

Problem Set 5 for Econometrics

due on next lecture

EC 310
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1. Consider the model

$$\log(\text{salary}) = \beta_0 + \beta_1 \text{edu} + \beta_2 \text{expr} + \beta_3 \text{female} + \beta_4 \text{edu} \cdot \text{female} + u,$$

where *female* is a binary variable as usually defined.

- (1) Interpret β_1 .
- (2) Outline how you would test the hypothesis that the return to education for males is higher than that for females.

2. Suppose we have estimated a linear probability model,

$$\text{migrate}_i = \beta_0 + \beta_1 \text{income}_i + u_i,$$

where income_i is what an individual makes from previous job in the countryside and migrate_i is a binary variable describing the decision of migration to the city. $\text{migrate} = 1$ denotes that the individual migrates to city and 0 otherwise.

- (1) How do you interpret β_1 ?
- (2) Suppose we define $\text{nomigrate} = 1 - \text{migrate}$ and run a simple regression of nomigrate on income , what will happen to the estimates of intercept and slope?
- (3) What will happen to the standard errors of the estimates?
- (4) What will happen to the R^2 ?

3. Consider the following probit model,

$$p_i = F(\beta_0 + \beta_1 \text{income}_i + \beta_2 \text{female}_i),$$

where p_i is the probability of migrating to the city for individual i and female_i is a binary variable describing the gender of the individual.

- (1) Calculate the marginal effect of income on probability.
- (2) Calculate the marginal effect of gender on probability.