Part III Applications and Prospects

10 MATHEMATICAL METHODS AND PLANNING

In this chapter we are no longer concerned to employ mathematical techniques merely to illuminate certain aspects of the theory of planning; instead, we shall be discussing those techniques and models which have actually been used in planning practice in one or other of the countries examined in this book. Accordingly the first three sections of the chapter are each devoted to the models applied in a single country; section 10.1 covers the Soviet Union, section 10.2 Hungary, and section 10.3 France. In each case one can enquire how far the introduction of mathematical methods into the planning process can actually lead to real improvements in the quality of planning and economic management. This is the subject of section 10.4, which concludes the chapter.

10.1 The Soviet Union
In the 1920s Soviet economists were path-breakers in developing mathematical models with the potential for application in economic planning. Some Soviet work in the early 1920s on balances of intersectoral flows within the economy was an important influence on Wassily Leontief's subsequent development of input—output methods. (Leontief left the Soviet Union in 1925; his review of the balance of the economy in 1923—4, prepared by the Soviet statistical agency, appeared in a Soviet journal in 1925 (Leontief, 1977, pp. 3—9).) Moreover, the Soviet economist Fel'dman developed in the mid-1920s a remarkable two-sector model of economic growth which is a precursor of much of the more recent mathematical growth theory (see Jones, 1975, pp. 113—22). These are merely the most distinguished examples of a large body of similar work.

However, the mathematical formulations did not find practical application during the Soviet industrialisation drive of the first five-year plans. Instead, they were rejected as empty formalisms which imposed a straitjacket on the virtually unlimited potential of the economy under socialism; as a result, mathematical studies in economics went into abeyance. The period saw instead the development of the material-balance system, described in Chapter 2, which still plays an important role in planning practice in the Soviet Union.

In the mid-1950s, however, mathematical economics revived in the Soviet Union, the revival being led by economists active in the 1920s (see Ellman, 1973). The growing complexity of the economy and the increase in information flows imposed a greater strain on the existing management system, and develop-