Consequences of Uncertainty

Lars Peter Hansen

University of Chicago

London, United Kingdom
April 1st, 2014
Who is Lars Peter Hansen?
Sharing with Some Friends
Jacob Bernoulli (left)

Law of Large Numbers used to reveal unknown probabilities (1713)
Uncertainty in Economic Analysis

- **Outside a model**
  Given a dynamic economic model, researchers:
  - estimate unknown parameters
  - assess model implications

- **Inside a model**
  When constructing a dynamic economic model, researchers:
  - depict economic actors (consumers, enterprises, policy makers) as they cope with uncertainty
  - deduce the consequences for market outcomes and resource allocations
Pioneers of Economic Time Series

Bachelier (1900)  Yule (1927)  Slutsky (1927)  Frisch (1933)

Dynamic models with random impulses
Urns and uncertainty
Uncertainty and Skepticism
Pioneers of Decision Theory

- Knight (1921)
- de Finetti (1937)
- Wald (1939)
- Savage (1954)

Models for confronting uncertainty
Investors Inside an Economic Model

When *constructing* a dynamic economic model, researchers:

- depict economic actors (consumers, enterprises, policy makers) as they cope with uncertainty
- deduce the resulting market responses and consequences for resource allocations

**Outcome:** New sources for fluctuations in *uncertainty prices* emerge in models of financial markets.
Policy Makers Outside the Model

- **Systemic risk:** A grab bag of scenarios rationalizing interventions in financial markets

- **Challenges:** Limited understanding of systemic risk challenges its value as a guiding principle for financial oversight (Haldane, Bank of England and Tarullo, Board of Governors)

- **Systemic uncertainty:** Complicated problems do not necessarily require complicated solutions
Friedman (1961): advocated simple rules because of long and variable lags in the monetary transmission mechanism.

Current monetary policy: forward guidance with limited knowledge of the impact of monetary policy on labor markets.

Simple and transparent?
Summary

- Two perspectives on uncertainty: outside the model and inside the model
- Multiple components to uncertainty
  - Model risk - what probabilities does a model assign to events in the future
  - Model ambiguity - how much confidence do we place in each model
  - Model misspecification - how do we use models that are not perfect
- Given limits to our understanding, complicated problems may be best addressed with simple solutions
Questions?

Please use the provided microphones.