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## Strategic monetary policy in interdependent economies: Gains from coordination reconsidered

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There is a wide acceptance that gains to international monetary policy coordination are small at best and that the need of policy coordination is questionable. This conclusion, however, follows from the underlying presumption that monetary policy is concerned with the stabilization of macroeconomic fluctuations only. This paper presents a general short-run monetary policy analysis within a familiar two-country New Open Economy Macroeconomics (NOEM) framework where national monetary policy involves the choice of a deterministic growth trend of money supply (average inflation rate) and stochastic, state-dependent deviations of actual money supply from the deterministic trend (stabilization). Strategic “beggar-thy-neighbor” considerations induce the deviation of both policy choices from their socially optimal values. The gains from international coordination of the average inflation rate are of first-order and hence larger than the gains from the coordination of the stabilization policies which are of second-order.

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### 1. Introduction

In Open Economy Macroeconomics, the study of international monetary policy cooperation has a long tradition. Game-theoretic arguments making the case for international policy coordination are based on the rationale first provided by Hamada (1974): Welfare gains from policy coordination may arise from the prevention of any strategic consideration to use national monetary policy so as to

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unilaterally manipulate the terms of trade in one country's own favor.<sup>1</sup> The paradigmatic consensus in the literature, however, is that gains from policy coordination are small at best.

The aim of this paper is to stress that this conclusion follows from the underlying presumption that monetary policy is concerned with the stabilization of macroeconomic fluctuations. As it is widely accepted, welfare gains from stabilizing macroeconomic fluctuations are per se quite limited.<sup>2</sup> Gains from international monetary policy coordination are consequently limited if cooperation is restricted to stabilization issues only. Considering instead more general monetary policy conduct reveals that the very same incentives that lead monetary authorities to strategically alter national responses to macroeconomic shocks also shift monetary policy conduct on average and independently of any exogenous economic disturbances. Crucially then, the welfare consequences of monetary policy coordination are substantially different from those of coordinating stabilization policies alone. To demonstrate this, I use a version of the familiar monetary two-country economy studied by Corsetti and Pesenti (2001) and Obstfeld and Rogoff (2000, 2002). In this simple dynamic stochastic general equilibrium model that has a closed-form solution, monetary non-neutrality stem from preset wages and cash-in-advance restrictions. National monetary authorities follow money supply rules that involve two policy choices: a deterministic growth rate or trend of money supply and stochastic, state-dependent deviations of actual money supply from the deterministic trend.

On the one hand, altering the deterministic trend of money supply affects the allocation via the expected (and on average realized) inflation rate and thus the nominal interest rate. Higher average money growth increases inflation and also the nominal interest rate on average. The nominal interest rate, however, reflects the opportunity cost of holding money wage payments as wealth. An increase in the nominal interest rate therefore prompts households to claim higher nominal wages. This in turn raises marginal costs of production, final goods prices, and causes thus an appreciation of the terms of trade. As a result, the non-stochastic trend of the money supply rule forms an effective policy instrument to manipulate the terms of trade on average. In the rational expectations equilibrium, there is a unique relationship between the deterministic growth rate or trend of money supply and the nominal interest rate that works through the inflation expectations. Each level of the trend (and hence the average) of money supply corresponds to a different nominal interest rate. Because the results of the analysis become much clearer, I exploit this one-to-one relationship and argue directly in terms of the nominal interest rate as the policy choice.<sup>3</sup>

On the other hand, the presence of nominal rigidities allows monetary authorities to alter the equilibrium allocation by means of state-dependent deviations of actual money supply from the deterministic trend. Since it cannot be fully offset by adjustments in prices and wages, an unexpected contraction of the actual money supply which appreciates the nominal exchange rate then also leads to an appreciation of the terms of trade. This is the familiar monetary policy channel to respond to economic fluctuations as widely discussed in the literature. I shall refer to it as the (active) money supply management.

Within this framework, two important observations stand out: First, the state-dependent (active) money supply management affects the equilibrium allocation by changing the variance of the equilibrium distribution. The nominal interest rate policy affects the equilibrium allocation by directly moving the mean of the equilibrium distribution. Consequently, the equilibrium and hence welfare implications of the nominal interest rate policy are of first-order whereas those of the money supply management are of second-order. Second, self-interested national policymakers face an incentive to deviate from the globally optimal interest rate policy for exactly the same reason why they deviate from

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<sup>1</sup> The most prominent contributions include Hamada (1976), Oudiz and Sachs (1984), Canzoneri and Gray (1985), and more recently Obstfeld and Rogoff (2002), Clarida et al. (2002), and Devereux and Engel (2003).

<sup>2</sup> See for example the prominent discussion by Lucas (2003).

<sup>3</sup> Within a closed economy model, Ireland (1996) demonstrates that monetary policy can be formulated in a more general way by using both expected money growth rate and deviations from the expected money growth rate. More recently, Adao et al. (2003) take up his approach and analyze optimal short-run monetary policy in a closed economy real business cycle model with monopolistic firms, a cash-in-advance restriction and preset prices. They, however, argue directly in terms of the nominal interest rate (implicitly controlled by the expected money growth rate) and the money supply (ie. state-dependent deviations from the expected money growth rate). For reasons of economic intuition it proves particularly useful to directly follow Adao et al. and refer to the two policy choices as the nominal interest rate policy and the money supply management.

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