



# How well can the New Open Economy Macroeconomics explain the exchange rate and current account?

Paul R. Bergin<sup>a,b,\*</sup>

<sup>a</sup> Department of Economics, University of California, One Shields Avenue, Davis, CA 95616-8578, USA

<sup>b</sup> NBER, USA

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## Abstract

This paper advances the New Open Economy Macroeconomic literature in an empirical direction, estimating and testing a two-country model. Fit to U.S. and G7 data, the model performs moderately well for the exchange rate and current account. Results offer guidance for future theoretical work. Parameter estimates lend support to the assumption of local currency pricing. Estimates are found for key parameters commonly calibrated in the theoretical literature, such as the elasticity of substitution between home and foreign composite goods, and the response of a country's risk premium to the net foreign asset position. Results also indicate that deviations from interest rate parity are not closely related to monetary policy shocks, as recently hypothesized, but that these deviations are strongly related to shifts in the current account.  
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## 1. Introduction

International macroeconomists increasingly have come to rely upon a class of models known as New Open Economy Macroeconomics (NOEM), characterized by microeconomic foundations in combination with nominal rigidities. While theoretical work in the NOEM literature

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\* Department of Economics, University of California, Davis, One Shields Avenue, Davis, CA 95616-8578, USA. Tel.: +1 530 752 8398; fax: +1 530 752 9382.

E-mail address: [prbergin@ucdavis.edu](mailto:prbergin@ucdavis.edu)

has grown rapidly, there has been comparatively little work done on empirical dimensions.<sup>1</sup> This has not been for a lack of interest, as it generally is agreed that if we are to trust these models for policy analysis, we should have some degree of confidence that they accurately reflect basic features of the economy. However, the macroeconomic models developed recently are sufficiently complex that estimating and testing them econometrically calls for new tools. This paper advances the NOEM literature in an empirical direction, estimating and testing a two-country model by maximum likelihood methods.<sup>2</sup> This estimation provides several results that could be useful in guiding future theoretical work.

The empirical record for earlier classes of macroeconomic models is very mixed. This is especially true with regard to the exchange rate and the current account, key variables for open economy macroeconomics. The current account dynamics of many countries have proved quite difficult to explain in terms of macroeconomic models using present value tests.<sup>3</sup> And in a classic result, [Meese and Rogoff \(1983\)](#) showed that a range of macroeconomic models were unable to beat a random walk in forecasting the nominal exchange rate. Exchange rate movements have proved so problematic that some recent research has recommended abandoning the attempt of explaining them in terms of macroeconomic models (see [Flood and Rose, 1999](#)).

As a result, it is becoming a familiar practice in NOEM studies to introduce exchange rate movements in a manner other than macroeconomic fundamentals. This often is done by adding an extra term to the uncovered interest rate parity condition (UIP) in the macro model.<sup>4</sup> Such a term is motivated by well-documented empirical evidence of strong deviations from UIP,<sup>5</sup> and it can be interpreted in a number of different ways: [Obstfeld and Rogoff \(2002\)](#) derive such a term as a currency risk premium which is associated with monetary policy actions; [Mark and Wu \(1998\)](#) and [Jeanne and Rose \(2002\)](#) derive it as a reflection of noise traders and a distribution of exchange rate expectations.

In response to the controversy regarding macro models as explanations for the exchange rate and current account, this paper will pay special attention to these two variables. In particular, a maximum likelihood approach is adapted for estimating and evaluating a two-country NOEM model. The U.S. is used as one of these countries, and an aggregate of the remaining G7 is used as the other country. The model is fit to five data series: the exchange rate, current account, output growth, inflation, and interest rate deviations between the two countries. Data are quarterly from 1973:1 to 2000:4.

The model shares many features common in NOEM models, including monopolistically competitive firms, sluggish price setting, capital accumulation subject to adjustment costs, and monetary policy in the form of interest rate setting rules. The procedure will estimate

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<sup>1</sup> In open economy work, see [Bergin \(2003\)](#) and [Ghironi et al. \(2003\)](#); in closed economy work, see [Ireland \(1997, 2001\)](#), [Kim \(2000\)](#), [Lubik and Schorfheide \(2004\)](#), and [Smets and Wouters \(2002\)](#).

<sup>2</sup> The current exercise goes beyond the initial empirical work in [Bergin \(2003\)](#) in important ways. In general terms, the model here is better suited to current questions raised in the theoretical literature, which are discussed in detail later in the paper. First, the model develops a means to allow multiple types of price stickiness to coexist, and so it can estimate the share of each type. Second, it uses a more general form of household preferences, to see if the estimated parameters support common assumptions in the theoretical literature regarding these preferences. Third, it does not assume that interest rate parity holds. The exercise also is improved on technical grounds, by ensuring stationarity of the wealth distribution and by allowing monetary policy authorities to respond to economic conditions. A final distinction is that instead of a small open economy, a two-country environment is modeled here, which is better suited to analyzing issues of the U.S. economy.

<sup>3</sup> For example, see [Sheffrin and Woo \(1990\)](#), [Ghosh \(1995\)](#), and [Bergin and Sheffrin \(2000\)](#).

<sup>4</sup> For examples, see [McCallum and Nelson \(1999, 2000\)](#), [Kollmann \(2001, 2002\)](#), and [Jeanne and Rose \(2002\)](#).

<sup>5</sup> For a summary, see [Lewis \(1995\)](#).

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