

Homework 8

Chapter 17

1 and 6 of Problems and Applications

Also, please solve the following question

9. The agent lives for two periods: period 1 and period 2. The agent's utility function is

$$U(C_1, C_2) = \frac{C_1^{1-\sigma}}{1-\sigma} + \beta \frac{C_2^{1-\sigma}}{1-\sigma}$$

where β is time discount factor and σ is coefficient of relative risk aversion. The income of period 1 is Y_1 and the income of period 2 is Y_2 . The interest rate is r . Please solve the optimal consumption functions, C_1 and C_2 .

Please put homework in your TA's mailbox before 2pm of next Monday.

KEY CONCEPTS

Marginal propensity to consume	Normal good	Permanent-income hypothesis
Average propensity to consume	Income effect	Permanent income
Intertemporal budget constraint	Substitution effect	Transitory income
Discounting	Borrowing constraint	Random walk
Indifference curves	Life-cycle hypothesis	
Marginal rate of substitution	Precautionary saving	

QUESTIONS FOR REVIEW

1. What were Keynes's three conjectures about the consumption function?
2. Describe the evidence that was consistent with Keynes's conjectures and the evidence that was inconsistent with them.
3. How do the life-cycle and permanent-income hypotheses resolve the seemingly contradictory pieces of evidence regarding consumption behavior?
4. Use Fisher's model of consumption to analyze an increase in second-period income. Compare the case in which the consumer faces a binding borrowing constraint and the case in which he does not.
5. Explain why changes in consumption are unpredictable if consumers obey the permanent-income hypothesis and have rational expectations.
6. Give an example in which someone might exhibit time-inconsistent preferences.

PROBLEMS AND APPLICATIONS

1. The chapter uses the Fisher model to discuss a change in the interest rate for a consumer who saves some of his first-period income. Suppose, instead, that the consumer is a borrower. How does that alter the analysis? Discuss the income and substitution effects on consumption in both periods.
2. Jack and Jill both obey the two-period Fisher model of consumption. Jack earns \$100 in the first period and \$100 in the second period. Jill earns nothing in the first period and \$210 in the second period. Both of them can borrow or lend at the interest rate r .
 - a. You observe both Jack and Jill consuming \$100 in the first period and \$100 in the second period. What is the interest rate r ?
 - b. Suppose the interest rate increases. What will happen to Jack's consumption in the first period? Is Jack better off or worse off than before the interest rate rise?
 - c. What will happen to Jill's consumption in the first period when the interest rate increases? Is Jill better off or worse off than before the interest rate increase?
3. The chapter analyzes Fisher's model for the case in which the consumer can save or borrow at an interest rate of r and for the case in which the consumer can save at this rate but cannot borrow at all. Consider now the intermediate case in which the consumer can save at rate r_s and borrow at rate r_b , where $r_s < r_b$.
 - a. What is the consumer's budget constraint in the case in which he consumes less than his income in period one?
 - b. What is the consumer's budget constraint in the case in which he consumes more than his income in period one?

- c. Graph the two budget constraints and shade the area that represents the combination of first-period and second-period consumption the consumer can choose.
 - d. Now add to your graph the consumer's indifference curves. Show three possible outcomes: one in which the consumer saves, one in which he borrows, and one in which he neither saves nor borrows.
 - e. What determines first-period consumption in each of the three cases?
4. Explain whether borrowing constraints increase or decrease the potency of fiscal policy to influence aggregate demand in each of the following two cases.
 - a. A temporary tax cut.
 - b. An announced future tax cut.
 5. In the discussion of the life-cycle hypothesis in the text, income is assumed to be constant during the period before retirement. For most people, however, income grows over their lifetimes. How does this growth in income influence the lifetime pattern of consumption and wealth accumulation shown in Figure 17-12 under the following conditions?
 - a. Consumers can borrow, so their wealth can be negative.
 - b. Consumers face borrowing constraints that prevent their wealth from falling below zero.Do you consider case (a) or case (b) to be more realistic? Why?
 6. Demographers predict that the fraction of the population that is elderly will increase over the next 20 years. What does the life-cycle model predict for the influence of this demographic change on the national saving rate?
 7. One study found that the elderly who do not have children dissave at about the same rate as the elderly who do have children. What might this finding imply about the reason the elderly do not dissave as much as the life-cycle model predicts?
 8. Consider two savings accounts that pay the same interest rate. One account lets you take your money out on demand. The second requires that you give 30-day advance notification before withdrawals. Which account would you prefer? Why? Can you imagine a person who might make the opposite choice? What do these choices say about the theory of the consumption function?