

Initial Structural Estimation Project Description and Presentation

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Requirments for a Project

- 1 Work in groups of $1 \leq \text{group size} \leq 2$
 - I like mostly pairs, but most of you solo
- 2 Focus must be a research question
 - No “methods for the sake of methods” papers
- 3 No regressions
 - unless used in indirect inference estimation
 - unless a small subroutine of bigger model
 - unless logistic regression, and logit must be rigorous and perform predictive analytics, and code maximum likelihood by self
- 4 Strong theory component
- 5 Must use GMM, MLE, SMM, or SMLE estimation that you code yourself

Sections of Structural Estimation Project

Sections of a paper

- 1 Abstract
- 2 Introduction
- 3 Theory/model
- 4 Data
- 5 Estimation strategy/results
- 6 Experiments/interpretation
- 7 Conclusion

Order of completing sections

- 1 Theory/model and data
- 2 Estimation strategy/results
- 3 Experiments/interpretation
- 4 Conclusion
- 5 Introduction
- 6 Abstract

Proposal presentation components (5 steps)

- 1 State the research question
 - What are you trying to learn by using this model?
 - Should be focused: narrow usually better than broad



- 2 Describe the model (the DGP)

$$F(\mathbf{x}_t, \mathbf{z}_t | \theta) = \mathbf{0}$$

- What are the endogenous variables \mathbf{x}_t ?
- What are the exogenous variables \mathbf{z}_t ?
- What are the parameters θ
- Which parameters are estimated $\hat{\theta}_e$?
- Which parameters are calibrated $\bar{\theta}_c$?
- How does one solve the model given θ ?
 - Equations are sufficient (e.g., econometric models)
 - Analytical solution (e.g., behavioral models)
 - Computational solution (e.g., behavioral models)



Proposal presentation components (5 steps)

- ③ Describe proposed data source X
 - How available is the data?
 - Can you show some initial descriptives?
- ④ Describe your proposed estimation strategy $\hat{\theta}$
 - Why did you choose this estimation strategy over alternatives?
 - How will you identify your parameters?
 - Likelihood function
 - What moments you use
- ⑤ Proposal conclusion
 - Research question
 - Hopes and dreams
 - Potential shortcomings/alternatives

Where/how do I find a project?

- MACSS/MAPSS thesis
- Evans' suggestions
- Google search: [my topic of interest] [structural estimation] [GMM], [MLE], [SMM]

Potential projects

- How do different bequest assumptions affect inequality?
 - Estimate three different models of the distribution of bequests and run macro model
- How do U.S. demographic changes affect macroeconomy?
 - Estimate parametric form for U.S. fertility and mortality immigration data by age and put it in macro model
- OG model, calibrate labor supply
 - How does disutility of labor vary by age?
 - How does a tax cut affect labor supply?
- OG model, calibrate discount factor, wealth inequality
 - Effect of a wealth tax on inequality

Potential projects

- Adjustment costs, [Cooper and Haltiwanger \(2006\)](#)
- Entrepreneurship: [Jones and Pratap \(2015\)](#)
 - “An Estimated Structural Model of Entrepreneurial Behavior”
- Business cycles and startups models are too hard: [Decker, et al \(2016\)](#)
- Mai Le, et al (2015): [DSGE model standard estimation vs. indirect inference](#)
- Asset pricing (hard but cool)
 - [Alti and Tetlock \(2014\)](#)
 - [Franke and Westerhoff \(2011 or 2012\)](#)

Other structural estimation papers

These are taken from [Chris Taber notes](#)

- “Effects of Affordable Care Act on labor market outcomes,” Aizawa and Fang, 2015.
- “Tuition Subsidies on Health,” Heckman, Humphries, and Veramundi, 2015.
- “Effects of extending length of payment for college loan programs on college enrollment,” Li, 2015.
- “Peer effects of school vouchers on public school students,” Altonji, Huang, and Taber, 2015.
- “Tax credits versus income support,” Blundell, Costa Dias, Meghir, and Shaw, 2015.
- “Effects of immigration on short and long run wages of natives,” Colas, 2016.
- “Welfare effects of alternative designs of school choice programs,” Calsamiglia, Fu, and Guell, 2016.