

Learning, Expectations Formation, and the Pitfalls of Optimal Control Monetary Policy

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discussion by Krisztina Molnar*

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Question

- Model
- Results
- 1st comment
- 2nd comment - commitment under learning
- Further comments

The main question of this paper is whether optimal control monetary policy is robust when there is uncertainty about the expectation formation of the private sector.

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The main question of this paper is whether optimal control monetary policy is robust when there is uncertainty about the expectation formation of the private sector.

To answer this, an estimated model for the US is used for studying the welfare losses under different monetary rules and different expectation formation of the private sector.

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- New Keynesian model

$$\text{IS} \quad u_t = \phi_u u_{t+1}^e + (1 - \phi_u)u_{t-1} + \alpha_u (i_t^e - \pi_{t+1}^e - r^*) + v_t$$

$$\text{PC} \quad \pi_t = \phi_\pi \pi_{t+1}^e + (1 - \phi_\pi)\pi_{t-1} + \alpha_\pi (u_t - u_t^*) + e_t$$

- Private sector:
 - rational expectations
 - different learning algorithms
- Monetary policy
 - commitment policy under rational expectations
 - simple rules

Results

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- I. Simple rules are robust under uncertainty about expectation formation
 - This is consistent with the robustness literature (Andrew, Wieland and Williams 1998, Leitemo and Söderström 2005)

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- I. Simple rules are robust under uncertainty about expectation formation
 - This is consistent with the robustness literature (Andrew, Wieland and Williams 1998, Leitemo and Söderström 2005)
- II. OC is more robust if MP puts higher weight on inflation stabilization
 - This is consistent with previous learning literature (Gaspar Smets and Vestin 2006, Molnar Santoro 2007, Orphanides and Williams 2004, Ferrero 2004)

1st comment

Congratulations for the JME publication!

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- Baseline: central bank has access to a commitment technology
- But should a central bank consider using the commitment rule when it is uncertain about expectation formation?

2nd comment - commitment under learning

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- Baseline: central bank has access to a commitment technology
- But should a central bank consider using the commitment rule when it is uncertain about expectation formation?
- Expectations are backward looking - not influenced by central bank communication.
- Maybe it is more "fair" to set the discretion rule as a benchmark.

A simple framework -Clarida, Gali and Gertler 1999

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$$x_t = x_{t+1}^e - \sigma^{-1}(r_t - \pi_{t+1}^e - \bar{r}_t) \quad (1)$$

$$\pi_t = \beta \pi_{t+1}^e + \lambda x_t + u_t \quad (2)$$

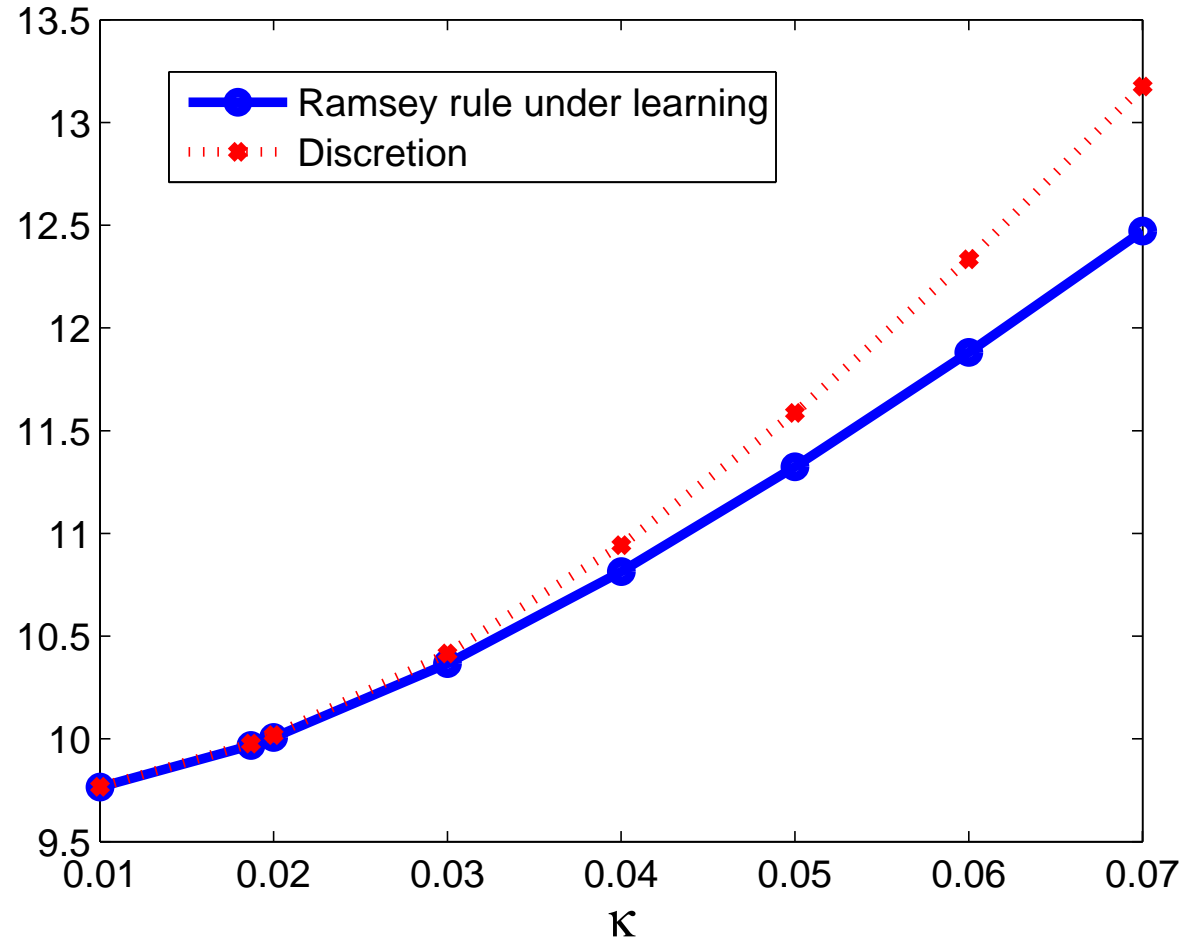
$$(3)$$

Optimal allocation under

- Discretion $\pi_t = \phi^d u_t$
- Commitment $\pi_t = \phi_x^c x_{t-1} + \phi_u^d u_t$
- CG learning $\pi_t = \phi_\pi^{cg} \pi_{t+1}^e + \phi^{cg} u_t$
 $\pi_{t+1}^e = \pi_t^e + \kappa(\pi_t - \pi_t^e)$ (Molnar and Santoro 2007)

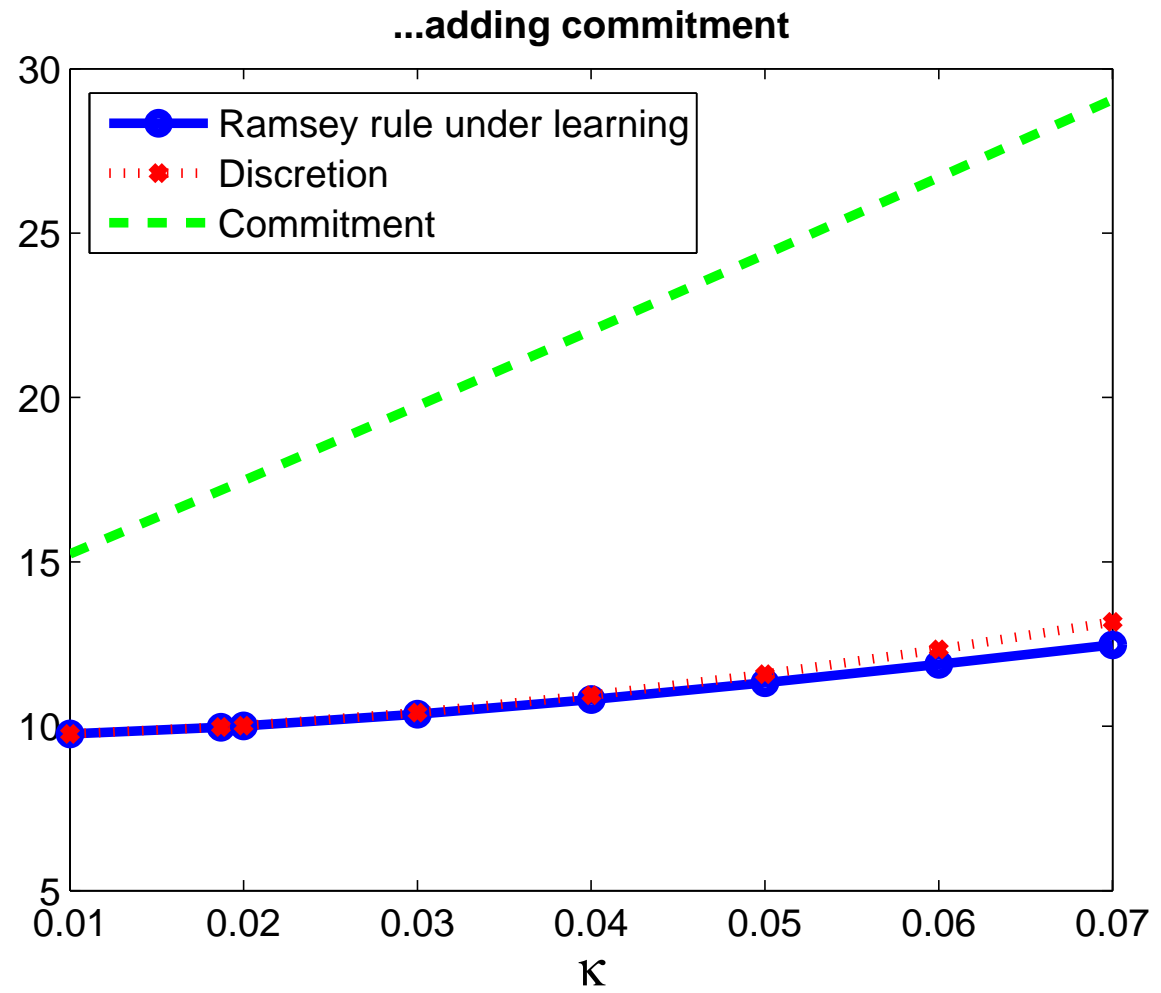
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Welfare losses under Ramsey learning rule and Discretionary policy

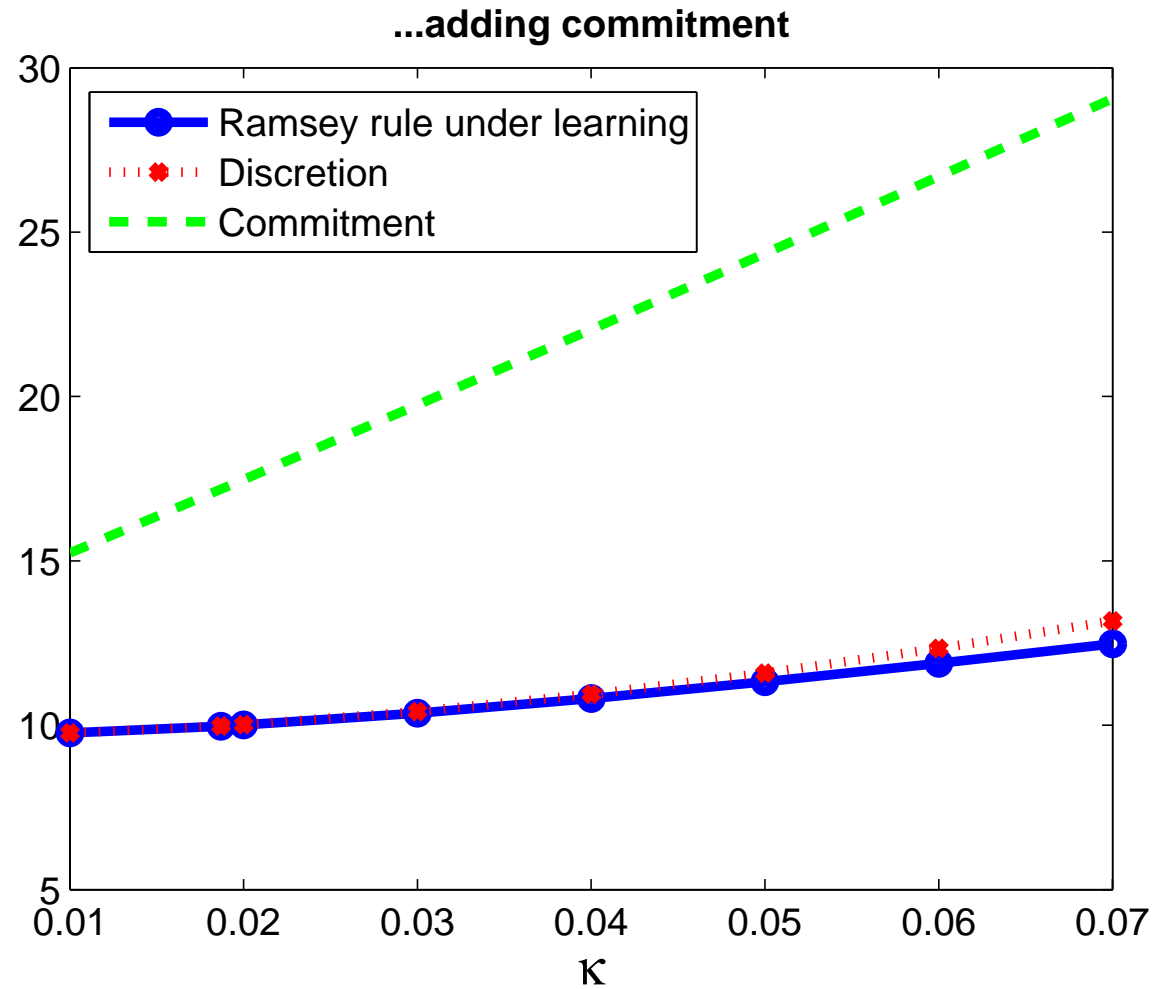


π_0^e in equilibrium.

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If learning has 11% or higher probability CB would choose discretion over commitment.

Back to 2nd comment - commitment under learning

What is the role of commitment under learning? Can MP influence adaptive expectations by commitment?

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What is the role of commitment under learning? Can MP influence adaptive expectations by commitment?

- Not in the traditional sense, since expectations are backward looking.
- **Commitment** can enhance learnability because it **generates accountability**

Reliance on discretion in pursuing general goals has meant also the absence of any satisfactory criteria for judging performance. This has made it nearly impossible to assess responsibility for success or failure and has greatly enhanced the difficulty of learning by experience (M. Friedman, A Program for Monetary Stability, 1960)

- Commitment makes the environment more understandable. Lucas critique applies to adaptive learning too (Evans and Garey JME 2006)

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- Empirical support for the Lucas critique of adaptive expectations
 - Molnar and Reppa 2008: In stable economies private agents use a lower gain parameter compared to countries with frequent structural breaks
- For future research
 - How does central bank communication (commitment to a rule) influence private sector learning
 - Does the public pay attention to the same variables as the central bank?

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- **Tracking parameter** is assumed to be between 0 and 0.04
 - But some empirical estimates are higher: 0.062 (Branch and Evans 2006), 0.059 (Molnar and Reppa 2008)

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- Imposing a **projection facility** restricts agents behavior, implies that agents have a certain amount of faith that the economy will not fluctuate excessively.(Grandmont 1998)
 - But are simple rules also robust to escape routes?

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- Imposing a **projection facility** restricts agents behavior, implies that agents have a certain amount of faith that the economy will not fluctuate excessively.(Grandmont 1998)
 - But are simple rules also robust to escape routes?
- Is it the **Calvo pricing** that makes inflation stabilization so important?