

## Problem Set #9

Econ 381, Prof. Evans

Due Monday, Mar. 30

(1:35 pm for Section 001) and (4:30 pm for Section 002)

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**NOTE:** You are encouraged to work on this problem set in a group of up to four members. When finished, each group should turn in one copy of the problem set to the class inbox in 130 FOB. Each completed problem set should list the names of the group members who worked on the assignment. As noted in the syllabus, no late assignments will be graded.

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1. **Chapter 16, “Problems and Applications” (5 points): #2, #4**
  
2. **Chapter 16, “Fisher 2-period life cycle model” (5 points)** An individual (who is representative of all the other individuals in the economy) lives for two periods. Period 1 is young and period 2 is old. Assume that the real interest rate on savings and borrowing is  $r = 0.05$ .
  - (a) If income in the first period of life is  $Y_1 = 10$  and income in the second period of life is  $Y_2 = 15$ , write down the intertemporal budget constraint.
  - (b) If the lifetime utility function of the representative agent is  $U = (C_1 \cdot C_2)^{0.5}$ , calculate the optimal levels of consumption  $C_1$  and  $C_2$  given the intertemporal budget constraint from part (a). Is the agent a saver or a borrower?
  - (c) What are the optimal levels of consumption  $C_1$  and  $C_2$  if the agent is borrowing constrained  $S \geq 0$ ?
  - (d) With the borrowing constraint from part (c), what would be the effect on consumption  $C_1$  and  $C_2$  of a government policy that increased income in the second period of life to  $Y_2 = 20$ ?
  - (e) What would be the effect on consumption  $C_1$  and  $C_2$  of a government policy that increased income in the second period of life to  $Y_2 = 20$  and implemented a loan program that allowed  $S < 0$ ? That is, the government facilitated borrowing for all possible points on the new intertemporal budget constraint. Why does this answer differ from that of part (d)?