Midterm - Gus Lipkin

Friday, October 9, 2020 1:56 PM

5 & 6 are switched

1) What is the difference between Pareto efficiency and Hicks-Kaldor efficiency, and why is it relevant to benefit cost analysis?

In Pareto efficiency, so long as one person is better and no one is worse off, it is Pareto efficient. In Hicks-Kaldor efficiency, it is efficient so long as people benefit more than those who are worse off so long as the people worse off could be compensated by the benefits. It is relevant because when doing a BCA of a project, especially a public project, it is important to consider how the community will be affected and to consider how a project can be made Pareto efficient so that no one is worse off after the project is finished.

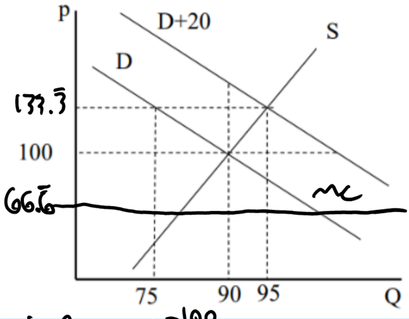
2) Why are benefit cost ratios inappropriate for evaluating alternative projects?

Benefit-cost ratios are inappropriate for evaluating alternative projects because the ratio is not indicative of total value added. It would be better to gauge projects by the net benefits. A project that has a benefit value of 15 and a cost value of 14 will have a much lower ratio than a project with 5 benefits and 1 cost.

3) Suppose your company is preparing a benefit-cost analysis to use to lobby the local government for a policy you want passed. Why would you want to know if the relevant decision makers are guardians or spenders?

The distinction between guardians and spenders is important because that largely controls their decisions on how to spend money. Guardians will be less likely to pass a new policy if it involves spending money while a Spender will be more likely to pass a policy if the money spent benefits the greater good.

4) A government project directly purchase 20 units in a local market. The METB is 0.2. The elasticity of demand is -2/3. Other pertinent information is summarized in the figure provided. Calculate the changes in PS, CS, GS, and SS associated with the purchase.



$MC = 133.3(1 - 1/2) = 200/3$

$\eta = \frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q} \rightarrow -\frac{2}{3} = \frac{95-75}{P-100} \cdot \frac{100}{90} \rightarrow -\frac{3}{5} = \frac{20}{P-100} \rightarrow P - 100 = -\frac{100}{3}$

$P = 200/3$

or $100 - P$

$-\frac{2}{3} = 20/(100 - P) \cdot 100/90 \rightarrow 100 - P = -100/3 \rightarrow P = 100 + 100/3 = 400/3$

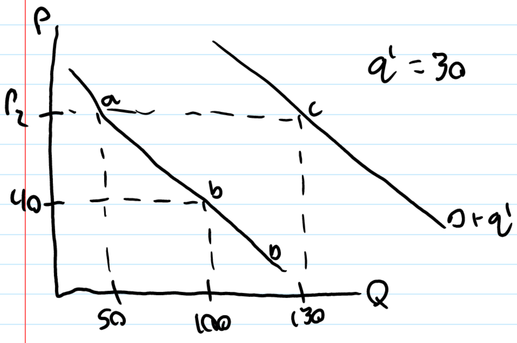
$\Delta CS = (100/3 \cdot 90) + (100/3 \cdot 5 \cdot \frac{1}{2}) = 3083.3$

$\Delta PS = (100/3 \cdot 75) - (200/3 \cdot 90) = -3500$

$\Delta GS = 100 \cdot 20 = 2000$

$\Delta SS = 3083.3 - 3500 + (1.2 \cdot 2000) = 1983.3$

6) A local government project requires 30 workers for a year from a market in which currently 100 workers are employed, 50 are unemployed, and the annual wage is $40K. The MEBT is 0.2.
a) Draw a figure illustrating the state of the market.
b) Calculate the opportunity cost of hiring the workers.



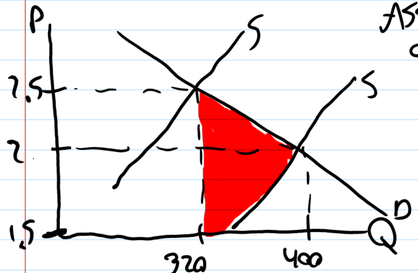
According to official solution for opportunity cost 1, since unemployment is small, wage doesn't change. I don't believe it applies here, but I did it that way so I would have an answer

The unemployment rate is HUGE

$abc = \frac{1}{2}(P_2 - 40k)(130 - 50) = 40(P_2 - 40k)$

$SC = 1.2 \cdot 40{,}000 \cdot 30 = 1{,}440{,}000$

5) Suppose:
i) the price of gasoline is $2 per gallon
ii) current consumption is 400 (million) gallons per day
iii) the elasticity of demand is -0.8
iv) retail provision of gasoline may be approximated as a constant cost industry
v) there is an external cost of $0.5 per gallon of gas ← tax!
Calculate deadweight loss associated with the externality. Draw a figure to illustrate.



Assuming tax is what changes (is added)

$-.8 = \frac{Q - 400m}{2.5 - 2} \cdot \frac{2}{400m} \rightarrow Q = 320m$

■ = DWL

$-.8 = \frac{320 - 400}{2 - P} \cdot \frac{2}{400} \rightarrow P = 1.5$

$DWL = (2.5 - 1.5)(\frac{1}{2})(80m) = 40{,}000{,}000$