12 Two Applications of Characteristics Theory
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1 INTRODUCTION

That there is at least some analogy between models of spatial and of monopolistic competition, or even that they are, in some fundamental sense, 'the same', has been commonly thought for many years. It was first suggested (to our knowledge) by Hotelling (1929); Chamberlin (see particularly (1957), pp.7, 23–4, 47–51, 124–9) appears to have regarded them as essentially the same; and many subsequent writers have presumed that a result obtained in one model would have a natural, if unspecified, twin in the other model. The purpose of the present paper is to investigate this presumption.

Although in the last paragraph we referred only to Chamberlin, both he and Robinson were, of course, contemporaneous and independent founders of the theories of 'monopolistic' and 'imperfect' competition. We have used Chamberlinian terminology here largely for convenience and, in part, because he did attempt, albeit with limited success, to 'go behind' the demand curve to consider such matters as product diversity. Robinson, in presenting a geometrically more elegant version of the model, took as a primitive of her analysis a demand curve for a given product constructed, by assumption, to have allowed for all reactions by rivals. (See Robinson (1933) p.21; and for further discussion of the two models, Archibald, 1987.)

We note that there are currently at least two quite different approaches to modelling monopolistic competition. One approach (see, e.g., Dixit and Stiglitz, 1977; Hart, 1979; Spence, 1976) either follows Triffin (1940) in assuming that 'there is nothing between the firm and the whole economy' or relies on cross-elasticities of demand for the usual taxonomy of markets. In these models the set of possible goods is either finite or countably infinite. The goods have no descriptions: they are 'just goods', and there is no well-defined distance between them. A representative consumer buys some of all of them.

This sort of model is in sharp contrast to the usual spatial model in which

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a 'market area' is accepted as a primitive which justifies partial equilibrium analysis. In these models the 'addresses' of producers and consumers are usually well defined, as is distance. The space (set of possible addresses) is a continuum. The consumer buys from the nearest store or producer, certainly not from all.

The second approach to monopolistic competition defines preferences on the characteristics of goods rather than goods themselves. Now the space of possible goods is a continuum, and goods, at least, have well-defined addresses. It is assumed that the number of goods exceeds the number of characteristics; and the consumer, of course, buys no more goods than the number of characteristics he wishes to consume. That models in which 'addresses' matter (and there is some increasingness of returns) form an important family, distinct from spaceless value-theory, was argued in Eaton and Lipsey (1977). Archibald, Eaton and Lipsey (1986) (henceforth AEL) made a case for the adoption of address models and discussed some implications (e.g. the possibility of localized competition).

The case for employing these models may be put briefly. There may be goods (and we believe that there are many) such that the name or label of the good does not convey sufficient information: the consumer's choice depends on some vector of 'descriptors', \( D \), say (which we call the address of the good). That is, before choosing, the consumer may need to know, e.g., the location of a good, or its vitamin content, or its protein content, or all three. We may make a simple conceptual experiment. Let the consumer be at a utility-maximizing equilibrium consuming a positive quantity of the good described by \( D \). We now vary one element of \( D \) by a small amount \( \epsilon \). We ask if the consumer's utility level can be restored by changing the price of the good by some small amount \( \delta \). If it cannot, the two goods, \( D \) and what we may describe as \( D + \epsilon \), are somehow unrelated. Our approach is relevant if, corresponding to a small neighborhood round \( D \), there is a small neighborhood round its price such that there are pairs of points in the two neighborhoods at which maximized utility is constant. If this is true, it seems natural to add the requirement that, as \( \epsilon \) goes to zero, so does \( \delta \) (continuity).

That this '\( \epsilon-\delta \)' construction holds in spatial models is, of course, properly taken for granted in the spatial literature. If there is to be any close relationship between spatial models and any model of monopolistic competition it obviously must hold in that model.

In this chapter we shall argue, not that spatial models and address models of monopolistic competition are 'the same', for indeed they are not, but that they can both be seen as applications, or particular examples, of the characteristics approach. (We might talk of 'attributes', 'descriptors', or 'address models', but it seems convenient to standardize on Lancaster's term 'characteristics'.) Using this approach, it is possible to be quite precise about both similarities and differences. Similarities are most easily seen