

Example 8-4 and Figure 8-1

September 11, 2020

```
[ ]: # install the following packages and libraries
```

```
install.packages("pder")
install.packages("plm")
install.packages("ggplot2")
```

```
library("plm")
library("ggplot2")
```

```
# import data
```

```
data("HousePricesUS", package = "pder")
```

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

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

```
## -----
```

```
# estimates of the competing models
```

```
housep.np <- pvcm(log(price) ~ log(income), data = HousePricesUS, model =  
  ↪ "within")
```

```
housep.pool <- plm(log(price) ~ log(income), data = HousePricesUS, model =  
  ↪ "pooling")
```

```
housep.within <- plm(log(price) ~ log(income), data = HousePricesUS, model =  
  ↪ "within")
```

```
## -----
```

```
summary(housep.np)
```

Oneway (individual) effect No-pooling model

Call:

```
pvcm(formula = log(price) ~ log(income), data = HousePricesUS,  
      model = "within")
```

Balanced Panel: n = 49, T = 29, N = 1421

Residuals:

Min.	1st Qu.	Median	3rd Qu.	Max.
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-0.279006789 -0.069921886 -0.005819077 0.064749895 0.352409710

Coefficients:

(Intercept)	log(income)
Min. :-0.2951	Min. :-1.1409
1st Qu.: 3.1519	1st Qu.: -0.1378
Median : 4.1457	Median : 0.2283
Mean : 3.8498	Mean : 0.3018
3rd Qu.: 4.7773	3rd Qu.: 0.6614
Max. : 6.9108	Max. : 2.0369

Total Sum of Squares: 3870.1

Residual Sum of Squares: 13.739

Multiple R-Squared: 0.99645

```
[4]: ##-----Block 2-----  
  
# stability test  
pooltest(housep.pool, housep.np)  
pooltest(housep.within, housep.np)
```

F statistic

```
data: log(price) ~ log(income)  
F = 25.778, df1 = 96, df2 = 1323, p-value < 2.2e-16  
alternative hypothesis: unstability
```

F statistic

```
data: log(price) ~ log(income)  
F = 16.074, df1 = 48, df2 = 1323, p-value < 2.2e-16  
alternative hypothesis: unstability
```

```
[5]: ##-----Block 3-----  
  
#### Figure 8-1 ####  
  
d <- data.frame(x = c(coef(housep.np)[[1]], coef(housep.np)[[2]]),  
               coef = rep(c("intercept", "log(income)"),  
                          each = nrow(coef(housep.np))))  
ggplot(d, aes(x)) + geom_histogram(col = "black", fill = "white", bins = 8) +  
  facet_wrap(~ coef, scales = "free") + xlab("") + ylab("")
```

