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Current account and real exchange rate dynamics in the G7 countries

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Abstract

The canonical predictions of intertemporal open-economy macro models are tested by a structural VAR analysis of G7 countries. The analysis is distinguished from the previous literature in that it adopts minimal assumptions for identification. Consistent with a large set of theoretical models, permanent shocks have large long-term effects on the real exchange rate, but relatively small effects on the current account; temporary shocks have large effects on the current account and exchange rate in the short run, but not on either variable in the long run. The signs of some impulse responses point toward models that differentiate tradables and nontradables.
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1. Introduction

The modeling of real exchange rate and of the current account determination has been, and remains, one of the most enduring and challenging topics of research in open-economy macroeconomics. However, until quite recently, the study of the two variables has proceeded on largely separate tracks. For instance, the typical examination of the real exchange rate relies upon either interest rate and purchasing power parity conditions (as in Edison and Pauls, 1993), or trends

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in productivity as in De Gregorio and Wolf (1994) or Chinn (1999). On the other hand, the econometric analysis of the current account has often been couched in terms of a composite good world (Sheffrin and Woo, 1990), at least when the framework is intertemporal in nature. Notable exceptions exist, as in Ahmed (1987), but by and large they constitute a minority.

This paper bridges this gap, by utilizing one of the canonical implications of the intertemporal approach to current account, namely that temporary shocks have no long-run effect on the real exchange rate. We also make the assumption that global shocks have no effects on either of these variables; only country-specific ones have an effect. These are two powerful identifying assumptions, and are consistent with a broad spectrum of open-macro models. Incorporating them, we can then test other short-run predictions of the models, including the economically interesting hypothesis that temporary shocks are a central factor inducing movements in the current account.

In terms of identification, we only require that temporary shocks have no long-run effect on the real exchange rate. This assumption is consistent not only with earlier intertemporal models of current account but also with recent intertemporal models of open economy. For instance, it is trivially consistent with the original model of Obstfeld and Rogoff (1995) because the real exchange rate is constant in their model by the assumption of purchasing power parity. In the models by Betts and Devereux (2000) and Chari et al. (2002), monetary shocks induce short-run fluctuations in the real exchange rate, via the pricing-to-market effect; however, such effects dissipate in the long run. The key identification assumption is consistent with a very broad class of open-macro models.

Although it is possible to impose different, and more numerous identifying restrictions involving more variables, we believe that a bivariate model can be very useful in validating several presumptions in open-economy macroeconomics, with a minimum of arbitrariness. Furthermore, other studies with more elaborate structural equations often fail to identify statistically significant impulse response functions.[1] The conclusions one can then reach are correspondingly less persuasive, despite offering evidence on more variables.

To anticipate our results, the estimated impulse response functions are much in line with the model's predictions. A permanent shock, which we interpret as a technology innovation, induces a permanent appreciation of the real exchange rate. There is some visible effect on the current account, although it is often statistically insignificant. A temporary shock, which we associate with a monetary innovation, induces a temporary depreciation of the real exchange rate and a concurrent improvement in the current account. Our results lend empirical support to the basic tenet of recent open-macro models, and thus lend empirical content to these models that have been adjudged to have superior micro-based foundations. In addition, the results highlight the limitations of existing models, thereby pointing out avenues for future research.

2. The identification strategy

We identify temporary and permanent shocks by resorting to long-run restrictions, as pioneered by Blanchard and Quah (1989). We first discuss the econometric specification, and then present an illustrative theoretical model that motivates our interpretation of the shocks so identified.

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[1] For instance, Prasad and Kumar (1997) allow for a larger set of shocks, and find that demand shocks have little independent effect on the exchange rate, except for the US, Canada and Italy. In Bergin (2003), the core structural restrictions are rejected for one out of the three countries examined. On the other hand, both approaches offer a richer set of results pertaining to multiple variables.