

EC2102 Macroeconomic Analysis I

Tutorial 1, Week 3 (January 25-29, 2010)

Question 1

Consider an economy which consists of only two individuals, Mr A and Mr B . They each live for 2 periods only; they are both young in period 1 and old in period 2, and they die at the end of period 2.

The lifetime utility function of Mr j , $j \in \{A, B\}$, is $U(c_1^j, c_2^j) = u(c_1^j) + \beta u(c_2^j)$, where the subscript denotes period t , $t = 1, 2$, and Mr j 's per period utility function is $u(c_1^j) = \sqrt{c_1^j}$ and $u(c_2^j) = \sqrt{c_2^j}$.

Mr A and B can borrow and lend freely at a real interest rate of r . Let us denote y_t^j as the endowment of Mr j at time t , $j \in \{A, B\}$. These endowments are expressed in real terms as units of consumption goods. Let $y_1^A = 10$, $y_2^A = 50$, and $y_1^B = 50$ and $y_2^B = 10$.

(i) Write down Mr A and B 's maximization problems.

(ii) Using (i) solve for Mr A and B 's optimal consumption and savings choices $(c_1^{j*}, c_2^{j*}, s_1^{j*}, s_2^{j*})$, $j \in \{A, B\}$.

(iii) Using indifference curves and the Lifetime Budget Constraint, draw the endowment point, and illustrate your solution to Mr A 's maximization problem. Do the same for Mr B . Explain what a First Order Condition is and its role in an individual's utility maximization problem.

(iv) Show mathematically, for period 1, that Mr A and Mr B both have a marginal propensity of consuming out of current income that is strictly less than 1.