



# Designing targeting rules for international monetary policy cooperation<sup>☆</sup>

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## Abstract

This study analyzes a two-country dynamic general equilibrium model with nominal rigidities, monopolistic competition and producer currency pricing. A quadratic approximation to the utility of the consumers is derived and assumed as the policy objective function of the policymakers.

It is shown that only under special conditions there are no gains from cooperation and moreover that the paths of the exchange rate and prices in the constrained-efficient solution depend on the kind of disturbance that affects the economy. Despite this result, simple targeting rules that involve only targets for the growth of output and for both domestic GDP and CPI inflation rates can replicate the cooperative allocation.

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The national economies that make up the world economy have become increasingly interdependent. Monetary policy in each country affects economic welfare both at home and abroad: the policymaker in each country generates externalities for the policymakers in the other countries. Therefore, the policymaker in each country must take account of the actions of policymakers in other countries.<sup>1</sup>

## 0. Introduction

The previous quotation outlines the basic idea behind the literature on international monetary policy cooperation in the 1980s and 1990s. The existence of externalities, whether positive or negative, is the source of a need of international monetary cooperation when countries do not internalize the effects of their actions on other countries.

In this study, we depart from the previous literature, discussed among others in Canzoneri and Gray (1985), Canzoneri and Henderson (1991), and Persson and Tabellini (1995), by considering a two-country model in which both the structure of the economy and the welfare criteria of the policymakers are derived from microfoundations. We revisit the scope for international monetary policy cooperation in a world in which goods and capital markets are perfectly integrated and where the disturbances that affect the economies originate from productivity, public expenditure and mark-up shocks.

We are not the first to address this issue in a microfounded model.<sup>2</sup> However, our contribution to the literature is to use a linear-quadratic solution method, as discussed in Benigno and Woodford (2005), to allow a direct comparison of the objective functions of the policymakers and the structure of the economies with the ones that were assumed in the previous literature. In a two-country open-economy model, we derive a quadratic utility-based objective function for each policymaker. As a difference with respect to the aforementioned literature, these objectives are not only quadratic in domestic output gap and producer inflation but contain other targets for the terms-of-trade, foreign output gap and producer inflation.

We analyze the cooperative and non-cooperative allocation. First, our analysis shows that it is not possible to give a conclusive prescription on which exchange-rate regime can enforce cooperation except for saying that it should be contingent on the kind of disturbance that hits the economies. As in Devereux and Engel (2003) and Obstfeld and Rogoff (2002), the exchange rate should float in order to accommodate asymmetric productivity shocks mirroring Friedman's prescription for flexible exchange rates.<sup>3</sup> Monetary policymakers are then left with the role of pursuing the domestic goal of price stability. On the opposite, when the economy is hit by other shocks, as mark-up disturbances, the optimal cooperative outcome might imply a stable exchange rate. Prices

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<sup>1</sup>Canzoneri and Henderson (1991, p. 1).

<sup>2</sup>Our approach follows recent contributions in the open-macro literature which have studied the analysis of international monetary cooperation with microfounded models and utility-based welfare criteria, as Benigno and Benigno (2003), Corsetti and Pesenti (2005), Devereux and Engel (2003), Obstfeld and Rogoff (2002), Sutherland (2002, 2005), Tille (2003). However, differently from these analyses, we characterize a dynamic model in which prices are sticky and staggered following the Calvo (1983) model and we allow for a more general structure of the economy, in terms of preferences and shocks. With the use of numerical methods, Kollmann (2003), Sutherland (2001), Tchakarov (2002) have evaluated optimal monetary policies in two-country dynamic general equilibrium models.

<sup>3</sup>Friedman (1953).

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