Economic Appraisal of Projects

Key idea: Use economic, not financial, benefits and costs.

Three basic postulates (Harberger) ... assumptions

1. Demand curve measures the value of a good or service to the demander.
   “willingness to pay”. “marginal benefit”.

CS: willing to pay — actually pay

[Buyer's regret]
Road free (not toll) to measure benefit of road, need to measure demand curve.
\[ Q_d = f\left( P, P_{other}, \text{income}, \text{tastes}, \text{pop, inc. dist}\right) \]

\[ \frac{\% \Delta Q}{\% \Delta P} = \eta \]

Own-price elasticity of demand: \[ \frac{\% \Delta Q}{\% \Delta P} = \eta \]

\[ \frac{dy}{dx} = \frac{dy}{dx} \times \frac{dx}{dx} = \frac{dy}{dx} \times \frac{dx}{dx} \]

ex. P up 10% \[ Q_d \downarrow 4\% \]

\[ \eta = \frac{-4}{+10} = -0.4 \]

\[ \text{elastic} \quad \text{inelastic} \]

\[ -1 \quad 0 \]
2. Supply curve measures cost to supplier.

Producer surplus

Externalities: unintended side effect.

E.g. factory smoke
3. Add up benefits and costs without regard of to whom they accrue.
Also: try to identify who benefits and loses, to help decision-makers decide.

Alternative would be to weight the benefits and costs, with more weight on benefits to poor.
In principle, fine. In reality, not helpful.

- Typically, many of the benefits and costs cannot be assigned to groups or people.
- What weights? “Distributional weights”
- John Hicks: all economic changes help some and may hurt some. Given time, sometimes you win, sometimes you lose. Tend to offset one another.
Quantify the effect of a project (or policy).

Nontradeables. Goods and services that, practically speaking, are not traded. Typically, cost of transport would be too high.

  e.g. haircut
  e.g. bricks.

Add a project. Build a hotel with 50 rooms. In the city, there are already 1000 hotel rooms. Assuming average price per day of a hotel room is $60.

\[
\begin{align*}
\Delta Q &= \Delta Q^d - \Delta Q^s \\
S_0 &= \frac{2.0}{0.0} - \frac{-3.0}{0.0} \\
\eta &= \frac{\Delta Q^d}{Q^d} / \frac{\Delta P}{P} \\
\Rightarrow \Delta Q^d &= \eta \cdot Q^d \cdot \frac{\Delta P}{P} \\
\Rightarrow \Delta P &= P \cdot \frac{\Delta Q}{Q_0} \cdot \frac{1}{\eta - \varepsilon}
\end{align*}
\]

\(\text{e.g. } Q_0 = 1000, \ P = 60, \ \Delta Q = 50, \ \eta = -0.8, \ \varepsilon = 1.2, \ \Delta P = \underline{-1.5} ?\)
Why use elasticities?

Ans: Often have some OK information on elasticities. Unit free.

Next step: Measure benefits of the additional hotel rooms.

\[ B = \frac{-\Delta Q^s \cdot p^s + \Delta Q^d \cdot p^d}{-\Delta Q^s + \Delta Q^d} \]

\[ B_{\text{unit}} = \frac{E p^s - \eta p^d}{E - \eta \left( \frac{Q^d}{Q^s} \right)} \]

\[ E = 1.2 \quad \eta = -0.8 \]

\[ Q^d = Q^s = 1000 \]

\[ p^s = p^d = 59.25 \]

\[ 1.2 \left( 59.25 \right) - (-0.8) \left( 59.25 \right) \]

\[ 1.2 - (-0.8) \]

\[ B_{\text{unit}} = 59.25 \]

Add sales tax of 10%.

\[ p^d = (1 + t) p^s \]

\[ \$ 62.8 = (1 + 0.1) p^s \]

\[ \frac{1.2 (60) - (-0.8) (60)}{1.2 - (-0.8)} \]

\[ \frac{7.2 + 52.8}{2} = 62.4 \]