

## Example 8-3

September 11, 2020

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

library("plm")
library("texreg")
library("msm")
```

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

#### Example 8-3 ####

## -----

data("RDSpillovers", package = "pder")

# formula
fm.rds <- lny ~ ln1 + lnk + lnrd

# mean groups model
mg.rds <- pmg(fm.rds, RDSpillovers, trend = TRUE)

# dynamic mean groups model
dmg.rds <- update(mg.rds, . ~ lag(lny) + .)

# creates a table for our results
screenreg(list('Static MG' = mg.rds, 'Dynamic MG' = dmg.rds), digits = 3)
```

```
\n===== \n Static MG Dynamic
MG \n----- \n(Intercept) 4.550 *** 4.038 *** \n (0.841) (0.778)
\lnlnl 0.568 *** 0.507 *** \n (0.086) (0.059) \nlnk 0.117 0.020 \n (0.122) (0.085) \nl-
nrd -0.058 -0.092 \n (0.079) (0.071) \ntrend 0.022 ** 0.023 *** \n (0.008) (0.004)
\nlag(lny) 0.223 *** \n (0.034) \n----- \nNum. obs. 2637 2518
\n===== \n*** p < 0.001; ** p <
0.01; * p < 0.05 \n'
```

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

## -----

# calculates the long -run elasticity of production to own R&D and the
↪ standard error
# using the delat method, as well as the t-statistic and p-value
b.lr <- coef(dmg.rds)["lnrd"]/(1 - coef(dmg.rds)["lag(lny)"])
SEb.lr <- deltamethod(~ x5 / (1 - x2),
                      mean = coef(dmg.rds), cov = vcov(dmg.rds))
z.lr <- b.lr / SEb.lr
pval.lr <- 2 * pnorm(abs(z.lr), lower.tail = FALSE)
lr.lnrd <- matrix(c(b.lr, SEb.lr, z.lr, pval.lr), nrow=1)
dimnames(lr.lnrd) <- list("lnrd (long run)", c("Est.", "SE", "z", "p.val"))
round(lr.lnrd, 3)
```

	Est.	SE	z	p.val
lnrd (long run)	-0.118	0.091	-1.301	0.193