考試科目	經濟理論	系所組別	金融學	考試時間	月 日 星期 上午 下午

(You may answer the following questions either in Chinese or in English.)

1. In Game Theory, why do people emphasize the concept of Nash Equilibrium? Please discuss the properties of N.E. in detail.
2. In Consumer Theory, there is "dual approach" (i.e., utility maximization vs. cost minimization); In Production Theory, there is also "dual approach" (i.e., revenue maximization vs. cost minimization). Why do we need to discuss these different approaches? What is their ultimate purpose?
3. What is St. Petersburg Paradox? How is it related to the Expected Utility Theory?
4. Please state the First and the Second Fundamental Theorem of Welfare Economics. How is the Second Fundamental Theorem related to the Equilibrium Approach of Macroeconomics?

以上一共四題，每題25分。

以下符號：y_t: dependent variable,
x_{it}: independent variable
u_{it}: Error term, white noise $\sim N(0, \sigma_i^2)$
α_i, β_i, θ 未知的參數

1. (40%)

$$y_{1t} = \alpha_1 y_{2t} + \alpha_2 x_{1t} + u_{1t}$$
$$y_{2t} = \beta_1 y_{1t} + \beta_2 x_{2t} + \beta_3 x_{3t} + u_{2t}$$

(a) 用此例說明 simultaneous bias
(b) 各個參數(即 α_i, β_i)是估計出來的？是 under, exact, over identified？
(c) 如何估計？

2. (40%) 試寫出下列 Tobit 的 likelihood function，一階導函數，及估計步驟

$$y_t = \begin{cases} \alpha + \beta x_t + u_t & \text{if } y_t > 0 \\ 0 & \text{if } y_t < 0 \end{cases}$$

3. (40%) 試寫出下列 threshold model 的 likelihood function，一階導函數，及說明如何估計之

$$y_t = \alpha_0 + \alpha_1 x_t + u_{1t} \quad \text{if } x_t > \theta$$
$$y_t = \beta_0 + \beta_1 x_t + u_{2t} \quad \text{if } x_t \le \theta$$

考試科目	[illegible]	所別	[illegible]	考試時間	[illegible] 月 [illegible] 日 [illegible] 午第 [illegible] 節

1. 請就你所瞭解的「1980年代以後的銀行理論」作一簡單評述（可以就某一篇你認為最重要的論文加以評述） (25%)

2. 請你評述「1980年代以後的貨幣理論」之重要發展。（可以就某幾篇論文加以評述） (25%)

3. 請用你自己的理論去解釋「東亞金融風暴」。(25%)

4. 我國的金融風暴與東亞金融風暴有何異同之處。(25%)

第一、二題必答；第三、四、五題任選兩題。共四題，
每題二十五分。

(一) Consider a security market economy containing savings account (riskless asset) B, a risky asset S and a zero-coupon bond B(t , T). The price dynamics of B and S are:

$$dB_t = r_t B_t dt$$

$$dS_t = \mu S_t dt + \sigma S_t dW_t$$

where W_t is a standard Brownian motion, B(t, T) is the price of a zero-coupon bond at t, matured at T for $ 1. Assume r_t is deterministic, then what is the fair price of an European put option on the risky asset with strike price K ?

(二) Under the same economy as above, if r_t is stochastic, how do you derive the price B(t, T) and the corresponding term structure of interest rates ? You should state the models and make suitable assumptions when needed.

(三) Does there exist any optimal capital structure of a firm? State the relevant issues and explain the recent development in theory and empirical evidence.

(四) There is evidence showing that foreign investment institutions have higher rates of return compared to domestic investors in investing Taiwan's stock market at both the time periods of before and after the occurrence of Asian financial crisis. Can you explain this superior performance based on some theory. Derive and comment the model on which you are based.

(五) Explain in detail the following terms (you may construct models to describe the theory)
1. Real options
2. Asset pricing under complete vs. incomplete market