Example 4-4

September 12, 2020

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

library("plm")

# import the data and create the following data frame and formula
data("RiceFarms", package="plm")
Rice <- pdata.frame(RiceFarms, index = "id")
fm <- log(goutput) ~ log(seed) + log(totlabor) + log(size)
```

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

#### Example 4-4 ####

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

# this is an example of a lm test for random effects and the presecence
# of serial correlation

bsy.LM <- matrix(ncol=3, nrow = 2)

# 'J' sets normalality and homoskedasticity as derived by Baltagi and Li (1991
 ↪and 1995)
# 'RE' is for random effect model
# 'AR' is for an AR(1) model
# these options are implemented in pbsytest()
tests <- c("J", "RE", "AR")
dimnames(bsy.LM) <- list(c("LM test", "p-value"), tests)
for(i in tests) {
    mytest <- pbsytest(fm, data = Rice, test = i)
    bsy.LM[1:2, i] <- c(mytest$statistic, mytest$p.value)
    }
round(bsy.LM, 6)
```

	J	RE	AR
LM test	62.6548	0.335149	39.23352
p-value	0.0000	0.368756	0.00000

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

# pbltest allows for random effects of any magnitude. using reseiduals of the
# random effects maximum likelihood estimator
pbltest(fm, Rice, alternative = "onesided")
```

```
Baltagi and Li one-sided LM test

data:  fm
z = 6.0766, p-value = 6.138e-10
alternative hypothesis: AR(1)/MA(1) errors in RE panel model
```