Econometrics II TA Session #8

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1 Empirical Application of Panel Data Model: Earnings Equation

1.1 Backgruond

A researcher wants to estimate the effect of full-time work experience on wages. He uses a *balanced* panel of 595 individuals from 1976 to 1982, taken from the Panel Study of Income Dynamics (PSID). The *balanced* panel data means that we can observe all individuals every year.

```
dt <- read.csv("./data/wages.csv")
head(dt, 14)
```

```
##    exp wks bluecol ind south smsa married  sex union ed black   lwage id time
## 1    3  32      no   0   yes   no     yes male    no  9    no 5.56068  1    1
## 2    4  43      no   0   yes   no     yes male    no  9    no 5.72031  1    2
## 3    5  40      no   0   yes   no     yes male    no  9    no 5.99645  1    3
## 4    6  39      no   0   yes   no     yes male    no  9    no 5.99645  1    4
## 5    7  42      no   1   yes   no     yes male    no  9    no 6.06146  1    5
## 6    8  35      no   1   yes   no     yes male    no  9    no 6.17379  1    6
## 7    9  32      no   1   yes   no     yes male    no  9    no 6.24417  1    7
## 8   30  34     yes   0    no   no     yes male    no 11    no 6.16331  2    1
## 9   31  27     yes   0    no   no     yes male    no 11    no 6.21461  2    2
## 10  32  33     yes   1    no   no     yes male   yes 11    no 6.26340  2    3
## 11  33  30     yes   1    no   no     yes male    no 11    no 6.54391  2    4
## 12  34  30     yes   1    no   no     yes male    no 11    no 6.69703  2    5
## 13  35  37     yes   1    no   no     yes male    no 11    no 6.79122  2    6
## 14  36  30     yes   1    no   no     yes male    no 11    no 6.81564  2    7
```

The variable `id` and `time` indicate individual and time indexs. We use these two variables to apply panel data models. Additionally, we use the following variables:

- `exp`: years of full-time work experience
- `sex`: an indicator of gender
- `ed`: years of education
- `lwage`: logarithm of wage

```r
dt <- dt[,c("id", "time", "exp", "sex", "ed", "lwage")]
summary(dt)
```

```
##        id           time        exp            sex             ed       
##  Min.   :  1   Min.   :1   Min.   : 1.00   female: 469   Min.   : 4.00  
##  1st Qu.:149   1st Qu.:2   1st Qu.:11.00   male  :3696   1st Qu.:12.00  
##  Median :298   Median :4   Median :18.00                 Median :12.00  
##  Mean   :298   Mean   :4   Mean   :19.85                 Mean   :12.85  
##  3rd Qu.:447   3rd Qu.:6   3rd Qu.:29.00                 3rd Qu.:16.00  
##  Max.   :595   Max.   :7   Max.   :51.00                 Max.   :17.00  
##      lwage      
##  Min.   :4.605  
##  1st Qu.:6.395  
##  Median :6.685  
##  Mean   :6.676  
##  3rd Qu.:6.953  
##  Max.   :8.537
```