6
Choice of Technique

6.1 Introduction

In Chapters 2–5, I assumed that there was only one process available to each sector. Consequently, there was only one technique available to the economy as a whole. I now relax this assumption in the simplest possible way by assuming that just one sector, say the second, has two processes, denoted by (IIα) and (IIβ). With the first sector’s process denoted by (I), there are two techniques of production:

(α) consists of (I) and (IIα); and

(β) consists of (I) and (IIβ).

For this simple model, choice of technique is equivalent to choice of process by the second industry. I devote sections 6.2–6.4 to the analysis of this model. Then, in section 6.5, I extend the model by permitting the second sector to have an arbitrary finite number of processes. A more substantial generalisation is made in section 6.6, where both sectors can have an arbitrary finite number of processes. In the two final sections, I draw some implications from the theory expounded in this chapter.

It is clearly necessary to state at the outset the criterion to be employed in choosing between techniques. Following Sraffa (PCMC, sections 92 and 93), I use the criterion of cost-minimisation. To illustrate its application, suppose that (α) is initially employed at a feasible rate of profit $\bar{\tau} (< R^a$, the maximum rate of profit of technique (α)), with corresponding real wage, $w^a(\bar{\tau})$, and prices $p^a_1(\bar{\tau}) = 1$, $p^a_2(\bar{\tau})$ (the first commodity being numeraire as in Chapter 4). Suppose that process (IIβ) becomes available to the second sector. A capitalist in that sector would
evaluate the process at the prevailing price system. There are three possibilities:

(i) (IIβ) is more expensive than (IIα), in which case there is no justification for switching to the new process;

(ii) (IIβ) reduces costs, in which case the capitalist switches his process of production because he can obtain a supernormal rate of profit, at least in the short run;

(iii) (IIβ) breaks even, so that it will be a matter of indifference to the capitalist whether he uses (IIα) or (IIβ).

I now examine each of these possibilities in more detail. In case (i), the capitalist has no reason to adopt process (IIβ). Technique (α) thus appears to be a cost-minimising technique at \( r, w^\alpha(\bar{r}), p^\alpha_1(\bar{r}) \) and \( p^\alpha_2(\bar{r}) \). In case (ii), process (IIβ) reduces the second sector's costs at the prevailing price system: thus (α) cannot be a cost-minimising technique at the given rate of profit, prices and wage rate. Suppose that the switch from (IIα) to (IIβ) is effected. Assume, further, that (β)'s price system is established at the same rate of profit, \( \bar{r} \). Now, the capitalist in the second sector evaluates (IIα) at the new price system \( \bar{r}, w^\beta(\bar{r}), p^\beta_1(\bar{r}) = 1 \) and \( p^\beta_2(\bar{r}) \) – to see if it is more profitable than (IIβ). Clearly, the same three possibilities arise when (IIα) is evaluated at (β)'s price system as when (IIβ) is evaluated at (α)'s price system: that is, (IIα) is cheaper than, more expensive than or as cheap as (IIβ). If (IIα) is cheaper than (IIβ) at (β)'s prices, the capitalist would be justified in switching back to the original process: in such a situation, there would be continual switching between (IIα) and (IIβ), (that is, techniques (α) and (β)) implying that choice of technique is indeterminate. On the other hand, if (IIα) is more expensive than (IIβ) at (β)'s prices, there would be no justification in switching back to (IIα): thus, (β) appears to be a cost-minimising technique at \( \bar{r}, w^\beta(\bar{r}), p^\beta_1(\bar{r}) \) and \( p^\beta_2(\bar{r}) \). If (IIα) breaks even at (β)'s price system, the capitalist is indifferent between employing (IIα) and (IIβ); however, I supposed that (IIβ) reduced costs at (α)'s price system, implying that (IIβ) was preferred to (IIα). This creates another difficulty for the theory of choice of technique, as there appears to be indeterminacy. Having exhausted the possibilities that can arise with (i) and (ii), consider finally (iii). If (IIβ) breaks even at (α)'s price system, a capitalist in the second sector is