Terms of trade shocks and the balance of trade: there is a Harberger-Laursen-Metzler effect

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Abstract

According to the Harberger-Laursen-Metzler (HLM) effect an exogenous increase in the terms of trade faced by a small open economy leads to an improvement in that country's trade balance. In this paper structural vector autoregression techniques are used to investigate whether there is any systematic pattern in the responses of the trade balance to terms of trade shocks for a large number of small open economies. Two important results emerge. First there is strong support in the data for the existence of an HLM effect. Second the response of the trade balance and real income to a terms of trade shock implied by the structural vector autoregression model are strongly consistent with those reported by Mendoza (1995) from simulating a particular dynamic stochastic equilibrium model of a small open economy.
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1. Introduction

This paper presents an empirical analysis of the dynamic effects on the balance of trade of an exogenous change in a country's terms of trade. There exists a large theoretical literature on this issue that dates back to work by Harberger (1950) and Laursen and Metzler (1959). These authors showed that an exogenous rise (fall) in the terms of trade faced by a small open economy would lead to an improvement (deterioration) in the country's trade balance. This theoretical prediction has sub-

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sequently become known as the Harberger-Laursen-Metzler (HLM) effect. The HLM effect was initially derived using income-expenditure models. However in the 1980's perfect-foresight intertemporal models of the current account were developed and a large part of that literature was devoted to establishing the microeconomic foundations of the HLM effect, see Obstfeld (1982); Svensson and Razin (1983) and Persson and Svensson (1985). In subsequent work a number of authors, including Backus (1993); Backus et al. (1992, 1994) and Mendoza (1992, 1995), have moved away from the perfect-foresight framework and have analyzed the relationship between the terms of trade and the trade balance using stochastic dynamic general equilibrium models.

The literature based on the deterministic perfect-foresight framework suggests that there are two main factors that influence the relationship between the trade balance and the terms of trade: the persistence of terms of trade fluctuations and the relationship between the rate of time preference and future utility. However Backus (1993) argues that these findings depend upon the deterministic nature of these models. He finds that in a stochastic environment the degree of market completeness is a key element in determining the relationship between the terms of trade and the trade balance. If contingent-claims markets are complete then the co-movement between the terms of trade and the trade balance is independent of the dynamic properties of the terms of trade, instead depending on preference and technology parameters and the nature of the fundamental shocks hitting the economy. When markets are incomplete, Backus (1993) and Mendoza (1992) suggest that some of the results from the perfect-foresight models may carry-over into the stochastic environment.

The main objective of this paper is to provide some new evidence on whether there is any empirical support for the existence of a HLM effect[1]. Is there a positive relationship between the terms of trade and the trade balance for small open economies? While Backus et al. and Mendoza address this question, they use the standard (real) business cycle methodology of comparing simulated second moments from calibrated versions of their models with those from the actual data. In contrast the empirical methodology adopted in this paper is to use a structural vector autoregression (SVAR) model to summarize the first and second moments of the data. Empirical evidence of a HLM effect is obtained from the SVAR model by examining the estimated impulse response function (IRF) for the trade balance following a terms of trade shock. To aid with the interpretation of the results from the SVAR the estimated IRFs are compared with the theoretical IRFs obtained by Mendoza (1995) from simulating his dynamic stochastic general equilibrium model of a small open economy. It turns out that there is a strikingly consistency between the empirical IRFs obtained from the SVAR model and those produced by Mendoza's dynamic stochastic general equilibrium model. Both imply that a positive shock to the terms of trade leads to an initial improvement in the trade balance—there is evidence of

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[1] There have been surprisingly few econometric studies that directly focus on the relationship between the terms of trade and the trade balance. Papers that do present empirical evidence on the HLM effect include Deardorff and Stern (1978); Ostry and Reinhart (1992); Kent (1997) and Cashin and McDermott (1998).