General Methods for Deriving Fiscal Estimates

- Data analysis (e.g., Census Bureau, Bureau of Labor Statistics)
- Forecasting based on previous estimates
- Use national estimates to cost out state estimates
- Survey based on previous research

Meta-Regression Analysis

What is it?

- Regression analysis of regression analyses (Stanley and Jarrell, 1989)

Why might you need it?

- Lots of existing research
- Research results are inconclusive

How is it better than survey?

- Accounts for within-study and across-study variation
- Aids in specifying a proper model
- Gives baseline estimate based on study-specific controls

What Do We Need for MRA?

Identify your research question(s)

Research good sample of primary studies

- Articles published in scholarly journals (use “snowball method”)
- Working papers (avoid “file-drawer” problem)

Select acceptable studies

Enterprise Zones

Designated within “distressed” areas or those with potential for expansion

- Based on income, education, population and building vacancies

Businesses within an EZ often receive labor and capital tax incentives

Studies have examined the effectiveness of EZs on economic growth

- Employment
- Wages or income
- Machinery and equipment
- Property values

How Do We Create the Dataset

Dataset is based on primary studies

- Estimation results
- Study features

Identify the variables being used to estimate the effect size in your primary studies

Dataset

Study Characteristics													
studyid	authors	avg. data year	st.	n	k	d.f.	est.	s.e.	effect size = est./s.e.	t-stat	p-val	RSq	pub
1	Couch et al. 2005	1986	MS	492	4	487	0.014	0.004	4.090	4.090	0.000	0.087	1
1	Couch et al. 2005	1986	MS	492	4	487	0.015	0.004	4.040	4.040	0.000	0.094	1
1	Couch et al. 2005	1986	MS	492	86	405	0.054	0.017	3.160	3.160	0.002	0.964	1
1	Couch et al. 2005	1986	MS	492	4	487	0.015	0.003	5.110	5.110	0.000	0.100	1

Dataset cont.

ependent Variables					Independent Variables						
p	wages	property values	machinery and equip	inventory	job	poverty	wages	income	industry	economic	demograph
1	0	0	0	0	1	1	1	0	0	0	
1	0	0	0	0	1	1	1	0	0	0	
1	0	0	0	0	1	1	1	0	0	0	
1	0	0	0	0	1	1	1	0	0	0	

Dataset cont.

Methodology					
Heckman Tobit	Propensity Score	growth dependent variable	lagged dependent variable	EZ*variable	EZ at current time
0	0	0	0	0	1
0	0	0	0	0	1
0	0	0	0	0	1
0	0	0	0	0	1

Dataset cont.

Estimator				
Ordinary Least Squares	Maximum Likelihood	Fixed Effects	Random effects	Instrumental variables
1	0	0	0	0
0	0	0	0	0
0	0	1	0	0
0	0	0	1	0

Dataset cont.

EZ Characteristics					
EZ initiated	avg # zones	Labor Subsidy	Labor Restriction	Capital Subsidy	Capital Restriction
1983	25	1	1	0	0
1983	25	1	1	0	0
1983	25	1	1	0	0
1983	25	1	1	0	0

Estimators

Fixed effects

- Assumes study-level variables account for all the variation in the effect size

Random effects

- Allows estimates to vary in an unpredictable way

How to Interpret the Results

Let's look at the intercept, which provides the baseline estimate for all the studies

	Est.	
CA	-0.111	*
MS	-0.083	
FL	-2.829	***
NJ	-0.114	**
US	-0.098	*
Published	-0.876	**
Average data year	0.000	**
Employment	0.025	***
Wealth	-0.020	**
Socioeconomic	0.007	
Employment measured as growth	0.006	***
EZ interacted with other variable	-0.003	
Current number of Ezs	-0.007	***
Propensity score method	-0.012	
First differencing method	-0.010	*
Ordinary Least Squares	0.001	
Fixed Effects	0.005	
Instrumental Variables	-0.021	**
Intercept (baseline)	0.639	**
R2	0.247	

Results cont.

Now let's look at some real-world variables

	Est.		z-value	Est.	
Labor restriction	-8.729	*	-1.890	-	
Capital subsidy	-8.792	*	-1.900	-	
Capital restriction	8.755	*	1.880	-	
CA	-			-0.111	*
MS	-			-0.083	
FL	-			-2.829	**
NJ	-			-0.114	**
US	0.020		1.540	-0.098	*
Published	-0.769	***	-3.800	-0.876	**
Average data year	0.005	**	2.090	0.000	**
Employment	0.064	*	1.900	0.025	**
Wealth	-0.020	**	-2.050	-0.020	**
Socioeconomic	0.007		0.660	0.007	
Employment measured as growth	-0.012	**	-2.240	0.006	**
EZ interacted with other variable	0.033		1.120	-0.003	
Current number of Ezs	0.007	***	9.090	-0.007	**
Propensity score method	-0.002		-1.510	-0.012	
First differencing method	-0.007	***	-9.470	-0.010	*
Ordinary Least Squares	0.000		0.240	0.001	
Fixed Effects	0.002		0.130	0.005	
Instrumental Variables	-0.010		-0.740	-0.021	**
Intercept (baseline)	0.637	**	2.210	0.639	**
R2	0.218				

Conclusions

Average effect of EZ on employment is 0.6 percentage points

Labor restriction and capital subsidy lead to a 9 percentage point decline in the effect of EZ on employment

Capital restriction leads to a 9 percentage point increase