

EC2102 Macroeconomic Analysis I
Tutorial 3, Week 5 (February 8-12, 2010)

Question 1

Consider an economy with a two-period lived representative agent. This agent has h units of time each period, which can be either spent working or on leisure, and this agent's utility function is $u(C_t, l_t)$, where C_t and l_t are consumption and leisure in time period t , $t = 1, 2$. Let w_t denote the real wage rate at time period t , $t = 1, 2$, and let r denote the real interest rate between time periods 1 and 2.

(i) Write down the per-period budget constraints of the representative agent. Now rewrite the two per-period budget constraints to obtain the representative agent's lifetime budget constraint.

(ii) Express C_1 as a function of (C_2, l_1, l_2) , and set up the representative agent's utility maximization problem.

(iii) Derive the First Order Conditions to the representative agent's utility maximization problem laid out in part (ii).

(iv) Manipulate the First Order Conditions to show that the representative agent's optimal consumption and leisure choices are such that the following conditions hold:

$$-\frac{u_1(C_1^*, l_1^*)}{\beta u_1(C_2^*, l_2^*)} = -(1 + r) \quad (I)$$

$$-\frac{u_2(C_1^*, l_1^*)}{u_1(C_1^*, l_1^*)} = -w_1 \quad (II)$$

$$-\frac{u_2(C_2^*, l_2^*)}{u_1(C_2^*, l_2^*)} = -w_2 \quad (III)$$

(v) Explain the economic interpretations of equations (I) to (III)?

Question 2 (This is a past-year final exam question)

You are eating your breakfast and reading the newspaper one morning when you came across this sentence which made you thoughtful:

"For a fully-funded social security system, either it does not bind and does not make any difference, or it binds and people are worse off."

Explain what this sentence means with the aid of a graph.

(**Hint:** First explain what a fully-funded social security system is, and then explain how people's consumption decisions are affected.)