import delimited C:\EconProject\file2\_short.csv, clear

**graph matrix logmortrate logsmokerate logwealth trend, half**



correlate logmortrate logsmokerate logwealth trend

(obs=20)

| logmor~e logsmo~e logwea~h trend

-------------+------------------------------------

logmortrate | 1.0000

logsmokerate | -0.8441 1.0000

logwealth | -0.7318 0.6456 1.0000

trend | 0.1619 -0.3470 0.2422 1.0000

regress logmortrate logsmokerate logwealth trend

Source | SS df MS Number of obs = 32

-------------+------------------------------ F( 3, 28) = 31.77

Model | 24.7518329 3 8.25061095 Prob > F = 0.0000

Residual | 7.27099917 28 .259678542 R-squared = 0.7729

-------------+------------------------------ Adj R-squared = 0.7486

Total | 32.022832 31 1.03299458 Root MSE = .50959

------------------------------------------------------------------------------

logmortrate | Coef. Std. Err. t P>|t| [95% Conf. Interval]

-------------+----------------------------------------------------------------

logsmokerate | -1.289197 .3419887 -3.77 0.001 -1.989729 -.5886649

logwealth | -1.260484 .56048 -2.25 0.033 -2.408575 -.1123929

trend | .0324748 .1131852 0.29 0.776 -.1993745 .2643241

\_cons | 7.473752 6.554206 1.14 0.264 -5.95193 20.89943

So it looks like logwealth is significant

rvfplot, yline(0)



Estat hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of logmortrate

chi2(1) = 0.63

Prob > chi2 = 0.4290

Ovtest

Ramsey RESET test using powers of the fitted values of logmortrate

Ho: model has no omitted variables

F(3, 25) = 3.74

Prob > F = 0.0239

Avplots



Predict e, resid

Kdensity e, normal



swilk e

Shapiro-Wilk W test for normal data

Variable | Obs W V z Prob>z

-------------+--------------------------------------------------

e | 32 0.97703 0.766 -0.552 0.70970

Now if we look at this on a FE basis

**xtset agecat wave**

xi: regress logmortrate logsmokerate logwealth trend i.agecat

Also using other command

xtreg logmortrate logsmokerate logwealth trend, fe

Fixed-effects (within) regression Number of obs = 32

Group variable: agecat Number of groups = 8

R-sq: within = 0.2722 Obs per group: min = 4

between = 0.9254 avg = 4.0

overall = 0.6568 max = 4

F(3,21) = 2.62

corr(u\_i, Xb) = -0.9592 Prob > F = 0.0777

------------------------------------------------------------------------------

logmortrate | Coef. Std. Err. t P>|t| [95% Conf. Interval]

-------------+----------------------------------------------------------------

logsmokerate | .8848858 1.04264 0.85 0.406 -1.283403 3.053175

logwealth | 1.73207 1.185421 1.46 0.159 -.7331479 4.197288

trend | .1699125 .1792644 0.95 0.354 -.2028883 .5427133

\_cons | -22.53896 13.1168 -1.72 0.100 -49.81684 4.738926

-------------+----------------------------------------------------------------

sigma\_u | 1.8275747

sigma\_e | .40856361

rho | .95240193 (fraction of variance due to u\_i)

------------------------------------------------------------------------------

F test that all u\_i=0: F(7, 21) = 3.22 Prob > F = 0.0175

xtreg logmortrate logsmokerate logwealth trend, re

Random-effects GLS regression Number of obs = 32

Group variable: agecat Number of groups = 8

R-sq: within = 0.0348 Obs per group: min = 4

between = 0.9242 avg = 4.0

overall = 0.7718 max = 4

Wald chi2(3) = 48.22

corr(u\_i, X) = 0 (assumed) Prob > chi2 = 0.0000

------------------------------------------------------------------------------

logmortrate | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

logsmokerate | -1.3401 .4333036 -3.09 0.002 -2.18936 -.4908406

logwealth | -1.011498 .6984576 -1.45 0.148 -2.38045 .3574534

trend | .0100886 .1235136 0.08 0.935 -.2319936 .2521708

\_cons | 4.66251 8.152863 0.57 0.567 -11.31681 20.64183

-------------+----------------------------------------------------------------

sigma\_u | .23363469

sigma\_e | .40856361

rho | .24642372 (fraction of variance due to u\_i)

Do Hausman test

xtreg logmortrate logsmokerate logwealth trend, fe

estimates store fixed

xtreg logmortrate logsmokerate logwealth trend, re

estimates store random

hausman fixed random

---- Coefficients ----

| (b) (B) (b-B) sqrt(diag(V\_b-V\_B))

| fixed random Difference S.E.

-------------+----------------------------------------------------------------

logsmokerate | .8848858 -1.3401 2.224986 .9483388

logwealth | 1.73207 -1.011498 2.743568 .9577995

trend | .1699125 .0100886 .1598239 .1299236

------------------------------------------------------------------------------

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(3) = (b-B)'[(V\_b-V\_B)^(-1)](b-B)

= 10.87

Prob>chi2 = 0.0124

(V\_b-V\_B is not positive definite)

xtreg logmortrate logsmokerate logwealth i.wave, re

xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

logmortrate[supergroup,t] = Xb + u[supergroup] + e[supergroup,t]

Estimated results:

| Var sd = sqrt(Var)

---------+-----------------------------

logmort~e | .8367067 .9147167

e | .2532685 .5032579

u | .2486769 .4986752

Test: Var(u) = 0

chibar2(01) = 52.80

Prob > chibar2 = 0.0000

Don’t know if this is appropriate for re but probably is!

xtreg logmortrate logsmokerate logwealth i.wave, re

testparm i.wave

( 1) 3.wave = 0

( 2) 4.wave = 0

( 3) 5.wave = 0

chi2( 3) = 31.36

Prob > chi2 = 0.0000