Managing Expectations in the New Keynesian Model

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Extended Abstract

This paper develops a model of shifting monetary regimes, aiming to capture the main features of inflation and real activity in the U.S. between the early 1950s and the mid 2000s. In addition to occasional observable changes in regime, the core features of our framework are: a forward-looking New Keynesian Phillips curve; optimizing behavior of the macroeconomic policymaker, and Bayesian learning by the private sector about the type of policymaker that is in place.

When a regime change occurs, the new policymaker can be of one of two types. A committed type can deliver on an inflation plan that incorporates management of expectations. An opportunistic type cannot commit, simply making choices for the current period taking as given the private sector's expectations, as in the classic analysis of Barro and Gordon (1983). However, we depart from their assumption of full information rational expectations which, with constant fundamentals, yields an immediate upward jump to an equilibrium inflation bias level in their setup. We assume that type is not observed by the private sector, but must be learned from inflation outcomes. Such a departure leads to a gradual process of a "Great Inflation."

Some, like Alan Blinder, are skeptical about whether there really is inflation bias in central bank policy. Our framework specifies a small amount of intrinsic inflation bias (what a policymaker would choose with low and stable expected inflation). Our paper explains that in a world with learning, the rise in inflation from this intrinsic level can be very gradual and but compatible with inflation being 10% or more in an ultimate high inflation regime that is recognizable as a Barro-Gordon equilibrium. The key mechanism behind a gradual Great Inflation is a dynamic interplay between the choices of a policymaker that can't commit and expectations.

The key modeling challenge is to describe the behavior of the committed type of policymaker. It has to manage inflation and inflation expectations knowing that private agents have concerns that the opportunistic type is in charge. The private sector's assessment of how likely there being a committed type – its reputation – becomes a central endogenous state variable which evolves like a capital good.

In our model, the optimal policies of the committed type and the opportunistic type determine the policy difference between the two "regimes" in the sense of "Markov regime switching" models. But relative to the basic "Markov switching" model, the policy difference across regimes in our model varies endogenously with the private sector's belief about policymaker type. In particular, the policy difference is small when the private sector believes that the committed type most likely is in place; and is large when otherwise. The private sector's belief, on the other hand, will be determined by past policy differences via Bayesian learning.

In some of our past work, when studying a committed policymaker's optimal decisions with evolving reputation, we have used an alternative policymaker that simply sets inflation at the level that would prevail without commitment and under full information (Lu, King and Pasten, JME 2016). The novel element of our current work – an opportunistic type optimally responding to expected inflation – also

has substantial implications for how a committed type will behave. We show that the interplay of the private sector's beliefs and optimal policy choices of each policymaker type within a regime resolves a dilemma for mechanical Markov switching models: we can making learning relevant while matching the large inflation swings during the period of the Great inflation and the Volcker disinflation.

For example, at the start of a Great Inflation initiated by a switch to the opportunistic type, rising actual inflation can have relatively minor effects on expected inflation, since the private sector believes that the committed type most likely is in place and expects future anti-inflation policies. Further, a policymaker that can't commit opts not to increase inflation much because its intrinsic bias is small and expectations are low and stable. In turn, this makes for slow learning. We find that energy shocks in our model lead to larger policy differences and faster deterioration of policymaker's reputation, so that the framework may be able to explain aspects of the 1970s where temporary energy shocks left inflation and inflation expectations higher afterwards.

If a regime switch occurs in early 1980s, a transition to a committed type that has weak initial reputation can lead to a Volcker-style disinflation. Forward-looking NK inflation dynamics play an important role in such situations. For example, both the full-commitment solution and a loose-commitment solution exhibit "start-up" inflation with initial high but declining inflation after a regime switch but are associated with a real boom. Matters are quite different in our model when there is a new committed policymaker that has weak initial reputation. This policymaker sees high initial expected inflation because the private sector believes it is likely that is facing an opportunistic type. An optimal action for the new committed policymaker must balance accommodating high expected inflation and differentiating itself from an opportunistic inflation policy. Hence, tough inflation actions lead to a decline in real activity rather than a boom. Over time, the private sector learns and puts less weight on an opportunistic type being in place. So the expected inflation declines, resulting in a lower perceived optimal opportunistic policy by the private sector, which further reduces the expected inflation, and hence the optimal committed inflation policies. Along the disinflation transition path, there is an initial stage of large output loss as the cost of signaling by the committed type. As its reputation improves over time, the signaling incentive of the committed type weakens and learning becomes more gradual.