The Use of (DSGE) Models in Central Bank Forecasting: The FRBNY Experience

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Panel Discussion
2016 ECB Workshop on “DSGE Models and Forecasting”

Disclaimer: The views expressed here do not necessarily reflect those of the Federal Reserve Bank of New York or the Federal Reserve System
“... most people outside the discipline who take one look at these models [DSGEs] immediately think they're kind of a joke. They contain so many unrealistic assumptions that they probably have little chance of capturing reality. Their forecasting performance is abysmal. Some of their core elements are clearly broken. Any rigorous statistical tests tend to reject these models instantly, because they always include a hefty dose of fantasy.”
Are DSGEs of Any Use for Forecasting and Policy Analysis?

ECONOMICS

Economics Struggles to Cope With Reality

By Noah Smith

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Link to **abysmal**: Abstract of Gürkaynak, Kisacikoglu, Rossi (Advances in Econometrics, 2013): “... there is no single best forecasting method. For example, typically simple AR models are most accurate at short horizons and DSGE models are most accurate at long horizons when forecasting output growth ... ”
Del Negro & Schorfheide (2013). “DSGE Model-Based Forecasting”
Handbook of Economic Forecasting II
Which DSGE Model Anyway?

Log Scores Comparison: SW vs SW + Financial Frictions

“Real” Real Time Forecasts from FRBNY-DSGE Model

Output Growth

November 2010

Core PCE Inflation

November 2010

October 2011

October 2011
"Real" Real Time Forecasts from FRBNY-DSGE Model

Evolution of year-over-year forecasts

Output Growth (Y-o-Y) Core PCE Inflation (Q4/Q4)

2012

2015
Why don’t more central banks publish their DSGE forecasts?
Storytelling, Unobservables, and Counterfactuals

- Yes, DSGEs may produce higher RMSEs than AR(2) ...
- .. But what do we do with an AR(2) (or VAR(2)) for policy analysis?
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![Natural Rate of Interest](image)

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... and Its Decomposition

- And, being full-fledged econometric models, can characterize the uncertainty surrounding these objects (unlike Cowles foundation models). Can we trust the DSGE-implied uncertainty?
Dealing with Misspecification

• Still, critics are right that the DSGEs are currently (and will always be) mis-specified.
• Incorporating misspecification into the policy advice/forecasting is of first order importance.
• What to do? **Diversify:**
  1. Across DSGEs
  2. Between DSGEs and other models – either directly embedding the DSGE into a loosely parameterized models (DSGE-VARs) or using pools

• “Will DSGE models eventually improve enough to fully replace semi-structural models in the forecasting process of the central banks?” Why replace?
Only Representative Agents/New Keynesian DSGEs?

- DSGEs are not all the same, but still, most (if not all) are near-clones of Smets and Wouters
- While there are good reasons for this, it is worrisome
  1. Not enough diversification/too much homegeneity
  2. Disconnect from academia

- Laundry list of possible avenues: Agents heterogeneity with borrowing and liquidity constraints, financial considerations such as the demand for safe assets, deviations from perfect information/rational expectations ...

- It is not easy – both computationally and econometrically – but let’s start walking (as central bank’s modelers) along some of these avenues!