

```

1 . use "/Users/imisiaaiyetan/Documents/Hw 5 Data.dta", clear
   (Yearly Panel data)

2 . do "/Users/imisiaaiyetan/Documents/HW_5.do"

3 . clear all

4 .
5 . set more off

6 .
7 . use "/Users/imisiaaiyetan/Documents/Hw 5 Data.dta"
   (Yearly Panel data)

8 .
9 . * Problem 1
10 .
11 .
12 . * 1(a): Estimating fixed effect by constructing standard errors in 2 ways
13 .
14 . xtset id year
      panel variable:  id (unbalanced)
      time variable:  yearly, 0104 to 0131
      delta:  1 year

15 . * The regular robust standard errors
16 .
17 . xtreg lrpdi lsales, fe vce(robust)

Fixed-effects (within) regression              Number of obs   =        28
Group variable: id                           Number of groups =         7

R-sq:  within = 0.0070                      Obs per group: min =         3
      between = 0.4037                      avg           =         4.0
      overall  = 0.0449                      max           =         5

                                         F(1,6)          =        0.40
corr(u_i, Xb)  = 0.1999                    Prob > F         =        0.5510

                                         (Std. Err. adjusted for 7 clusters in id)

```

lrpdi	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
lsales	.0042463	.0067238	0.63	0.551	-.0122061	.0206988
_cons	4.512929	.0306475	147.25	0.000	4.437938	4.587921
sigma_u	.06705105					
sigma_e	.0135427					
rho	.96080464	(fraction of variance due to u_i)				

```

18 .

```

```

19 . * Clustering by i, the of cross-sectional observation
20 .
21 . xtreg lrpdi lsales, fe vce(cluster id)

```

```

Fixed-effects (within) regression               Number of obs   =       28
Group variable: id                             Number of groups =        7

R-sq:  within = 0.0070                         Obs per group: min =        3
        between = 0.4037                        avg =       4.0
        overall  = 0.0449                       max =        5

corr(u_i, Xb)  = 0.1999                        F(1,6)          =       0.40
                                                Prob > F         =     0.5510

```

(Std. Err. adjusted for 7 clusters in id)

lrpdi	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
lsales	.0042463	.0067238	0.63	0.551	-.0122061	.0206988
_cons	4.512929	.0306475	147.25	0.000	4.437938	4.587921
sigma_u	.06705105					
sigma_e	.0135427					
rho	.96080464	(fraction of variance due to u_i)				

```

22 .
23 . * 1(b): Estimating fixed effect using Demean approach
24 .
25 . egen lsale_bar = mean(lsales)

26 .
27 . egen lrpdi_bar =mean(lrpdi)

28 .
29 . gen z = lsales - lsale_bar

30 .
31 . gen q = lrpdi - lrpdi_bar

32 .
33 . reg z q

```

Source	SS	df	MS	Number of obs =	28
Model	.071949325	1	.071949325	F( 1, 26) =	1.22
Residual	1.52932909	26	.05882035	Prob > F =	0.2789
Total	1.60127842	27	.059306608	R-squared =	0.0449
				Adj R-squared =	0.0082
				Root MSE =	.24253

  

z	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
q						

q	.7995552	.7229344	1.11	0.279	-.6864578	2.285568
_cons	6.82e-08	.0458337	0.00	1.000	-.0942124	.0942126

```

34 .
35 . egen l_sale_bar = mean(lsales), by(id)

36 .
37 . egen l_rpd_i_bar =mean(lrpdi), by(id)

38 .
39 . gen x = lsales - l_sale_bar

40 .
41 . gen y = lrpdi - l_rpd_i_bar

42 .
43 . reg y x

```

Source	SS	df	MS	Number of obs =	28
Model	.000026032	1	.000026032	F( 1, 26) =	0.18
Residual	.003668096	26	.000141081	Prob > F =	0.6711
Total	.003694129	27	.00013682	R-squared =	0.0070
				Adj R-squared =	-0.0311
				Root MSE =	.01188

y	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
x	.0042463	.0098853	0.43	0.671	-.0160732 .0245659
_cons	-1.54e-07	.0022447	-0.00	1.000	-.0046142 .0046139

```

44 .
45 .
46 .
47 . * 1(c) Estimating the fixed effect using the poolregression with individual
48 . * dummy variable and by cluster
49 .
50 . * Estimating regression equation with individual dummy variable. Note that
51 . *we removed D1 to avoid dummy variable trap.
52 .
53 . reg lrpdi lsales d2 d3 d4 d5 d6 d7

```

Source	SS	df	MS	Number of obs =	28
Model	.108981639	7	.015568806	F( 7, 20) =	87.36
Residual	.003564294	20	.000178215	Prob > F =	0.0000
Total	.112545933	27	.004168368	R-squared =	0.9683
				Adj R-squared =	0.9572
				Root MSE =	.01335

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

lsales	.0050718	.0109675	0.46	0.649	-.017806	.0279495
d2	.0241732	.0095558	2.53	0.020	.0042403	.0441062
d3	.0675644	.0095742	7.06	0.000	.047593	.0875359
d4	.1227823	.0097271	12.62	0.000	.1024918	.1430727
d5	.1309612	.0097047	13.49	0.000	.1107177	.1512048
d6	.1532011	.0096012	15.96	0.000	.1331732	.1732289
d7	.177454	.0095976	18.49	0.000	.1574336	.1974743
_cons	4.412576	.0488529	90.32	0.000	4.310671	4.514481

```

54 .
55 . * Estimating regression equation with clustering by i
56 .
57 . reg lrpdi lsales i.id

```

Source	SS	df	MS	Number of obs =	28
Model	.108877836	7	.015553977	F( 7, 20) =	84.81
Residual	.003668096	20	.000183405	Prob > F =	0.0000
Total	.112545933	27	.004168368	R-squared =	0.9674
				Adj R-squared =	0.9560
				Root MSE =	.01354

lrpdi	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lsales	.0042463	.011271	0.38	0.710	-.0192646 .0277572
id					
2	.024285	.009697	2.50	0.021	.0040575 .0445125
3	.0676848	.0097162	6.97	0.000	.0474172 .0879524
4	.1245132	.0104325	11.94	0.000	.1027514 .146275
5	.1285638	.0095564	13.45	0.000	.1086295 .1484982
6	.1533331	.0097443	15.74	0.000	.1330068 .1736594
7	.1775845	.0097406	18.23	0.000	.157266 .1979029
_cons	4.416218	.0501929	87.98	0.000	4.311518 4.520919

```

58 .
59 .
60 .
61 .
62 .
63 .
    end of do-file

```

```

64 .

```