Estimating Dynamic Models in Corporate Finance

Toni M. Whited

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Many Ways to do Empirical Work

- Describe the data: Smith and Warner (1979).


It is Good to Have Both Hammers and Screw Drivers in your Toolbox

- Recent methodological debates are too “black and white.”
- Different techniques are useful for answering different questions.

My goals:
- **Briefly** explain which techniques are good for which questions.
- Talk in nontechnical terms about the advantages and disadvantages of structural estimation.
What is Structural Estimation?

- Structural estimation is an attempt to fit economic optimization models directly to data to assess the quality of the fit to identify parameters that govern technology, preferences, and (thus far in corporate finance) largely time-invariant institutional features.

- Structural estimation ascertains whether optimal decisions implied by a model resemble actual decisions by firms.
What Kinds of Questions Can Different Techniques Answer?

- Structural estimation tends to ask different types of questions than either reduced form regressions or quasi-experimental techniques.

- Reduced form techniques examine the sign of the magnitude of an effect of one variable on another.

  - **Not causal**: Which kinds of firms have which kinds of bond covenants, and what do these covenants look like?

  - **Causal**: Does CEO succession within a family help or hurt firm performance?
What Kinds of Questions Can These Different Techniques Answer?

- Structural estimation is better at examining economic mechanisms.

- How badly do simple models fit the data? What kinds of model features help the model and data get along?

- What do boards value when they decided to fire CEOs? (Taylor, 2010)

- Parameter estimates can be used to analyze counterfactuals, which are causal statements.
One Important Advantage of Structural Estimation

- It is sometimes useful to go after similar questions in different ways.

Non-Issues with Structural Estimation

- The models have never been tested out of sample.
- The models fail the data badly.
- There is a big gap between the model variables and observable variables.
- How do we know that another model would not do a better job of fitting the data?
Genuine Issues with Structural Estimation

- The models need to be better.
- Some of the parameters in the models are not “deep.”
- What is “deep?” Invariant relative to a given policy experiment.
- The counterfactuals one can do are limited. Not a fatal flaw.
Genuine Issues with Structural Estimation

KEY POINTS

- IDENTIFICATION
  
  Only one set of model parameters should be able give you the maximized likelihood.

- Forming a likelihood or moment conditions from a model is like picking instruments. You have to understand the economics.
Genuine Issues with Structural Estimation

- The question is more important than the technique.
- The barriers to entry are many, not large, but many.
Conclusion

- Debates about economic questions are more interesting than methodological debates.

- If you want to make a causal statement about the effect of one variable on another, go find an instrument.

- If you collected an interesting data set, describe it in a theory-informed way.

- If you want to see whether models fit the data, estimate one.