

Solution Case Assignment

Tibo Lachaert

2024-03-01

Part 0: OLS estimation

```
source("OwnFunctions.R")
library(tidyverse)
library(readr)
library(fastDummies)
library(matlib)

data <- read_delim("Data_Baltagi.csv", delim = ";",
                  escape_double = FALSE, trim_ws = TRUE, show_col_types = FALSE) %>%
  rename("lnC_it" = "ln C_it",
         "lnP_it" = "ln P_it",
         "lnPn_it" = "ln Pn_it",
         "lnY_it" = "ln Y_it") %>%
  group_by(state) %>%
  mutate(lnC_it_lag = lag(lnC_it, n = 1)) %>%
  ungroup() %>%
  na.omit()

df_OLS_y <- data %>%
  select(lnC_it) %>%
  as.matrix()

df_OLS_X <- data %>%
  mutate(intercept = 1) %>%
  select(intercept, lnC_it_lag, lnP_it, lnPn_it, lnY_it) %>%
  as.matrix()

OLS <- OLS_own(df_OLS_y, df_OLS_X)
knitr::kable(OLS[2:5, ])
```

	coefs	stdvs	tstats	pvals
lnC_it_lag	0.969	0.006	157.669	0.000
lnP_it	-0.090	0.015	-6.183	0.000
lnPn_it	0.024	0.013	1.827	0.068
lnY_it	-0.031	0.006	-5.089	0.000

Part 1: Fixed Effects (FE) estimation

```
df_FE_y <- data %>%
  select(state, year, lnC_it) %>%
```

```

pivot_wider(names_from = state, values_from = lnC_it) %>%
select(-year) %>%
as.matrix()

df_FE_X <- data %>%
  select(state, year, lnC_it_lag, lnP_it, lnPn_it, lnY_it) %>%
  mutate(dummy_cols(data %>% select(year))) %>%
  pivot_longer(cols = -c(state, year)) %>%
  xtabs(data = ., value ~ year + state + name)

FE <- FE_own(df_FE_y, df_FE_X)
knitr::kable(FE[1:4, ])

```

	coefs	stdvs	tstats	pvals
lnC_it_lag	0.833	0.133	6.262	0.000
lnP_it	-0.299	0.250	-1.194	0.233
lnPn_it	0.034	0.291	0.117	0.907
lnY_it	0.100	0.253	0.397	0.692