Discussion of

Monetary Policy Challenges from Falling Natural Interest Rates

by Klaus Adam

Argia Sbordone*

ECB Forum on Central Banking 2020

Central banks in a shifting world

November 11-12, 2020

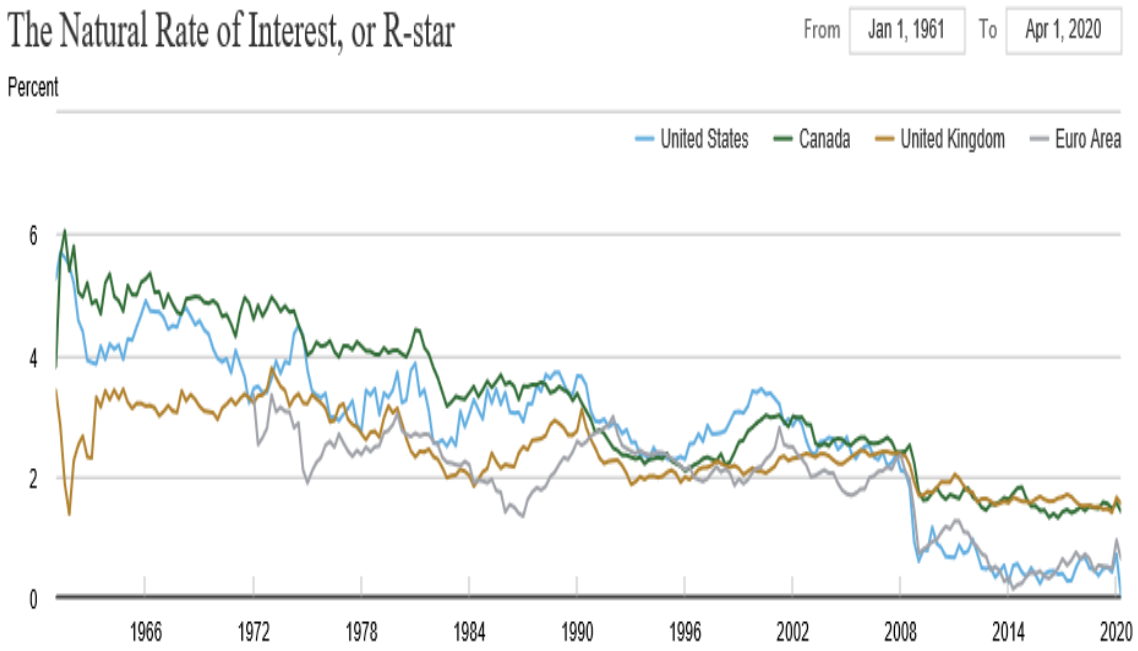
*The views expressed here are my own and do not necessarily reflect those of the Federal Reserve Bank of New York or any other part of the Federal Reserve System

Discussion

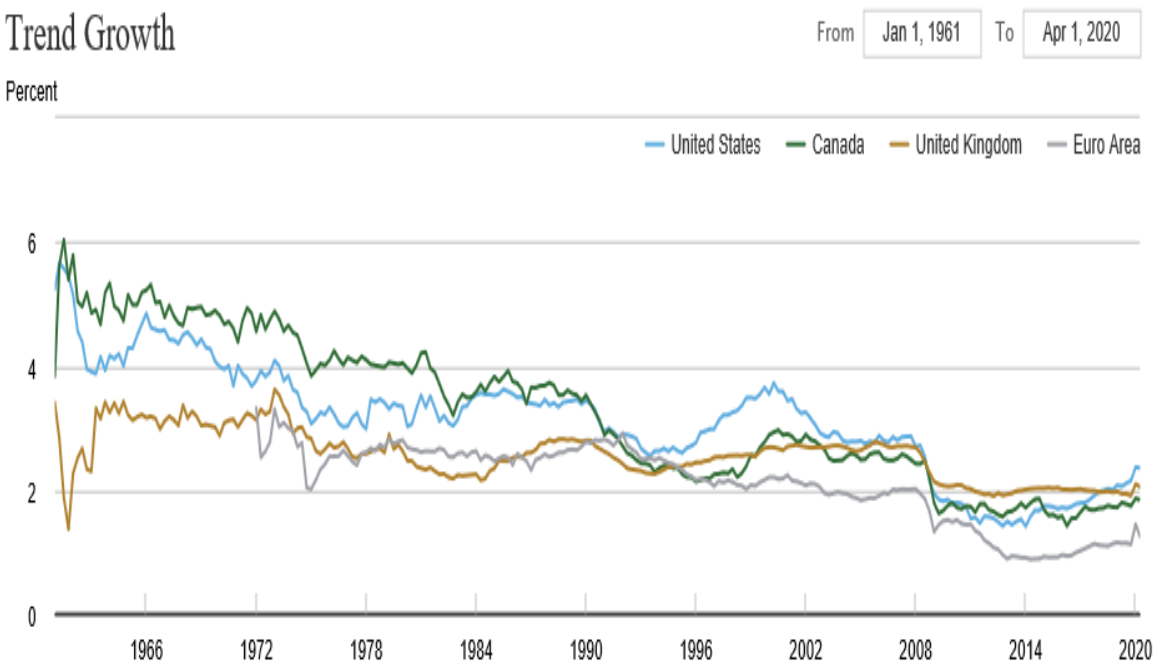
- **Motivation**
  - Dual challenge from decline in the natural rate of interest and increased volatility of housing and asset prices
- **Analytical framework**
  - Extended New Keynesian model
  - Optimal monetary policy with occasionally binding ELB
- **Main takeaways**
  - Average inflation under optimal policy: higher when natural rates are low
  - Subjective beliefs create a case for optimal policy to 'lean against the wind'
- **Critique and implications for Central Banks' strategic reviews**

Motivating observations

- **Decline in the natural rate of interest in many countries, particularly since the 1990s**



- **Likely reflecting decline in trend growth and other structural factors**



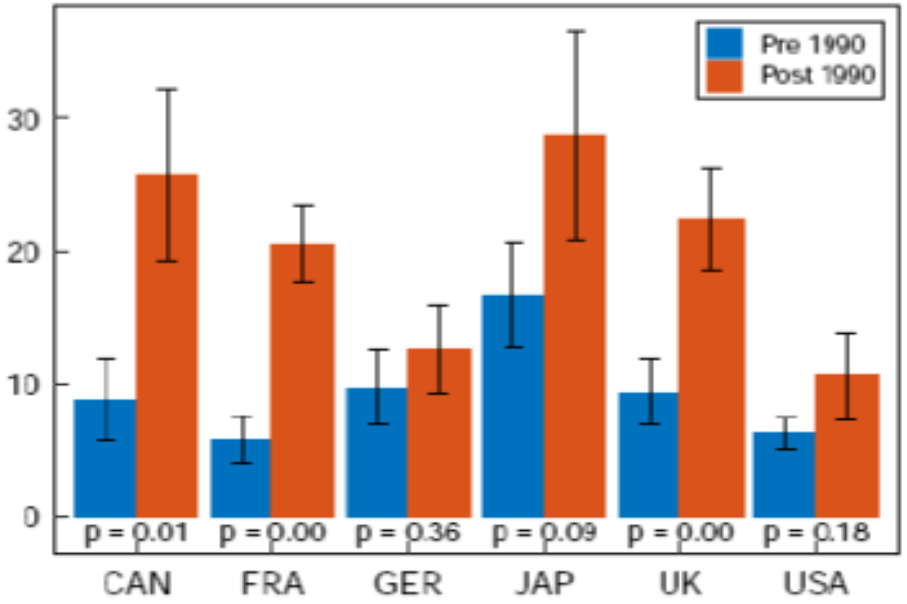
Holston, Laubach, and Williams, NY Fed 2020

Motivating observations

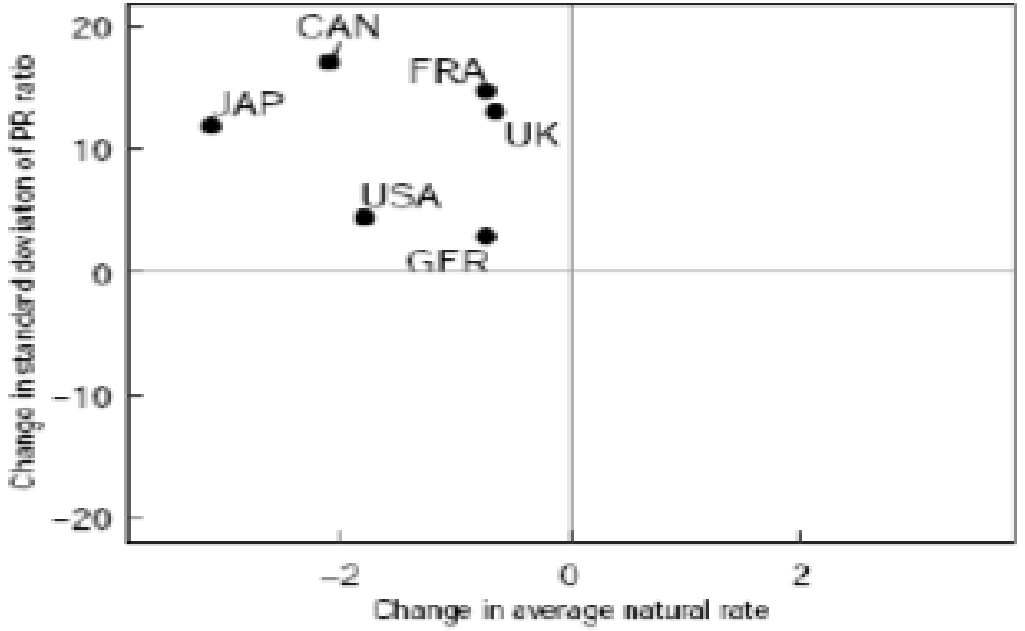
- **Increased volatility in housing prices in the post-1990s**

- **Apparently correlation with the decline in natural rates**

Standard deviation of P/R ratios



P/R ratios volatility vs natural rate



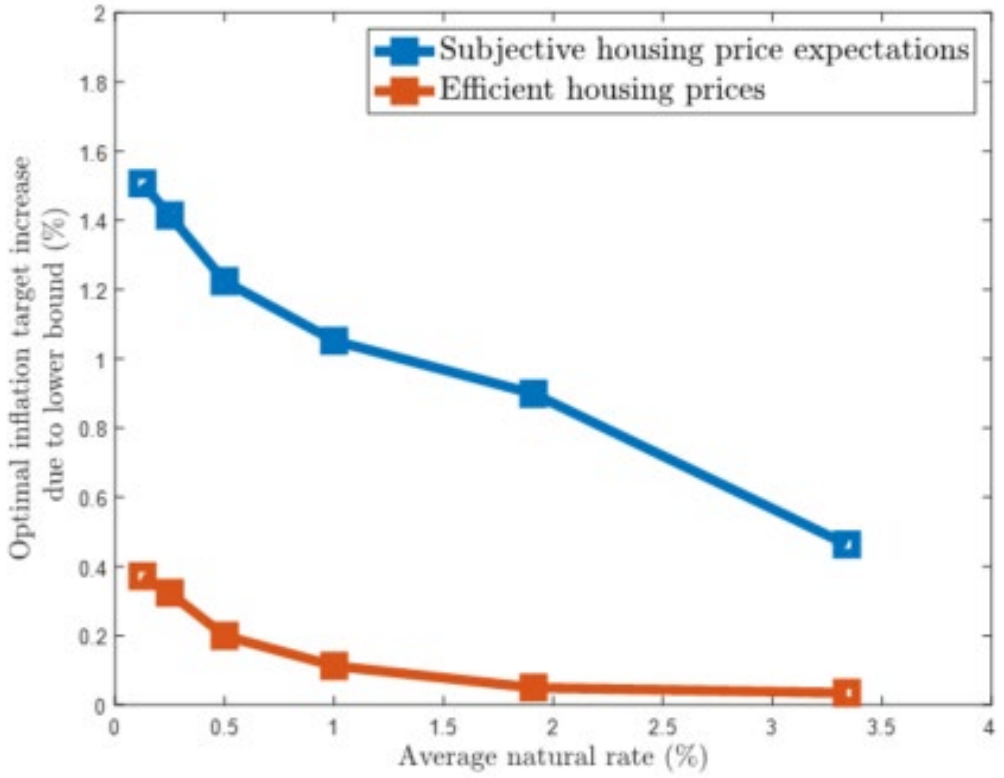
Challenges for monetary policy

- The vicinity of the ELB
  - Many countries have now extremely low (or negative) short-term rates
  - Inability to lower the policy rate because of the zero bound leads to undershooting the target, risking un-anchoring of inflation expectations
- Housing/asset price volatility is heightened when safe rates are low
  - May increase the natural rate volatility, compounding the ELB problem

Analytical framework

- New Keynesian model, with features to account for the observations
  - Includes housing sector
  - Departs from full rationality of housing price expectations to allow for excess volatility
    - Subjective asset price beliefs $\beta_t = E_t^S[p_{t+1}/p_t]$
    - Sluggishly adjust to forecast errors $\beta_{t+1} = \beta_t + \frac{1}{\alpha}(p_t/p_{t-1} - \beta_t)$
  - Accounts for occasionally binding ELB constraint
    - Allows the analysis of monetary policy at low real interest rates
- Well-defined optimal monetary policy problem
  - Maximize welfare in the presence of a lower bound constraint

Main takeaways



- 'Optimal inflation target' generally higher the lower is r*
- The *source* of asset price volatility matters *quantitatively*
  - If pricing is efficient, inflation is only slightly higher
  - Under subjective beliefs, inflation is much higher, as natural rate's volatility tends to increase as r* falls
- Policy should lean against asset/housing prices fluctuations
  - Because subjective belief dynamics amplify housing price movements

Intuition is simple

- Easing the ELB constraint
  - Decline in the natural rate with fixed target inflation
    - nominal rate must decline
    - at low level of natural rate, higher probability to hit the ELB constraint
  - When housing price beliefs are extrapolative
    - housing prices are more volatile
    - lead to more volatile natural rate and nominal rate
- However ….

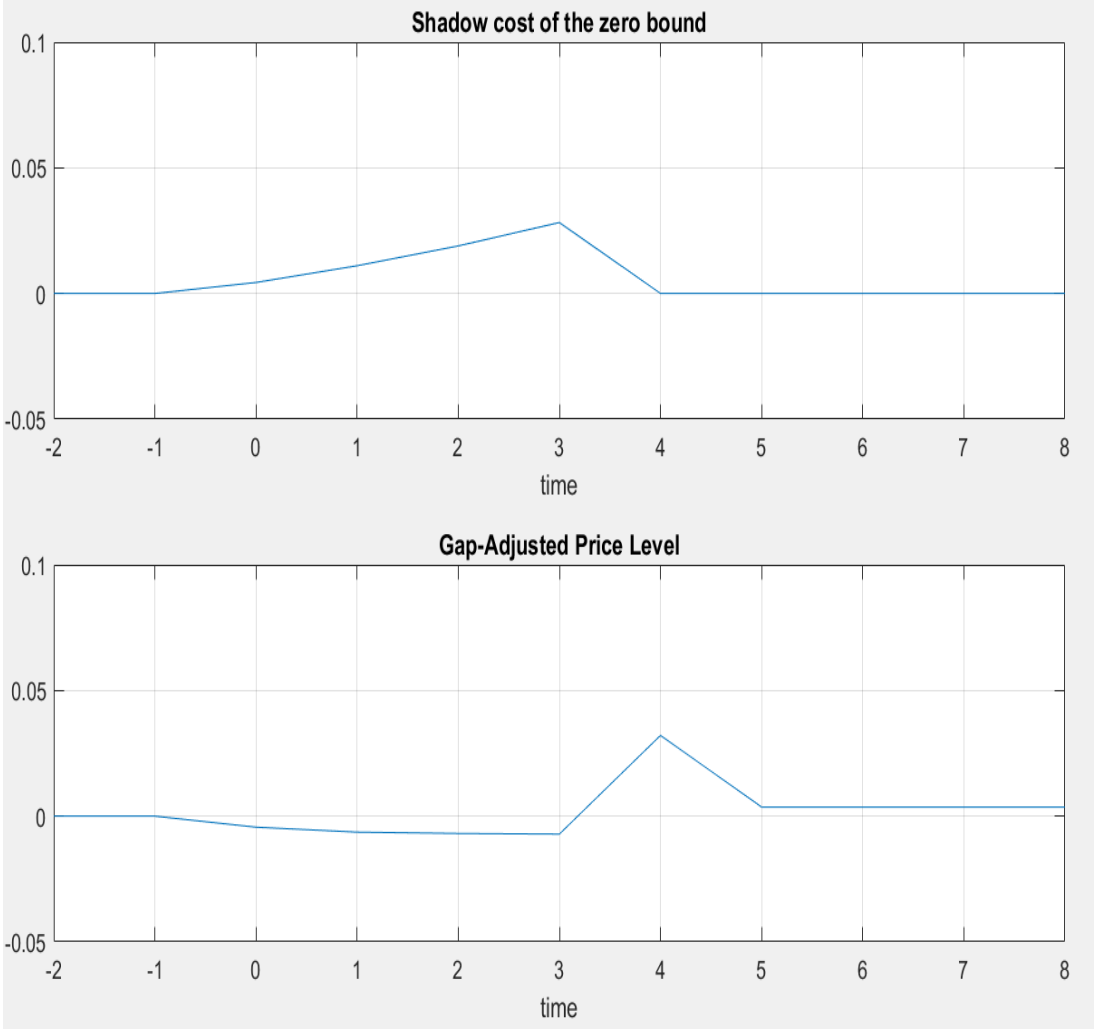
Does this mean a higher *inflation target*?

- Optimal target criterion

$$\underbrace{\pi_t + \lambda\left(y_t^{gap} - y_{t-1}^{gap}\right)}_{\text{Trade-off in the absence of ELB}} + \underbrace{\left[\gamma_t - \alpha_1\gamma_{t-1} + \alpha_2\gamma_{t-2}\right]}_{\text{terms induced by the ELB constraint}} = 0$$

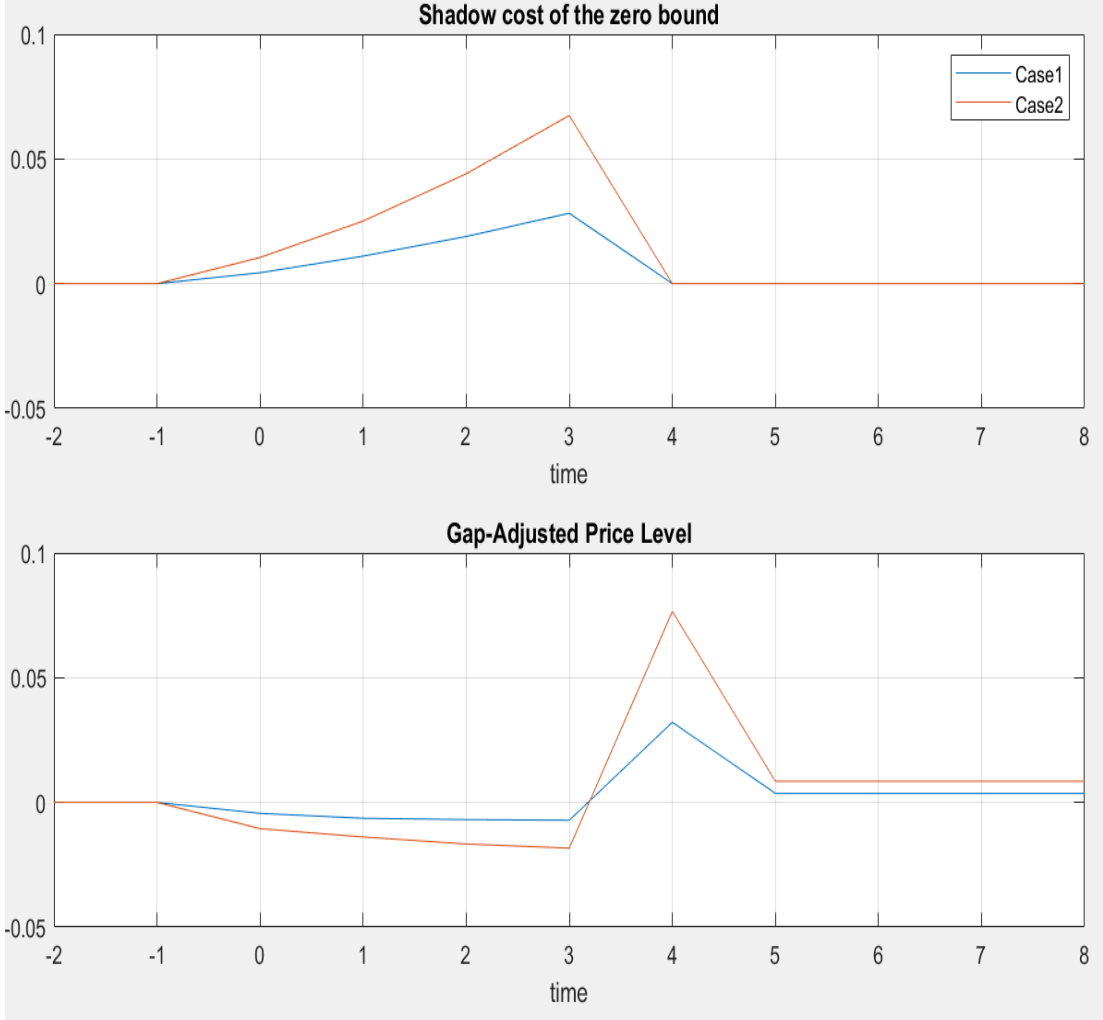
- Gap-adjusted price level $q_t = \log p_t + \lambda y_t^{gap}$
- Target criterion: $\Delta q_t = -\left[\gamma_t - \alpha_1\gamma_{t-1} + \alpha_2\gamma_{t-2}\right]$
- Interpretation
  - ELB not binding: $\Delta q_t = 0$
  - ELB binding at time t_0: q_t decreases at t_0, increases at t_0+1 and decreases at t_0+2
  - ELB binding to greater extent or for more periods: inflation 'catch-up' is larger

Example: sequence of shocks to the output gap



- Optimal policy promises *higher future inflation* when current policy is constrained by the lower bound
  - The decline in (gap-adjusted) price level is later compensated with a correction
  - The *compensation* is determined by the extent to which the constraint binds
- After the correction
  - The price level path has moved up
  - But policy returns to target the *same inflation rate* as when the constraint never bind

Lower r*, or larger shocks



- If natural rate of interest is *lower*, for the *same shocks*
  - The constraint is more stringent and the initial fall in the price level is *deeper*, requiring a larger correction
- If at the same r* negative shocks are larger
  - Similarly, the fall in the price level is *deeper*, and the subsequent correction larger
- The *inflation rate, averaged* over the period(s) of undershooting and overshooting will end up somewhat higher

Correct interpretation

- Optimal policy does not call for a change in the inflation target
  - It implies a higher average level of inflation because it averages periods of undershooting and corrections
- Why is this distinction important?
  - Problematic to talk about an increase in the 'inflation target' as this is understood by the public as a longer-term concept
  - The long-run target is what CB targets **except** when temporarily deviating from it to correct for an undershoot
  - A commitment to corrective policy with no change in the LR target has the advantage (vs increasing the LR target) of avoiding the costs of *permanently higher* inflation when ELB turn out to be infrequent
- The Fed's framework review process and new policy strategy underscore this difference

The Fed's 'Consensus statement'*

- Re-stated the existing numerical inflation target
  - *The Committee reaffirms its judgment that inflation at the rate of 2 percent, as measured by the annual change in the price index for personal consumption expenditures, is most consistent over the longer run with the Federal Reserve's statutory mandate*.
- But opted for a strategy that addresses short-falls from that target
  - *In order to anchor longer-term inflation expectations at this level, the Committee seeks to achieve inflation that averages 2 percent over time, and therefore judges that, following periods when inflation has been running persistently below 2 percent, appropriate monetary policy will likely aim to achieve inflation moderately above 2 percent for some time*.
- As indicated by Fed Chair Powell in the Jackson Hole speech:
  - *…. our approach could be viewed as a flexible form of average inflation targeting.*
- And it is indeed very much in line with the optimal monetary policy of the paper

**Statement on Longer-Run Goals and Monetary Policy Strategy, amended August 27, 2020*

The role of subjective beliefs

- Subjective expectations may lead to *inefficient* asset price movements
  - Making the natural rate more volatile than under Rational expectations
- Under subjective beliefs, monetary policy optimally leans against asset price movements
  - Conclusion holds under extrapolative expectations
    - Adam, Pfaeuti and Reinelt, 2020; Caines and Winkler, 2019
  - Holds under more general forms of beliefs distortion
    - Adam and Woodford, 2019
  - Holds even when macroprudential tools are available, when beliefs are extrapolative during busts
    - Farhi and Werning, 2020
- These important implications call for more empirical analysis of expectation formation

Final considerations

- The paper addresses key challenges faced by monetary policy today
- It presents optimal policy implications from a model that allows
  - Incidence of ELB episodes
  - Sources of excess asset price volatility
- Optimal policy results in periods in which *inflation is optimally higher* than the stated longer-term inflation target
  - A policy that rationalizes a particularly aggressive form of AIT policy
- Open questions
  - Effective communication of medium and long-term strategies
  - Appropriate combination of policy tools for financial instability