

Advanced Quantitative Methods

Lab 5: Regression diagnostics

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1. Open the unemployment data set. Check the teaching data page for more information on the variables.
`library(rio)`
`une <- import("http://www.joselkink.net/wp-content/uploads/2013/01/unemployment.dta")`
2. Plot unemployment rates and exports over time.
`plot(unemployment ~ year, une, type = "l", lwd = 2, col = "red")`
3. Produce ACF and PACF plots for both variables.
`acf(une$unemployment)`
`pacf(une$unemployment)`
4. Test for stationarity in both variables.
`library(tseries)`
`adf.test(une$unemployment, k = 0)`
`adf.test(une$unemployment)`
`adf.test(une$unemployment, k = 2)`
5. Regress *unemployment* on the log of the ratio of *money* and *deflator*, the log of *purchases*, the log of *exports*, and *year*.
 - (a) Test whether these variables are cointegrated.
(See also <http://www.econ.uiuc.edu/~econ508/R/e-ta8.R.html>)
 - (b) Calculate the short-term and long-term elasticities of the effect of exports on unemployment.
6. Study the extent to which unemployment rates can be blamed on the party affiliation of the president in office (cf. Hibbs, 1977).

Hibbs, Douglas. 1977. "Political parties and macroeconomic policy." *American Political Science Review* 71(4):1467–1487.

URL: <http://douglas-hibbs.com/HibbsArticles/APSR 1977.pdf>