Econometria Avançada - 2015-1

Trabalho 4 - Vector autoregressions

Due date: June 2nd 2015 (9:45am)

Consider four components of U.S. monthly industrial production index from January 1947 to December 2012. The four components are

- Durable consumer goods (`ipdcongd`),
- Nondurable consumer goods (`ipncongd`),
- Business equivalent (`ipbuseq`), and
- Materials (`ipmat`).

The original data are from the Federal Reserve Bank of St. Louis and are seasonally adjusted. See the file `US-PI-4comp.txt` on the course page.

(a) Construct the growth rate series y_t of the four industrial production index, that is, take the first difference of the log data. Obtain time plots of y_t. Comment on the time plots.

(b) Build a VAR model for y_t, including simplification and model checking. Write down the fitted model and explain how and why you arrived at this final model. *Hint: Use the information criteria and check for white noise residuals.*

(c) Based on the chosen model from (b), compute one-step ahead to twelve-step ahead predictions of y_t at the forecast origin of December 2012. Obtain 95% interval forecasts for each component series.

(d) The time plots show the existence of possible aberrant observations, especially at the beginning of the series. Repeat the analyses of (a), (b) and (c) above, but use the subsample January 1964 to December 2012.

Comment thoroughly your findings.