# Initial Structural Estimation Project Description and Presentation

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# Requirments for a Project

1. Work in groups of $1 \leq$ 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, or SMM 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

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)

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

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

# Proposal presentation components

3. Describe proposed data source $\boldsymbol{X}$
   - 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

# Potential projects

- 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
- Dodd-Frank and bank profits (nothing)
- Innovation and growth (too hard): Aghion, et al (2017)
- Asset pricing (hard but cool)
  - Alti and Tetlock (2014)
  - Franke and Westerhoff (2011 or 2012)

# Potential projects

- Adjustment costs, Cooper and Haltiwanger (2006)
- 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

# 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.