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Simplicity versus optimality: The choice of monetary policy rules when agents must learn☆

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Abstract

The normal assumption of full information is dropped and the choice of monetary policy rules is instead examined when private agents must learn the rule. A small, forward-looking model is estimated and stochastic simulations conducted with agents using discounted least squares to learn of a change of preferences or a switch to a more complex rule. We find that the costs of learning a new rule may be substantial, depending on preferences and the rule that is initially in place. Policymakers with strong preferences for inflation control incur substantial costs when they change the rule in use, but are nearly always willing to bear the costs. Policymakers with weak preferences for inflation control may actually benefit from agents' prior belief that a strong rule is in place.
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1. Introduction

In recent years, there has been a renewed interest in the governance of monetary policy through the use of rules. This has come in part because of academic contributions including those of Hall and Mankiw (1994), McCallum (1987), Taylor (1993,1994), and Henderson and McKibbin (1993). It has also arisen because of adoption in a number of countries of explicit inflation targets. New Zealand (1990), Canada (1991), the United Kingdom (1992), Sweden (1993) and Finland (1993) have all announced such regimes.

The academic papers noted above all focus on simple ad hoc rules. Typically, very simple specifications are written down and parameterized either with regard to the historical experience, such as Taylor (1993), or through simulation experiments as in Henderson and McKibbin (1993), or McCallum (1987). Both the simplicity of these rules, and the evaluation criteria used to judge them stand in stark contrast to the earlier literature on optimal control. Optimal control theory wrings all the information possible out of the economic model, the nature of the stochastic shocks borne by the economy, and policymakers' preferences. This, however, may be a mixed blessing.

As a tool for monetary policy, optimal control theory has been criticized on three related grounds. First, the optimization is conditional on a large set of parameters, some of which are measured imperfectly and the knowledge of which is not shared by all agents. Some features of the model are known to change over time, often in imprecise ways. The most notable example of this is policymakers' preferences which can change either 'exogenously' through the appointment process, or 'endogenously' through the accumulation of experience.[1] Second, optimal control rules are invariably complex. The arguments to an optimal rule include all the state variables of the model. In working models used by central banks, state variables can number in the hundreds. The sheer complexity of such rules makes them difficult to follow, difficult to communicate to the public, and difficult to monitor. Third, in forward-looking models, it can be difficult to commit to a rule of any sort. Time inconsistency problems often arise. Complex rules are arguably more difficult to commit to, if for no reason other than the benefits of commitment cannot be reaped if agents cannot distinguish commitment to a complex rule and mere discretion.

Simple rules are claimed to avoid most of these problems by enhancing accountability, and hence the returns to precommitment, and by avoiding rules that are optimal only in idiosyncratic circumstances. At the same time, simple rules still allow feedback from state variables over time, thereby avoiding the straightjacket of 'open-loop' rules, such as Friedman's k-percent money growth

[1] Levin et al. (1998) examine rules that are optimal in each of three models for their performance in the other models as a check on robustness of candidate rules.

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