

Introduction to Quantitative Methods

Dr Aris Kartsaklas,
Email: aris.kartsaklas@brunel.ac.uk

Eviews Class 1

The two-variable regression model

Using the data contained in the files `cons_inco.xls` and `wages_autosales.xls` answer all the following questions.

1 Consumption and Income

1.1 Regression

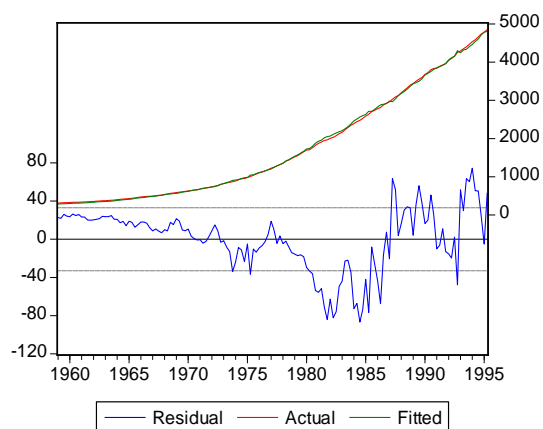
- Run a regression of consumption on a constant and on disposable income using the sample 1959:1 to 1995:2.
- Before estimation we need to specify the sample we want to use.
To do so enter the following command: `smpl 1959:Q1 1995:Q2`.
- Once the sample is specified, we can estimate the equation using OLS.
- To do so enter the following command: `equation eq01.ls gc=c(1)+c(2)*gyd`.
- Eviews will create the object `eq01`. Double clicking on `eq01` provides the results

1.2 Tests

- Derive the t-statistics for the null that the coefficients are equal to 0. To do so use the estimated coefficients and their standard errors.
- Is the coefficient attached to the constant significant at the 5% level?
- Is the coefficient attached to disposable income significant at the 5% level?
- Test the null hypothesis that the coefficient attached to the constant is equal to 1.

1.3 R-squared and Analysis of Variance

- Draw a graph of the actual-fitted-residual decomposition. To do so, click "resids" on the estimation output window:



- Show that the square of the S.E. of regression equals the sum of squared residuals (or Error Sum of Squares, ESS) divided by $N-k$, where N is the sample size and k the number of regressors.
- Compute the total variation of Y (Total Sum of Squares, TSS). Hint: you can compute it directly, or derive it from the variance of the dependent variable.
- Compute the explained variation of Y (Regression Sum of Squares, RSS). Hint: you can compute it directly, or derive it from ESS and TSS.
- Show that the R-squared is equal to the ratio between RSS and TSS.

2 Wages and Retail Auto Sales

The file `wages_autosales.xls` contains quarterly data on wages and retail auto sales.

1. Export the data in `eviews` and run a regression of sales on wages and a constant using the sample 1959:1 to 1995:2.
2. Provide the estimation results in a table such as the one shown in the previous exercise on consumption and income.
3. Comment the results. In particular:
 - Derive the t-statistics for the null that the coefficients are equal to 0. To do so use the estimated coefficients and their standard errors.
 - Is the coefficient attached to the constant significant at the 5% level?
 - Is the coefficient attached to wages significant at the 5% level?
 - Test the null hypothesis that the coefficient attached to the constant is equal to 5.
 - Draw a graph of the actual-fitted-residual decomposition.
 - Compute the total variation of Y (Total Sum of Squares, TSS).
 - Compute the explained variation of Y (Regression Sum of Squares, RSS).
 - Show that R-squared is equal to 1 minus the ratio between ESS and TSS.