Development Economics: Problem Set 2

S M Sajid Al Sanai

May 25, 2019

Contents

1 Model

1.1 Results

Using cleaned Ghana datasets, I replicated the model from the previous problem set.

ln_yield	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
female	−1.42802	1.467602	−0.97	0.332	−4.333048	1.477008
fertiliser_quantity	.0481314	.0542881	0.89	0.377	−.0593285	.1555913
ph	−.3368012	.7782551	−0.43	0.666	−1.877309	1.203707
oc	−1.039273	7.593463	−0.14	0.891	−16.07007	13.99152
om	.4267788	4.37492	0.10	0.922	−8.233106	9.086664
soiltype						
1	−.9487539	2.635692	−0.36	0.719	−6.165944	4.268436
2	.6594256	3.387578	0.19	0.846	−6.046077	7.364928
3	3.27172	5.466155	0.60	0.551	−7.548199	14.09164
4	.1966215	1.604958	0.12	0.903	−2.980294	3.373537
5	−2.965469	6.221397	−0.48	0.634	−15.28034	9.349404
6	1.628645	8.366498	0.19	0.846	−14.93232	18.18961
topo						
2	0	(omitted)				
3	−.8469617	8.233856	−0.10	0.918	−17.14537	15.45145
4	0	(omitted)				
5	1.756968	8.398051	0.21	0.835	−14.86646	18.38039
9	4.851925	8.672712	0.56	0.577	−12.31518	22.01903
deciles_area						
2	.0161547	1.823157	0.01	0.993	−3.592672	3.624981
3	−1.776003	1.718104	−1.03	0.303	−5.176885	1.624878
4	−3.163836	1.997841	−1.58	0.116	−7.118439	.7907667
5	−1.843065	2.165279	−0.85	0.396	−6.129103	2.442972
6	−4.678732	4.372353	−1.07	0.287	−13.33354	3.976072
7	−3.57888	2.332717	−1.53	0.128	−8.19635	1.03859
8	−3.180382	3.328247	−0.96	0.341	−9.768442	3.407678
9	−6.662023	2.876139	−2.32	0.022	−12.35516	−.9688821
10	−12.79748	2.330009	−5.49	0.000	−17.40959	−8.185367
_cons	7.562252	9.714092	0.78	0.438	−11.6662	26.7907
sigma_u	4.9215408					
sigma_e	5.2734663					
rho	.46552169	(fraction of variance due to u_i)				

F test that all u_i=0: F(546, 123) = 0.51 Prob > F = 1.0000

It appears that the impact of female ownership of an agricultural plot on its yield while accounting for other plot-specific characteristics and non-labour inputs is negative. This would suggest that female ownership yields poorer returns on land. However, since the coefficients are not robust, and therefore we fail to reject the null hypothesis that the effects are jointly insignificant.

2 Code

2.1 Source

```
* Development Economics: Problem Set 2
* S M Sajid Al Sanai


*"""     SOILDATA.DTA
use /Users/studentuser/Desktop/Ghana/soildata.dta
gen year = .
replace year = 2
save /Users/studentuser/Desktop/Ghana/temp_soildata.dta, replace
replace year = 1
append using /Users/studentuser/Desktop/Ghana/temp_soildata.dta
gen ph = .
gen oc = .
gen om = .
replace ph = ph97 if year == 1
replace ph = ph98 if year == 2
replace oc = oc97 if year == 1
replace oc = oc98 if year == 2
replace om = om97 if year == 1
replace om = om98 if year == 2
keep village hhn id ph oc om number plot year
* v h c t i
save /Users/studentuser/Desktop/Ghana/temp_soildata.dta, replace
clear

*"""     LANDC.DTA
use /Users/studentuser/Desktop/Ghana/landc.dta
gen year = year(date)
replace year = 0 if year == 1996
replace year = 1 if year == 1997
replace year = 2 if year == 1998
tab year
drop if year > 2
gen month = month(date)
gen day = day(date)
gen round = .
replace round = 1 if year == 0
replace round = 9 if year == 1 & ((month == 12 & day <= 31) | (month < 11))
replace round = 8 if year == 1 & ((month == 12 & day < 2) | (month < 12))
replace round = 7 if year == 1 & ((month == 9 & day < 29) | (month < 9))
replace round = 6 if year == 1 & ((month == 8 & day < 18) | (month < 8))
replace round = 5 if year == 1 & ((month == 7 & day < 7) | (month < 7))
replace round = 4 if year == 1 & ((month == 6 & day < 2) | (month < 6))
replace round = 3 if year == 1 & ((month == 4 & day < 14) | (month < 4))
replace round = 2 if year == 1 & ((month == 3 & day < 3) | (month < 3))
replace round = 1 if year == 1 & ((month == 1 & day < 27))
replace round = 15 if year == 2 & ((month == 8 & day >= 10) | (month > 8))
replace round = 14 if year == 2 & ((month == 8 & day < 10) | (month < 8))
replace round = 13 if year == 2 & ((month == 7 & day < 5) | (month < 7))
replace round = 12 if year == 2 & ((month < 7))
replace round = 11 if year == 2 & ((month == 4 & day < 20) | (month < 4))
replace round = 10 if year == 2 & ((month == 3 & day < 16) | (month < 3))
replace round = 9 if year == 2 & ((month == 10 & day < 20))
keep village hhn respondent_number plot_number date toposequence soil* area* day month year round
```

```
rename respondent_number id
rename plot_number plot
rename toposequence topo
replace topo = "3" if topo == "3 (60%), 9 (40%)" | topo == "3 (50%), 9 (50%)"
replace topo = "9" if topo == "3 (30%), 9 (70%)" | topo == "3 (40%), 9 (60%)" | topo == "5 (30%),
replace topo = "3" if topo == "3, 5"
replace topo = "9" if topo == "5, 9"
replace topo = "5" if topo == "flat"
drop if topo == "hilly" | topo == "very"
destring topo, generate(ftopo)
drop topo
rename ftopo topo
gen ln_area = log(area_sqm)
xtile deciles_area = area_sqm, nq(10)
gen soiltype = ""
replace soiltype = "red sandy" if soil_description == "ama sika" | soil_description == "pongpong"
replace soiltype = "black sandy" if soil_description == "black and sandy" | soil_description == "b
replace soiltype = "rocky" if soil_description == "bipuosu " | soil_description == "hard sandy" |
replace soiltype = "gravels" if soil_description == "abu siabu" | soil_description == "afo nwa" |
replace soiltype = "clay" if soil_description == "akrampasu" | soil_description == "akranpasu" | s
replace soiltype = "loamy" if soil_description == "loam and clay" | soil_description == "loamy" |
replace soiltype = "rocky clay" if soil_description == "ameti with rocks" | soil_description == "c
rename soiltype soilt
gen soiltype = .
replace soiltype = 0 if soilt == "red sandy"
replace soiltype = 1 if soilt == "black sandy"
replace soiltype = 2 if soilt == "rocky"
replace soiltype = 3 if soilt == "gravels"
replace soiltype = 4 if soilt == "clay"
replace soiltype = 5 if soilt == "loamy"
replace soiltype = 6 if soilt == "rocky clay"
rename soilt soilcategory
save /Users/studentuser/Desktop/Ghana/temp_landc.dta, replace
clear

*"""     CROPC.DTA
use /Users/studentuser/Desktop/Ghana/cropc.dta
gen year = year(date)
replace year = 0 if year == 1996
replace year = 1 if year == 1997
replace year = 2 if year == 1998
tab year
drop if year > 2
gen month = month(date)
gen day = day(date)
gen round = .
replace round = 1 if year == 0
replace round = 9 if year == 1 & ((month == 12 & day <= 31) | (month < 11))
replace round = 8 if year == 1 & ((month == 12 & day < 2) | (month < 12))
replace round = 7 if year == 1 & ((month == 9 & day < 29) | (month < 9))
replace round = 6 if year == 1 & ((month == 8 & day < 18) | (month < 8))
replace round = 5 if year == 1 & ((month == 7 & day < 7) | (month < 7))
replace round = 4 if year == 1 & ((month == 6 & day < 2) | (month < 6))
replace round = 3 if year == 1 & ((month == 4 & day < 14) | (month < 4))
replace round = 2 if year == 1 & ((month == 3 & day < 3) | (month < 3))
replace round = 1 if year == 1 & ((month == 1 & day < 27))
replace round = 15 if year == 2 & ((month == 8 & day >= 10) | (month > 8))
replace round = 14 if year == 2 & ((month == 8 & day < 10) | (month < 8))
replace round = 13 if year == 2 & ((month == 7 & day < 5) | (month < 7))
```

```
replace round = 12 if year == 2 & ((month < 7))
replace round = 11 if year == 2 & ((month == 4 & day < 20) | (month < 4))
replace round = 10 if year == 2 & ((month == 3 & day < 16) | (month < 3))
replace round = 9 if year == 2 & ((month == 10 & day < 20))
keep village hhn respondent_number plot_number crop year day month round
rename respondent_number id
rename plot_number plot
save /Users/studentuser/Desktop/Ghana/temp_cropc.dta, replace
clear

*"""     PLOTACT.DTA
use /Users/studentuser/Desktop/Ghana/plotact.dta
save /Users/studentuser/Desktop/Ghana/temp_plotact.dta, replace
clear

*"""     PLOTHARV.DTA
use /Users/studentuser/Desktop/Ghana/plotharv.dta
keep village hhn id plot crop round value
rename value gross_value
gen ln_value = log(gross_value)
save /Users/studentuser/Desktop/Ghana/temp_plotharv.dta, replace
clear

*"""     PLOTINP.DTA
use /Users/studentuser/Desktop/Ghana/plotinp.dta
gen fertiliser = .
replace fertiliser = 0 if input != ""
replace fertiliser = 1 if input == "fertilizer" | (real(input) >= 41 & real(input) <= 49)
keep village hhn id plot round unit quantity fertiliser value
rename quantity fertiliser_quantity
gen nlinp_fertiliser = fertiliser * fertiliser_quantity
save /Users/studentuser/Desktop/Ghana/temp_plotinp.dta, replace
clear

* Merge
use /Users/studentuser/Desktop/Ghana/temp_landc.dta
sort village hhn id plot round
merge 1:1 _n using /Users/studentuser/Desktop/Ghana/temp_cropc.dta
sort village hhn id plot round crop
drop if _merge != 3
drop _merge

merge 1:1 _n using /Users/studentuser/Desktop/Ghana/temp_plotinp.dta
sort village hhn id plot round crop
drop if _merge != 3
drop _merge

merge 1:1 _n using /Users/studentuser/Desktop/Ghana/temp_plotact.dta
sort village hhn id plot round crop
drop if _merge != 3
drop _merge

merge 1:1 _n using /Users/studentuser/Desktop/Ghana/temp_plotharv.dta
sort village hhn id plot round crop
drop if _merge != 3
drop _merge

merge 1:1 _n using /Users/studentuser/Desktop/Ghana/temp_soildata.dta
sort village hhn id plot round crop
```

```
drop if _merge != 3
drop _merge

save /Users/studentuser/Desktop/Ghana/pset2_ghana.dta, replace

* Generate crop
replace crop = "24" if crop == "coconut"
replace crop = "0" if crop == "fallow"
replace crop = "36" if crop == "mango"
replace crop = "37" if crop == "pear"
replace crop = "38" if crop == "teak"
destring crop, generate(fcrop)
drop crop
rename fcrop crop

* Generate gender
gen female = .
replace female = 1 if id == 1
replace female = 0 if id == 0
drop if female == .

* Generate fixed effects
gen fe_vtc  = (village * 10000) + (crop * 100) + round
label var fe_vtc "vtc Fixed Effects"
gen fe_vhtc = (fe_vtc * 100) + hhn
label var fe_vhtc "vhtc Fixed Effects"

* Dependent variable is log of yield (vhtci)
** {yield = tot_value / tot_area}
** => ln_yield = ln( tot_value / tot_area )
** => ln_yield = ln( tot_value ) - ln( tot_area )
gen ln_yield = ln_value - ln_area
label var ln_yield "Log of Yield"

save /Users/studentuser/Desktop/Ghana/pset2_ghana.dta, replace

* Fixed Effects Regression
** {xtreg, fe i(.)}              Command format
** {topo* soil* loc* ln_area}    Covariates matrix
** {totarea lntarea lnhhsize}    Exclude

*** use #  for interaction
*** use *  for wildcard
*** use i. for categorical

global dependent    "ln_yield"
global soil         "ph oc om"
global land         "$soil i.soiltype i.topo i.deciles_area"
global independent  "female fertiliser_quantity $land"

xtreg $dependent $independent, fe i(fe_vhtc)
predict residuals_v, e
label var residuals_v "Residuals"

*encode activity1, generate(numeric_activity)
*xtreg $dependent $independent female#i.numeric_activity, fe i(fe_vhtc)
*predict residuals_v, e
*label var residuals_v "Residuals"
```

2.2 Output

```
      name:  <unnamed>
       log:  /Users/studentuser/Desktop/Ghana/pset2_ghana.smcl
  log type:  smcl
 opened on:  27 May 2019, 10:27:46

. do "/Users/studentuser/Desktop/Ghana/pset2_source.do"

. * Development Economics: Problem Set 2
. * S M Sajid Al Sanai
.
.
. *"""     SOILDATA.DTA
. use /Users/studentuser/Desktop/Ghana/soildata.dta

. gen year = .
(1262 missing values generated)

. replace year = 2
(1262 real changes made)

. save /Users/studentuser/Desktop/Ghana/temp_soildata.dta, replace
file /Users/studentuser/Desktop/Ghana/temp_soildata.dta saved

. replace year = 1
(1262 real changes made)

. append using /Users/studentuser/Desktop/Ghana/temp_soildata.dta

. gen ph = .
(2524 missing values generated)

. gen oc = .
(2524 missing values generated)

. gen om = .
(2524 missing values generated)

. replace ph = ph97 if year == 1
(740 real changes made)

. replace ph = ph98 if year == 2
(1148 real changes made)

. replace oc = oc97 if year == 1
(740 real changes made)

. replace oc = oc98 if year == 2
(1148 real changes made)

. replace om = om97 if year == 1
(740 real changes made)

. replace om = om98 if year == 2
(1148 real changes made)

. keep village hhn id ph oc om number plot year
```

```
. * v h c t i
. save /Users/studentuser/Desktop/Ghana/temp_soildata.dta, replace
file /Users/studentuser/Desktop/Ghana/temp_soildata.dta saved

. clear


.
. *"""     LANDC.DTA
. use /Users/studentuser/Desktop/Ghana/landc.dta

. gen year = year(date)
(17 missing values generated)

. replace year = 0 if year == 1996
(135 real changes made)

. replace year = 1 if year == 1997
(500 real changes made)

. replace year = 2 if year == 1998
(626 real changes made)

. tab year

       year |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        135       10.69       10.69
          1 |        500       39.59       50.28
          2 |        626       49.56       99.84
        987 |          1        0.08       99.92
       1992 |          1        0.08      100.00
------------+-----------------------------------
      Total |      1,263      100.00

. drop if year > 2
(19 observations deleted)

. gen month = month(date)

. gen day = day(date)

. gen round = .
(1261 missing values generated)

. replace round = 1 if year == 0
(135 real changes made)

. replace round = 9 if year == 1 & ((month == 12 & day <= 31) | (month < 11))
(434 real changes made)

. replace round = 8 if year == 1 & ((month == 12 & day < 2) | (month < 12))
(453 real changes made)

. replace round = 7 if year == 1 & ((month == 9 & day < 29) | (month < 9))
(343 real changes made)

. replace round = 6 if year == 1 & ((month == 8 & day < 18) | (month < 8))
(305 real changes made)
```

```
. replace round = 5 if year == 1 & ((month == 7 & day < 7) | (month < 7))
(262 real changes made)

. replace round = 4 if year == 1 & ((month == 6 & day < 2) | (month < 6))
(209 real changes made)

. replace round = 3 if year == 1 & ((month == 4 & day < 14) | (month < 4))
(157 real changes made)

. replace round = 2 if year == 1 & ((month == 3 & day < 3) | (month < 3))
(99 real changes made)

. replace round = 1 if year == 1 & ((month == 1 & day < 27))
(22 real changes made)

. replace round = 15 if year == 2 & ((month == 8 & day >= 10) | (month > 8))
(312 real changes made)

. replace round = 14 if year == 2 & ((month == 8 & day < 10) | (month < 8))
(314 real changes made)

. replace round = 13 if year == 2 & ((month == 7 & day < 5) | (month < 7))
(272 real changes made)

. replace round = 12 if year == 2 & ((month < 7))
(267 real changes made)

. replace round = 11 if year == 2 & ((month == 4 & day < 20) | (month < 4))
(155 real changes made)

. replace round = 10 if year == 2 & ((month == 3 & day < 16) | (month < 3))
(134 real changes made)

. replace round = 9 if year == 2 & ((month == 10 & day < 20))
(8 real changes made)

. keep village hhn respondent_number plot_number date toposequence soil* area* day month year roun

. rename respondent_number id

. rename plot_number plot

. rename toposequence topo

. replace topo = "3" if topo == "3 (60%), 9 (40%)" | topo == "3 (50%), 9 (50%)"
(2 real changes made)

. replace topo = "9" if topo == "3 (30%), 9 (70%)" | topo == "3 (40%), 9 (60%)" | topo == "5 (30%)
(5 real changes made)

. replace topo = "3" if topo == "3, 5"
(3 real changes made)

. replace topo = "9" if topo == "5, 9"
(1 real change made)

. replace topo = "5" if topo == "flat"
(28 real changes made)
```

```
. drop if topo == "hilly" | topo == "very"
(4 observations deleted)

. destring topo, generate(ftopo)
topo has all characters numeric; ftopo generated as byte
(13 missing values generated)

. drop topo

. rename ftopo topo

. gen ln_area = log(area_sqm)
(9 missing values generated)

. xtile deciles_area = area_sqm, nq(10)

. gen soiltype = ""
(1257 missing values generated)

. replace soiltype = "red sandy" if soil_description == "ama sika" | soil_description == "pongpong
> escription == "sandy" | soil_description == "sandy, mbe sika"
soiltype was str1 now str9
(702 real changes made)

. replace soiltype = "black sandy" if soil_description == "black and sandy" | soil_description ==
>  == "black sand" | soil_description == "black soil" | soil_description == "black soil and red so
> escription == "hard soil" | soil_description == "loose black soil" | soil_description == "marshy
>  soil" | soil_description == "sandy and black soil" | soil_description == "sandy black" | soil_d
soiltype was str9 now str11
(129 real changes made)

. replace soiltype = "rocky" if soil_description == "bipuosu " | soil_description == "hard sandy"
> scription == "rocky and sandy" | soil_description == "rocky red soil" | soil_description == "roc
>  rocky" | soil_description == "sandy and very stony" | soil_description == "sandy rocks" | soil_
(20 real changes made)

. replace soiltype = "gravels" if soil_description == "abu siabu" | soil_description == "afo nwa"
> oil_description == "gravels (mbosia)" | soil_description == "mbe sika" | soil_description == "mb
> on == "nbe sika" | soil_description == "nbusia" | soil_description == "nbusia, rocky" | soil_des
> ription == "sandy and gravels"
(29 real changes made)

. replace soiltype = "clay" if soil_description == "akrampasu" | soil_description == "akranpasu" |
> tion == "asase kokoo" | soil_description == "askrampasu" | soil_description == "atwepi" | soil_d
> lack and red soil (clay)" | soil_description == "black soil and clay" | soil_description == "cla
> oil" | soil_description == "clay and sand" | soil_description == "clay and sandy" | soil_descrip
> y" | soil_description == "nso nwea (clay and sand)" | soil_description == "otanim (clay)" | soil
> = "sandy (clay)" | soil_description == "sandy and clay" | soil_description == "sandy and water l
> scription == "water log"
(253 real changes made)

. replace soiltype = "loamy" if soil_description == "loam and clay" | soil_description == "loamy"
(98 real changes made)

. replace soiltype = "rocky clay" if soil_description == "ameti with rocks" | soil_description ==
> lay rocks" | soil_description == "white sand" | soil_description == "white soil (sandy)"
(10 real changes made)

. rename soiltype soilt
```

```
. gen soiltype = .
(1257 missing values generated)

. replace soiltype = 0 if soilt == "red sandy"
(702 real changes made)

. replace soiltype = 1 if soilt == "black sandy"
(129 real changes made)

. replace soiltype = 2 if soilt == "rocky"
(20 real changes made)

. replace soiltype = 3 if soilt == "gravels"
(29 real changes made)

. replace soiltype = 4 if soilt == "clay"
(253 real changes made)

. replace soiltype = 5 if soilt == "loamy"
(98 real changes made)

. replace soiltype = 6 if soilt == "rocky clay"
(10 real changes made)

. rename soilt soilcategory

. save /Users/studentuser/Desktop/Ghana/temp_landc.dta, replace
file /Users/studentuser/Desktop/Ghana/temp_landc.dta saved

. clear

.
. *"""    CROPC.DTA
. use /Users/studentuser/Desktop/Ghana/cropc.dta

. gen year = year(date)
(21 missing values generated)

. replace year = 0 if year == 1996
(313 real changes made)

. replace year = 1 if year == 1997
(742 real changes made)

. replace year = 2 if year == 1998
(1037 real changes made)

. tab year
```

year	Freq.	Percent	Cum.
0	313	14.92	14.92
1	742	35.37	50.29
2	1,037	49.43	99.71
987	2	0.10	99.81
1992	4	0.19	100.00
Total	2,098	100.00	

```
. drop if year > 2
(27 observations deleted)

. gen month = month(date)

. gen day = day(date)

. gen round = .
(2092 missing values generated)

. replace round = 1 if year == 0
(313 real changes made)

. replace round = 9 if year == 1 & ((month == 12 & day <= 31) | (month < 11))
(616 real changes made)

. replace round = 8 if year == 1 & ((month == 12 & day < 2) | (month < 12))
(677 real changes made)

. replace round = 7 if year == 1 & ((month == 9 & day < 29) | (month < 9))
(480 real changes made)

. replace round = 6 if year == 1 & ((month == 8 & day < 18) | (month < 8))
(420 real changes made)

. replace round = 5 if year == 1 & ((month == 7 & day < 7) | (month < 7))
(352 real changes made)

. replace round = 4 if year == 1 & ((month == 6 & day < 2) | (month < 6))
(292 real changes made)

. replace round = 3 if year == 1 & ((month == 4 & day < 14) | (month < 4))
(234 real changes made)

. replace round = 2 if year == 1 & ((month == 3 & day < 3) | (month < 3))
(145 real changes made)

. replace round = 1 if year == 1 & ((month == 1 & day < 27))
(37 real changes made)

. replace round = 15 if year == 2 & ((month == 8 & day >= 10) | (month > 8))
(613 real changes made)

. replace round = 14 if year == 2 & ((month == 8 & day < 10) | (month < 8))
(424 real changes made)

. replace round = 13 if year == 2 & ((month == 7 & day < 5) | (month < 7))
(351 real changes made)

. replace round = 12 if year == 2 & ((month < 7))
(344 real changes made)

. replace round = 11 if year == 2 & ((month == 4 & day < 20) | (month < 4))
(199 real changes made)

. replace round = 10 if year == 2 & ((month == 3 & day < 16) | (month < 3))
(179 real changes made)
```

```
. replace round = 9 if year == 2 & ((month == 10 & day < 20))
(12 real changes made)

. keep village hhn respondent_number plot_number crop year day month round

. rename respondent_number id

. rename plot_number plot

. save /Users/studentuser/Desktop/Ghana/temp_cropc.dta, replace
file /Users/studentuser/Desktop/Ghana/temp_cropc.dta saved

. clear

.
. *"""     PLOTACT.DTA
. use /Users/studentuser/Desktop/Ghana/plotact.dta

. save /Users/studentuser/Desktop/Ghana/temp_plotact.dta, replace
file /Users/studentuser/Desktop/Ghana/temp_plotact.dta saved

. clear

.
. *"""     PLOTHARV.DTA
. use /Users/studentuser/Desktop/Ghana/plotharv.dta

. keep village hhn id plot crop round value

. rename value gross_value

. gen ln_value = log(gross_value)
(10 missing values generated)

. save /Users/studentuser/Desktop/Ghana/temp_plotharv.dta, replace
file /Users/studentuser/Desktop/Ghana/temp_plotharv.dta saved

. clear

.
. *"""     PLOTINP.DTA
. use /Users/studentuser/Desktop/Ghana/plotinp.dta

. gen fertiliser = .
(3008 missing values generated)

. replace fertiliser = 0 if input != ""
(3007 real changes made)

. replace fertiliser = 1 if input == "fertilizer" | (real(input) >= 41 & real(input) <= 49)
(279 real changes made)

. keep village hhn id plot round unit quantity fertiliser value

. rename quantity fertiliser_quantity

. gen nlinp_fertiliser = fertiliser * fertiliser_quantity
(92 missing values generated)
```

```
. save /Users/studentuser/Desktop/Ghana/temp_plotinp.dta, replace
file /Users/studentuser/Desktop/Ghana/temp_plotinp.dta saved

. clear

.
. * Merge
. use /Users/studentuser/Desktop/Ghana/temp_landc.dta

. sort village hhn id plot round

. merge 1:1 _n using /Users/studentuser/Desktop/Ghana/temp_cropc.dta
hhn was byte now int

    Result                           # of obs.
    -----------------------------------------
    not matched                           835
        from master                         0  (_merge==1)
        from using                        835  (_merge==2)

    matched                             1,257  (_merge==3)
    -----------------------------------------

. sort village hhn id plot round crop

. drop if _merge != 3
(835 observations deleted)

. drop _merge

.
. merge 1:1 _n using /Users/studentuser/Desktop/Ghana/temp_plotinp.dta
hhn was int now float
id was byte now float
plot was byte now float

    Result                           # of obs.
    -----------------------------------------
    not matched                         1,751
        from master                         0  (_merge==1)
        from using                      1,751  (_merge==2)

    matched                             1,257  (_merge==3)
    -----------------------------------------

. sort village hhn id plot round crop

. drop if _merge != 3
(1751 observations deleted)

. drop _merge

.
. merge 1:1 _n using /Users/studentuser/Desktop/Ghana/temp_plotact.dta

    Result                           # of obs.
    -----------------------------------------
    not matched                        13,319
        from master                         0  (_merge==1)
```

```
        from using                     13,319  (_merge==2)

    matched                             1,257  (_merge==3)
    -----------------------------------------

. sort village hhn id plot round crop

. drop if _merge != 3
(13319 observations deleted)

. drop _merge

.
. merge 1:1 _n using /Users/studentuser/Desktop/Ghana/temp_plotharv.dta
crop was str10 now str25

    Result                           # of obs.
    -----------------------------------------
    not matched                         2,477
        from master                         0  (_merge==1)
        from using                      2,477  (_merge==2)

    matched                             1,257  (_merge==3)
    -----------------------------------------

. sort village hhn id plot round crop

. drop if _merge != 3
(2477 observations deleted)

. drop _merge

.
. merge 1:1 _n using /Users/studentuser/Desktop/Ghana/temp_soildata.dta
village was byte now float

    Result                           # of obs.
    -----------------------------------------
    not matched                         1,267
        from master                         0  (_merge==1)
        from using                      1,267  (_merge==2)

    matched                             1,257  (_merge==3)
    -----------------------------------------

. sort village hhn id plot round crop

. drop if _merge != 3
(1267 observations deleted)

. drop _merge

.
. save /Users/studentuser/Desktop/Ghana/pset2_ghana.dta, replace
file /Users/studentuser/Desktop/Ghana/pset2_ghana.dta saved

.
. * Generate crop
. replace crop = "24" if crop == "coconut"
```

```
(1 real change made)

. replace crop = "0" if crop == "fallow"
(20 real changes made)

. replace crop = "36" if crop == "mango"
(1 real change made)

. replace crop = "37" if crop == "pear"
(5 real changes made)

. replace crop = "38" if crop == "teak"
(3 real changes made)

. destring crop, generate(fcrop)
crop has all characters numeric; fcrop generated as byte
(4 missing values generated)

. drop crop

. rename fcrop crop

.
. * Generate gender
. gen female = .
(1257 missing values generated)

. replace female = 1 if id == 1
(293 real changes made)

. replace female = 0 if id == 0
(942 real changes made)

. drop if female == .
(22 observations deleted)

.
. * Generate fixed effects
. gen fe_vtc  = (village * 10000) + (crop * 100) + round
(4 missing values generated)

. label var fe_vtc "vtc Fixed Effects"

. gen fe_vhtc = (fe_vtc * 100) + hhn
(4 missing values generated)

. label var fe_vhtc "vhtc Fixed Effects"

.
. * Dependent variable is log of yield (vhtci)
. ** {yield = tot_value / tot_area}
. ** => ln_yield = ln( tot_value / tot_area )
. ** => ln_yield = ln( tot_value ) - ln( tot_area )
. gen ln_yield = ln_value - ln_area
(10 missing values generated)

. label var ln_yield "Log of Yield"

.
```

```
. save /Users/studentuser/Desktop/Ghana/pset2_ghana.dta, replace
file /Users/studentuser/Desktop/Ghana/pset2_ghana.dta saved

.
. * Fixed Effects Regression
. ** {xtreg, fe i(.)}                              Command format
. ** {topo* soil* loc* ln_area}   Covariates matrix
. ** {totarea lntarea lnhhsize}   Exclude
.
. *** use #  for interaction
. *** use *  for wildcard
. *** use i. for categorical
.
. global dependent    "ln_yield"

. global soil         "ph oc om"

. global land         "$soil i.soiltype i.topo i.deciles_area"

. global independent  "female fertiliser_quantity $land"

.
. xtreg $dependent $independent, fe i(fe_vhtc)
note: 2.topo omitted because of collinearity
note: 4.topo omitted because of collinearity

Fixed-effects (within) regression               Number of obs      =       693
Group variable: fe_vhtc                         Number of groups   =       547

R-sq:  within  = 0.3473                         Obs per group: min =         1
       between = 0.1656                                        avg =       1.3
       overall = 0.2069                                        max =         6

                                                F(23,123)          =      2.85
corr(u_i, Xb)  = -0.4364                        Prob > F           =    0.0001
```

ln_yield	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
female	-1.42802	1.467602	-0.97	0.332	-4.333048	1.477008
fertiliser_quantity	.0481314	.0542881	0.89	0.377	-.0593285	.1555913
ph	-.3368012	.7782551	-0.43	0.666	-1.877309	1.203707
oc	-1.039273	7.593463	-0.14	0.891	-16.07007	13.99152
om	.4267788	4.37492	0.10	0.922	-8.233106	9.086664
soiltype						
1	-.9487539	2.635692	-0.36	0.719	-6.165944	4.268436
2	.6594256	3.387578	0.19	0.846	-6.046077	7.364928
3	3.27172	5.466155	0.60	0.551	-7.548199	14.09164
4	.1966215	1.604958	0.12	0.903	-2.980294	3.373537
5	-2.965469	6.221397	-0.48	0.634	-15.28034	9.349404
6	1.628645	8.366498	0.19	0.846	-14.93232	18.18961
topo						
2	0	(omitted)				
3	-.8469617	8.233856	-0.10	0.918	-17.14537	15.45145
4	0	(omitted)				
5	1.756968	8.398051	0.21	0.835	-14.86646	18.38039
9	4.851925	8.672712	0.56	0.577	-12.31518	22.01903

```
                |
  deciles_area  |
             2  |   .0161547   1.823157     0.01   0.993    −3.592672    3.624981
             3  |  −1.776003   1.718104    −1.03   0.303    −5.176885    1.624878
             4  |  −3.163836   1.997841    −1.58   0.116    −7.118439    .7907667
             5  |  −1.843065   2.165279    −0.85   0.396    −6.129103    2.442972
             6  |  −4.678732   4.372353    −1.07   0.287    −13.33354    3.976072
             7  |   −3.57888   2.332717    −1.53   0.128     −8.19635     1.03859
             8  |  −3.180382   3.328247    −0.96   0.341    −9.768442    3.407678
             9  |  −6.662023   2.876139    −2.32   0.022    −12.35516   −.9688821
            10  |  −12.79748   2.330009    −5.49   0.000    −17.40959   −8.185367
                |
         _cons  |   7.562252   9.714092     0.78   0.438     −11.6662     26.7907
----------------+------------------------------------------------------------------
       sigma_u  |  4.9215408
       sigma_e  |  5.2734663
           rho  |  .46552169   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(546, 123) =     0.51                 Prob > F = 1.0000

. predict residuals_v , e
(542 missing values generated)

. label var residuals_v "Residuals"

.
. *encode activity1 , generate(numeric_activity)
. *xtreg $dependent $independent female#i.numeric_activity , fe i(fe_vhtc)
. *predict residuals_v , e
. *label var residuals_v "Residuals"
.
end of do-file

. log close
      name:  <unnamed>
       log:  /Users/studentuser/Desktop/Ghana/pset2_ghana.smcl
  log type:  smcl
 closed on:  27 May 2019, 10:27:59
```