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科目：經濟學(E)
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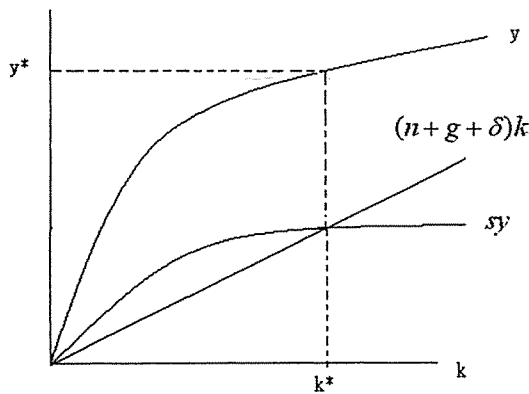國立臺灣大學 105 學年度碩士班招生考試試題

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1. (30%) 假設臺灣有一生產方程式 $Y = K^\alpha (LA)^{1-\alpha}$，$0 < \alpha < 1$。令 $y = k^\alpha$，而其中 $y = \dfrac{Y}{LA}$ 和 $k = \dfrac{K}{LA}$。假設勞工成長率($\dfrac{\dot{L}}{L} \cong \dfrac{\Delta L}{L}$)和人口成長率皆是 n，資本折舊率(capital depreciation rate) 是 δ，技術成長率 (technology growth rate $\dfrac{\dot{A}}{A} \cong \dfrac{\Delta A}{A}$) 是 g，K 是資本。請回答以下二小題：

(1) (20%) 請推導 Solow model，以致於你能畫出圖一的均衡穩定態 (steady state: k*, y*)。注意：$\dot{A} = \dfrac{dA}{dt}$，t 是時間。

(2) (10%) 當臺灣到達均衡穩定態 (steady state)之後，請導出其人均 GDP 的成長率($\dfrac{(\dot{Y}/L)}{Y/L}$)。

圖一

2. (20%)。請根據 Mundell-Fleming Model，用 (ε, Y) 象限圖示並說明何近期美元升值而人民幣相對貶值?:(Note: Y: real GDP; ε: nominal exchange rate=foreign currency per unit domestic currency)

見背面

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3. (15%) Define compensating variation (CV) and Equivalent variation (EV) mathematically. Graphically illustrate that CV compensated demand curve will always lie above EV compensated demand curve for the case of price increase. Alternatively, when price of good x decreases, CV compensated demand curve will lie below EV compensated demand curve. In your graphical illustration, define the substitution, income and total effects from price changes as well.

4. (15%) Use the isoquant map to explain why the short-run total cost curves shown in the figure below, except for the one tangent to the TC curve, are not the minimal costs for producing some given output level. Be sure to mark K_1, K_2, K_3 and Q_1, Q_2, Q_3 as well as $STC_1, \cdots, STC_9$ on your isoquant map.
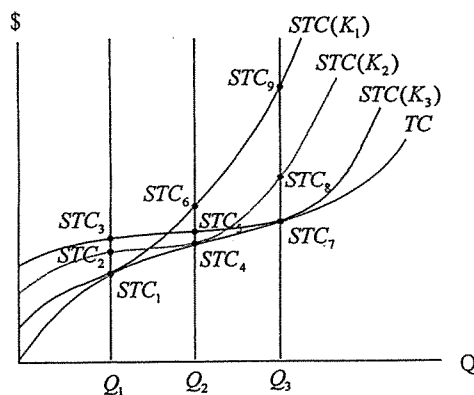
5. (20%) The following questions concern centralized and decentralized emission reduction policies:

(1) Given two firms each can reduce emissions by x_i at a cost of $C_i(x_i)$, derive the centralized decision rule to achieve a targeted amount of emission reduction, T, in the cheapest way. (5%)

(2) Demonstrate mathematically that under carbon tax, the government can set carbon tax according to the centralized rule in (1) to reduce carbon emissions by the targeted amount. (5%)

(3) Under cap and trade, each firm can buy a license to emit x_i units at p per units: (i) derive the firm's optimal choice of emissions and permits mathematically, and (ii) construct their demand curves for permits to show the high-cost firm has greater demand for permits. (10%)

試題隨卷繳回