

# Microeconomics

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Class #9: Intertemporal choice.

David Henriques

Classes: 40, 41

## Question 1

Consider a consumer whose preferences are summarized by the utility function  $U(c_1, c_2) = c_1^\alpha c_2^{1-\alpha}$ ,  $0 < \alpha < 1$ , where  $c_1$  and  $c_2$  denote consumed quantities in period 1 and 2, respectively. Let  $m_1$  and  $m_2$  be incomes received by the consumer in periods 1 and 2, respectively, and  $r$  is the interest rate. Assume that the prices of consumption in each period are constant at 1.

- (a) Define algebraically and draw the intertemporal budget constraint.
- (b) Compare the equation previously obtained to the “usual” budget constraint ( $p_1 x_1 + p_2 x_2 = m$ ). To what does correspond  $p_1$ ,  $p_2$  and  $m$ ?
- (c) Derive the demand functions for consumption in each one of the periods.
- (d) Suppose that the interest rate  $r$  increases. What will happen to the consumption in each one of the periods? And to savings?
- (e) Considering other possible utility functions, can we say in general that if  $r$  increases, the consumer will consume less today and more tomorrow? Explain.

## Question 2

Consider a consumer whose preferences are summarized by the utility function  $U(c_1, c_2) = c_1 c_2$ . Let  $M$  be the income received by the consumer in each period, and the interest rate is 5%. Assume that the prices of consumption in each period are constant at 1. What will be the consumption of this consumer in period 1? Is this consumer a lender or a borrower in period 1?