Homework 4

(Due on Nov 18th, 2022)

The file RGDP.XLS contains the real GDP data that were used to estimate (4.29), page 210 in Ender's textbook, 3e.

$$\Delta lrgdp_t = \underset{(3.52)}{0.0246} + \underset{(2.49)}{0.00028}t - \underset{(-2.59)}{0.0360}lrdgp_{t-1} + \underset{(5.66)}{0.3426}\Delta lrgdp_{t-1}$$

Note: $\Delta lrgdp_t$ is logarithmic change in real GDP.

(a) Use the series to replicate the results in Appendix 4.2 (pages 267-271).
(b) It is often argued that the oil price shock in 1973 reduced the trend growth rate of real U.S. GDP. Perform the Perron test to determine whether the series is trend-stationary with a break occurring in mid-1973; perform the Zivot and Andrews test to see if you can have consistent results as Perron test.
(c) Decompose the real GDP series into the temporary and permanent components using the HP filter and the Beveridge-Nelson decomposition. Plot the transitory component that you obtained from the HP filter and the one you obtained from the Beveridge-Nelson decomposition. In what ways are the two series different?
(d) Suppose that real GDP is trend-stationary with a break occurring in mid-1973. Let the deviation from trend constitute the transitory component of the series. How does this transitory component compare with your answer found in part c?
(e) Perform endogenous breaks tests: Quant-Andrews, Bai and Perron (1998), and Bai (1997) and comment on your findings.