

第一部分 經濟學 (50%)

1. (20%) Describe the following terms:
- (1) contestable market
 - (2) long-run Phillips curve
 - (3) Nash equilibrium
 - (4) externality
2. (15%) Wage rates of high-skilled and low-skilled workers are determined by demand and supply in the labor market. Explain why the wage rate for high-skilled workers always exceeds that for low-skilled workers. On the labor demand side, illustrate the different marginal revenue product caused by skill differentials. On the labor supply side, show the effects of the cost of acquiring skills on the supply curves of labor.
3. The economy of Coldland is confronted with the following events:
- The world economy experiences a deep recession
 - Labor costs rise sharply
 - Businesses expect huge losses in the near future
- (1) (8%) What will be the combined effect of these events on real GDP and the price level in Coldland, starting from long-run equilibrium? Explain.
 - (2) (7%) Explain what the Coldland government and central bank can do to overcome the problems faced by the economy.

注意：背面有試題

第二部分 統計學 (50%)

1. (15%) Describe the following terms:

(1) consistency (2) significance level (3) maximum likelihood estimator

2. Let Y_1, Y_2, Y_3 and Y_4 be independent, identically distributed random variables from a population with mean μ and variance σ^2 . Let ω be the average of these four random variables.

(1) (5%) What are the expected value and variance of ω in terms of μ and σ^2 ? Is ω an unbiased estimator of μ ?

(2) (5%) Now, consider a different estimator of μ :

$$\delta = \frac{1}{10}Y_1 + \frac{1}{5}Y_2 + \frac{3}{10}Y_3 + \frac{2}{5}Y_4.$$

Is δ an unbiased estimator of μ ? Find the variance of δ .

(3) (5%) Which estimator of μ is more efficient, ω or δ ? Why?

3. The following sample is drawn from a normal distribution with mean μ and variance σ^2 :

$X = 1.5, 2.3, 0.6, 1.5, 0.7, 0.4, 2.0, 2.7, 2.1, 3.4.$

(1) (5%) Compute the mean, median, and variance of the sample.

(2) (9%) Test the following three hypotheses at the 5% significance level:

(a) $H_0: \mu > 2.2$, (b) $H_0: \mu < 0.9$, (c) $H_0: \sigma^2 = 0.5$.

(3) (6%) Form 95% confidence intervals for mean μ and variance σ^2 .

參考用

Critical values for the t distribution					Critical values for the chi-square distribution											
df \ p	0.10	0.05	0.025	0.01	df \ area	.990	.975	.950	.900	.750	.500	.250	.100	.050	.025	.010
1	3.077684	6.313752	12.70620	31.82052	1	0.00016	0.00098	0.00393	0.01579	0.10133	0.45494	1.32330	2.70554	3.84146	5.02389	6.63490
2	1.885618	2.919986	4.30265	6.96456	2	0.02010	0.05664	0.10259	0.21072	0.57536	1.38629	2.77259	4.60517	5.99146	7.37776	9.21034
3	1.637744	2.353363	3.18245	4.54070	3	0.11483	0.21580	0.35185	0.58437	1.21253	2.36597	4.10834	6.25139	7.81473	9.34840	11.34487
4	1.533206	2.131847	2.77645	3.74695	4	0.29711	0.48442	0.71072	1.06362	1.92256	3.35669	5.38527	7.77944	9.48773	11.14329	13.27670
5	1.475884	2.015048	2.57058	3.36493	5	0.55430	0.83121	1.14548	1.61031	2.67460	4.35146	6.62568	9.23636	11.07050	12.83250	15.08627
6	1.439756	1.943180	2.44691	3.14267	6	0.87209	1.23734	1.63538	2.20413	3.45460	5.34812	7.84080	10.64464	12.59159	14.44938	16.81189
7	1.414924	1.894579	2.36462	2.99795	7	1.23904	1.68897	2.16735	2.83311	4.25485	6.34581	9.03715	12.01704	14.06714	16.01276	18.47531
8	1.396815	1.859548	2.30600	2.89646	8	1.64650	2.17973	2.73264	3.48954	5.07064	7.34412	10.21885	13.36157	15.50731	17.53455	20.09024
9	1.383029	1.833113	2.26216	2.82144	9	2.08790	2.70039	3.32511	4.16816	5.89883	8.34283	11.38875	14.68366	16.91898	19.02277	21.66599
10	1.372184	1.812461	2.22814	2.76377	10	2.55821	3.24697	3.94030	4.86518	6.73720	9.34182	12.54886	15.98718	18.30704	20.48318	23.20925

注意：背面有試題