3 The Heckscher–Ohlin Theory

The central question of foreign trade theory is how to determine the pattern of foreign trade: which commodities will be exported and imported and where. The answer provided is based on the work of two Swedish economists, Eli Filip Heckscher (1919) and Bertil Ohlin (1933). Their propositions were later formulated as the Heckscher–Ohlin Theorem (HO). Subsequently three additional theorems have been posited. These four propositions represent the core of the mainstream theory of foreign trade. Of these, two refer to comparisons between two countries (the HO theorem proper and the factor price equalization theorem). The other two deal with relationships within a single country (the Stolper–Samuelson and Rybczynski theorems). The latter two can dispense with the assumption of identical technology.

3.1 PRELIMINARIES

The main idea of the theory is very simple, although not all the derived consequences are: It is observed that (1) countries have different factor endowments and (2) industries use factors at different intensities. These two sets of differences make international trade profitable. Comparative advantage based on (1) is a quite trivial proposition. If the supply of fertile land is plentiful, the country will produce and export agricultural products. The consequences of observation (2) are not so straightforward.

The theory is next constrained by a number of assumptions such as (1) the absence of factor intensity reversals; (2) the absence of demand reversals (a strong preference for a good in country A, although it is more expensive than in country B); (3) same constant returns technology with convex isoquants; (4) similar and unique community preferences; (5) perfect competition. Given the constraints, two conclusions follow: (a) the country will export that commodity whose production uses, relatively intensively, a relatively
plentiful factor of production (‘plentiful’ being the same as ‘cheap’) and (b) although factors are not mobile internationally, free trade will equalize commodity prices and so also factor prices.

Next, assumption (1) implies that industries are equally flexible. Since they are not, the assumption will almost certainly be vitiated (see Fig. 4.1). Technologies are different. Competition is not perfect. Thus, claim (a) will certainly be refuted, and so will (b), which may additionally be invalidated by complete specialization and trade impediments (this simplified description of HO theory relies on Hefferman and Sinclair, 1990, pp. 25–38). Consequently, we should expect to find that HO theory has no predictive value.

We will proceed to analyse HO theory in more detail. After that, we shall deduce a number of more fundamental theoretical objections.

Perhaps the essential idea underlying HO theorizing consists in the unique determination of commodity prices by factor prices – given a technology which determines quantities – and factor prices depend on factor proportions. If it is assumed that production functions are identical in the two countries compared, then the only difference between them is to be found in factor endowments. If constant returns prevail, then marginal rates of substitution – determining prices – will depend only on the proportions of the factors employed. The basic relations are derived in the following way.

Let two goods \((X, Y)\) be produced by means of two factors \((L, K)\). Let \(X\) be labour-intensive, that is, in the production of \(X\) to the same factor price ratio \(w/r\) corresponds higher factor ratio \(L/K\) than in the production of \(Y\). The relevant functions are assumed to be monotonic (it will later be shown that they need not be: see Section 4.2) and therefore all variables are uniquely determined. The factor price ratio is positively related to the product price ratio, \(w/r = f(p_x/p_y)\), and inversely related to factor proportions, \(w/r = g(L/K)\). In this way all important factor proportions \((L/K)\) uniquely determine relative factor \((w/r)\) and commodity \((p_x/p_y)\) prices. The functional relationships are shown in Figure 3.1 (Chacholiades, p. 246).

Fig. 3.1 is the basis for all the four theorems – Heckscher–Ohlin, Stolper–Samuelson, factor price equalization and Rybczynski – underlying the neoclassical theory of international trade. The first theorem determines comparative advantage (exports of commodities). The other three follow directly from Fig. 3.1: there are three monotonically interrelated variables – \(p_x/p_y, w/r, L/K\) – and when one is fixed, the other two are uniquely determined.