R for Economics and Social Science Research

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WORKSHOP 4

1. Load the *rental* data set from the **wooldridge** package using the code below.

```
library(wooldridge)
data('rental')
```

The description of the variables of this data set is given below.

Format

A data.frame with 128 observations on 23 variables:

- **city:** city label, 1 to 64
- **year:** 80 or 90
- **pop:** city population
- **enroll:** # college students enrolled
- **rent:** average rent
- **rnthsg:** renter occupied units
- **tothsg:** occupied housing units
- **avginc:** per capita income
- **lenroll:** log(enroll)
- **lpop:** log(pop)
- **lrent:** log(rent)
- **ltothsg:** log(tothsg)
- **lrnthsg:** log(rnthsg)
- **lavginc:** log(avginc)
- **clenroll:** change in lrent from 80 to 90
- **clpop:** change in lpop
- **clrent:** change in lrent
- **cltothsg:** change in ltothsg
- **clrnthsg:** change in lrnthsg
- **clavginc:** change in lavginc
- **pctstu:** percent of population students
- **cpctstu:** change in pctstu
- **y90:** =1 if year == 90

2. Fit an OLS model with *lrent* as response and *y90*, *lpop*, *lavginc*, and *pctstu* as predictors. You can use with the lm() or plm() functions. Check the standard assumptions of a linear model. Which assumptions are violated, if any.

3. Using the same set of response and predictor variables fit a FE (within) model via LSDV approach or using the plm() function.

4. Use the pFtest() function to test for fixed effects.

5. Using the same set of response and predictor variables fit a RE model.

6. Perform the Hausman test to determine whether a FE or RE model fits the data well.

7. Run the Breusch-Pagan Lagrange Multiplier test to determine if RE model fits better than (pooled) OLS model.

8. Interpret the coefficients of the best model.