

# 國立清華大學 107 學年度碩士班考試入學試題

系所班組別：經濟學系 (0545)

考試科目（代碼）：總體經濟學 (4502)

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## Section A: Short questions [ 25 points]

1. Explains why Tobin's  $q$  theory of investment can have the same implications as the neoclassical theory of investment if stock prices are equal to the present value of future dividend.
2. Explain why firms might be unwilling to lower wages even when the unemployed would be willing to work for less than the prevailing wage.
3. Faced with the problem of rising public debt, many governments are considering tax increases to reduce budget deficits. Explain why the Ricardian equivalent proposition implied that it does not matter what governments do if the level of government spending remains the same. Why do you think this implication of the Ricardian equivalent might not hold during the recent recession?
4. Suppose the demand curve for money is subject to many shocks. Assume prices are sticky and that the aim of monetary policy is to stabilise GDP. Explain why it would be desirable to implement monetary policy by setting interest rates rather than fixing the money supply.
5. 'Long-run' economic growth is exogenous in the Solow growth model but endogenous in the R&D model.' Explain the key reason for this argument by comparing the difference between physical capital and ideas.

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Section B

Question 1: Growth model [12 points]

Consider an economy with aggregate production function  $Y_t = F(K_t, N_t)$ , where  $K_t$  represents the stock of domestic capital,  $N_t = N_0 e^{gt}$  is the efficient labour force, which grows at rate  $g$  every period  $t$ , and  $Y_t$  is domestic output. Assume there is an exogenous and constant net-of-depreciation saving rates  $s_t = s$ .

- (a) [2 points] Denote by  $a_t$  the ratio of capital to output. Write the transition equation relating  $a_{t+1}$  and  $a_t$ .
- (b) [2 points] Compute the steady-state value of  $a$ .
- (c) [5 points] Assume that every period there is a uniform rate of capital gain  $q$ , such that capital stock in period  $t+1$ ,  $K_{t+1}$ , is equal to  $(1 + q)[K_t + sY_t]$ . Express the steady-state capital to output ratio as a function of  $s$ ,  $g$ , and  $q$ .
- (d) [3 points] Can capital gain described in part (c) per se generate capital accumulation in this model?

Question 2: Intertemporal Consumption [13 points]

Consider a two-period economy in which the representative consumer maximises the life-time utility function  $U(C_1, C_2) = u(C_1) + \beta u(C_2)$  subject to the life-time budget constraint  $(1 + t)C_1 + \frac{C_2}{R} = W$ , where  $0 < \beta < 1$ ,  $W$  is the present value of after-tax life-time income,  $t$  is the consumption tax rate, and  $R = 1 + r$ , where  $r$  is the interest rate.

- (a) [3 points] Show that the optimality condition relating  $C_1$  and  $C_2$  is the following:  
 $u'(C_1) = (1 + t)\beta R u'(C_2)$ .
- (b) [2 points] Suppose the utility function is  $u(C) = \log(C)$ . Derive the optimal levels of  $C_1$  and  $C_2$ .
- (c) [3 points] The consumer receives incomes  $Y_1$  and  $Y_2$  and pays lump-sum taxes  $T_1$  and  $T_2$  in periods 1 and 2. Suppose the government uses all tax revenue to finance a project that costs  $G$  in period 1. Write down the intertemporal budget constraint for the government.
- (d) [2 points] Suppose there is no consumption tax, i.e.  $t = 0$ . Use this model to explain Ricardian equivalence.
- (e) [3 points] Suppose there is consumption tax, i.e.  $t > 0$ . Show that the result you have derive in part (d) might not hold here. Explain your answer.

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申論題 (每題 25 分)

1. 根據實質景氣循環理論(real business cycle theory)，經濟景氣波動主要為生產力衝擊(productivity shocks)所造成。若景氣循環的來源皆為生產力衝擊，您認為：
  - (a) 就業量、勞動平均生產力、實質工資、實質利率、以及物價膨脹率等變數應為順景氣循環(pro-cyclical)或為反景氣循環(counter-cyclical)變數？您的理由為何？請詳細分析說明之。
  - (b) 以上所預測各變數的景氣循環波動特色，那些與現實狀況相符？那些與現實狀況不相符？若有不相符之處，您認為其原因為何？
2. 美國在大蕭條最嚴重的 1931 年初至 1933 年 3 月間，其聯邦準備理事會（中央銀行）以公開市場操作的方式不斷購買國庫券以增加貨幣基數(monetary base)的供給量。但是美國的貨幣供給量(例如 M2)卻不斷下降。請詳細分析此現象產生的可能原因，以及其對央行在金融危機下貨幣政策的啟示。