MQE: Economic Inference from Data: Module 2: Fixed Effects

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Module 2: Fixed Effects

- ▶ Data Structures
- ▶ Fixed Effects

-A simulation

-Fixed effects as demeaned data

-Thinking about variation

-Example: Crime and Unemployment

Controling for unobservables

We saw with AGG(2006) that even with many covariates, unobservables are a problem.

Certain types of data allow us to control for more of these unobservables by using fixed effects.

Example:

$$Income_i = \beta_0 + \beta_1 Schooling_i + \epsilon$$

There are many unobsevables like 'ability', 'enthusiasm' or 'grit' that could bias these estimates.

What if I can control for all of the unobservable characteristics of an individual, as long as they do not change over time?

Data Structures

Cross-sectional data: I see each unit once

Individual	Income	Schooling	Female
1	22000	12	1
2	57000	16	1
...	...	...	...
N	15000	12	0

Data Structures

Panel Data: I see each unit multiple times

Individual	Income	Schooling	Female	Year
1	22000	12	1	2001
1	23000	12	1	2002
2	57000	16	1	2001
2	63000	17	1	2002
...	...	...	...	...
N	15000	12	0	2001
N	13000	12	0	2002

Data Structures: Notation

To uniquely identify an observation, I need to know the individual and the time of the observation.

We need to add a new subscript to our estimating equations:

$$Income_{it} = \beta_0 + \beta_1 Schooling_{it} + \epsilon$$