The Macroeconomic Effects of the Federal Reserve’s Unconventional Monetary Policies

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Two Questions

1. Did the Fed’s unconventional policy actions alter beliefs about its implicit policy rule?
   • Use Blue Chip forecasts to infer changes in perceived policy rule
   • Finding – marked shifts in rule after explicit FG and QE expansion

2. Did changes in the perceived policy rule plus QE-related term premium effects provide much stimulus?
   • Use FRB/US to simulate outcomes w/o unconventional policy
   • Finding – moderate support to real activity and inflation
Review of Unconventional Policy Actions

1. Asset purchases and other QE programs
   - $3.8 trillion in purchases (Treasuries and MBS, three phases)
   - Other actions – reinvestment, maturity extension program

2. Forward guidance
   - Qualitative (Dec 2008 through June 2011)
   - Calendar-based and explicit (Aug 2011 through Oct 2012)
   - Threshold conditions (Dec 2012 through Jan 2014)
Blue Chip Forecasts of Average Annual Conditions

Unemployment Rate

Imputed Output Gap -- 2(U*-U)

GDP Price Inflation

3-Month Treasury Bill Rate

Blue Chip T-Bill Forecasts and Taylor Rule Prescriptions

October 2009 Survey

October 2010 Survey

October 2011 Survey

March 2012 Survey

October 2012 Survey

October 2013 Survey

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Blue Chip T-bill forecast

Taylor rule prescription given BC inflation and unemployment
Identifying Shifts in BC-Consistent Policy Rules

- Assume forecasters always expect the same general rule but may update its perceived parameters over time

\[ i_t = r^* + \pi_t + \alpha(\pi_t - \pi^*) + \beta \text{gap}_t \]

- March/October surveys provide forecasts for \( i_t, \pi_t \) and \( \text{gap}_t \) for years 0 to 6, plus \( r^* \) and \( \pi^* \)
  - Estimate separate \( \beta \) for each survey
  - Assume \( \alpha = 0.5 \) (projected inflation gaps uninformative)

- For pooled 1992-2007 surveys, \( \alpha \) and \( \beta \) close to 0.5
Blue Chip T-Bill Forecasts and Fitted Policy Rules

October 2009 Survey

- Beta = 0.228

October 2010 Survey

- Beta = 0.269

October 2011 Survey

- Beta = 0.541

March 2012 Survey

- Beta = 0.717
- Lambda = 0.8, Beta = 0.380

October 2012 Survey

- Beta = 0.852
- Lambda = 0.8, Beta = 0.625
- Lambda = 0.8, Beta = 1.167

October 2013 Survey

- Beta = 1.605
- Lambda = 0.8, Beta = 1.167

Forecast, estimated annual rule, calibrated inertial rule
What Were the Macro Effects of Unconventional Policy?

1. Difficult question
   - Did others also perceive a shift in the policy rule?
   - Not obvious how to embed changes in perceived rule in a VAR
   - Structural models may not account for term premium effects

2. Use FRB/US model
   - Structural model with rational expectations
     - but simulations incorporate gradual learning
   - Model incorporates role for term premiums
   - Has dynamics similar to range generated by other models

3. Address uncertainty using alternative versions of the model (e.g., lower interest elasticity of demand)
Evolution of QE-Related Term Premium Effects

Source: Ihrig et al. (2012), Li and Wei (2013), and authors’ calculations
Simulation Procedure

1. Create set of overlapping baselines consistent with BC surveys
   • Solve for past/future shocks to policy and economy consistent with Mar 2009 real-time data, Blue Chip forecasts, estimated $\beta$, and expected QE term premium effects
   • Repeat parsing exercise for October 2009, March 2010, ..., October 2013
   • Simulating this sequence of past/expected shocks replicates evolution of the economy from early 2009 to late 2013

2. Re-simulate model eliminating shifts in $\beta$ and QE-related reductions in term premiums

3. Difference between history and counterfactual simulation measures effective stimulus
Baseline Estimates of Macro Effects

Unemployment Effects

- Non-inertial rule
- Inertial rule

Inflation Effects

- Percentage points

Engen, Laubach and Reifschneider (2015)
Alternative Estimates of Macro Effects

Unemployment Effects

Inflation Effects

-1.6 -1.4 -1.2 -1.0 -0.8 -0.6 -0.4 -0.2 0.0 0.2 0.4 0.6 0.8

2008 2010 2012 2014 2016 2018

-1.6 -1.4 -1.2 -1.0 -0.8 -0.6 -0.4 -0.2 0.0 0.2 0.4 0.6 0.8

2008 2010 2012 2014 2016 2018

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2008 2010 2012 2014 2016 2018

% points

percentage points

baseline model
alternative inflation dynamics
rational expectations in financial markets only
low interest elasticity of demand
policy-linked house price effects