

# Optimal monetary policy cooperation through state-independent contracts with targets

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Received 1 April 1997; accepted 1 July 1998

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## Abstract

Simple *state-independent* monetary institutions are shown to secure optimal cooperative policies in a *stochastic*, linear-quadratic two-country world with international policy spill-overs and national credibility problems. Institutions characterize delegation to independent central bankers facing quadratic performance related contracts punishing or rewarding deviations from primary and intermediate policy targets. © 2000 Elsevier Science B.V. All rights reserved.

*JEL classification:* E42; E58; F42

*Keywords:* Monetary policy cooperation; Central bank independence; Monetary institutions; Performance contracts; Policy targets

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## 1. Introduction

Among interdependent economies, sovereign policymaking by nationalist policymakers typically involves various inefficiencies that could be internalized to the benefit of all countries. For example, conflicts over the appropriate degree of stabilization towards shocks or permanent conflicts over macroeconomic

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variables imply that some degree of policy cooperation would be desirable.<sup>1</sup> However, the very same incentives that account for inefficiencies in the first place, often make it profitable for one country to deviate from a cooperative scheme in order to pursue self-interests at the expense of other countries. Identification and assessment of mechanisms that sustain cooperative policies are therefore of great importance.

In this paper we address this issue with respect to monetary policymaking through a ‘principal–agent’ approach, where governments (the principals) delegate policy conduct to independent central bankers (the agents) whose operational environment is appropriately designed so as to induce optimal, cooperative policies. The design turns out to be remarkably simple, feasible and easily interpretable, and in contrast with those of previous literature it is *state-independent* even though the world under consideration is stochastic. This may be of theoretical interest in its own right, but the portrayed institution also reveals new results concerning well-known concepts from the related literature such as ‘conservativeness’ (Rogoff, 1985b) and ‘inflation targets’ (Leiderman and Svensson, 1995; Svensson, 1997), which are of relevance for the design of real-life monetary institutions in interdependent economies. For example, within European countries participating in the EMU, between the upcoming EMU and non-participants, between EMU and USA, and so forth.

Our analysis is conceptually related to Persson and Tabellini (1995, 1996a, b) who examine a two-country, linear-quadratic monetary policy game where policymaking is delegated to independent, benevolent central bankers (CBs). They demonstrate optimality of performance contracts with payments *linearly* related to some economic variable (typically the inflation rate). The finding draws on the closed economy models of Persson and Tabellini (1993) and Walsh (1995) where linear contracts were shown to eliminate the well-known inflation bias of monetary policy (Kydland and Prescott, 1977; Barro and Gordon, 1983). But whereas the optimal linear contract in the conventional closed economy case is *state-independent*, i.e., not contingent upon underlying shocks but only upon realized macroeconomic variables, it is *state-contingent* in the two-country case. This crucial difference arises since in the closed economy, the linear contract neutralizes the CB’s constant inflationary incentives. But as responses towards shocks are efficient, they require no correction and the optimal contract is state-independent.<sup>2</sup> In the two-country case, however, shock stabilization has

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<sup>1</sup> The literature covering the costs and benefits of international policy cooperation is enormous, but recent surveys focusing on the strategic issues to be considered here, include Canzoneri and Henderson (1991) and Persson and Tabellini (1995).

<sup>2</sup> If the inflation bias for some reason is state-contingent, the optimal linear contract also becomes state-contingent; cf. Persson and Tabellini (1993). See, e.g., Canzoneri et al. (1997), Herrendorf and Lockwood (1997) and Svensson (1997) for examples of how such state-contingencies may arise.

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