

F³: F tests, Functional Forms and Favorite Coefficient Models

Favorite coefficient model: *otherteams*

```
use "nflpricedata B.dta"
```

```
reg rprice pop pop2 rpci wprcnt1 po5 otherpro cap95 newstad tempstad exp  
reloc
```

1) F tests:

a) -testing one parameter ... and t-tests

```
test pop = 0  
di sqrt(27.31)  
test exp = 0  
di sqrt(2.09)
```

b) -testing joint hypotheses (multiple parameters)

i) Population effects?

```
test (pop=0) (pop2=0)  
test pop pop2
```

ii) Team quality effects?

```
test wprcnt1 po5
```

iii) ... and functional forms:

```
reg rprice pop pop2 yr  
gen yr2=yr^2  
reg rprice pop pop2 yr yr2  
reg rprice pop pop2 i.yr  
predict yhat  
scatter yhat pop  
test i.yr  
testparm i.yr
```

2) Dummies capture average residuals (what your model did not otherwise explain):

```
reg rprice pop pop2 i.yr  
gen resid = rprice - (43.43622+ 2.849277*pop -.0756375*pop2)  
tabstat resid, by(yr) stat(mean)
```

3) Bring on the dummies... team quality effects:

```
xi i.team  
reg rprice wprcnt1 po5 i.yr _I*  
margins, eyex(wprcnt1 po5) atmeans
```

4) Polynomials:

```
reg rprice pop
predict phat1
reg rprice pop pop2
predict phat2
gen pop3=pop^3
reg rprice pop pop2 pop3
predict phat3
scatter phat* pop
vif
test pop2 pop3
```

So drop one, but not both!

5) Percentile dummies... here, quintile dummies

```
xtile pop5=pop, n(5)
scatter pop5 pop
reg rprice i.pop5
predict phat5
scatter phat2 phat5 pop
```

6) Use areg to run fixed effect.... but only for one variable:

```
reg rprice i.pop5 rpci wprcnt1 po5 otherpro cap95 newstad tempstad exp
reloc

areg rprice rpci wprcnt1 po5 otherpro cap95 newstad tempstad exp reloc,
absorb(pop5)
```

7) Why hold back... afterall, it's a favorite coefficient model!

```
xtile rpci5=rpci, n(5)
reg rprice i.pop5 i.rpci5 wprcnt1 po5 otherpro cap95 newstad tempstad exp
reloc

xtile wprcnt5=wprcnt1, n(5)
reg rprice i.pop5 i.rpci5 i.wprcnt5 po5 otherpro cap95 newstad tempstad
exp reloc

reg rprice i.pop5 i.rpci5 i.wprcnt5 i.po5 otherpro cap95 newstad tempstad
exp reloc

testparm i.pop5
testparm i.pop5 i.rpci5
testparm i.pop5 i.rpci5 i.wprcnt5
```