

The New School for Social Research
Advanced Econometrics 1
Fall 2017
Christian Schoder
Jangho Yang

Assignment 7

Due Nov 27 (Mon) 6:00 pm

1. Data Manipulation: Load the attached data file. The data is from AMADEUS database and records the firm-level economic variables for the United Kingdom from 1985-2017.
 - (a) Take the observations only from 2006-2014. Use the column named *CLOSDATE_year*. Remove all the rows whose *NAICS_CORE_CODE* starts with 52. This will effectively remove the financial firms. *Using substr function will be useful.
 - (b) The column *IDNR* records the ID number for each firm. Take those firms whose ID number is recorded for all years from 2006-2014.
 - (c) The columns *TOAS*, *EMPL*, *STAF*, and *EBIT* represent total asset, employment, labor cost, and earnings before interest and tax, respectively. Rearrange the rows of “each firm” so that the year for these variables starts with 2006 onward to 2014. *Using dply and match function will be useful.
 - (d) Take only *TOAS* and *EBIT* along with the year column. Remove those rows that include NA.
 - (e) Calculate the rate of profit = $EBIT/TOAS$ for each firm and each year.
 - (f) Plot the log marginal distribution of the rate of profit for all the firms for each year. Use those observations of the rate of profit between -1 and 1 or (-100% and 100% in percentage). *Don’t forget to use the log scale on the frequency.
 - (g) What probability distribution would fit the data well?
2. Basic Time Series Model
 - (a) Take the mean of the profit rate for each year and plot it versus years 2006-2014
 - (b) Fit a Bayesian model to this time series data. Plot the fitted uncertainty interval.