

Final exam-like practice questions

1. In problem 4 in hw 3, use the probit output to estimate the likelihood that a student whose GPA is 3.60 and whose GRE is 660 will get admitted.
2. Given the same data, what is the likelihood of observing exactly one admission among two students both of whose GPA is 3.60 and GRE is 660? Two admissions? Zero?
3. The same student as in the first question retakes her GRE and improves her score to a 700. By how much have her chances of admission increased according to the Probit model?
4. Redo questions 1 and 3 using the linear probability model (the one you estimated in the first part of question 1) instead of the probit model.
5. Use excel to generate the coefficients shown in the probit regression table in hw4.
6. Consider two probit models for estimating $P(admit)$. Model A uses GPA only. Model B is the Naive model (constant only). Using the last 100 observations of dataset 4 as a testing sample while the first 300 are your estimation sample, compare the forecasting performance of the two models. Use likelihood as your measure of forecasting fit on the testing sample. Then do the same using RMSEs.
7. Download dataset data1D2D.xlsx from my webpage. Use the first 500 observations as your testing sample while remaining observations are your estimation/training sample. Use that split to compare the forecasting performance of the following two models:
 - (a) Model A: A regression of $\ln(spending)$ on $income$
 - (b) Model B: A regression of $\ln(spending)$ on $income$ and $gender$
8. Download the realGDP dataset from my webpage. Keep only post-1985 data (for reasons we will discuss in class). Compute quarterly growth rates. Using the 1985-2010 as the training sample and any data after that as the testing sample, compare the forecasting performance of an AR(1) for real GDP growth to a model that simply assumes that post-2010 growth will be the average growth rate between 2008 and 2010.

9. Estimate an AR(1) model on the same GDP growth data but using the entire post-1985 data (include all observations between 1985 and 2015.) Use this model to produce a forecast for real GDP growth 3 quarters ahead.