

Discussion of

“The Power of Forward Guidance Revisited”

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Challenges for Macroeconomic Policy in a Low Inflation Environment
European Central Bank, Frankfurt, November 5, 2015

The views are solely those of the discussant and do not necessarily reflect those of the
FRB of New York or the Federal Reserve System.

Great Paper !

1. Addresses an important current monetary issue
 - Why doesn't economy boom following FG?
2. Proposes a model with only essential ingredients
 - Extremely elegant: Combines NK model with incomplete markets model
 - Very clearly written
3. Main results
 - Assumption of complete markets plays a crucial rule for power of FG
 - Effects of FG as not as large as “standard” models predict, when accounting for incomplete markets!
 - Model can be approximated by simple linear model with discounting in Euler equ.

What Does the Paper Do?

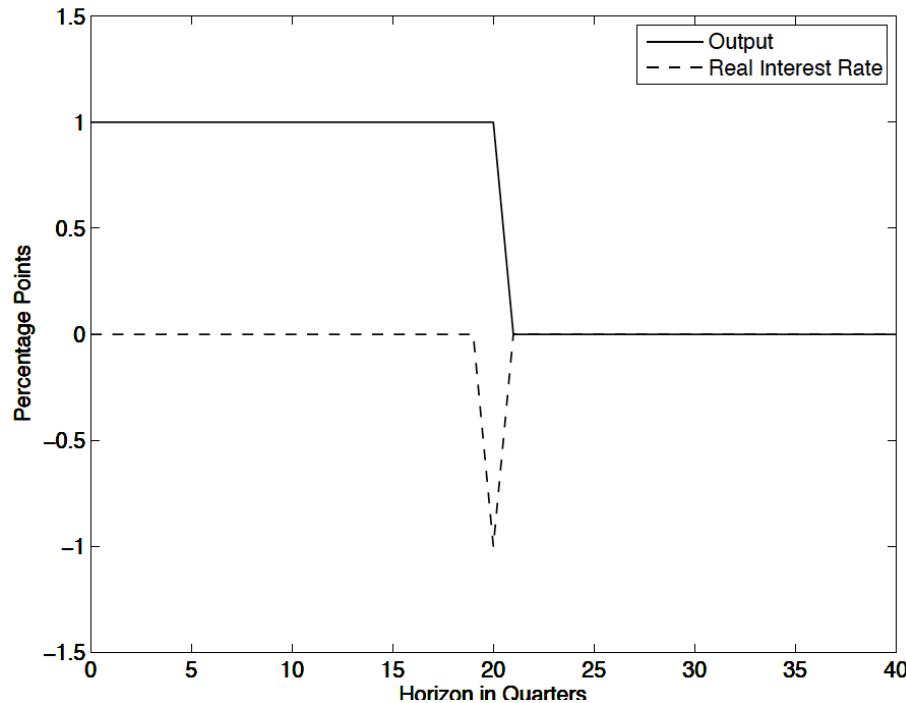
1. “Forward Guidance Puzzle” in a very stark example
 - Simple NK model:

$$\hat{c}_t = -E_t[\hat{R}_t - \hat{\pi}_{t+1} + \hat{c}_{t+1}]$$

$$\hat{\pi}_t = \kappa \sum_{j=0}^{\infty} \beta^j E_t[\hat{c}_{t+j}]$$

- Assumes that monetary policy controls the real interest rate
- Considers drop in real interest rate by 100bps in 20 quarters

Forward Guidance's Effect on Output

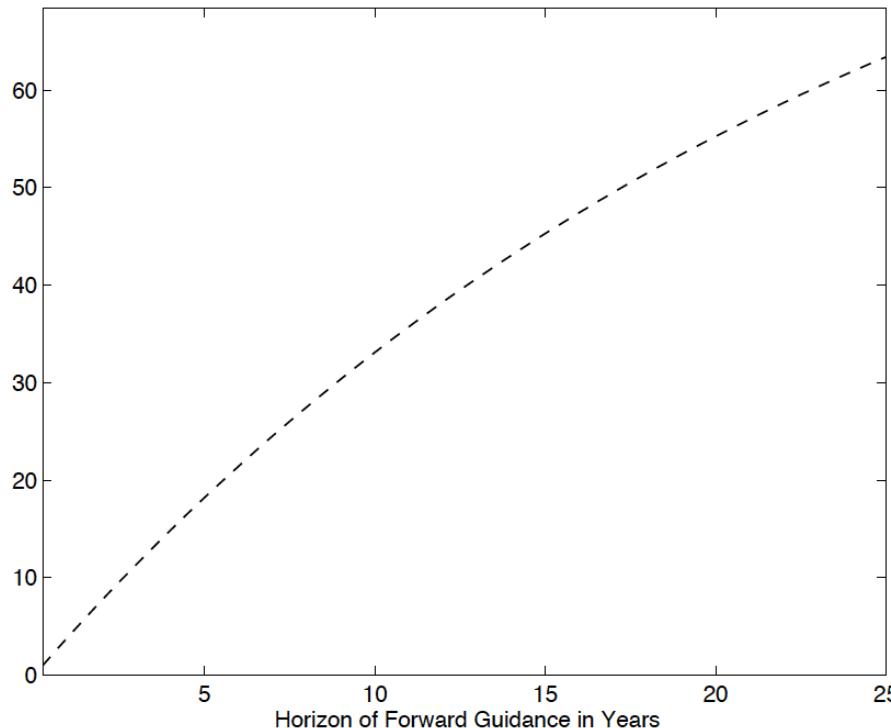


1: Consumption depends on the expected future short-term real rates:

$$\hat{c}_t = -E_t[\hat{R}_t - \hat{\pi}_{t+1} + \hat{c}_{t+1}] \implies \hat{c}_t = -\sum_{j=0}^{\infty} E_t [\underbrace{\hat{R}_{t+j} - \hat{\pi}_{t+1+j}}_{\hat{r}_{t+j}}]$$

- Contemporaneous shock: $\hat{r}_t \downarrow \Rightarrow \hat{c}_t \uparrow, \hat{c}_{t+1} = 0, \dots$
- Anticipated shock: $\hat{r}_{t+H} \downarrow \Rightarrow \hat{c}_t \uparrow, \hat{c}_{t+1} \uparrow, \dots, \hat{c}_{t+H} \uparrow$
- The farther the rate drop, the longer does consumption boom last

Forward Guidance's Effect on Current Inflation



- NK model: inflation is PDV of future expected output gaps:

$$\hat{\pi}_t = \kappa \sum_{j=0}^{\infty} \beta^j E_t[\hat{c}_{t+j}]$$

- The farther in the future is the announcement of policy, the more prolonged is the consumption boom
→ the more inflation rises today

Comments

1. FG on the Real Rate vs the Nominal Rate
2. Is the model-implied effect of FG really excessive?
 - What does the data tell us?
 - Is the MNS example extreme, or is it representative of a broader class of models?
3. Proposed mechanism and Role of Incomplete Markets
 - A few open issues
4. Discounting in Euler equation?
 - Yes,... but can be fully micro-founded

Comment #1: Further Effects of Forward Guidance

- Paper focuses on FG effects when CB controls real interest rate
 - Illustrates clearly problems with consumption Euler equation
- But if CB sets nominal rate, further effects / problems appear:
 - Increases in expected inflation reduce real rate further
→ very powerful **additional amplification**
(Carlstrom, Fuerst, Paustian, 2012; Del Negro et al. 2012; Kiley et al. 2014)
 - Systematic policy (monetary policy rule) tends to stabilize inflation and output gap → **offset stimulus**

Comment #2: Is the Model-Implied Effect of FG Really Excessive?

- What does the data tell us?
- Is the MNS example extreme, or is it representative of a broader class of models?

Forward Guidance – The Challenge

- Difficulty to identify / interpret FG:
 - Announcement by CB that will maintain FFR at ZLB for longer may have at least two effects:
 - » **More monetary stimulus**: lower expectation of future FFR
 - ➔ lower long-term bond yields
 - ➔ stimulates economic activity, higher inflation
 - » Reveals **negative news** about state of economy: lower long-term bond yield and lower projected activity, lower inflation
 - Gürkaynak et al. (2005), Campbell et al. (2012), Woodford, (2012) ...
- How did GDP growth and inflation forecasts change following FG announcements?

What are the Effects of Forward Guidance? Evidence from Blue Chip Financial Forecasters

Del Negro, Giannoni, Patterson (2015):

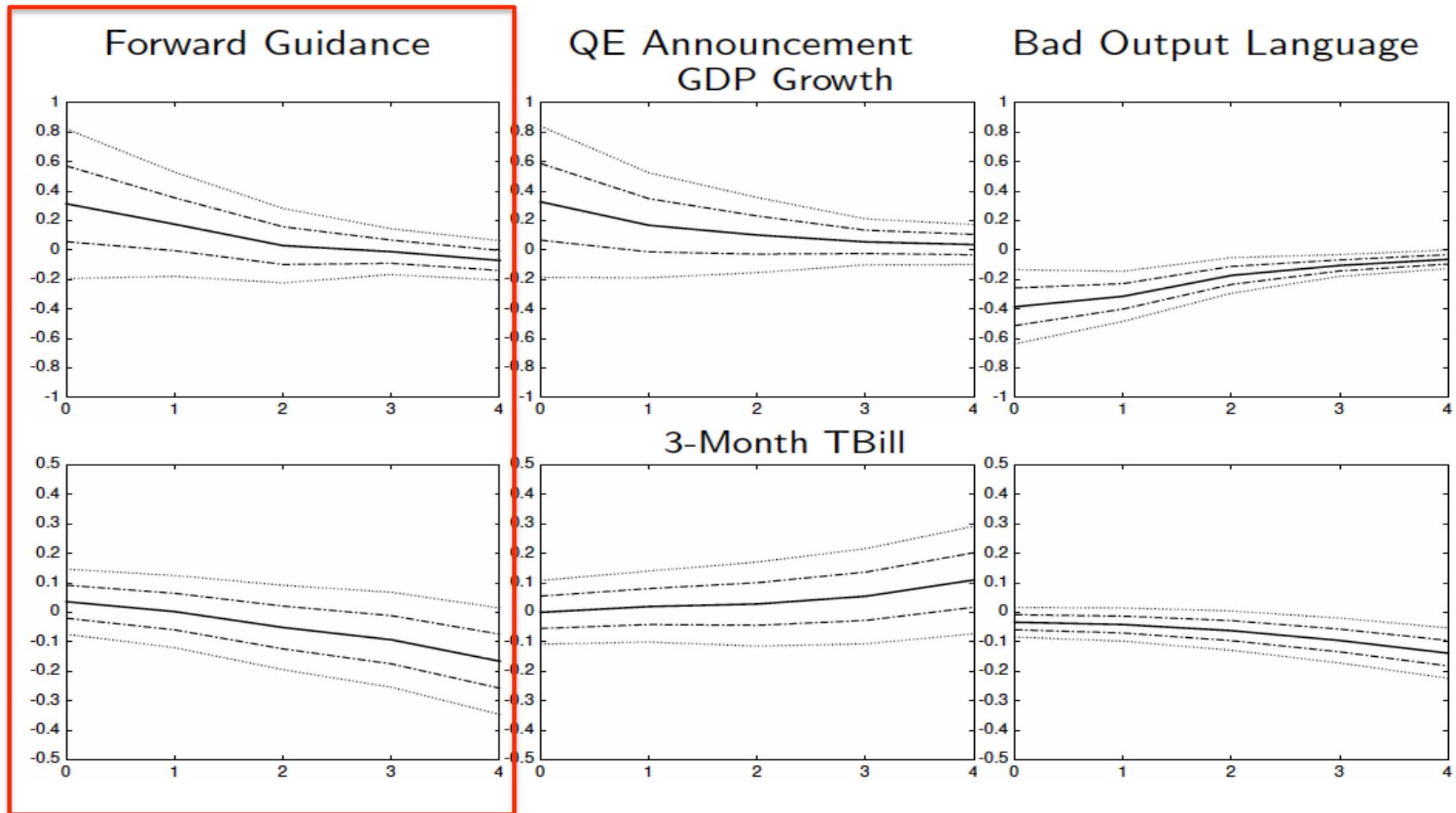
- Compute change in forecasts in a one-month window around FOMC announcement
- ... controlling for:
 - all macroeconomic news (surprises)
 - asset price movements (ex event window)
- Panel regression for variable (k), horizon (h), forecaster (i):

$$\Delta f(k, h)_{t,i} = \gamma_0 + \gamma'_1 \text{ Macro news} + \gamma'_2 \text{ Asset Price Changes} \\ + \gamma'_3 i\text{-specific control} + \beta \text{ Announcement Dummy} + \epsilon_{i,t}$$

for $t = 2008.06, \dots, 2015.02$

- Add dummies for FG episode, QE, output conditions, inflation conditions

Effect of Different Aspects of the FOMC Statement

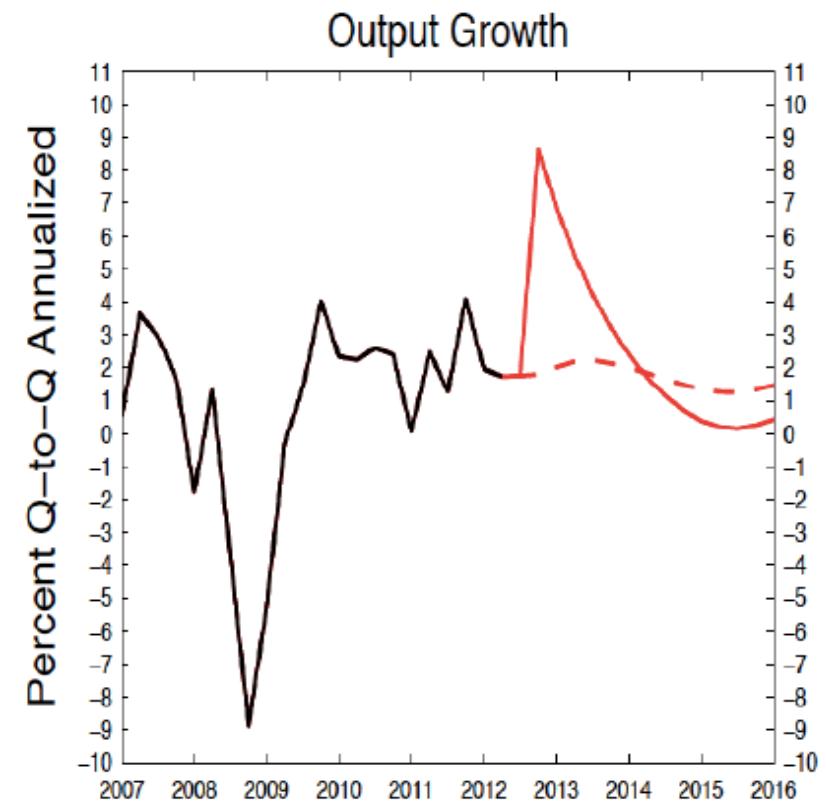
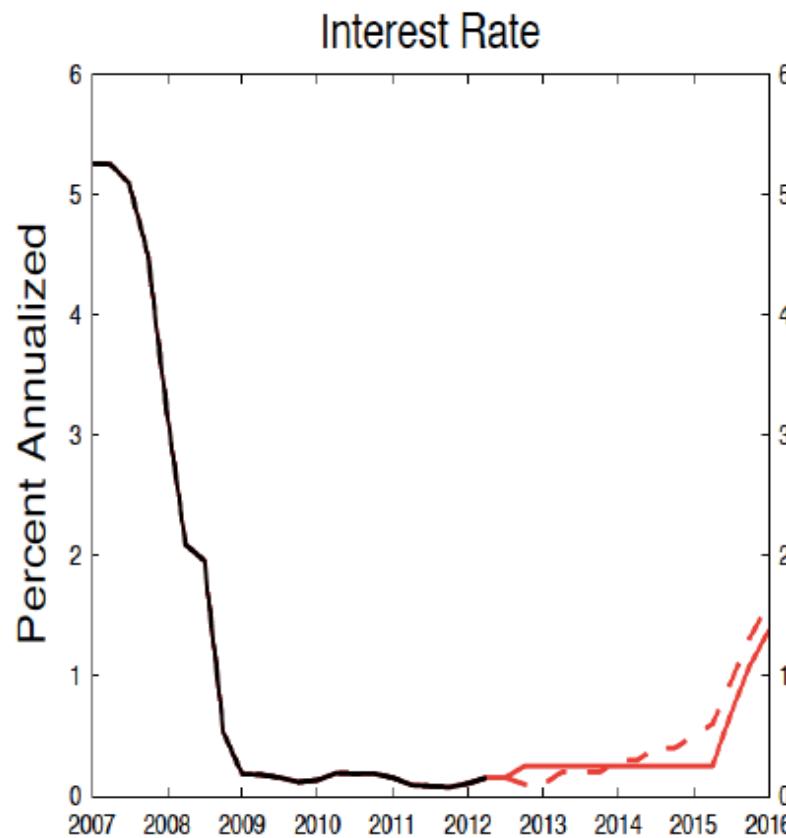


FG involving 15bps lower FFR in 4 quarters seems to raise
near term GDP growth forecasts by about 30 bps

The Forward Guidance Puzzle

Del Negro, Giannoni, Patterson (2012)

- Medium-scale DSGE – Good forecasting performance
 - *In principle* well suited for counterfactual experiments
- 2012Q2 “experiment”: FFR kept at ZLB through 2015Q2



Model-implied GDP response implausibly large!! Generic in this class of models.

What is the Excessive Response Due to?

1. Imperfect credibility of policy announcements
 - At odds with surveys and financial market responses
2. The Euler equation
 - MNS paper → introduce incomplete markets
 - Del Negro et al.: → introduce finite life (Blanchard)
3. Phillips Curve:
 - Carlstrom, Fuerst and Paustian (2012), Kiley (2014)
4. Deviations from rational expectations
 - Gabaix (2015), Garcia-Schmidt & Woodford (2015)

Comment #3: Mechanism

- **Precautionary savings crucial:**
 - Lower FFR: EE logic → Consume more now, dissave (run down assets)
 - Incomplete mkts: with low assets, households exposed to future income shocks → precautionary savings → more conservative consumption path → output expands less
 - More precautionary saving the farther in the future is the FFR decline (need to run down assets a lot)
 - Makes a lot of sense!
- But it is a partial equilibrium logic!
- Does it hold in general equilibrium?
 - Yes, it appears so!
 - Calibrate general equilibrium model with incomplete markets, borrowing constraints
 - → Response to FG announcement generates much smaller output and inflation response

Comment #3: Role of Incomplete Markets

Are Incomplete Markets and Precautionary Savings the Main Drivers?

- Werning (2015) shows:
 - Power of FG is not affected by market incompleteness per se, but by interaction of incomplete markets with cyclicalities of income risk and of assets/GDP
 - Low consumption response to FG when income risk is procyclical and Assets/GDP are countercyclical: likely the case in MNS!
- MNS:
 - Income risk:
 - Sticky prices → firms profits countercyclical
 - Profits distributed evenly to workers
 - more important for low earners
 - Income dispersion high in expansions, low in recessions!
 - Assets: short-term real government bond, assumed to be maintained constant → Asset/GDP countercyclical!
- **Suggestion**: try with sticky wages, flexible prices → procyclical profits

Comment #3: Role of Incomplete Markets

Are Incomplete Markets and Precautionary Savings the Main Drivers?

- J. Kreamer (2015):
 - MNS model with endogenous unemployment risk
 - Addition of incomplete markets has an ambiguous effect on the power of FG:

Decrease in future interest rates

→ raises the path of employment

→ decreases unemployment risk facing households

→ lowers precautionary savings of unconstrained households

→ raises demand

Comment # 4: Discounting in Euler Equation?

- Seems to solve problem. But can be fully micro founded
- SW model with Blanchard-Yaari Households (Del Negro et al. 2015)
 - Households face probability p of being replaced before next period
 - Individuals behave as in standard model (standard EE)
 - **But unborn cohorts cannot react** to announcements
 - Aggregate consumption Euler equation (simplified):

$$\hat{c}_t = - \left(\hat{R}_t - E_t[\hat{\pi}_{t+1}] \right) + (1 - \eta) E_t [\hat{s}_{t+1}] + \eta E_t [\hat{c}_{t+1}]$$

where $\eta < 1$ when $p > 0$

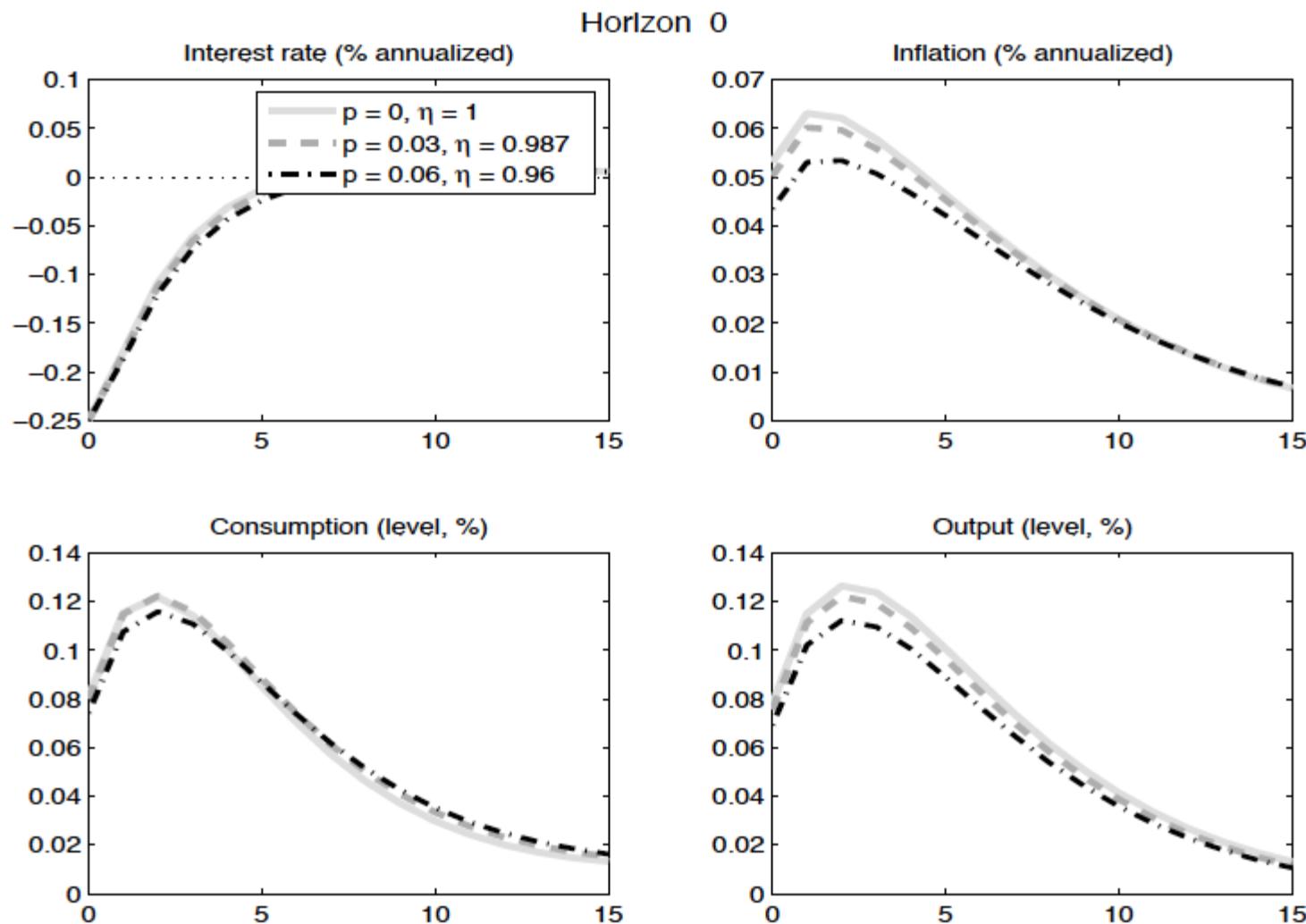
- Evolution of wealth \hat{s}_t and fiscal policy
- All other equations are the same as in SW (with $\tilde{\beta} = \eta\beta$),
e.g. NK Phillips Curve:

$$\pi_t = E_t \sum_{j=0}^{\infty} \tilde{\beta}^j \kappa m c_{t+j}$$

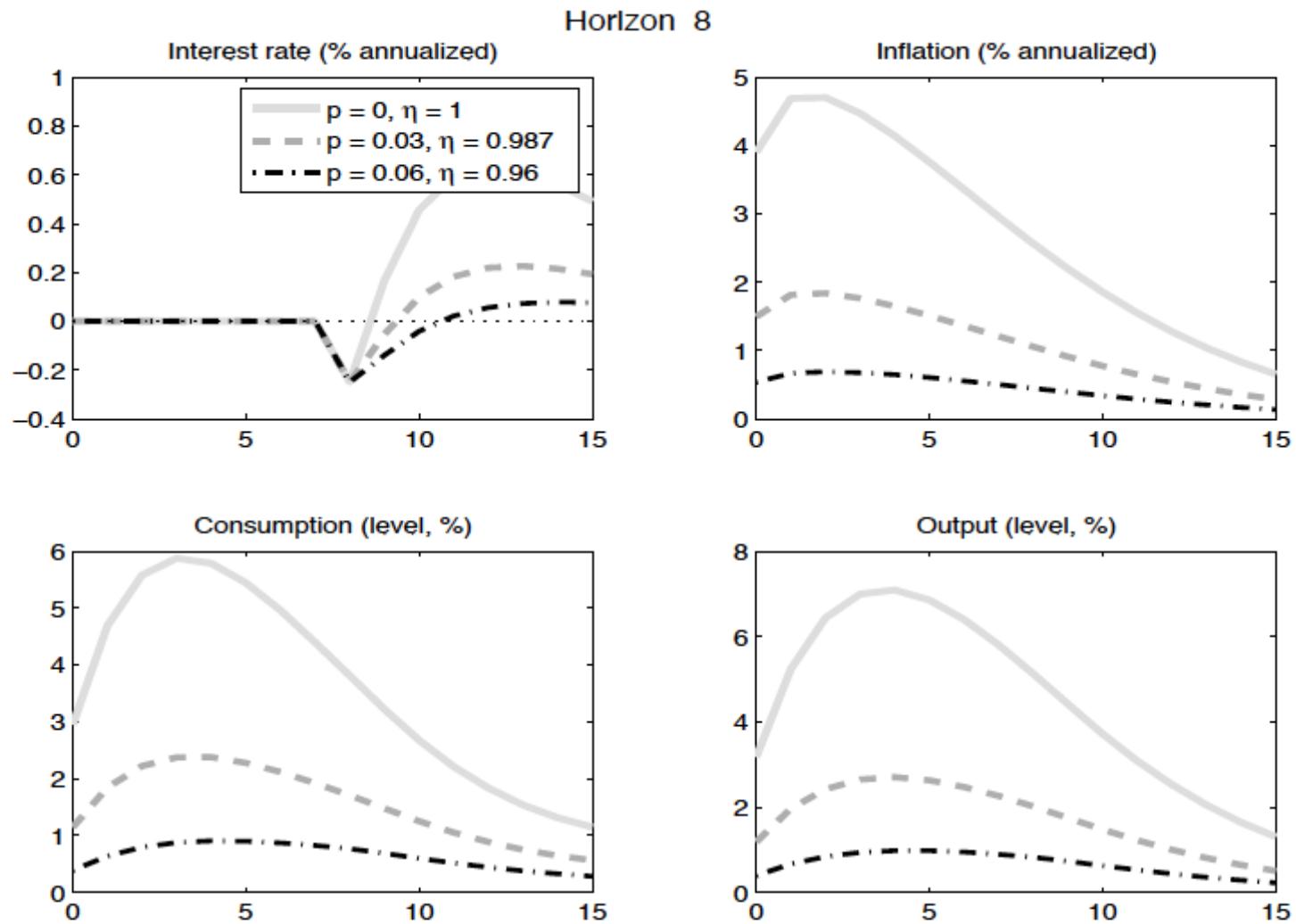
- SWBY: Tractable medium scale DSGE

Contemporaneous Drop in FFR

- Response to contemporaneous shock similar for $p = 0$, 3% or 6%



Announcement of FFR Drop in 8 Quarters



- With $p = 0$: FG causes huge changes in output and inflation
- With $p = 3\%$, response of output and inflation cut by $2/3$

Conclusion

1. Great paper!
2. Addresses a key monetary issue
 - “Standard” models imply excessive response of economy to FG
 - Propose a very reasonable solution to this FG Puzzle
3. Very nice and appealing model!
4. Discounted Euler equation
 - Yes, but can also be obtained using (micro-founded) Blanchard-Yaari structure
5. Open questions:
 - What are the fundamental drivers of the results? May want to look at cyclicalities of idio. risk and of assets/GDP ratio
 - How tractable is the model to expand to medium scale?