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Households' Choices Among Fluid Milk Products: What Happens When Income and Prices Change?

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What Is the Issue?

Many households experienced a decrease in income during the 2007-2009 recession. At the same time, food prices rose. In 2008, the median U.S. household made 3.6 percent less money after adjustment for inflation than it did in 2007, while prices for fluid milk at retail food stores rose 11.6 percent in 2007 and 6 percent in 2008. Households have several ways to economize on their retail food purchases when prices increase or their incomes fall. More information on how households economize on their purchases may help policymakers better understand the relationship of consumer choices to changes in the economy and to a host of demographic variables.

What Did the Study Find?

Households experiencing an income decrease may look for ways to stretch their food dollar, such as seeking out promotions or shopping at less expensive stores like supercenters. This study focuses on the type of fluid milk a household buys. Fluid milk that is higher fat, organic, or packaged in small containers is more expensive per gallon than milk that is lower fat, conventionally produced, or packaged in large containers. Households typically switch to less expensive products when their incomes decrease. For instance, households save money by choosing fluid milk products with a lower fat content or by switching from organic to conventional milk.

Households with an increase in income, however, do not always buy more expensive products:

A 10-percent increase in household income:

- Raises the probability of purchasing organic milk from 3 to 3.7 percent;
- Raises the probability of buying low-fat milk (defined as “skim and less than 2 percent fat”) from 47 to 48.6 percent;
- Lowers the probability of purchasing whole milk (at least 3.25 percent fat) from 17 to 15.9 percent;
- Lowers the probability of choosing reduced-fat milk (between 2 and 3.25 percent fat) from 36 to 35.5 percent; and
- Has only a small effect on households' choice among products in different container sizes.

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Changes in retail prices also affect a household's choice among different milk products:

- A small (1-percent) increase in prices for all milk products has only a small effect on the division of sales among products with different levels of fat content and in different package sizes, as well as division of sales between milk produced using conventional and organic methods.
- A large (\$1 per gallon or approximately 25-percent) increase in retail milk prices is large enough to curb growth in sales of organic milk.
- A large increase in prices for all milk products also increases the probability—from 47 to 53.9 percent—of purchasing low-fat milk.
- Even large price shocks have little effect on households' choice between package sizes. The probability of purchasing milk in a container smaller than 1 gallon decreases from 42 to 40.2 percent.

Overall, when substantial price and income shocks occur, households switch from more expensive to less expensive products. This practice may help households afford a healthful diet when budgets get tight. However, many lower income Americans already (before income reductions or general price increases) purchase less expensive items; likewise, lower income households are less likely to choose organic milk. This lack of flexibility may render households already on a tight budget more exposed to the effects of price volatility.

In general, demand for organic milk is more sensitive than demand for conventional milk to swings in income and food prices. Past research suggests that many buyers of organic milk question conventional production methods and believe organic products to be safer and/or more healthful. Nonetheless, during the recent recession, when incomes declined and prices rose, growth in organic milk sales stalled.

How Was the Study Conducted?

We investigate a household's choice among retail fluid milk products categorized along three dimensions: three levels of fat content, two levels of package size, and organic versus conventional methods of production. Categorizing retail products along all 3 dimensions yields 12 specific products (e.g., low-fat organic milk in a 1-gallon container). A unique multinomial logit choice model is applied to account for past household purchase behavior, price, promotional deal, and seasonality. It also accounts for household demographic variables such as income and number of household members, as well as the age, employment status, education, and ethnicity of the head of household and whether or not the home was owned. We use 2007-2008 Nielsen Homescan data to estimate the choice model. Finally, using model results for each of the 12 specific products, we simulate how shocks to prices, income, and other demand determinants would affect the probability that a household buys lower fat versus higher fat fluid milk, conventional or organic products, and fluid milk packaged in a 1-gallon or smaller container.