

考試科目	個體經濟理論	所別	財政所	考試時間	5月21日(六)第一節
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1. (20%) Show that in any Nash equilibrium of the Bertrand model with  $m > 2$  firms, all sales take place at a price equal to cost.
2. (30%) A consumer has an indirect utility function of the form  $v(p, m) = A(p)m$ .
  - (a) What is the form of this consumer's expenditure function,  $e(p, u)$
  - (b) What is the form of this consumer's indirect money metric utility function,  $\mu(p; q, m)$ ?
  - (c) Suppose instead that the consumer had an indirect utility function of the form  $v(p, m) = A(p)m^b$  for  $b > 1$ . What will be the form of the consumer's indirect money metric utility function now?

3. (25%) Consider a simple economy with two consumers, a single consumption good  $x$ , and two time periods. Consumption of the good in period  $t$  is denoted  $x_t$  for  $t = 1, 2$ . Inter-temporal utility functions for the two consumers are

$$u^i(x_1, x_2) = (x_1 - 1)^{1/3}(x_2 - 3)^{2/3}, \quad i = 1, 2.$$

Endowments are  $e^1 = (10, 0)$  and  $e^2 = (12, 4)$ . The good is perfectly *storable*, so what is not consumed in the first period can be saved and consumed in the second period.

- (a) Suppose the two consumers cannot trade with one another. How much does each consume in each period?
  - (b) Now suppose there are competitive "spot" and "futures" markets for this good. Let  $p_1$  be the (spot) price per unit in period 1, and let  $p_2$  be the (futures) price prevailing in period 1 for delivery of 1 unit of the good in period 2. What will be the equilibrium relative price,  $p_2 / p_1$ ?
4. (25%) A person has an expected utility function given by  $U(w) = 100 - e^{-w}$ . He initially has wealth of zero. He has a lottery ticket that will be worth  $w_1$  with probability 1/2 and will be worth  $w_2$  with probability 1/2.
    - (a) What is his absolute risk aversion?
    - (b) Please derive the certainty equivalent and risk premium of the lottery the person owns? (Express that in  $w_1, w_2$ .)

考試科目	總體經濟理論	所別	財政研究所	考試時間	5月21日(六)第二節
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1. (35%) Please answer the following questions:

(a) (5%) Suppose that the Phillips curve is given by  $\pi_t = \pi_t^e + 0.2 - 5u_t$ , and  $\pi_t^e = \theta\pi_{t-1}$ . Suppose that  $\theta$  is equal to 0.5. The rate of unemployment is initially equal to the natural rate and the authorities decide to bring the unemployment rate down to 3% and hold it there forever. If  $\pi_{t-1} = 6\%$ , determine the inflation rate in year  $t$  and  $t+1$ .

(b) (10%) Explain the Lucas critique.

(c) (10%) Explain the Ricardian equivalence.

(d) (10%) What are the implications of the Lucas imperfect-information model for monetary policy?

2. (25%) Suppose that the production function is Cobb-Douglas. In a Solow growth model,

a) (8%) Find the expressions for steady state levels of capital, output and consumption as functions of the parameters in the model.

b) (6%) Find the golden-rule value of capital.

c) (6%) Find the saving rate which is needed to yield the golden-rule capital stock.

d) (5%) There are empirical evidences showing that the poor countries tend to grow faster than rich countries. How can the Solow growth model help explain the convergence in growth?

3. (25%) Keynes assumed the consumption as a linear function of income which explicitly follows the form:

$$C = \alpha + \beta Y$$

where  $\alpha > 0$  and  $0 < \beta < 1$ .

a) (8%) Please explain its implications for the average propensity to consume.

b) (8%) Do the empirical cross-section and time-series studies support the implications of the consumption function?

c) (9%) How does the permanent income hypothesis help justify the linear consumption function?

4. (15%) Explain why consumption follows random walk in Hall's model. Illustrate Hall's model.

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