

Exercsie

2025-01-22

Question 1:

The following R code loads the **okun5_aus**.

```
library(tidyverse)
library(dynlm)
#browseURL("http://www.principlesofeconometrics.com/poe5/data/def/okun5_aus.def")
load(url("http://www.principlesofeconometrics.com/poe5/data/rdata/okun5_aus.rdata"))

okun5_aus %>% head()
```

	dateid01	g	u
1	1978-04-01	0.9	6.3
2	1978-07-01	1.4	6.3
3	1978-10-01	0.8	6.3
4	1979-01-01	2.8	6.3
5	1979-04-01	-1.6	6.3
6	1979-07-01	1.0	6.2

- (a). Transfor the variables U and G into time series object.
- (b). Estimate the following distributed lag model:

$$\Delta U_t = \alpha + \beta_0 G_t + \beta_1 G_{t-1} + \beta_2 G_{t-2} + \beta_3 G_{t-3} + \beta_4 G_{t-4} + \epsilon_t$$

- (c). Interpret the coefficients of the estimated model above. Specifically, explain what the estimates for lag lengths 1, 2, 3, and 4 indicate about the relationship between the variables over time.

(d). In the estimated model above, what are the impact multiplier, the 1-period, 2-period, and 3-period interim multipliers, and the total multiplier?

(d). If given the general model below, how would you determine the optimal lag length?

$$\Delta U_t = \alpha + \beta_0 G_t + \beta_1 G_{t-1} + \beta_2 G_{t-2} \dots + \beta_p G_{t-p} + \epsilon_t$$

(e). Estimate the model using the optimal lag length obtained, and check for serial correlation and homoskedasticity in the estimated model.

Question 2:

Refer to Chapter 12 of the textbook (POE5), complete questions 12.13 (a) through (e) on pages 592-593.