Expectations, Credibility, and Disinflation in a Small Macroeconomic Model

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We used a version of the Fuhrer-Moore model to study the effects of expectations and central bank credibility on the economy's dynamic transition path during a disinflation. Simulations were compared under four different specifications of the model which vary according to the way that expectations are formed (rational versus adaptive) and the degree of central bank credibility (full versus partial). The various specifications exhibited qualitatively similar behavior, and were able to reasonably approximate the trend movements in U.S. macro variables during the Volcker disinflation of the early 1980s. However, the specification with adaptive expectations/partial credibility was the only one to capture the temporary rise in long-term nominal interest rates observed in U.S. data at the start of the disinflation. We also found that incremental reductions in the output sacrifice ratio were largest at the low end of the credibility range, suggesting that a central bank may face diminishing returns in its efforts to enhance credibility.   © 2000 Elsevier Science Inc.

I. Introduction

The idea that expectations can play a crucial role in determining the effects of monetary policy on real and nominal variables is now a well-established paradigm in macroeconomics.[1] It is also widely recognized that central bank credibility—defined generally as the extent to which beliefs about future policy actions are consistent with the announced programs of policymakers—is an important factor governing the cost of disinflationary

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[1] The classic articles include Phelps (1967, 1968), Friedman (1968), Lucas (1972, 1973), Sargent (1973), Sargent and Wallace (1975), Taylor (1975), and Barro (1976).

policies.[2] This paper uses a small macroeconomic model to study the effects of expectations and credibility on the economy's dynamic transition path during a disinflation. In particular, we experiment with different assumptions regarding the way that expectations are formed (rational versus adaptive) and the degree of central bank credibility (full versus partial) to determine which of the various specifications can best account for the trend movements in U.S. macro variables during the Volcker disinflation of the early 1980s. We also investigate the implications of these features for the length, speed, and cost of the disinflation episode.

The framework for our analysis is a version of the forward-looking macroeconomic model developed by Fuhrer and Moore (1995a, b). This model is quite tractable and has the advantage of being able to reproduce the dynamic correlations among U.S. inflation, short-term nominal interest rates, and deviations of real output from trend. The model consists of an aggregate demand equation, a nominal wage contracting equation (which embeds a version of an expectations-augmented Phillips curve), a central bank reaction function which defines monetary policy, and a term structure equation. We append a simple version of Okun's law which relates the unemployment rate to the deviation of real output from trend.

The experiment we consider is one in which the central bank announces a program to reduce the prevailing rate of inflation and then immediately embarks on such a path by lowering the target level of inflation in the reaction function. This leads to a monetary contraction, as evidenced by an increase in the short-term nominal interest rate. Due to the presence of nominal rigidities (staggered wage contracts), the tighter monetary policy results in a temporary decline in real output relative to trend, and a corresponding increase in the unemployment rate.

A key assumption underlying the use of rational expectations in macroeconomic models is that agents have enough information about the structure of the economy to make unbiased forecasts of the relevant economic variables. Taylor (1975) and Friedman (1979) argued that this assumption may be unrealistic during the transition period immediately following a major policy change because agents have not had sufficient time to fully comprehend the implications of the new policy or become convinced of the policymaker's commitment to maintaining it. Such a scenario seems particularly applicable to the Volcker era, given the Fed's adoption in October 1979 of an operating procedure for targeting nonborrowed reserves that was unprecedented. Based on this view, we consider the possibility that agents' forecasts during the transition to lower inflation do not make optimal use of all available information but, instead, are constructed using a first-order vector autoregression (VAR) which involves a subset of known variables. This set-up can be viewed as a particular form of adaptive (or distributed lag) expectations.[3]

Regarding credibility, it seems reasonable to assume that the Federal Reserve's commitment to reducing inflation was viewed with considerable skepticism at the start of the Volcker disinflation. Two previous attempts to reduce inflation, begun in April 1974

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[2] See, for example, Sargent (1982, 1983), Taylor (1982), and Fischer (1986). For a survey of the (huge) game-theoretic literature on credibility in monetary policy, see Blackburn and Christensen (1989).

[3] A higher-order distributed lag specification (labeled VAR-based expectations) is used in the Federal Reserve Board's large-scale macroeconomic model, known as FRB/US. The Board's model also allows for rational (or model-consistent) expectations. For details, see Brayton et al. (1997).