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Putting the ‘New Open Economy Macroeconomics’ to a test

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Abstract

This paper explores one way to extend the New Open Economy Macroeconomics in an empirical direction. Adapting maximum likelihood procedures, it estimates and tests an intertemporal small open economy model with monetary shocks and nominal rigidities. Results offer mixed support for a benchmark model where prices are assumed to be sticky in the currency of the buyer. Price stickiness seems to be an important element, as overall results are poorer for versions of the model in which prices either are flexible or are sticky in the currency of the producer. The benchmark model does a better job explaining some variables than others; in particular, it does a poor job explaining exchange rate movements. © 2002 Elsevier Science B.V. All rights reserved.

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1. Introduction

Recent years have witnessed a shift in international macroeconomic theory, with the development of a modeling approach that widely has become known as the ‘New Open Economy Macroeconomics.’ The unifying feature of this literature is the introduction of nominal rigidities into a dynamic general equilibrium model

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based on optimizing agents.¹ Typically, monopolistic competition is incorporated to permit the explicit analysis of price-setting decisions. This literature has tended to focus on shocks to money supply, and demonstrates how such shocks can explain fluctuations in the current account and exchange rate. Following the fundamental work of Obstfeld and Rogoff (1995), there has been a proliferation of models extending the theory in varied directions.²

There are a number of debates within this literature. One such debate regards the choice of currency in which prices are sticky. Betts and Devereux (1996, 2000) argue that assuming prices are sticky in the currency of the buyer (local currency pricing) improves the model's ability to explain exchange rate behavior. On the other hand, Obstfeld and Rogoff (2000) argue in favor of prices sticky in the currency of the seller (producer currency pricing). A second theoretical argument regards whether stickiness is better assumed for prices or for wages. While the literature generally has focused on sticky goods prices, Obstfeld and Rogoff (2000) demonstrate the usefulness of wage stickiness.³

Resolution of these theoretical debates is hampered by the fact that while the theoretical literature on New Open Economy Macroeconomics has grown rapidly, the empirical literature has lagged behind. While earlier generations of intertemporal international models were evaluated econometrically using present value tests, this approach cannot accommodate the more complex models of the recent generation.⁴ Without empirical testing, it is difficult to know which of the many versions considered in the literature is preferable. And more generally, it is impossible to say whether the overall approach of the New Open Economy Macroeconomics is sufficiently accurate as a characterization of reality, that it eventually could be used reliably for policy analysis.

The present paper explores one approach for addressing these issues. A structural general equilibrium model of a semi-small open economy is estimated by maximum likelihood, and the fit of the model is evaluated by comparing the likelihood to that of an unrestricted counterpart.⁵ In addition, alternative versions of the structural model are compared to each other in terms of their fit. The model

¹See Lane (2001) for a detailed survey of this literature.

²To name just a few, Kollmann (2001) considers a semi-small open economy version, Hau (2000) considers a version with nontraded goods, and Obstfeld and Rogoff (1998) and Devereux and Engel (1998) consider a reformulated version that permits a discussion of risk.

³Work by Erceg (1997) shows this assumption is important for matching persistence in output data.

⁴See Sheffrin and Woo, 1990; Ghosh, 1995; Bergin and Sheffrin, 2000, for example.

⁵The estimation methodology used here was developed in Leeper and Sims (1994) and extended in Kim (2000), to estimate closed-economy structural models of monetary policy. The present methodology differs in that it is applied also to an unrestricted counterpart that nests the structural model, so as to permit likelihood ratio tests. The methodology is also extended to consider first differences and to allow correlated shocks. Ireland (1997, 2001) also estimates parameters in a closed economy model by a related maximum likelihood procedure, but utilizes these for different purposes and tests. Ghironi (2000) estimates a New Open Economy model by nonlinear least squares at the single-equation level and by FIML system-wide regressions, but again the tests applied are quite different.

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