



B.E. International Program

Faculty of Economics, Thammasat University

EE325 INTRODUCTORY ECONOMETRICS
SEMESTER 1/2012
PROBLEM SET 1

Instructions

- 1) The Problem Set 1 count towards your final score accumulation of EE325: Introductory Econometrics. **ATTEMPT ALL QUESTIONS.**
- 2) To complete the assignment, you are allowed to discuss the problems with your classmates but have to write up solutions completely on your own.
Copying is plagiarism and will be treated as an “honor code violation”.
- 3) The date of submission is on Friday 21st September 2012 by 16.30 at B.E. Office
- 4) If you have questions, please send me an e-mail at pwrasai@gmail.com

Note: Use 4 decimal places for numerical answers

1. Shown are the probability distributions of job satisfaction scores for a sample of information systems (IS) senior executives and IS middle managers (Computerworld, May 26, 1997). The scores range from a low of 1 (very dissatisfied) to a high of 5 (very satisfied).

Job Satisfaction Score	Probability	
	IS Senior Executives	IS Middle Executives
1	0.05	0.04
2	0.09	0.10
3	0.03	0.12
4	0.42	0.46
5	0.41	0.28
Total	1.00	1.00

- a) What are the expected values of the job satisfaction scores for senior and middle executives?
- b) Compute the variances and standard deviations for both groups
- c) Compare the overall job satisfaction of both groups (Note: take into accounts the s.d.)

2. Referring to the Table 1 in the excel file,
 - a) What are random variables do we have? What are their types?
 - b) Suppose Nominal GDP (NGDP) and Nominal Consumption (NCONS) is one group, and real GDP (RGDP) and Real Consumption (NCONS) is another group. In each group which variable should be independent variable, and which should be dependent variable? Why?
 - c) Plot scatter diagrams for both groups (Note: an independent variable should be on the horizontal axis). What can you say about the relationships? Are they consistent with your expectation?
 - d) Find the expected values, variances for all variables. Find covariance and correlation for both groups.

3. Consider data in the Table 1

Table 1

X_i	Y_i
10	0
12	2
14	5
16	6
18	7
22	10
24	10
26	15
28	16
30	20

From the simple regression model $Y_i = \beta_1 + \beta_2 X_i + u_i, u_i \sim NIID(0, \sigma^2)$ Find estimators of β_1 and β_2 from the OLS method and interpret the meaning.

3.1 Find the value of $\hat{Y}_i$ and $\hat{u}_i$. Show that $\sum \hat{u}_i \approx 0$

3.2 Plot graph and draw regression line. Does the line pass through $(\bar{X}, \bar{Y})$?

3.3 If $X_i = 16$, what is the predicted Y?

3.4 Find $\text{var}(\hat{u}_i), \text{var}(\hat{\beta}_1), \text{var}(\hat{\beta}_2)$

Practice makes perfect.

Anonymous