Journal of Macroeconomics 24 (2002) 41–49

Journal of
MACROECONOMICS

www.elsevier.com/locate/econbase

Optimal and efficient monetary policy rules in a forward-looking model

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Received 9 July 1999; accepted 30 January 2001

Abstract

This paper shows that two monetary policy strategies—hybrid nominal income targeting and strict inflation targeting—are efficient strategies of monetary policy in the sense that they are special cases of the optimal monetary policy strategy. In the case of a hybrid nominal income targeting strategy, the policymaker chooses a unitary trade-off between real output and the rate of inflation, while under strict inflation targeting the policymaker attaches a zero weight on output in the optimal policy rule. © 2002 Elsevier Science Inc. All rights reserved.

JEL classification: E5

Keywords: Forward-looking; Optimal and efficient policy; Inflation targeting; Hybrid nominal income targeting

1. Introduction

Current discussions of issues in monetary policy share a number of characteristics. First, there has been a move toward a new framework where the rate of inflation—and not the price level—features prominently. The new approach emphasizes simplicity over complexity. It comprises a simple two-equation IS-Phillips Curve framework where real output and the rate of inflation enter as the two endogenous

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PII: S0164-0704(02)00014-9

variables. Practical considerations have led to the omission of the LM relation from the analysis. As most central banks use a short-term nominal interest rate to set the stance of monetary policy, the inclusion of money demand in the analysis will merely serve to determine the volume of the money supply that is consistent with the set interest rate. [1]

Despite the adoption of an alternative framework for the analysis of monetary policy issues, there remains some disagreement among economists about the proper specification of the underlying structural relations. Of the competing specifications, two have attracted particular attention. One approach assumes that real output and the rate of inflation exhibit persistence, that is, that current real output and the rate of inflation are tied to their past behavior. In the literature this specification is referred to as "backward-looking". [2] In sharp contrast, the "forward-looking" specification adopts a rational expectations framework where current real output and the rate of inflation, respectively, depend on the next period's expected level. [3]

Another characteristic common to current and recent contributions to the literature is the renewed interest in the properties of monetary policy rules. In view of the widespread disagreement among economists about the proper specification of macroeconomic relationships, efforts have been made to examine the properties of simple, tractable rules across a wide variety of macroeconomic models. The idea here is to examine the robustness of candidate rules for inflation targets, price level targets, nominal income targets, exchange rate targets, and other rules such as the Taylor Rule. [4] For instance, Ball (1997) finds nominal income targeting to be inconsistent with the optimal policy rule in a simple backward-looking model. Indeed he labels nominal income targeting a disastrous strategy of monetary policy as it leads to instability in both the rate of inflation and the output gap. This result is challenged by McCallum (1997) who attributes Ball's findings to the backward specification of the Phillips Curve. [5]

The current paper takes the forward-looking model as the baseline model to derive the optimal monetary policy rule. The paper takes the view that optimal mon-

[1] See, for instance, Taylor (1995), Ball (1997), McCallum (1997), Svensson (1997), Clarida et al. (1999) and McCallum and Nelson (1999) amongst others.

[2] The papers by Taylor (1995), Ball (1997) and Svensson (1997, 1999) fall into this category.

[3] Examples of this approach are McCallum (1997), McCallum and Nelson (1999), Clarida et al. (1999) and Woodford (1999).

[4] A recent comprehensive contribution in this area is the papers presented at a symposium of the Sveriges Riksbank in 1998 and published in the *Journal of Monetary Economics* (1999). A treatment of monetary policy rules also appears in Taylor (1999). See also Bryant et al. (1993), Henderson and McKibbin (1993) and Taylor (1993) for earlier assessments of the empirical properties of various monetary policy rules. Analyzing solely the merits of nominal income targeting, Rudebusch (2000) finds that this strategy receives only modest empirical support from US data.

[5] For a comparative analysis of various monetary policy rules in forward- and backward-looking models, the reader is referred to Guender (2000). He shows that the instability of nominal income targeting in the backward-looking specification disappears if the policymaker chooses to target a hybrid form of nominal income.