

考試科目	財政學	所別	財政學	考試時間	月 日 星期	上午第 節
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50%

1. (25 分) Consider an economy with one public good,  $G$ , a (taxable) private good,  $x_1$ , and an untaxable private good,  $x_0$ . Assume that the technology is such that  $p_G = p_1 = p_0 = 1$ . Assume that the economy has  $n$  identical agents with endowments  $w$  of good  $x_0$  and utility functions

$$U_i = x_0 + \alpha \ln x_1 + \beta \ln G$$

- Find the first-best provision of the public good  $G$ . Is this unique?
- Suppose that the government is constrained to pay for the public good with distortionary taxes on  $x_1$ . Find the second-best tax,  $t$ , on good 1. What is the second-best level of  $G$  at this optimum?
- Compare your answers in (a) and (b). Which has the higher level of  $G$ ? Discuss your answer in terms of Pigou's (1947) argument about funding public goods with distortionary taxes rather than lump sum taxes. Also relate your discussion to Atkinson and Stern's (1974) treatment of Pigou's argument. Are the results of Atkinson and Stern consistent with your results? Why or why not?

2. (25 分)

Part I Consider the two-sector general-equilibrium model of tax incidence attributed to Harberger. **INTUITIVELY** describe the incidence of

- A tax on labor in the  $X$  sector when the elasticity of substitution between capital and labor is zero in both sectors.
- A tax on capital in both sectors.

Part II Now we vary Harberger's two-sector general-equilibrium model to be a two-country general-equilibrium model of *tax competition*. Capital is freely mobile between two countries, whereas labor is immobile. The total supply of the world capital is fixed. Both countries tax capital invested within borders to finance government spending. Explain **INTUITIVELY**:

- The incidence of the capital taxes.
- Will the level of spending in both countries be Pareto efficient? Why or why not?
- If consider the growth of capital, how will answers in (a) and (b) change?

考試科目	財政理論	所別	財政系	考試時間	6月24日(四) 星期2 下午第1節
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1. 50%

1. 何謂第一及第二福利定理？有那一假設第一福利定理沒有，但第二福利定理卻必須用到？
2.
  - (a). 公共財資源配置最適條件為何？
  - (b). 公共財資源配置最適條件是否會因為公共財融通方式不同而改變？
3. 何謂「中位選民定理」(median voter theorem)？  
此一定理背後有何假設？中位選民定理和 Arrow 著名的不可能定理間有何關聯？

考試科目	經濟學	所別	財政所	考試時間	6月28日 上午第二節 星期二
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(一) 試簡要說明經濟主體對於風險之態度，規避風險之指標以 (10%) 及 固定風險規避效用函數之形態。

(二) 試簡要說明猜測變量 (Conjectural Variations) 分析計算，並說明 (10%) 廠商不同猜測變量假設即反應不同市場結構之行為。

(三) 試精簡說明福利經濟學之三大定理。  
(10%)

(四) 試精簡說明 Real Business Cycle 理論之基本精神並評論之。  
(10%)

(五) 試簡要說明最適經濟成長之條件，及何者在 Over-lapping generation model 中可產生 Dynamic Inefficiency?  
(10%)

考試科目	經濟理論 ——個體部分	所別	財政所	考試時間	6月24日(上)午第 二 期	第 節
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共  
50%

1. A consumer in a three-good economy (goods denoted  $x_1, x_2$  and  $x_3$ , prices denoted  $p_1, p_2$  and  $p_3$ ) with income level  $m > 0$  has demand functions for commodities 1 and 2 given by

$$x_1 = 100 - 5 \frac{p_1}{p_3} + \beta \frac{p_2}{p_3} + \delta \frac{m}{p_3}$$

$$x_2 = \alpha + \beta \frac{p_1}{p_3} + \gamma \frac{p_2}{p_3} + \delta \frac{m}{p_3},$$

where  $\alpha, \beta, \gamma$  and  $\delta$  are nonzero constants.

- Calculate the restrictions on the numerical values of  $\alpha, \beta, \gamma$ , and  $\delta$  implied by utility maximization.
- Given your results in part (a), for a fixed level of  $x_3$ , draw the consumer's indifference curve in the  $x_1, x_2$  plane.
- What does your answer to (b) imply about the form of the consumer's utility function  $U(x_1, x_2, x_3)$ ? (18%)

2. Suppose the production function  $f(x)$  is concave function with  $n$  inputs ( $x_1, x_2, \dots, x_n$ ). Suppose also that  $\partial f(x)/\partial x_i > 0$  for all  $i$  and  $x_i \geq 0, i=1, \dots, n$  and that the matrix  $D^2 f(x)$  is negative definite at all  $x$ . The output price and input price in the competitive market denote  $p$  and  $w$  respectively. Use the firm's first-order conditions and the implicit function theorem to prove the following statements:

- An increase in the output price always increases the profit-maximizing level of output.
- An increase in output price increases the demand for some input.
- An increase in the price of an input leads to a reduction in the demand for the input. (18%)

3. Consider an Edgeworth box economy with two consumers ( $i=1, 2$ ) and two goods ( $j=1, 2$ ) in which the consumers have the Cobb-Douglas utility functions  $u_i(x_{i1}, x_{i2}) = x_{i1}^{\alpha_i} x_{i2}^{1-\alpha_i}$ , where  $1 > \alpha_i > 0$  and  $i=1, 2$ . Consumer  $i$ 's endowments are  $(w_{i1}, w_{i2}) >> 0$  with  $\bar{w}_j = w_{1j} + w_{2j}$  for  $j=1, 2$ .

- Solve for the equilibrium price ratio ( $p_1/p_2$ ) and allocation  $(x_{11}^*, x_{12}^*)$ .
- How do these change with a differential change in  $w_{11}$ ? (14%)