

point of view of applied econometrics. Duality aspects are particularly emphasized. Section 2 covers what I shall call 'naive' demand analysis, the estimation and testing, largely on aggregate time series data, of 'complete' systems of demand equations linking quantities demanded to total expenditure and prices. The label "naive" implies simplicity neither in theory nor in econometric technique. Instead, the adjective refers to the belief that, by itself, the simple, static, neoclassical model of the individual consumer could (or should) yield an adequate description of aggregate time-series data. Section 3 is concerned with microeconomic or cross-section analysis including the estimation of Engel curves, the treatment of demographic variables, and the particular econometric problems which arise in such contexts. There is also a brief discussion of the econometric issues that arise when consumers face non-linear budget constraints. Sections 4 and 5 discuss two theoretical topics of considerable empirical importance, separability and aggregation. The former provides the analysis underpinning econometric analysis of subsystems on the one hand and of aggregates, or supersystems, on the other. The latter provides what justification there is for grouping over different consumers. Econometric analysis of demand under conditions of rationing or quantity constraints is discussed in Section 6. Section 7 provides a brief overview of three important topics which, for reasons of space, cannot be covered in depth, namely, intertemporal demand analysis, including the analysis of the consumption function and of durable goods, the choice over qualities, and the links between demand analysis and welfare economics, particularly as concerns the measurement of consumer surplus, cost-of-living index numbers and the costs of children. Many other topics are inevitably omitted or dealt with less fully than is desirable; some of these are covered in earlier surveys by Goldberger (1967), Brown and Deaton (1972) and Barten (1977).

## 1. Utility and the specification of demand

### *1.1. Assumptions for empirical analysis*

As is conventional, I begin with the specification of preferences. The relationship "is at least as good as", written  $\succsim$ , is assumed to be reflexive, complete, transitive and continuous. If so, it may be represented by a utility function,  $v(q)$  say, defined over commodity vector  $q$  with the property that the statement  $q^A \succsim q^B$  for vectors  $q^A$  and  $q^B$  is equivalent to the statement  $v(q^A) \geq v(q^B)$ . Clearly, for most purposes, it is more convenient to work with a utility function than with a preference ordering. There seem few prior empirical grounds for objecting to reflexivity, completeness, transitivity or continuity, nor indeed to the assumption that  $v(q)$  is monotone increasing in  $q$ . Again, for empirical work, there is little