

Economic Linkages Between the WIC Program and the Farm Sector

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The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is one of the central components of the Nation's food and nutrition assistance programs. With Federal expenditures of \$5.5 billion in fiscal 2007—or almost 10 percent of total Federal Government expenditures for food and nutrition assistance—WIC is the third largest food assistance program, trailing only the Supplemental Nutrition Assistance Program (SNAP, formerly the Food Stamp Program) and the National School Lunch Program (USDA, 2008). WIC serves over 8 million participants per month, including almost half of all infants and a quarter of all children ages 1-4 in the United States.

WIC provides program participants with supplemental food, as well as nutrition education and referrals to health care and other social services. WIC is based on the premise that early intervention programs during critical times of growth and development in a child's life can help prevent future medical and developmental problems. WIC also has economic ramifications that extend beyond program recipients. To the extent that WIC increases total food expenditures, WIC also affects the country's farm sector. This report estimates the revenues that farmers derive from sales of WIC foods and the number of farm jobs needed to produce these foods. It updates the analysis reported in Hanson (2003) by taking into account the 2007 revisions in the types and amounts of food provided in the WIC food packages.

WIC Food Packages Are Revised

Participants in WIC receive one of seven food packages, depending on their recipient category (infants 0 through 3 months; infants 4 through 12 months, children 1 to 5 years; pregnant and breastfeeding women, nonbreastfeeding postpartum women, breastfeeding women-enhanced, and children/women with special dietary needs). The foods included in the packages are high in nutrients that have been determined by nutritional research to be lacking in the diets of the population served by the program (7 CFR 246.2). A lack of these nutrients may result in adverse health consequences.

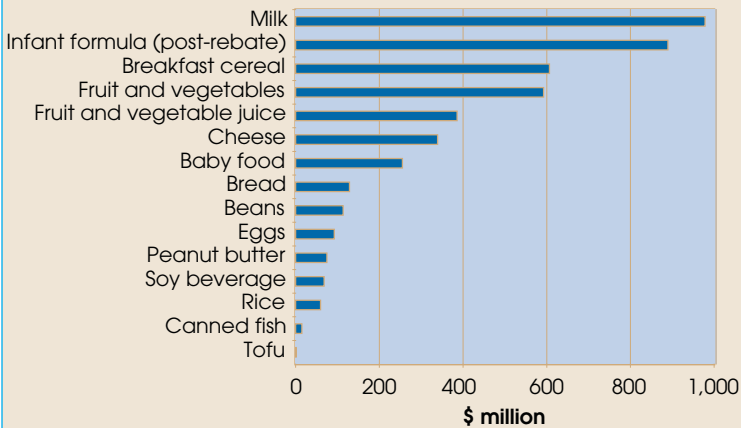
Before 2008, WIC food packages included combinations of the following foods: iron-fortified infant formula; iron-fortified cereal (infant and adult); vitamin C-rich fruit juice and/or vegetable juice; eggs; milk; cheese; peanut butter, dried beans, or peas; tuna fish; and carrots. In December 2007, program regulations were revised to better reflect advances in nutrition science and dietary recommendations and to better address current supplemental nutritional needs of WIC participants (72 *Federal Register* 68965-69032) (see box, “Summary of Major Revisions to WIC Food Packages”). Reductions in the maximum monthly allowances for some foods (e.g., milk, cheese, juice, and eggs) and the addition of new groups (e.g., fruits and vegetables and some whole grain products) are anticipated to improve the nutrition and health of the program’s target population. Allowing more flexibility in food selection (e.g., soy-based beverages and tofu as alternatives to milk in the women’s packages) should also provide greater incentives for families to participate in WIC and consume the prescribed foods. The new food packages were designed to be cost-neutral—that is, to cost no more than the packages they replaced. WIC State agencies are required to implement the new provisions between February 4, 2008, and October 1, 2009.

Summary of Major Revisions to WIC Food Packages

- Addition of fruits and vegetables (as commercial baby foods for older infants and as cash-value vouchers for children and women).
- More whole grain foods—at least half of the cereals in a State’s list of approved WIC foods must be whole grain, and new whole grain products are allowed, including breads, brown rice, tortillas, and bulgur.
- Addition of baby food meats for fully breastfed older infants.
- Greater variety of choices, such as soy beverages and tofu, as substitutes for milk for women.
- Less milk, cheese, eggs, and juice. New constraints on choices include reduced amount of cheese that may be substituted for fluid milk; no whole milk, except for 1-year-old children or children with medical documentation for other participant categories; no juice for infants.
- Delayed provision of complementary infant foods for children ages 4-6 months (only infant formula will be provided until the infant is 6 months old).
- Less infant formula for partially breastfed infants and for older infants (6-11 months), more infant formula for fully formula-fed infants ages 4-5 months (to compensate for the elimination of complementary infant foods for this age group).

Figure 1

Estimated WIC sales by food item based on revised food packages, 2008



Note: Estimated post-rebate WIC sales in 2008 sum to \$4.6 billion.
Source: ERS calculations.

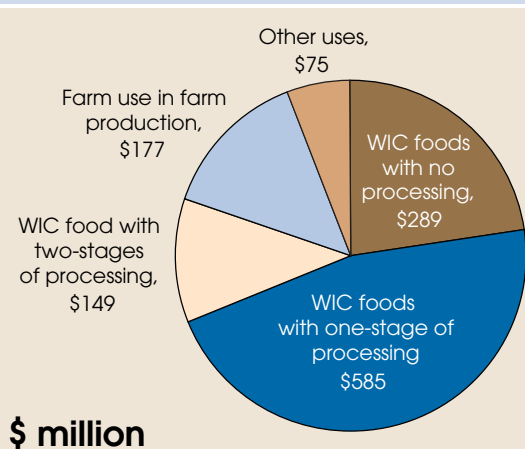
Most States distribute WIC foods to participants via a retail food delivery system. Under this system, WIC provides participants with food instruments—in the form of a voucher, check, or Electronic Benefit Transfer (EBT) card—which specify the types and quantities of foods the participants may obtain. WIC participants then exchange the food instruments for WIC foods at over 44,000 approved retail vendors (usually grocery stores or supermarkets) across the country. WIC State agencies reimburse the vendors for the foods purchased with the food instruments.

\$1.3 Billion in Farm Revenues Are Linked to WIC Foods

Although States have until October 1, 2009, to implement the revised food packages, this analysis assumes that the revisions in the WIC food packages were implemented in all States in fiscal 2008. We estimated retail sales of food in the revised WIC food packages to be \$4.6 billion after rebates in fiscal 2008 (see box, “How Was the Study Conducted?”).

Figure 2

Estimated revenue from the sale of farm commodities used in the production of WIC foods



Note: In 2008 dollars.
Source: ERS calculations.

WIC sales by food item—based on the revised WIC food packages—are shown in figure 1. Even with the reductions in milk associated with the revised WIC food packages, milk has the largest sales—\$978 million. About two-thirds (67 percent) of all WIC food sales are accounted for by milk (21 percent), infant formula (19 percent, measured on a post-rebate basis), breakfast cereal (13 percent), and fruits and vegetables (13 percent).

Our analysis indicates that farmers receive almost \$1.3 billion from the sale of commodities that are used in producing the \$4.6 billion in WIC retail food sales. A food’s path from its raw form at the farm to a finished product in a WIC household may take various routes with few or many stops along the way. WIC foods that undergo minimal processing, such as eggs and fresh fruits and vegetables, which essentially go from the farm through the wholesale trade and transportation system to retail vendors, account for \$289 million (23 percent) of farm revenues realized from the sale of WIC foods (fig. 2). The largest share of farm revenue (\$585 million, or 46 percent) is from farm commodities that undergo one stage of processing into WIC foods—for example, raw milk from the farm processed into the milk we drink. WIC foods that involve two stages of processing—for example, wheat and other grains processed by the miller and ultimately made into whole grain bread or breakfast cereal—contribute \$149 million of farm revenue (12 percent).

In addition to farm commodities used by food processors to produce WIC foods, the production of these farm commodities may also involve the use of other farm commodities. Examples include feed for dairy cows and poultry (whether in the form of raw grains and hay or processed grains) and seed for grain production. These farm commodities account for \$177 million (14 percent) of farm revenue. The remaining \$75 million (6 percent) in farm revenue are from other uses of farm commodities in the production of WIC foods that are not accounted for above.

Of the estimated \$1.3 billion in total farm revenue from WIC food sales, livestock and crop farms receive \$707 million and \$567 million, respectively (table 1). Dairy farms receive the most revenues at \$569 million (45 percent), fruits and vegetables are second with \$292 million (23 percent), and grains are third with \$171 million (13 percent).

WIC Generates a Net Gain of \$331 Million in Farm Revenues From Increased Food Spending

The estimate of \$1.3 billion in farm revenue generated from the sale of WIC foods does not represent the net impact of WIC on the farm sector because many of the foods purchased through WIC would have been purchased by WIC participants even in the absence of the program. That is, without the program, the people now participating in WIC would have purchased some of these foods with their own money. Stated another way, although participants who receive a dollar of benefits from a program are likely to spend the entire dollar on food, at the same time, they are reducing the amount they spend on food from their own cash income. As a result, the increase in food expenditures resulting from a food assistance program will be some fraction of the total dollar amount of benefits provided.

How Was the Study Conducted?

The first stage of the analysis involved estimating the total dollar sales of WIC foods in fiscal 2008. At the time of this analysis, data on the sale of WIC foods was available for only the first 8 months of 2008. Therefore, a linear trend from October 2006 through May 2008 was used to estimate the remaining 4 months of WIC sales in fiscal 2008. The result is an estimate of \$4.6 billion in WIC sales after rebates (WIC receives about \$1.7 billion in rebates from infant formula manufacturers for the infant formula purchased through the program). Given the assumption of cost neutrality of the revised WIC food packages, the fiscal 2008 estimate of WIC food sales based on the revised WIC food packages is assumed to be the same as the estimated sales based on the old WIC food packages.

Stage two of this analysis involved distributing the \$4.6 billion of total WIC sales across the individual foods contained in the revised WIC food packages (although States have until October 1, 2009, to implement the revised food packages, we assume for this analysis that the revisions in the WIC food packages were implemented in all States in fiscal 2008). The basis for our estimate of WIC food sales is the estimates developed by USDA's Food and Nutrition Service (*Federal Register* 72:234, December 6, 2007, table 18, p. 69029). FNS estimated sales of the foods contained in the revised WIC food packages based on 2005 cost data. Because the FNS estimates reflected pre-rebate sales, we subtracted out rebates for infant formula and then proportionately adjusted the estimates for each food item to derive a total estimate of post-rebate WIC food sales for fiscal 2008. The estimates of WIC sales shown in figure 1 reflect these adjustments.

In the third and last stage of this analysis, an Input-Output Multiplier Model developed by ERS was used to estimate revenues received by the various sectors and derive farm revenue (and farm jobs) linked to the WIC food package sales. The model is based on the 2002 Benchmark Input-Output Account published by the U.S. Department of Commerce, Bureau of Economic Analysis (2007). The account provides information on the dollar value of commodities used by industry as inputs into production, as well as their use in final demand by consumers. The account consists of over 400 industries and commodities, including 14 in farming and about 30 in food processing. For the analysis of the farm revenue linked to the WIC food package, we treated farm revenue as the value of production (output) in the farm sectors. Farm revenue directly linked to processed foods in the WIC food package were derived from the input-output coefficients, after taking into account trade and transportation margins. The Input-Output Multiplier Model estimates the indirect farm revenue associated with the WIC food package. For analysis of 2008 WIC food package sales with a model based on 2002 data, we deflated the WIC food sales from 2008 to 2002 dollars using the Consumer Price Index (CPI) for food at home, and then we inflated model results from 2002 to 2008 dollars.

Table 1

Farm revenue from WIC food sales by type of farm, 2008

| Type of farm | Farm revenue | |
|----------------------|--------------------------|--|
| | From producing WIC foods | Net increase due to additionality ¹ |
| <i>\$ million</i> | | |
| All farms | 1,274.2 | 331.3 |
| Type of farm: | | |
| Livestock | 707.3 | 183.9 |
| Dairy | 568.9 | 147.9 |
| Poultry and eggs | 92.8 | 21.5 |
| Meat animals | 55.6 | 14.5 |
| Crops | 566.9 | 147.4 |
| Grains | 171.2 | 44.5 |
| Fruit and vegetables | 292.2 | 76.0 |
| Other crops | 103.4 | 26.9 |

Note: Based on the revised WIC food packages.

¹Based on an additionality value of 0.26. Additionality is the amount by which a dollar of program spending results in additional food spending. Source: ERS calculations.

Table 2

Farm jobs required to produce WIC foods, 2008

| Type of farm | Farm revenue | |
|------------------------------|----------------------|--|
| | To produce WIC foods | Net increase due to additionality ¹ |
| <i>Number</i> | | |
| Total farm jobs ² | 10,155 | 2,640 |
| Type of farm: | | |
| Livestock | 5,149 | 1,339 |
| Dairy | 4,101 | 1,066 |
| Poultry and eggs | 214 | 56 |
| Meat animals | 834 | 217 |
| Crops | 5,006 | 1,302 |
| Grains | 1,573 | 409 |
| Fruit and vegetables | 2,563 | 666 |
| Other crops | 871 | 226 |

¹Based on an additionality value of 0.26. Additionality is the amount by which a dollar of program spending results in additional food spending.

²Full-time-equivalent jobs.

Source: ERS calculations.

Thus, the net impact of WIC on the farm sector depends largely on the program's additionality (that is, the amount by which a dollar of program spending results in additional food spending). If WIC's additionality is zero—that is, if all foods purchased with WIC vouchers would have otherwise been purchased with the participants' own funds—then WIC would have little overall impact on the farm sector. Any effect from WIC on agriculture would be due to a different mix of foods being purchased (for example, more milk and juice and fewer other beverages) rather than from a difference in the total amount of food purchased. On the other hand, additionality occurs if participation in WIC results in participants purchasing more food (that is, spending more money on food) than they would otherwise in the absence of the program. The degree to which WIC results in additionality is not known. A comprehensive literature review of USDA's food and nutrition assistance programs' impact on participants' health concluded that, because of data and methodological issues associated with previous empirical research, it is difficult to draw conclusions about WIC's impact on household expenditures for food (Fox et al., 2004).

In light of the lack of a widely accepted estimate of WIC's additionality, we assume that the economic behaviors by WIC participants resemble those of SNAP recipients. A number of studies have found that SNAP increases participants' food purchases (Fox et al., 2004). After reviewing the literature on the additionality associated with SNAP, we chose to use an additionality value of 26 percent based on a study by Levedahl (1995). This estimate is a conservative value among the values cited by Fox et al. (2004), which ranged from 17 percent to 69 percent. Thus, we assumed that the WIC program increases WIC participants' food expenditures by 26 percent of the value of the WIC food package. Under this scenario, we estimated that the net addition to retail food sales due to the WIC program (i.e., sales beyond that which would have been purchased if there were no WIC program) in fiscal 2008 was \$1.196 million (26 percent of the \$4.6 billion of WIC retail food sales). The net addition to farmers' revenues was \$331 million (table 1). Of this \$331 million, \$184 million went to livestock farms—predominantly dairy farms—and \$147 million went to crop farms—mostly fruit and vegetable farms.

WIC Affects the Number of Farm Jobs

This analysis also examined the amount of labor—as measured by number of jobs on U.S. farms—needed to produce WIC foods, regardless of whether the work is performed by hired farmworkers, self-employed farm operators, or unpaid family members. Because of differences in the seasonality of farm jobs by type of farm (e.g., jobs on dairy farms are often year-round, while jobs on fruit and vegetable farms are often seasonal) and because many farm jobs are only part-time, our estimates of farm jobs are reported in terms of full-time equivalents.

To produce the \$4.6 billion in WIC retail food sales, an estimated 10,155 full-time-equivalent farm jobs were required (table 2). These jobs are almost evenly split between livestock and crop production. Once again assuming an additionality of 26 percent for WIC, the program resulted in a net addition of 2,640 full-time equivalent farm jobs during the year. Dairy accounted for 40 percent of the total increase in jobs, whereas fruits and vegetables accounted for another 25 percent.

The number of farm jobs associated with the production of WIC foods, either with or without the additionality adjustment, is relatively small, due partly to the efficiency of U.S. agriculture. Increased mechanization and other technological advances have greatly reduced the labor input per unit of output on U.S. farms over time. Because of the seasonal nature of agriculture, many farmworkers do not work year round in agriculture. Consequently, the number of full-time-equivalent farm jobs reported here may underestimate the actual total number of full-time plus part-time farmworkers involved in producing WIC foods.

WIC May Affect Nonfarm Sector Also

This study estimates that the \$4.6 billion of food purchased with WIC vouchers in fiscal 2008 generated \$1.3 billion in farm revenue, based on the assumption that the recent revisions in the WIC food packages were implemented in all States in fiscal 2008. Given that WIC participants would have purchased some of these foods with their own money in the absence of the program, we estimated that the net addition to farm revenue from WIC was \$331 million and the net increase in full-time-equivalent farm jobs was 2,640. Note that WIC may also impact the nonfarm sector if funds that WIC participants normally would have spent out of pocket for food are spent on nonfood items instead.

Information Sources . . .

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