

Central Banks: Current Experiences and Views on the Next Generation of Policy Models

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¹The views expressed are my own. They do not necessarily represent the views of the Federal Reserve Bank of Chicago, the Federal Reserve System, or its Board of Governors.



Current Experiences at the Chicago Fed

- ▶ Medium-scale DSGE model based on Justiniano, Primiceri, and Tambalotti (2010).
- ▶ Quarterly Data
- ▶ Neoclassical Model Core
- ▶ Standard Keynesian Features
- ▶ Novel Features
- ▶ Estimation
- ▶ Policy use
- ▶ Publication



Current Experiences at the Chicago Fed

- ▶ Medium-scale DSGE model based on Justiniano, Primiceri, and Tambalotti (2010).
- ▶ Quarterly Data
 - ▶ Chain-aggregated *model-consistent* growth rates of consumption, investment, and GDP from NIPA
 - ▶ Accompanying relative prices.
 - ▶ Total hours worked.
 - ▶ “Trend” hours worked taken from FRB/US model.
 - ▶ Multiple measures of wage and price inflation.
 - ▶ SPF 10-year inflation expectations for the CPI.
 - ▶ The federal funds rate.
 - ▶ Ten quarters of OIS futures rates.
- ▶ Neoclassical Model Core
- ▶ Standard Keynesian Features
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Current Experiences at the Chicago Fed

- ▶ Medium-scale DSGE model based on Justiniano, Primiceri, and Tambalotti (2010).
- ▶ Quarterly Data
- ▶ Neoclassical Model Core
 - ▶ Representative household with Jaimovich and Rebelo (2009) preferences augmented with external habit.
 - ▶ Stochastic growth trend driven by Hicks-neutral and investment-specific technology shocks.
 - ▶ \dot{I} adjustment costs.
- ▶ Standard Keynesian Features
- ▶ Novel Features
- ▶ Estimation
- ▶ Policy use
- ▶ Publication



Current Experiences at the Chicago Fed

- ▶ Medium-scale DSGE model based on Justiniano, Primiceri, and Tambalotti (2010).
- ▶ Quarterly Data
- ▶ Neoclassical Model Core
- ▶ Standard Keynesian Features
 - ▶ Chamberlinian monopolistic competition in goods production.
 - ▶ Chamberlinian monopolistic competition in labor provision.
 - ▶ Calvo pricing with nominal indexation.
 - ▶ Calvo wage setting with real and nominal indexation.
 - ▶ Interest-rate rule with time-varying long-run inflation target (π_t^*).
- ▶ Novel Features
- ▶ Estimation
- ▶ Policy use
- ▶ Publication



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- ▶ Standard Keynesian Features
- ▶ Novel Features
 - ▶ Government bonds (in zero net supply) in the utility function.
 - ▶ Odyssean forward guidance shocks. (Svensson and Laséen, 2011)

$$i_t = f(\Omega_t) + \sum_{l=0}^M \xi_{t-l}^l$$

- ▶ Estimation
- ▶ Policy use
- ▶ Publication



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- ▶ Standard Keynesian Features
- ▶ Novel Features
- ▶ Estimation
 - ▶ First moments first. Calibrate all parameters with implications for the steady-state growth path.
 - ▶ Estimate all parameters governing out-of-steady-state dynamics with standard Bayesian methods.
- ▶ Policy use
- ▶ Publication



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- ▶ Medium-scale DSGE model based on Justiniano, Primiceri, and Tambalotti (2010).
- ▶ Quarterly Data
- ▶ Neoclassical Model Core
- ▶ Standard Keynesian Features
- ▶ Novel Features
- ▶ Estimation
- ▶ Policy use
 - ▶ Medium-run forecasts
 - ▶ conditional on interest-rate futures data, and
 - ▶ with judgmental adjustments of parameters for structural change.
 - ▶ Simulations to support policy analysis.
 - ▶ Optimal policy calculation (ongoing work).
- ▶ Publication



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- ▶ Publication
 - ▶ Campbell, Evans, Fisher, and Justiniano (2012)
 - ▶ Campbell, Fisher, Justiniano, and Melosi (2016)



The Four Questions (of DSGE)

- ▶ Which central phenomena do we miss?
- ▶ Which assumptions require relaxation?
- ▶ Which model features do we need?
- ▶ Which technical challenges do we face?



The Four Questions (of DSGE)

- ▶ Which central phenomena do we miss?
 - ▶ The global savings glut.
 - ▶ Market change/collapse. (We hit the ZLB because markets failed, not because they worked.)
 - ▶ Markets allocate among heterogeneous households.
 - ▶ Markets convert risky assets into safe stores of value.
 - ▶ We live in a risk-on/risk-off world.
 - ▶ Monetary policy makers provide Delphic forward guidance.
- ▶ Which assumptions require relaxation?
- ▶ Which model features do we need?
- ▶ Which technical challenges do we face?



The Four Questions (of DSGE)

- ▶ Which central phenomena do we miss?
- ▶ Which assumptions require relaxation?
 - ▶ Central-bank commitment.
 - ▶ Complete Markets
 - ▶ Full Rational Expectations
 - ▶ Government bonds are in zero net supply.
 - ▶ Households are Ricardian.
 - ▶ Asset-market arbitrage is costless.
- ▶ Which model features do we need?
- ▶ Which technical challenges do we face?



The Four Questions (of DSGE)

- ▶ Which central phenomena do we miss?
- ▶ Which assumptions require relaxation?
- ▶ Which model features do we need?
 - ▶ Markov-perfect discretion or quasi-commitment (Schaumburg and Tambalotti, 2007)
 - ▶ Government bonds with at least two maturities.
 - ▶ Blanchard-Yaari OLG.
 - ▶ Segmented markets.
 - ▶ First-moment news shocks
 - ▶ Second-moment news shocks/Time-varying risk (Financial and technological).
- ▶ Which technical challenges do we face?



The Four Questions (of DSGE)

- ▶ Which central phenomena do we miss?
- ▶ Which assumptions require relaxation?
- ▶ Which model features do we need?
- ▶ Which technical challenges do we face?
 - ▶ Overfitting. (Address with calibration based on micro data.)
 - ▶ Model sprawl (Address with factor analysis.)



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