abc

- So, b/c we understate gains by abc this often represents a close approximation for the area efg in the golf market
  - i.e. abc represents part of the benefits from the fish-stocking project and area efg an approximately offsetting cost of the project

Efficient Secondary Mkt Effects with Price Changes

- Under certain assumptions, abc and efg will be very close
    - If price effects are relatively small and there are no income effects, then there will be symmetry in substitution b/w the two goods
    - i.e. cross-substitution effects will be equal

    $$\partial Q_F / \partial P_G = \partial Q_G / \partial P_F$$

    $\Rightarrow \Delta P_F \Delta Q_F \approx \Delta P_G \Delta Q_G$

    $\Rightarrow abc \approx efg$

- Takeaway: We ignore effects in ***undistorted*** secondary mkts, regardless of whether there are price changes, if we are measuring the benefits in the primary mkt. using empirically measured demand schedules that do not hold prices in secondary markets constant.

Valuing benefits in distorted secondary markets

- Lets consider a slightly altered example of the previous problem
- Assume, b/c of negative externalities, the mkt. price of fishing equipment, P_{E0}, underestimates the marginal social cost by x cents
  - E.g. equipment like lead sinkers, some of which might end up in the lake where they poison ducks and other wildlife

  [show graphically]

  - The expansion of consumption inflicts a marginal damage of x for each additional unit produced from Q_{E0} to Q_{E1}:
    - Social loss = $x(Q_{E1} - Q_{E0})$
    - This loss, which is not reflected at all by mkt. demand or supply schedules in the fishing mkt., should be subtracted from the benefits occurring in that market.
- For additional practice on distorted secondary markets, work through the example on pgs. 122-123 on the tax in the beef market.