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Term structure evidence on interest rate smoothing and monetary policy inertia ☆

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Abstract

Numerous studies have used quarterly data to estimate monetary policy rules or reaction functions that appear to exhibit a very slow partial adjustment of the policy interest rate. The conventional wisdom asserts that this gradual adjustment reflects a policy inertia or interest rate smoothing behavior by central banks. However, such quarterly monetary policy inertia would imply a large amount of forecastable variation in interest rates at horizons of more than 3 months, which is contradicted by evidence from the term structure of interest rates. The illusion of monetary policy inertia evident in the estimated policy rules likely reflects the persistent shocks that central banks face.

JEL classification: E4; E5

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1. Introduction

How quickly do central banks adjust monetary policy in response to developments in the economy? A common view among economists is that the short-term policy interest rate in many countries is changed at a very sluggish pace over several

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quarters. The evidence supporting this view is found in the many monetary policy rules or reaction functions estimated in the literature with quarterly data. These policy rules take the general partial adjustment form $i_t = (1-\rho)i_t^* + \rho i_{t-1}$, where i_t is the level of the policy interest rate in quarter t, which is set as a weighted average of the current desired level, i_t^*, and last quarter's actual value, i_{t-1}. Based on historical data, estimates of ρ are often in the range of 0.8, so these empirical rules appear to imply a very slow speed of adjustment of the policy rate to its fundamental determinants. This gradual adjustment of the policy rate over several quarters to its desired level is widely interpreted as evidence of an "interest rate smoothing" or "monetary policy inertia" behavior by central banks. For example, Clarida et al. (2000, pp. 157–158) describe their U.S. estimates of various partial adjustment policy rules: "… the estimate of the smoothing parameter ρ is high in all cases, suggesting considerable interest rate inertia: only between 10 and 30 percent of a change in the [desired interest rate] is reflected in the Funds rate within the quarter of the change. Thus, our estimates confirm the conventional wisdom that the Federal Reserve smooths adjustments in the interest rate". Some of the many other recent papers with a similar inertial interpretation of monetary policy rules include Woodford (1999), Goodhart (1999), Levin et al. (1999), Amato and Laubach (1999), and Sack (1998).

Furthermore, a few researchers have also argued recently that the monetary policy inertia apparently present in the real world may be an optimal behavioral response on the part of central banks. For example, one popular such normative argument contends that the quarterly policy inertia and interest rate smoothing behavior helps the central bank focus the expectations of agents in the economy on its stabilization goals and thereby achieve a better outcome (e.g., Levin et al. 1999; Woodford, 1999; Sack and Wieland, 2000).

There is another quite separate literature on "interest rate smoothing", which, at least superficially, may appear to be consistent with the quarterly interest rate smoothing described above. This earlier literature analyzes changes in policy interest rates on a day-by-day basis. Both in the U.S. (e.g., Goodfriend, 1991; Rudebusch, 1995) and in Europe, Japan, and Australia (e.g., Goodhart, 1997; Lowe and Ellis, 1997), central banks appear to follow a pattern of behavior in which changes in the policy rate are undertaken at discrete intervals and in discrete amounts.[1] For example, Rudebusch (1995, p. 264) defines short-term (or weekly) interest rate smoothing as the Fed adjusting interest rates "… in limited amounts… over the course of several weeks with gradual increases or decreases (but not both)…".[2]

[1] Also, see Balduzzi et al. (1997), Dotsey and Otrok (1995), and Eijffinger et al. (1999).

[2] The short-term interest rate smoothing literature distinguishes three interest rates: the market rate at which funds are actually traded, i_t^m; the "target" rate that the central bank enforces in the market on a week-by-week basis, i_t; and the desired rate, i_t^*, that the central bank would set as its target if unconstrained by a desire to adjust the target rate slowly. Note that the "target" rate is not the desired rate. Furthermore, although the market and target rates, which are the ones reported in the popular press, can differ substantially on any given day, they are largely indistinguishable on a monthly average basis as the central bank hits its target, so both are denoted as i_t in this paper (which considers quarterly average data). As examples, Rudebusch (1995) explicitly models i_t^m and i_t on a daily basis (with i_t^* implicit), while Dotsey and Otrok (1995) model i_t^* and i_t on a monthly average basis (so $i_t^m = i_t$).