

Economics 472

Problem Set #9

(1) Stock and Watson, 9.1. *Note:* You will need to look up values of the Normal cumulative density function on pages 642-643 of your book to carry out this exercise.

(2) Stock and Watson, 9.2. *Note:* You will have to calculate the logit function by hand using a calculator. See pages 307-308 of your book for more on this. **YOU ONLY NEED TO REPEAT THE RESULTS OF PART (A) OF 9.1 USING THE LOGIT MODEL.**

(3) Load the “collegedata.txt” data set from the course website into STATA.

The first column of the data set is an indicator (i.e., a binary variable), equal to one if the individual went to college and equal to zero otherwise. The second column in the data set is a STANDARDIZED ability (test score) measure. An individual with ability=0 corresponds to an individual of average ability in the population while an individual with ability = 2, for example, corresponds to an individual 2 standard deviations above the mean of the ability distribution.

(3a) Assume that a *linear probability model* is appropriate for this data. That is, run a linear regression using STATA by typing in a command of the form:

regress college ability

Based on the results of this regression, what is your predicted probability that someone of average ability will attend college? What is your predicted probability that someone 3 standard deviations above the mean of the ability distribution attends college? Comment on these results and the linear probability model.

(3b) Now, run a *probit model* for this same data. To run a probit model using STATA, simply type

probit college ability

The output of this regression provides point estimates of the coefficients, standard errors, p-values, etc.

To obtain *marginal effect estimates* (instead of coefficient estimates) using the probit model, simply type

dprobit college ability

Comment on your results and their similarity to (3a).

(3c) Now, run a *logit model* for this data. You can run the logit by typing

logit college ability

Comment on the results you get from (3a)-(3c) and include your regression output with your problem set. If you are REALLY ambitious, you might try and calculate (you will have to do this using a calculator) the marginal effect from the logit model and compare it to the probit marginal effect.