COST-BENEFIT ANALYSIS
Exercise 2. Economic Costs and Benefits

Answers to this exercise are due back by the end of Saturday, May 2, at jhaughton@suffolk.edu.

1. Economic vs. Financial benefits

You are evaluating a project that would build a large (300 bedroom) hotel in downtown Boston, where there are already 10,000 hotel beds. Assume that the current price of hotel rooms is $150 per night; that there is a 12% tax on top of this; that the elasticity of demand for hotel rooms is -0.5 and the elasticity of supply is 1.2. The occupancy rate averages 85%.

Compute
   a. The annual average financial benefit of the project.
   b. The annual average economic benefit of the project.
   c. The conversion factor (i.e. economic benefit divided by financial benefit). [This is trivial!].

Illustrate your answer with an appropriate diagram.

2. The cost of imports

Steel is imported into the country of Seebeeh. The government levies a tariff of 30% on the CIF value of imports (which is $280/tonne). There is also a sales tax of 8% on the landed price (CIF + Tariff). The port handling charge is 1% of the CIF value, and domestic freight to project site is 2.5% of the CIF value. The share of tradable content in port handling is 30% and that in domestic freight is 70%. Both handling and freight sectors are taxed in Seebeeh, with specific conversion factors (i.e. the ratio of economic to financial benefits) of 0.9 and 0.75 respectively.

Compute the economic cost of steel used by a project in Seebeeh.

3. Lottery

A lottery advertises “Win a million bucks” so you are elated when you find you have the winning ticket. But then you find that the lottery offers you five options:

(i) You get your million dollars at the end of ten years.
(ii) You get $50,000 annually for twenty years.
(iii) You get $30,000 annually for ever, and can sell this right.
(iv) You get $100,000 now, and $45,000 for each of the subsequent 20 years.
(v) You get $35,000 annually until you die.

[Note: You will need to calculate your life expectancy. Here are a few sites that might help:
https://media.nmfn.com/tnetwork/lifespan/#0
https://www.projectbiglife.ca/life-expectancy-calculator

You face an income tax of 10% on the first $20,000 that you receive every year, and 15% on amounts above that. Explain your answers. You may assume a discount rate of 6%.

a. Which option should you choose?
b. Which option should you choose if lottery winnings are exempt from income tax.

Set out any further assumptions that you make.