淡江大學九十學年度碩士班招生考試試題

系別：產業經濟學系　　科目：計 量 經 濟 學

准帶項目請打「○」否則打「×」	
計算機	字典
○	×

本試題共 二 頁

本試題雙面印製

請將答案寫在答案紙上， 在試題紙上作答， 不予計分。

1. (15%) 請簡述古典線型迴歸模型 (Classical Linear Regression Model) 的假設。

2. (10%) 假設應變數 (Dependent Variable) 服從常態分配， 請比較最小平方 (Ordinary Least Squares) 法與最大概似 (Maximum Likelihood) 法參數估計式 (Estimator) 之異同。

3. You are given the following historical data on the annual earnings and years of school completed in Table 1.

Table 1 Annual Earnings and Years of School Completed

Y (annual earnings in NT$ 10,000)	X (years of school completed)
70	18
65	18
60	18
50	16
40	12
30	9
25	9
20	6

a. (20%) Estimate the regression of annual earnings on years of school completed in Table 1. In other words, you need to calculate the intercept and the slope of the regression line.
b. (10%) How do you interpret the intercept and slope of the regression line?
c. (20%) Calculate the standard errors associated with the intercept and slope of the regression line.
d. (5%) Is the coefficient of years of school completed significant at the 5 percent level? Please refer Table 2.
e. (5%) Omitting experience from the earnings function results in a downward bias in the schooling coefficient. Is this statement true? Explain.

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4. (15%) A generalization of the Cobb-Douglas model is the translog model, which is

$$\ln Y = \beta_1 + \beta_2 \ln L + \beta_3 \ln K + \beta_4 \frac{(\ln L)^2}{2} + \beta_5 \frac{(\ln K)^2}{2} + \beta_6 \ln L \ln K + \varepsilon$$

How do you test the hypothesis that a Cobb-Douglas model is appropriate? State your null hypothesis, alternative hypothesis, and testing statistic.

Table 2 Percentiles of the t Distribution

	Pr							
df	.80	.60	.40	.20	.10	.05	.02	.01
1	.325	.727	1.376	3.078	6.314	12.706	31.821	63.657
2	.289	.617	1.061	1.886	2.920	4.303	6.965	9.925
3	.277	.584	.978	1.638	2.353	3.182	4.541	5.841
4	.271	.569	.941	1.533	2.132	2.776	3.747	4.604
5	.267	.559	.920	1.476	2.015	2.571	3.365	4.032
6	.265	.553	.906	1.440	1.943	2.447	3.143	3.707
7	.263	.549	.896	1.415	1.895	2.365	2.998	3.499
8	.262	.546	.889	1.397	1.860	2.306	2.896	3.355
9	.261	.543	.883	1.383	1.833	2.262	2.821	3.250
10	.260	.542	.879	1.372	1.812	2.228	2.764	3.169
11	.260	.540	.876	1.363	1.796	2.201	2.718	3.106
12	.259	.539	.873	1.356	1.782	2.179	2.681	3.055
13	.259	.538	.870	1.350	1.771	2.160	2.650	3.012
14	.258	.537	.868	1.345	1.761	2.145	2.624	2.977
15	.258	.536	.866	1.341	1.753	2.131	2.602	2.947
16	.258	.535	.865	1.337	1.746	2.120	2.583	2.921
17	.257	.534	.863	1.333	1.740	2.110	2.567	2.898
18	.257	.534	.862	1.330	1.734	2.101	2.552	2.878
19	.257	.533	.861	1.328	1.729	2.093	2.539	2.861
20	.257	.533	.860	1.325	1.725	2.086	2.528	2.845
21	.257	.532	.859	1.323	1.721	2.080	2.518	2.831
22	.256	.532	.858	1.321	1.717	2.074	2.508	2.819
23	.256	.532	.858	1.319	1.714	2.069	2.500	2.807
24	.256	.531	.857	1.318	1.711	2.064	2.492	2.797
25	.256	.531	.856	1.316	1.708	2.060	2.485	2.787
26	.256	.531	.856	1.315	1.706	2.056	2.479	2.779
27	.256	.531	.855	1.314	1.703	2.052	2.473	2.771
28	.256	.530	.855	1.313	1.701	2.048	2.467	2.763
29	.256	.530	.854	1.311	1.699	2.045	2.462	2.756
30	.256	.530	.854	1.310	1.697	2.042	2.457	2.750
40	.255	.529	.851	1.303	1.684	2.021	2.423	2.704
60	.254	.527	.848	1.296	1.671	2.000	2.390	2.660
120	.254	.526	.845	1.289	1.658	1.980	2.358	2.617
∞	.253	.524	.842	1.282	1.645	1.960	2.326	2.576

Note: Pr represents the probability that the t value will exceed each number in the table in absolute value. This is appropriate for two-tailed tests. For one-tailed tests simply divide each probability in half. For example, .325 in row 1, column 1 tells us that the probability of t being less than −.325 or greater than .325 is .8.

Source: Obtained from Table III of Fisher and Yates, *Statistical Tables for Biological, Agricultural and Medical Research*, with the permission of the authors and publishers (Edinburgh: Oliver & Boyd, Ltd.).