



**College of Business Administration**  
**Department of Economics**  
**Aggregate Economic Conditions & Analysis**  
**Lecturer: O. Mikhail**  
**ECO 6206-0001**  
**Spring 2002**

---

### **Assignment III**

**Due January 29, 2001**

A simple Two-Period Model

A consumer lives for two periods. Her lifetime utility is presented by  $U(C_1, C_2)$ , where  $C_i$  denotes consumption in period  $i$ . The individual has a given income in the two periods of  $Y_1$  and  $Y_2$  and faces the interest rate.

- a) Discuss which factors affect the individual's marginal rate of substitution between consumption in the two periods.
- b) What is the individual lifetime budget constraint if she can borrow or lend any amount at the market interest rate  $r$  ?
- c) Suppose that the lifetime utility is now given by  $U(C_1, C_2) = U(C_1) + (1+\rho)^{-1} U(C_2)$  where  $\rho$  is the individual's subjective rate of time preference and  $U(\cdot)$  is strictly concave. Is the answer to the part (a) any different with these preferences?

For what follows assume that the utility function is given by part (c)

- d) Derive and explain the first-order conditions that characterize the individual optimal consumption profile.
- e) Draw a diagram in  $(C_1, C_2)$  space that explains the individual's decision-making. Explain how changes in  $r$  and  $\rho$  affect the outcome.
- f) Suppose that the individual can lend at the rate  $r$  but cannot borrow at any rate. How does this affect the diagram and the solution to the individual's optimization problem?
- g) Explain the behavior of the consumption function?