ECONOMETRICS II, FALL 2025

Homework 1. Due Wednesday September 3.

1. Using the Matlab program `Main_HW1.mlx` program posted, simulate and estimate a probit model (you need to write and insert the likelihood function).

2. Use the program from question 1. and still simulate the same model using normal draws, but now estimate the parameters using a logit model. Are the parameters different...actually, that is not very meaningful, are the implied derivatives of the probability evaluated at the data mean similar? (Often, but not always, we do not care too much about whether we use probit or logit models, but we care about the predicted impact of a regressor on the outcome probability.)

3. For the probit model that you estimated, calculate the standard errors of the estimated parameters in three different ways and compare: Using the Hessian (calculated analytically), using the Hessian calculated numerically using your program, using the Outer Product of the gradients using the program. Are they similar? Compare for a small sample and for a longer sample.