Example 8-9

September 11, 2020

[ ]:
```r
# install the following packages and library
install.packages("pder")
install.packages("plm")

library("plm")

# import the data
data("HousePricesUS", package = "pder")

# common correlated effects mean groups model
ccemgmod <- pcce(log(price) ~ log(income), data=HousePricesUS, model="mg")
summary(ccemgmod)

## ------------------------------------------------------------------------

# common correlated effects pooled model
ccepmod <- pcce(log(price) ~ log(income), data=HousePricesUS, model="p")
summary(ccepmod)
```

[4]:
```r
##---------------------------------Block 1---------------------------------

#### Example 8-9 ####

## ------------------------------------------------------------------------

# reproduces the CD statistics and average pairwise correlation coefficients for
# the residuals of the ADF regressions

tab5a <- matrix(NA, ncol = 4, nrow = 2)
tab5b <- matrix(NA, ncol = 4, nrow = 2)

for(i in 1:4) {
    mymod <- pmg(diff(log(income)) ~ lag(log(income)) +
                 lag(diff(log(income)), 1:i),
                 data = HousePricesUS,
                 model = "mg", trend = TRUE)
    tab5a[1, i] <- pcdtest(mymod, test = "rho")$statistic
```

```
    tab5b[1, i] <- pcdtest(mymod, test =  "cd")$statistic
}

for(i in 1:4) {
    mymod <- pmg(diff(log(price)) ~ lag(log(price)) +
                 lag(diff(log(price)), 1:i),
                 data=HousePricesUS,
                 model="mg", trend = TRUE)
    tab5a[2, i] <- pcdtest(mymod, test = "rho")$statistic
    tab5b[2, i] <- pcdtest(mymod, test =  "cd")$statistic
}

tab5a <- round(tab5a, 3)
tab5b <- round(tab5b, 2)
dimnames(tab5a) <- list(c("income", "price"),
                        paste("ADF(", 1:4, ")", sep=""))
dimnames(tab5b) <- dimnames(tab5a)

tab5a
tab5b
```

	ADF(1)	ADF(2)	ADF(3)	ADF(4)
income	0.465	0.443	0.338	0.317
price	0.346	0.326	0.252	0.194

	ADF(1)	ADF(2)	ADF(3)	ADF(4)
income	82.84	77.40	57.96	53.21
price	61.73	57.02	43.21	32.52

[5]:
```
##---------------------------------Block 2---------------------------------

# runs Pesaran's CIPS test for unit roots for the regression results

## ------------------------------------------------------------------------
php <- pdata.frame(HousePricesUS)
cipstest(log(php$price), type = "drift")
```

```
Pesaran's CIPS test for unit roots

data:  log(php$price)
CIPS test = -2.0342, lag order = 2, p-value = 0.1
alternative hypothesis: Stationarity
```

[6]:
```
##---------------------------------Block 3---------------------------------

cipstest(diff(log(php$price)), type = "none")
```

```
Pesaran's CIPS test for unit roots

data:  diff(log(php$price))
CIPS test = -1.8199, lag order = 2, p-value = 0.01
alternative hypothesis: Stationarity
```

[7]:
```
##---------------------------------Block 4---------------------------------

# runs Pesaran's CIPS test for unit roots for the CCEMG model
cipstest(resid(ccemgmod), type="none")
```

```
Pesaran's CIPS test for unit roots

data:  resid(ccemgmod)
CIPS test = -2.6588, lag order = 2, p-value = 0.01
alternative hypothesis: Stationarity
```

[8]:
```
##---------------------------------Block 5---------------------------------

# runs Pesaran's CIPS test for unit roots for the CCEP model
cipstest(resid(ccepmod), type="none")
```

```
Pesaran's CIPS test for unit roots

data:  resid(ccepmod)
CIPS test = -2.2666, lag order = 2, p-value = 0.01
alternative hypothesis: Stationarity
```