Athanasios Orphanides and John C. Williams,
Imperfect Knowledge, Inflation Expectations, and
Monetary Policy
Discussion by Lars E.O. Svensson
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- Simple model of monetary policy under perfect knowledge and imperfect knowledge with learning
- Simulation of model under perfect and imperfect knowledge
- Discussion of monetary policy under imperfect knowledge

\[ \dot{\pi} = \phi \pi + (1 - \phi) \pi_t + \alpha y_{t+1} + \epsilon_{t+1} \]  
\[ y_{t+1} = x_t + u_{t+1} \]  

\[ \mathcal{L} = \omega \text{Var}[\pi_t - \pi^*] + (1 - \omega) \text{Var}[y_t] \]  
\[ = \lim_{\delta \to 1} (1 - \delta) E_t \sum_{r=0}^{\infty} \delta^r [\omega (\pi_{t+r} - \pi^*)^2 + (1 - \omega) y_{t+r}^2] \]

Rational expectations
\[ \pi_{t+1}^e = E_t \pi_{t+1} \]

- Optimal policy linear
\[ x_t = -\theta \pi \]  
\[ (\pi_t \text{ only state variable}) \]
\[ \theta^p = \frac{4(1 - \omega)^2 (1 - \omega) + \omega^2 - \omega}{2(1 - \omega) (1 - \omega)} \]  
\[ \frac{\partial \theta^p}{\partial (1 - \omega)} > 0, \quad \frac{\partial \theta^p}{\partial \omega} > 0 \]

Results
- Imperfect knowledge and learning implies particular nonlinear updating of inflation expectations
- Inflation becomes more persistent
- Performance of simple policy
\[ x_t = -\theta (\pi_t - \pi^*) \]
  * Optimal simple policy higher \( \theta \), stabilizes inflation more

Comments
- Optimal nonlinear policy different from optimal policy under RE, takes learning into account
- Calculate optimal nonlinear policy
- Inflation-forecast targeting, constructing alternative inflation and output-gap forecasts, selecting those that “look best,” come close to optimal nonlinear policy?
  * Never use simple mechanical policy rule?
- Problems with asymmetric information assumption
  * Central bank knows all, private sector primitive learning
  * Transparent informed central bank would inform the private sector about model and inflation forecasts (cf. Inflation Reports in NZ, UK, Sweden)
  * Real world, closer to symmetry