# Trabalho ao Final

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## Exercicio 2

**Leitura de dados**

```
library(readxl)
library(stargazer)

Data_Renewable <- read_excel("~/Videos/Inverno 2019/Exercicios/Data_Renewable.xlsx", na = "..")

head(Data_Renewable[,5:10])
```

```
## # A tibble: 6 x 6
##    renov energia eletric          pib      pop  pibpc
##    <dbl>   <dbl>  <dbl>        <dbl>    <dbl>  <dbl>
## 1     NA      NA     NA  15856574731. 29185507   543.
## 2      0    729.  1943.  11926953214.  2913021  4094.
## 3      0   1114.  1017. 161207268655. 35977455  4481.
## 4     NA      NA     NA    576000000     56079 10271.
## 5     NA      NA     NA   3355695364.    84449 39736.
## 6      0    521.   206.  83799496611. 23356246  3588.
```

```
summary(Data_Renewable[,5:10])
```

```
##      renov               energia           eletric
##  Min.   :0.000e+00   Min.   :  135.4   Min.   :   24.52
##  1st Qu.:0.000e+00   1st Qu.:  687.3   1st Qu.:  775.95
##  Median :1.040e+08   Median : 1474.7   Median : 2491.63
##  Mean   :5.445e+09   Mean   : 2641.6   Mean   : 4259.60
##  3rd Qu.:1.927e+09   3rd Qu.: 3347.6   3rd Qu.: 5700.86
##  Max.   :1.784e+11   Max.   :17023.2   Max.   :51439.91
##  NA's   :82          NA's   :81        NA's   :81
##       pib                pop               pibpc
##  Min.   :3.182e+07   Min.   :1.000e+04   Min.   :    234.2
##  1st Qu.:4.895e+09   1st Qu.:6.897e+05   1st Qu.:   1516.8
##  Median :2.027e+10   Median :5.824e+06   Median :   5568.1
##  Mean   :3.194e+11   Mean   :3.180e+07   Mean   :  15492.7
##  3rd Qu.:1.466e+11   3rd Qu.:2.053e+07   3rd Qu.:  19281.2
##  Max.   :1.499e+13   Max.   :1.338e+09   Max.   :150585.5
##  NA's   :17          NA's   :5           NA's   :17
```

## Regression

```
linregression = lm(renov ~ pib + pop, data = Data_Renewable)
```

**Lin-log**

```r
linlogregression = lm(renov ~ log(pib) + log(pop), data = Data_Renewable)
```

**Log-lin**

```r
loglinregression = lm(log(renov + 1) ~ pib + pop, data = Data_Renewable)
```

**Log-log**

```r
loglogregression = lm(log(renov + 1) ~ log(pib) + pop, data = Data_Renewable)

stargazer(linlogregression, loglinregression, loglogregression,
          type = "text", digits = 8, column.labels = c("Lin-log", "Log-lin",
                                                        "Log-log"),
          keep.stat = c('n','rsq','adj.rsq','f'), out = "mrd.txt")
```

```
## 
## ===============================================================================
##                                       Dependent variable:
##                      ----------------------------------------------------------
##                                renov                    log(renov + 1)
##                               Lin-log            Log-lin            Log-log
##                                 (1)                (2)                (3)
## -------------------------------------------------------------------------------
## log(pib)             5,188,506,697.00000000***                   2.64541400***
##                       (1,001,320,220.00000000)                   (0.43773740)
## 
## log(pop)               919,936,393.00000000
##                       (1,171,945,667.00000000)
## 
## pib                                            0.00000000***
##                                                (0.00000000)
## 
## pop                                            0.00000000        -0.00000000
##                                                (0.00000001)      (0.00000001)
## 
## Constant             -139,634,102,491.00000000*** 12.76543000*** -52.58271000***
##                       (19,017,008,819.00000000)   (0.85568050)    (10.91291000)
## 
## -------------------------------------------------------------------------------
## Observations                    137                137                137
## R2                          0.30441630         0.08601107         0.24020220
## Adjusted R2                 0.29403450         0.07236945         0.22886190
## F Statistic (df = 2; 134)   29.32199000***     6.30504600***    21.18135000***
## ===============================================================================
## Note:                                            *p<0.1; **p<0.05; ***p<0.01
```

## Pooled end Panel Data

```
Data_Renewable_Painel <- read_excel("~/Videos/Inverno 2019/Exercicios/Data_Renewable_Painel.xlsx",
                                     na = "..")
Dados = Data_Renewable_Painel

summary(Dados[,5:9])
```

```
##      renov               pib                 pop
##  Min.   :0.000e+00   Min.   :2.144e+07   Min.   :3.893e+03
##  1st Qu.:0.000e+00   1st Qu.:3.515e+09   1st Qu.:4.628e+05
##  Median :0.000e+00   Median :1.495e+10   Median :4.100e+06
##  Mean   :2.181e+09   Mean   :2.449e+11   Mean   :2.415e+07
##  3rd Qu.:3.200e+08   3rd Qu.:1.100e+11   3rd Qu.:1.312e+07
##  Max.   :3.174e+11   Max.   :1.784e+13   Max.   :1.393e+09
##  NA's   :6789        NA's   :3554        NA's   :108
##      eletri            energia
##  Min.   :    0.0   Min.   :    0.0
##  1st Qu.:  399.5   1st Qu.:  512.7
##  Median : 1574.4   Median : 1212.1
##  Mean   : 3173.1   Mean   : 2348.6
##  3rd Qu.: 4305.1   3rd Qu.: 3067.7
##  Max.   :54799.2   Max.   :40710.1
##  NA's   :6896      NA's   :6721
```

## Regression panel

```
library(plm)

panel1 = plm(log(renov + 1) ~ log(pib) + log(pop), data = Dados,
             index = c("pais", "ano"), model = "within")

binano = Dados$ano
n = length(binano)
binary = rep(0, n)

for (i in 1:n) {if(binano[i]>=1997 & (binano[i]<2005))binary[i] = 1}

panel2 = plm(log(renov + 1) ~ log(pib) + log(pop) + binary, data = Dados,
             index = c("pais", "ano"), model = "within")

panel3 = plm(log(renov + 1) ~ log(pib) + log(pop) + binary, data = Dados, index = c("pais", "ano"),
             effect = "twoways", model = "within")


stargazer(panel1, panel2, panel3, type = "text", digits = 5, column.labels = c("", "", ""),
          keep.stat = NULL, out = "mrd.txt")
```

```
##
## ===================================================================================================
##                                         Dependent variable:
##          ------------------------------------------------------------------------------------------
##                                           log(renov + 1)
```

```
##
##                               (1)                      (2)                      (3)
## ---------------------------------------------------------------------------------------------
## log(pib)                   9.16919***               9.16919***               3.97127***
##                            (0.22438)                (0.22438)                (0.31701)
##
## log(pop)                  -3.71073***              -3.71073***              -6.32668***
##                            (0.44893)                (0.44893)                (0.50635)
##
## ---------------------------------------------------------------------------------------------
## Observations                 5,447                    5,447                    5,447
## R2                          0.35596                  0.35596                  0.04757
## Adjusted R2                 0.33909                  0.33909                  0.01239
## F Statistic  1,466.60800*** (df = 2; 5307) 1,466.60800*** (df = 2; 5307) 131.17090*** (df = 2; 5252)
## =============================================================================================
## Note:                                                              *p<0.1; **p<0.05; ***p<0.01
```