

Assignment from Lecture - Regression as a Special Case of Quadratic Programming

Part I

- 1) Generate a data set with 40 observations of an expenditures and income variables. To do this first
 - a. Generate epsilon from a normal distribution with mean zero and standard deviation 20
 - b. Generate an income variable from a uniform distribution over 25 to 125
 - c. Assume a linear data generation process with an intercept parameter of 7 and a slope parameter of 0.23
- 2) Insert the generated data into the gams file ghj.gms and run the file.
- 3) Record the estimated values for the constant and income parameters that are estimated and the significance level.
- 4) Repeat steps 1-3 20 times and construct a histogram for the constant and income parameters. Report your estimates for each of the 20 trials (parameter estimates and significances if available).
- 5) Comment on the relationship between the constructed histograms and the significance levels of the parameters.

Part II

Consider the additional file provided “CNLS_new.gms”. This file estimates a monotonic and concave function discussed at the end of class.

- 1) Use the data from the ghj.gms file on Income and Expenditures to estimate a linear relationship between Income and Expenditures. Report your results (parameter estimates and significances if available).
- 2) Now use the same data and estimate a monotonic and concave relationship between Income and Expenditures where income becomes larger expenditures increase, but at a decreasing rate. Report your results (parameter estimates and significances if available).
- 3) Compare the estimation results from 1) and 2) considering basic insights from inference. Which model is more likely to be correct? Why?

This assignment is due Thursday August 2nd at 5 pm. Please e-mail your answers to me as a pdf file attached to an email. My email address is ajohnson@tamu.edu . Students are allowed to discuss the assignment and work together, but it is expected that each student will do both part I and part II individually. In other words, no two submission should have the same answers.