

The difficulty of discerning what's too tight: Taylor rules and Japanese monetary policy

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Abstract

Observers have relied increasingly on simple reaction functions, such as the Taylor rule, to assess the conduct of monetary policy. Applying this approach to deflationary or near-zero inflation environments is problematic, however, and this paper examines two shortcomings of particular relevance to the Japanese case of the last decade. One is the unusually high degree of uncertainty associated with potential output in an environment of prolonged stagnation and deflation. Consequently, reaction function-based assessments of Japanese monetary policy are so sensitive to the chosen gauge of potential output as to be unreliable. The second shortcoming is the neglect of policy expectations, which become critically important as nominal interest rates approach zero. Using long-term bond yields, we identify five episodes since 1996 characterized by abrupt declines in Japanese inflation expectations. Policies undertaken by the Bank of Japan during this period did little to stabilize expectations, and the August 2000 interest-rate increase appears to have intensified deflationary concerns.

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1. The trouble with Taylor rules in low inflation environments

Monetary policy must be evaluated, both by those conducting the policy and by those in markets and in the political realm holding it accountable. In recent years, the academic literature as well as the financial press and pundits have relied increasingly on simple monetary policy reaction functions, such as the eponymous rule of Taylor (1993), to make that

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assessment. Using (seemingly) readily available data and requiring little or no estimation, an analyst using a Taylor (or similar) rule can give a simple yes or no answer to the question of whether policy at a given moment is too tight or too loose. For academics, Taylor-like reaction functions are appealing to the extent that they can be interpreted as reasonable approximations to the optimal instrument rules derived from simple, micro-founded macro models.²

As with most current forms of comfort in macroeconomics, however, Taylor rule analysis becomes problematic when confronting a low-inflation environment, and particularly when facing the experience of Japan's Great Recession. Many commentators have focused on the obvious difficulty that when the central bank's nominal instrument interest rate nears zero, it is impossible to evaluate actual policy measures by means of a Taylor rule that might suggest negative instrument interest rates.³ But this self-evident concern is misplaced in at least two ways. First, even when the instrument interest rate is zero, the same theoretical approaches that underlie Taylor rule analysis imply that a credible commitment to a *future* course of interest rates should have the same effect as a movement in the interest rate today.⁴ Thus, the issue for monetary policy assessment when interest rates near zero becomes how to discern whether such a commitment exists and is believed by the market and households.

Second, even if there is sufficient room left in nominal interest rates to make an assessment based on some version of a Taylor rule, uncertainty over the potential rate of growth in the economy is likely to rise as inflation approaches zero. This is both a statistical artifact, a result of the econometric methods employed to make most "top-down" estimates of potential output, and a substantive problem, reflecting the difficulty of distinguishing between structural change and deficient aggregate demand in times of financial distress (almost inevitably coincident with low inflation/deflationary periods). The Taylor rule assessment depends upon an estimate of potential output to such a degree that its results are extremely fragile to variation or uncertainty about this estimate, contrary to the usual blithe assumption that potential output is known with certainty.

Both of these issues played critical roles in the debate over what happened in Japan over the last decade, and particularly in the assessment of monetary policy there. In the early part of the Great Recession, from 1992 to 1998, differing assessments of the downturn's severity between various Japanese government agencies and the market, based on differing estimates of potential growth, determined the relative willingness to undertake countercyclical macroeconomic stimulus.⁵ The Bank of Japan (BoJ), though lacking legal independence until April 1998, participated in these debates, and had to make its monetary policy judg-

² See Clarida, Gali, and Gertler (1999), Goodfriend and King (2001), and Giannoni and Woodford (2003) for the canonical and widely-cited examples of tractable new Keynesian/Classical models that yield Taylor rule-like reaction functions from theoretically appealing underlying assumptions.

³ Taylor himself acknowledged this issue, arguing instead for money supply rules in a deflationary environment (Taylor, 1997). Nonetheless, Taylor (2001) presents an assessment of BoJ policy using a conventional Taylor rule.

⁴ Or, to put it another way: the Taylor rule-like reaction functions are typically derived in the context of a discretionary monetary policy, while the gains from policy commitment become large when the policy rate is constrained by the zero lower bound. Absent such a commitment, Orphanides and Wieland (2000) show that it may be optimal for a central bank to ease policy more aggressively than it would have otherwise, in order to avoid hitting the zero lower bound on the nominal interest rate.

⁵ See the discussion of demand-versus supply-side interpretations of Japanese stagnation in Posen (1998, Chapter 2) and the comparison of public and private economic forecasts in Ahearne et al. (2002).

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