ECON7350: Applied Econometrics for Macroeconomics and Finance

Tutorial 1: R and Basic Operations

At the end of this tutorial you should be able to:

- use R to read, manipulate and save data and workfiles;
- use R to compute descriptive statistics;
- use R to conduct hypothesis tests concerning a population mean.

Problems

1. The text file `consumption.txt` contains observations on the weekly family consumption expenditure (`CONS`) and income (`INC`) for a sample of 10 families.

   (a) Read the data into R.

   (b) Draw a scatter diagram of `CONS` against `INC`.

   (c) On checking the data, you find that your assistant has recorded the weekly consumption expenditure for Family 8 as \$900 instead of \$90. Correct this error and redraw the scatter diagram.

   (d) Compute the mean, median, maximum and minimum values of `INC` and `CONS`.

   (e) Compute the correlation coefficient between `CONS` and `INC`. Comment on the result.

   (f) Create the following new variables:

$$\begin{aligned} \texttt{DCONS} &= 0.5\texttt{CONS}, \\ \texttt{LCONS} &= \log(\texttt{CONS}), \\ \texttt{INC2} &= \texttt{INC}^2, \\ \texttt{SQRTINC} &= \sqrt{\texttt{INC}}. \end{aligned}$$

   (g) Delete the variables `DCONS` and `SQRTINC`.

   (h) Delete everything.

2. At the Famous Fulton Fish Market in New York city, sales of whiting (a type of fish) vary from day to day. Over a period of several months, daily quantities sold (in pounds) were observed. These data are in the file `fultonfish.dat`. Description of the data is in the file `fultonfish.def`. Describe the first four columns.

   (a) Use R to open the data file and name the series in the first four columns as `date`, `lprice`, `quan` and `lquan`.

   (b) Compute the sample mean and standard deviation of the quantity sold (`quan`).

   (c) Test the null hypothesis that the mean quantity sold is equal to 7,200 pounds a day at the 5% level of significance.

   (d) Construct the 95% confidence interval for part (c).

   (e) Plot `lprice` against `lquan` and label the variable `lprice` as "log(Price) of whiting per pound" and `lquan` as "log(Quantity)". Then, comment on the nature of the relationship between these two variables.

   (f) Save this workfile to any folder on any drive.