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Monetary policy of the Bank of Japan—inflation target versus exchange rate target

Joaquim Pinto de Andrade[a,*], José Angelo Divino[b,c]

[a]*Department of Economics, University of Brasilia, Brasilia, DF, Brazil*
[b]*Department of Economics, Boston University, Boston, MA, USA*
[c]*Department of Economics, Catholic University of Brasilia, Brasilia, DF, Brazil*

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Abstract

This paper reviews the empirical evidence on the monetary policy of the Bank of Japan (BOJ). The main findings confirm [McKinnon, R., Ohno, K., Dollar and Yen, Resolving Economic Conflict between the United States and Japan. MIT Press, Cambridge, MA, USA, 1997] thesis that the BOJ has tried to stabilize exchange rate. The interest rate is counter-cyclical to the exchange rate and the coefficient of inflation, which is not weakly exogenous, is significantly smaller than 1. Impulse response analysis confirms the BOJ's sensitivity not only to inflation and output gap but also to exchange rate. Finally, historical decomposition reveals a major role for exchange rate in explaining cyclical patterns of the interest rate, especially during the bubble period.

JEL classification: C3; C5; E3; E5; J3

Keywords: Target inflation; Monetary policy; Taylor rule; Unit root; Cointegration

1. Introduction

The interest rate has been recognized as the main instrument of monetary policy of most Central Banks to reach inflation stability, output stability and maybe exchange rate stability. The main objective of this paper is to identify the targets of the monetary policy conducted by the Bank of Japan (BOJ).

There is a proposition among Japanese scholars that the BOJ has given a major emphasis on exchange rate targeting instead of inflation rate targeting. The empirical works of Hutchison (1988), Okabe (1995) and McKinnon and Ohno (1997) are good examples of

* Corresponding author. Tel.: +55-61-307-2498; fax: +55-61-340-2311.
E-mail address: jandrade@unb.br (J.P. de Andrade).

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this line of research. Their results point to a minor role for output gap and a major role for exchange rate deviations on the monetary policy of the BOJ.

McKinnon and Ohno's argument is that exchange rate is a forcing variable and the domestic prices level an adjusting variable. Accordingly, stabilization of the exchange rate may lead to stabilization of the price level in the long run.

Taking an alternative view, Chinn and Dooley (1997) and Clarida et al. (1998) present new evidences in favor of the inflation targeting approach.

Chinn and Dooley (1997) estimate an interest rate reaction function, using as targets the forecasts of inflation and output gap obtained from a structural VAR of the main economic aggregates that are related to monetary policy, as suggested by Clarida and Gertler (1996). Their findings indicate the relevance of inflation and output stabilization to the BOJ policy. They observe that the inclusion of real exchange rate deviations is not statistically significant to explain the behavior of the interest rate.

Much stronger evidence in favor of inflation targeting regime is found in Clarida et al. (1998). They estimate a reaction function using a forward-looking framework, where the arguments of the function are deviations of inflation and output gap in relation to their target values. Their results would be consistent with the view that exchange rate contains all the information on future inflation, as suggested by McKinnon and Ohno. Their empirical analysis, however, did not consider adequately the properties of the time series. They use non-stationary series, or integrated of first order, in a GMM model without testing for the possibility of cointegration among them. This procedure limits seriously the results of the asymptotic theory and may invalidate their estimation process (e.g., Davidson and Mackinnon, 1993).

This paper aims to identify the behavior of the BOJ in the management of the monetary policy using the methodology of cointegration analysis, impulse response functions, and historical decomposition of the residuals during the cyclical movements of the nominal interest rate. The period of the analysis is the same as the one considered by Clarida et al. (1998).

2. Monetary reaction function

The monetary policy reaction function is specified along the lines of Clarida et al. (1998) and estimated according to different procedures. The motivation for this type of function can be seen in Taylor (1993a,b, 1996), Svensson (1997a,b) and Woodford (1994).

The main assumptions are

(i) Central Bank main instrument is the official discount rate—call rate (e.g., Ito, 1992).
(ii) Wages and prices present viscosity—there is nominal rigidity in the short-run.
(iii) Monetary authorities follow real targets (product stabilization, real exchange rate stabilization), and nominal targets (price stabilization).

The reaction function can be characterized as follows:

$$i_t^* = \bar{i} + \beta(E[\pi_t|\Omega_t] - \pi^*) + \gamma(E[h_t|\Omega_t] - h_t^*) + \xi(E[e_t|\Omega_t] - e_t^*) \quad (1)$$

where $\bar{i}$ is the long run equilibrium nominal interest rate and E is the expected value of the respective variable conditional on the information set available to the monetary authority at