

考 試 科 目	總體經濟學	系 所 別	經濟學系	考 試 時 間	2 月 11 日(二) 第三節
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1. The following system of equations describes a Keynesian macroeconomic framework: $C^d = 300 + 0.75(Y - T) - 250r$ is desired consumption function, where Y is real output and r is real interest rate. $T = 300$ is lump sum tax. $I^d = 500 - 350r$ is desired investment function. $G = 300$ is government purchase. $L = 0.75Y - 500i$ is real money demand function, where i is nominal interest rate. $M = 2370$ is nominal money supply. $\bar{Y} = 3260$ is full-employment output. $\pi^e = 0.05$ is expected inflation rate. Answer the following questions:
- (1). What are the values of the real interest rate, the price level, consumption, and investment for the economy in general equilibrium. (8%)
 - (2). Now suppose the autonomous investment decreases to 450 due to a negative shock to investment confidence, with no change in the expected inflation. What will be the real interest rate, output, consumption, and investment in the short run (in which the price level is fixed)? (4%)
 - (3). Continued from (2), assume that the Okun's coefficient is 1.334 and the natural rate of unemployment is 0.05. What is the actual rate of unemployment in the short run? (5%)
 - (4). Continued from (2), what happens in the long run to the real interest rate, the price level, consumption, and investment, in which the expected inflation changes to 0.043? (8%)
2. Assume that firms with perfect foresight are certain about future profitability, interest rate, tax policies, etc. Let K_{t-1} denote stocks of physical capital at the end of period $t - 1$. Moreover, a representative firm owns the stock of physical capital K_{t-1} , and pays a wage w_t to the L_t workers hired at the begin of period t . The single goods Y_t of the firm is produced by using K_{t-1} and L_t , according the following Cobb-Douglas production technology: $Y_t = K_{t-1}^\alpha L_t^{1-\alpha}$, $0 < \alpha < 1$, at time t . Assume that the goods market is perfectly competitive. Both labor and capital markets are also perfectly competitive. For simplicity, the price of the single goods is assumed to be 1. Moreover, the purchase price of capital goods is also assumed to be 1. The firm expends I_t to invest equipment and machinery at time t . An equation that shows capital accumulation over time is required.

$$K_t = I_t + (1 - \delta)K_{t-1},$$

where $\delta \in (0,1)$ is the rate of capital depreciation. The firm chooses the amount of investment and physical capital and the number of workers to use every period in production in order to maximize the sum of future discounted cash flows (in which the firm has taken wage w_t and real interest rate r_t as given):

$$\max_{\{I_t, K_t, L_t\}} \sum_{t=1}^{\infty} \frac{CF_t}{(1+r_1)(1+r_2) \dots (1+r_{t-1})}$$

where CF_t denotes firms' cash flows and $r_t > 0$ is real interest rate. The cash flow is defined as:

$$CF_t = Y_t - w_t L_t - I_t - \frac{\psi I_t^2}{2 K_t},$$

where $\frac{\psi I_t^2}{2 K_t}$ represents the adjustment costs and $\psi > 0$ is constant. Answer the following questions:

- (1) Derive the optimal intertemporal decisions of the firm's I_t , L_t , and K_t for maximizing the sum of future discounted cash flows and explain the economic intuition for each decision. (12%)
- (2) Continued from (1), derive the Tobin's q . (5%)
- (3) Draw diagrams to analyze the effects of a permanent decrease in the real interest rate on physical capital,

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<p>investment, and the Tobin's q. (8%)</p> <p>3. Answer the following questions:</p> <p>(1) Describe three alternative responses available to policymakers when the economy is in recession. (5%)</p> <p>(2) Continued from (1), draw diagrams to analyze the effects of three alternative responses on employment, the price level, and the composition of output. (12%)</p> <p>(3) What are some of the practical difficulties in using macroeconomic stabilization policies to fight recessions? (8%)</p> <p>4. Suppose the central bank dislikes inflation variability around a target level π^*. It also prefers to keep unemployment stable around an unemployment target u^*. These objectives can be represented in terms of minimizing</p> $V = \lambda(u - u^*)^2 + \frac{1}{2}(\pi - \pi^*)^2,$ <p>where π is the inflation rate and u is the unemployment rate. The economy is described by</p> $u = u_n - a(\pi - \pi^e) + v, a > 0$ <p>where u_n is the natural rate of unemployment and π^e is expected inflation. Expectations are formed by the public before observing the disturbance v. The central bank can set inflation after observing v. Assume $u^* < u_n$. Answer the following questions:</p> <p>(1) What is the equilibrium rate of inflation under discretion? What is the equilibrium unemployment rate? (10%)</p> <p>(2) What is the equilibrium rate of inflation under commitment? What is the equilibrium unemployment rate under commitment? How are they affected by u^*? Explain. (15%)</p>					
備 註	<p>一、作答於試題上者，不予計分。</p> <p>二、試題請隨卷繳交。</p>				