

## 14.31 – Problem Set Five

Fall 2000

Due: Thursday, November 30

### Instrumental Variables, Measurement Error, Simultaneity

1. Pindyck and Rubinfeld, Exercise 7.1
2. Pindyck and Rubinfeld, Exercise 7.9
3. Pindyck and Rubinfeld, Exercise 12.1
4. Pindyck and Rubinfeld, Exercise 12.2
5. Berndt, Chapter 8, Exercise 1
6. Berndt, Chapter 8, Exercise 2
7. Berndt, Chapter 8, Exercise 3

### Limited Dependent Variable Models

8. Pindyck and Rubinfeld, Exercise 11.2
9. Pindyck and Rubinfeld, Exercise 11.4
10. Berndt, Chapter 11, Exercise 3

### Special Topics: Panel Data, Advanced Limited Dependent Variables

11. Pindyck and Rubinfeld, Exercise 9.4
12. Use the data ddb9598.dta. This is data from DDB Needham, a marketing firm. Your dependent variable is INTERNET (used the internet in the last 12 months, 1=none, 2=1-4 times, 3=5-8 times, 4=9-11 times, 5=12-24 times, 6=25-51 times, 7=52+ times). Your dependent variables are AGE, FEMALE (=1 if female), MARRIED (=1 if married), R1, R2, R3, R4 (regional dummies for northeast, midwest, south, and west), SMSA (=1 if live in a large metropolitan area), INLF (=1 if in the labor force), SKIING (=1 if went skiing in past 12 months), and BOWLING (=1 if went bowling in past 12 months). You want to determine if you are better off advertising on the internet to skiers or to bowlers.
  - a) Run an ordered logit and run a multinomial logit model.
  - b) Interpret the coefficients on skiing and bowling in your regressions. Why might skiing increase internet usage?
  - c) How would you interpret the ancillary parameters in the ordered logit model?
  - d) Now redefine the dependent variable so that 7=none, 6=1-4 times, 5=5-8 times, 4=9-11 times, 3=12-24 times, 2=25-51 times, 1=52+ times. Rerun the multinomial logit model with this new dependent variable. How would you interpret the coefficients now?
  - e) Why can't you just run ordinary least squares? Which equation would you prefer, the ordered logit or the multinomial logit?