When a Wal-Mart supercenter comes to town, what happens to the grocery stores that are already there?

Paul Ellickson, assistant professor of economics and of marketing, who studies the economics of retail competition, researched the question with Paul Grieco of Pennsylvania State University, in “Density versus Differentiation: The Impact of Wal-Mart on the Grocery Industry.”

Wal-Mart has had a well-documented effect on the discount general merchandise industry in the United States. The addition of a Wal-Mart store to a community draws customers away from locally owned hardware stores, home and garden centers, and convenience stores.

Ellickson and Grieco took the research to the next level. They wanted to explore the retailer’s impact specifically on competing grocery stores. What effect do its supercenters, which contain full grocery departments, have on food retail chains, franchises, and mom-and-pop shops that operate in the same area?

The authors used a detailed panel data set spanning 1994 to 2006 to estimate Wal-Mart’s impact on the revenues, employment numbers, and square footage of competing grocery stores. They found that the retail giant’s presence is felt mostly within a tight, three-mile radius of its location.

“Wal-Mart’s entry does not negatively affect revenue or employment at grocery stores more than three miles away from the Wal-Mart site,” they write. “This seems to indicate that Wal-Mart’s strategy of exploiting density economics by convincing consumers to travel farther for goods has not translated from dry goods to groceries.”

Consumer tastes are more individualized when it comes to the wide array of choices available in food shopping. This works against Wal-Mart’s traditional business model, which emphasizes standardization.

“In particular, if consumer preferences are more discerning for grocery products than dry goods, it may be difficult to gather a sufficient mass of grocery shoppers under a single roof to generate the requisite scale,” Ellickson says.

In addition, consumers who are willing to travel 20 miles to buy a television may be unwilling to repeatedly make the same trip to purchase groceries, the authors write.

Even within the three-mile radius in which Wal-Mart does have an impact, not all of its grocery competitors are adversely affected. Growing companies that are entering or expanding in the same market are essentially untouched. These can include retailers that target more affluent consumers, such as Wegmans Food Markets, and discount, private-label food retailers, such as Aldi and Save-a-Lot, as well as dollar stores.

“There’s a segment of consumers that actually finds Wal-Mart expensive,” Ellickson says.

On the other hand, outlets of large, similar chains and stores that are already on the decline are damaged by Wal-Mart’s entry. An exception is franchise operations, whose local owners can tailor merchandise selection to local demographics, Ellickson says.

“Wal-Mart appears to intensify declines in sales due to contraction and exit,” the paper states. “Its effect falls mostly on large chains, which target the same consumer types as Wal-Mart supercenters.”

Though Wal-Mart has not reshaped the economic geography of grocery retailing as it has for dry goods, it has other reasons besides density motives to be part of the grocery segment, Ellickson says. For one, the presence of a grocery section in the store can bring in more customers—or entice regular customers to visit more often—increasing the chance that they will purchase high-margin offerings in other parts of the store.

In addition, the authors write, “even though Wal-Mart may not draw customers from far afield, it may still be profitable when operating grocery outlets within a smaller catchment area.”

Wal-Mart has started opening small stores, which it calls neighborhood markets, that specialize in groceries. The retailer’s interest in smaller grocery stores, the authors write, indicates that “the company which built itself on a density strategy believes smaller grocery stores remain profitable despite the scale of supercenters.”

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