Spatial Competition under Constrained Product Selection

Ming-hung Weng
National Cheng Kung University, Taiwan

Abstract

When one compares different types of retailers, like convenience stores (such as 7-Elevens) and wholesalers, several salient contrasts may be easily observed. First, speaking of the convenience stores only, on the one hand, there are several same commodities commonly sold in most stores, but on the other hand, there are some products, sold in different stores under different brands, varieties, or qualities.[1] The consumers understand that there are several goods they can obtain everywhere, but they need to go to specific stores to get some specific products. Second, despite their occasional sales, the price for the same commodity is always lower in the wholesale branches than in the convenience stores. Moreover, the convenience stores are often seen next to each other, but one would be surprised to see a wholesaler outlet right next to its competitors. While many investigations have succeeded in explaining either the maximum or the minimum differentiation of the firms' product selections, none is able to capture the above features together in a model and to provide some explanations. Therefore, this research will use a modified spatial model to explore the similarities and differences between convenience stores (which are smaller retailers) and wholesalers (which are big retailers) so that one can use it to justify the above scenarios.

There are several issues involved in above story that I will try to use this model to answer or to investigate. The first one is regarding the capacities of retailers to display their commodities. Other things being equal,[2] larger display spaces certainly will bring higher revenue and profit. However, retailers are always restricted in their capacities and spaces, especially the convenience stores which usually reside at the metropolitan area and are charged with relative high rents. While most literature in the business/marketing area focuses on how to successfully manage their capacities to boost the profits of individual retailers (Anderson 1979, Corstjens and Doyle 1981), and many economic researchers devote themselves to analyze the variety/quality choices (Canoy and Peitz 1997, Economides 1993, Lambertini 2001, Peng and Tabuchi 2007) or location patterns (Brenner 2005, Martinez-Giralt and Neven 1988, Pal and Sarkar 2002, Peng and Tabuchi 2007, Tabuchi 2009) of firms, none is concerned at the aggregate impact of the larger display space/capacity on the

[1] Though this difference may also happen between different wholesalers, it is still more obvious between different convenience stores since the latter sells fewer commodities.
[2] Here it particularly means that its opponent has fixed its capacity while the retailer changes its capacity.

industry's overall performance, and how that may have affected retailers' location choices. By fixing the number of products available for retailers to sell, my argument is that: with the total market size to be unchanged, the more products the retailers can sell in the shops, the more severe the competition will be, the lower the prices will drop, and the lower the profit level of each retailer will earn. Certainly this effect is also expected to alter the firms' location decisions when they foresee the fierce price war ahead.

The second question explored here is regarding the switch between the maximum differentiation and minimum differentiation especially on the spatial characteristic. It is understood that the firms have incentives to differentiate from each other so that the price war could be less intense. However, the firms also have incentives to move closer to the middle of any characteristic so that it can capture a greater market share. The results of existing works present only either end of the differentiation when each firm can set up a shop only (Ansari *et al.* 1998, Economides 1986, Economides 1989, Lambertini 2001, Netz and Taylor 2002, Neven and Thisse 1990). I will examine if the product selection constraints will relax such maximal differentiation.