Code:

library(plm)

#install.packages("plm")

setwd("C://Users//HP//Desktop//Jupyter\_practice//R")

a1<-read.csv("C://Users//HP//Desktop//Jupyter\_practice//R//bank new-2.csv")

#data

pdata = pdata.frame(a1, index = c("ID","Year"))

###Pooled Method###

pooledmethod=plm(ni~ta+ffr+cc, data=pdata, model = "pooling")

summary(pooledmethod)

pooledmethod=plm(nig~ta+ffr+cc, data=pdata, model = "pooling")

summary(pooledmethod)

pooledmethod=plm(roe~ta+ffr+cc, data=pdata, model = "pooling")

summary(pooledmethod)

##with growth

b1<-read.csv("C://Users//HP//Desktop//Jupyter\_practice//R//bank new-3.csv")

#data

pdata = pdata.frame(b1, index = c("ID","Year"))

###Pooled Method###

pooledmethod=plm(nig~tag+ffrg+ccg+lfg, data=pdata, model = "pooling")

summary(pooledmethod)

pooledmethod=plm(nig~ta+ffr+cc, data=pdata, model = "pooling")

summary(pooledmethod)

pooledmethod=plm(roe~ta+ffr+cc, data=pdata, model = "pooling")

summary(pooledmethod)

##with growth

c1<-read.csv("C://Users//HP//Desktop//Jupyter\_practice//R//bank new-3.csv")

#data

pdata = pdata.frame(c1, index = c("ID","Year"))

###Pooled Method###

pooledmethod=plm(nig~tag+ffrg+cg+lfg, data=pdata, model = "pooling")

summary(pooledmethod)

pooledmethod=plm(nig~ta+ffr+cc, data=pdata, model = "pooling")

summary(pooledmethod)

pooledmethod=plm(roe~ta+ffr+cc, data=pdata, model = "pooling")

summary(pooledmethod)

####MAIN CODE

pooledmethod=plm(roe~ta+ffr+cc+lf, data=pdata, model = "pooling")

summary(pooledmethod)

pooledmethod=plm(roe~tag+ffrg+cg+lfg, data=pdata, model = "pooling")

summary(pooledmethod)

pooledmethod=plm(roe~ffrg+cg+lfg, data=pdata, model = "pooling")

summary(pooledmethod)

pooledmethod=plm(roe~ta+cc+lf, data=pdata, model = "pooling")

summary(pooledmethod)

pooledmethod=plm(de~ta+ffr+cc+lf, data=pdata, model = "pooling")

summary(pooledmethod)

pooledmethod=plm(de~tag+ffrg+cg+lfg, data=pdata, model = "pooling")

summary(pooledmethod)

pooledmethod=plm(roe~ta+ffr+cc+lf+de, data=pdata, model = "pooling")

summary(pooledmethod)

##ta, cc, lf, roe

##fixed method

femethod=plm(roe~ta+ffr+cc+lf, data=pdata, model = "within")

summary(femethod)

##random method

remethod=plm(roe~ta+ffr+cc+lf, data=pdata, model = "random")

summary(remethod)

##Poolabilty Test

#null: pooled ols is stable

pooltest(roe~ta+ffr+cc+lf, data=pdata, model = "within")

##as p is less than 5%, pooled ols is unstable here

##Pooled vs Fixed

# Null: Pooled is consistent

# Alter: Fixed is consistent

pFtest(femethod,pooledmethod)

## ##as p is less than 5%, pooled ols is unstable here and Fixed effect model is consistent

##Hausman Test

# Null: Random is consistent

# Alter: Fixed is constant

phtest(femethod,remethod)

##we can say out of both, random is more consistent

##Panel Unit Root Testing, null is that the variable is non stationary

w = data.frame(split(pdata$roe, pdata$ID))

purtest(w, pmax=2,exo="intercept", test = "levinlin" )

w = data.frame(split(pdata$roe, pdata$ID))

purtest(w, pmax=2,exo="intercept", test = "levinlin" )

w = data.frame(split(pdata$ta, pdata$ID))

purtest(w, pmax=2,exo="intercept", test = "levinlin" )

w = data.frame(split(pdata$cc, pdata$ID))

purtest(w, pmax=2,exo="intercept", test = "levinlin" )

w = data.frame(split(pdata$ffr, pdata$ID))

purtest(w, pmax=2,exo="intercept", test = "levinlin" )

w = data.frame(split(pdata$lf, pdata$ID))

purtest(w, pmax=2,exo="intercept", test = "levinlin" )

#Durbin Watson for Autocorrelation;Null: there is no autocorrelation

pdwtest(roe~ta+ffr+cc+lf, data=pdata, model = "random")

# The error term generated from random effect has autocorrelation problem of serial correlation

####Homoscedasticity Test: Null-there is homoskedasticity

library(lmtest)

#install.packages("zoo")

bptest(roe~ta+ffr+cc+lf, data=pdata, studentize = F)

#Durbin Watson for Autocorrelation;Null: there is no autocorrelation

pdwtest(roe~ta+ffr+cc+lf, data=pdata, model = "random")

# The error term generated from random effect has autocorrelation problem of serial correlation

####Homoscedasticity Test: Null-there is homoskedasticity

library(lmtest)

#install.packages("zoo")

bptest(roe~ta+ffr+cc+lf, data=pdata, studentize = F)

#install.packages("lmtest")

##There is no homoscedasticity

###Controlling of Heteroscedasticity and autocorrelation of Panel Data###

#for the fixed effect effect model:

install.packages("sandwich")

library(sandwich)

coeftest(femethod,vcovHC(femethod,method = "arellano"))

#for the random effect effect model

coeftest(remethod,vcovHC(remethod,method = "arellano"))

# remethod <- plm(roe~ta+ffr+cc+lf, data=pdata, index=c("ID", "Year"), model="random")

#####Wooldridge Test for Autocorrelation in Panel Data

##null: There is no autocorrelation

pbgtest(femethod)

pbgtest(remethod)

####ADF TEST, NULL:Non- STATIONARY

#install.packages("tseries")

library(tseries)

adf.test(pdata$roe)

adf.test(pdata$ta)

adf.test(pdata$cc)

adf.test(pdata$lf)

adf.test(pdata$ffr)

##as p is 0.01, roe, ta, ffr, cc, lf are stationary

#install.packages("systemfit")

###SUR

library(systemfit)

sur=systemfit(roe~ta+ffr,method = "SUR", data = pdata)

summary(sur)

###granger causality test, Null: does not cause granger

pgrangertest(roe~ta,data = pdata)

pgrangertest(roe~cc,data = pdata)

pgrangertest(roe~lf,data = pdata)

pgrangertest(roe~ffr,data = pdata)

#ta,cc,lf,ffr does not cause roe as p is greater than 5%

###if we know the lag order

pgrangertest(roe~ta,data = pdata, order = 3)

pgrangertest(roe~cc,data = pdata,order = 3)

pgrangertest(roe~lf,data = pdata,order = 3)

pgrangertest(roe~ffr,data = pdata,order = 3)

pgrangertest(roe~ta,data = pdata, order = 4)

pgrangertest(roe~cc,data = pdata,order = 4)

pgrangertest(roe~lf,data = pdata,order = 4)

pgrangertest(roe~ffr,data = pdata,order = 4)

Ans:

R version 4.2.0 (2022-04-22 ucrt) -- "Vigorous Calisthenics"

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Platform: x86\_64-w64-mingw32/x64 (64-bit)

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'help.start()' for an HTML browser interface to help.

Type 'q()' to quit R.

[Workspace loaded from ~/.RData]

> library(plm)

> install.packages("plm")

Error in install.packages : Updating loaded packages

> setwd("C://Users//HP//Desktop//Jupyter\_practice//R")

> library(plm)

> #install.packages("plm")

> setwd("C://Users//HP//Desktop//Jupyter\_practice//R")

> ##with growth

> c1<-read.csv("C://Users//HP//Desktop//Jupyter\_practice//R//bank new-3.csv")

> #data

> pdata = pdata.frame(c1, index = c("ID","Year"))

> pooledmethod=plm(roe~ta+ffr+cc+lf, data=pdata, model = "pooling")

> summary(pooledmethod)

Pooling Model

Call:

plm(formula = roe ~ ta + ffr + cc + lf, data = pdata, model = "pooling")

Balanced Panel: n = 20, T = 19, N = 380

Residuals:

Min. 1st Qu. Median 3rd Qu. Max.

-0.3800416 -0.0185892 0.0063517 0.0280084 0.1927469

Coefficients:

Estimate Std. Error t-value Pr(>|t|)

(Intercept) 0.37211476 0.08265812 4.5019 9.004e-06 \*\*\*

ta -0.06359744 0.01790291 -3.5524 0.0004305 \*\*\*

ffr -0.00393280 0.00328559 -1.1970 0.2320693

cc 0.09454816 0.03425906 2.7598 0.0060675 \*\*

lf 0.00161893 0.00034738 4.6604 4.391e-06 \*\*\*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Total Sum of Squares: 1.2305

Residual Sum of Squares: 0.9524

R-Squared: 0.22603

Adj. R-Squared: 0.21777

F-statistic: 27.3783 on 4 and 375 DF, p-value: < 2.22e-16

> ##fixed method

> femethod=plm(roe~ta+ffr+cc+lf, data=pdata, model = "within")

> summary(femethod)

Oneway (individual) effect Within Model

Call:

plm(formula = roe ~ ta + ffr + cc + lf, data = pdata, model = "within")

Balanced Panel: n = 20, T = 19, N = 380

Residuals:

Min. 1st Qu. Median 3rd Qu. Max.

-0.33322842 -0.01617916 0.00039957 0.01975628 0.19919165

Coefficients:

Estimate Std. Error t-value Pr(>|t|)

ta -0.06359744 0.01499824 -4.2403 2.848e-05 \*\*\*

ffr -0.00393280 0.00275252 -1.4288 0.153938

cc 0.09454816 0.02870067 3.2943 0.001086 \*\*

lf 0.00161893 0.00029102 5.5630 5.219e-08 \*\*\*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Total Sum of Squares: 0.91269

Residual Sum of Squares: 0.63456

R-Squared: 0.30474

Adj. R-Squared: 0.25982

F-statistic: 39.0097 on 4 and 356 DF, p-value: < 2.22e-16

> ##random method

> remethod=plm(roe~ta+ffr+cc+lf, data=pdata, model = "random")

> summary(remethod)

Oneway (individual) effect Random Effect Model

(Swamy-Arora's transformation)

Call:

plm(formula = roe ~ ta + ffr + cc + lf, data = pdata, model = "random")

Balanced Panel: n = 20, T = 19, N = 380

Effects:

var std.dev share

idiosyncratic 0.0017825 0.0422192 0.694

individual 0.0007866 0.0280470 0.306

theta: 0.6736

Residuals:

Min. 1st Qu. Median 3rd Qu. Max.

-0.3485093 -0.0157188 0.0020185 0.0210051 0.1970879

Coefficients:

Estimate Std. Error z-value Pr(>|z|)

(Intercept) 0.37211476 0.06953059 5.3518 8.708e-08 \*\*\*

ta -0.06359744 0.01499824 -4.2403 2.232e-05 \*\*\*

ffr -0.00393280 0.00275252 -1.4288 0.1530617

cc 0.09454816 0.02870067 3.2943 0.0009867 \*\*\*

lf 0.00161893 0.00029102 5.5630 2.652e-08 \*\*\*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Total Sum of Squares: 0.94655

Residual Sum of Squares: 0.66842

R-Squared: 0.29384

Adj. R-Squared: 0.2863

Chisq: 156.039 on 4 DF, p-value: < 2.22e-16

> ##Poolabilty Test

> #null: pooled ols is stable

>

> pooltest(roe~ta+ffr+cc+lf, data=pdata, model = "within")

F statistic

data: roe ~ ta + ffr + cc + lf

F = 4.4124, df1 = 76, df2 = 280, p-value < 2.2e-16

alternative hypothesis: unstability

> ##as p is less than 5%, pooled ols is unstable here

>

> ##Pooled vs Fixed

> # Null: Pooled is consistent

> # Alter: Fixed is consistent

> pFtest(femethod,pooledmethod)

F test for individual effects

data: roe ~ ta + ffr + cc + lf

F = 9.3851, df1 = 19, df2 = 356, p-value < 2.2e-16

alternative hypothesis: significant effects

>

> ## ##as p is less than 5%, pooled ols is unstable here and Fixed effect model is consistent

> ##Hausman Test

>

> # Null: Random is consistent

> # Alter: Fixed is constant

>

> phtest(femethod,remethod)

Hausman Test

data: roe ~ ta + ffr + cc + lf

chisq = 1.6518e-14, df = 4, p-value = 1

alternative hypothesis: one model is inconsistent

> ##we can say out of both, random is more consistent

>

> ##Panel Unit Root Testing, null is that the variable is non stationary

> w = data.frame(split(pdata$roe, pdata$ID))

> purtest(w, pmax=2,exo="intercept", test = "levinlin" )

Levin-Lin-Chu Unit-Root Test (ex. var.: Individual Intercepts)

data: w

z = -5.635, p-value = 8.754e-09

alternative hypothesis: stationarity

Warning message:

In selectT(l, theTs) : the time series is short

>

> w = data.frame(split(pdata$roe, pdata$ID))

> purtest(w, pmax=2,exo="intercept", test = "levinlin" )

Levin-Lin-Chu Unit-Root Test (ex. var.: Individual Intercepts)

data: w

z = -5.635, p-value = 8.754e-09

alternative hypothesis: stationarity

Warning message:

In selectT(l, theTs) : the time series is short

>

> w = data.frame(split(pdata$ta, pdata$ID))

> purtest(w, pmax=2,exo="intercept", test = "levinlin" )

Levin-Lin-Chu Unit-Root Test (ex. var.: Individual Intercepts)

data: w

z = -1.5469, p-value = 0.06095

alternative hypothesis: stationarity

Warning message:

In selectT(l, theTs) : the time series is short

>

> w = data.frame(split(pdata$cc, pdata$ID))

> purtest(w, pmax=2,exo="intercept", test = "levinlin" )

Levin-Lin-Chu Unit-Root Test (ex. var.: Individual Intercepts)

data: w

z = 13.863, p-value = 1

alternative hypothesis: stationarity

Warning message:

In selectT(l, theTs) : the time series is short

>

> w = data.frame(split(pdata$ffr, pdata$ID))

> purtest(w, pmax=2,exo="intercept", test = "levinlin" )

Levin-Lin-Chu Unit-Root Test (ex. var.: Individual Intercepts)

data: w

z = -8.8073, p-value < 2.2e-16

alternative hypothesis: stationarity

Warning message:

In selectT(l, theTs) : the time series is short

>

> w = data.frame(split(pdata$lf, pdata$ID))

> purtest(w, pmax=2,exo="intercept", test = "levinlin" )

Levin-Lin-Chu Unit-Root Test (ex. var.: Individual Intercepts)

data: w

z = -0.58249, p-value = 0.2801

alternative hypothesis: stationarity

Warning message:

In selectT(l, theTs) : the time series is short

>

> #Durbin Watson for Autocorrelation;Null: there is no autocorrelation

>

> pdwtest(roe~ta+ffr+cc+lf, data=pdata, model = "random")

Durbin-Watson test for serial correlation in panel models

data: roe ~ ta + ffr + cc + lf

DW = 0.91544, p-value < 2.2e-16

alternative hypothesis: serial correlation in idiosyncratic errors

>

> # The error term generated from random effect has autocorrelation problem of serial correlation

> ####Homoscedasticity Test: Null-there is homoskedasticity

> library(lmtest)

Loading required package: zoo

Attaching package: ‘zoo’

The following objects are masked from ‘package:base’:

as.Date, as.Date.numeric

> #install.packages("zoo")

> bptest(roe~ta+ffr+cc+lf, data=pdata, studentize = F)

Breusch-Pagan test

data: roe ~ ta + ffr + cc + lf

BP = 92.245, df = 4, p-value < 2.2e-16

> #Durbin Watson for Autocorrelation;Null: there is no autocorrelation

>

> pdwtest(roe~ta+ffr+cc+lf, data=pdata, model = "random")

Durbin-Watson test for serial correlation in panel models

data: roe ~ ta + ffr + cc + lf

DW = 0.91544, p-value < 2.2e-16

alternative hypothesis: serial correlation in idiosyncratic errors

> ####Homoscedasticity Test: Null-there is homoskedasticity

> library(lmtest)

> ####Homoscedasticity Test: Null-there is homoskedasticity

> library(lmtest)

> #install.packages("zoo")

> bptest(roe~ta+ffr+cc+lf, data=pdata, studentize = F)

Breusch-Pagan test

data: roe ~ ta + ffr + cc + lf

BP = 92.245, df = 4, p-value < 2.2e-16

> ##There is no homoscedasticity

> ###Controlling of Heteroscedasticity and autocorrelation of Panel Data###

>

> #for the fixed effect effect model:

> library(sandwich)

> coeftest(femethod,vcovHC(femethod,method = "arellano"))

t test of coefficients:

Estimate Std. Error t value Pr(>|t|)

ta -0.06359744 0.01386035 -4.5884 6.198e-06 \*\*\*

ffr -0.00393280 0.00134578 -2.9223 0.0036962 \*\*

cc 0.09454816 0.02424029 3.9005 0.0001148 \*\*\*

lf 0.00161893 0.00040175 4.0297 6.832e-05 \*\*\*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> coeftest(remethod,vcovHC(remethod,method = "arellano"))

t test of coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) 0.37211476 0.09470517 3.9292 0.0001015 \*\*\*

ta -0.06359744 0.01386035 -4.5884 6.099e-06 \*\*\*

ffr -0.00393280 0.00134578 -2.9223 0.0036848 \*\*

cc 0.09454816 0.02424029 3.9005 0.0001138 \*\*\*

lf 0.00161893 0.00040175 4.0297 6.764e-05 \*\*\*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> pbgtest(femethod)

Breusch-Godfrey/Wooldridge test for serial correlation in panel

models

data: roe ~ ta + ffr + cc + lf

chisq = 125, df = 19, p-value < 2.2e-16

alternative hypothesis: serial correlation in idiosyncratic errors

> pbgtest(remethod)

Breusch-Godfrey/Wooldridge test for serial correlation in panel

models

data: roe ~ ta + ffr + cc + lf

chisq = 130.18, df = 19, p-value < 2.2e-16

alternative hypothesis: serial correlation in idiosyncratic errors

> library(tseries)

Error in library(tseries) : there is no package called ‘tseries’

> ####ADF TEST, NULL: STATIONARY

> install.packages("tseries")

Installing package into ‘C:/Users/HP/AppData/Local/R/win-library/4.2’

(as ‘lib’ is unspecified)

also installing the dependencies ‘xts’, ‘TTR’, ‘curl’, ‘quadprog’, ‘quantmod’

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/xts\_0.12.1.zip'

Content type 'application/zip' length 897059 bytes (876 KB)

downloaded 876 KB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/TTR\_0.24.3.zip'

Content type 'application/zip' length 519809 bytes (507 KB)

downloaded 507 KB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/curl\_4.3.2.zip'

Content type 'application/zip' length 2616370 bytes (2.5 MB)

downloaded 2.5 MB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/quadprog\_1.5-8.zip'

Content type 'application/zip' length 36699 bytes (35 KB)

downloaded 35 KB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/quantmod\_0.4.20.zip'

Content type 'application/zip' length 1032730 bytes (1008 KB)

downloaded 1008 KB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/tseries\_0.10-51.zip'

Content type 'application/zip' length 379068 bytes (370 KB)

downloaded 370 KB

package ‘xts’ successfully unpacked and MD5 sums checked

package ‘TTR’ successfully unpacked and MD5 sums checked

package ‘curl’ successfully unpacked and MD5 sums checked

package ‘quadprog’ successfully unpacked and MD5 sums checked

package ‘quantmod’ successfully unpacked and MD5 sums checked

package ‘tseries’ successfully unpacked and MD5 sums checked

The downloaded binary packages are in

C:\Users\HP\AppData\Local\Temp\RtmpcHh1UO\downloaded\_packages

> library(tseries)

Registered S3 method overwritten by 'quantmod':

method from

as.zoo.data.frame zoo

‘tseries’ version: 0.10-51

‘tseries’ is a package for time series analysis and

computational finance.

See ‘library(help="tseries")’ for details.

> adf.test(pdata$roe)

Augmented Dickey-Fuller Test

data: pdata$roe

Dickey-Fuller = -6.3018, Lag order = 7, p-value = 0.01

alternative hypothesis: stationary

Warning message:

In adf.test(pdata$roe) : p-value smaller than printed p-value

> adf.test(pdata$ta)

Augmented Dickey-Fuller Test

data: pdata$ta

Dickey-Fuller = -10.472, Lag order = 7, p-value = 0.01

alternative hypothesis: stationary

Warning message:

In adf.test(pdata$ta) : p-value smaller than printed p-value

> adf.test(pdata$cc)

Augmented Dickey-Fuller Test

data: pdata$cc

Dickey-Fuller = -10.713, Lag order = 7, p-value = 0.01

alternative hypothesis: stationary

Warning message:

In adf.test(pdata$cc) : p-value smaller than printed p-value

> adf.test(pdata$lf)

Augmented Dickey-Fuller Test

data: pdata$lf

Dickey-Fuller = -8.1069, Lag order = 7, p-value = 0.01

alternative hypothesis: stationary

Warning message:

In adf.test(pdata$lf) : p-value smaller than printed p-value

> adf.test(pdata$ffr)

Augmented Dickey-Fuller Test

data: pdata$ffr

Dickey-Fuller = -11.271, Lag order = 7, p-value = 0.01

alternative hypothesis: stationary

Warning message:

In adf.test(pdata$ffr) : p-value smaller than printed p-value

> adf.test(pdata$roe, k=1)

Augmented Dickey-Fuller Test

data: pdata$roe

Dickey-Fuller = -8.1275, Lag order = 1, p-value = 0.01

alternative hypothesis: stationary

Warning message:

In adf.test(pdata$roe, k = 1) : p-value smaller than printed p-value

> adf.test(pdata$roe, k=2)

Augmented Dickey-Fuller Test

data: pdata$roe

Dickey-Fuller = -7.6043, Lag order = 2, p-value = 0.01

alternative hypothesis: stationary

Warning message:

In adf.test(pdata$roe, k = 2) : p-value smaller than printed p-value

> adf.test(pdata$roe, k=3)

Augmented Dickey-Fuller Test

data: pdata$roe

Dickey-Fuller = -7.2702, Lag order = 3, p-value = 0.01

alternative hypothesis: stationary

Warning message:

In adf.test(pdata$roe, k = 3) : p-value smaller than printed p-value

> sur=systemfit(roe~ta+ffr+cc+lf,method = "SUR", data = pdata)

Error in systemfit(roe ~ ta + ffr + cc + lf, method = "SUR", data = pdata) :

could not find function "systemfit"

> install.packages("systemfit")

Installing package into ‘C:/Users/HP/AppData/Local/R/win-library/4.2’

(as ‘lib’ is unspecified)

also installing the dependencies ‘rprojroot’, ‘rstudioapi’, ‘diffobj’, ‘rematch2’, ‘stringi’, ‘cpp11’, ‘brio’, ‘callr’, ‘desc’, ‘jsonlite’, ‘pkgload’, ‘praise’, ‘processx’, ‘ps’, ‘waldo’, ‘backports’, ‘purrr’, ‘stringr’, ‘tidyr’, ‘tidyselect’, ‘evaluate’, ‘highr’, ‘yaml’, ‘xfun’, ‘testthat’, ‘broom’, ‘dplyr’, ‘numDeriv’, ‘knitr’, ‘SparseM’, ‘MatrixModels’, ‘sp’, ‘minqa’, ‘nloptr’, ‘RcppEigen’, ‘carData’, ‘abind’, ‘pbkrtest’, ‘quantreg’, ‘maptools’, ‘lme4’, ‘car’

There is a binary version available but the source version is

later:

binary source needs\_compilation

systemfit 1.1-24 1.1-26 FALSE

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/rprojroot\_2.0.3.zip'

Content type 'application/zip' length 109222 bytes (106 KB)

downloaded 106 KB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/rstudioapi\_0.13.zip'

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downloaded 294 KB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/diffobj\_0.3.5.zip'

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downloaded 967 KB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/rematch2\_2.1.2.zip'

Content type 'application/zip' length 47427 bytes (46 KB)

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trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/stringi\_1.7.6.zip'

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downloaded 13.5 MB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/cpp11\_0.4.2.zip'

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trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/brio\_1.1.3.zip'

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trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/jsonlite\_1.8.0.zip'

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downloaded 1.0 MB

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trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/processx\_3.6.1.zip'

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trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/backports\_1.4.1.zip'

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trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/testthat\_3.1.4.zip'

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downloaded 2.0 MB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/broom\_0.8.0.zip'

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downloaded 1.8 MB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/dplyr\_1.0.9.zip'

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downloaded 1.2 MB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/numDeriv\_2016.8-1.1.zip'

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trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/knitr\_1.39.zip'

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trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/SparseM\_1.81.zip'

Content type 'application/zip' length 1026945 bytes (1002 KB)

downloaded 1002 KB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/MatrixModels\_0.5-0.zip'

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trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/sp\_1.5-0.zip'

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downloaded 1.7 MB

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trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/nloptr\_2.0.3.zip'

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trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/RcppEigen\_0.3.3.9.2.zip'

Content type 'application/zip' length 2283833 bytes (2.2 MB)

downloaded 2.2 MB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/carData\_3.0-5.zip'

Content type 'application/zip' length 1822283 bytes (1.7 MB)

downloaded 1.7 MB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/abind\_1.4-5.zip'

Content type 'application/zip' length 63750 bytes (62 KB)

downloaded 62 KB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/pbkrtest\_0.5.1.zip'

Content type 'application/zip' length 355839 bytes (347 KB)

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trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/quantreg\_5.93.zip'

Content type 'application/zip' length 1726131 bytes (1.6 MB)

downloaded 1.6 MB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/maptools\_1.1-4.zip'

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downloaded 2.1 MB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/lme4\_1.1-29.zip'

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downloaded 4.7 MB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.2/car\_3.1-0.zip'

Content type 'application/zip' length 1672344 bytes (1.6 MB)

downloaded 1.6 MB

package ‘rprojroot’ successfully unpacked and MD5 sums checked

package ‘rstudioapi’ successfully unpacked and MD5 sums checked

package ‘diffobj’ successfully unpacked and MD5 sums checked

package ‘rematch2’ successfully unpacked and MD5 sums checked

package ‘stringi’ successfully unpacked and MD5 sums checked

package ‘cpp11’ successfully unpacked and MD5 sums checked

package ‘brio’ successfully unpacked and MD5 sums checked

package ‘callr’ successfully unpacked and MD5 sums checked

package ‘desc’ successfully unpacked and MD5 sums checked

package ‘jsonlite’ successfully unpacked and MD5 sums checked

package ‘pkgload’ successfully unpacked and MD5 sums checked

package ‘praise’ successfully unpacked and MD5 sums checked

package ‘processx’ successfully unpacked and MD5 sums checked

package ‘ps’ successfully unpacked and MD5 sums checked

package ‘waldo’ successfully unpacked and MD5 sums checked

package ‘backports’ successfully unpacked and MD5 sums checked

package ‘purrr’ successfully unpacked and MD5 sums checked

package ‘stringr’ successfully unpacked and MD5 sums checked

package ‘tidyr’ successfully unpacked and MD5 sums checked

package ‘tidyselect’ successfully unpacked and MD5 sums checked

package ‘evaluate’ successfully unpacked and MD5 sums checked

package ‘highr’ successfully unpacked and MD5 sums checked

package ‘yaml’ successfully unpacked and MD5 sums checked

package ‘xfun’ successfully unpacked and MD5 sums checked

package ‘testthat’ successfully unpacked and MD5 sums checked

package ‘broom’ successfully unpacked and MD5 sums checked

package ‘dplyr’ successfully unpacked and MD5 sums checked

package ‘numDeriv’ successfully unpacked and MD5 sums checked

package ‘knitr’ successfully unpacked and MD5 sums checked

package ‘SparseM’ successfully unpacked and MD5 sums checked

package ‘MatrixModels’ successfully unpacked and MD5 sums checked

package ‘sp’ successfully unpacked and MD5 sums checked

package ‘minqa’ successfully unpacked and MD5 sums checked

package ‘nloptr’ successfully unpacked and MD5 sums checked

package ‘RcppEigen’ successfully unpacked and MD5 sums checked

package ‘carData’ successfully unpacked and MD5 sums checked

package ‘abind’ successfully unpacked and MD5 sums checked

package ‘pbkrtest’ successfully unpacked and MD5 sums checked

package ‘quantreg’ successfully unpacked and MD5 sums checked

package ‘maptools’ successfully unpacked and MD5 sums checked

package ‘lme4’ successfully unpacked and MD5 sums checked

package ‘car’ successfully unpacked and MD5 sums checked

The downloaded binary packages are in

C:\Users\HP\AppData\Local\Temp\RtmpcHh1UO\downloaded\_packages

installing the source package ‘systemfit’

trying URL 'https://cran.rstudio.com/src/contrib/systemfit\_1.1-26.tar.gz'

Content type 'application/x-gzip' length 1033312 bytes (1009 KB)

downloaded 1009 KB

\* installing \*source\* package 'systemfit' ...

\*\* package 'systemfit' successfully unpacked and MD5 sums checked

\*\* using staged installation

\*\* R

\*\* data

\*\* inst

\*\* byte-compile and prepare package for lazy loading

\*\* help

\*\*\* installing help indices

\*\* building package indices

\*\* installing vignettes

\*\* testing if installed package can be loaded from temporary location

\*\* testing if installed package can be loaded from final location

\*\* testing if installed package keeps a record of temporary installation path

\* DONE (systemfit)

The downloaded source packages are in

‘C:\Users\HP\AppData\Local\Temp\RtmpcHh1UO\downloaded\_packages’

> ###SUR

> sur=systemfit(roe~ta+ffr+cc+lf,method = "SUR", data = pdata)

Error in systemfit(roe ~ ta + ffr + cc + lf, method = "SUR", data = pdata) :

could not find function "systemfit"

> #install.packages("systemfit")

> ###SUR

> library(systemfit)

Loading required package: Matrix

Loading required package: car

Loading required package: carData

Please cite the 'systemfit' package as:

Arne Henningsen and Jeff D. Hamann (2007). systemfit: A Package for Estimating Systems of Simultaneous Equations in R. Journal of Statistical Software 23(4), 1-40. http://www.jstatsoft.org/v23/i04/.

If you have questions, suggestions, or comments regarding the 'systemfit' package, please use a forum or 'tracker' at systemfit's R-Forge site:

https://r-forge.r-project.org/projects/systemfit/

> sur=systemfit(roe~ta+ffr+cc+lf,method = "SUR", data = pdata)

Error in .solve.dgC.lu(as(a, "dgCMatrix"), b = b, tol = tol) :

LU computationally singular: ratio of extreme entries in |diag(U)| = 8.102e-18

> summary(sur)

Error in h(simpleError(msg, call)) :

error in evaluating the argument 'object' in selecting a method for function 'summary': object 'sur' not found

> sur=systemfit(roe~ta+ffr,method = "SUR", data = pdata)

Error in .solve.dgC.lu(as(a, "dgCMatrix"), b = b, tol = tol) :

LU computationally singular: ratio of extreme entries in |diag(U)| = 4.306e-19

> summary(sur)

Error in h(simpleError(msg, call)) :

error in evaluating the argument 'object' in selecting a method for function 'summary': object 'sur' not found

> ###granger causality test, Null: does not cause granger

> pgrangertest(roe~ta,data = pdata)

Panel Granger (Non-)Causality Test (Dumitrescu/Hurlin (2012))

data: roe ~ ta

Ztilde = -0.58006, p-value = 0.5619

alternative hypothesis: Granger causality for at least one individual

> pgrangertest(roe~cc,data = pdata)

Panel Granger (Non-)Causality Test (Dumitrescu/Hurlin (2012))

data: roe ~ cc

Ztilde = -0.18276, p-value = 0.855

alternative hypothesis: Granger causality for at least one individual

> pgrangertest(roe~lf,data = pdata)

Panel Granger (Non-)Causality Test (Dumitrescu/Hurlin (2012))

data: roe ~ lf

Ztilde = -0.95029, p-value = 0.342

alternative hypothesis: Granger causality for at least one individual

> pgrangertest(roe~ffr,data = pdata)

Panel Granger (Non-)Causality Test (Dumitrescu/Hurlin (2012))

data: roe ~ ffr

Ztilde = -0.60728, p-value = 0.5437

alternative hypothesis: Granger causality for at least one individual

> ###if we know the lag order

>

> pgrangertest(roe~ta,data = pdata, order = 1)

Panel Granger (Non-)Causality Test (Dumitrescu/Hurlin (2012))

data: roe ~ ta

Ztilde = -0.58006, p-value = 0.5619

alternative hypothesis: Granger causality for at least one individual

> pgrangertest(roe~cc,data = pdata,order = 1)

Panel Granger (Non-)Causality Test (Dumitrescu/Hurlin (2012))

data: roe ~ cc

Ztilde = -0.18276, p-value = 0.855

alternative hypothesis: Granger causality for at least one individual

> pgrangertest(roe~lf,data = pdata,order = 1)

Panel Granger (Non-)Causality Test (Dumitrescu/Hurlin (2012))

data: roe ~ lf

Ztilde = -0.95029, p-value = 0.342

alternative hypothesis: Granger causality for at least one individual

> pgrangertest(roe~ffr,data = pdata,order = 1)

Panel Granger (Non-)Causality Test (Dumitrescu/Hurlin (2012))

data: roe ~ ffr

Ztilde = -0.60728, p-value = 0.5437

alternative hypothesis: Granger causality for at least one individual

> pgrangertest(roe~ta,data = pdata, order = 3)

Panel Granger (Non-)Causality Test (Dumitrescu/Hurlin (2012))

data: roe ~ ta

Ztilde = 3.2798, p-value = 0.001039

alternative hypothesis: Granger causality for at least one individual

> pgrangertest(roe~cc,data = pdata,order = 3)

Panel Granger (Non-)Causality Test (Dumitrescu/Hurlin (2012))

data: roe ~ cc

Ztilde = 6.3065, p-value = 2.855e-10

alternative hypothesis: Granger causality for at least one individual

> pgrangertest(roe~lf,data = pdata,order = 3)

Panel Granger (Non-)Causality Test (Dumitrescu/Hurlin (2012))

data: roe ~ lf

Ztilde = -0.73138, p-value = 0.4645

alternative hypothesis: Granger causality for at least one individual

> pgrangertest(roe~ffr,data = pdata,order = 3)

Panel Granger (Non-)Causality Test (Dumitrescu/Hurlin (2012))

data: roe ~ ffr

Ztilde = 7.5779, p-value = 3.513e-14

alternative hypothesis: Granger causality for at least one individual

> pgrangertest(roe~ta,data = pdata, order = 4)

Panel Granger (Non-)Causality Test (Dumitrescu/Hurlin (2012))

data: roe ~ ta

Ztilde = 0.79987, p-value = 0.4238

alternative hypothesis: Granger causality for at least one individual

> pgrangertest(roe~cc,data = pdata,order = 4)

Panel Granger (Non-)Causality Test (Dumitrescu/Hurlin (2012))

data: roe ~ cc

Ztilde = 3.063, p-value = 0.002191

alternative hypothesis: Granger causality for at least one individual

> pgrangertest(roe~lf,data = pdata,order = 4)

Panel Granger (Non-)Causality Test (Dumitrescu/Hurlin (2012))

data: roe ~ lf

Ztilde = -0.82939, p-value = 0.4069

alternative hypothesis: Granger causality for at least one individual

> pgrangertest(roe~ffr,data = pdata,order = 4)

Panel Granger (Non-)Causality Test (Dumitrescu/Hurlin (2012))

data: roe ~ ffr

Ztilde = 1.8758, p-value = 0.06068

alternative hypothesis: Granger causality for at least one individual