Time Series Econometrics: Home work assignment 3

Yukai Yang
Department of Statistics
Uppsala University

Abstract

Please write your report in LaTeX. The report should be clearly written such that it is easy to understand what is done and why. Please attach any computer code in an appendix.

1 Problem 1

Let

$$y_{1,t} = 0.750y_{1,t-1} - 0.125y_{1,t-2} + 0.5y_{2,t-1} + \varepsilon_{1,t}$$
$$y_{2,t} = 0.700y_{2,t-1} - 0.100y_{2,t-2} + \varepsilon_{2,t}$$

where all $\begin{pmatrix}\varepsilon_{1,t} & \varepsilon_{2,t}\end{pmatrix}$ are i.i.d. $N(\mathbf{0}, \mathbf{\Omega})$ for some 2×2 matrix $\mathbf{\Omega}$.

1. Write the system on the form (10.1.11) in Hamilton.
2. Is the system covariance-stationary?

2 Problem 2

Download the Stock and Watson (2001) data from Studentportalen.

1. Stock and Watson chose a lag length of 4. Does this seem appropriate?

2. Replicate their variance decomposition analysis (Table 1B.i-1B.iii).[1]

3. Replicate their impulse response analysis (Figure 1).

[1]Note: You may present the table as a figure instead.