

```
1 clear
2 cd "C:\Users\lfeler1\Documents\Applied Econometrics Course\Notes\Weeks 11-13"
3 use PanelData_BrazilBanking
4
5 capture log close
6 log using PanelData_BrazilBankingExample, replace
7
8 keep if small==1
9 keep if YTT>=-9&YTT<=8
10
11 xi i.year, prefix(_ydm)
12
13 gen trend=YT
14
15
16 ****What's happening to lending in privatizing and non-privatizing cities***
17 preserve
18 sort priv YTT
19 collapse (mean) lnending, by(priv YTT)
20 graph twoway (line lnending YTT if priv==1) (line lnending YTT if priv==0)
21 graph save Fig1.gph, replace
22 restore
23
24 ****Let's difference out year fixed effects***
25
26
27 xi i.YTT, noomit prefix( YTT)
28 foreach var of varlist _YTT* {
29   gen privX`var'=priv*`var'
30 }
31
32 reg lnending privX_YTT* _YTT* _ydm*, nocons
33 matrix coeffs=e(b)'
34 matrix m1=coeffs["privX_YTTYTT_1".."privX_YTTYTT_18","y1"]
35 matrix m2=coeffs["_YTTYTT_1".."_YTTYTT_18","y1"]
36 svmat m1
37 svmat m2
38 gen obsnol=-9+_n if m11~=.
39
40 gen priv_yearfe=m11+m21
41 gen nonpriv_yearfe=m21
42
43 graph twoway (line priv_yearfe obsnol) (line nonpriv_yearfe obsnol)
44 graph save Fig2.gph, replace
45
46 graph combine Fig1.gph Fig2.gph
47
48 ****Now let's do the same thing but include city fixed-effects***
49
50 capture drop m11 m21 obsnol
51
52 xtset new_code
53
54 xtreg lnending privX_YTTYTT_2-privX_YTTYTT_18 _YTTYTT_2-_YTTYTT_18 _ydm*, fe
55 matrix coeffs=e(b)'
56 matrix m1=coeffs["privX_YTTYTT_2".."privX_YTTYTT_18","y1"]
57 matrix m2=coeffs["_YTTYTT_2".."_YTTYTT_18","y1"]
58 svmat m1
59 svmat m2
60 gen obsnol=-8+_n if m11~=.
61
62 gen priv_yearcityfe=m11+m21
63 gen nonpriv_yearcityfe=m21
64
65 graph twoway (line priv_yearcityfe obsnol) (line nonpriv_yearcityfe obsnol)
66 graph save Fig3.gph, replace
67
68 graph combine Fig1.gph Fig2.gph Fig3.gph
```

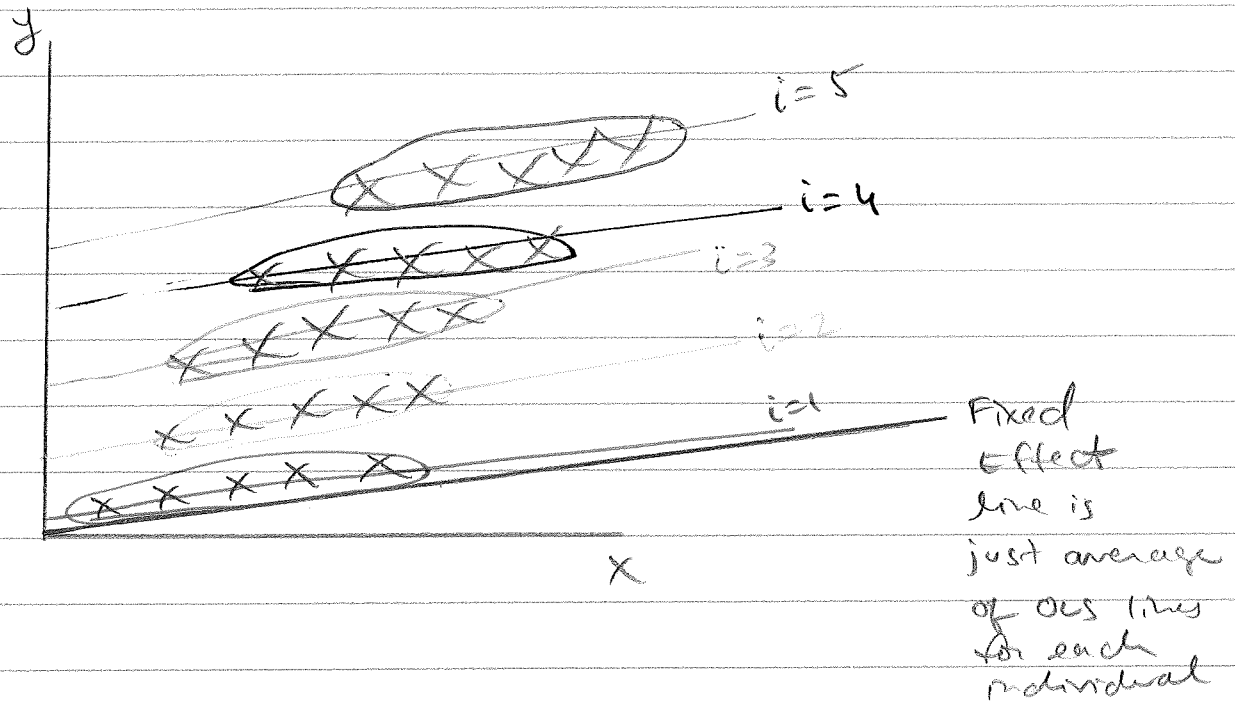
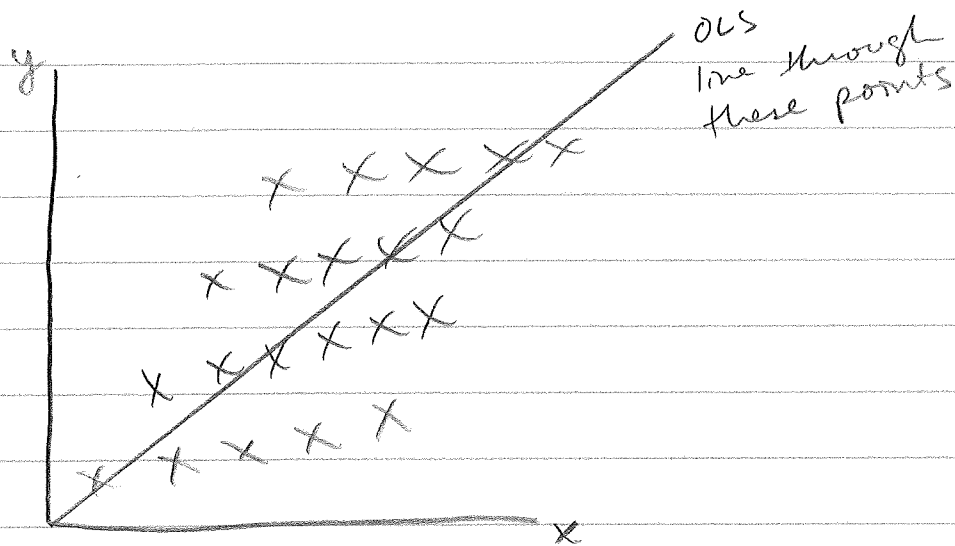
```

69
70 ****Now let's also control for a trend***
71
72 capture drop m11 m21 obsnol
73
74 xtset new_code
75
76 xtreg lnending privX_YTTYTT_2-privX_YTTYTT_18 _YTTYTT_3-_YTTYTT_18 trend _ydm*, fe
77 matrix coeffs=e(b)'
78 matrix m1=coeffs["privX_YTTYTT_3".."privX_YTTYTT_18","y1"]
79 matrix m2=coeffs["_YTTYTT_3".."_YTTYTT_18","y1"]
80 svmat m1
81 svmat m2
82 gen obsnol=-7+_n if m11~=.
83
84 gen priv_yearcityfet=m11+m21
85 gen nonpriv_yearcityfet=m21
86
87 graph twoway (line priv_yearcityfet obsnol) (line nonpriv_yearcityfet obsnol)
88 graph save Fig4.gph, replace
89
90 graph combine Fig1.gph Fig2.gph Fig3.gph Fig4.gph
91
92
93 ****Now let's allow for different trends for privatizing cities***
94
95 capture drop m11 m21 obsnol
96
97 xtset new_code
98 gen privXtrend=priv*trend
99
100 xtreg lnending privX_YTTYTT_3-privX_YTTYTT_18 _YTTYTT_3-_YTTYTT_18 trend privXtrend
    _ydm*, fe
101 matrix coeffs=e(b)'
102 matrix m1=coeffs["privX_YTTYTT_3".."privX_YTTYTT_18","y1"]
103 matrix m2=coeffs["_YTTYTT_3".."_YTTYTT_18","y1"]
104 svmat m1
105 svmat m2
106 gen obsnol=-7+_n if m11~=.
107
108 gen priv_yearcityfept=m11+m21
109 gen nonpriv_yearcityfept=m21
110
111 graph twoway (line priv_yearcityfept obsnol) (line nonpriv_yearcityfept obsnol)
112 graph save Fig5.gph, replace
113
114 graph combine Fig1.gph Fig2.gph Fig3.gph Fig4.gph Fig5.gph
115
116 graph combine Fig1.gph Fig2.gph Fig3.gph Fig4.gph Fig5.gph, ycommon
117
118
119
120 *****Now let's do diffs in diffs*****
121
122 reg lnending priv post privXpost
123
124 reg lnending priv post privXpost _ydm*
125
126 xtreg lnending priv post privXpost _ydm*, fe
127 ** Why does "priv" drop out when we include city fixed-effects?
128
129 xtreg lnending post privXpost _ydm*, fe
130 xtreg lnending post privXpost _ydm*, fe cluster(new_code)
131
132 ***What if I use random effects instead?
133 xtreg lnending priv post privXpost _ydm*, re cluster(new_code)
134
135 ***Compare fixed and random effects when corr(u_i, xb) not approx. equal to zero***

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136
137 xtreg lnhighskill lnending _ydm*, fe cluster(new_code)
138 xtreg lnhighskill lnending _ydm*, re cluster(new_code)
139 reg lnhighskill lnending _ydm*, cluster(new_code)
140
141
142 ****Now let's do diffs in diffs but add controls for trends***
143
144 xtreg lnending post privXpost _ydm*, fe cluster(new_code)
145 xtreg lnending post privXpost _ydm* trend, fe cluster(new_code)
146 xtreg lnending post privXpost _ydm* trend privXtrend, fe cluster(new_code)
147
148 ****Now let's also allow trends to change following treatment***
149
150 gen postXtrend=post*trend
151 gen privXpostXtrend=priv*post*trend
152
153 xtreg lnending post privXpost _ydm* trend privXtrend, fe cluster(new_code)
154 xtreg lnending post privXpost postXtrend privXpostXtrend _ydm* trend privXtrend, fe
cluster(new_code)
155
156 ****Now let's try to instrument for the effect of lending on employment using
privatization as an instrument***
157
158 xtreg lnlowskill lnending _ydm*, fe cluster(new_code)
159 xtivreg2 lnlowskill post _ydm* (lnending=privXpost), fe ffirst cluster(new_code)
160 xtivreg2 lnlowskill post postXtrend trend privXtrend _ydm* (lnending=privXpost
privXpostXtrend), fe first ffirst cluster(new_code)
161
162
163
```

Difference between OLS, FE, and RE.



What is random effects? An average of OLS and FE estimated slopes.

As $\text{con}(y-i, x) \rightarrow 0$, R.E. \rightarrow F.E.

As $\text{con}(y-i, x) \rightarrow 1$, R.E. \rightarrow OLS

This average is a weighted average, where weight on OLS = $\text{con}(y-i, x)$.