Examples 4-7 & 4-8 & 4-9

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

[2]:
```
##---------------------------------Block 1--------------------------------

#### Example 4-7 ####

## ------------------------------------------------------------------------
data("EmplUK", package = "plm")

# Wooldridge's within-based serial correlation test
pwartest(log(emp) ~ log(wage) + log(capital), data = EmplUK)
```

```
Wooldridge's test for serial correlation in FE panels

data:  plm.model
F = 312.3, df1 = 1, df2 = 889, p-value < 2.2e-16
alternative hypothesis: serial correlation
```

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

#### Example 4-8 ####

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

# Wooldridge's first-difference test for serial correlation
pwfdtest(log(emp) ~ log(wage) + log(capital), data = EmplUK)
```

```
Wooldridge's first-difference test for serial correlation in panels

data:  plm.model
F = 1.5251, df1 = 1, df2 = 749, p-value = 0.2172
alternative hypothesis: serial correlation in differenced errors
```

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

# by specifying the h0 option, the null hypothesis is now such that there is
# no serial correlation in the original errors
pwfdtest(log(emp) ~ log(wage) + log(capital), data = EmplUK,
    h0 = "fe")
```

```
Wooldridge's first-difference test for serial correlation in panels

data:  plm.model
F = 131.55, df1 = 1, df2 = 749, p-value < 2.2e-16
alternative hypothesis: serial correlation in original errors
```

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

#### Example 4-9 ####

# another example of Wooldridge's first difference test.
# here the results are not as clear cut as the ones above

# 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)

## ------------------------------------------------------------------------
W.fd <- matrix(ncol = 2, nrow =2)
H0 <- c("fd", "fe")
dimnames(W.fd) <- list(c("test", "p-value"), H0)
for(i in H0) {
    mytest <- pwfdtest(fm, Rice, h0 = i)
    W.fd[1, i] <- mytest$statistic
    W.fd[2, i] <- mytest$p.value
    }
round(W.fd, 6)
```

	fd	fe
test	176.4155	19.574707
p-value	0.0000	0.000011