



Can world real interest rates explain business cycles in a small open economy?[☆]

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Abstract

While the world real interest rate is potentially an important mechanism for transmitting international shocks to small open economies, much of the recent quantitative research that studies this mechanism concludes that it has little effect on output, investment, and net exports. We re-examine the importance of world real interest rate shocks using an approach that reverses the standard real business cycle methodology. We begin with a small open economy business cycle model. But, rather than specifying the stochastic processes for the shocks and then solving and simulating the model to evaluate how well these shocks explain business cycles, we use the model to back out the shocks that are consistent with the model's observable endogenous variables. Then we use variance decompositions to examine the importance of each shock. We apply this methodology to Canada and find that world real interest rate shocks can play an important role in explaining the cyclical variation in a small open economy. In particular,

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they can explain up to one-third of the fluctuations in output and more than half of the fluctuations in net exports and net foreign assets. © 2001 Elsevier Science B.V. All rights reserved.

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1. Introduction

In theory, the world real interest rate is an important mechanism by which foreign shocks are transmitted to small open economies. Changes in the world real interest rate can affect behavior along many margins: they affect households by generating intertemporal substitution, wealth, and portfolio allocation effects, and they affect firms by altering incentives for domestic investment. It is surprising, then, that much of the recent quantitative research on the effects of world real interest rates find that they are not important in explaining the dynamics of small open economies. This literature (see for example, Mendoza, 1991; Correia et al., 1992, 1995; Schmitt-Grohe, 1998) finds that world real interest rate shocks have small effects on output, consumption, and labor hours — and in some cases — even on investment, net exports, and net foreign assets.

In obtaining these findings, the authors mentioned above follow the standard international real business cycle approach. They build a dynamic stochastic model of a small open economy. Then they parameterize the model, including the processes for the stochastic shocks — one of which is the world real interest rate. Finally, they solve the model and/or conduct impulse responses to quantitatively evaluate the role of interest rate shocks.

There are, however, three difficulties with this standard approach. First, there is no consensus on a good proxy for the *ex ante* world real interest rate, which is, of course, unobservable.¹ A wide variety of nominal interest rates, price indices, and inflation expectations have been used to construct measures of world real interest rates. For example, the 3-month U.S. T-Bill rate, the rate of return on the S&P 500, the LIBOR rate, as well as a weighted average of several countries'

¹ Obstfeld and Rogoff (1995, p. 1781), in discussing tests of intertemporal current account models, note that 'a first difficulty is that it is not obvious what real interest rate to use to discount expected future output flows'. Indeed, studying interest rates in a real business cycle context is a relatively recent phenomenon. King et al., (1988, p. 226) do not 'study interest rates because of the well-known difficulties of obtaining measures of expected real interest rates'. Beaudry and Guay (1996) and van Wincoop (1993) are among the first to focus explicitly on comparing interest rates implied by real business cycle models to interest rates constructed from the data.

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