

國立中山大學九十學年度碩博士班招生考試試題

科目：統計學【經濟所碩士班】甲、乙組

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每題二十分，共五題，請橫寫由左到右依序作答，計一百分。

(一) Let X be a continuous random variable with density function $f_x(x) = e^{-x}$, $x > 0$.

Let $U = X^{1/2}$ and let $V = e^{-X}$. Then what are the density functions of U , ($f_u(u)$) and V , ($f_v(v)$)?

(二) Let X be a continuous random variable with density function $f(x) = e^{-x}$, $x > 0$.

Let $U_1 = h_1(X) = \begin{cases} \text{if } X \leq 1 \\ \text{if } X > 1 \end{cases}$, $U_2 = h_2(X) = \begin{cases} 1 & \text{if } X \leq 1 \\ X & \text{if } X > 1 \end{cases}$.

Find the expected value of U_1 , ($E[U_1]$) and U_2 , ($E[U_2]$).

(三) Let $X \equiv (X_1, \dots, X_n)'$ be a random sample from a Pareto distribution with

$f(x; \theta) = \theta x^{-\theta-1}$, $1 \leq x < \infty$, $\theta \in \mathbb{R}_+$. Find the maximum likelihood

estimator (MLE) for θ .

(四) Let X_1, X_2, \dots, X_n be a random sample from the geometric probability function

$$f_x(x, p) = pq^{x-1}, \quad x = 1, 2, \dots$$

where $q = 1 - p$. Find Λ , the generalized likelihood ratio for testing

$$H_0: p = p_0 \quad \text{versus} \quad H_1: p \neq p_0.$$

(五) Let X_1, X_2, \dots, X_9 be an independent random sample from an $N(2, 4)$ pdf

and Y_1, Y_2, Y_3, Y_4 an independent random sample from an $N(1, 1)$ pdf.

Find $P(\bar{X} \geq \bar{Y})$.

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(附表：標準常態分配表)

TABLE 1. Cumulative Normal Distribution; Table Entry Is Prob($Z \leq z$)

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.5000	.5040	.5080	.5120	.5160	.5199	.5239	.5279	.5319	.5359
0.1	.5398	.5438	.5478	.5517	.5557	.5596	.5636	.5675	.5714	.5753
0.2	.5793	.5832	.5871	.5910	.5948	.5987	.6026	.6064	.6103	.6141
0.3	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517
0.4	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879
0.5	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224
0.6	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
0.7	.7580	.7611	.7642	.7673	.7704	.7734	.7764	.7794	.7823	.7852
0.8	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133
0.9	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389
1.0	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621
1.1	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
1.2	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9015
1.3	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
1.4	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
1.5	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
1.6	.9452	.9463	.9474	.9484	.9495	.9505	.9515	.9525	.9535	.9545
1.7	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
1.8	.9641	.9649	.9656	.9664	.9671	.9678	.9686	.9693	.9699	.9706
1.9	.9713	.9719	.9726	.9732	.9738	.9744	.9750	.9756	.9761	.9767
2.0	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817
2.1	.9821	.9826	.9830	.9834	.9838	.9842	.9846	.9850	.9854	.9857
2.2	.9861	.9864	.9868	.9871	.9875	.9878	.9881	.9884	.9887	.9890
2.3	.9893	.9896	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
2.4	.9918	.9920	.9922	.9925	.9927	.9929	.9931	.9932	.9934	.9936
2.5	.9938	.9940	.9941	.9943	.9945	.9946	.9948	.9949	.9951	.9952
2.6	.9953	.9955	.9956	.9957	.9959	.9960	.9961	.9962	.9963	.9964
2.7	.9965	.9966	.9967	.9968	.9969	.9970	.9971	.9972	.9973	.9974
2.8	.9974	.9975	.9976	.9977	.9977	.9978	.9979	.9979	.9980	.9981
2.9	.9981	.9982	.9982	.9983	.9984	.9984	.9985	.9985	.9986	.9986
3.0	.9987	.9987	.9987	.9988	.9988	.9988	.9989	.9989	.9990	.9990
3.1	.9990	.9991	.9991	.9991	.9992	.9992	.9992	.9992	.9993	.9993
3.2	.9993	.9993	.9994	.9994	.9994	.9994	.9994	.9995	.9995	.9995
3.3	.9995	.9995	.9995	.9996	.9996	.9996	.9996	.9996	.9996	.9997
3.4	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9998

國立中山大學九十學年度碩博士班招生考試試題

科目：總體經濟學【經濟所碩士班】甲組

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壹、單選題 (30%)

- () 1. According to which view a tax cut does not stimulate the economy, it merely reschedules taxes from the present to the future.
a. Keynes ; b. Marx ; c. Ricardo ; d. Adam Smith.
- () 2. The IS-LM model is a general theory of
a. Employment, Interest and Money.
b. Aggregate Demand and Aggregate Supply.
c. Aggregate Demand.
d. Macro and Micro Economics.
- () 3. In 1990s, who's consumption function has a better explanation of the reality in the U.S. as well as in Japan.
a. Keynes ; b. Friedman ; c. Modigliani ; d. Adam Smith
- () 4. In recent years, the central banks of U.S. and Japan conduct their monetary policy by changing:
a. money supply; b. interest rate; c. foreign exchange rate; d. income tax rate.
- () 5. The "classical economists" was a name invented by
a. Marx ; b. Keynes ; c. Marshall ; d. Samuelson
- () 6. According to the quantity theory of money, the rate of growth in the quantity of money determines
a. the inflation rate ; b. the real economic growth rate ; c. the employment rate;
d. the real interest rate.
- () 7. Who estimated that income elasticity of money demand was 1.8 much higher than others,
a. Baumol ; b. Tobin ; c. Friedman ; d. Phillips.
- () 8. Which country has the highest rate of national debt to GDP today.
a. Japan ; b. U.S.A. ; c. Taiwan ; d. China.
- () 9. Which country is currently pursuing a zero-interest rate policy?
a. Japan ; b. U.S.A. ; c. England ; d. France ; e. none of above.
- () 10. Which country has been practicing activists Keynesian Policy in recent years.
a. Japan ; b. U.S.A. ; c. Taiwan ; d. China ; e. all of them.

貳、問答題 (20%)

Suppose that the demand for real money balances depends on disposable income.

That is, the money demand function is

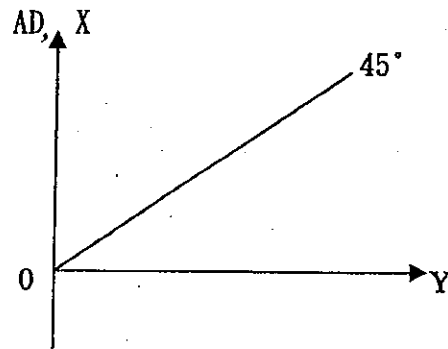
$$M/P=L(r, Y-T), \text{ but } T=T_0+tY, r \text{ is the interest rate.}$$

Using the IS-LM model, discuss whether this change in the money demand function alters the following:

- a. The analysis of changes in government purchases.
b. The analysis of changes in money supply.

參、Given the Model (50%)

1. $Y=C+I+G+X$
2. $C=a+b(Y-T)$
 $=40+0.8(Y-T)$
3. $I=30$
4. $G=50$
5. $T=50$
6. $Ex=70$
7. $Im=n+mY$
 $=10+0.2Y$
8. $X=Ex-Im$



- (一) 請劃出 Aggregate demand curve, $AD=C+I+G+X$ 與 Trade balance curve, $X=Ex-Im$ (5%)
- (二) 用文字與數字解出 Y_e , equilibrium level of national income (20%)
- (三) 在經濟達成均衡時, 該國之 Trade position 如何? Deficit or Surplus 多少? (5%)
- (四) 如充分就業所得 $Y_f=400$, 政府應增加支出多少, 才能促進 Y_f 的達成? 那時的 trade position 惡化或改善多少? (10%)
- (五) 政府為平衡貿易、計劃改變式 (7) 的 n 值, 以限制進口。請問這與充分就業的經建目標有否矛盾或一致之處? 請以本 Model 所代表之國家為例, 用數字及圖形作答之。(10%)

國立中山大學九十學年度碩博士班招生考試試題

科目：個體經濟學【經濟所碩士班】甲組

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(30%)

1. Answer the following statements as true, false, or uncertain. Defend your answer briefly, but clearly. Undefended answers are not acceptable.

- (a) An increase in the demand for a monopolist's product always result in a higher price.
- (b) A firm should always produce at an output at which long-run average cost is minimized.
- (c) If a firm hires a currently unemployed worker, the opportunity cost of utilizing the worker's service is zero.
- (d) Suppose all firms in a monopolistically competitive industry were merged into one large firm. The new firm would produce only a single brand.
- (e) In many oligopolistic industries, the same firms compete over a long period of time, setting prices and observing each other's behavior repeatedly. Given that the number of repetitions is large, the collusive outcomes don't typically result.

(15%)

2. The general CES utility function is given by

$$U(X, Y) = \frac{X^\delta}{\delta} + \frac{Y^\delta}{\delta}$$

- (a) Show the first-order conditions for this constrained utility maximization.
- (b) Show that the result in part (a) implies that individuals will allocate their funds equally between X and Y for the Cobb-Douglas case ($\delta = 0$).
- (c) How does the ratio $P_X X / P_Y Y$ depend on the value of δ ?

(20%)

3. An entrepreneur purchases two firms to produce semiconductor. Each firm produces identical products, and each has a production function given by

$$q = \sqrt{K_i L_i} \quad i = 1, 2.$$

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The firms differ, however, in the amount of capital equipment each has. In particular, firm 1 has $K_1 = 25$, whereas firm 2 has $K_2 = 100$. Rental rates for K and L are given by $w = v = \$1$.

- If the entrepreneur wishes to minimize short-run total costs of semiconductor production, how should output be allocated between the two firms?
- Given that output is optimally allocated between the two firms, calculate the short-run total, average, and marginal cost curves. What is the marginal cost of the 200th semiconductor?
- How should the entrepreneur allocate semiconductor production between the two firms in the long run? Calculate the long-run total, average, and marginal cost curves for semiconductor production.
- How would your answer to part (c) change if both firms exhibited diminishing returns to scale?

(20%)

4. Two firms compete by choosing price. Their demand functions are

$$Q_1 = 20 - P_1 + P_2$$

and

$$Q_2 = 20 + P_1 - P_2$$

where P_1 and P_2 are the prices charged by each firm, respectively, and Q_1 and Q_2 are the resulting demands. Marginal costs are zero.

- Suppose the two firms set their prices at the *same time*. Find the resulting Nash equilibrium. What price will each firm charge, how much will it sell, and what will its profit be?
- Suppose Firm 1 sets its price *first*, and then Firm 2 sets its price. What price will each firm charge, how much will it sell, and what will its profit be?
- Suppose you are one of these firms, and there are three ways you could play the game: (i) Both firms set price at the same time. (ii) You set price first. (iii) Your competitor sets price first. If you could choose among these, which would you prefer? Explain why.

(15%)

- According to Ronald Coase, what are the essence of the organization? What are the major determinants to consider the size of the firm?

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科目：經濟學原理【經濟所碩士班】乙組

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5. 台灣的汽車業者每隔一兩年就會推出新的車種。廠商變換新車種需要
付出額外的成本。請從經濟學的角度分析廠商為什麼會這麼做。

6. 政府規定在高速公路開車，駕駛人必須繫上安全帶，而且行車時速
必須維持在 60-90 公里之間。請從「外部性」之觀點，說明安全帶要
不要繫與車速快慢這兩項問題，為什麼不能聽任駕駛人自行決定？

國立中山大學九十學年度碩博士班招生考試試題

科目：經濟政策【經濟所碩士班】乙組

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說明：1、本考試共五題，每題 20 分。

2、回答時要註明題目號碼，不必按照題目次序回答；不必抄題目。

- (1) 台灣的經濟發展可以分成三個階段。
第一階段是進口取代(民國 42-53 年)，
第二階段是出口導向(民國 54-70 年)，
第三階段是高科技產業(民國 71 年至今)。
簡單描述每一個階段政府的主要政策。
- (2) 針對當今的經濟不景氣，擴大內需是當今新政府的主要施政措施。分別討論財政政策與金融政策及說明其可能的影響。
- (3) 亞當·史密斯(Adam Smith)的主要經濟思想是在自由市場經濟下，由價格決定資源的分配，以增加生產；政府不必干預此市場經濟。而凱恩斯(Keynes)則主張政府政策，以財政赤字增加消費，進而促進經濟成長。如果把台灣 50 多年的經濟發展劃分成前半與後半兩個階段。說明此兩個經濟思想對台灣經濟發展兩個階段的影響。
- (4) 國際機構非常關心 21 世紀開發中國家的經濟發展。說明 5 個比較重要的課題及策略。
- (5) 許多國家包括中國大陸及台灣，訂定獎勵外資政策，以發展高科技產品及擴大出口。說明 4 種策略。