

Discussion of
“The Power of Forward Guidance Revisited”

by A. McKay, E. Nakamura, J. Steinsson

Marc Giannoni
Federal Reserve Bank of New York

Challenges for Macroeconomic Policy in a Low Inflation Environment
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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 role 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?

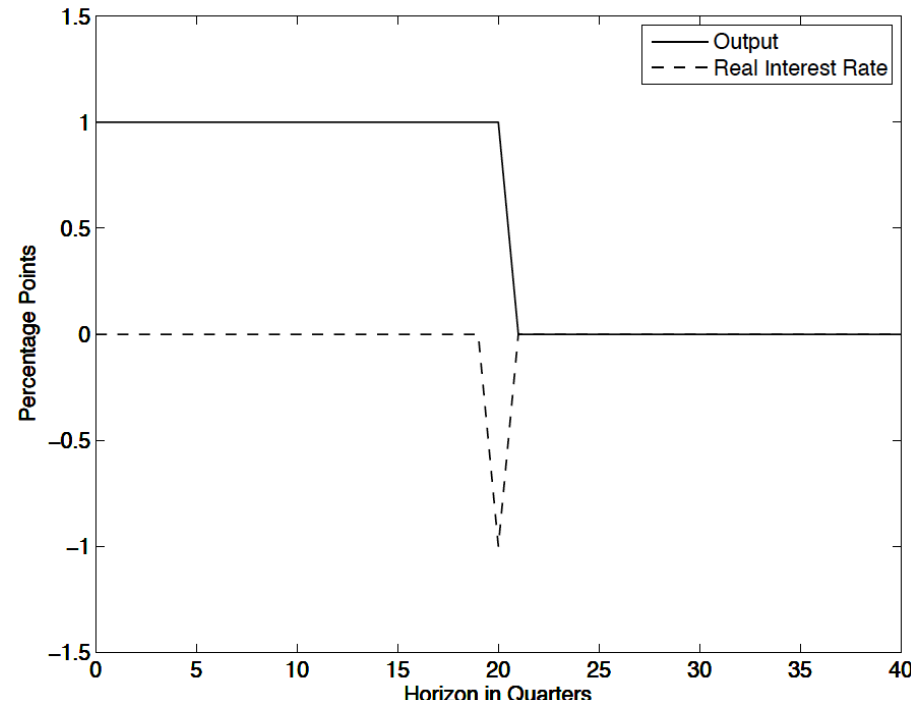
1. “Forward Guidance Puzzle” in a very stark example
 - Simple NK model:

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

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

- 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

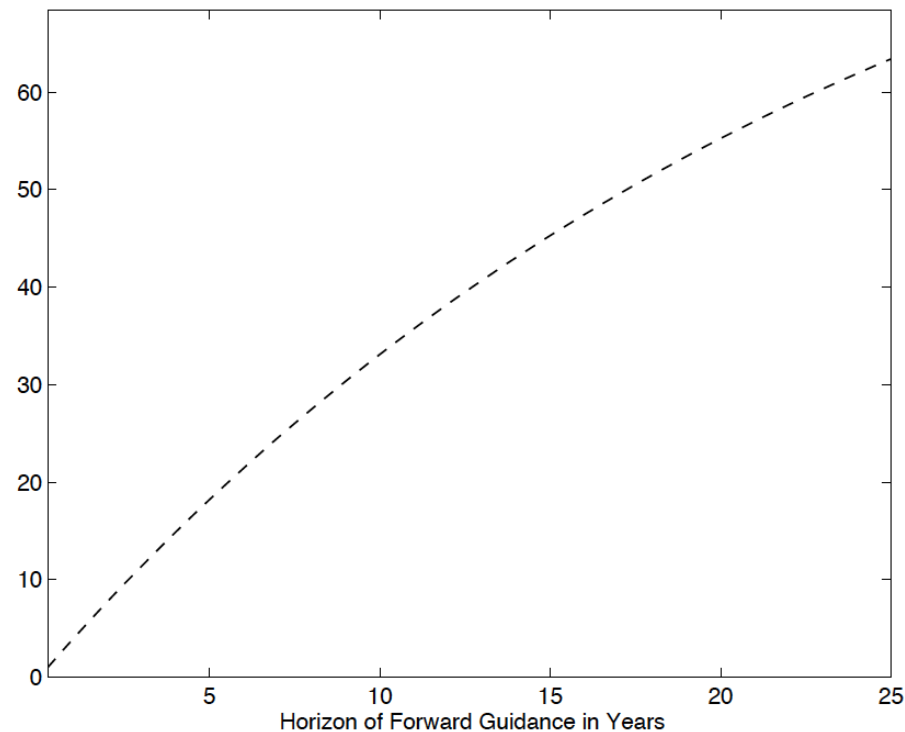


1: Consumption depends on the expected future short-term real rates:

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

- **Contemporaneous** shock: $\hat{r}_t \downarrow \implies \hat{c}_t \uparrow, \hat{c}_{t+1} = 0, \dots$
- **Anticipated** shock: $\hat{r}_{t+H} \downarrow \implies \hat{c}_t \uparrow, \hat{c}_{t+1} \uparrow, \dots, \hat{c}_{t+H} \uparrow$
- 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):

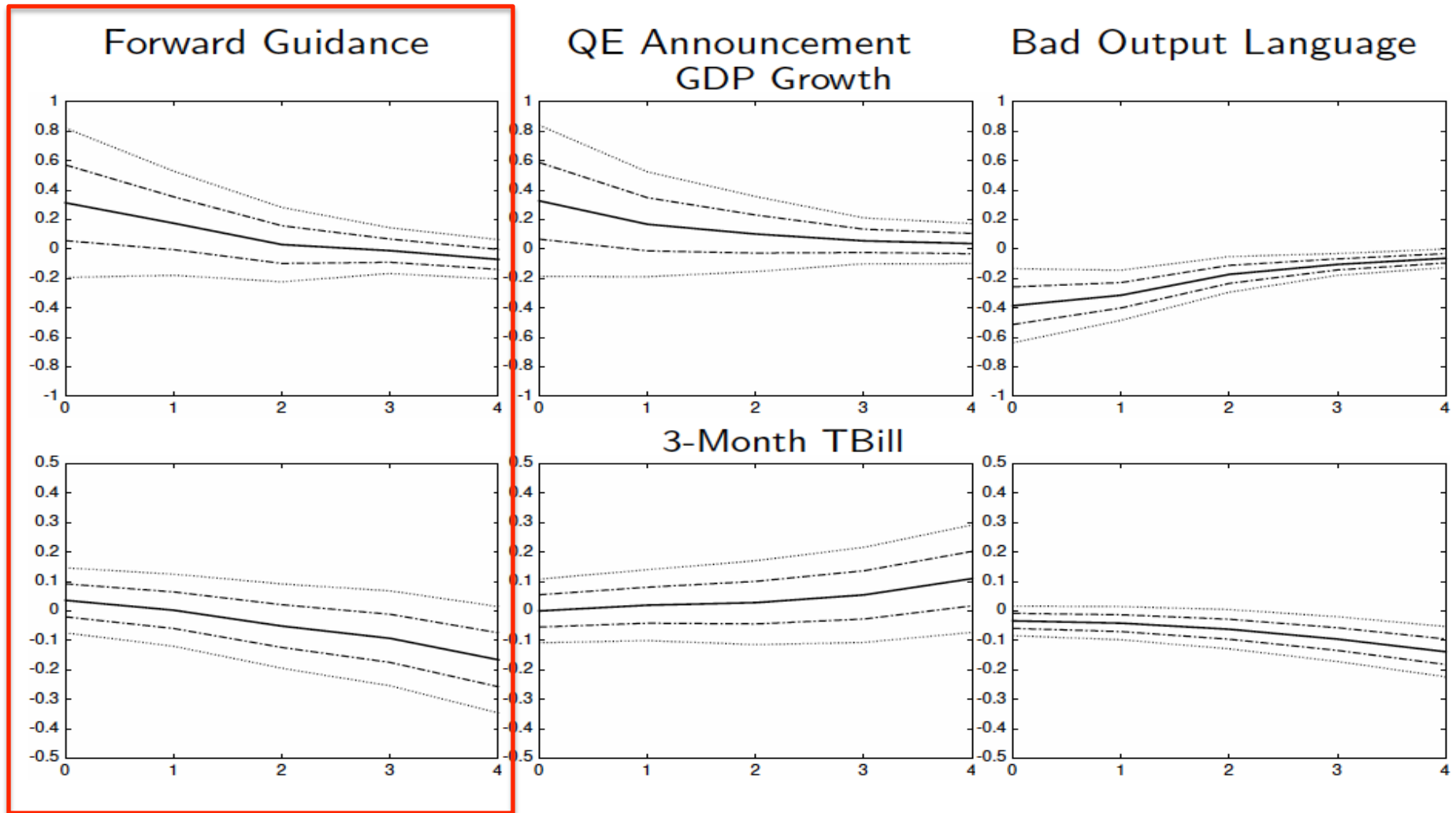
- Compute change in forecasts in a one-month window around FOMC announcement
- ... controlling for:
 - all macroeconomic news (surprises)
 - asset price movements (ex event window)
- Panel regression for variable (k), horizon (h), forecaster (i):

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

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

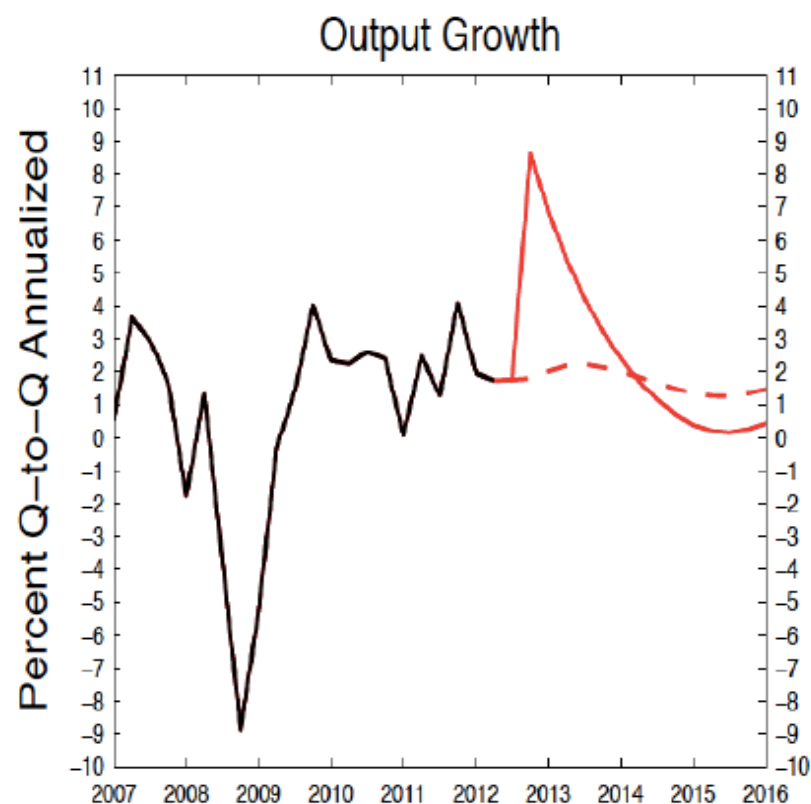
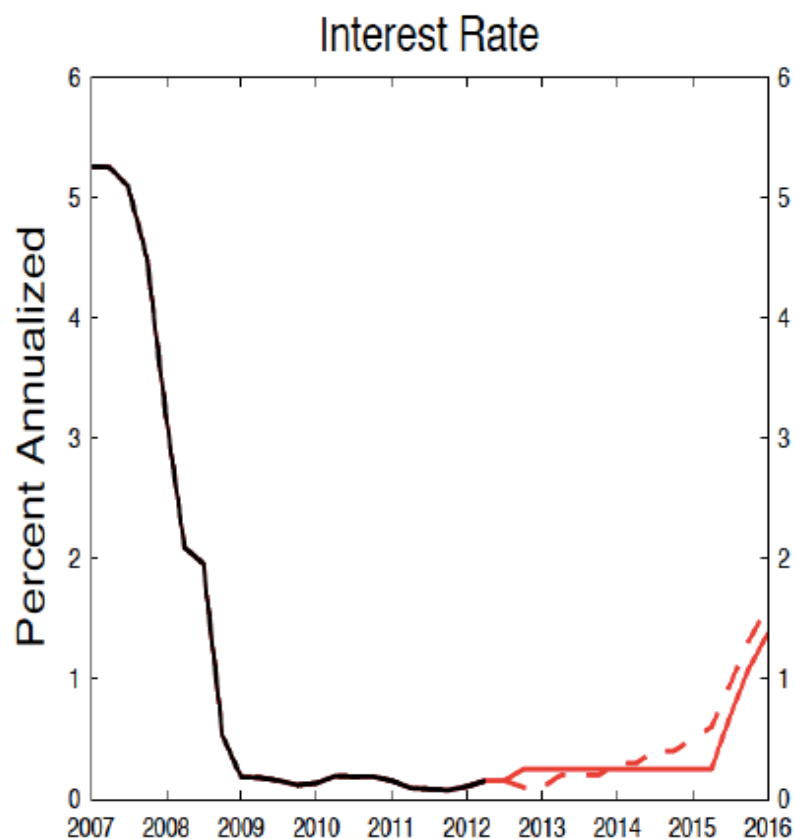


FG involving 15bps lower FFR in 4 quarters seems to raise near term GDP growth forecasts by about 30 bps

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 $p > 0$

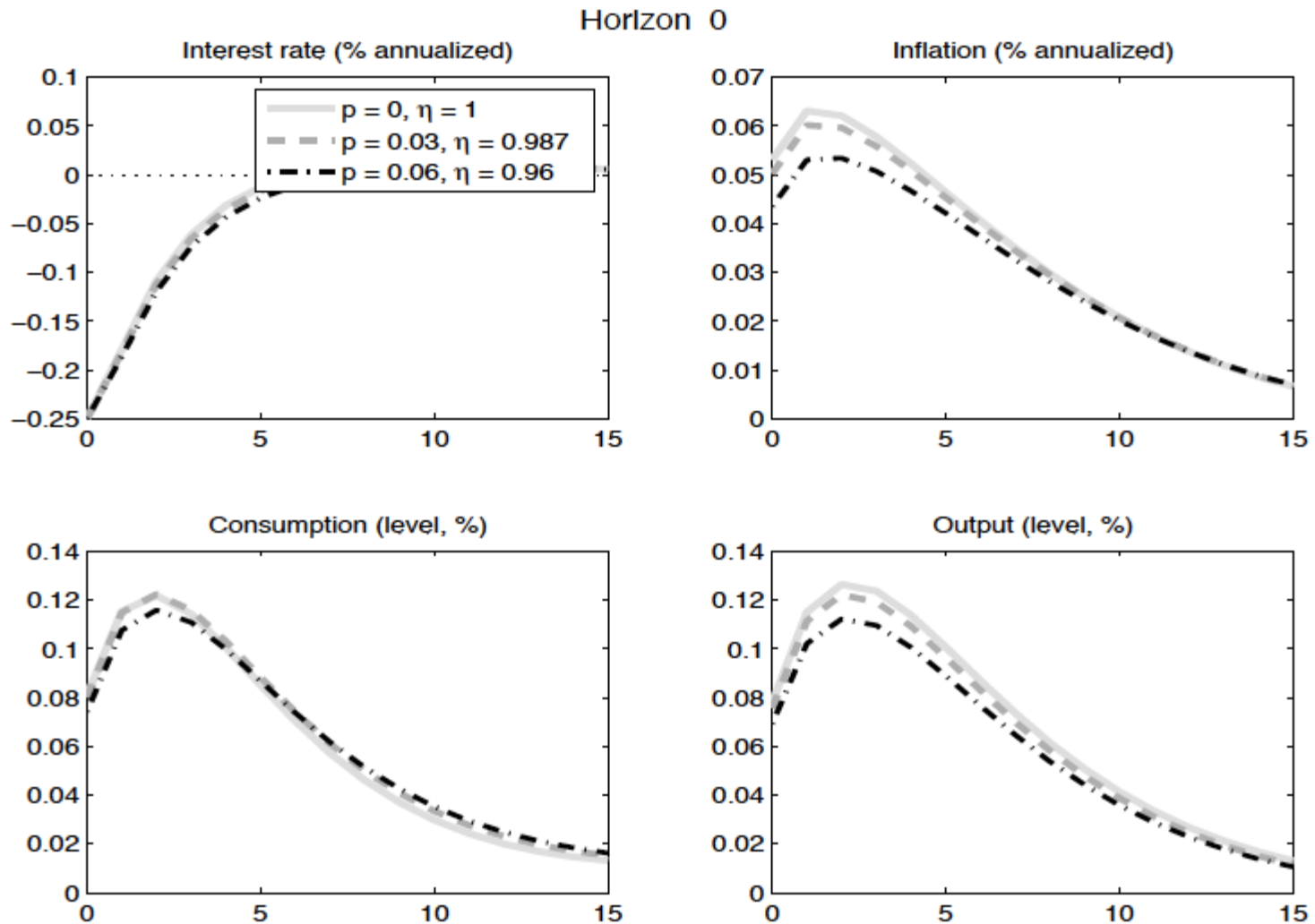
- Evolution of wealth \hat{s}_t and fiscal policy
- All other equations are the same as in SW (with $\tilde{\beta} = \eta\beta$), e.g. NK Phillips Curve:

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

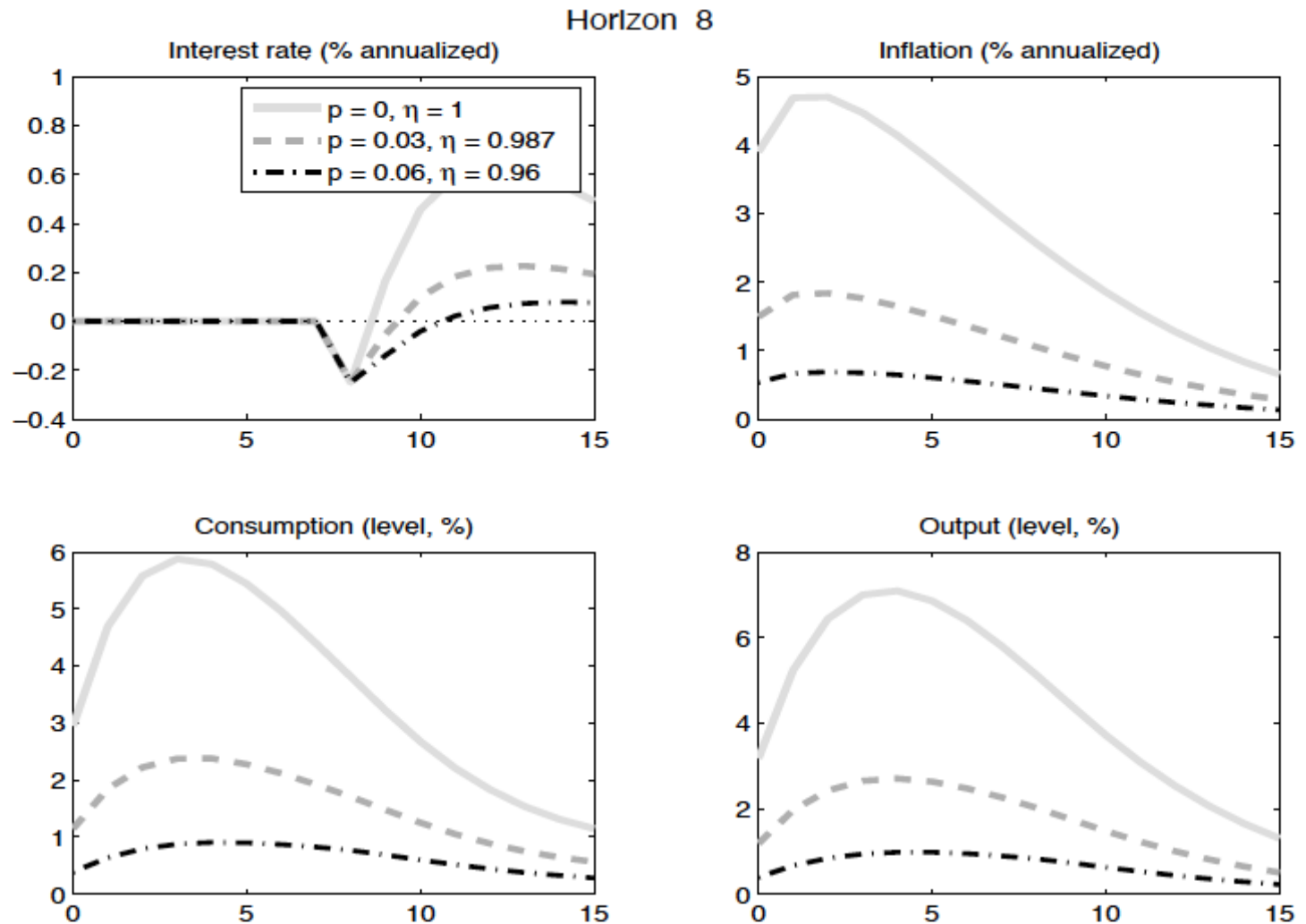
- SWBY: Tractable medium scale DSGE

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 cyclicity of idio. risk and of assets/GDP ratio
 - How tractable is the model to expand to medium scale?