

# The exchange rate and optimal monetary policy rules in open and developing economies: Some simple analytics<sup>☆</sup>

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## Abstract

Using a simple, tractable model, this paper revisits and expands upon issues relating to optimal monetary policy rules (MPRs) in open economies. The optimality of the rule is explored through various specifications of a central bank loss function as it is the loss function that offers insight into central bank preferences. Many of the issues on this topic have centred on the role of the exchange rate: Is it optimal for the policy instrument to react to the exchange rate? What is the role of the exchange rate in a domestic inflation targeting vs CPI inflation targeting? Does a fear of floating have any bearing on the way optimal MPRs are constructed? While this paper is not empirical, the analysis is relevant for central banks in open and developing economies that face a choice between allowing exchange rates to float (and adopting an inflation targeting regime) and engaging in some degree of exchange rate fixity.

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## 1. Introduction

Much of the recent discussion on optimal monetary policy rules has been conducted in the context of the rule being employed as part of an inflation targeting regime (see [Ball, 1999, 2001](#); [Svensson, 2000](#); [Taylor, 2000a,b](#); [Cavoli and Rajan, 2007](#); [Collins and Siklos, 2004](#) and many others). This is essentially because inflation targeting has become a seriously contemplated policy option for many open economies and recently, for emerging market economies in Southeast Asia (see [Carare and Stone, 2003](#); [Masson et al., 1997](#); [Mishkin, 2000](#); [Ito and Hayashi, 2004](#); [Ho and McCauley, 2003](#); [Cavoli and Rajan, 2006a](#)).

But, is inflation targeting suitable for open and developing economies? Given the size and degree of openness of many emerging market countries, the exchange rate may play an important role in the transmission of foreign shocks into domestic economic conditions and also in the transmission of policy actions. As such, there is an added incentive

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for the exchange rate to be included as part of policy and the resulting multiplicity of objectives risks being at odds with the inflation targeting regime. This paper examines the mechanics of this very problem—the dilemma associated with having an inflation target and an exchange rate objective and one policy instrument.

Of central importance in this paper is the role of the exchange rate in the construction of optimal monetary policy rules (MPRs) in an open economy. Optimality in this paper is given by particular specifications of the central bank loss function. An optimal rule, therefore, is one that is derived as the result of minimising a loss function where the variables contained in the function and their corresponding weights reflect central bank preferences. The rule itself, once derived from the central bank minimisation problem, specifies how the instrument of policy reacts to the variables specified in the model. The monetary policy rules derived here differ from those derived under the usual inflation targeting regime in that this paper considers the possibility that the policymakers are interested in a degree of management of the exchange rate.

The analysis in this paper pre-supposes the following context: A developing economy central bank has implemented procedures supporting inflation targeting arrangements. However, there remain nagging doubts about committing wholeheartedly to inflation targeting due to concerns about the adverse effects of excessive exchange rate volatility (a fear of floating, see [Calvo and Reinhart, 2002](#)). Under the analytical (and, indeed, institutional) framework set up for inflation targeting, can the exchange rate play a role in the implementation of policy?

This scenario is not purely conceptual—it has both positive and normative implications that reflect actual policy dilemmas. On the positive side, this scenario is very reflective of the situation in the Asian economies of Korea, Thailand, Indonesia and the Philippines. Recent work has examined the post-crisis *de facto* exchange rate regimes of these countries and has found evidence of a possible desire to revert to pre-crisis USD or basket pegs (see [Baig, 2001](#); [Cavoli and Rajan 2006b](#); [Willett et al., 2005](#)). [McCauley \(2001\)](#) and [Parrado \(2004\)](#), for instance, examine the role of the exchange rate in Singapore's monetary policy regime. On the normative side, there is a strong view that inflation targeting systems can be augmented to characterise optimal policy with a degree of involvement of the exchange rate (see [Goldstein, 2002](#); [Edwards, 2002](#); [Fischer, 2001](#); [Chang and Velasco, 2000](#)). For instance, [Chang and Velasco \(2000\)](#) state: “In short, the evaluation of exchange rate policy should move away from the ‘fix vs flex’ dichotomy, and toward the characterisation of optimal monetary policy in well specified analytical frameworks.” (p75). Moreover, [Edwards \(2002\)](#) states: “Indeed, it is perfectly possible that the optimal policy, that is, policy that minimizes a well-defined loss function is one where the central bank intervenes from time to time.” (p248).<sup>1</sup>

There is a large literature on the role of the exchange rate with monetary policy rules and it covers a range of contributions—from those that are quite technical ([Svensson, 2000](#); [Gali and Monacelli, 2005](#); [Devereux et al., 2005](#) among others) to those that are essentially descriptive and policy-oriented ([Eichengreen, 2001](#); [Taylor, 2001](#); [Ito and Hayashi, 2004](#); [Ho and McCauley, 2003](#)). The more technical literature presents, for the most part, simulation/numerical methods as a way to analyse the effectiveness of various policies. This paper attempts to bridge the gap between this literature and the descriptive literature by examining the simple analytics of alternative optimal rules. To my knowledge, there are few papers of this type pertaining to open economies. [Clarida, Gali and Gertler \(2002\)](#), [Guender \(2005\)](#) and [Semmler and Zhang \(2007\)](#) are such examples. The intention of the paper is to present the type of analysis for open economies as [Ball \(1997\)](#) and [Cecchetti \(2000\)](#) conducted for closed economies. While the simple analytics are the focus of the paper, in order to augment the analytics and to illustrate some of the main points, a simple numerical example is presented later in the paper.

The paper is structured as follows: The following section presents the basic model and derives the optimal rule for domestic inflation targeting, CPI inflation targeting and real exchange rate targeting. Section 3 presents the interesting policy implication of fear of floating and discusses whether there are instances where fear of floating is justified. Section 4 presents a simple numerical exercise as a way to illustrate some of the results gained in the previous sections. Section 5 concludes.

## 2. Optimal monetary policy rules and the exchange rate

This section constructs optimal MPRs using a simple macroeconomic model and simple optimisation methods for three policy regimes, domestic inflation targeting, CPI inflation targeting and real exchange rate targeting. The regimes

<sup>1</sup> See, also, [Edwards \(2006\)](#).

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