

## Assignment 9 MN Logit & Ordered Logit Models

### The model

In the study of problems of the business, the most serious problem was the price-war. The analysis is trying to estimate the model that determines factors that have impact on the degree of seriousness of the problem.

$$Prob(y_i=j|X) = f(x_1, x_2, x_3, x_4)$$

where:  $y_i$  is categorical data = 0 for no problem, = 1 for less serious, ..., and = 5 for very serious, and  $i=1$  or 2.

$x_1$  is dummy variable = 0 for nonfamily firm and =1 for family firm.

$x_2$  is dummy variable = 0 for no brand and =1 for have own-brand name.

$x_3$  is dummy variable = 0 for low technology and =1 for high technology firm.

$x_4$  is log of the size of the firm.

**Requirements:** From data file – Assign09.dta:

- 1 Estimate the model using multinomial logit of  $y_i$ . Perform IIA test. Interpret your estimated result (overall test, individual test, pseudo  $R^2$ , counted  $R^2$ ).
- 2 Estimate the model using order logit of  $y_i$ . Interpret your estimated result (overall test, individual test, pseudo  $R^2$ , counted  $R^2$ ).
- 3 From (a) and (b), compare the two models. Perform order logit test. Which model is more appropriated in this case? Why?
- 4 Compute marginal effect at mean and median of both models.