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International monetary policy coordination: an evaluation using a large econometric model

Ray Barrell*, Karen Dury, Ian Hurst¹

*National Institute of Economic and Social Research, 2 Dean Trench Street, Smith Square,
London SW1P 3HE, UK*

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Abstract

We examine whether there is a case for coordinating monetary policy reactions across major economies. We undertake stochastic simulations on the National Institute's Global Econometric Model (NiGEM), to evaluate independently set monetary policy where domestic considerations remain the prime objective and we compare outcomes to a regime with a coordinated policy where domestic interest rates react to international conditions. We also demonstrate the asymptotic properties of the stochastic simulations and stress the robustness of our results. © 2002 Elsevier Science B.V. All rights reserved.

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1. Introduction

The rationale for policy coordination stems from the potential spillover effects that independent domestic policy can have on other countries. These spillover effects may result in adverse economic consequences for other nations. For

* Corresponding author. Tel.: +44-207-654-1925; fax: +44-207-654-1900.

E-mail address: rbarrell@niesr.ac.uk (R. Barrell).

¹ Prof. Ray Barrell is a Senior Research Fellow at NIESR, a visiting Professor at Imperial, Dr Karen Dury and Dr Ian Hurst are Senior Research Officers at NIESR.

example, a tightening of monetary policy in one country to reduce inflation will result in an appreciation of the exchange rate which can adversely affect the short-term inflation prospects for other countries, as imports become more expensive. The issue of spillover effects has become more prominent as the world economy becomes ever more integrated through the reduction of trade barriers, improvements in communication technology and increased cross-border movements of capital and labour. Independent monetary policy does not take into account the externalities imposed on other countries and internalising these in the national decision making process may be beneficial. Increased integration also results in a more rapid transmission of macroeconomic shocks across world economies. Events such as the Asian crisis in 1997 and 1998 and the effects it had across the world have highlighted the important role that international policy coordination may be able to play in helping to sustain world demand.

In this paper we aim to assess how different policy regimes affect national economies and also the effect they have on the global economy. Specifically, we seek to evaluate the stabilisation properties of independently set monetary policy rules, where stabilising domestic considerations are the only objective, against a *coordinated* policy rule where domestic interest rates are also set in relation to conditions outside the national border. We assume that each country reacts to international conditions to the same degree (i.e. the weights placed on the different objectives in the policy rule are equivalent across countries) and at the same time. The aim of this paper is to analyse simple policy rules and we do not use a game theoretic approach.

We apply stochastic simulations techniques to the National Institute's Global Econometric model (NiGEM), in order to evaluate the policy. It is common to undertake policy analyses using models of the economy and these normally involve applying a single shock, such as an increase in government spending, and evaluating its effects under a number of different policy responses. However, the overall performance of the rules will depend on their ability to stabilise the economy given a variety of shocks and in order to evaluate them in this context we have to utilise techniques such as stochastic simulations. We analyse in an appendix the effects of increasing the number of stochastic simulations and show that after approximately 100 stochastic simulations results settle down. Shocks are repeatedly applied to the model, producing a large number of possible out-turns and from this we can calculate the volatility of the economy. NiGEM is a large non-linear rational expectations model. There are full working models of all countries in the OECD, this including South Korea, and China and there are regional blocks for East Asia, Latin America, Africa, miscellaneous developing countries, and developing Europe. It is therefore an appropriate tool for answering detailed questions about international policy coordination.

The structure of the paper is as follows: Section 2 gives a brief discussion of the literature on policy coordination. Section 3 gives an overview of the procedure for stochastic simulations we use on NiGEM, including how shocks are constructed, how we apply them to the model and model solution. Section 4 sets out the policy environment used in this analysis and gives a brief description of the model itself.

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