

Unemployment and crime rate: Two year panel data and fixed effects model

Source: crime2 (Wooldridge) Data on 46 cities in 1982 and 1987

- 1. pop population
- 2. unem unemployment rate
- 3. officers number police officers
- 4. pcinc per capita income
- 5. year 82 or 87
- 6. d87 =1 if year = 87
- 7. crmrte crimes per 1000 people
- 8. area land area, square miles
- 9. offarea officers per sq mile
- 10. lawexpc law enforcement expend. pc, \$
- 11. city city number 1 to 46

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. sum crmrte offarea lawexpc polpc unem pcinc if year==87
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Variable	Obs	Mean	Std. Dev.	Min	Max
crmrte	46	103.8727	34.78523	50.01925	179.4173
offarea	46	12.27184	10.23428	1.269868	44.85477
lawexpc	46	1113.951	329.3595	635.7	2262.44
unem	46	5.88913	1.509706	2.4	10.4
pcinc	46	10619.54	1685.336	6494	14474

- (1) reg crmrte unem if year==87
- (2) reg crmrte unem area west offarea lawexpc pcinc if year==87
- (3) reg crmrte unem d87
- (4) reg crmrte unem d87 area west offarea lawexpc pcinc
- (5) reg crmrte d87 i.city
- (6) reg crmrte unem d87 offarea lawexpc pcinc i.city

Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)
Crime rate	1987	1987	1982-1987	1982-1987	1982-1987	1982-1987
Unemployment rate	-4.161 (1.22)	-6.7 (1.80)	0.427 (0.36)	-0.54 (0.41)	2.218 (2.53)*	2.932 (2.59)*
Land area (sq miles)		0.059 (1.23)		0.013 (0.46)		
West		-21.963 (1.79)		-9.143 (1.22)		
Officers per square mile		-0.114 (0.17)		0.088 (0.22)		1.838 (1.03)
Law enforcement expend pc (\$)		0.021 (1.15)		0.02 (1.51)		-0.007 (0.51)
Per capita income (\$)		-0.002 (0.53)		-0.002 (0.63)		-0.006 (1.00)
Year 1987			7.94 (1.00)	3.207 (0.28)	15.402 (3.28)**	39.576 (1.75)
City						
2					17.292 (1.22)	12.531 (0.71)
3					4.689 (0.33)	-10.681 (0.58)
4					7.007 (0.48)	-0.048 (0.00)
45					-17.753 (1.25)	-16.979 (0.78)
46					-3.277 (0.23)	-45.015 (1.34)
Constant	128.378 (6.18)**	140.06 (2.74)**	93.42 (7.33)**	98.832 (3.58)**	51.489 (4.17)**	91.618 (1.95)
Observations	46	46	92	92	92	92
R-squared	0.03	0.16	0.01	0.07	0.89	0.90

Absolute value of t statistics in parentheses

* significant at 5%; ** significant at 1%

. reg crmrte unem d87 i.city [generates dummy variables for each value of the variable city]

Source	SS	df	MS	Number of obs =	92
Model	72200.7324	47	1536.1858	F(47, 44) =	7.64
Residual	8844.77129	44	201.017529	Prob > F =	0.0000
Total	81045.5037	91	890.609931	R-squared =	0.8909
				Adj R-squared =	0.7743
				Root MSE =	14.178

crmrte	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
unem	2.217997	.8778657	2.53	0.015	.4487745 3.987219
d87	15.40219	4.702116	3.28	0.002	5.925702 24.87869
city					
2	17.29172	14.19545	1.22	0.230	-11.31733 45.90076
3	4.688527	14.23908	0.33	0.744	-24.00846 33.38551
4	7.006747	14.45368	0.48	0.630	-22.12274 36.13623
5	24.49799	14.61705	1.68	0.101	-4.960738 53.95671
6	43.56559	14.57534	2.99	0.005	14.19093 72.94025
7	2.546187	14.23123	0.18	0.859	-26.13498 31.22735
8	12.02717	14.19545	0.85	0.401	-16.58187 40.63622
9	-10.2511	14.20257	-0.72	0.474	-38.8745 18.3723
43	44.38133	14.22751	3.12	0.003	15.70767 73.05499
44	1.722018	14.19138	0.12	0.904	-26.87882 30.32286
45	-17.75309	14.17813	-1.25	0.217	-46.32724 10.82106
46	-3.277064	14.51653	-0.23	0.822	-32.53321 25.97908
_cons	51.48925	12.34577	4.17	0.000	26.60798 76.37052

Stata command for fixed effects model

. xtreg crmrte unem d87, fe i(city)

Fixed-effects (within) regression	Number of obs =	92
Group variable (i): city	Number of groups =	46
R-sq: within = 0.1961	Obs per group: min =	2
between = 0.0036	avg =	2.0
overall = 0.0067	max =	2
corr(u_i, Xb) = -0.1477	F(2,44) =	5.37
	Prob > F =	0.0082

crmrte	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
unem	2.217997	.8778657	2.53	0.015	.4487745 3.987219	
d87	15.40219	4.702116	3.28	0.002	5.925702 24.87869	
_cons	75.40839	9.07054	8.31	0.000	57.12792 93.68886	
sigma_u	28.529801					
sigma_e	14.178065					
rho	.80194675	(fraction of variance due to u_i)				
F test that all u_i=0:			F(45, 44) =	7.87	Prob > F = 0.0000	

Multi-year panel data: Impact of enterprise zones on employment

Source: data file EZUNEM (Wooldridge). 22 cities in Indiana, from 1980 to 1988.

Six enterprise zones created in 1984, and 4 more in 1985.

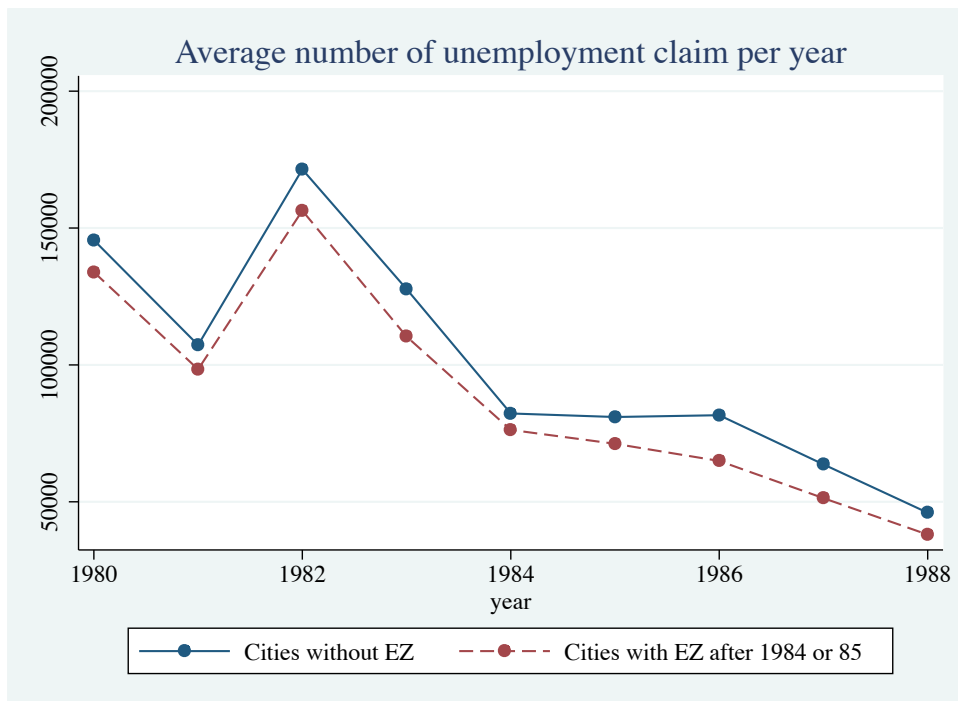
uclms is number of unemployment claims file during the year

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. sum
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Variable	Obs	Mean	Std. Dev.	Min	Max
year	198	1984	2.588534	1980	1988
uclms	198	95383.39	89173.63	12360	667208
ez	198	.2323232	.4233845	0	1

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. table year, c(n uclms mean uclms min uclms max uclms)
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year	N(uclms)	mean(uclms)	min(uclms)	max(uclms)
1980	22	140267.2	48490	533598
1981	22	103229	34489	435754
1982	22	164579.3	46225	667208
1983	22	119835.9	34154	545625
1984	22	79541.59	30062	340092
1985	22	76527.23	25004	325797
1986	22	74040.95	21100	303724
1987	22	58051.14	16913	262512
1988	22	42378.32	12360	209103



. reg luclms ez i.year i.city

Source	SS	df	MS	Number of obs =	198
Model	93.7818454	30	3.12606151	F(30, 167) =	77.75
Residual	6.71437093	167	.040205814	Prob > F =	0.0000
Total	100.496216	197	.510133078	R-squared =	0.9332
				Adj R-squared =	0.9212
				Root MSE =	.20051

luclms	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
ez	-.1044144	.0554191	-1.88	0.061	-.2138267 .0049979
year					
1981	-.3216314	.0604572	-5.32	0.000	-.4409903 -.2022725
1982	.1354959	.0604572	2.24	0.026	.016137 .2548548
1987	-.8889487	.0654953	-13.57	0.000	-1.018254 -.7596432
1988	-1.227633	.0654953	-18.74	0.000	-1.356938 -1.098327
city					
2	-.1934845	.099411	-1.95	0.053	-.3897488 .0027797
3	-.3789357	.099411	-3.81	0.000	-.5752 -.1826714
21	.4577925	.0945231	4.84	0.000	.2711782 .6444068
22	.2186422	.099411	2.20	0.029	.0223779 .4149065
_cons	11.67615	.0800792	145.81	0.000	11.51805 11.83425

. xtreg luclms ez i.year, fe i(city)

Fixed-effects (within) regression
 Group variable: city
 R-sq: within = 0.8416
 between = 0.0002
 overall = 0.3528
 Number of obs = 198
 Number of groups = 22
 Obs per group: min = 9
 avg = 9.0
 max = 9
 F(9,167) = 98.59
 Prob > F = 0.0000
 corr(u_i, Xb) = -0.0039

luclms	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
ez	-.1044144	.0554191	-1.88	0.061	-.2138267 .0049979
year					
1981	-.3216314	.0604572	-5.32	0.000	-.4409903 -.2022725
1982	.1354959	.0604572	2.24	0.026	.016137 .2548548
1983	-.2192554	.0604572	-3.63	0.000	-.3386144 -.0998965
1984	-.579152	.0623179	-9.29	0.000	-.7021843 -.4561196
1985	-.5917876	.0654953	-9.04	0.000	-.7210931 -.4624821
1986	-.621265	.0654953	-9.49	0.000	-.7505704 -.4919595
1987	-.8889487	.0654953	-13.57	0.000	-1.018254 -.7596432
1988	-1.227633	.0654953	-18.74	0.000	-1.356938 -1.098327
_cons	11.69439	.0427497	273.55	0.000	11.60999 11.77879
sigma_u	.55551507				
sigma_e	.20051387				
rho	.88473197	(fraction of variance due to u_i)			

F test that all u_i=0: F(21, 167) = 68.95 Prob > F = 0.0000