R OLS and Instrumental Variable Regression M Outcomes and N RHS Alternatives

Fan Wang

2020-04-01

Contents

IV Loop over RHS

Go to the RMD, R, PDF, or HTML version of this file. Go back to fan's REconTools Package, R Code Examples Repository (bookdown site), or Intro Stats with R Repository (bookdown site).

Regression with a Variety of Outcome Variables and Right Hand Side Variables. There are M outcome variables, and there are N alternative right hand side variables. Regress each M outcome variable and each N alternative right hand side variable, with some common sets of controls and perhaps shared instruments. The output file is a M by N matrix of coefficients, with proper variable names and row names. The matrix stores coefficients for this key endogenous variable.

• Dependency: R4Econ/linreg/ivreg/ivregdfrow.R

Construct Program The program relies on double lapply. lapply is used for convenience, not speed.

```
ff_reg_mbyn <- function(list.vars.y, list.vars.x,</pre>
                         vars.c, vars.z, df,
                         return_all = FALSE,
                         stats ends = 'value', time = FALSE) {
  \# reqf.iv() function is from C:\Users\fan\R\LEcon\lineg\ivreq\ivreq\finou.
  if (time) {
    start_time <- Sys.time()</pre>
  }
  if (return_all) {
    df.reg.out.all <-
      bind_rows(lapply(list.vars.x,
                        function(x) (
                          bind_rows(
                            lapply(list.vars.y, regf.iv,
                                   vars.x=x, vars.c=vars.c, vars.z=vars.z, df=df))
                        )))
  } else {
    df.reg.out.all <-
      (lapply(list.vars.x,
              function(x) (
```

```
# Library
library(tidyverse)
library(AER)

# Load Sample Data
setwd('C:/Users/fan/R4Econ/_data/')
df <- read_csv('height_weight.csv')

# Source Dependency
source('C:/Users/fan/R4Econ/linreg/ivreg/ivregdfrow.R')

# Setting
options(repr.matrix.max.rows=50, repr.matrix.max.cols=50)</pre>
```

Prepare Data Parameters.

```
var.y1 <- c('hgt')
var.y2 <- c('wgt')
var.y3 <- c('vil.id')
list.vars.y <- c(var.y1, var.y2, var.y3)

var.x1 <- c('prot')
var.x2 <- c('cal')
var.x3 <- c('wealthIdx')
var.x4 <- c('p.A.prot')
var.x5 <- c('p.A.nProt')
list.vars.x <- c(var.x1, var.x2, var.x3, var.x4, var.x5)

vars.z <- c('indi.id')
vars.c <- c('sex', 'wgt0', 'hgt0', 'svymthRound')</pre>
```

Program Testing

| vars_var.y | prot_tvalue | cal_tvalue | wealthIdx_tvalue | p.A.prot_tvalue | p.A.nProt_tvalue |
|------------|-------------------|-------------------|------------------|------------------|------------------|
| hgt | 18.8756010031786 | 23.4421863484661 | 13.508899618216 | 3.83682180045518 | 32.5448257554855 |
| wgt | 16.3591125056062 | 17.3686031309332 | 14.1390521528113 | 1.36958319982295 | 12.0961557911467 |
| vil.id | -14.9385580468907 | -19.6150110809452 | 34.0972558327347 | 8.45943342783186 | 17.7801422421419 |

Test Program OLS Z-Stat

| vars_var.y | prot_zvalue | cal_zvalue | wealthIdx_zvalue | p.A.prot_zvalue | p.A.nProt_zvalue |
|------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| hgt | 8.87674929300964 | 12.0739764947235 | 4.62589553677969 | 26.6373587567312 | 32.1162192385744 |
| wgt | 5.60385871756365 | 6.1225187008946 | 5.17869536991717 | 11.9295584469998 | 12.3509307017263 |
| vil.id | -9.22106223347162 | -13.0586007975839 | -51.5866689219593 | -29.9627476577329 | -38.3528894620707 |

Test Program IV T-stat

| vars_var.y | prot_Estimate | cal_Estimate | wealthIdx_Estimate | p.A.prot_Estimate | p.A.nProt_Estimate |
|------------|---------------------|----------------------|--------------------|----------------------|---------------------|
| hgt | 0.049431093806755 | 0.00243408846205622 | 0.21045655488185 | 3.86952250259526e-05 | 0.00542428867316449 |
| wgt | 16.5557424523585 | 0.699072500364623 | 106.678721085969 | 0.00521731297924587 | 0.779514232050632 |
| vil.id | -0.0758835879205584 | -0.00395676177098486 | 0.451733304543324 | 0.000149388430455142 | 0.00526237555581024 |

Test Program OLS Coefficient

```
vars.z <- c('indi.id')
suppressWarnings(suppressMessages(
  ff_reg_mbyn(list.vars.y, list.vars.x,</pre>
```

```
vars.c, vars.z, df,
    return_all = FALSE,
    stats_ends = 'Estimate'))) %>%
kable() %>%
kable_styling_fc_wide()
```

| vars_var.y | prot_Estimate | cal_Estimate | wealthIdx_Estimate | $p.A.prot_Estimate$ | p.A.nProt_Estimate |
|------------|-------------------|--------------------|--------------------|----------------------|---------------------|
| hgt | 0.859205733632614 | 0.0238724384575419 | 0.144503490136948 | 0.00148073028434642 | 0.0141317656200726 |
| wgt | 98.9428234201406 | 2.71948246216953 | 69.1816142883022 | 0.221916473012486 | 2.11856940494335 |
| vil.id | -6.02451379136132 | -0.168054407187466 | -1.91414470908345 | -0.00520794333267238 | -0.0494468877742109 |

Test Program IV coefficient

| X.Intercept. Estimate | 27.3029514189609 | 99.973884728925 | 31.46466602210029 | 27.9038445914729 | 219.626765179299 | 30.5103967998551 | 35.790038860306 | -2662.74797734003 | 29.2380039651127 | 23.9945007729744 | -547.959546430029 | 22.3367814226238 | 21.0904444950927 | -476.703973630552 | 22.7780909464511 |
|--|--|---|--|--|--|---|---|---|--|---|--|--|--|---|---|
| Introcept. Pr. t. | 5.682171822149G3+231 | 0.75529005553805 | 6.780646553403994-84 | 8.24252673999353=242 | 0.493216914827181 | 1.62688785535218-79 | 2.26726906489443-145 | 7.13318962990131e-65 | 1.535790352679736-124 | 2.11912340053336e-165 | 0.0941551350855875 | 3.66337296226599e-49 | 2.34941965806765e-181 | 0.143944033032383 | 9.580294507112114-52 |
| Introcept. Std.Error | 0.831272666092284 | 329.450650379964 | 1.61328519718754 | 0.828072565159449 | 220.522532223672 | 1.60831190651104 | 1.38461348429899 | 670.301542938561 | 1.22902177264147 | 0.86658166219672 | 227.343126852912 | 1.3099937309759 | 0.543371070630828 | 325.1328.0308906 | 1.5004026559967 |
| intercept, typine | 32.90g789696777% | 0.31166697965244 | 19.569474977155 | 23.6973421962119 | 0.685214557790078 | 18.9704485063256 | 25.840029368106 | -3.97246270039407 | 23.8479483950102 | 27.6890900532576 | -1.6729907509002 | 14.7939130971335 | 29.0397533397398 | -1.06069652604567 | 15.1909794232527 |
| i respected v | 0.412229996159741 | 0.60716996506993 | 0.0979347513690973 | n shonggraph(45) | 0.6879636795112007 | -0-045349907116090449 | 0.97501.89319990565 | 0.90093693733695 | 0.058543179819776 | 0.90.00000001459616 | 0.6273000977783.44 | 0.0003190074190696 | 0.924547953656956 | 0.690950790454794 | 0.0995497955117917 |
| O v | 6 | 6 | 6 | 6 | 6 | 4 | 4 | 6 | 9 | 6 | 6 | 6 | 6 | 6 | 6 |
| 12 v | | 18962 | 19999 | 18907 | 18962 | 18999 | 25092 | | 30913 | 16567 | 18391 | 18845 | 1897 | 18591 | 18845 |
| D v | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| uri) Estimate | 0.60391517349617 | 56.3852927199184 | 0.296844389234445 | 0.589847843438394 | 52,9797041896704 | -0.272219230757999 | 0.439074453256029 | 47.170969664749 | 0.35909363992046 | 0.087209209111965 | 72.100360623359 | -0.109789161111504 | 9.62226G398399299 | 62.7336229299257 | -0.157911627494093 |
| 162) PtL. | 1.14533314566771e-183 | 1.52417506966835e-12 | 1.00290396203743-13 | 7.7917g9G1119325e-177 | 3.05720143843295e-11 | 8.89189153865126e-12 | 2.71000179219152-36 | 0.00520296567000071 | 2.41120063623865e-31 | | 4.7961302424896e-19 | | 1.11511327162935e-190 | 8.38506282719209-15 | 2.13721119929676e-66 |
| gt) Std.Error | 0.020667538632713 | 7.967(5224000553 | 0.0401060912799595 | 0.0205836398279421 | 7.96822145797115 | 0.0399777363543633 | 0.0346701896616764 | 16.8823488375743 | 0.000799463553359 | | 8.07740906400683 | | 0.02089.05437579215 | 3.07589092979212 | 0.0071223237183417 |
| gtt Makerus gtt tudge | 29.2231179249683 | 7.90730222000333 | -7.4014799000965 | 28.6561.96975977 | 6.64774497796099 | -6.83428417151858 | 12.6002985423502 | 2.79445531182964 | -11.6590740C325 | 22.1393351494544 | 8.8077429884388833 8.926773298555983 | | 29.80550020495 | 7.76901157994423 | -4.25112420677158 |
| | | | | | | -6.83E28E11151858 | | | | | | | | | |
| eut_Estimate | 0.049430093806755 | 16.5557424523585 | -0.0058935979295584 | NA | NA NA | NA | NA | NA | NA | | NA | | NA | NA | NA. |
| est_Prt. | | 9.6120337322218360 | 3.56296093562335e-50 | NA. | | NA | | | NA | | NA | | NA | NA | NA |
| eut_Std.Error | | 1.01201959743751 | 0.00507971392734022 | NA. | NA. | NA | NA | NA . | NA | | NA. | NA | NA | NA | NA |
| est_trader | 18.8756010001786 | 16.3591125056062 | -14.9385580468907 | NA. | NA. | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| .aquand_v | 0.814299000954592 | 0.607272921412925 | 0.0075790335372957 | 0.806117722817266 | 0.60796705182314 | 0.0456030419476623 | 0.93202797977066 | 0.920952383432395 | 0.0599997716363463 | 0.804740609090486 | 0.617403296088206 | | 0.824589538985803 | 0.629352935549793 | 0.0397997530096596 |
| suMale Estimate | 0.935177192149406 | 415.163616765357 | -0.254089999175318 | 0.893454962955608 | 405.534891838028 | -0.191389499600951 | 1.60682463132073 | 999.926979716707 | -0.33436777751525 | | 397.141949675354 | | 0.96490990500711 | 400.59054369002 | -0.423929627917592 |
| exhiate Ptt. | 2.39482111724900+51 | 2.0925290029000.50-67 | 0.0020709259907025 | 2.097659053359779-47 | 2.513656756967529-64 | 0.1290000754000748 | 1.3002730202354-06 | 2.6463089114000g-86 | 0.00031174554787706 | | 6.194407 D677962i-59 | | 1.245566152365604-52 | 1.18409030741204+60 | 0.00015614000636154 |
| architale Stat France | 0.0678492294097367 | 22 6516343,439675 | 0.120092045309633 | 0.0616029355633535 | 23 6567517563516 | 0.11679990545455 | 0.1044752927957902 | 50 5470476511796 | 0.09771922234229799 | 0.0617309019973967 | 24.4479730996481 | @ 119292WG992WG9 | 0.0029977077360307 | 24.95/9999077297 | 0.119069536545845 |
| exhibit today | 12 1200306 P0068 | 17.4059409514302 | 2.11577613841484 | 14.5027763743537 | 16.9997478990157 | -1.51508010885176 | 17.2902770900016 | 19,76600(0)507596 | -3.69622577771614 | 11.1108867823929 | 16.2147/08/223453 | -3.96717228218682 | 15.316409812052 | 16.4893316350029 | -3.79137329093902 |
| ierea V | 4.21029544914335 | 1623 77111076429 | 9.19.60700000001 | A 19939119979039 | 1622 225 2960650 | s 15073090560541 | s removements | 2001 15220012507 | 7.93450723909962 | A 95003031773430 | 16/5 77655655999 | 7 6/15669/20025 | 4 22972961593693 | 1679 /2065007515 | 7.59462918474114 |
| contlibound Estimate | | 189.0429688392 | -0.0054758585998997 | 0.951999939799917 | 185.308286001897 | 0.0200471227905442 | 0.432815253441721 | 189.877991796084 | 0.0021514£302529796 | 0.90903.002000.130 | 205.597385664745 | -0.0399071490702906 | 0.921892091790082 | 205.945141306000 | -0.0557201455206461 |
| wenthRound Pr., t. | A | 0 | 0.0397964033067173 | 1.0 | 0 | 0.0117151165196433 | 4 | 0 | 0.000447277200067272 | 0 | | 1.97139399992395-19 | 4 | 0 | 7 760.40.49775376693 |
| cynthRound Std Error | | 1.4955473831309 | 0.00052730297891217 | 0.0041123488213290 | 1.59260919679221 | 0.00799017907322279 | 1.00C2S32373332898 | 0.8270030998222 | 0.0006(27920956823) | 0.00331109017586007 | 1.22083496490832 | | 9.000171135.0002635 | 1.228/8979019071 | 0.0000000000000000000000000000000000000 |
| | 221 500692230022 | 196.403923139396 | -2.0559D000161154 | 297.16832490006 | 116 957095671967 | 2.50065522351666 | 594 962299361197 | 596 959999679556 | 3.5309922277002 | 977 796573 3 99766 | 164 3007 29796095 | -e sossoscii taacii | 290 71/19/7971/49 | 167 926734460200 | -0.000000000000000000000000000000000000 |
| | 221.NBH002.BH022 | 125-033823119395 | | 207.168822400006 | 116.357(030)1267 | 2.52085021254888 | 394.362330361190 | 338.332339919308 | | 277.728011133796 | 164.30812X3809G | | 290.114194780148 | 167.9267.31468268 | -9.82988630236028 |
| OM_OMY | No. | vg. | V0.50 | 165 | wg: | 12.30 | 1g | wg | V0.56 | 163 | wg: | VE34 | 16 | wgt | VILIG |
| THE THESE | sex+wgt0+kgt0+wywthRound | acs+sgt0+kgt0+synthRound | | sex+wgt0+hgt0+ssymthRound | ex+vgti+lgti+eynthRoad | $400 + 800 + \log 10 + erynthikund$ | sex+wg0+lg0+eynthRoad | | sex+wgt0+lgt0+scynstlRound | | soc-wgth-light-orysoliflouid | | | ssx+ugt0+kgt0+eyutkRound | |
| | peut | | prot | rad | risk. | cal | weighting | wealthlik | wealthkix | | p.A.peut | | p.A.aProt | p.A.sProt | p.A.aPox |
| | | | | -0.000116898230009949 | 0.649394003614758 | -0.000941127072743919 | 0.00122231975126209 | 1.32970922160235 | -0.000845838526704796 | -0.000489534836079617 | 0.560023505722658 | -0.00056290911156061 | 3.23596354259100+05 | 0.65551206304675 | -0.00115432723977403 |
| ugt0_Estimate | | | | | | | | | | | | | | | 2.754727817284486-11 |
| ugt0 Estimate ugt0 Prt. | 0.130011583497549 | 2.96480083692757v-63 | 2.05763549729273+-06 | 0.230228828649018 | 7.43034302413852=66 | 6.6690119623173307 | 1.22269348658816e-13 | 6.75397939223977v-62 | | | | | | | |
| ugt0_Ps_t_ | 0.130011583497549 | 2.96490083092757v-63 0.0028027271614794 | 2.057635497292736-06 | 0.230228628629018 9.74307633896921+-05 | 7.130313021138520-66 | 6.669012902317333-07 | | 0.0798131859496002 | 0.0001440403082619518 | 9.90430500454333+05 | 0.0374185042114355 | 0.000072365145002826 | 9.75296521392969-05 | 0.0277292854835204 | 0.000173241059789276 |
| ugt0_Ps_t_ | 0.130011583497549 | | | | | | | | | | 0.0374185042114255 15.5088615428128 | | 9.75208521200966-05 9.33182531275641 | | 0.000173241656789276 -6.66312722777158 |
| ogt0_Pr_t. ogt0_St4.Error ogt0_tralar | 0.130011583497549 9.79994437486573+05 -1.49987260496811 | 0.0078027371614794 16.8512547316329 | 0.000290221500067133 | 9.74307633896921+-05 -1.29690821393398 | 0.037739975283113 | 0.000039270503626621 | 0.0001647475346907989 7.41843614592224 | 0.0798131856486002 16.6477281392748 | 0.000143040392619518 -5.872926128913 | -4.94270692926991 | | -9.0629777654973 | | 0.6977292854835204 17.3782378582956 | |
| ogt0 Prt. ogt0 Std.Ever ogt0 tudae ad Estimate | 0.13001E553297529 9.790941372865726-05 -1.09087200096911 NA | 0.0078027371614794 16.8512547316329 NA | 0.000190221503067433 -4.74915073475531 NA | 9.7±307633896921+05 -1.3986821393398 0.00243488846305622 | 0.027739975283113 17.2071651836606 0.699072500364623 | 0.000089270543029621 -1.972111109029309 -0.00395674177096196 | 0.0001647475346907989 7.41843614592224 | 0.0798131856486002 16.6477281392748 | 0.0001140403082619G18 -5.872926128913 NA | -1.94274682926991 NA | 15.5000805428128 NA | -9.0609777654873 NA | 0.331822524275644 NA | 0.0277292854835204 17.3782278584956 NA | -6.66312722777158 |
| ogt0 Prt. ogt0 St4 Erus ogt0 tudae ad Estimate ad Prt. | 8.1900115/0197549 8.799914372865730-05 -1.0906/200000011 NA NA | 0.0278027371414794 16.3512547314329 NA NA | 0.000190221503067133 -4.72915073475531 NA | 9.71307033866021±-05 -1.7996031793398 0.00213398830305622 9.00672788677960±120 | 0.037739675283113 17.2071651836606 0.099072500363623 4.71331900865298a-67 | 0.00008070500036021 -1.97211108028308 -0.0025676177096486 7.906481280250276-85 | 0.0001647975846607889 7.41943814592224 NA | 0.0798111859286002 16.6477281390748 NA NA | 0.000141030082619518 -5.972906128913 NA NA | -1.9271682926991 NA NA | 15.5000005128128 NA NA | -9:0629777654972 NA NA | 0.33182252225644 NA NA | 0.0077202654802004 17.2782270582806 NA NA | -6.66312722777158 NA NA |
| opt0 Prt. opt0 St&Error opt0 todas al Erimate al Prt. al St&Error | 0.130011553297549 9.799912173965736-05 -1.49907200486011 NA NA | 0.0078027371614794 16.8512547316329 NA NA | 0.000190221500367233 -4.72915073675531 NA NA | 9.7 £1076321946921+45 -1. 299608211932298 0.00243489842305622 9.00672798677966-120 0.00030833875113418 | 0.037739973283113 17.3071051836006 0.00072500364623 4.71311600967266-47 0.0432392008645167 | 0.00038079503050621 -1.9721418909309 -0.003567747709486 7.966612409627-85 0.00030772109117477 | 0.000564767846907889 7.41843614590224 NA NA | 0.0798131859486002 16.6477281390748 NA NA | 0.000148020392819518 -5.372906128013 NA NA | -4.927 08/202091 NA NA NA | 15.500805428428 NA NA NA | -8.0029777654873 NA NA NA | 0.33182252275644 NA NA NA | 0.007720285483204 17.328227058286 NA NA NA | -6.66312722777158 NA NA NA |
| opti Ptt. opti Std Erus opti Italia al Estimate al Pt.L. ul Std Error al Volte | 8 190011583297549 8 20001437 885734-05 -1.000720000011 NA NA NA | 0.0078007371614794 16.8512547316329 NA NA NA | 0.0001902215031671331 -4.72915073475531 NA NA NA | 9.71307033866021±-05 -1.7996031793398 0.00213398830305622 9.00672788677960±120 | 0.037739675283113 17.2071651836606 0.099072500363623 4.71331900865298a-67 | 0.00008070500036021 -1.97211108028308 -0.0025676177096486 7.906481280250276-85 | 0.0006679784097989 7.4180814592224 NA NA NA | 0.0798111859286002 16.6477281390748 NA NA | 0.00014204039319518 -5.972906128013 NA NA NA | -4.927468293691 NA NA NA NA | 15.5000005128128 NA NA | - NA NA NA NA | 0.33182252225644 NA NA | 0.02772035482004 17.378227658206 NA NA NA NA | 6.66312722777158 NA NA NA |
| systi Pr. t. systi Std Error systi trabe ral Error ral Fr. t. ral Std Error ral Std Error ral std Error ral std Error rand trabe smalthic Errorate | 0.130011581297529 9.20093437.200573a-05 -1.0200720000011 NA NA NA NA NA | 0.0278027271614794 16.5612547316229 NA NA NA NA NA | 0.000190221503047130 -4.7915073475531 NA NA NA NA NA | 9.7 (200/022896921+05 -1. 19969921193288 0.0021238884929522 8.00512789877986+120 0.000308933879613418 224422963184961 NA | 0.037736975284113 117-2071051506006 0.000072500064623 1.7121900005290-47 0.020205000665347 17.3040031300332 NA | 0.00039027050050031 -4.97214489029008 -4.000005070477006466 7.3.9694129020020-05 0.000001724106117477 -19.4050010909523 NA | 0.000464767846907889 7.11848142692224 NA NA NA NA NA NA 0.21605655488186 | 0.0708131850;286002 16.6377290:002748 NA NA NA NA 166.6787220085000 | 0.00014000080819G18 -5.572900128013 NA NA NA NA NA 0.651728004543224 | -4.927.08/2928991 NA NA NA NA NA | 15 5000015 120 120 NA NA NA NA NA NA | -9.0628777654872 NA NA NA NA NA | NA NA NA NA NA NA NA | 0.007720254832004 11 37927936-2056 NA NA NA NA | 6.6631272277756 NA NA NA NA NA |
| south Pt. 1. south Stifferes south Stifferes south Italian rail Pt. 1. rail Stifferes | 8 190011583497549 8 20004437486573-05 -1 20007200400011 NA NA NA NA NA | 0.022807271614794 16.5612527316229 NA NA NA NA NA NA NA | 0.000190221500067438 -4.7943603475531 NA NA NA NA NA NA | 9.7 (200/022896921+-05 1-1. 29869621 (2)228 0.000213898 (2007622 9.000727898 (2)256-120 0.0000188757613418 22.4225834848001 NA | 0.037736477284113 17.201051806006 0.0007720006402 4.71211900005266-47 0.04028900665547 17.304001300322 NA | 0.00008927850003621 -1.97251418929308 -0.0000067017709496 7.9064512825020-95 0.000201723106117477 -19.605011969452 | 0:0004.647628-0607989 7: 418481-4592224 NA NA NA NA NA NA 0:21605655-988186 1:38284225727-259641 | 0.079813185626600 16.637236390239 NA NA NA NA NA NA 106.079720085988 1 25.9544050908-E | 0.000148040080619518 -5.572000129013 NA NA NA NA NA NA 1.0.65778300548924 1.523905484220070-220 | -4.927.08/292091 NA NA NA NA NA NA | 15.5000005128-18 NA NA NA NA NA NA NA | -8.0009777054872 NA NA NA NA NA NA NA | 8.11822-2125-641 NA NA NA NA NA | 0.00770005480001 17.250270562806 NA NA NA NA NA NA | 6.66312722777150 NA NA NA NA NA NA |
| opti Pr. t. opti Std Error opti Std Error opti rollor al Estimate al Estimate al Pr. L. al Std Error al rollor outlide Estimate outlide Pr. L. outlide Pr. L. | 0.130011583197529 9.20004137396573=05 1.00067300000011 NA NA NA NA NA NA NA | 0.007802771614794 16.5512947318229 NA NA NA NA NA NA NA | 0.000190221203047231 1-7913603425531 NA NA NA NA NA NA NA NA NA NA NA NA | 9.72800828966921+-05 7-3.29968921190239 0.00924389849026622 9.00972788949026622 9.00972788977986-120 0.00938823879413419 22.43729803450951 NA NA | 0.027739672051113 17.2071651506000 0.0907720065022 4.71211500065250-47 0.0322020006655167 17.306031200202 NA NA | 8.00004827850005631 -1.97314186000000 -0.0000507477006486 7.96648124828525-85 8.000001721168117477 -19.655611969452 NA NA | 0.0006.679/N-0607980 7.418281.459224 NA NA NA NA NA 1.304 NA 1.304 1.304025771208-41 1.304025771208-41 | 0.07981314504946002 10.6177294390749 NA NA NA NA NA 100.079720005080 2.2549145025006-45 7.54498977117000 | 0.0001400-0000019518 -0.572700129013 NA NA NA NA NA 0.61772004541224 -0.01772004541225 -0.012240277250455 | -1.927 (08/292009) NA | 15.5000005128-128 NA NA NA NA NA NA NA NA | -8:0009777654873 NA NA NA NA NA NA NA | 8-33189259295644 NA NA NA NA NA NA NA | 0.0077909554802004 117.358227054906 NA NA NA NA NA NA NA NA | -6.66012722777158 NA NA NA NA NA NA NA |
| opti Pr. 1. opti StdErver opti talke al Estimate al Pr. L. al StdErver al volve conditide Estimate conditide Estimate conditide Estimate conditide StdErver conditide No. L. | 8 1300115531975-9 3 70001157 26573-05 1 1.0002 2650001 NA NA NA NA NA NA NA NA NA NA | 0.002907771614794 16.561292731829 NA NA NA NA NA NA NA NA NA NA NA NA NA | 0.0001909215031047231 -4.7921603455531 SA SA SA SA SA SA SA SA SA SA | 9.7220032969021-05 -1.7968021103298 -1.7968021103298 -0.00212188840206022 -9.00277796077966-220 -0.0021820077913118 -23.4272633459961 | 0.027789670283113 13.2071651856000 0.099072500000022 4.7181199086029 1.718199086031909327 7.7.3960031300332 NA NA NA | 8 00001007360000621 - 1 9731410002888 - 1 900000674277006466 2 3 96 91240706076-85 9 1000000722101617427 - 10 00000722101617427 - 10 00000722101617427 NA NA NA | 0.0000.647020.6007980 7.418481.092221 NA NA NA NA NA 1NA 1NA 1NA 1849125777.2006-01 0.01007510.2007516 1.1102012577.2006-01 | 6.0794131450296002 16.6177341892749 NA NA NA NA NA 106.6757220965989 12.5481455819084-45 7.54299671113000 | 0.00014100202619518 -5.57205028913 NA NA NA NA NA NA NA NA NA NA NA NA NA | - 1.9 (27 (08/29/29/9)) NA NA NA NA NA NA NA NA NA | IS SOMMOND LINE IN NA | -8-0009777054873 NA NA NA NA NA NA NA NA | 8.111925925641 NA NA NA NA NA NA NA NA | 0.0077909854802004 17328229054980 NA NA NA NA NA NA NA NA | -6.66312722777158 NA NA NA NA NA NA NA NA |
| gen Pr. 1. gen Std Erne gen Std Erne gen Std Erne gen tale al Estimate al Fr. L. al Std Erne al tedae mathlds; Estimate mathlds; Pr. L. mathlds; Colore mathld | 8 12001 ESCHPULP 8 12001 ESCHPULP 8 12002 ETT #6572=65 1-1.0005 200 000011 NA | 0.003000787444794 16.8512567314329 NA NA NA NA NA NA NA NA NA NA NA NA NA | 0.0001902150300733 -4.7993003425531 NA | 9.7 E000025960021-05 7-3. 2860025100228 0.002233868-36005622 8.600272960279666-220 0.0000260207013218 22. 32296358-0001 NA NA NA NA NA | 0.0077269F70004113 17.300 F61506000 0.609975500064623 17.101160766250064623 17.300 F6150600131296322 NA | 8 (00001007)0000000031 - 1.973151 (0000000000 - 0.000006070277006486 7 (9806) (2800000000000 - 0.0000000000000000 - 0.0000000000 | ### ################################## | 0.0794111450496000 16.6477294290749 NA NA NA NA NA NA 10.6479/22096090 13.2544354/20960- 14.1296/20559113 NA NA NA NA NA NA NA NA NA NA | 0.000140040000415G18 15.557200120013 NA NA NA NA NA NA NA NA NA N | - 1 0427 0402820091 NA NA NA NA NA NA NA NA NA NA | 15.5000005.138-138 NA | -9.0029777054972 NA | 8.111925225641 NA NA NA NA NA NA NA NA NA NA | 0.007700054540004 17.3050270564056 NA | -6.6631272277158 NA NA NA NA NA NA NA NA NA NA |
| gen Pa_L, gen Std.Brus gen Std.Brus gen Std.Brus al Estimate al Pa_L, al Std.Brus al twike subtide Pa_L, subtide Pa_L, subtide Pa_L, subtide Pa_L, subtide Pa_L, subtide Std.Brus subtide Std.Bru | 8. ERBOLING-GREVE-PP 9. PROPELED GREGORY | 0.003/007271414794 16.851254231625 NA | 0.0001902315030473301.793200367531 NA | 9-TEDOGESPHIND-1-05 1-EPHIND-STOCKER 0.00213088-94000022 0.00213088-94000022 0.0003100000796613418 23-44228-8448-9861 NA | 0.007730472084113 17. 2016/1308000 0.009972500004022 4.7121500062500-07 0.00309500065147 17. 306001300022 NA | 8 000010073600106021 - 1 97214100023802 - 1 97214100023805 7 3 900 912 91000270- 05 9 0000017217010817027 - 100 000501721701817027 - 100 00501721701817027 NA | 0.00066470004007080 7.41843814502224 NA | 0.079411150296002 16.617734189739 NA NA NA NA NA NA NA NA NA NA NA NA NA | 0.0001410000000110118 -5.57200120013 NA NA NA NA NA NA NA NA NA NA NA NA NA | - 1 0/27 000/29/20091 NA | 15 Someon (1901); NA NA NA NA NA NA NA NA NA N | | 8.131 80252 225641 NA | 0.82770004480004 17.33822760.8266 NA NA NA NA NA NA NA NA NA NA | -6.6631772277158 NA |
| ngt0 Pr. L. ngt0 Std.Erm ngt0 Std.Erm ngt0 Std.Erm ngt0 Std.Erm nd Pr. L. al Pr. L. al Std.Erm al twise multide, Estimate multide, Estimate multide, Std.Erm nultide, Std.Erm nultide, Tools nultide, Tools nultide, Pr. L. Apot, McLimate Apot, Apot, Std.Erm | 8 L READ LEGGLESCHE 2 8 LEGGLESCHE 2 1 L REEDE LEGGLESCHE 1 1 L REEDE LEGGLESCHE 1 NA NA NA NA NA NA NA NA NA N | 0.001002777444790 16.8541254234829 N.A. | 0.0000 00215 0000 0700 1-1 70215 00215 0000 0700 1-1 70215 00215 0000 0700 1-1 70215 002 | 9.7 EMPORTOMORDIA-65 - 1.2 PROMORDI POLIZIE - 0.00023 EMPORTOMORDIA-65 - 0.00023 EMPORTOMORDIA-620 - 0.00028 EMPOR | 0.007780972001113 3.7.3021651800000 0.000075000064023 1.1721150000620004023 1.17211500006200407 17.30000130000635147 17.30000133000625147 N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A | 0.00000070200000001 | ### ################################## | 0.0784.118560486002 18.6477298.007748 NA NA NA NA NA NA NA NA 13.24542.0060000 14.1286225524111 NA NA NA NA NA NA NA NA NA NA | 0.0001.000000015518 5.5.572000120013 NA NA NA NA 0.0772000120021 1.072000120027 1.072000120027 NA NA NA NA NA NA NA NA NA N | 1-4 SEZI GRAZIONINI NA | 13. 50000015 201.20 NA NA NA NA NA NA NA NA NA NA | -0.0009773G4872 NA NA NA NA NA NA NA NA NA NA | 8.218223225612 NA | 0. 007200AC 8400000 11 12 200000 11 12 200000 11 12 20000 11 10 20000 11 20 2000 11 20 2000 11 20 20 20 20 20 20 20 20 20 20 20 20 20 | -6:6631772277158 NA |
| SSD Ps. L. SSD Ps. L. SSD Table al Estimate al Estimate al Std Enve authlife, Sol Enve muthlife, Sol Enve muthlife, Sol Enve muthlife, Sol Enve authlife, Sol Enve Aport, Ps. L. Aport, Ps. L. Aport, Std Enve aport, Std Enve aport, Std Enve aport, Std Enve Aport, Ps. L. Aport, Std Enve Aport, Ps. L. Aport, Std Enve | 8. EROLI ESCARO PEP P. DEGO SETE DESCRIPTION 1. ESCARD SERVICE NA NA NA NA NA NA NA NA NA N | 0.0050007774417901 [In.SS12542346239] NA N | 0.00000071500007001 -1.4787100730007001 -0.478710073007001 -0.4787100730070007001 -0.47871007300700070007000070000000000000000 | 9.7 EMPOREMENDO 1—65 - 1 PROMOSED (COLEGE 0.0002.3 SINO-5 (COLEGE 0.0002.3 | 0.007200072001113 7.320 (61.500000 0.00007200000.0022 0.00007200000.0022 1.712150000000000000000 NA | 0.0000000798/0.0000001 | ### ################################## | 0.07983/118560986002 11.06477298.092749 NA | 0.0001.pp.0200019518 - 5.572000.20013 - SA | 1-4 9427 00429 00493 NA NA NA NA NA NA NA NA NA N | 13. (2000/06/12/01/28/ XA | A 00009777054872 XA XA XA XA XA XA XA XA XA X | 8.31182232325618 NA | 0.0072000548400000 0.007200054840000 N.A. N.A. N.A. N.A. N.A. N.A. N.A. | -6.603177277118 NA NA NA NA NA NA NA NA |
| SSD Ps. L. SSD Ps. L. SSD Table al Estimate al Estimate al Std Enve authlife, Sol Enve muthlife, Sol Enve muthlife, Sol Enve muthlife, Sol Enve authlife, Sol Enve Aport, Ps. L. Aport, Ps. L. Aport, Std Enve aport, Std Enve aport, Std Enve aport, Std Enve Aport, Ps. L. Aport, Std Enve Aport, Ps. L. Aport, Std Enve | 8. EROLI ESCARO PEP P. DEGO SETE DESCRIPTION 1. ESCARD SERVICE NA NA NA NA NA NA NA NA NA N | 0.0050007774417901 [In.SS12542346239] NA N | 0.00000071500007001 -1.4787100730007001 -0.478710073007001 -0.4787100730070007001 -0.47871007300700070007000070000000000000000 | 9.7 EMPORTOMORDIA-65 - 1.2 PROMORDI POLIZIE - 0.00023 EMPORTOMORDIA-65 - 0.00023 EMPORTOMORDIA-620 - 0.00028 EMPOR | 0.007780972001113 3.7.3021651800000 0.000075000064023 1.1721150000620004023 1.17211500006200407 17.30000130000635147 17.30000133000625147 N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A | 0.00000070200000001 | ### ################################## | 0.07983/118560986002 11.06477298.092749 NA | 0.0001.pp.0200019518 - 5.572000.20013 - SA | 1-4 9427 00429 00493 NA NA NA NA NA NA NA NA NA N | 13. 50000015 201.20 NA NA NA NA NA NA NA NA NA NA | A 00009777054872 XA XA XA XA XA XA XA XA XA X | 8.218223225612 NA | 0. 007200AC 8400000 11 12 200000 11 12 200000 11 12 20000 11 10 20000 11 20 2000 11 20 2000 11 20 20 20 20 20 20 20 20 20 20 20 20 20 | -6.66312722777158 NA |
| SSD Ps. L. SSD Ps. L. SSD Table al Estimate al Estimate al Std Enve authlife, Sol Enve muthlife, Sol Enve muthlife, Sol Enve muthlife, Sol Enve authlife, Sol Enve Aport, Ps. L. Aport, Ps. L. Aport, Std Enve aport, Std Enve aport, Std Enve aport, Std Enve Aport, Ps. L. Aport, Std Enve Aport, Ps. L. Aport, Std Enve | B. ERGI LEG-GRAPLEP | 0.025002777441790 | 0.00010071500007201 -1.192150715031 -0.6 -0.6 -0.6 -0.6 -0.6 -0.6 -0.6 -0.6 | 9.7 EMPOREMENDO 1—65 - 1 PROMOSED (COLEGE 0.0002.3 SINO-5 (COLEGE 0.0002.3 | 0.007200072001113 7.320 (61.500000 0.00007200000.0022 0.00007200000.0022 1.712150000000000000000 NA | 0.0000000798/0.0000001 | # 000000170% approximate 1 | 0.0798111500.060002 ELEAST7200.000720 NA NA NA NA NA NA LOG 979720000000 13.2544515.550000-E- 17.5469000711000 14.18000005001113 NA | 0.0001 (2007) (2 | 1-5 027 06/200091 NA NA NA NA NA NA NA NA NA N | 13. (2000/06/12/01/28/ XA | ###################################### | 8.31182232325618 NA | 0.0072000548400000 0.007200054840000 N.A. N.A. N.A. N.A. N.A. N.A. N.A. | -6.603177277118 NA NA NA NA NA NA NA NA |
| ger Pr. L. ger Stal Erus ger Stal ger | B. ERGI LEG-GRAPLEP | 0.025002177441790 | 0.0000 8071 50000 T 201 - 1.4 FELECO 12 FELEC 1 SAL | 0.7 EMPOREMENDING 1-65 -1.2 DEMONET DECEMBE 0.000133888-90006022 8.00077388977886-220 0.000133888-90006022 8.00077388977886-220 0.0001088038778612131 8.X. 8.X. 8.X. 8.X. 8.X. 8.X. 8.X. 8.X | 0.007200072001113 7.320 (61.500000 0.00007200000.0022 0.00007200000.0022 1.712150000000000000000 NA | 0.0000.000706/0.0000011 1-072014 100000706/0.0000011 1-072014 100000706/0.00000706-66 2-00000120700000000000000000000000000000 | # 000000170% approximate 1 | 0.0798.1115/Consecute [En.6477220.0207249 S.A. S.A. S.A. S.A. S.A. S.A. S.A. S.A | 0.0001 (pagenesi 1951) S. S. SPERGEZ 2013 NA NA NA NA NA NA NA NA NA N | 1-4 9427 (64290099) NA | 13. Januari 54 201. 20 1 | A SIGNET OF THE STATE OF THE ST | B. 3182329276648 NA | 0. 017790845 48140000 11.12789229780.0 0260 NA | -6.6631272277138 NA |

Test Program OLS Return All

Test Program IV Return All

Program Line by Line Set Up Parameters

```
vars.z <- c('indi.id')
vars.z <- NULL
vars.c <- c('sex', 'wgt0', 'hgt0', 'svymthRound')</pre>
```

```
| March | Marc
```

Lapply

Nested Lapply Test

```
# df.reg.out.all %>%
# kable() %>%
# kable_styling_fc_wide()
```

Nested Lapply All

| $vars_var.y$ | prot_tvalue | cal_tvalue | wealthIdx_tvalue | $p.A.prot_tvalue$ | $p.A.nProt_tvalue$ |
|---------------|-------------------|-------------------|------------------|--------------------|---------------------|
| hgt | 18.8756010031786 | 23.4421863484661 | 13.508899618216 | 3.83682180045518 | 32.5448257554855 |
| wgt | 16.3591125056062 | 17.3686031309332 | 14.1390521528113 | 1.36958319982295 | 12.0961557911467 |
| vil.id | -14.9385580468907 | -19.6150110809452 | 34.0972558327347 | 8.45943342783186 | 17.7801422421419 |

Nested Lapply Select