

## Conclusions

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Since 1989, Federal law has required that WIC State agencies enter into cost-containment contracts for the purchase of infant formula used in WIC. Typically, WIC State agencies obtain significant discounts in the form of rebates from the manufacturers for each can of infant formula purchased by WIC participants. In exchange for rebates, a manufacturer is given the exclusive right to provide its products to WIC participants in the State.

Concerned about the rise in the price of infant formula since the WIC rebate program began, Congress in 2000 directed ERS to report on the several aspects of the infant formula market. While the resulting *Report to Congress* answered the specific questions posed by Congress, this report extends the original analyses and provides a more indepth examination of the effects of WIC and its infant formula rebate program on the retail prices of infant formula. Although wholesale prices can indirectly affect retail prices, this report focused on the pricing behavior of retailers for a given set of wholesale prices.<sup>1</sup> Specifically, this report provides answers to the following questions:

*What are the recent trends in the infant formula market?*

Since 1997, the volume of infant formula sold in the United States has remained relatively stable at about 27-28 billion ounces (reconstituted) per year. Over three-quarters of all infant formula sold in 2000 was milk-based, while soy-based infant formula accounted for another 20 percent. While most infant formula is sold in supermarkets (69 percent in 2000), the proportion of infant formula sold by mass merchandisers (at prices typically below those in supermarkets) has increased slightly in recent years, accounting for about 28 percent of total volume sold. One of the more dramatic trends in the infant formula market in recent years has been the increase of formula sold in powdered form (generally, the least expensive form of formula)—from 44 percent of all formula sold in 1994 to 62 percent in 2000. The volume of powdered infant formula that is sold in large—24 or more ounces—containers (at lower per unit prices) is also on the rise, increasing from only 4 percent in 1994 to 19 percent in 2000. Specialized formula (which is generally more expensive than standard formula) has made significant inroads in the market in recent years and accounted for 8 percent of all formula sold in 2000. Total dollars sales of infant formula has increased in recent years, much of it attributed to the increased sales of specialized formula. The average retail price of infant formula continues to increase over time, across the different physical forms, product bases, and outlets.

*Has the number of infant formula suppliers decreased since WIC's infant formula rebate program began?*

In both 1987, before WIC's infant formula rebate programs were widely implemented, and in 2000, three manufacturers accounted for about 99 percent of the infant formula market. Furthermore, in both years, two companies—Ross and Mead Johnson—accounted for between 87 percent and 90 percent of all infant formula sold. However, the third-largest producer in 2000—Carnation—entered the U.S. market after the rebate program began. Carnation continues to make inroads into the infant formula market; they accounted for 12 percent of all formula sold in 2000. In addition, a fourth company—PBM Products—entered the infant formula market in the late 1990s. Starting in 1997, PBM began marketing formula produced by Wyeth (which withdrew from the U.S. retail market in 1996). Thus, there is no

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<sup>1</sup> To the extent that WIC and the rebate program affect wholesale prices in addition to the retail markup, this report's analysis does not capture all effects of WIC and the rebate program.

evidence that WIC's infant formula rebate program has resulted in a reduction of the number of infant formula manufacturers, thereby lessening competition.

*Have infant formula prices increased faster than inflation in recent years?*

Although the increase in the retail price of infant formula over the 1994-2000 period varied by manufacturer and type of formula, in nearly all cases, the average annual increase in the retail price of infant formula exceeded inflation regardless of which of three Consumer Price Indices (CPI) were used to represent inflation—*All Items, Food at Home, or Nonprescription Drugs and Medical Supplies*. In addition, in every case the annual rate of increase in retail prices exceeded the annual rate of increase in wholesale prices. Since little information is available on the operating costs associated with retailing infant formula, it is not possible to determine the extent to which the increase in retail infant formula prices above the rate of inflation are attributable to increased costs of retailing. It also should be noted that infant formula prices were increasing faster than inflation even before the rebate program was implemented.

*Does the percentage retail markup of infant formula differ by brand or type of formula?*

The size of the retail markups in percentage terms varied by type and manufacturer. Carnation brands of infant formula had a higher retail markup than did Mead Johnson and Ross brands. Since the wholesale prices of Carnation are generally lower than the two other brands, retailers can mark Carnation products up more and still price them lower than the Ross and Mead Johnson brands. In addition, liquid concentrate forms of formula (both milk- and soy-based) had higher markups than powdered forms of formula across manufacturers. All categories of formula had positive average annual retail markups at the national level. However, in many individual market areas, the retail prices of some infant formula products were priced below the listed wholesale price suggesting that many retailers may use infant formula as loss leaders to attract customers into their stores.

*What is the availability of infant formula products from the major manufacturers by market area?*

Infant formula manufactured by Mead Johnson, Ross, and Carnation are widely available in supermarkets throughout the United States. Formula manufactured by Wyeth and marketed by PBM Products, usually at relatively low retail prices, is available in some supermarkets in most areas of the country.

*Is the retail price of formula that is included in the WIC rebate program greater than formula that is not included in the WIC rebate program?*

Retail prices of infant formula vary widely across geographic areas. Within market areas there is not a clear and consistent relationship between a formula's being the WIC contract brand and having the highest average retail price.

*What effect does being the WIC contract brand have on the retail price of infant formula?*

The results from the event study analysis clearly showed that after a change in the WIC contract holder, the retail price of the new contract brand of formula increased more than that of the old contract holder and the other brands of formula. This finding suggests that being the contract brand of formula results in higher retail prices. This general result of higher, but not necessarily the highest price, was robust across all product bases and physical forms. A multivariate regression analysis examined retail prices while controlling for a variety of economic, demographic, and WIC program factors. Results showed that a manufacturer's brand of formula had a higher retail price—for a given wholesale price—if that brand is the WIC contract brand. The use of two different analytical approaches with comparable findings provides stronger, more credible results.

*Does the size of the WIC program affect the retail price of infant formula?*

The multivariate regression analysis showed that the greater the relative size of the WIC program in the State, as measured by the ratio of WIC formula feeders to non-WIC formula feeders, the greater the retail price of both the contract and noncontract brands of formula, holding other factors constant. This result held across nearly all brands and types of infant formula. Increasing the prevalence of breastfeeding among WIC mothers would decrease the relative size of the WIC program, thereby resulting in lower retail prices of infant formula.

In conclusion, supermarket prices of infant formula in a market area depend on a number of economic, demographic, and WIC program factors. WIC and its infant formula rebate program each tend to modestly increase the supermarket price of infant formula for non-WIC consumers, for given wholesale prices. The infant formula rebate program affects retail prices due to the designation of a single brand of formula as the contract brand (i.e., sole sourcing). The WIC program also affects retail infant formula prices through changes in WIC's size as measured by the number of formula-fed WIC infants relative to the number of formula-fed non-WIC infants. An increase in the relative size of the WIC program tends to result in higher retail prices. Accordingly, States with a high percentage of formula-fed infants in WIC had higher prices (other factors equal) with the amount of the increase depending on type and brand of formula consumed. For example, when moving from an area where WIC infants account for half of all formula-fed infants to an area where they account for two-thirds, a family with a typical 12-pound formula-fed infant has monthly expenditures (for milk-based formula) that increase by about \$3 to \$5 for contract brands of formula and about \$1 to \$4 for noncontract brands. No evidence was found that suggests that rebate levels affect retail markups. A full discussion of the price effects on non-WIC consumers due to WIC and its infant formula rebate program should consider that over one out of every four participants in the WIC program (i.e., almost 2 million people per month in fiscal 2000) is served with rebate money. Furthermore, recent legislative changes provide USDA with enhanced control of the prices WIC vendors charge for the contract brand of infant formula.