



# Should central banks react to exchange rate movements? An analysis of the robustness of simple policy rules under exchange rate uncertainty

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## Abstract

This paper evaluates the performance of simple policy rules in an open economy. By introducing a high degree of exchange rate uncertainty we find that policy rules with an important feedback from movements in the real exchange rate are very robust to uncertainty about the true exchange rate model. A closed economy rule performs badly in most exchange rate specifications. This is in contrast to the findings of many other studies. In our view, this result is due to the fact that these studies assume a known and reliable relationship between the exchange rate and the interest rate.

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## 1. Introduction

In recent years there has been considerable progress in the field of monetary policy analysis. A growing academic literature explores simple policy rules expressed in terms of interest rate instruments as guides for monetary policy under a strategy of flexible inflation targeting. Since most inflation targeting countries today are small open economies,

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the role of the exchange rate for the conduct of monetary policy is a central issue. In particular, the question whether the exchange rate (in whatsoever form) should enter the policy rule or not is still a matter of debate in the literature. Thus, the evaluation of so-called open economy policy rules has become an important extension to the closed economy analysis of interest rate rules.

Empirically, the tendency of central banks to indirectly influence the exchange rate by interest rate adjustments is largely confirmed (even for developed countries) by work on monetary policy rules. One strand of evidence results from the estimation of structural VARs in which, among other dynamic relationships such as aggregate demand, an equation for the monetary policy instrument has to be specified. For example, [Clarida and Gertler \(1997\)](#) reported estimates according to which the Bundesbank responded to a depreciation of the real exchange rate with a rise in short-term interest rates. Based on a small-scale model of the Australian economy, [Brischetto and Voss \(1999\)](#) and [Dungey and Pagan \(2000\)](#) found that the Reserve Bank of Australia reacts with the short-term interest rate to movements in the exchange rate. Another strand of empirical evidence results from the direct estimation of monetary policy rules. [Clarida et al. \(1998\)](#) found a small but significant reaction of the nominal interest rate of the Bundesbank (1979–1993), the Bank of Japan (1979–1994) and the Bank of England (1979–1990) to the real exchange rate. [Gerlach and Smets \(2000\)](#) estimated interest rate policy rules according to which the Reserve Bank of New Zealand and the Bank of Canada respond significantly with the short-term interest rate to changes in the nominal exchange rate, whereas the Reserve Bank of Australia does not. Investigating the inflation targeters Australia, Canada, New Zealand, Sweden and the United Kingdom, [Hüfner \(2004\)](#) found that the exchange rate term in the policy rule is only significant for the United Kingdom and New Zealand. He explains the differences to the study of [Gerlach and Smets \(2000\)](#) mainly by a somewhat larger sample period. For the emerging market economies Chile, Israel, South Africa, the Czech Republic and Mexico, [Ades et al. \(2002\)](#) also found significant (and, in comparison with the developed economies of the aforementioned studies, larger) exchange rate coefficients in the interest rate policy rule. These findings are confirmed by a recent study of [Mohanty and Klau \(2004\)](#).

In contrast to the rather clear-cut results from empirical studies, the results from numerical simulations of calibrated open economy macro models are mixed. By adding an exchange rate term to a simple, Taylor-type policy rule, [Ball \(1999\)](#), [Svensson \(2000\)](#) and [Batini et al. \(2001\)](#) find a small improvement of the macroeconomic performance of a central bank's interest rate policy. In contrast to this, [Côté et al. \(2002\)](#) come to the result that using an open economy monetary policy rule often increases the value of the loss function. [Taylor \(1999c\)](#) gets somewhat mixed results in his multi-country study, favouring open economy rules for some countries and rejecting their usefulness for other countries. In a recent overview, he ultimately comes to the conclusion that “research to date indicates that monetary policy rules that react directly to the exchange rate, as well as to inflation and output, do not work much better in stabilizing inflation and real output and sometimes work worse than policy rules that do not react directly to the exchange rate” ([Taylor, 2001, p. 267](#)).

In our view the problem of most of these numerical simulation studies is that they disregard the fact that economists know little about the determinants of exchange rate movements and the interaction between exchange rates and other fundamental variables in systems of independently floating exchange rates. A notable exception is the paper of [Leitemo and Söderström \(2005\)](#), which also studies the impact of exchange rate uncertainty on

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