Examples 10-15 to 10-17

September 11, 2020

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

library(spData)
install.packages("spDataLarge")
library("pder")
library("plm")
library("splm")
library("spdep")

# import the data and run the following models

## ------------------------------------------------------------------------
data("RiceFarms", package = "splm")
data("riceww", package = "splm")
ricelw <- mat2listw(riceww)
Rice <- pdata.frame(RiceFarms, index = "id")

riceprod <- log(goutput) ~ log(seed) + log(totlabor) +
    log(size) + region + time

## ------------------------------------------------------------------------
data("EvapoTransp", package = "pder")
data("etw", package = "pder")

evapo <- et ~ prec + meansmd + potet + infil + biomass + plantcover +
  softforbs + tallgrass + diversity + matgram + dwarfshrubs + legumes
```

[7]:
```
#### Example 10-15 ####

##-----------------------------------Block 1---------------------------------

# BSJK test for joint and all 3 conditional specifications (spatial to random)
bsjk.LM <- matrix(ncol = 4, nrow = 2)
tests <- c("J", paste("C", 1:3, sep = "."))
```

```
dimnames(bsjk.LM) <- list(c("LM test", "p-value"),
                                tests)
for(i in tests) {
    mytest <- bsjktest(riceprod, data = RiceFarms, index = "id",
                       listw = ricelw, test = i)
    bsjk.LM[1, i] <- mytest$statistic
    bsjk.LM[2, i] <- mytest$p.value
    }
round(bsjk.LM, 6)
```

	J	C.1	C.2	C.3
LM test	319.5237	371.5239	11.894431	75.79687
p-value	0.0000	0.0000	0.000563	0.00000

[8]:
```
#### Example 10-16 ####

##---------------------------------Block 2---------------------------------

# estimate the full SEMSRRE model with a significance table for the error␣
 ↪components
semsrre.rice <- spreml(riceprod, data = Rice,#Farms, index = "id",
                       w=riceww, lag = FALSE, errors = "semsrre")
round(summary(semsrre.rice)$ErrCompTable, 6)
```

	Estimate	Std. Error	t-value	Pr(>|t|)
phi	0.250015	0.059035	4.234994	0.000023
psi	0.124953	0.040904	3.054770	0.002252
rho	0.613588	0.046167	13.290605	0.000000

[9]:
```
##---------------------------------Block 3---------------------------------

#### Example 10-17 ####

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

# estimate of the encompassing specification with SAR, SEM, and serial error␣
 ↪correlation
# table reports coefficients for the error variance parameters and spatial lag␣
 ↪coefficient
saremsrre.evapo <- spreml(evapo, data = EvapoTransp,
                          w = etw, lag = TRUE, errors = "semsr")
summary(saremsrre.evapo)$ARCoefTable
round(summary(saremsrre.evapo)$ErrCompTable, 6)
```

	Estimate	Std. Error	t-value	Pr(>|t|)
lambda	-0.3220364	0.2816532	-1.143379	0.2528813

	Estimate	Std. Error	t-value	Pr(>|t|)
psi	0.167879	0.048266	3.478185	0.000505
rho	0.899960	0.029105	30.920974	0.000000