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A More Advanced Open Economy Model

12.1 Introduction

The open economy model deployed in Chapter 6 was very much simplified, with fixed exchange rates and no private transactions in foreign assets, while central banks held all their foreign exchange reserves in the form of gold. In this chapter we add a number of realistic features.¹ Private agents trade foreign assets. Official account imbalances are settled normally by transactions in dollar-denominated assets, with gold only playing a small role. International trade depends both on national output and relative prices, implying a distinction between nominal and real values.² A minimum of five prices are considered: export prices, import prices, the price of sales, a domestic sales price and a GDP deflator. Fixed and flexible exchange rate regimes will both

¹ Our methodology, which is based on stock and flow matrices which embody all transactions within and between two or three countries, was developed by Godley during the nineties. The first paper published was Godley (1999b) which formed the basis for Taylor (2004a). There are now some models with three countries. Lequain (2003) has built a model with two countries sharing a single central bank (Europe), operating with a fixed exchange rate regime with a third country (the USA), the money of which is the international currency. Godley and Lavoie (2006b) have built a similar model, but operating with a flexible exchange rate regime. Zhao (2006) built a model with the first two countries (China and the USA) tied up by a fixed exchange rate, while a third country (Europe) is on a flexible exchange rate regime with these other two countries. None of these models (apart from Godley (1999b)) deal explicitly with prices. We have benefited from Lequain’s formalization of a dollar exchange regime (an international monetary system based on the dollar rather than on gold), as can be seen in Godley and Lavoie (2003).

² This explains why a flexible exchange rate regime was not considered in Chapter 6. A flexible exchange rate regime implies changing price indices, and these could best be handled only after Chapter 8, where prices were first introduced. See Godley and Lavoie (2005–6) for a more heuristic but less formal attempt at handling a flexible exchange rate regime, without making use of prices.
be explored. But many simplifying assumptions remain. There are only two countries, there is no domestic or foreign investment in fixed or working capital,\(^3\) firms do not hold financial assets, there is no endogenous wage inflation, there are no commercial banks or credit money, and the treatment of expectations is rudimentary. Yet we already need nearly one hundred equations to close the model and for inclusion of further realistic features we would require several more.

The present model, like all our previous models, evolves through time, solving dynamically from one period to the next. There are two parties to each transaction, while every financial balance has a counterpart change in balance sheets, making the model complete in the vitally important sense that the \(n\)th equation is logically implied by the other \(n - 1\). This completeness provides some ostensive justification for the model by comparison with others which do not use a comprehensive accounting framework. Indeed the logical structure of the model and the need to find an equation for each of its one hundred odd variables brings some degree of inevitability to its overall properties, which might survive alternative specifications of key behavioural relationships, for instance the equations describing international trade or the consumption function.\(^4\)

As in other chapters, we start by setting out the model's balance sheet and the transactions-flow matrices. We then present sets of equations describing how individual components of the model work on various different assumptions about how it is closed (fixed versus floating exchange rates). Various simulation experiments are then conducted which illustrate how the systems as a whole work.

### 12.2 The two matrices

Table 12.1 sets out the balance sheets of two economies, which will be called 'the United States' and 'the United Kingdom', as a single complete system. As no physical capital exists apart from foreign exchange reserves held in the form of gold, every asset is a financial asset which has a counterpart liability. Household wealth in each country has three components: cash (in the domestic currency only), bills issued at home and bills issued abroad. We use notations that are similar to those of Chapter 6, but instead of a North and South terminology, we have recourse to a dollar (\$) and pound sterling denomination (£).

Bills issued by the government of one country can be held either by households or by the central bank of the other country. When describing bills,