60 0.016 15.98158 7.707004

61 0.022 13.49503 6.516891

62 0.020 13.54082 6.573947

Effective.Federal.Funds.Rate.... Loss.Function Net.Income Net.Income.Growth

1 1.23838710 -4.05336010 147871000 0.29214000

2 0.98419355 -3.02071964 158360000 0.07093000

3 2.15612903 -1.95569616 179023000 0.13048000

4 4.15709677 -0.73140156 201505000 0.12558000

5 5.23806452 -0.06030976 212977000 0.05693000

6 4.24451613 -0.83637236 217664000 0.02201000

7 0.15516129 -11.63450485 153232000 -0.29602000

8 0.11806452 -35.05002555 200578000 0.30898000

9 0.18322581 -28.98190976 246754000 0.23021000

10 0.07161290 -20.25058505 285875000 0.15854000

11 0.16451613 -15.30670522 351191000 0.22848000

12 0.08516129 -7.40697020 316609000 -0.09847000

13 0.12258065 -2.84120576 292435000 -0.07635000

14 0.24064516 -1.75917748 288565000 -0.01323000

15 0.54000000 -0.51944151 232668000 -0.19371000

16 1.30161290 -0.08797052 334644000 0.43829000

17 2.27419355 0.01320947 445646000 0.33170000

18 1.55096774 0.02877444 500758000 0.12367000

19 0.09000000 -7.56021125 435030000 -0.13126000

20 0.07967742 8.35828089 618121000 0.42087000

21 1.23838710 -4.05336010 10355000 0.07495069

22 0.98419355 -3.02071964 12010000 0.15982617

23 2.15612903 -1.95569616 13101000 0.09084097

24 4.15709677 -0.73140156 13728000 0.04785894

25 5.23806452 -0.06030976 22128000 0.61188811

26 4.24451613 -0.83637236 15153000 -0.31521150

27 0.15516129 -11.63450485 -3916000 -1.25843067

28 0.11806452 -35.05002555 -41789000 9.67134831

29 0.18322581 -28.98190976 -3989000 -0.90454426

30 0.07161290 -20.25058505 21093000 -6.28779143

31 0.16451613 -15.30670522 14435000 -0.31564974

32 0.08516129 -7.40697020 20018000 0.38676827

33 0.12258065 -2.84120576 38723000 0.93440903

34 0.24064516 -1.75917748 40847000 0.05485112

35 0.54000000 -0.51944151 72100000 0.76512351

36 1.30161290 -0.08797052 73548000 0.02008322

37 2.27419355 0.01320947 121027000 0.64555120

38 1.55096774 0.02877444 161441000 0.33392549

39 0.09000000 -7.56021125 261988000 0.62280957

40 0.07967742 8.35828089 376913000 0.43866513

41 1.23838710 -4.05336010 8904000 0.06801000

42 0.98419355 -3.02071964 10768000 0.20934000

43 2.15612903 -1.95569616 9308000 -0.13559000

44 4.15709677 -0.73140156 7376000 -0.20756000

45 5.23806452 -0.06030976 7290000 -0.01166000

46 4.24451613 -0.83637236 7937000 0.08875000

47 0.15516129 -11.63450485 6744000 -0.15031000

48 0.11806452 -35.05002555 7219000 0.07043000

49 0.18322581 -28.98190976 8419000 0.16623000

50 0.07161290 -20.25058505 8502000 0.00986000

51 0.16451613 -15.30670522 8886000 0.04517000

52 0.08516129 -7.40697020 9315000 0.04828000

53 0.12258065 -2.84120576 10290000 0.10467000

54 0.24064516 -1.75917748 11017000 0.07065000

55 0.54000000 -0.51944151 10869000 -0.01343000

56 1.30161290 -0.08797052 9788000 -0.09946000

57 2.27419355 0.01320947 21748000 1.22190000

58 1.55096774 0.02877444 23721000 0.09072000

59 0.09000000 -7.56021125 18394000 -0.22457000

60 0.07967742 8.35828089 27834000 0.51321000

61 1.23838710 -4.05336010 9461000 0.00485000

62 0.98419355 -3.02071964 9513000 0.00550000

[ reached 'max' / getOption("max.print") -- omitted 338 rows ]

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

> data

SL ID Year Market.Capitalization Market.Cap.Growth Debt...Equity.Ratio

1 1 BOKF 2002 1789343670 0.11137 2.55667

2 1 BOKF 2003 2209731698 0.23494 2.26321

3 1 BOKF 2004 2889069788 0.30743 1.94645

4 1 BOKF 2005 3023672153 0.04659 1.74653

5 1 BOKF 2006 3676927974 0.21605 1.88263

6 1 BOKF 2007 3470470088 -0.05615 2.40312

7 1 BOKF 2008 2724327015 -0.21500 2.67886

8 1 BOKF 2009 3217462633 0.18101 2.26839

9 1 BOKF 2010 3636066128 0.13010 1.39431

10 1 BOKF 2011 3735591003 0.02737 1.00701

11 1 BOKF 2012 3715008179 -0.00551 1.03245

12 1 BOKF 2013 4561992571 0.22799 1.01644

13 1 BOKF 2014 4163023380 -0.08746 1.12843

14 1 BOKF 2015 4048562123 -0.02749 1.94328

15 1 BOKF 2016 5473204100 0.35189 1.74582

16 1 BOKF 2017 6042970484 0.10410 1.67494

17 1 BOKF 2018 4798294139 -0.20597 1.67386

18 1 BOKF 2019 6192990074 0.29066 1.77547

19 1 BOKF 2020 4814543444 -0.22258 0.72563

20 1 BOKF 2021 7236272634 0.50300 0.46505

21 2 ABCB 2002 127494511 -0.04493 1.48854

22 2 ABCB 2003 157520049 0.23550 1.24390

23 2 ABCB 2004 204466281 0.29803 1.26893

24 2 ABCB 2005 235421261 0.15139 1.05614

25 2 ABCB 2006 367275379 0.56008 0.74806

26 2 ABCB 2007 228134172 -0.37885 0.77111

27 2 ABCB 2008 160754327 -0.29535 0.59194

28 2 ABCB 2009 97978113 -0.39051 0.51047

29 2 ABCB 2010 249008185 1.54147 0.56307

30 2 ABCB 2011 244168442 -0.01944 0.34018

31 2 ABCB 2012 297501109 0.21843 0.33112

32 2 ABCB 2013 504645295 0.69628 1.05322

33 2 ABCB 2014 722037733 0.43078 0.59426

34 2 ABCB 2015 1094346017 0.51564 0.33503

35 2 ABCB 2016 1522510866 0.39125 0.97466

36 2 ABCB 2017 1794536562 0.17867 0.45588

37 2 ABCB 2018 1504353915 -0.16170 0.17945

38 2 ABCB 2019 2963376941 0.96987 0.62638

39 2 ABCB 2020 2645505086 -0.10727 0.21198

40 2 ABCB 2021 3459476289 0.30768 0.29397

41 3 ACNB 2002 115517146 0.14555 1.09100

42 3 ACNB 2003 145143897 0.25647 2.15400

43 3 ACNB 2004 140795016 -0.02996 2.64300

44 3 ACNB 2005 108178410 -0.23166 2.50100

45 3 ACNB 2006 108450215 0.00251 2.65800

46 3 ACNB 2007 86745944 -0.20013 1.89100

47 3 ACNB 2008 74287693 -0.14362 2.25500

48 3 ACNB 2009 76772042 0.03344 1.53500

49 3 ACNB 2010 93015702 0.21158 1.28600

50 3 ACNB 2011 82169313 -0.11661 1.20200

51 3 ACNB 2012 96444450 0.17373 1.05900

52 3 ACNB 2013 108119098 0.12105 1.23400

53 3 ACNB 2014 130746406 0.20928 1.15100

54 3 ACNB 2015 128537726 -0.01689 0.97400

55 3 ACNB 2016 189408188 0.47356 0.90700

56 3 ACNB 2017 207430510 0.09515 0.85400

57 3 ACNB 2018 276407292 0.33253 0.70300

58 3 ACNB 2019 267559065 -0.03201 0.54500

59 3 ACNB 2020 217582825 -0.18679 0.37000

60 3 ACNB 2021 271981821 0.25002 0.26900

61 4 AMNB 2002 150296016 0.37818 0.82200

62 4 AMNB 2003 147688667 -0.01735 0.94600

Debt...FCF.Ratio Return.on.Equity..ROE. Return.on.Assets..ROA.

1 9.50190 0.153 0.013

2 9.74217 0.134 0.012

3 8.43194 0.135 0.013

4 9.09780 0.135 0.013

5 14.24817 0.130 0.012

6 16.25542 0.118 0.011

7 40.67754 0.079 0.007

8 17.85534 0.096 0.009

9 10.37485 0.101 0.010

10 7.03148 0.107 0.012

11 4.57368 0.121 0.013

12 4.07427 0.106 0.012

13 -52.72263 0.091 0.010

14 27.74269 0.087 0.009

15 -61.58961 0.070 0.007

16 24.58061 0.097 0.010

17 -12.21543 0.118 0.013

18 -10.83433 0.106 0.012

19 -7.89122 0.084 0.009

20 -0.66842 0.116 0.013

21 7.72135 0.098 0.009

22 8.53709 0.108 0.010

23 8.22153 0.111 0.011

24 8.37829 0.105 0.010

25 4.71562 0.138 0.012

26 20.00461 0.081 0.007

27 8.94645 -0.021 -0.002

28 5.29998 -0.200 -0.019

29 3.70682 -0.028 -0.003

30 2.83003 0.063 0.006

31 -5.66804 0.037 0.004

32 18.19816 0.062 0.006

33 -21.55331 0.113 0.010

34 -4.59217 0.082 0.008

35 -7.83172 0.115 0.011

36 -5.53105 0.093 0.010

37 -2.21059 0.095 0.012

38 -1.63485 0.082 0.011

39 0.71849 0.104 0.013

40 -60.77017 0.132 0.017

41 27.76800 0.131 0.013

42 12.98400 0.151 0.013

43 37.51700 0.128 0.010

44 25.35400 0.101 0.008

45 24.35200 0.097 0.008

46 47.66500 0.098 0.008

47 17.23000 0.080 0.007

48 16.02300 0.083 0.007

49 15.42200 0.091 0.009

50 7.22600 0.087 0.008

51 14.78600 0.089 0.009

52 8.35300 0.090 0.009

53 16.51700 0.093 0.010

54 8.83600 0.097 0.010

55 9.29800 0.091 0.009

56 8.62000 0.071 0.007

57 4.25000 0.134 0.013

58 4.24300 0.130 0.014

59 3.84200 0.073 0.008

60 1.79500 0.104 0.010

61 6.58800 0.138 0.016

62 5.84000 0.134 0.015

Return.on.Capital..ROIC. Log.Total.Assets Log.Currency.in.Circulation....Bil.

1 0.017 13.49503 6.516891

2 0.016 13.54082 6.573947

3 0.017 13.60352 6.624590

4 0.018 13.64122 6.663562

5 0.017 13.66789 6.696201

6 0.015 13.69423 6.709663

7 0.008 14.61425 6.777514

8 0.011 14.61267 6.829053

9 0.014 14.68793 6.886930

10 0.017 14.87723 6.972049

11 0.019 14.88062 7.053322

12 0.016 15.19975 7.115002

13 0.015 15.31890 7.190449

14 0.013 15.31653 7.254916

15 0.009 15.31067 7.312790

16 0.015 15.30763 7.380595

17 0.014 15.22248 7.442430

18 0.013 15.23038 7.492348

19 0.011 15.80599 7.635558

20 0.017 15.98158 7.707004

21 0.013 13.49503 6.516891

22 0.015 13.54082 6.573947

23 0.016 13.60352 6.624590

24 0.015 13.64122 6.663562

25 0.018 13.66789 6.696201

26 0.011 13.69423 6.709663

27 -0.003 14.61425 6.777514

28 -0.016 14.61267 6.829053

29 -0.003 14.68793 6.886930

30 0.012 14.87723 6.972049

31 0.008 14.88062 7.053322

32 0.010 15.19975 7.115002

33 0.014 15.31890 7.190449

34 0.012 15.31653 7.254916

35 0.016 15.31067 7.312790

36 0.016 15.30763 7.380595

37 0.015 15.22248 7.442430

38 0.015 15.23038 7.492348

39 0.018 15.80599 7.635558

40 0.027 15.98158 7.707004

41 0.017 13.49503 6.516891

42 0.015 13.54082 6.573947

43 0.011 13.60352 6.624590

44 0.008 13.64122 6.663562

45 0.008 13.66789 6.696201

46 0.009 13.69423 6.709663

47 0.007 14.61425 6.777514

48 0.008 14.61267 6.829053

49 0.010 14.68793 6.886930

50 0.010 14.87723 6.972049

51 0.010 14.88062 7.053322

52 0.011 15.19975 7.115002

53 0.012 15.31890 7.190449

54 0.012 15.31653 7.254916

55 0.012 15.31067 7.312790

56 0.011 15.30763 7.380595

57 0.016 15.22248 7.442430

58 0.017 15.23038 7.492348

59 0.010 15.80599 7.635558

60 0.016 15.98158 7.707004

61 0.022 13.49503 6.516891

62 0.020 13.54082 6.573947

Effective.Federal.Funds.Rate.... Loss.Function Net.Income Net.Income.Growth

1 1.23838710 -4.05336010 147871000 0.29214000

2 0.98419355 -3.02071964 158360000 0.07093000

3 2.15612903 -1.95569616 179023000 0.13048000

4 4.15709677 -0.73140156 201505000 0.12558000

5 5.23806452 -0.06030976 212977000 0.05693000

6 4.24451613 -0.83637236 217664000 0.02201000

7 0.15516129 -11.63450485 153232000 -0.29602000

8 0.11806452 -35.05002555 200578000 0.30898000

9 0.18322581 -28.98190976 246754000 0.23021000

10 0.07161290 -20.25058505 285875000 0.15854000

11 0.16451613 -15.30670522 351191000 0.22848000

12 0.08516129 -7.40697020 316609000 -0.09847000

13 0.12258065 -2.84120576 292435000 -0.07635000

14 0.24064516 -1.75917748 288565000 -0.01323000

15 0.54000000 -0.51944151 232668000 -0.19371000

16 1.30161290 -0.08797052 334644000 0.43829000

17 2.27419355 0.01320947 445646000 0.33170000

18 1.55096774 0.02877444 500758000 0.12367000

19 0.09000000 -7.56021125 435030000 -0.13126000

20 0.07967742 8.35828089 618121000 0.42087000

21 1.23838710 -4.05336010 10355000 0.07495069

22 0.98419355 -3.02071964 12010000 0.15982617

23 2.15612903 -1.95569616 13101000 0.09084097

24 4.15709677 -0.73140156 13728000 0.04785894

25 5.23806452 -0.06030976 22128000 0.61188811

26 4.24451613 -0.83637236 15153000 -0.31521150

27 0.15516129 -11.63450485 -3916000 -1.25843067

28 0.11806452 -35.05002555 -41789000 9.67134831

29 0.18322581 -28.98190976 -3989000 -0.90454426

30 0.07161290 -20.25058505 21093000 -6.28779143

31 0.16451613 -15.30670522 14435000 -0.31564974

32 0.08516129 -7.40697020 20018000 0.38676827

33 0.12258065 -2.84120576 38723000 0.93440903

34 0.24064516 -1.75917748 40847000 0.05485112

35 0.54000000 -0.51944151 72100000 0.76512351

36 1.30161290 -0.08797052 73548000 0.02008322

37 2.27419355 0.01320947 121027000 0.64555120

38 1.55096774 0.02877444 161441000 0.33392549

39 0.09000000 -7.56021125 261988000 0.62280957

40 0.07967742 8.35828089 376913000 0.43866513

41 1.23838710 -4.05336010 8904000 0.06801000

42 0.98419355 -3.02071964 10768000 0.20934000

43 2.15612903 -1.95569616 9308000 -0.13559000

44 4.15709677 -0.73140156 7376000 -0.20756000

45 5.23806452 -0.06030976 7290000 -0.01166000

46 4.24451613 -0.83637236 7937000 0.08875000

47 0.15516129 -11.63450485 6744000 -0.15031000

48 0.11806452 -35.05002555 7219000 0.07043000

49 0.18322581 -28.98190976 8419000 0.16623000

50 0.07161290 -20.25058505 8502000 0.00986000

51 0.16451613 -15.30670522 8886000 0.04517000

52 0.08516129 -7.40697020 9315000 0.04828000

53 0.12258065 -2.84120576 10290000 0.10467000

54 0.24064516 -1.75917748 11017000 0.07065000

55 0.54000000 -0.51944151 10869000 -0.01343000

56 1.30161290 -0.08797052 9788000 -0.09946000

57 2.27419355 0.01320947 21748000 1.22190000

58 1.55096774 0.02877444 23721000 0.09072000

59 0.09000000 -7.56021125 18394000 -0.22457000

60 0.07967742 8.35828089 27834000 0.51321000

61 1.23838710 -4.05336010 9461000 0.00485000

62 0.98419355 -3.02071964 9513000 0.00550000

[ reached 'max' / getOption("max.print") -- omitted 338 rows ]

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

>

> ###Pooled Method###

> pooledmethod=plm(Net Income~Log Total Assets + Effective Federal Funds Rate (%)+ Log Currency in Circulation ($ Bil), data=pdata, model = "pooling")

Error: unexpected symbol in "pooledmethod=plm(Net Income"

> 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)

Pooling Model

Call:

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

Balanced Panel: n = 20, T = 20, N = 400

Residuals:

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

-4.62e+09 -2.10e+09 -1.45e+09 0.00e+00 -7.97e+08 4.32e+10

Coefficients:

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

(Intercept) -1.4176e+10 7.3910e+09 -1.9180 0.05583 .

ta -1.1053e+09 1.7443e+09 -0.6336 0.52668

ffr 1.2403e+08 3.3344e+08 0.3720 0.71010

cc 4.5570e+09 3.2345e+09 1.4089 0.15966

---

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

Total Sum of Squares: 1.3222e+22

Residual Sum of Squares: 1.2916e+22

R-Squared: 0.023202

Adj. R-Squared: 0.015802

F-statistic: 3.13535 on 3 and 396 DF, p-value: 0.025467

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

> summary(pooledmethod)

Pooling Model

Call:

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

Balanced Panel: n = 20, T = 20, N = 400

Residuals:

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

-357.28676 -0.14954 1.09491 2.77703 18.11498

Coefficients:

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

(Intercept) 11.70470 25.73238 0.4549 0.6495

ta -7.91489 6.07298 -1.3033 0.1932

ffr -0.55783 1.16089 -0.4805 0.6311

cc 14.78599 11.26120 1.3130 0.1899

Total Sum of Squares: 157580

Residual Sum of Squares: 156550

R-Squared: 0.0065222

Adj. R-Squared: -0.0010041

F-statistic: 0.866588 on 3 and 396 DF, p-value: 0.45845

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

> ##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"))

> summary(pooledmethod)

Pooling Model

Call:

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

Balanced Panel: n = 20, T = 20, N = 400

Residuals:

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

-0.366844 -0.018807 0.009237 0.029749 0.163608

Coefficients:

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

(Intercept) 0.2612126 0.0677599 3.8550 0.000135 \*\*\*

ta -0.0980377 0.0159917 -6.1305 2.120e-09 \*\*\*

ffr -0.0025422 0.0030569 -0.8316 0.406123

cc 0.1804163 0.0296536 6.0841 2.765e-09 \*\*\*

---

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

Total Sum of Squares: 1.3279

Residual Sum of Squares: 1.0856

R-Squared: 0.18249

Adj. R-Squared: 0.1763

F-statistic: 29.4661 on 3 and 396 DF, p-value: < 2.22e-16

> ###Pooled Method###

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

Error in eval(predvars, data, env) : object 'tag' not found

> ##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)

Pooling Model

Call:

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

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

Residuals:

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

-358.45468 0.35105 1.36825 2.23430 16.97736

Coefficients:

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

(Intercept) 0.893851 2.931783 0.3049 0.7606

tag 0.988709 8.383691 0.1179 0.9062

ffrg 0.189420 1.531871 0.1237 0.9017

cg -35.729481 48.453375 -0.7374 0.4613

lfg -0.098206 0.141516 -0.6940 0.4881

Total Sum of Squares: 157540

Residual Sum of Squares: 157030

R-Squared: 0.0031845

Adj. R-Squared: -0.0074482

F-statistic: 0.2995 on 4 and 375 DF, p-value: 0.87822

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

> summary(pooledmethod)

Pooling Model

Call:

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

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

Residuals:

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

-0.3664969 -0.0184216 0.0084532 0.0294609 0.1644207

Coefficients:

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

(Intercept) 0.2255733 0.0785218 2.8727 0.0043 \*\*

ta -0.0919354 0.0172964 -5.3153 1.830e-07 \*\*\*

ffr -0.0013342 0.0033259 -0.4011 0.6885

cc 0.1724376 0.0307188 5.6134 3.858e-08 \*\*\*

---

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

Total Sum of Squares: 1.2305

Residual Sum of Squares: 1.0076

R-Squared: 0.1812

Adj. R-Squared: 0.17467

F-statistic: 27.7361 on 3 and 376 DF, p-value: 3.1774e-16

> 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

> 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

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

Error in eval(predvars, data, env) : object 'ccg' not found

> 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

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

> summary(pooledmethod)

Pooling Model

Call:

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

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

Residuals:

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

-0.3678559 -0.0209485 0.0076633 0.0299332 0.1675304

Coefficients:

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

(Intercept) 0.10566791 0.00781930 13.5137 < 2.2e-16 \*\*\*

tag 0.02277995 0.02235997 1.0188 0.3089630

ffrg 0.00875996 0.00408562 2.1441 0.0326676 \*

cg -0.37260411 0.12922900 -2.8833 0.0041624 \*\*

lfg 0.00126556 0.00037743 3.3531 0.0008807 \*\*\*

---

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

Total Sum of Squares: 1.2305

Residual Sum of Squares: 1.117

R-Squared: 0.092235

Adj. R-Squared: 0.082552

F-statistic: 9.52564 on 4 and 375 DF, p-value: 2.4117e-07

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

> summary(pooledmethod)

Pooling Model

Call:

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

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

Residuals:

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

-0.363038 -0.020330 0.006836 0.031790 0.165691

Coefficients:

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

(Intercept) 0.10495174 0.00778803 13.4760 < 2.2e-16 \*\*\*

ffrg 0.00550837 0.00255075 2.1595 0.0314426 \*

cg -0.31695066 0.11712115 -2.7062 0.0071163 \*\*

lfg 0.00128562 0.00037694 3.4107 0.0007183 \*\*\*

---

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

Total Sum of Squares: 1.2305

Residual Sum of Squares: 1.1201

R-Squared: 0.089723

Adj. R-Squared: 0.08246

F-statistic: 12.3536 on 3 and 376 DF, p-value: 1.0063e-07

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

> summary(pooledmethod)

Pooling Model

Call:

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

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

Residuals:

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

-0.3803726 -0.0205284 0.0063589 0.0278644 0.1920975

Coefficients:

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

(Intercept) 0.30030296 0.05689294 5.2784 2.208e-07 \*\*\*

ta -0.04828715 0.01253363 -3.8526 0.0001374 \*\*\*

cc 0.07196806 0.02861412 2.5151 0.0123153 \*

lf 0.00154836 0.00034254 4.5203 8.285e-06 \*\*\*

---

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

Total Sum of Squares: 1.2305

Residual Sum of Squares: 0.95603

R-Squared: 0.22307

Adj. R-Squared: 0.21687

F-statistic: 35.9854 on 3 and 376 DF, p-value: < 2.22e-16

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

> summary(pooledmethod)

Pooling Model

Call:

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

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

Residuals:

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

-2.249906 -1.243878 -0.686643 -0.022393 35.335088

Coefficients:

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

(Intercept) 12.353132 3.668547 3.3673 0.0008374 \*\*\*

ta 0.333283 0.808188 0.4124 0.6802938

cc -2.196335 1.845084 -1.1904 0.2346515

lf 0.002504 0.022087 0.1134 0.9098002

---

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

Total Sum of Squares: 4081.4

Residual Sum of Squares: 3975.1

R-Squared: 0.026044

Adj. R-Squared: 0.018273

F-statistic: 3.35148 on 3 and 376 DF, p-value: 0.019122

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

> summary(pooledmethod)

Pooling Model

Call:

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

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

Residuals:

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

-2.221658 -1.245909 -0.676745 -0.033719 35.326422

Coefficients:

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

(Intercept) 10.47318318 5.33842430 1.9618 0.05052 .

ta 0.73408876 1.15624859 0.6349 0.52589

ffr 0.10295600 0.21219785 0.4852 0.62783

cc -2.78745531 2.21260075 -1.2598 0.20852

lf 0.00065664 0.02243516 0.0293 0.97667

---

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

Total Sum of Squares: 4081.4

Residual Sum of Squares: 3972.6

R-Squared: 0.026655

Adj. R-Squared: 0.016273

F-statistic: 2.56735 on 4 and 375 DF, p-value: 0.037845

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

> summary(pooledmethod)

Pooling Model

Call:

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

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

Residuals:

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

-3.20577 -1.12203 -0.72768 -0.03826 34.34231

Coefficients:

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

(Intercept) 2.709995 0.466373 5.8108 1.329e-08 \*\*\*

tag 1.935390 1.333634 1.4512 0.14756

ffrg 0.027280 0.243682 0.1119 0.91092

cg -19.430942 7.707712 -2.5210 0.01212 \*

lfg -0.022334 0.022512 -0.9921 0.32179

---

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

Total Sum of Squares: 4081.4

Residual Sum of Squares: 3973.7

R-Squared: 0.026378

Adj. R-Squared: 0.015993

F-statistic: 2.53995 on 4 and 375 DF, p-value: 0.039573

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

> summary(pooledmethod)

Pooling Model

Call:

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

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

Residuals:

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

-0.379493 -0.018472 0.006540 0.027807 0.187422

Coefficients:

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

(Intercept) 0.36848154 0.08317134 4.4304 1.237e-05 \*\*\*

ta -0.06385211 0.01793196 -3.5608 0.0004174 \*\*\*

ffr -0.00396851 0.00329019 -1.2062 0.2285158

cc 0.09551514 0.03436872 2.7791 0.0057256 \*\*

lf 0.00161870 0.00034775 4.6547 4.512e-06 \*\*\*

de 0.00034691 0.00080044 0.4334 0.6649763

---

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

Total Sum of Squares: 1.2305

Residual Sum of Squares: 0.95192

R-Squared: 0.22642

Adj. R-Squared: 0.21607

F-statistic: 21.8928 on 5 and 374 DF, p-value: < 2.22e-16

> ##ta, cc, lf, roe

> ##fixed method

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

> ##ta, cc, lf, roe

> ##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

> 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

> 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

> 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

> 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

> 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

> w = data.frame(split(pdata$roe, pdata$ta, pdata$ffr, pdata$lf, pdata$cc))

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

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

data: w

z = -17.571, p-value < 2.2e-16

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

> 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

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

Error in bptest(roe ~ ta + ffr + cc + lf, data = pdata, studentsize = F) :

could not find function "bptest"

> ####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.package(zoo)

Error in install.package(zoo) : could not find function "install.package"

> install.packages("zoo")

Error in install.packages : Updating loaded packages

> install.packages("zoo")

Warning in install.packages :

package ‘zoo’ is in use and will not be installed

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)

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, studentsize = F)