R Quiz 2: ECON-UA 266 - Intro to Econometrics

Sahar Parsa

Spring 2024

Question 1

In this question, you will study the participation of married women in the labor force. Download the dataset "MROZ.dta".

We want to run regressions to estimate labor force (inlf) on the covariates:

- nwifeinc
- educ
- exper
- exper2
- age
- kidslt6
- kidsge6

(a) Estimate labor force with a linear regression.

Answer: *Answer in code, lines 23-24*

(b) Estimate labor force with the Probit model.

Answer: *Answer in code, lines 26-27*

(c) Estimate labor force with the Logit model.

Answer: *Answer in code, lines 29-30*

(d) Report all the 3 above regressions in one table.

Table 1: Labor Force Participation Models

	Dependent variable: inlf		
	OLS	Probit	Logistic
nwifeinc	-0.003	-0.012**	-0.021**
		(0.005)	(0.008)
educ	0.038	0.131***	0.221***
		(0.025)	(0.043)
exper	0.039	0.123***	0.206***
		(0.019)	(0.032)
exper_sq	-0.001	-0.002***	-0.003***
		(0.001)	(0.001)
age	-0.016	-0.053***	-0.088***
		(0.008)	(0.015)
kidslt6	-0.262	-0.868***	-1.443***
		(0.118)	(0.204)
kidsge6	0.013	0.036	0.060
		(0.044)	(0.075)
Constant	1.586	0.270	0.425
		(0.508)	(0.860)
Observations	753	753	753
Log Likelihood		-401.302	-401.765
Akaike Inf. Crit.		818.604	819.530

Table 2: *
Note: *p<0.1; **p<0.05; ***p<0.01

(e) For Probit and Logit, calculate and write the predicted percentage of inlf given the following values:

- nwifeinc = 1
- educ = 10
- exper = 5
- age = 30
- kidslt6 = 1
- kidsge6 = 0

Answer:

- Predicted Probability of Being in Labor Force (Probit): 0.3755273
- Predicted Probability of Being in Labor Force (Logit): 0.3733716

Question 2

University departments often consider teaching evaluations when hiring and promoting lecturers and professors. Hamermesh and Parker (2005) collected data on course evaluations and characteristics of their instructors. Find the data and description on Brightspace.

(a) Run the following regression and output the summary:

$$\text{Course\_eval} = \beta_0 + \beta_1 \text{minority} + \beta_2 \text{nnenglish} + \beta_3 \text{female} + \beta_4 \text{age} + \beta_5 \text{age}^2 +$$

$$\beta_6 \text{intro} + \beta_7 \text{onecredit} + \beta_8 \text{female} \times \text{age} + \beta_9 \text{female} \times \text{age}^2 + \epsilon$$

Answer: *Answer in code, lines 61-66*

(b) According to the results, what are the estimated marginal effects of becoming one year older for a 35-year-old male and a 35-year-old female instructor?
Answer:

- For a 35-year-old male: 0.0205
- For a 35-year-old female: -0.0179

(c) Run the regression above without the coefficients associated with female.
Answer: *Answer in code, lines 82-85*

(d) Based on your previous regressions, is there evidence that being female is relevant to explain variations in course evaluations?
Answer: Yes, the coefficients associated with female are statistically significant.

(e) Does the regression in (a) explain Course evaluations? Conduct a test of significance of the regression in (a).
Answer: Yes, the regression model (a) does explain course evaluations, as it is statistically significant overall, and several individual predictors contribute significantly to the explanation of course evaluation scores. However, additional factors not included in this model might also influence course evaluations.