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Monetary policy rules in the open economy: effects on welfare and business cycles[☆]

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Abstract

This paper computes welfare maximizing Taylor-style interest rate rules, in a business cycle model of a small open economy. The model assumes staggered price setting and shocks to domestic productivity, to the world interest rate, to world inflation, and to the uncovered interest rate parity condition. Optimized policy rules have a pronounced anti-inflation stance and entail significant nominal and real exchange rate volatility. The country responds to an increase in external volatility by holding more foreign assets. The policy rule affects the variance and the mean of consumption. The effect on the mean matters significantly for welfare. © 2002 Elsevier Science B.V. All rights reserved.

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1. Introduction

The effect of the monetary policy regime on welfare and business cycles is a key question in economics. This paper examines that question using a micro-based quantitative (calibrated) business cycle model of a small open economy in which monetary policy affects real activity because of staggered price setting.

Much effort has recently been devoted to develop dynamic general equilibrium models of open economies with monopolistic competition and sluggish prices (or wages)—see Lane (2001) for a survey of that work, often referred to as “New Open Economy Macroeconomics” (NOEM). An important strand of the NOEM literature uses highly stylized models (for which analytical results can be worked out) to determine welfare under alternative exchange rate regimes and to derive optimal monetary policy rules. The simplifying assumptions generally made in these models include, in particular: full international risk sharing, a stripped-down structure of shocks (mostly just one type of shock—productivity shocks), and the absence of physical capital.¹ Another strand of the literature develops quantitative business cycle models that can be used to study the key features of international macroeconomic data.²

The models studied in the first strand seem too stylized for empirical analysis, whereas computing welfare (and welfare maximizing policy rules) in quantitative business cycle models has, until now, not been practically feasible, given available numerical techniques. The paper here bridges these two approaches by determining welfare maximizing Taylor (1993a)-style interest rate rules, using a quantitative business cycle model. This is made possible by recent advances in solving dynamic models (Sims, 2000).

The model here extends the sticky-prices open economy model that Kollmann (2001a) calibrated to data for Japan, Germany and the U.K. It assumes imperfect international risk sharing due to incomplete international financial markets (transactions restricted to trade in bonds) and physical capital (like standard business cycle models). In the model, there are shocks to domestic productivity, to the world interest rate, to world inflation, and to the uncovered interest parity condition (“UIP shocks”). Monetary policy is described by a rule according to which the nominal interest rate is set as a function of the inflation rate and of GDP.

¹See, for example, Bacchetta and van Wincoop (2000), Benigno (2000, 2001), Clarida et al. (2001), Corsetti and Pesenti (2001), Devereux and Engel (2000), Galí and Monacelli (2000), Obstfeld and Rogoff (2000), Parrado and Velasco (2001), and Sutherland (2001).

²See, for example, Batini et al. (2001), Benigno (1999), Bergin (2001), Betts and Devereux (2001), Chari et al. (2000), Collard and Dellas (2002), Dedola and Leduc (2001), Duarte and Stockman (2001), Erceg and Levin (2001), Faia (2001), Ghironi and Rebucci (2001), Hairault et al. (2001), Kollmann (2001a, b; 2002), McCallum and Nelson (1999, 2000), Monacelli (1999), Schmitt-Grohé and Uribe (2001a), and Smets and Wouters (2000, 2001).

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