EKT 720 Assignment 1-3

Assignment 1: (27/7/2015)

Study Appendix C in Gujarati. Prepare a handout that documents your understanding.

Assignment 2: (27/7/2015)

Consider the data of 30 families. Each of these families has two income earners, and uses their income jointly to finance common household and other expenditure. You want to use the data to estimate property value. You may assume that property value is a function of the joint income, the size of the property stand, and the ratio of the built area to the stand area associated with the properties of these families. It is also known that a double story property reaches a higher price than single story properties and should therefore, also be included in your model.

The following variables are measured:

Income 1	Annual income of earner 1 (R100)
Income 2	Annual income of earner 2 (R100)
House	Area of the actual building (m^2)
Stand	Stand size (m^2)
Double	1 if house is a double story, otherwise 0
Prop	The value of the property (R1000)

Create two new variables:
- Income: which determines the joint income of the family
- Ratio: which is the ratio of the built area to the stand area.

Estimate the following linear regression model:

$$Prop = \beta_1 + \beta_2 Income + \beta_3 Stand + \beta_4 Ratio + \beta_5 Double + u_i$$

a) Write down the estimated regression line and interpret the estimated regression parameters.
b) Calculate and interpret R^2 and $\bar{R}^2$.
c) Test the model for significance on a 5% level of significance – use an F test.
d) Test β_3 for significance ($\alpha = 0.05$).
e) Calculate a 90% confidence interval for β_4 and use it to test whether β_4 is significant on a 10% level of significance.Test if β_2 and β_4 are jointly significant. Base your answer on the following F statistic.

$$F = \frac{(R_{UR}^2 - R_R^2)/m}{(1 - R_{UR}^2)/(n - k)}$$

Assignment 3: (3/8/2015)

Consider the data as in Assignment 2.

a) Estimate the model as in

$$Prop = \beta_1 + \beta_2 Income + \beta_3 Stand + \beta_4 Ratio + \beta_5 Double + u_i$$

.

b) Repeat a) based on a leave one out approach. That is estimate the model based on a process where you estimate the model n times, each time with one observation excluded.

c) Summarize your results on the estimated parameters in tabular form. Interpret these results.

d) Draw a random sample with replacement ($n=30$) from the observed data. Repeat a) for this sample.

e) Repeat d) 100 times. Summarise your results on the estimated parameters in tabular form. Interpret these results