

A small open economy model with transaction costs in foreign capital

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Abstract

In this paper we develop a stochastic dynamic general equilibrium model for a small open economy in the real business cycle modeling tradition. Household preferences depend on private and public consumption and leisure. Production technology depends on public capital. Government finances its investment, consumption and transfer payments by means of a proportional income tax rate. Households buy and sell foreign assets in an international capital market with transaction costs and also receive transfer payments from abroad. We calibrate the model for the Greek economy. The volatility, persistence, and co-movement properties of the business cycle component of the data generated by the model are broadly consistent with the actual behavior of the corresponding actual data. We use the model to investigate the response of major macroeconomic variables to temporary and permanent changes in government policy variables, foreign transfers, and the rate on return of foreign assets. We find that increasing government consumption and domestic transfers financed through distorting taxation lowers capital, labor (in most cases) and output while it increases foreign asset holdings, both in the short and the long run. Increasing government investment financed by distorting taxation eventually increases capital and output and decreases labor. Finally transfers from abroad decrease capital, labor and output, while they increase consumption. © 2000 Elsevier Science B.V. All rights reserved.

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1. Introduction

There are serious doubts whether simple Real Business Cycle (RBC) models can be helpful in explaining the behavior of economies other than that of the United States.¹ These doubts are justified on the presumption that most of these economies have features that are very difficult to capture in simple RBC setups (see, e.g., Prescott, 1986). Notably, it is argued that most economies other than that of the United States should be better modeled as ‘small open economies’ and, in several cases, with foreign capital market imperfections (see, e.g., Mendoza, 1991, p. 815). Further, these doubts are justified on the ground that, in most of these other economies, government intervention plays an important role (see, e.g., Gali, 1994). Furthermore, the overwhelming evidence that the labor market is the most differentiated institutional feature in the economies of the developed world should be also considered (see, e.g., Danthine and Donaldson, 1993, pp. 29–30; Fiorito and Kollintzas, 1994, pp. 259–260; Christodoulakis et al., 1995). Thus, with a few notable exceptions, the success of modeling the United States Economy via RBC models has not been accompanied by models for other countries.² This paper is a further attempt to remedy this omission.

In particular, in this paper we extend the standard RBC model (Prescott, 1986) to study the behavior of a small open economy that is characterized by impediments to its access to the foreign capital markets and a relatively large and distorting public sector. Our second objective is to calibrate this model on data for the Greek economy from 1960 to 1992 and look first at the descriptive power of the model and second to investigate the response of major macroeconomic variables to temporary and permanent changes in government policy variables. We are especially interested in studying the effects of foreign transfers, given that Greece has been the ‘beneficiary’ of a relatively big transfer program from the other EU countries since 1989 (the so-called ‘Delors I and II packages’).

¹ See, e.g., Kydland and Prescott (1982, 1988, 1991), Hansen (1985), Greenwood et al. (1988), King et al. (1988a,b, 1990), Benhabib et al. (1991), Christiano and Eichenbaum (1992), Backus et al. (1992), Baxter and King (1993), Baxter and Crucini (1993), McGrattan (1994), Backus et al. (1995) and McGrattan et al. (1997).

² RBC models for countries other than USA were analyzed by Mendoza (1991) for Canada; Bruno and Portier (1995) for France; Correia et al. (1995) for Portugal; Jonsson and Klein (1996) for Sweden; Holland and Scott (1996) for the U.K.

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