SW and ADF test (GDP)

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November 22, 2018

Data

Data: 145+1-5=141 series in total.

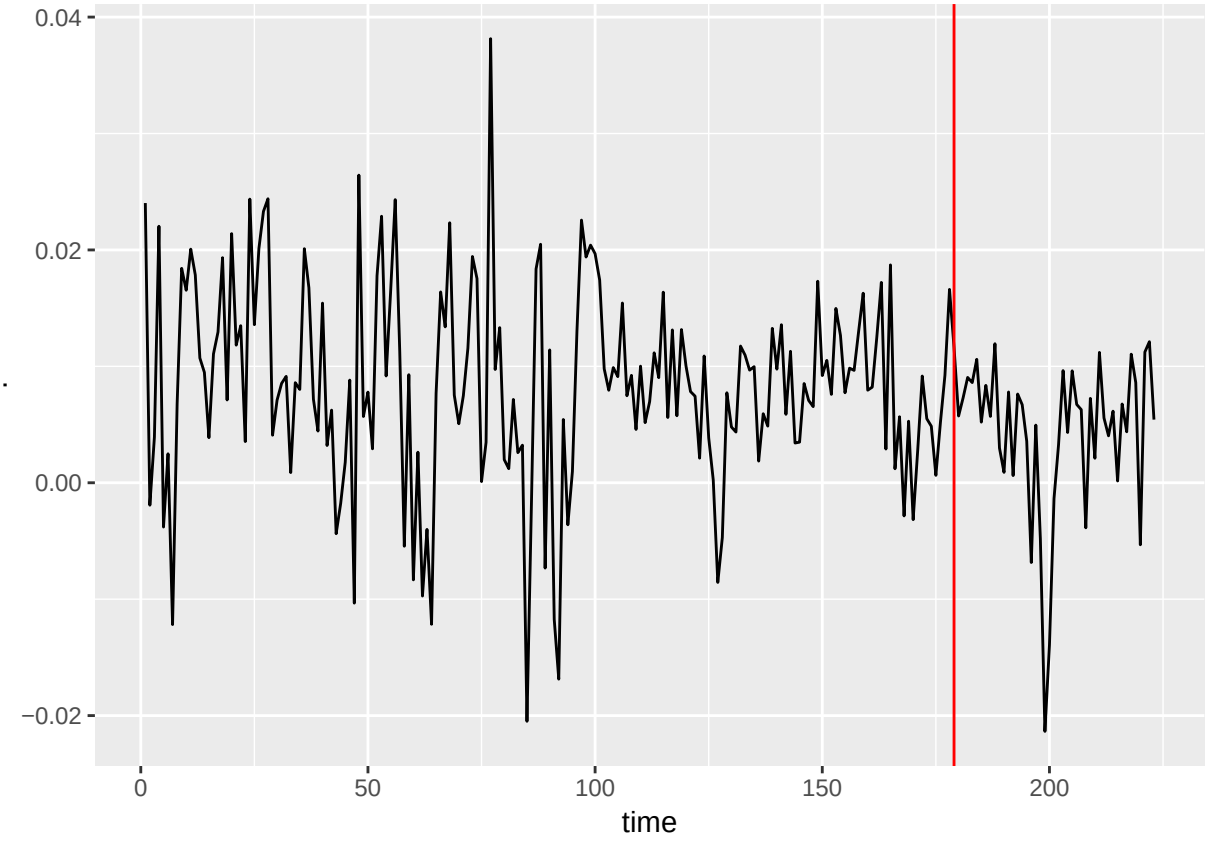
The "spread" series (difference between two I(1) series) are removed.

One of the I(1), "CP3FM" was omitted in the original data set, now is added.

log() is done.

y is GDP.

The earliest 80% of data were used to estimate the coefficients, the rest 20% were used to calculate the out-of-sample MSE.



ADF test

Step 1, ADF test to the 146 original series.

Step 2, mark "I(0)" variables as "I(0)".

Step 3, ADF test to the first-differenced 146 series.

Step 4, check for contradictions, found "PCED_RecServices" in AIC.

Step 5, mark "I(1)" variable as "I(2)" (including "PCED_RecServices").

Step 6, mark the rest as "I(1)".

Step 7, repeat the above 6 steps for both "AIC" and "BIC".

Lasso 1

$$\begin{aligned}\Delta y_t = & \, y_{t-1} \\ & + \Delta y_{t-1} + \Delta y_{t-2} + \Delta y_{t-3} + \Delta y_{t-4} \\ & + I(0)_{t-1} + I(0)_{t-2} + I(0)_{t-3} + I(0)_{t-4} \\ & + I(1)_{t-1} + I(1)_{t-2} + I(1)_{t-3} + I(1)_{t-4} \\ & + \Delta I(2)_{t-1} + \Delta I(2)_{t-2} + \Delta I(2)_{t-3} + \Delta I(2)_{t-4}\end{aligned}$$

Lasso 2

$$\begin{aligned}\Delta y_t = & \, y_{t-1} \\ & + \Delta y_{t-1} + \Delta y_{t-2} + \Delta y_{t-3} + \Delta y_{t-4} \\ & + I(0)_{t-1} + I(0)_{t-2} + I(0)_{t-3} + I(0)_{t-4} \\ & + \Delta I(1)_{t-1} + \Delta I(1)_{t-2} + \Delta I(1)_{t-3} + \Delta I(1)_{t-4} \\ & + \Delta^2 I(2)_{t-1} + \Delta^2 I(2)_{t-2} + \Delta^2 I(2)_{t-3} + \Delta^2 I(2)_{t-4}\end{aligned}$$

Lasso 3

$$\begin{aligned}\Delta y_t = & \, y_{t-1} \\ & + \Delta y_{t-1} + \Delta y_{t-2} + \Delta y_{t-3} + \Delta y_{t-4} \\ & + I(0)_{t-1} + I(0)_{t-2} + I(0)_{t-3} + I(0)_{t-4} \\ & + \Delta I(1)_{t-1} + \Delta I(1)_{t-2} + \Delta I(1)_{t-3} + \Delta I(1)_{t-4} \\ & + \Delta^2 I(2)_{t-1} + \Delta^2 I(2)_{t-2} + \Delta^2 I(2)_{t-3} + \Delta^2 I(2)_{t-4} \\ & + I(1)_{t-1} + \Delta I(2)_{t-1}\end{aligned}$$

Table 1: out-of-sample MSE, when the dependent variable is inflation

	SW	AIC	BIC
LASSO 1	0.7607	0.726	0.7059
LASSO 2	0.4971	0.4971	0.4993
LASSO 3	0.4981	0.4981	0.5002