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Interest rate shocks, Central Bank's Credibility and Inflation Targeting Regime: simulations in a Dynamic Stochastic General Equilibrium Model

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Abstract

This article analyzes the Central Bank's endogenous and nonlinear credibility, under shocks and inflation targeting regime. Monetary policy regimes are compared, which are different in terms of endogenous credibility levels and their nonlinear sensibility to the observed economic deviations. It shows that the higher the credibility level, the lower its sensibility to the observed deviations and, as a consequence, the higher the flexibility power for the central bank to stimulate the economy without expressive unstable results. This proposition is verified through a stochastic autoregressive dynamic model and a small numeric simulation.

Keywords: Central Bank; Credibility; Inflation Target.

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1. Introduction

The Central Bank's credibility is an important feature in the implementation of monetary policy strategies. The ability a Central Bank has in order to control inflation dynamics, with lower social costs through the time, depends basically on its power in managing public's inflationary expectations. The higher the Central Bank's credibility level, the lower the expected inflation rate sensibility to the observed inflation deviations; and the higher the weight of the announced inflation target in the public's expectations. It gives power to the Central Bank to implement counter-cyclical monetary policies with lower unstable results for the economy.

Thus, modeling and estimating the Central Bank's credibility dynamics is one of the main topics in the monetary policy research, because it identifies the ways by which monetary authorities can improve its credibility gains (and losses) and the effects of it on the economic and policy dynamics.

In line with Argov et al. (2007), this work implements a small-scale structural macro model that does not present explicit microfoundations, but resembles New-Keynesian models, such as in Ball (1999), Svensson (1997) and Clarida, Galí & Gertler (1999), among others, thereby becoming useful in analyzing monetary policy implementation and dynamic macro responses from different kinds of shocks, specifically the interest rate shocks in this paper. The key difference between the current model and standard New-Keynesian models is in the Central Bank's endogenous and nonlinear credibility, such as in Lalonde (2005), which will be proposed.

As it will be shown by the results of the numeric simulations, interest rate shocks cause lower output variability when the credibility dynamics is conceived as an endogenous and nonlinear process, in comparison with the results under constant or exogenous credibility degrees. Moreover, the study verifies that the initial credibility level is an important factor in determining the relevant variables' dynamics. That is, the higher the Central Bank's initial credibility level, the lower the output variability as a consequence of shocks, even if the credibility dynamics is modeled as an endogenous and nonlinear variable. This result may explain why some Central Banks are faced by higher economic instability through the time, in relation to others, even when the Central Banks sample is under similar monetary policy regimes and economic shocks. So, in Central Bank's performance the history and the credibility gains process matter.

2. Theoretical approach: the credibility *versus* flexibility dilemma

Taking the real interest rate as the main policy instrument, the central bank's credibility is associated with the public's perception of a desirable and coherent direction and velocity of the instrument rate path in the face of the central bank's target. In this case, two things are essential while the economic agents are making their evaluation about the central bank and about its monetary policy credibility: the *policy target* and the observed shifts in the *policy instrument*, as it is the relation between these two variables that determines the credibility degree and the effectiveness of the monetary policy[b].

A useful estimator in evaluating monetary policy would be the real interest rate trajectory in relation to the *natural interest rate*. However, it is generally accepted the public's and the central bank's uncertainty on the natural interest rate level (Galí & Gertler, 2007), so that the monetary policy efficiency and credibility should

[b] This concept of credibility is in the same way followed by Argov et al. (2007), among others, that is, credibility as the public's assessment of the central bank's ability to achieve the target.