

```

1 . do "/var/folders/xt/knmm4spn729blppxvvlvklc00000gn/T//SD10291.000000"
2 . use "yamaguchi.dta", clear
3 .
4 . encode pref, gen(pref1)
5 . keep if hhtype == "all"
   (470 observations deleted)
6 . keep if year > 1999
   (94 observations deleted)
7 . xtset pref1 year
   panel variable:  pref1 (strongly balanced)
   time variable:   year, 2000 to 2010, but with gaps
   delta:          1 unit
8 .
9 . * The following two agree in the coefficients AND standard errors.
10 .
11 . reg emprate caprate i.pref1 // least square dummy variable estimation

```

Source	SS	df	MS	Number of obs	=	141
Model	1.30104848	47	.027681882	F(47, 93)	=	118.97
Residual	.021639613	93	.000232684	Prob > F	=	0.0000
				R-squared	=	0.9836
				Adj R-squared	=	0.9754
Total	1.32268809	140	.009447772	Root MSE	=	.01525

emprate	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
caprate	.8051027	.033819	23.81	0.000	.7379448	.8722605
pref1						
京都府	-.0157907	.0124867	-1.26	0.209	-.0405868	.0090054
佐賀県	.1017107	.0124549	8.17	0.000	.0769777	.1264437
兵庫県	.0139376	.0133437	1.04	0.299	-.0125603	.0404355
北海道	.0472086	.0134158	3.52	0.001	.0205674	.0738498
千葉県	.0368712	.0137407	2.68	0.009	.009585	.0641574
和歌山県	-.100145	.0126271	-7.93	0.000	-.12522	-.0750701
埼玉県	.0649718	.0142111	4.57	0.000	.0367514	.0931922
大分県	.0786482	.0126728	6.21	0.000	.0534825	.1038139
大阪府	-.0118248	.0132013	-0.90	0.373	-.0380399	.0143903
奈良県	-.0521911	.0127336	-4.10	0.000	-.0774776	-.0269046
宮城県	.1460906	.0139421	10.48	0.000	.1184043	.1737768
宮崎県	.0735578	.0125386	5.87	0.000	.0486586	.0984571
富山県	.0474861	.0133388	3.56	0.001	.0209979	.0739743
山口県	.0277748	.012543	2.21	0.029	.0028668	.0526827
山形県	.2719284	.0126632	21.47	0.000	.2467818	.297075
山梨県	-.0212312	.0126121	-1.68	0.096	-.0462763	.003814
岐阜県	-.010662	.0124551	-0.86	0.394	-.0353953	.0140713
岡山県	.0438233	.0125127	3.50	0.001	.0189755	.0686711
岩手県	.1405341	.0124898	11.25	0.000	.1157319	.1653362
島根県	.1024291	.0128977	7.94	0.000	.0768169	.1280413
広島県	.0114802	.0125019	0.92	0.361	-.0133461	.0363064
徳島県	.0514452	.0124723	4.12	0.000	.0266778	.0762127
愛媛県	.0066101	.0125009	0.53	0.598	-.0182142	.0314343
愛知県	-.0179738	.0125683	-1.43	0.156	-.042932	.0069843
新潟県	.0524787	.0130406	4.02	0.000	.0265826	.0783748
東京都	.0125847	.0129841	0.97	0.335	-.0131991	.0383685
栃木県	.1180016	.0132636	8.90	0.000	.0916627	.1443405
沖縄県	.1535242	.0130467	11.77	0.000	.127616	.1794324
滋賀県	.039056	.0128979	3.03	0.003	.0134433	.0646687
熊本県	.0569382	.0125922	4.52	0.000	.0319326	.0819439
石川県	-.0158949	.0142681	-1.11	0.268	-.0442286	.0124388
神奈川県	.0455206	.014498	3.14	0.002	.0167305	.0743107
福井県	.0478417	.0135053	3.54	0.001	.0210228	.0746606
福岡県	.0234296	.0126027	1.86	0.066	-.0015968	.048456
福島県	.2133901	.0136173	15.67	0.000	.1863489	.2404313
秋田県	.1310402	.0124963	10.49	0.000	.106225	.1558554
群馬県	.0412263	.0125224	3.29	0.001	.0163592	.0660933
茨城県	.0929807	.0133669	6.96	0.000	.0664368	.1195247

```
. xtreg emprate caprate, fe // fixed effects estimation
```

Fixed-effects (within) regression	Number of obs	=	141
Group variable: pref1	Number of groups	=	47
R-sq:	Obs per group:		
within = 0.8590	min =		3
between = 0.4978	avg =		3.0
overall = 0.5336	max =		3
	F(1,93)	=	566.74
corr(u_i, Xb) = -0.3180	Prob > F	=	0.0000

F test that all $u_i=0$: $F(46, 93) = 55.62$ Prob > F = 0.0000

Linear regression	Number of obs	=	141
	$F(0, 46)$	=	.
	Prob > F	=	.
	R-squared	=	0.9836
	Root MSE	=	.01525

(Std. Err. adjusted for 47 clusters in pref1)

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岩手県	.1405341	.0015265	92.06	0.000	.1374614	.1436067
島根県	.1024291	.0054795	18.69	0.000	.0913993	.1134588
広島県	.0114802	.0017725	6.48	0.000	.0079123	.015048
徳島県	.0514452	.0010781	47.72	0.000	.0492752	.0536152
愛媛県	.0066101	.0017529	3.77	0.000	.0030816	.0101386
愛知県	-.0179738	.0027556	-6.52	0.000	-.0235205	-.0124272
新潟県	.0524787	.0063201	8.30	0.000	.0397571	.0652004
東京都	.0125847	.0060006	2.10	0.041	.0005061	.0246633
栃木県	.1180016	.0074585	15.82	0.000	.1029884	.1330147
沖縄県	.1535242	.0063537	24.16	0.000	.1407349	.1663135
滋賀県	.039056	.0054812	7.13	0.000	.0280229	.0500891
熊本県	.0569382	.0030337	18.77	0.000	.0508317	.0630448
石川県	-.0158949	.0113839	-1.40	0.169	-.0388095	.0070197
神奈川県	.0455206	.0121357	3.75	0.000	.0210926	.0699486
福井県	.0478417	.0085401	5.60	0.000	.0306513	.0650321
福岡県	.0234296	.0031476	7.44	0.000	.0170938	.0297655
福島県	.2133901	.009003	23.70	0.000	.195268	.2315122
秋田県	.1310402	.0016638	78.76	0.000	.1276912	.1343892
群馬県	.0412263	.0021251	19.40	0.000	.0369486	.045504
茨城県	.0929807	.0079362	11.72	0.000	.077006	.1089555
長崎県	.0690056	.0000387	1781.07	0.000	.0689276	.0690835
長野県	-.073244	.0060147	-12.18	0.000	-.085351	-.061137
青森県	.041126	.0046138	8.91	0.000	.0318389	.050413
静岡県	.1082465	.0086014	12.58	0.000	.0909328	.1255602
香川県	.0508828	.0006408	79.41	0.000	.049593	.0521726
高知県	-.0384989	.0125954	-3.06	0.004	-.063852	-.0131457
鳥取県	.0477726	.0080749	5.92	0.000	.0315186	.0640266
鹿児島県	.0751702	.003601	20.87	0.000	.0679218	.0824187
_cons	.0898478	.0214623	4.19	0.000	.0466464	.1330493

18 . xtreg emprate caprate, fe robust // fixed effects estimation with cluster-robust SE (automatically set)

```

Fixed-effects (within) regression               Number of obs   =       141
Group variable: pref1                        Number of groups =       47

R-sq:                                         Obs per group:
    within = 0.8590                             min =          3
    between = 0.4978                             avg =         3.0
    overall = 0.5336                             max =          3

corr(u_i, Xb) = -0.3180                      F(1,46)          =     316.73
                                           Prob > F          =     0.0000

```

(Std. Err. adjusted for 47 clusters in pref1)

emprate	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
caprate	.8051027	.0452385	17.80	0.000	.7140422	.8961631
_cons	.1394067	.016401	8.50	0.000	.1063932	.1724203
sigma_u	.0692764					
sigma_e	.01525398					
rho	.95375825	(fraction of variance due to u_i)				

```

19 .
20 . * The following does not agree with -reg emprate caprate i.pref1, vce(cluster pref1)- either
21 .
22 . xtreg emprate caprate, fe vce(cluster pref1) // fixed effects estimation with cluster-robust SE (manually set)

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```

Fixed-effects (within) regression               Number of obs   =       141
Group variable: pref1                        Number of groups =       47

R-sq:                                         Obs per group:
    within = 0.8590                             min =          3
    between = 0.4978                             avg =         3.0
    overall = 0.5336                             max =          3

corr(u_i, Xb) = -0.3180                      F(1,46)          =     316.73
                                           Prob > F          =     0.0000

```

(Std. Err. adjusted for 47 clusters in pref1)

emprate	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
caprate	.8051027	.0452385	17.80	0.000	.7140422	.8961631
_cons	.1394067	.016401	8.50	0.000	.1063932	.1724203
sigma_u	.0692764					
sigma_e	.01525398					
rho	.95375825	(fraction of variance due to u_i)				

23 .
end of do-file

24 .