DSGE Model for Policy Analysis

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XIII Meeting of the Network of America Central Bank Researchers, November 2008, México City.
1. Recent Developments

2. Relevant Issues for DSGE Implementation

3. Challenges
Recent Development

Recent Events

- Bank of Indonesia and BIS Workshop, Bali, June 3-4, 2008 (Keynote, Volker Wieland)
- Banco Central de Reserva del Perú and CEMLA Workshop, Lima, June 23-27, 2008 (Keynote, Fabio Canova)
- Macroeconomic Modeling Workshop, Cartagena, Colombia, October 9-10, 2008 (Keynote, Fabio Canova and Douglas Laxton)

- Macroeconomic Modeling Workshop 2009 is in Israel
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DSGE Models in CEMLA group

- Several central banks have developed (are developing) DSGE models
- Besides being used for policy analysis they can (and sometimes are) used for forecasting
- "Work overall impressive, especially relative to what I have seen in developed countries" (Canova)
- Models introduced several features that are relevant in our economies:
  - Commodity producers
  - Oil as an input in production
  - Some rule of thumb agents (consumers and producers)
  - Multiple monetary policy objectives
  - Dollarization
  - Banks and credit
  - Fiscal rules
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Potentially Missing Features

- Labor migration (out and back) and remittances
- No role for relative price movements (services v/s manufacturing)
- At times capital
- Role for foreign direct investment
- Public/nationalized firms (non-competitive sector)
- The informal sector may be large
- Certain sectors maybe dominating the economy
- Certain institutions may be changing
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Modeling Issues

- Financial frictions and fiscal policy can be introduced explicitly
- Very few operation models where credit plays a role in transmitting (amplifying) monetary policy shocks
- One model or many models? Should explain both trend and cycle?
- Suggestion: start from small models and enlarge them. Large models are difficult to understand
- Role of relative price adjustments (particularly relevant for an open economy where exchange rate fluctuations play a central role)
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Modeling Issues

To avoid the problems of relying just on one model (view), develop a suite of models using different modeling and estimation approach.

- Linear approximations are convenient, but:
  - Nonlinearities may have crucial influence on the economy and policy design.
  - Regime change is nonlinear.
  - Learning introduces a nonlinearity.
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Relevant Issues for DSGE Implementation

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Estimation Issues

- Fit the model with ML and later go Bayesian
- Do Bayesian with and without added measurement errors. How much is the model misspecified? In which equation? What is the measurement error doing?
- System-wide methods choose parameters to minimize the largest discrepancy of the model to the data. Careful with having one equation "very" misspecified.
- If breaks exist, use pre-break data to "calibrate" the prior. Don’t throw away.
- Watch out for identification problems
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A common presumption: asset markets passively reflect fluctuations in standard shocks and contribute little to propagation

Challenge: to integrate financial frictions into standard DSGE models. How?:

- "Financial Factors in Economic Fluctuations" Christiano, Motto and Rostagno (2008)
- "Credit and Banking in a DSGE Model" Gerali, Neri, Sessa and Signoretti (2008)
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Optimal Policy and Central Bank Preferences

- Monetary policy is characterized by a Taylor rule
- This is a reduced form without structural interpretation
- An alternative is to make explicit the problem the CB is trying to minimize
- This implies deriving an optimal policy reaction given a loss criterion
- It has the advantage of being flexible (can change the criterion) and have a structural interpretation
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