

考試科目	個體經濟學	系所別	經濟學系	考試時間	2月9日(星期三) 第二節
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1. (40 分) 針對下列敘述，請指出該敘述為「真」、「偽」或是「不確定」，並詳細說明原因。
- $U(X,Y) = \min[X^2, Y^{0.5}]$, $X \geq 0$ 同時 $Y \geq 0$ 。在效用極大化的前提之下，本效用函數所推導出的 X 財貨和 Y 財貨的需求函數，皆為正常財。
 - $U(X,Y) = X^2 Y^{0.5}$, $X \geq 0$ 同時 $Y \geq 0$ 。在效用極大化的前提之下，當 X 財貨的價格上升時，所造成的補償變量 (compensating variation) 一定會大於均等變量 (equivalent variation)。
 - 某廠商的生產函數 $F(L,K)$ 具有固定規模報酬 (constant returns to scale) 的特性。在成本極小化的前提之下，該廠商的長期成本函數為產量的一次齊次函數 (homogeneous of degree one function)。
 - 長期邊際成本一定小於或是等於短期邊際成本。
2. (10 分) 假設生產函數為 $F(L,K) = L^2 [\min(L,K)]^2$, L 的價格為 w 而 K 的價格為 r 。請推導出成本極小化下的成本函數。
3. (25 points) (Labor Supply) Rachel maximizes her utility $u(c,n)$ over hours of leisure (n) and consumption (c) subject to the following constraints:

$$h = 24 - n \text{ and}$$

$$c = wh + V,$$

where h is the hours of work per day, w is the wage rate, and V is her non-labor income.

- Derive a Slutsky equation for her uncompensated labor supply function. (10 points)
- Assume a Cobb-Douglas utility function, $u(c,n) = c^\alpha n^{1-\alpha}$, and the non-labor income equals to zero. Use the Slutsky equation to show why income and substitution effects of a change in the wage are precisely offsetting in the uncompensated labor supply function. (10 points)
- An economist is interested in estimating labor supply function. She obtains cross-sectional data and estimates the following equation:

$$h_i = \alpha + \beta w_i + \delta V_i + u_i.$$

Ignoring econometric identification and estimation issues, how can she estimate the substitution and income effects of a wage increase? (5 points)

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4. (25 points) (Labor Demand) David owns a large factory on an isolated island. His factory is the only source of employment for most of the islanders, and thus David acts as monopsonist. The supply curve for workers is given by

$$l = 80w,$$

where l is the number of workers hired and w is their hourly wage. Assume also that David's labor demand is given by

$$l = 400 - 40MRP_l.$$

- How many workers will David hire to maximize his profits, and what wage will he pay? (6 points)
- Assume that the government implements a minimum wage law covering all workers. How many workers will David hire, and how much unemployment will there be if the minimum wage is set at \$4 per hour? (6 points)
- How does a minimum wage imposed under monopsony differ in results as compared with a minimum wage imposed under perfect competition? Use a graph to explain. (8 points)
- Suppose there are two islands, island A and island B. They are identical except for a higher minimum wage in island A. Does comparing employment and minimum wage in island A with those in island B help us identify labor supply or labor demand? Explain. (5 points)

備註

- 作答於試題上者，不予計分。
- 試題請隨卷繳交。