CHALLENGES TO THE BUSINESS CYCLE PARADIGM IN CENTRAL BANK MODELS

• Should we use DSGE models to think about and guide monetary policy?
• If so, what should these models look like?
• Are there other types of models we should consider?
SHOULD CENTRAL BANKS USE DSGE MODELS?

• Yes
SHOULD CENTRAL BANKS USE DSGE MODELS?

- DYNAMIC
- STOCHASTIC
- GENERAL EQUILIBRIUM
GENERAL EQUILIBRIUM?

- What are the ingredients of a general equilibrium model?
- Individual agents who do the best they can subject to constraints
- Assumptions about preferences, technology, etc.
- Description of how markets clear
- Assumptions about the information agents have and how they process it
“It was what it was: glorious and wonderful and all that, but it doesn't mean anything”
WHY OBJECT TO DSGE MODELS?

- Cannot do sensible policy analysis without models
- Economics is a *social* science that studies human behavior: Models without agents lack an essential ingredient
- Assumptions about preferences, technology, and various frictions may be false but they may be useful simplifications of reality: We can build confidence in our models
- DSGE models such as TOTEM already include any number of generalizations of perfect market clearing in their descriptions of “equilibrium”
PROBLEMS WITH CENTRAL BANK DSGE MODELS

• Overfitting? Are model parameters convincingly and robustly identified.
• Accuracy of quantitative predictions from policy experiment, and forecasts
• Centrality of the consumption Euler equation
• Inadequate financial sector
  • Interaction between asset prices and real activity is mostly missing
  • Role of regulation in affecting behavior of financial sector is minimal
• Existing models may be far from suitable for some questions.
MULTIPLE STEADY STATES AND STRUCTURAL CHANGE

- Conventional CB models have stable dynamics around a unique steady state.
- Models are typically calibrated or estimated to fit behavior over long periods of time.
- For the purposes of central banks it may be adequate to model some structural change using slow time variation in parameters.
  - E.g. evolving demographics.
- For other questions, modeling the shocks/breaks may be central.
  - E.g. changes in beliefs, hysteresis in labor markets.
- For some questions the theory in place is not ready to be incorporated into a large DSGE model.
FINANCIAL AND COMMODITY CYCLES

• The description and role of the financial sector in CB models seems quite crude even after the experience of the last 10 years
• Current models don’t seem well set up to capture the effects of changing bank regulation on transmission mechanisms
• Asset prices, most especially, the value of housing seem to be important in real activity, as does the heterogeneity of the participants in asset markets
• Commodities: crucial to Canada and the US but in different ways
“Scientists believe no experiment is a failure, that even a mistake advances the evolution of understanding.”
THINGS WORTH EXPLORING

• Departures from rational expectations
  • Ambiguity aversion
  • Overconfidence
  • Learning
  • Social dynamics
  • Adaptive expectations

• These are all potentially *disciplined* departures from rational expectations
THINGS WORTH EXPLORING

• Broader description of the financial sector
• Heterogeneous agents
  • Consumption Euler equation
  • Differences in beliefs
• Welfare costs of business cycles / connection to asset prices as well
CONCLUDING THOUGHTS

• Keep faith in using models to address important policy questions
• Avoid the hubris of believing you’ve solved a puzzle, be open to new ideas
• The truth will be revealed but only as $T \to \infty$

“There is a way out of every box, a solution to every puzzle; it’s just a matter of finding it.”

“We burn away irrelevancies until we are left with a pure product, the truth for all time”