

The last one!

Do not write your name on the assignment. Write your name only on the back of this sheet of paper and staple your answers on the front of this sheet of paper. Failure to follow these directions will cost you 1 point on the assignment.

The detailed outline for the Senior Project is due on the Friday after the “break,” (10/24). You should already have handed your proposal in to the department.

For all questions, show all work. You will not get credit for an answer given without work.

Note that there was an error on the help sheet that I printed for you last week. I have corrected it on the web. In the section on “Inter-temporal Budget Constraints,” the section should say (with the correction underlined):

Inter-temporal budget constraints: For inter-temporal budget constraints, the constraint can be written as $C_2 = I_2 + (I_1 - C_1)(1+i)$. Then you can simplify it as $C_2 = I_2 + I_1(1+i) - C_1(1+i)$ $\Rightarrow C_2 + C_1(1+i) = I_2 + I_1(1+i)$. Then you can treat it just like any other budget constraint.

1) (15 points) Implicitly, the budget constraint above makes some assumptions about the prices of goods. What is that assumption? Explain how you came to that conclusion.

2) (15 points) In the inter-temporal budget constraint, what is the opportunity cost of buying something now? Explain your logic.

3) (25 points) Using the generic formulas, $U(C_1, C_2)$ and the budget constraint above, derive the formula that is the equivalent of the equi-marginal principle we derived for one-period consumption.

4) (45 points) Suppose that a firm has a production function of $Q = K^{1/4}L^{1/4}$ and capital costs \$16/unit while labor costs \$9/unit. Derive the total cost function, the marginal cost function, and the average cost function for this firm.