Business practices often take advantage of the heterogeneity in the consumer population: product lines and price schedules are especially designed to discriminate among consumers on the basis of their taste and/or income diversity. However, because there are many interacting forces, it is not easy to identify the process through which a particular product mix and price schedule emerges on the market.

First, there are cost barriers to brand proliferation: the existence of substantial overhead costs may drastically reduce the ability of firms to adapt their product lines to the spectrum of consumer tastes and incomes. The cost advantage from concentrating productive effort on a restricted number of products may outweigh the increased potential for surplus extraction accruing from increased product variety.

Second, the nature of the product mix also depends on the type of heterogeneity observed in the consumer population. The potential customers of a product may have different opinions about the ranking of its variants, as in the case of the location of firms in geographical space. This means that each variety has its own circle of customers, and a wide range of different substitutes can survive in the market because each of them combines the attributes of the product in a fashion suitable to a particular class of consumers ('horizontal' product differentiation). Alternatively, the potential customers of a product may have a unanimous ranking of the possible substitutes, as in the case of a luxury or standard variant of the product. Then the range of substitutes surviving on the market must rather reflect income differences or different intensity of preferences in the consumer population ('vertical' product differentiation).

Third, the possibility of discriminating in prices and/or product quality between different consumers heavily relies on the ability of firms to identify their income or taste characteristics. In many cases sellers face an 'imper-sonal' market and, even if they know the distribution of consumer characteristics, they cannot explicitly distinguish one consumer from

* The authors thank S. Anderson for his comments on a first draft.
another. This may well prevent the firms from exploiting full price discrimination among consumers with varying willingness to pay.

Last, but not least, the observed market product mix and price schedule also reflects the competitive context in which firms operate. The possibility for each firm to attract customers around the variants of the product it offers crucially depends on the product constellations and price schedules chosen by its competitors. Accordingly, the way prices are settled and products are designed to sort different consumers among differentiated goods should be widely explained by the underlying competitive process.

Several recent studies have paved the way for better insights into the understanding of the problems raised above. Mussa and Rosen (1978) pioneered the study of the optimal product mix and pricing policy under vertical differentiation, for a monopolist facing a population of consumers of varying intensities of preferences. They assume a continuous quality differentiated spectrum of products with marginal costs increasing in quality, and constant in output for any given quality. They also assume that the monopolist cannot distinguish among buyers, and thereby cannot extract the whole surplus by fully discriminating among them. A similar analysis was conducted by Gabszewicz, Shaked, Sutton and Thisse (1986) when the spectrum of goods is finite and the heterogeneity of consumers follows from income differences. The extension of this approach to duopoly has been recently explored by Champsaur and Rochet (1985).

All the above studies assume that there is no extra set-up cost for the firms to adapt their product lines to consumers' characteristics: product variety may possibly cover the whole spectrum of tastes and incomes. At the other extreme, one assumes that overhead costs are so high that each firm must specialize in the production of a single variant only. Then product competition among firms is drastically weakened since each of them can choose at most a single point in the space of attributes, and not a whole spectrum of variants. Price and product competition under such circumstances was first analyzed by Hotelling (1929) in his pathbreaking contribution on spatial competition. He introduced the prototype of horizontal product differentiation, which constitutes the location model; in this model, each firm charges the same mill price to all consumers, who also bear transportation costs. Hotelling's contribution is at the root of modern theories of monopolistic competition, such as Lancaster (1979), Salop (1979) and Archibald, Eaton and Lipsey (1986). The extension of Hotelling's analysis to the case where firms are allowed to discriminate between consumers according to their location has been initially conducted by Hoover (1937), and recently pursued by MacLeod, Norman and Thisse (1985) and Lederer and Hurter (1986).

Under vertical differentiation, the study of price and product competition between firms each offering a single variant of the product at uniform prices was first introduced by the authors (Gabszewicz and Thisse, 1979;