Model 1

Test

Analyse and test of my first model. These tests help select the panel model to be estimated. Here is my first model :

Model 1 : Green Initiatives on Tobin's Q

$$TobinsQ_{it+1} = \beta_0 + \beta_1(SP_{it}) + \beta_2(ST_{it}) + \beta_3(AS_{it}) + \beta_9(C_{it}) + \varepsilon_{it} \quad (1)$$

Tests of poolability

Citation from [@Croissant2008] :

> *pooltest tests the hypothesis that the same coeffcients apply to each individual. It is a standard F test, based on the comparison of a model obtained for the full sample and a model based on the estimation of an equation for each individual. The first argument of pooltest is a plm object. The second argument is a pvcm object obtained with model=within. If the first argument is a pooling model, the test applies to all the coefficients (including the intercepts), if it is a within model, different intercepts are assumed.*

```
if (!require("plm")) install.packages("plm")
```

```
## Loading required package: plm
```

```
## Loading required package: Formula
```

```
library(plm)

# I dowload my DataBase with read.csv2
DB<-data.frame(read.csv2("DataBase/DataBase_010418.csv", sep = ";",stringsAsFactors=FALSE, header = TRU

# Test of poolability --> error that I cannot understand

# M1_pvcm <- pvcm(ROA ~ SustainabilityPayLink + SustainableThemedCommitment + AuditScore + DebtRatio^2

# M1_plm<-plm(ROA ~ SustainabilityPayLink + SustainableThemedCommitment + AuditScore + DebtRatio^2 + Ne

# pooltest(M1_pvcm,M1_plm)

# pooltest(ROA ~ SustainabilityPayLink + SustainableThemedCommitment + AuditScore + DebtRatio^2 + NetMa
```

Fixed or Random : Hausman Test

Citation from @Torres-Reyna2010 :

> *To decide between fixed or random effects you can run a Hausman test where the null hypothesis is that the preferred model is random effects vs. the alternative the fixed effects (see Green, 2008, chapter 9). It basically tests whether the unique errors (ui) are correlated with the regressors, the null hypothesis is they are not.*

```
fixed <- plm(ROA ~ SustainabilityPayLink + SustainableThemedCommitment + AuditScore + DebtRatio^2 + Net

random <- plm(ROA ~ SustainabilityPayLink + SustainableThemedCommitment + AuditScore + DebtRatio^2 + Ne
```

```r
phtest(fixed,random)
```

```
##
##  Hausman Test
##
## data:  ROA ~ SustainabilityPayLink + SustainableThemedCommitment + AuditScore +  ...
## chisq = 21.344, df = 6, p-value = 0.001591
## alternative hypothesis: one model is inconsistent
```

Interpretation : P-Value < 0.05 then Ho is rejected and I have to use the fixed-effect.