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Victor Oliveira and David E. Davis

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Victor Oliveira and David E. Davis

Abstract

Over half of all infant formula sold in the United States is purchased through the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Typically, WIC State agencies obtain substantial discounts in the form of rebates from infant formula manufacturers for each can of formula purchased through the program. The cost to WIC for each can of formula provided through the program has two components: (1) net wholesale price, which is equal to the wholesale price of formula minus the amount of the rebate; and (2) retail markup, which is equal to the retail price minus the wholesale price. This analysis suggests that retail markup accounts for most of the cost to WIC of infant formula in most States. However, both cost components have increased over time. The recent increase in both net wholesale price and retail markup coincides with the introduction of higher priced supplemented infant formulas. Conditions may change after the market adjusts to these new formulas.

Keywords

WIC; Special Supplemental Nutrition Program for Women, Infants, and Children; infant formula; rebates; net wholesale price; retail markup; wholesale price, Food Assistance and Nutrition Research Program, FANRP.

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Summary

What Is the Issue?

Over half of all infant formula sold in the United States is purchased through the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Typically, WIC State agencies obtain significant discounts in the form of rebates from infant formula manufacturers for each can of formula purchased through WIC. In exchange, the manufacturer is given exclusive right to provide its product to WIC participants in the State. Contracts are awarded to the manufacturer offering the lowest net wholesale price (manufacturer's wholesale price minus the rebate).

Infant formula rebates totaled $1.6 billion in fiscal year 2004, an amount that supported about one-quarter of all WIC participants. Since the establishment of the rebate program in 1988, rebates as a share of total pre-rebate WIC food costs increased rapidly, peaking at 33.5 percent in fiscal year 2000. In other words, without the rebates, WIC food costs would have been one-third higher. However, rebates as a share of WIC's food costs have fallen each year since 2000 (down to 31.6 percent in 2004). In recent years, some States awarding new infant formula rebate contracts have seen a marked increase in the net wholesale price for formula. Since WIC is a discretionary program with fixed funding, higher costs mean that fewer persons will be served (or that additional funds need to be appropriated).

What Did the Project Find?

The cost that WIC pays for each can of formula provided through the program has two components: the net wholesale price that goes to the manufacturer and the retail markup that goes to the retailer. Both these costs have increased in recent years.

Prior to 2004, most infant formula rebate contracts were bid on by two manufacturers, usually Mead Johnson and Ross, with Nestlé bidding on just more than one-quarter of all contracts. Nestlé has since joined in bidding on nearly all contracts, which would seemingly make it less likely that a manufacturer would win a contract with an unusually low rebate (resulting in a high net wholesale price to the WIC State agency). However, the real net wholesale prices bid by all three competitors have increased in recent years. Of the 16 States that have awarded infant formula rebate contracts since 2003, 10 (63 percent) saw a net increase in real net wholesale price relative to their latest pre-2003 contract for powder and 13 (81 percent) saw an increase relative to their pre-2003 contract for liquid concentrate.

Some of this recent increase in net wholesale price can be attributed to the introduction of more costly formulas supplemented with DHA and ARA (two fatty acids found in breast milk). Although not all States currently offer these new formulas to their WIC recipients, recent legislation requires that all States offer the supplemented formula as of their next rebate contract, presuming that the manufacturers submit bids based on these supplemented formulas.

During the second quarter of 2004, the retail markup was substantially greater for the new DHA- and ARA-supplemented infant formulas than for unsupplemented formulas (retail markups for the new supplemented formulas were also found to exceed the markup of unsupplemented formulas from 1994 to 2000, indicating that retail markups to WIC have increased over time). The effect of the markup that States pay retailers can be substantial. In many cases, it is the largest component of the cost to WIC. However, it is because of the effectiveness of the rebate program that net wholesale prices are so low. If net wholesale prices were to increase to the level experienced in New York in 2003 (where net wholesale prices of powder were over three times the retail markup), total costs to States would increase significantly.

This analysis suggests that both cost components to WIC—net wholesale price and retail markup—have increased over time. However, much of the increase in costs is due to the higher priced DHA- and ARA-supplemented infant formulas. Because these supplemented formulas are relatively new to the market (first introduced in 2002), conditions observed in this study may change once the market reaches long-term equilibrium.

How Was the Project Conducted?

This report examines trends in the factors affecting WIC infant formula costs from January 1998 to January 2006. The cost that WIC pays for each can of formula provided through the program after rebate has two components: a part that goes to the manufacturer and a part that goes to the retailer. The part that goes to the manufacturer is the net wholesale price (wholesale price minus the rebate); this has been the subject of most previous studies on WIC's infant formula rebate program. Retail markup—the part that WIC pays to the retailer (retail price minus wholesale price)—has not received nearly as much attention.

This study examines the cost of infant formula to the WIC program in light of recent changes in the infant formula market and in the program's authorizing legislation. It is the only study to examine the rebates associated with infant formula in both liquid concentrate and powdered forms. Powdered formula has not been the focus of most previous studies, yet it has become the most prevalent form of formula provided in WIC. Information comes from several sources—data on infant formula manufacturers' bids for rebate contracts, formula manufacturers' wholesale price lists, and scanner-based retail sales data from supermarkets.

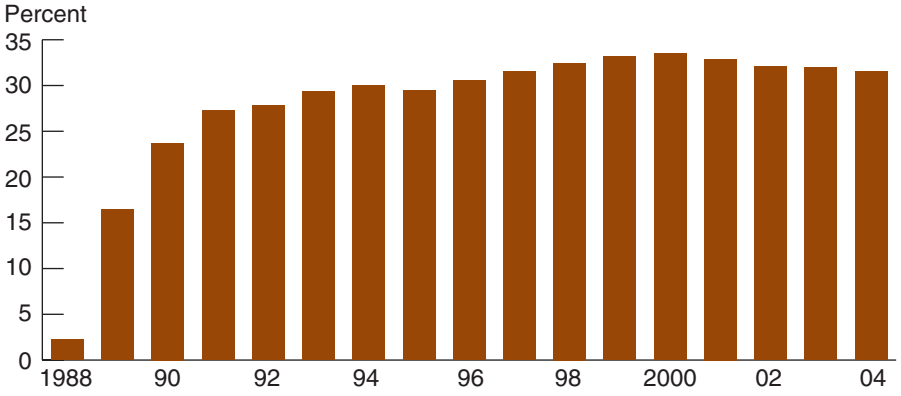
Introduction

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provides supplemental foods, nutrition education, and health care referrals to low-income pregnant, postpartum, and breastfeeding women; infants; and children up to age 5 who are at nutritional risk. Over half of all infant formula sold in the United States is purchased through WIC. Federal law requires that WIC State agencies enter into cost-containment contracts for the purchase of infant formula. Typically, WIC State agencies obtain substantial discounts in the form of rebates from the infant formula manufacturers for each can of formula purchased through WIC.[1] In exchange for the rebates, a manufacturer is given the exclusive right to provide its product to WIC participants in the State. Contracts are awarded to the manufacturer offering the WIC State agency the lowest net wholesale price, as determined by the manufacturer's wholesale price minus the rebate.[2]

Infant formula rebates have become an important component of the WIC program, totaling $1.6 billion in fiscal year 2004, an amount that supports about one-quarter of all WIC participants.[3] The effect of infant formula rebates on reducing program costs has been significant. Since the establishment of the rebate program in the late 1980s, rebates as a share of total pre-rebate WIC food costs (i.e., costs before taking into account savings from the rebates) increased rapidly, peaking at 33.5 percent in fiscal year 2000 (fig. 1). In other words, WIC food costs would have been one-third higher at the same level of participation without the rebates. However, rebates as a share of total pre-rebate food costs have fallen each year since 2000 (down to 31.6 percent in 2004), as total WIC food costs increased faster than rebates. In recent years, some States awarding new infant formula rebate contracts have seen a marked increase in the net wholesale price for formula. This trend, if sustained, could have far-reaching negative implications for the WIC program. Therefore, understanding the costs to WIC of infant formula—and the factors behind costs—is important.

This report examines trends in the factors affecting WIC infant formula costs during the period January 1998-January 2006. The cost that WIC pays

Figure 1
Infant formula rebates as a share of total pre-rebate WIC food costs, fiscal 1988-2004



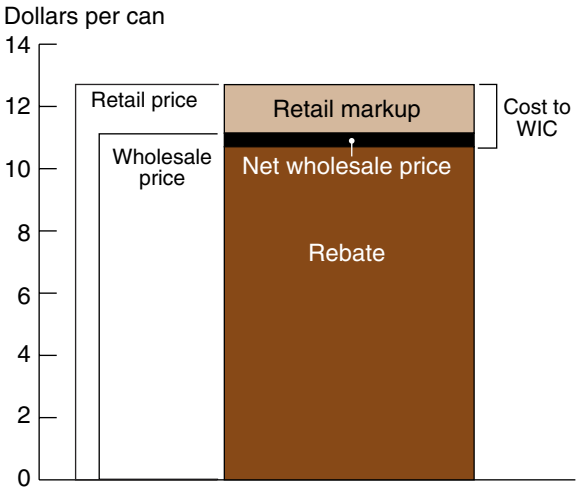
Source: USDA, Food and Nutrition Service.

[1]Without the rebates, infant formula would be the most costly food item provided by WIC. Infant formula accounted for 44.1 percent of total WIC food costs before rebates in fiscal year 2003, but only 17.8 percent after rebates (FNS, 2006).

[2] The term "net wholesale price" is equivalent to the term "net price" used in previous ERS reports of the infant formula market by Oliveira et al. (2004) and Prell (2004).

[3]Estimate of the total value of rebates was provided by USDA's Food and Nutrition Service (FNS).

Figure 2
Relationship of infant formula rebate, net wholesale price, and retail markup for can of powdered formula



Note: Example based on a 12.9-oz can of Ross Similac with iron (powder) in the California WIC program during the 2nd quarter of 2004.
Source: USDA's Economic Research Service.

for each can of formula provided through the program after rebate has two components: a part that goes to the manufacturer and a part that goes to the retailer (fig. 2). The part that goes to the manufacturer is referred to as the net wholesale price and is equal to the wholesale price minus the rebate. This is the part of the total cost to WIC that is the focus of WIC rebate bids and subject of most of the previous studies on WIC's infant formula rebate program.[4] The second cost component is retail markup, which has not received nearly as much attention. Retail markup is the part that WIC pays to the retailer (e.g., a supermarket or grocery store) and is equal to the retail price minus the wholesale price. Thus, the cost to WIC for each can of formula sold through the program (after rebate) can be expressed as:[5]

$$\text{Cost to WIC} = \text{Net Wholesale Price} + \text{Retail Markup},$$

where

$$\text{Net Wholesale Price} = \text{Wholesale Price} - \text{Rebate}$$

and

$$\text{Retail Markup} = \text{Retail Price} - \text{Wholesale Price}$$

Information from several sources—including data on infant formula manufacturers' bids for rebate contracts, formula manufacturers' wholesale price lists, and scanner-based retail sales data from supermarkets—is used to address two major questions:

1. What are the recent trends in the infant formula rebates in terms of net wholesale price?
2. How much does the retail markup for infant formula affect the costs to WIC State agencies?

This study examines the cost of infant formula to the WIC program in light of recent changes in the infant formula market and in the program's authorizing legislation.[6] It is the only study to examine rebates associated with infant formula in both liquid concentrate and powdered forms. Powdered formula has not been the focus of most previous studies, though it has become the most prevalent form of formula provided in WIC. This is also the first study to consider the impact of retail markups on costs to the WIC program.

[4]For example, see Government Accountability Office (2006), General Accounting Office (2003), and Center on Budget and Policy Priorities (1995).

[5]The cost of formula to WIC can also be expressed as retail price minus the manufacturer's rebate. Although this may be a simpler way of expressing infant formula's costs to WIC, this report retains the fuller expression in order to emphasize that costs to WIC are established by two different market agents—infant formula manufacturers and foodstore retailers.

[6] This study focuses solely on the infant formula provided through the WIC program that is covered by cost-containment contracts with manufacturers. The Government Accountability Office (2006) estimates that this includes about 92 percent of all infant formula provided through WIC. WIC does not receive rebates for the remaining 8 percent of infant formula provided to WIC participants, which includes exempt infant formula for use by infants with an unusual medical or dietary problem and non-exempt infant formula produced by a manufacturer not covered by the cost-containment contract. Local WIC agencies are required to obtain medical documentation to provide exempt and noncontract, non-exempt infant formula to program participants.

Overview of the WIC Program

WIC is based on the premise that early intervention programs during critical times of growth and development can help prevent future medical and developmental problems. Administered by USDA's Food and Nutrition Service (FNS), the program provides grants for food benefits, nutrition services, and administration to 90 WIC State agencies, including the 50 States, the District of Columbia, Guam, the U.S. Virgin Islands, American Samoa, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, and 34 Indian tribal organizations. Each State agency is responsible for program operations within its jurisdictions.

Since its establishment in the early 1970s, WIC has become one of the central components of the Nation's food assistance system. In fiscal year 2005, an average 8 million persons participated in the program each month (USDA, 2005). This includes over 2 million infants, or almost half of all infants born in the United States.

To qualify for WIC, a family's income must be at or below 185 percent of the Federal poverty guidelines ($35,798 for a family of four in July 2005).[7] Applicants must also be nutritionally at risk, as determined by a health professional such as a physician, nutritionist, or nurse.[8]

The authorized foods provided through WIC are high in one or more of five target nutrients—protein, calcium, iron, and vitamins A and C—identified as lacking in the diets of the program's target population, which may result in adverse health consequences. Participants are prescribed one of seven food packages according to participant category. The food package for nonbreastfed infants less than 1 year of age provides up to the monthly maximum allowance of 403 fluid ounces of liquid concentrate infant formula, 806 fluid ounces of infant formula in ready-to-feed form, or 8 pounds of powdered infant formula.[9] The maximum monthly allowance of liquid concentrate, the equivalent of 31 13-ounce cans of liquid concentrate, reconstitutes to 806 fluid ounces.

To provide program participants with supplemental food packages, States may use three types of food delivery systems (or any combination of the three):

- Retail food delivery systems—participants obtain supplemental food free of charge by transacting a food instrument at authorized retail vendors.
- Home food delivery systems—supplemental foods are delivered to the participant's home.
- Direct distribution food delivery systems—participants pick up supplemental foods from storage facilities operated by the State or local agency.

Most States distribute WIC foods primarily via the retail food delivery systems. (The exceptions are Vermont and one Indian tribal organization, which use a home delivery system; and Mississippi and one Indian tribal organization, which use direct distribution.) Under the retail food delivery system, participants purchase the WIC food items from retail foodstores

[7]Applicants who participate or who have certain family members who participate in the Food Stamp, Medicaid, or Temporary Assistance Program for Needy Families (TANF) programs are deemed to meet the income eligibility criterion automatically.

[8]WIC applicants are required to meet only one of a number of nutritional risk criteria to be eligible for WIC. Research has determined "that nearly all U.S. women and children" meet at least one of the criteria and are thus considered to be at nutritional risk (Institute of Medicine, 2002).

[9]Starting at 4 months, the infant packages also provide infant cereal and fruit juice.

using a food instrument (i.e., voucher, coupon, or EBT card) that specifies the types and amounts of foods that can be purchased.[10] Only those vendors (usually supermarkets, grocery stores, or pharmacies) authorized by the WIC State agency may transact and redeem food instruments. Generally, retailers submit the instruments to their bank, which submits them to the WIC State agency's bank. That bank then pays the vendors the full retail price (i.e., shelf price) of the WIC food items with funds provided by the WIC State agency in a manner set forth in the State agency's contract with the bank.

Because WIC is a discretionary grant program funded annually at a level determined by appropriations law, the number of participants that can be served depends on the annual congressional appropriations as well as the cost of operating the program.[11] Cost-containment practices thus enable WIC to increase the number of applicants it can enroll.

[10] The food instrument also specifies the brand of infant formula.

[11] In the event that WIC does not have the funds to enroll all eligible applicants, WIC developed a priority system to ensure that those at the greatest nutrition risk receive program benefits. Anecdotal evidence suggests that, in recent years, funding has been sufficient to provide benefits to nearly all eligible persons who applied.

The Infant Formula Market

The infant formula market is highly concentrated: three manufacturers produce the vast majority of all infant formula sold in the United States. ERS analysis of scanner-based data on supermarket retail sales during the second quarter of 2004 (the latest data available at the time of the study) found that two companies—Mead Johnson and Ross—accounted for 89 percent of the market as determined by volume of sales (fig. 3).[12] Nestlé accounted for another 10 percent of the market.

[12] An analysis of the infant formula market in 2000 found that supermarkets accounted for about 69 percent of all infant formula sold, mass merchandisers 28 percent, and drugstores 3 percent (Oliveira et al., 2004).

Infant Formula Types

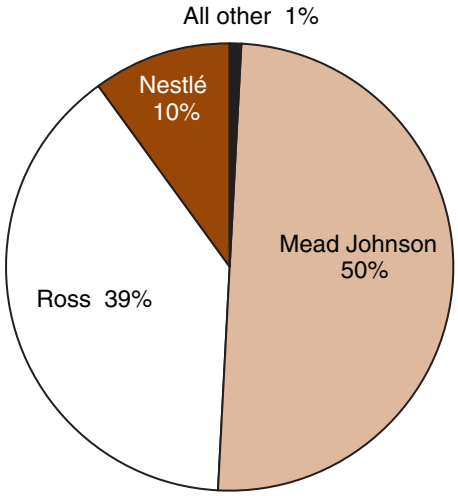
For infants who are not breastfed, infant formula may be the sole source of nutrition during the first months of life. Conventional milk-based infant formula, containing lactose (a carbohydrate in cow's milk) and cow-milk proteins, is the most widely used formula. Soy-based formulas, free of cow-milk proteins and lactose, are an alternative protein source for infants with milk-based allergies or with symptoms of lactose intolerance. They are also used by parents seeking a vegetarian diet for their infants. These milk- and soy-based formulas are available in three different forms:

- Powder—the least expensive formula, it must be mixed with water and stirred,
- Liquid concentrate—must be mixed with an equal amount of water, and
- Ready-to-feed—the most expensive form of formula, it does not require mixing.

Milk- and soy-based formulas are available in a wide range of package sizes and in two different iron levels: added iron and low iron. The American Academy of Pediatrics recommends that formula-fed infants receive an iron-fortified formula as a way of reducing the prevalence of iron deficiency anemia (1999). Iron-fortified infant formula is routinely issued in WIC; all low-iron infant formula issued through WIC requires medical documentation. Infant formulas supplemented with two fatty acids found in small concentrations in breast milk—docosahexaenoic acid (DHA) and arachidonic acid (ARA)—are available to consumers, as are unsupplemented forms of formula.

A wide range of infant formulas in addition to the standard milk- and soy-based formulas used for routine infant feeding is also available on the market. Most of these formulas are designed for infants with unique nutritional needs. For example, milk-based lactose-free formulas are available for infants sensitive to lactose. Hypoallergenic formulas are available for infants with food protein allergies. Infant formulas are available for infants with other special nutritional needs (e.g., low-birth-weight and premature infants) and medical disorders, such as phenylketonuria (PKU).

Figure 3
Share of infant formula sold in U.S. supermarkets by manufacturer, 2nd quarter of 2004



Note: Market share was determined by volume of sales based on stores with annual sales over $2 million. "All other" includes store brand infant formula where manufacturer was not identified.
Source: ERS analysis of ACNielsen Scantrack data.

Milk- and soy-based formulas accounted for most of formula sold by volume. Over three-quarters (77 percent) of all infant formula sold was milk-based, while soy-based formula accounted for 17 percent. Formulas that use another product base, primarily protein hydrolysate, accounted for the remaining 6 percent of all formula sold.[13]

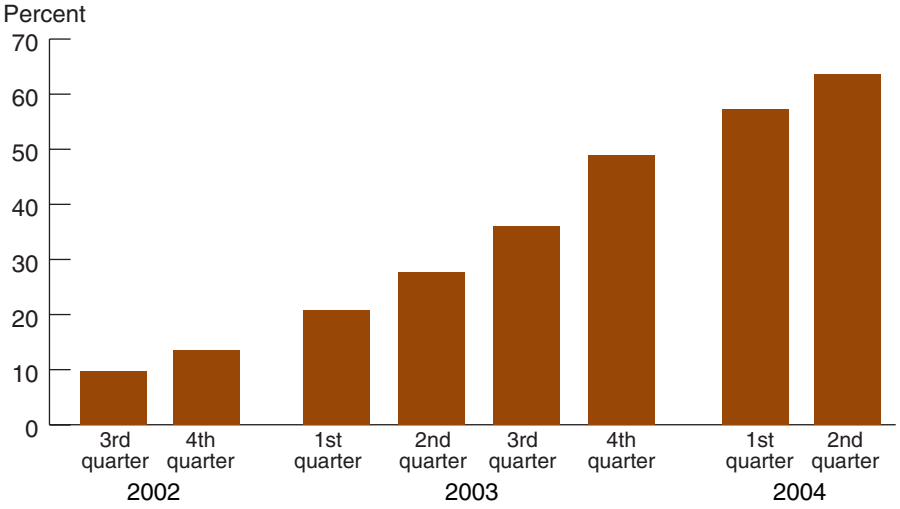
The use of formula in powdered form has increased markedly in recent years. Between 1994 and 2000, powder increased from 44 percent to 62 percent of all formula sold by volume on a reconstituted basis (Oliveira et al., 2004). Over the same period, liquid concentrate decreased from 42 percent to 27 percent of all formula sold, and ready-to-feed decreased from 14 percent to 11 percent. Data from the second quarter of 2004 indicate that this trend is continuing: powder accounted for 70 percent of dollar sales, compared with 23 percent for liquid concentrate and 7 percent for ready-to-feed.[14]

An important development in recent years has been the introduction of infant formulas supplemented with the fatty acids docosahexaenoic acid (DHA) and arachidonic acid (ARA). Ross first introduced these formulas into their product lines in 2002, with Mead Johnson and Nestlé following in 2003. While some studies have suggested that the addition of these fatty acids to formula may improve visual function and the mental development of infants, other studies have not found such a relationship. Citing the lack of data on the fatty acids' effectiveness, the American Academy of Pediatrics (AAP) Committee on Nutrition has recommended that the Academy not take an official stand at this time (AAP Committee on Nutrition, 2002). The share of total sales of infant formula attributed to DHA- and ARA-supplemented formulas has increased rapidly since their introduction (fig. 4). By the second quarter of 2004, supplemented formulas accounted for almost two-thirds (63.6 percent) of total dollar sales of formula in supermarkets.

[13] Protein hydrolysate formulas make milk proteins more digestible and less allergenic and provide alternative sources of protein to children who are allergic to milk and soy proteins.

[14] The increased use of powdered formula has been attributed in part to the increase in breastfeeding. Powdered formulas "are commonly used to make up an occasional formula feeding for breastfed infants and many mothers may have continued to use powdered formulas after the cessation of breastfeeding" (Fomon, 2001).

Figure 4
Sales of DHA- and ARA-supplemented formula as a share of total infant formula sales in supermarkets



Source: ERS analysis of ACNielsen Scantrack data.

Wholesale Price of Infant Formula

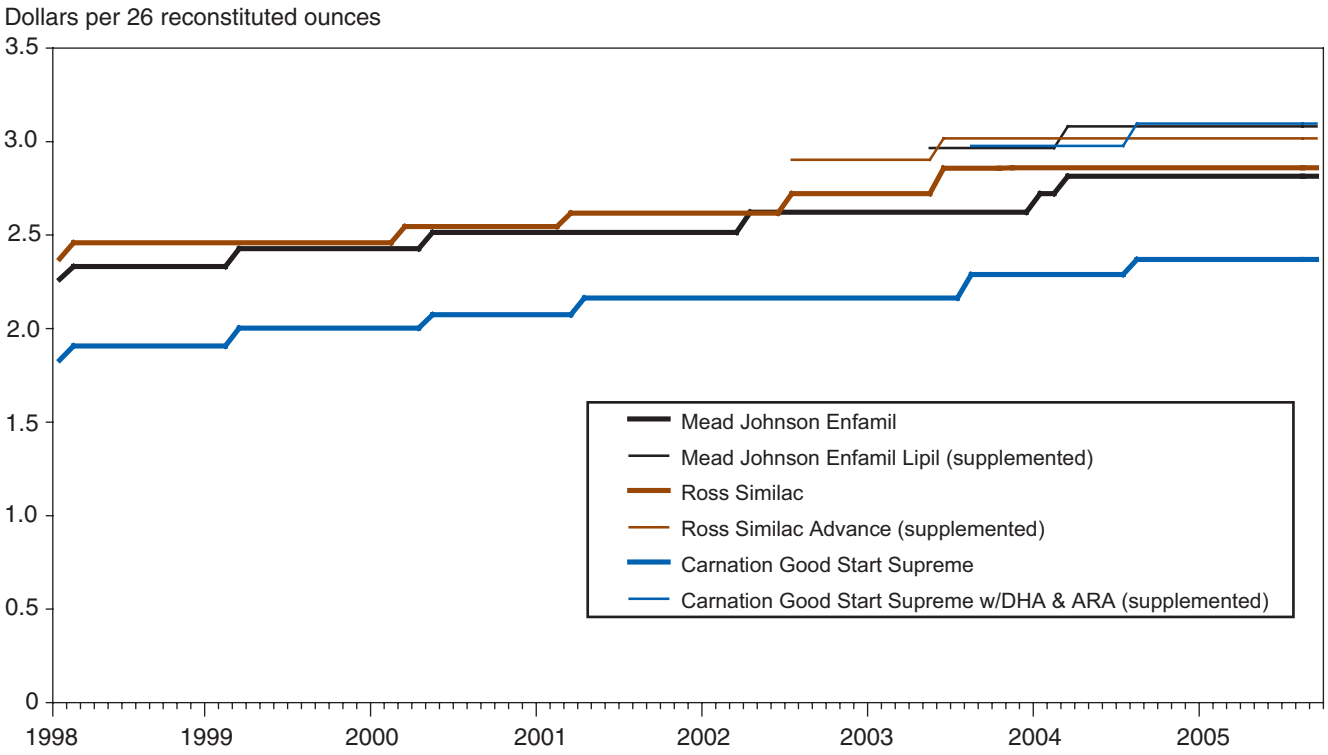
This section examines the wholesale prices of infant formula produced by the three major manufacturers—Mead Johnson, Ross, and Nestlé. Because both the can sizes and reconstitution factors for formula in powder form differ across the three manufacturers, all prices were converted to a standard unit—26 ounces of reconstituted formula. This volume was chosen because it is the ready-to-feed equivalent of a 13-ounce can of liquid concentrate. This conversion allows one to easily compare prices for different package sizes and product forms. All three manufacturers offer liquid concentrate in 13-ounce cans that reconstitute to 26 ounces.

Figures 5 and 6 show the wholesale price of milk-based powder and liquid concentrate in nominal terms (i.e., not adjusted for inflation) between January 1998 and August 2005 for both the new DHA- and ARA-supplemented formulas and the unsupplemented formulas.[15] During this period, each manufacturer raised the wholesale price of its unsupplemented formula (both powder and liquid concentrate) five or six times and the wholesale price of their supplemented formula once. In general, wholesale prices for Mead Johnson and Ross unsupplemented formulas were similar, and both were higher than that of Nestlé. For all three manufacturers, supplemented formulas were more costly than the unsupplemented formulas, and comparable in price among all three companies.

While nominal (i.e., not adjusted for inflation) wholesale prices have risen over time, have they increased faster than inflation? The answer depends on two factors: the set of goods used to measure inflation and the reference period. For example, the Consumer Price Index for all items (CPI-U)—the most widely used measure of inflation, or general price changes—is a broad, comprehensive price index that measures the average change over time in prices paid by urban consumers for a market basket of consumer goods and services. More specific measures to compare infant formula prices against inflation include the CPI for food at home and the CPI for

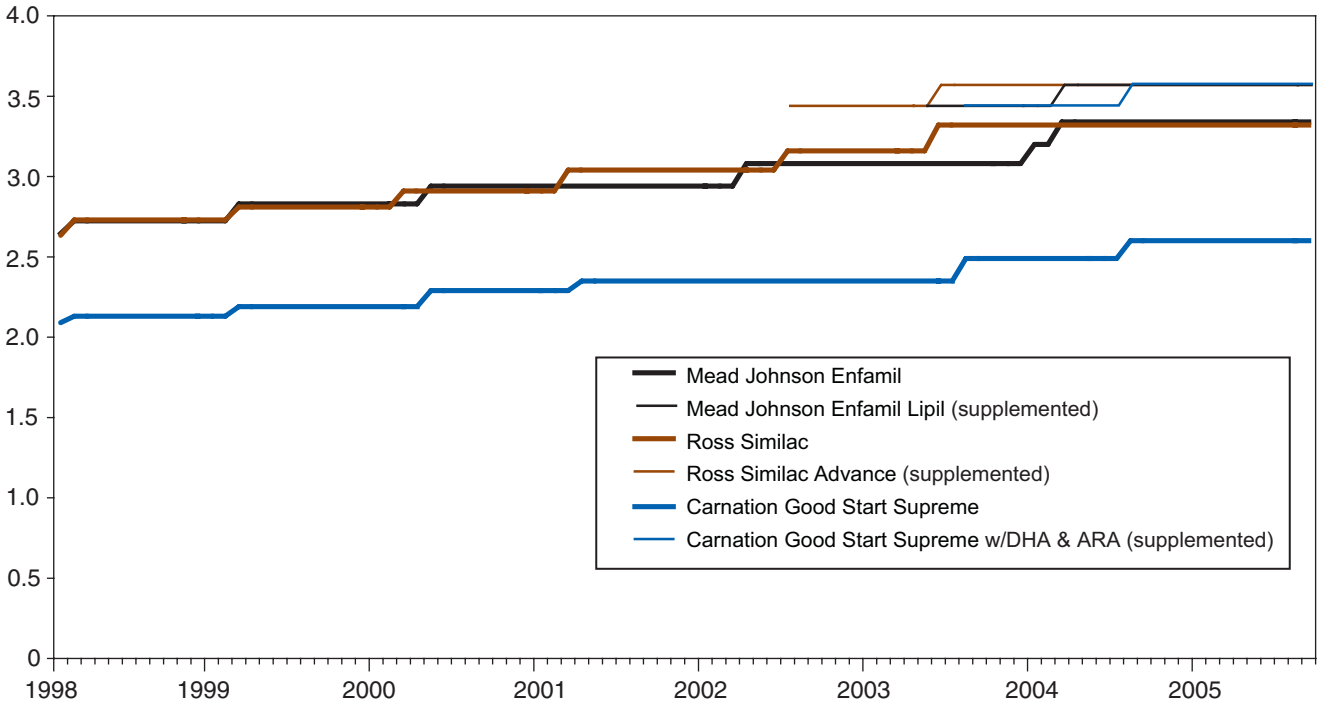
[15]Wholesale prices represent the manufacturers' lowest national wholesale price per unit for a full truckload of infant formula as reported in each manufacturer's price list catalog. Wholesale prices were obtained from wholesalers' price lists through August 2005.

Figure 5
Wholesale prices of milk-based powder by brand, 1998-2005



Source: Infant formula manufacturers' product price list catalogs.

Figure 6
Wholesale prices of milk-based liquid concentrate by brand, 1998-2005



Source: Infant formula manufacturers' product price list catalogs.

nonprescription drugs and medical supplies.[16] The reference period used here for price comparisons is January 1998 to August 2005. Results indicate that the wholesale price of powdered unsupplemented formula by Mead Johnson, Ross, and Nestlé increased by 24.4 percent, 20.5 percent, and 29.4 percent, respectively, and the corresponding wholesale prices of unsupplemented formula in liquid concentrate increased by 26.3 percent, 26.0 percent, and 24.4 percent.[17] During the same period, the CPI for all items increased by 21.5 percent, the CPI for food at home increased by 17.7 percent, and the CPI for nonprescription drugs and medical supplies increased by 3.3 percent. Thus, during the period January 1998-August 2005, the wholesale price of most unsupplemented formulas increased faster than overall as well as specific measures of inflation.[18]

Infant Formula Products in This Analysis

During the study period, each of the three manufacturers submitted rebate bids based on one of two milk-based infant formulas with iron in their product line, depending on whether or not the formula was supplemented with DHA and ARA. All analyses of wholesale and retail prices described in this report are based on these same formulas, shown below:

	Powder can size as of August 2005*
Unsupplemented formulas:	
Mead Johnson—Enfamil	14.3 oz
Ross—Similac	12.9 oz
Nestlé—Good Start Supreme	12 oz
Supplemented formulas:	
Mead Johnson—Enfamil LIPIL	12.9 oz
Ross—Similac Advance	12.9 oz
Nestlé—Good Start Supreme DHA & ARA	12 oz

*The can size of some brands of powdered infant formula changed during the study period. All three manufacturers sold liquid concentrate in 13-oz. cans.

[16]The argument for using the CPI for food at home, the Nation's principal indicator of changes in retail food prices, is that most infant formula is sold in retail foodstores. The argument for using the CPI for nonprescription drugs and medical supplies is that most infant formula is produced by pharmaceutical companies and all formula must conform to regulatory standards enforced by the Food and Drug Administration.

[17] Supplemented formulas were not available in 1998.

[18] The period of analysis is important in calculating rates of inflation. Manufacturers' wholesale prices are unchanged for months at a time, and determining whether the real wholesale price of formula has increased over a period of time depends on the length of time covered and whether it includes one or more increases in wholesale price. For example, the real wholesale price of formula will increase markedly over a relatively short time period if there was an increase in the wholesale price during that period. Conversely, real wholesale prices will fall if the chosen reference period is between increases in nominal wholesale prices, since nominal wholesale price is fixed during the period while a price index typically rises month by month.

WIC's Infant Formula Rebate Program

In the mid-1980s, infant formula was accounting for an increasing share of total WIC food costs. Starting in 1987, several States implemented rebate programs with manufacturers of infant formula in an effort to control costs. As a result of the cost savings realized from these rebate programs, a Federal law was passed in 1989 requiring that all WIC State agencies—except those States with home delivery/direct distribution or Indian State agencies with 1,000 or fewer participants—enter into cost-containment contracts for the procurement of infant formula. Current Federal regulations specify that those WIC State agencies required to operate a cost-containment system for infant formula must use a sole-source (i.e., single supplier) competitive system unless an alternative system provides equal or greater savings.[19] Under the sole-source competitive system, a WIC State agency uses competitive bidding to award a contract to a manufacturer of infant formula in exchange for a rebate for each can of infant formula issued to WIC participants. As a result, the brand of infant formula provided by WIC will vary by State according to which manufacturer holds the contract for that State.

[19]See Oliveira et al. (2004) for a summary of alternative infant formula cost-containment systems used by some States prior to this report's 1998-2006 study period.

How the Contracts Work

Solicitation for bids under the sole-source competitive system can take one of two forms—single solicitation or separate solicitations. Under single solicitation, the request for bids is for a single iron-fortified milk-based infant formula that is suitable for routine issuance to most generally healthy, full-term infants (only iron-fortified infant formulas are authorized for use in the WIC program).[20] This formula is referred to as the primary contract brand infant formula, and must be offered in all physical forms—liquid concentrate, powder, and ready-to-feed. (Although the WIC program usually issues formula in powdered or liquid concentrate forms, formula may be issued in ready-to-feed form in special situations, such as when the participant's household does not have an adequate and safe water supply or refrigeration, or if the person caring for the infant may have difficulty in correctly diluting concentrated liquid or powdered forms.)

[20] The primary contract brand of formula cannot be an exempt infant formula, which is defined as any formula that is represented and labeled for use by an infant who has an inborn error of metabolism or a low birth weight, or who otherwise has an unusual medical or dietary problem (exempt infant formula is not required to have a rebate). Infant formulas that do not meet the Federal WIC requirement for iron may be issued with medical documentation.

Manufacturers who submit bids for the WIC contract are required to specify a rebate amount for the primary contract brand infant formula for each of the three forms of infant formula.

The sole-source contract is awarded to the bidder offering the lowest total monthly net wholesale price, as determined by the submission of sealed bids, for a standardized amount of the primary contract brand infant formula by each of the three forms—powder, liquid concentrate, and ready-to-feed.[21] Net wholesale price is defined as the difference between the rebate level offered by the manufacturer and the infant formula manufacturer's lowest national wholesale price per unit for a full truckload of infant formula. (All further references to wholesale price in this report will refer to the wholesale price per unit for a full truckload of infant formula.) The standardized number of units must contain the equivalent of the total number of ounces

[21]WIC State agencies can elect to award the WIC contract to the bidder offering the highest monthly rebate if the weighted average of retail prices for different brands of infant formula in the State vary by 5 percent or less.

by physical form needed to provide the maximum allowance to the average monthly number of infants using each form.

Because net wholesale prices are weighted by the number of units by form, it is possible that a manufacturer can bid a relatively high net wholesale price (i.e., small rebate) on one product form (e.g., liquid concentrate), and yet win the contract by offering a low net wholesale price (i.e., large rebate) on another product form (e.g., powder) if that product form receives a sufficiently large weight.

Table 1 shows how a winning bidder is determined under two different scenarios. Both scenarios assume an equal number of infants (25,000) receive formula, two manufacturers bid on the contract, and the wholesale prices by product form for the two manufacturers are similar. The amount of the rebate per can offered by each manufacturer by product type also remains constant over the two scenarios. However, the scenarios differ in the number of infants issued formula by physical form. Scenario 1 assumes a nearly equal number of infants are issued powder and liquid concentrate (13,250 vs. 11,250), while scenario 2 assumes a majority are issued powder (22,500 vs. 2,000). Both scenarios have the same small issuance of ready-to-feed formula. The two scenarios can be thought of as two States with an equal number of infants but different rates of issuance by form.

Before bidding, manufacturers are given information by the State on the average number of infants using each physical form, which is derived from at least 6 months of recent participation and issuance data. Manufacturers then bid on the rebate per can by physical form. Bids are evaluated by calculating the net wholesale price per can for each physical form, then multiplying that number by the standardized number of units, which equals the total ounces for bid divided by can size. Total ounces for bid are calculated by multiplying the average infant participation by physical form by the maximum monthly issuance for each form. The winning manufacturer is the one with the lowest total monthly net wholesale price after the monthly net wholesale prices for each physical form are summed.[22]

Manufacturer 1 bids a high rebate for liquid concentrate—the rebate ($3.70) is 93 percent of the wholesale price ($4.00)—and a lower rebate for powder (rebate equals 87 percent of the wholesale price). In contrast, manufacturer 2 bids a high rebate for powder (rebate is 95 percent of the wholesale price) and a low rebate for liquid concentrate (rebate equals 78 percent of the wholesale price). In scenario 1, manufacturer 1 wins the contract based on the lowest total monthly net wholesale price ($305,914 vs. $419,577) driven by a large rebate for liquid concentrate. In scenario 2, manufacturer 2 wins the contract driven by a large rebate for powder. In the two scenarios, the winner is determined by the size of the rebate and the weight they get from the issuance rates.

Issuance of formula by physical form varies across States. Although liquid concentrate was the primary form of formula issued through WIC for many years, *powder is now the primary form of formula issued by most WIC State agencies.*[23]

[22]This is equivalent to the lowest "weighted" net wholesale price, where weights are the share of units of each product form.

[23] A recent study by the U.S. Government Accountability Office (2006) found that in the 29 States that provided information on their use of the different forms of infant formula, only a third of all formula issued in 2004 was liquid concentrate, compared with 55 percent of all formula issued in 2000.

Table 1
How bids are evaluated

Scenario 1 - 25,000 total infants, approximately evenly split between powder and liquid concentrate

	Infants	Maximum issuance per child	Total ounces per month	Wholesale price per can	Rebate per can	Net wholesale price per can	Monthly net price to State
Manufacturer 1 (winning bidder)							
Powder (13 oz can)	13,250	128	1,696,000	$11.50	$10.00	$1.50	$195,692.31
Liquid concentrate (13 oz can)	11,250	403	4,533,750	$4.00	$3.70	$0.30	$104,625.00
RTF (36 oz can)	500	806	403,000	$6.50	$6.00	$0.50	$5,597.22
							$305,914.53
Manufacturer 2							
Powder (13 oz can)	13,250	128	1,696,000	$11.00	$10.50	$0.50	$65,230.77
Liquid concentrate (13 oz can)	11,250	403	4,533,750	$4.50	$3.50	$1.00	$348,750.00
RTF (36 oz can)	500	806	403,000	$6.00	$5.50	$0.50	$5,597.22
							$419,577.99

Scenario 2 - 25,000 total infants, large majority redeeming powder

	Infants	Maximum issuance per child (ounces per month	Total ounces per month	Wholesale price	Rebate per can	Net wholesale price per can	Monthly net price
Manufacturer 1							
Powder (13 oz can)	22,500	128	2,880,000	$11.50	$10.00	$1.50	$332,307.69
Liquid concentrate (13 oz can)	2,000	403	806,000	$4.00	$3.70	$0.30	$18,600.00
RTF (36 oz can)	500	806	403,000	$6.50	$6.00	$0.50	$5,597.22
							$356,504.91
Manufacturer 2 (winning bidder)							
Powder (13 oz can)	22,500	128	2,880,000	$11.00	$10.50	$0.50	$110,769.23
Liquid concentrate (13 oz can)	2,000	403	806,000	$4.50	$3.50	$1.00	$62,000.00
RTF (36 oz can)	500	806	403,000	$6.00	$5.50	$0.50	$5,597.22
							$178,366.45

Source: Prepared by USDA's Economic Research Service.

All the different types of infant formula (except exempt infant formula) produced by the contract-winning manufacturer are referred to as contract brand infant formula. Under single solicitation, the winning bidder is required to supply and provide rebates for all the different types of contract-brand infant formula the WIC State agency chooses to issue, such as lactose-free and soy-based formulas. Contract-winning manufacturers that do not produce soy-based infant formulas must subcontract with another manufacturer to supply it. The amount of the rebate on these contract brand infant formulas is based on the same percentage discount rebate (i.e., the amount of the rebate as a percentage of the wholesale price) for the particular form of the primary contract-brand infant formula. For example, if the rebate offered for the primary contract brand of powdered infant formula was 85 percent of the manufacturer's wholesale price, then the rebate for all other powdered forms of the contract-brand infant formula (including soy-based powder) would also be 85 percent of their wholesale price.

The percentage discount rebate is based on wholesale prices at the time of the bid opening. The contracts contain inflationary provisions. In the event of an increase (decrease) in the wholesale price after the bid opening, there is a cent-for-cent increase (decrease) in the rebate amounts. Thus, the *net* wholesale price of formula to a WIC State agency remains fixed over the entire span of the contract despite increases (or decreases) in the wholesale price.[24]

Under separate solicitations, bids are issued separately for milk-based and soy-based infant formulas. Separate solicitations may increase competition for WIC contracts by allowing new or smaller infant formula manufacturers with a limited product line to bid on contracts (*Federal Register*, Vol. 65, No. 164).

During most of the 1998-2006 study period, WIC State agencies could choose to issue all or some of the different types of contract brand infant formula. Any noncontract brand of formula (including exempt infant formulas and formulas not manufactured by the WIC contract manufacturer) may be issued only with medical documentation (provided by a licensed health care professional authorized to write medical prescriptions under State law) that an infant has a condition that dictates the formula's use.[25] The WIC agency does not receive rebates from noncontract-brand infant formula.[26]

States can either hold an individual contract for infant formula or be part of a multistate group contract or alliance. Of the 48 States and the District of Columbia that operated a competitive sole-source rebate system in conjunction with a retail food delivery system as of August 2005, 30 took part in one of 5 multistate alliances under which WIC State agencies join together in a single rebate agreement to obtain infant formula.[27] In this way, WIC State agencies with fewer clients can pool their buying power to leverage higher rebate levels (Liu, 1991). The remaining 19 States held contracts that applied solely to their particular State.[28]

Most WIC participants receive food instruments, such as vouchers, that they transact for the contract brand of infant formula at authorized retailers. The WIC State agency then reimburses the vendor for the full retail price of the

[24]While the nominal net wholesale price remains constant over time, the real (i.e., inflation-adjusted) net wholesale price will decrease over time due to general price inflation.

[25] The only exception to this rule is that local WIC agencies may issue noncontract-brand infant formula without medical documentation in order to accommodate religious eating patterns (*Federal Register*, Vol. 65, No. 164).

[26] The U.S. Government Accountability Office (2006) estimated that noncontract formula accounted for 8 percent of all formula provided to WIC participants in 2004. Also see United States General Accounting Office, 2003, for information on the use of noncontract infant formula in WIC.

[27] For example, the Western States Contracting Alliance (WSCA) is comprised of Alaska, Arizona, Delaware, Hawaii, Idaho, Kansas, Maryland, Montana, Nevada, Oregon, Utah, Washington, the District of Columbia, West Virginia, and Wyoming (as well as American Samoa, Guam, Virgin Islands, and 3 Indian Tribal Organizations). The New England and Tribal Organization (NEATO) is comprised of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and 3 Indian Tribal Organizations.

[28] Although Oklahoma, along with 3 Indian Tribal Organizations located within the State, comprise the Southwest multistate region, they are considered an individual State agency for this report.

infant formula, after which its financial institution bills the formula manufacturer for the contracted rebate on each can of formula purchased. As a result, the cost of infant formula to the WIC State agency per can of infant formula equals net wholesale price plus the retail markup, which can be expressed as:

Cost to WIC = (retail price - wholesale price) + (wholesale price - rebate).

Wholesale prices are a component of both retail markup and net wholesale price. Wholesale prices for infant formula vary by manufacturer; each manufacturer publishes a wholesale price list for its products. The listed prices are set at the national level, and vary only by volume, with larger volume purchases (up to a truckload of formula) receiving a bulk discount. Since the wholesale price used by WIC is the manufacturer's lowest national wholesale price per unit for a full truckload of infant formula, the wholesale price for an individual manufacturer, used for the determination of its net wholesale price, does not vary by State (U.S. territories and Indian tribal organizations are excluded from this discussion). On the other hand, the amount of the rebate, determined by the contract awarded by submission of sealed bids, varies by both manufacturer and State. As a result, net wholesale price will also vary by State.

Recent Legislative Developments

The Child Nutrition and WIC Reauthorization Act of 2004 (P.L. 108-265), signed into law in June 2004, made several modifications to WIC's infant formula rebate program. Previously, manufacturers could submit a bid for the rebate contract based on any product in their product line as long as it was suitable for routine issuance to the majority of generally healthy, full-term infants. WIC State agencies were responsible for identifying the specific infant formula products in the winning manufacturer's product line to be used in their WIC program. Consequently, the contract formulas provided to WIC participants in a particular State would not necessarily include the primary contract-brand product specified in the manufacturer's bid. For example, nearly all of the bids submitted by the formula manufacturers after February 2003 have been for the new DHA- and ARA-supplemented formulas. However, some States have chosen not to offer these formulas, while others have given the participant (i.e., the infant's parent) the choice of either supplemented or unsupplemented formula. Where the contract formula provided through WIC was different from the primary contract formula in the bid, the rebate on the formula provided by WIC is based on the same percentage discount rebate as the primary contract formula.[29] Under the new law, for all contracts based on solicitations issued after September 2004, State agencies must use the primary contract infant formula for which the manufacturer submitted its bid (and for which the contract was awarded) as the first choice of issuance (by physical form), with all other infant formulas issued as an alternative. As a result, if the winning bids are based on the DHA- and ARA-supplemented formulas, then those States awarding rebate contracts will have to offer the supplemented formulas to their participants if they do not do so currently.

[29]In those States that do not offer the formula that was bid on as the formula of first choice, the formula provided must be on the list of WIC-approved infant formulas.

The Child Nutrition and WIC Reauthorization Act of 2004 also requires State agencies or multistate alliances that serve a monthly average of more than 100,000 infants (during the preceding 12-month period) to use separate solicitations in soliciting bids from infant formula manufacturers (except where the Secretary of Agriculture determines that such solicitation procedures are not in the best interest of the program). As of January 1, 2006, there was one case in which two different manufacturers held infant formula contracts in a single State—New York, where Mead Johnson held the milk-based contract and Nestlé held the soy-based contract. However, because the bids for rebates in the larger States will now be solicited for milk-based and soy-based infant formula separately, there may be more cases where two different manufacturers hold contracts—one for milk-based formula and one for soy-based formula—in the same State or multistate alliance.

The new law also prohibits the formation of multistate alliances for the purchase of infant formula if the total number of infants served by the States exceeds 100,000 (unless the alliance had 100,000 infants as of October 2003). Any alliance in existence as of October 2003 may expand to serve more than 100,000 infants, but may not expand to include any additional WIC State agency (an exception is made if the WIC State agency to be added served fewer than 5,000 infants as of October 2003).[30]

In recent years, some States have seen a growth in the number of WIC-only stores (i.e., vendors that derive more than 50 percent of their annual food sales revenue from WIC food instruments). This growth has been cited as possibly reducing the savings from infant formula rebates in the future (Neuberger and Greenstein, 2004). The thinking is that formula manufacturers are willing to offer high rebates to win the WIC contract in part because the WIC contract brand of formula may get more shelf space and hence lead to increased sales to non-WIC consumers. In contrast, shelf space in WIC-only stores does not promote sales to non-WIC customers. As more WIC participants purchase their formula in WIC-only stores, sales of the contract brand of formula to WIC customers in traditional retail food stores decrease, and these stores may respond by stocking less of the WIC contract brand and devoting less shelf space to it. Infant formula manufacturers may then lower their rebate bids as a result of the reduced opportunity to attract non-WIC customers to their products.[31]

The Child Nutrition and WIC Reauthorization Act of 2004 includes several provisions that attempt to ensure that the vendors authorized to participate in WIC charge competitive prices. In addition, the Consolidated Appropriations Act, enacted on December 8, 2004, imposed a nationwide moratorium on authorizing new WIC-only stores, except with USDA approval that the stores are necessary to ensure participant access. This moratorium was extended in the FY 2006 Appropriations Act, with an additional exception for WIC State agencies for which vendor cost-containment systems have been certified by USDA. In November 2006, FNS published an interim rule to implement these cost containment provisions (*Federal Register*, Vol. 70, No. 228).

Federal regulations dictate that participants can redeem a maximum of 128 ounces of powered infant formula each month. However, the amount that participants can actually redeem is determined by can size. If the number of

[30] The same law requires WIC retail vendors to purchase infant formula only from licensed wholesalers, distributors, and retailers set forth on a list provided by the State agencies. This is to prevent the sale of stolen infant formula.

[31] There were over 1,200 WIC-only stores in 19 States (including the District of Columbia) in 2004 (preliminary estimate provided by FNS). In December 2005, WIC-only stores accounted for 48 percent of all WIC voucher redemptions in California, the State with the largest number of WIC infants (data from the California WIC program).

dry ounces in a can does not evenly divide into 128, participants may be able to redeem less than the full allotment. For example, if the can size is 16 ounces, then a participant can redeem 8 cans per month and get a full 128 ounces per month. However, if the can size is 14.1 ounces, then a participant can only redeem 9 cans for a total of 126.9 ounces. This disparity raised concerns that some manufacturers may have an advantage when bidding for infant formula contracts because they are essentially bidding on fewer total cans. Regulations require net wholesale price bids to be evaluated assuming all 128 ounces of formula are redeemed—no matter the can size (CFR 246.16a). The Child Nutrition and Reauthorization Act allows States—for contracts awarded on or after October 1, 2004—to round up to the next whole can of infant formula so participants can redeem the full allotment.

In July 2005, FNS released a proposed rule that would prohibit WIC State agencies from requiring infant formula manufacturers, in rebate contracts, to provide free products and services, such as sample infant formula (*Federal Register,* Vol. 70, No. 143). According to FNS, the quantity of sample infant formula required in rebate contracts has grown in recent years. FNS expressed concern that the increased quantity of sample infant formula and other gratis items, including educational supplies, could result in reduced rebate savings to individual State agencies and to the WIC program nationally.

Trends in Bidding for Rebate Contracts

This chapter examines the recent bidding history of infant formula manufacturers and some of the characteristics of winning bids from January 1998 to January 2006. The analysis is based on bid data compiled by two different organizations: the Center on Budget and Policy Priorities, and USDA's Food and Nutrition Service (FNS), the agency responsible for administering the WIC program.

Manufacturers' Bid History

During the study period, three manufacturers bid on infant formula rebate contracts—Mead Johnson, Ross, and Nestlé. Table 2 shows the bid history of the three firms during this time for the milk-based infant formula rebate contracts.[32] Examination of the data suggests that several changes took place in the rebate program during or soon after 2003.

Mead Johnson and Ross bid on the vast majority (94 percent) of contracts during the study period, while Nestlé was much more selective, bidding on less than half (27 percent) of all contracts.[33] However, Nestlé has been much more active in recent years, bidding on eight of the nine milk-based contracts awarded after 2003.[34] Furthermore, in the one State that Nestlé did not bid for the milk-based contract during this period (New York in 2006), Nestlé bid on and won the soy-based contract. As a result of Nestlé's increased bidding activity, all of the contracts awarded after 2003 (except for New York's 2006 milk-based contract) have been bid on by all three manufacturers.

In terms of winning bids between 1998 and the end of 2003, Mead Johnson won 18 contracts, Ross 15, and Nestlé 7. However, Mead Johnson has won only one contract after 2003, while Nestlé has won five, and Ross has won three.[35]

During most of the study period (1998 to January 2006), Mead Johnson won nearly all the infant formula contracts in the large WIC States, and all the contracts in the multistate alliances. The notable exception was in August 2003, when Ross won the rebate contract in California that was previously held by Mead Johnson.[36]

Along with the change in contracts won by manufacturers in recent years, there has been a corresponding shift in each manufacturer's share of the WIC market (fig. 7).[37] Mead Johnson accounted for 60 to 70 percent of the WIC market from 1998 to 2003. However, their share dropped to 49 percent in 2004 due largely to the loss of the California contract to Ross in 2003. Meanwhile, Ross increased its share from 21 percent in 2003 to 39 percent in 2004, while Nestlé's share of the WIC market increased from 5 percent in 2001 to 14 percent in 2005.

Another important change has been in the brands of formula that manufacturers are submitting bids for, that is, the designated primary contract-brand

[32]Milk-based infant formula accounts for most of the formula provided by WIC, so we focus on that here.

[33]While Nestlé bid on fewer contracts than the other two formula manufacturers, it was more likely to win a contract that it bid on. Nestlé won 58 percent of the contracts it bid on (11 out of 19), compared with 40 percent (19 out of 47) for both Mead Johnson and Ross.

[34] Four of these eight contracts were in States in which Nestlé did not bid on the previous contract.

[35]Mead Johnson did not hold the previous contract in any of the eight States won by Ross and Nestlé after 2003. That is, Mead Johnson did not lose any of the States that it previously held contracts in.

[36] California is the largest State in terms of WIC infants, with about 14 percent of the U.S. total (based on unpublished data from USDA's Food and Nutrition Service).

[37] Shares are determined by the total number of WIC infants in the States held by a particular formula manufacturer and therefore do not represent the shares of total infant formula redemptions. Interstate differences in breast feeding rates are not considered. Thus, this chart should be viewed as indicative of general trends in the share of the WIC infant formula market.

Table 2
Bids for milk-based infant formula rebate contracts by manufacturer, 1998-2006

	Mead	Ross	Nestlé	Number of bidders
NY 7/1/1998				1
CA 8/1/1998				2
GA 8/1/1998				2
CO 10/1/1998				2
MO 10/1/1998				3
PA 10/1/1998				2
TX, MN, IO 10/1/1998				2
FL 2/1/1999				3
KY 7/1/1999				2
ND 7/1/1999				2
TN 7/1/1999				2
IN 10/1/1999				2
LA 10/1/1999				2
NJ 10/1/1999				3
OK 10/1/1999				2
SD, NE 10/1/1999				2
SC 4/7/2000				2
AL 10/1/2000				2
AR, NM, NC 10/1/2000				2
WI 1/1/2001				2
IL 2/1/2001				2
VA 6/29/2001				3
KY 7/1/2001				3
ND 7/1/2001				2
NEATO 10/1/2001				2
WSCA 10/1/2001				2
MI 11/1/2001				2
OH 6/20/2001				0
FL 2/1/2002				3
GA 10/1/2002				2
OH 10/1/2002				2
TX, MN, IO 10/1/2002				2
CO 1/1/2003				3
OK 1/1/2003				3
LA 2/1/2003				3
NY 7/1/2003				1
CA 8/1/2003	DHA&ARA	DHA&ARA		2
AR, NM, NC 10/1/2003				2
IN 10/1/2003	DHA&ARA	DHA&ARA		2
MO/NE/SD 10/1/2003	DHA&ARA	DHA&ARA		2
PA 10/1/2003	DHA&ARA	DHA&ARA		2
TN 7/1/2004	DHA&ARA	DHA&ARA	DHA&ARA	3
AL 10/1/2004	DHA&ARA	DHA&ARA		3
LA 10/1/2004	DHA&ARA	DHA&ARA	DHA&ARA	3
NJ 10/1/2004	DHA&ARA	DHA&ARA	DHA&ARA	3
SC 4/7/2005	DHA&ARA	DHA&ARA	DHA&ARA	3
ND 7/1/2005	DHA&ARA	DHA&ARA	DHA&ARA	3
OK 10/1/2005	DHA&ARA	DHA&ARA	DHA&ARA	3
WI 1/1/2006	DHA&ARA	DHA&ARA	DHA&ARA	3
NY 1/1/2006	DHA&ARA	DHA&ARA		2

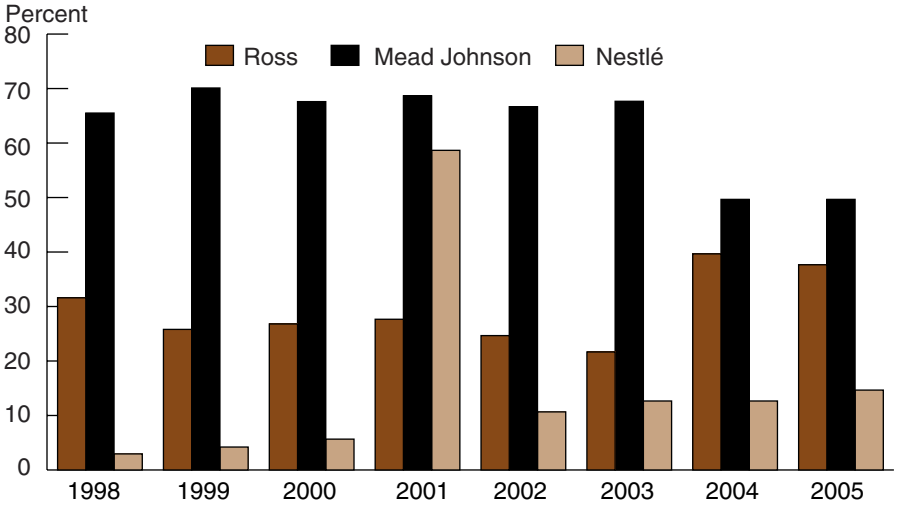
Legend

Winning bid	Losing bid	Did not bid

Source: Compiled by USDA's Economic Research Service based on formula manufacturers' bids.

Notes: DHA&ARA=bid based on DHA- and ARA-supplemented formula.
NEATO=New England and Tribal Organizations (CT, ME, MA, NH, and RI).
WSCA=Western States Contracting Alliance (AK, AZ, DE, HI, ID, KS, MD, MT, NV, OR, UT, WA, DC, WV, and WY).

Figure 7
Estimated share of the WIC infant formula market by manufacturer, 1998-2005



Source: USDA's Economic Research Service.

formula. Beginning with the California contract that became effective in August 2003, nearly all the submitted bids have been for DHA- and ARA-supplemented formulas.

Characteristics of the Winning Bids

The net wholesale price and rebate (per can) of the winning bids (both powdered and liquid concentrate) are shown in figures 8 and 9. Note that the net wholesale price plus the rebate equals the wholesale price.[38] Differences in can sizes and reconstitution factors for powdered formula across both manufacturer and time period make comparison of rebates and net wholesale prices across contracts difficult. As a result, this discussion focuses on the winning liquid concentrate contracts (all the liquid concentrate contracts awarded during the study period were based on a 13-ounce can that reconstituted to 26 ounces). However, the same general conclusions hold for the powdered contracts.

Rebates varied greatly by State and time period, ranging from $1.82 to $3.37 per can of liquid concentrate during the study period (fig. 9). Net wholesale price also varied, ranging from 7 cents to $1.07 per can. The percentage discount rebates (i.e., the amount of the rebate expressed as a percentage of the wholesale price) were generally large, ranging from 65 percent in New York (effective July 2003) to 98 percent in South Carolina (effective April 2000). In other words, the infant formula purchased through WIC cost the South Carolina program only 2 percent of its wholesale cost, plus the amount of the retail markup.[39]

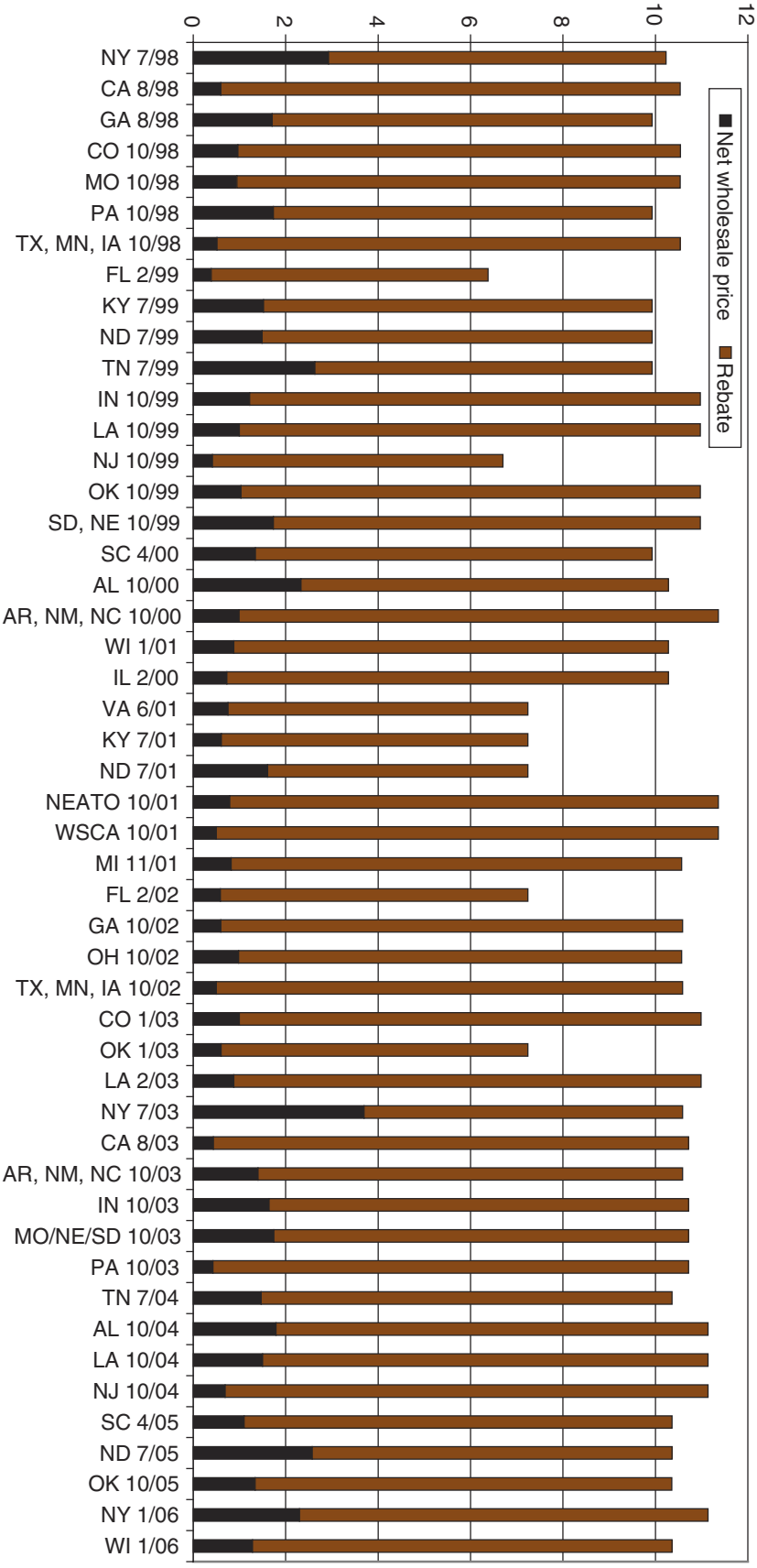
Both supply-side and demand-side characteristics of the infant formula market help to explain why WIC State agencies receive such large rebates. On the supply side, the formula market is highly concentrated, a factor which is often associated with higher profit margins. This, in turn, gives

[38]The wholesale prices shown in figures 4 and 5 differ across contracts due to both variation in the wholesale price by manufacturer and changes in each manufacturer's wholesale prices over time.

[39]Rebate contracts contain inflationary provisions. In the event of an increase in the wholesale price after the date of the bid opening, there is a cent-for-cent increase in the rebate amounts. Thus, once the wholesale price increases (e.g., near the end of the contract), the cost to an individual State WIC agency will be an even smaller percentage of the new wholesale price.

Figure 8

Rebate and net wholesale price of milk-based powder by State, 1998-2006



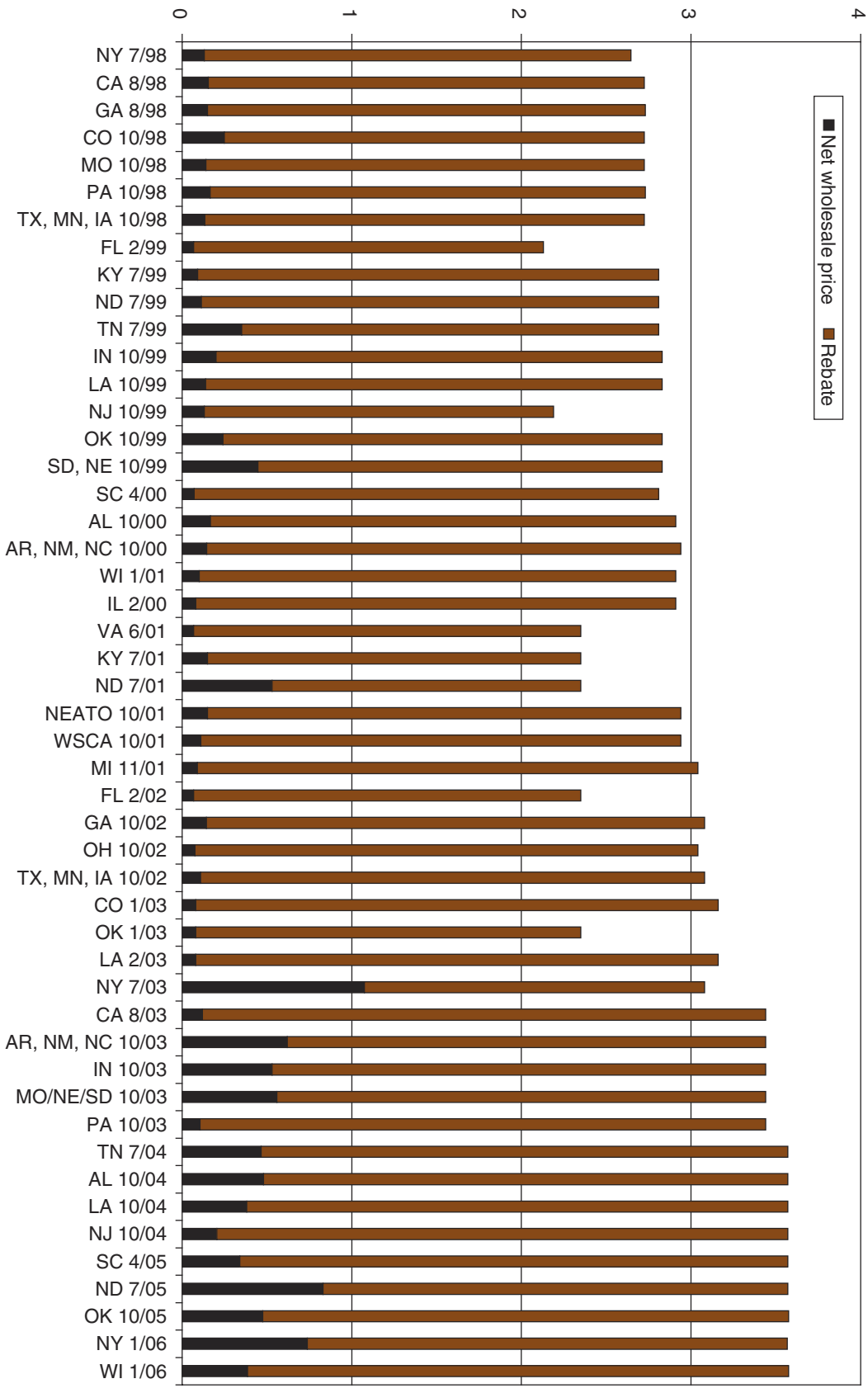
Note: Can sizes are not standardized.

Source: Compiled by USDA's Economic Research Service based on formula manufacturers' bids.

Figure 9

Rebate and net wholesale price of milk-based liquid concentrate by State, 1996-2006

Dollars per 13-ounce can



Source: Compiled by USDA's Economic Research Service based on formula manufacturers' bids.

manufacturers the cushion to offer high rebates.[40] On the demand side, WIC participants purchase over half of all infant formula, assuring large sales for the contract-winning manufacturer. In addition, manufacturers may realize spillover benefits of winning a WIC contract: retailers may devote more shelf space to the WIC contract brand, which may spur sales to non-WIC consumers. Sales may also rise if hospitals and/or physicians recommend the WIC contract brand to non-WIC mothers.[41]

Much of the concern about a possible trend toward reduced rebates and higher net wholesale prices was prompted by the rebate contract for New York that took effect in July 2003. This contract specified a rebate that was only 65 percent of its wholesale price (on January 1, 2004, a contract amendment changed the rebate in New York to 75 percent of its wholesale price). The percentage discount rebates specified in previous contracts were usually 90 percent or more (i.e., in 31 out of the 34 previous contracts). Only one manufacturer—Mead Johnson—bid on the New York contract. This was seen as particularly significant because New York contains the third largest number of infants in WIC. States with large numbers of WIC infants are presumably able to negotiate larger rebates from infant formula manufacturers, other factors being constant.[42] Although no contract awarded since New York's has as low a percentage discount rebate, net wholesale prices in general appear to have risen.

[40]For a fuller discussion of market power and prices, see Prell, 2004.

[41]To win a WIC contract, a manufacturer may choose to offer infant formula at low net wholesale prices or even at a loss in the WIC market by bidding a high rebate. To be profitable to a manufacturer, such a below-cost strategy requires that increased sales in the non-WIC market offset the loss in the WIC market.

[42]It has been speculated that one factor behind only one manufacturer bidding on the New York contract was California soliciting bids for their contract at about the same time (the California opening date for bids was December 2002, versus March 2003 for New York). Concerns regarding Ross' capacity to fulfill the WIC contract in two of the largest States may have prevented it from bidding on both contracts.

Trends in Net Wholesale Price

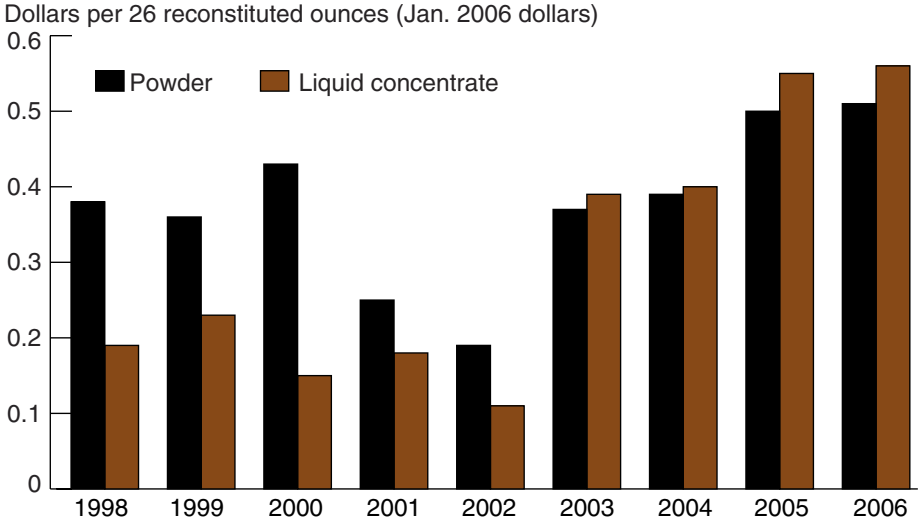
This chapter analyzes recent trends in the net wholesale price, which along with the retail markup, determines the cost of infant formula to the WIC program. The analysis examines the net wholesale prices associated with both the powder and liquid concentrate forms of milk-based infant formula. Because both the can sizes and reconstitution factors for powder formula differ across manufacturers, all prices reported in this chapter were converted to a standard unit of volume—26 ounces of reconstituted formula. Net wholesale prices have been adjusted for inflation and represent the price of 26 reconstituted ounces of infant formula as of January 2006.[43]

The real net wholesale price for both powder and liquid concentrate has increased, on average, across those States awarding new infant formula rebate contracts since 2002 (fig. 10). However, there are several caveats. Our calculations are based on unweighted data, that is, the net wholesale prices for all States awarding contracts in a particular year are counted the same regardless of the size of their WIC infant population. Also, the mix of States represented in the annual averages varies from year to year.[44] Historically, some State agencies receive lower net wholesale prices than other States. Therefore, the upward trend in net wholesale prices may arise, in part, because the contracts in the later years represent high net-wholesale-price States, whereas the contracts in the early years could represent low net-wholesale-price States. The next section examines whether net wholesale prices are increasing or decreasing for individual State agencies.

State-Specific Changes in Real Net Wholesale Prices, Wholesale Prices, and Rebates

Figures 11 and 12 show the difference between a State's net wholesale price in its most recent contract (2003 or later) and the net wholesale price in the

Figure 10
Average real net wholesale prices of newly awarded infant formula rebate contracts, 1998-2006



Source: USDA's Economic Research Service.

[43]Specifically, net wholesale prices discussed in this section have been deflated by the CPI-U for all items—the most widely used measure of inflation.

[44]Although infant formula contracts typically last about 3 years, they vary in duration across States and can be longer or shorter. A recent report by the Government Accountability Office (2006) found that 45 States allow for extensions of their infant formula contracts ranging from 1 to 4 years.

State's prior contract, adjusted for inflation.[45] For example, if a State negotiated contracts in 2005 and 2002, the 2002 real net wholesale price was subtracted from the 2005 real net wholesale price. States are represented twice in the figures if they awarded more than one contract since 2003.

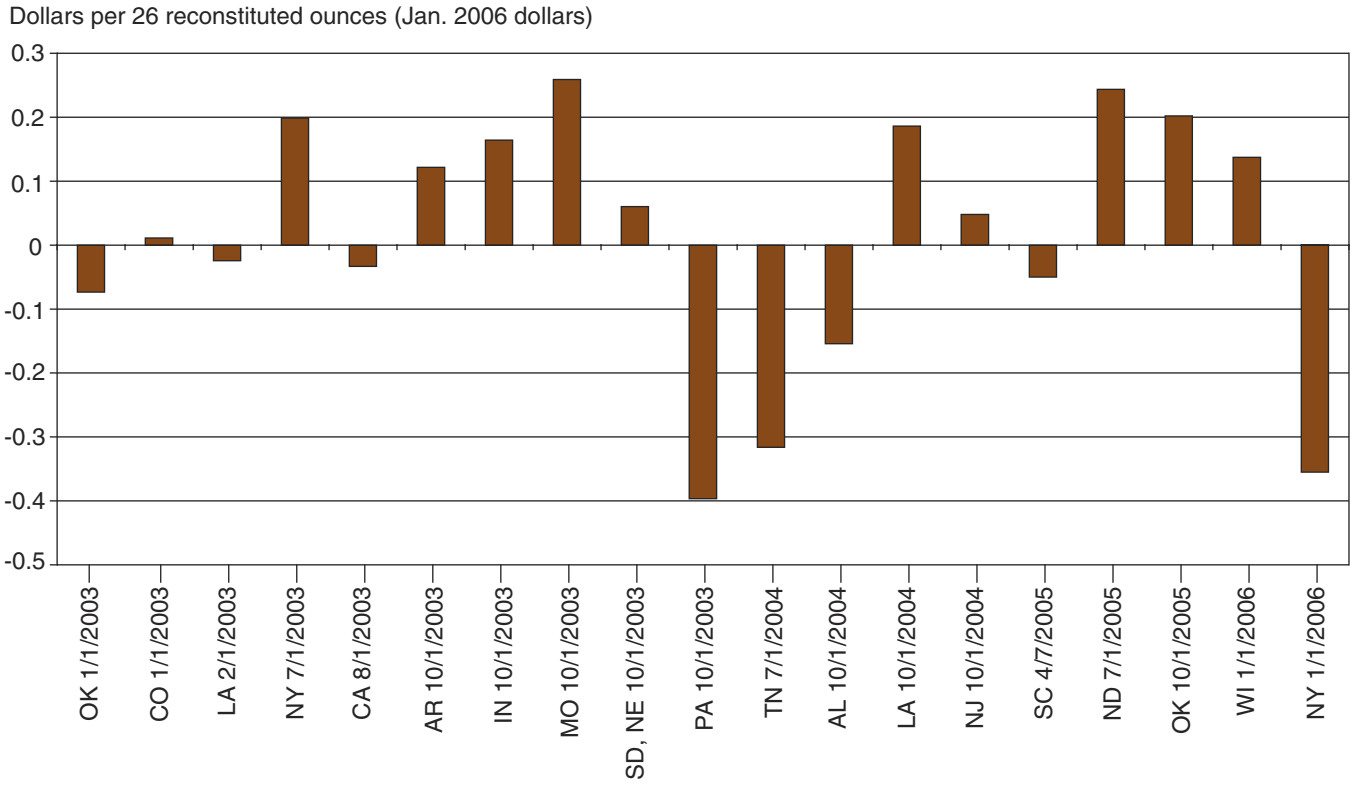
Of the 19 contracts since 2003, 11 show an increase in the real net wholesale price for milk-based powder (fig. 11). Three States—Oklahoma, Louisiana, and New York—awarded two contracts since 2003. Oklahoma and Louisiana saw a decrease in real net wholesale price for their contracts effective in 2003, but an increase in net wholesale price for their more recent contracts. On the other hand, New York saw an increase in real net wholesale prices for its contract effective in 2003, while the next contract, effective in 2006, showed a decrease.[46] The net effect of the two contracts was an increase in real net wholesale price in Oklahoma and Louisiana and a decrease in real net wholesale price in New York. So, of the 16 *States* that awarded contracts since 2003, 10 (63 percent) saw real net wholesale prices increase relative to their latest pre-2003 contract, and 6 (38 percent) saw net wholesale prices decrease.

Of the 19 contracts for liquid concentrate that became effective since 2003, 13 showed an increase in real net wholesale price (fig. 12). The net effect in all three States that awarded two contracts since 2003 was an increase in real net wholesale price. So, of the 16 *States* that awarded contracts since 2003, 13 (81 percent) saw a net increase in real net wholesale price over their latest pre-2003 contract.

[45]The total cost to a WIC State agency depends on the combined effect of powder and liquid concentrate costs based on the State's issuance of powder vs. concentrate. However, because data on the ratio of powder and concentrate issued by individual States was not available, data on the changes in real net costs in this section are presented for powder and concentrate separately.

[46]Note that the comparison is based on real net wholesale price as of the effective date of the contract (7/1/2003) and does not reflect the contract amendment on 1/1/2004 that reduced the net wholesale price to 25 percent of its wholesale price.

Figure 11
Change in State's real net wholesale price for milk-based powder contracts awarded since 2003 compared with prior contract



Source: USDA's Economic Research Service based on formula manufacturers' bids.

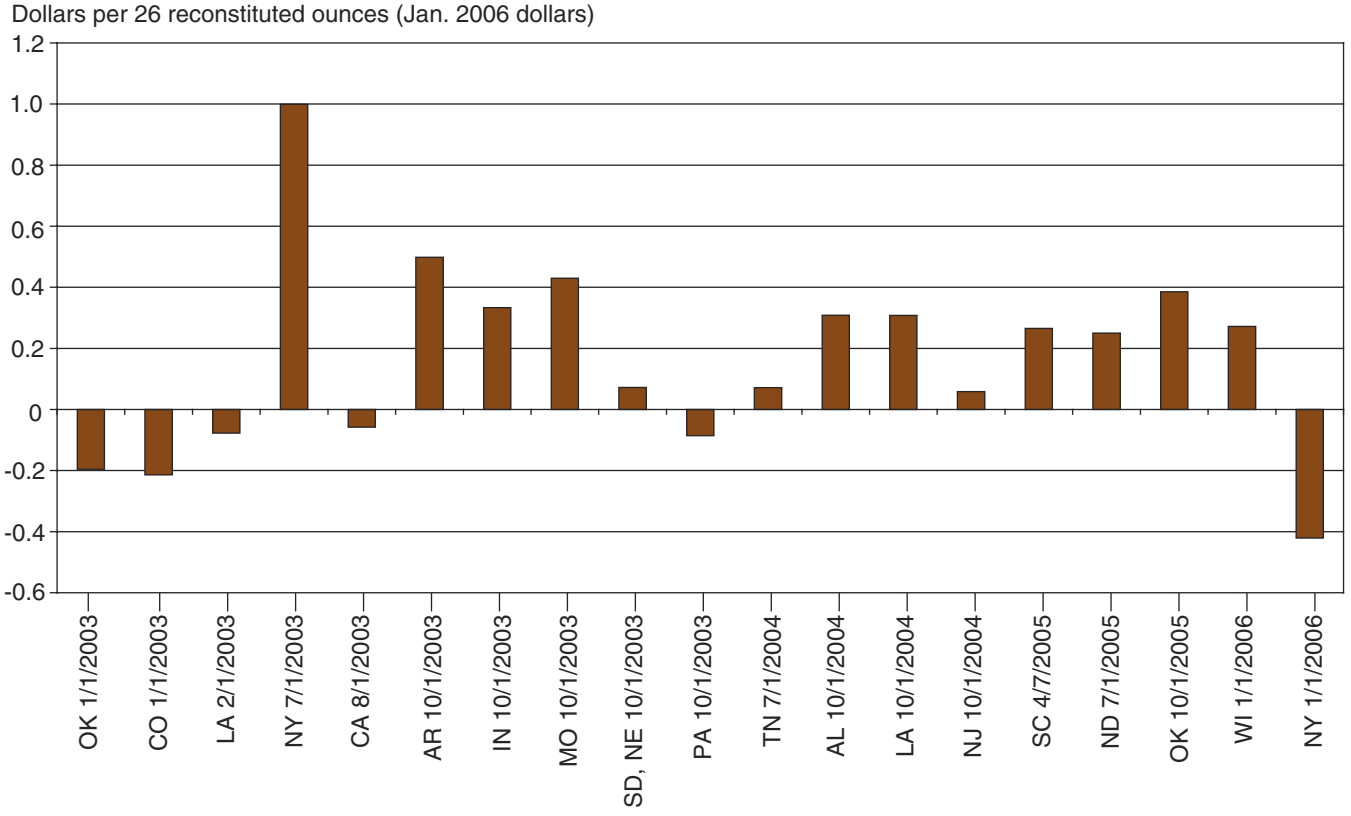
Tables 3 (powder) and 4 (liquid concentrate) show State-specific changes in real net wholesale prices, real wholesale prices, and real rebates for those States awarding contracts since 2003. The "change in real net wholesale price" column contains the data graphed in figures 11 and 12. Data in the next two columns—"change in real wholesale price" and "change in real rebate"—provide information on the factors behind changes in real net wholesale price, i.e., whether the changes in real net wholesale price were due to a change in the real wholesale price, a change in the real rebate, or both.

The tables show that real wholesale prices usually increased between contracts.[47] In many cases, the wholesale price for the latest contract was based on the more costly DHA- and ARA-supplemented formulas while the wholesale price for the previous contract was based on the unsupplemented formula. Therefore, the net wholesale price will increase for those States that switch from unsupplemented to supplemented formulas if the rebate remains constant. In the past, each State could choose the formulas it would offer participants from among all the contract brands of the winning manufacturer. However, the Child Nutrition and WIC Reauthorization Act of 2004 (P.L. 108-265) requires State agencies to use the primary contract infant formula product submitted by the manufacturer as the first choice of issuance for all contracts based on solicitations after September 2004.[48] Consequently, with all manufacturers currently submitting bids for the DHA- and ARA-supplemented formulas, wholesale prices will be higher.

[47]There were very few cases where real wholesale prices decreased. Oklahoma (January 2003) shows a decrease in real wholesale price for powder and liquid concentrate, but the difference in price was measured between two different contract holders (the more recent contract was held by Nestlé, while the prior contract was held by Mead-Johnson, and Nestlé had lower wholesale and retail prices than Mead-Johnson and Ross during that time period). The only other real wholesale price decrease occurred in powder for the Arkansas, New Mexico, and North Carolina alliance of States (October 2003). This decrease was very small, and coincided with a change in the can size of Mead Johnson's powdered formula.

[48]Many States have chosen to offer the supplemented formulas to their participants even though they were not required to do so until their next contract.

Figure 12
Change in State's real net wholesale price for milk-based liquid concentrate contracts awarded since 2003 compared with prior contract



Source: USDA's Economic Research Service based on formula manufacturers' bids.

Table 3

Summary of changes in milk-based powder contracts awarded after 2002

State agencies	Change in real: Net wholesale price	Wholesale price	Rebate
		January 2006 dollars	
OK 1/1/2003	-0.074	-0.501	-0.427
CO 1/1/2003	0.011	0.151	0.140
LA 2/1/2003	-0.025	0.087	0.111
NY 7/1/2003	0.199	0.077	-0.122
CA 8/1/2003	-0.033	0.289	0.322
AR, NM, NC 10/1/2003	0.122	-0.054	-0.176
IN 10/1/2003	0.164	0.292	0.128
MO 10/1/2003	0.259	0.334	0.075
SD, NE 10/1/2003	0.060	0.292	0.232
PA 10/1/2003	-0.397	0.137	0.534
TN 7/1/2004	-0.316	0.315	0.631
AL 10/1/2004	-0.154	0.231	0.385
LA 10/1/2004	0.186	0.185	-0.001
NJ 10/1/2004	0.048	0.773	0.726
SC 4/7/2005	-0.050	0.307	0.357
ND 7/1/2005	0.243	0.725	0.481
OK 10/1/2005	0.203	0.721	0.518
WI 1/1/2006	0.137	0.211	0.074
NY 1/1/2006	-0.355	0.230	0.585

Source: USDA's Economic Research Service based on formula manufacturers' bids.

Table 4

Summary of changes in milk-based liquid concentrate contracts awarded after 2002

State agencies	Change in real: Net wholesale price	Wholesale price	Rebate
		January 2006 dollars	
OK 1/1/2003	-0.196	-0.772	-0.576
CO 1/1/2003	-0.214	0.155	0.369
LA 2/1/2003	-0.077	0.086	0.163
NY 7/1/2003	0.999	0.107	-0.892
CA 8/1/2003	-0.058	0.389	0.447
AR, NM, NC 10/1/2003	0.498	0.337	-0.162
IN 10/1/2003	0.333	0.351	0.017
MO 10/1/2003	0.430	0.394	-0.036
SD, NE 10/1/2003	0.072	0.351	0.279
PA 10/1/2003	-0.086	0.386	0.472
TN 7/1/2004	0.072	0.395	0.324
AL 10/1/2004	0.308	0.392	0.084
LA 10/1/2004	0.308	0.286	-0.022
NJ 10/1/2004	0.059	1.126	1.068
SC 4/7/2005	0.265	0.385	0.120
ND 7/1/2005	0.250	0.998	0.747
OK 10/1/2005	0.386	0.989	0.604
WI 1/1/2006	0.272	0.274	0.003
NY 1/1/2006	-0.421	0.249	0.670

Source: USDA's Economic Research Service based on formula manufacturers' bids.

Although wholesale prices usually increased in real terms, so did real rebates. Looking at powder and liquid concentrate combined, only 9 of the 38 changes in real rebates (24 percent) were negative (tables 3 and 4). In 29 of the 38 total cases (76 percent), both real rebates and real net wholesale prices increased from one contract to the next. In these cases, the change in net wholesale price is determined by the increase in the real rebate relative to the increase in the real wholesale price. For example, New Jersey's October 2004 powdered contract saw a 60-cent increase in the rebate amount per 26 reconstituted ounces, but a 64-cent increase in the wholesale price. As a result, the net wholesale price increased by 4 cents. In 16 of these 29 (55 percent) cases, the increase in real wholesale price exceeded the increase in real rebates, resulting in an increase in the real net wholesale price.

Trends in Bids

The discussion so far has focused on net wholesale prices for the "winning" infant formula manufacturer. Arguably, this is the price most important to WIC. However, patterns in bidding—losing bids as well as winning bids—may contain information about trends in the bidding process and the incentives of all manufacturers—not just the contract winner—to participate and offer bids to obtain a WIC contract. For example, if bids by the "losing" manufacturer appear less aggressive over time as evidenced by relatively high net wholesale prices, then winning bidders may adjust their behavior and offer higher net wholesale prices on future contracts.

Each manufacturer's real net wholesale price bids for powder and liquid concentrate are represented in figures 13-15.[49] Real net wholesale prices for both of Mead Johnson's product types—powder and liquid concentrate—generally move together (correlation coefficient equals .91) (fig. 13). In addition, real net wholesale prices bid by Mead Johnson appear to increase beginning in 2003, about the time that the bids based on the DHA- and ARA-supplemented formulas appeared.

[49]The time intervals between the data points in the figures are not equivalent.

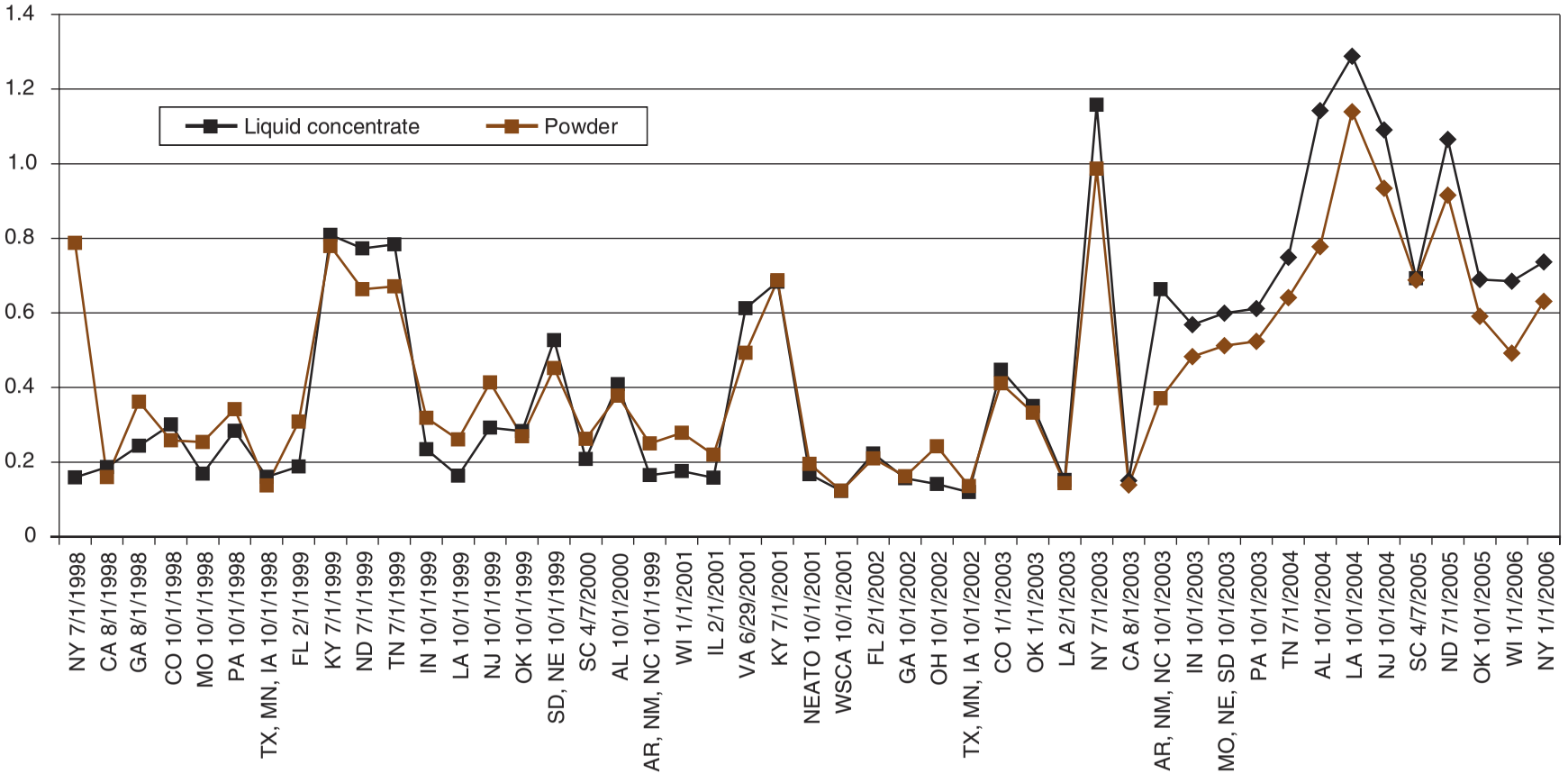
Nestlé's bids (fig. 14) follow a similar trend—real net wholesale prices for powder and concentrate move together closely (correlation coefficient equals .95) and bids in later periods are higher than those for earlier contracts. (There are fewer data points for real net wholesale price since Nestlé bid for fewer contracts than the other manufacturers during this period.)

Real net wholesale price bids for Ross's powder and liquid concentrate also move together, but to a lesser degree (correlation coefficient equals 0.74) (fig. 15). In contrast to Mead Johnson, real net wholesale prices are less for liquid concentrate than powder for many of Ross's bids. Prices bid by Ross trend up slightly for the later contracts, although less strongly than bids by Mead Johnson and Nestlé.

Figure 13

Real net wholesale prices bid by Mead Johnson for milk-based infant formula contracts by physical form, 1998-2006

Dollars per 26 reconstituted ounces (Jan. 2006)

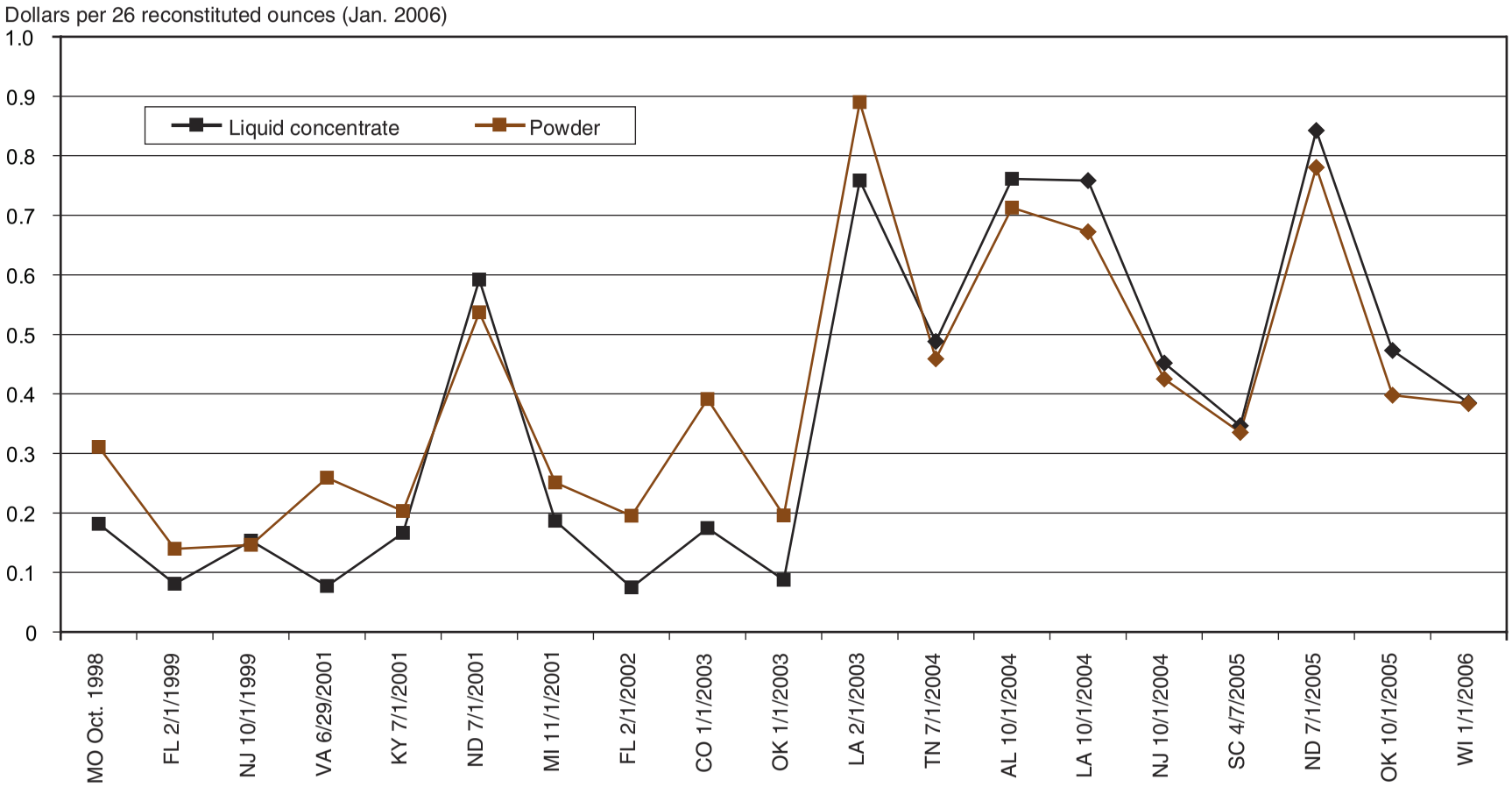


Note: Squares represent bids based on unsupplemented formula and diamonds represent bids based on DHA- and ARA-supplemented formula.

Source: USDA's Economic Research Service based on formula manufacturers' bids.

Figure 14

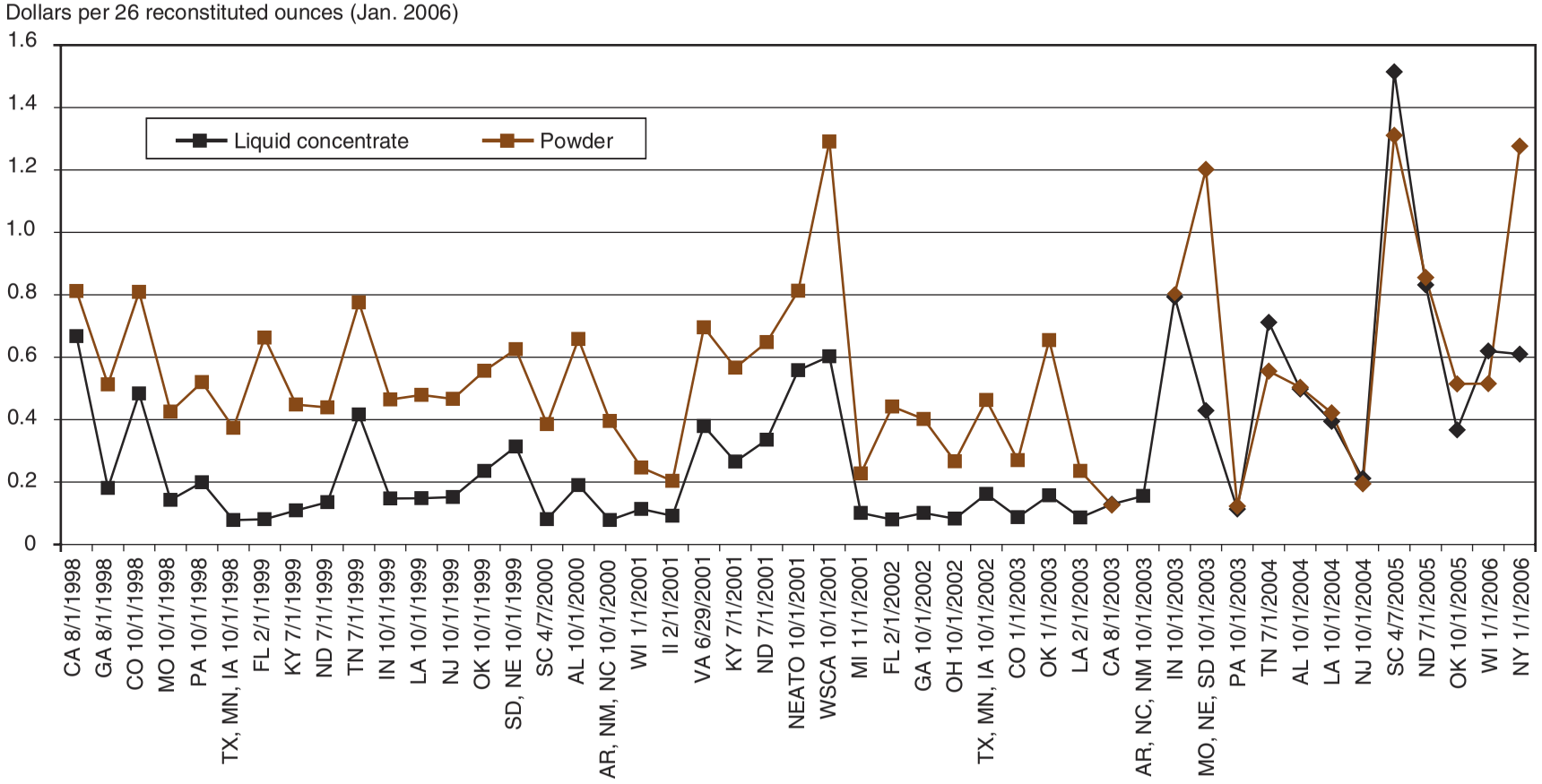
Real net wholesale prices bid by Nestlé for milk-based infant formula rebate contracts by physical form, 1998-2006



Note: Squares represent bids based on unsupplemented formula and diamonds represent bids based on DHA- and ARA-supplemented formula.

Source: USDA's Economic Research Service based on formula manufacturers' bids.

Figure 15
Real net wholesale prices bid by Ross for milk-based infant formula contracts by physical form, 1998-2006



Note: Squares represent bids based on unsupplemented formula and diamonds represent bids based on DHA- and ARA-supplemented formula.
Source: USDA's Economic Research Service based on formula manufacturers' bids.

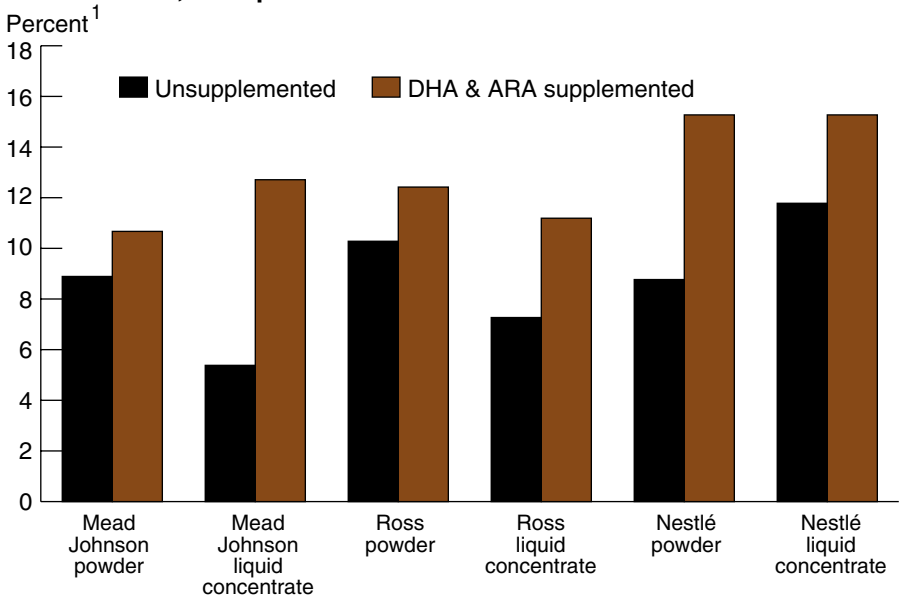
Retail Markup

All States except Mississippi and Vermont use the retail food delivery system to provide infant formula to eligible infants. Under this system, participants (i.e., the infants' caretakers) obtain the formula by transacting a check or voucher at an authorized retailer. The WIC State agency then reimburses the vendor for the full retail price of the formula. Thus, the cost of the formula to the WIC State agency equals the net wholesale price plus the retail markup, defined as the difference between the retail and wholesale price (i.e., the infant formula manufacturer's lowest national wholesale price per unit for a full truckload of infant formula).[50]

The role of retailers is important, as they—not the infant formula manufacturers—set the retail price. Although wholesale prices are a major determinant of retail prices, retailers consider additional factors such as the cost of transporting the formula from the store warehouse to the store, shelf space, overhead, product movement, profit, and other local supply and demand factors. Retail markup can vary widely depending on a store's pricing strategy. For example, at one extreme, some retailers may use infant formula as a loss leader, whereby they price the product below cost to attract people into their store to purchase other items at full markup.

The information on retail markup presented in this chapter is based on published national wholesale prices and ERS analysis of ACNielsen Scantrack retail price data, which are representative of sales in supermarkets with $2 million or more in annual sales.[51] The retail markup by manufacturer and physical form for both the supplemented and unsupplemented types of formula during the 2nd quarter of 2004 (April to June), the most recently available retail data, is shown on a percentage basis in figure 16.[52]

Figure 16
Percentage retail markup of infant formula by form and manufacturer, 2nd quarter of 2004



[1]The percentage retail markup is the difference between the retail and wholesale price as a percentage of the retail price.
Source: ERS analysis of ACNielsen Scantrack data.

[50]Wholesale prices vary by volume, with larger volume purchases (up to a truckload of formula) receiving a bulk discount. Smaller retail stores that purchase smaller volumes of infant formula will therefore pay more for formula per unit than larger stores. Although the cost to WIC is unaffected, part of the "retail markup," as defined in this report, may actually include part of the wholesale price that smaller retailers pay to the infant formula manufacturers.

[51] The ACNielsen Scantrack data exclude formula purchased at mass merchandisers such as Wal-Mart, pharmacies, and small groceries.

[52] The percentage retail markup is the difference between the retail and wholesale price as a percentage of the retail price. The comparisons are product specific, that is, they are based on the same infant formulas and same size cans as specified by the manufacturers in their bids for the rebate contracts.

Several patterns in retail markup are apparent, with implications for the prices that States pay to retailers. First, the percentage retail markup of the DHA- and ARA-supplemented formula was always greater than the markup for the unsupplemented formulas. This is likely because supplemented formula is more expensive than unsupplemented formula and because purchasers of supplemented formula may be less sensitive to price than purchasers of unsupplemented formula. The Child Nutrition and WIC Reauthorization Act of 2004 requires State agencies to offer the primary contract infant formula chosen by the manufacturer as the first choice of issuance (by physical form) to participants. Since all three manufacturers now submit bids based on the DHA- and ARA-supplemented formulas, it is expected that these formulas will be offered to all WIC participants in the future. Higher retail markups for these supplemented formulas will result in higher costs to WIC State agencies than if they previously provided only unsupplemented formulas.

Second, the percentage retail markups for supplemented formula found in this study exceed those of unsupplemented formula during 1994-2000 found in a previous ERS analysis of the retail infant formula market (Oliveira et al., 2004).[53] This suggests that costs to WIC associated with the retail markup have increased over time.

Third, formula made by Nestlé, which has increased its share of the WIC market in recent years (fig. 7), had a higher percentage retail markup than did the Mead Johnson and Ross brands. Because the wholesale prices of Nestlé infant formula products during the 2nd quarter of 2004 were lower than those of the other two manufacturers, retailers could mark them up more and they would still be priced below the other brands. However, Nestlé, unlike the other two manufacturers, has raised its wholesale prices since then (effective in July 2004). The wholesale prices of Nestlé's DHA- and ARA-supplemented formulas are now similar to those of the other two manufacturers.[54]

Table 5 shows the estimated net wholesale price and retail markup per 26 reconstituted ounces of milk-based powder faced by WIC State agencies during the 2nd quarter of 2004. The estimates are based on the assumption that *all* States offer the DHA- and ARA-supplemented formulas.[55] In reality, because many States were operating under contracts awarded prior to the introduction of the supplemented formulas, not all States offered the supplemented formulas during the second quarter of 2004.[56] However, those States that did not offer the supplemented formulas at that time either now offer the supplemented formulas or will be required to offer them in their next contract (as long as the formula manufacturers continue to submit bids for the rebate contracts based on the supplemented formulas). Average retail markups by State were estimated based on analysis of supermarket scanner data.[57]

The effect of the retail markup on the cost to WIC State agencies can be significant. In 25 of the 33 States (76 percent) in which retail markups could be estimated, the retail markup for the supplemented powdered formulas exceeded the net wholesale price. And in 30 of the 33 States (91 percent), the retail markup for the supplemented formulas in liquid concentrate exceeded the net wholesale price (table 6).

[53] For example, the average retail percentage markup of the milk-based unsupplemented formulas by manufacturer and physical form during 1994-2000 was less than 7 percent (except for Nestlé liquid concentrate at 12 percent), while the percentage retail markup for the supplemented formulas in the 2nd quarter of 2004 ranged from 10 to nearly 16 percent.

[54] As of August 2005, the wholesale price for the DHA- and ARA-supplemented formulas in liquid concentrate was the same for all three manufacturers.

[55] For those States whose primary contract brand was not a DHA- and ARA-supplemented formula, the net wholesale price was calculated using the same percentage discount rebate as the primary contract brand applied to wholesale price of the supplemented formula in effect during the 2nd quarter of 2004.

[56] The Government Accountability Office (2006) reported that as of mid-2005, 8 States did not provide supplemented formula; 23 States provided supplemented formula to all participants, or provided it to all participants unless unsupplemented formula was requested; while the remaining States provided supplemented formula under certain circumstances such as when a prescription was provided or when unsupplemented formula was not available in retail outlets.

[57] Retail markups were estimated only for those States in which ACNielsen Scantrack retail price data were available. The retail prices used to estimate retail markups are based on an average of all supermarkets (i.e., WIC-authorized stores as well as stores not WIC-authorized) in a particular State. It was not possible to determine the actual retail markup paid by State WIC agencies since information on retail prices in WIC-authorized stores was not available.

Table 5

Estimated net wholesale price and retail markup of powdered formula in the 2nd quarter of 2004, by State

State	Date contract started	Contract holder	Net wholesale price per 26 oz	Retail markup per 26 oz
TN	7/1/1999	Ross	$0.65	$0.30
NJ	10/1/1999	Nestlé	$0.12	$0.36
SC	4/7/2000	Ross	$0.33	$0.21
AL	10/1/2000	Ross	$0.58	$0.32
WI	1/1/2001	Ross	$0.22	$0.32
IL	2/1/2000	Ross	$0.18	$0.35
VA	6/29/2001	Nestlé	$0.23	$0.32
KY	7/1/2001	Nestlé	$0.18	$0.43
ND	7/1/2001	Nestlé	$0.48	NA
NEATO (New England and Tribal Organizations)				
CT	10/1/2001	Mead Johnson	$0.18	$0.30
ME	10/1/2001	Mead Johnson	$0.18	NA
MA	10/1/2001	Mead Johnson	$0.18	$0.37
NH	10/1/2001	Mead Johnson	$0.18	NA
RI	10/1/2001	Mead Johnson	$0.18	NA
WSCA (Western States Contracting Alliance)				
AK	10/1/2001	Mead Johnson	$0.10	NA
AZ	10/1/2001	Mead Johnson	$0.10	$0.38
DE	10/1/2001	Mead Johnson	$0.10	NA
HI	10/1/2001	Mead Johnson	$0.10	NA
ID	10/1/2001	Mead Johnson	$0.10	NA
KS	10/1/2001	Mead Johnson	$0.10	$0.37
MD	10/1/2001	Mead Johnson	$0.10	$0.33
MT	10/1/2001	Mead Johnson	$0.10	NA
NV	10/1/2001	Mead Johnson	$0.10	NA
OR	10/1/2001	Mead Johnson	$0.10	$0.71
UT	10/1/2001	Mead Johnson	$0.10	NA
WA	10/1/2001	Mead Johnson	$0.10	$0.57
DC	10/1/2001	Mead Johnson	$0.10	NA
WY	10/1/2001	Mead Johnson	$0.10	NA
MI	11/1/2001	Ross	$0.20	$0.30
FL	2/1/2002	Nestlé	$0.17	$0.49
GA	10/1/2002	Mead Johnson	$0.13	$0.40
OH	10/1/2002	Ross	$0.24	$0.35
Southwest/Mountain Plains/Midwest Regions				
TX	10/1/2002	Mead Johnson	$0.11	$0.33
MN	10/1/2002	Mead Johnson	$0.11	$0.41
IA	10/1/2002	Mead Johnson	$0.11	$0.45
CO	1/1/2003	Ross	$0.25	$0.36
OK	1/1/2003	Nestlé	$0.18	$0.60
LA	2/1/2003	Ross	$0.22	$0.34
NY	7/1/2003	Mead Johnson	$0.83	$0.27
CA	8/1/2003	Ross	$0.12	$0.55
Southwest/Southeast Region				
AR	10/1/2003	Mead Johnson	$0.31	$0.46
NM	10/1/2003	Mead Johnson	$0.31	NA
NC	10/1/2003	Mead Johnson	$0.31	$0.24
IN	10/1/2003	Mead Johnson	$0.45	$0.34
Mountain Plains Region				
MO	10/1/2003	Mead Johnson	$0.48	$0.48
NE	10/1/2003	Mead Johnson	$0.48	$0.33
SD	10/1/2003	Mead Johnson	$0.48	NA
PA	10/1/2003	Ross	$0.11	$0

Source: USDA's Economic Research Service based on formula manufacturers' bids and ACNielsen Scantrack data.

Table 6

Estimated net wholesale price and retail markup of liquid concentrate formula in the 2nd quarter of 2004, by State

State	Date contract started	Contract holder	Net wholesale price per 26 oz	Retail markup per 26 oz
TN	7/1/1999	Ross	$0.35	$0.40
NJ	10/1/1999	Nestlé	$0.13	$0.46
SC	4/7/2000	Ross	$0.07	$0.33
AL	10/1/2000	Ross	$0.17	$0.39
WI	1/1/2001	Ross	$0.10	$0.66
IL	2/1/2000	Ross	$0.08	$0.63
VA	6/29/2001	Nestlé	$0.07	$0.38
KY	7/1/2001	Nestlé	$0.15	$0.50
ND	7/1/2001	Nestlé	$0.53	NA
NEATO (New England and Tribal Organizations)				
CT	10/1/2001	Mead Johnson	$0.15	$0.38
ME	10/1/2001	Mead Johnson	$0.15	NA
MA	10/1/2001	Mead Johnson	$0.15	$0.45
NH	10/1/2001	Mead Johnson	$0.15	NA
RI	10/1/2001	Mead Johnson	$0.15	NA
WSCA (Western States Contracting Alliance)				
AK	10/1/2001	Mead Johnson	$0.11	NA
AZ	10/1/2001	Mead Johnson	$0.11	$0.58
DE	10/1/2001	Mead Johnson	$0.11	NA
HI	10/1/2001	Mead Johnson	$0.11	NA
ID	10/1/2001	Mead Johnson	$0.11	NA
KS	10/1/2001	Mead Johnson	$0.11	$0.50
MD	10/1/2001	Mead Johnson	$0.11	$0.42
MT	10/1/2001	Mead Johnson	$0.11	NA
NV	10/1/2001	Mead Johnson	$0.11	NA
OR	10/1/2001	Mead Johnson	$0.11	$0.78
UT	10/1/2001	Mead Johnson	$0.11	NA
WA	10/1/2001	Mead Johnson	$0.11	$0.79
DC	10/1/2001	Mead Johnson	$0.11	NA
WY	10/1/2001	Mead Johnson	$0.11	NA
MI	11/1/2001	Ross	$0.09	$0.38
FL	2/1/2002	Nestlé	$0.07	$0.39
GA	10/1/2002	Mead Johnson	$0.14	$0.56
OH	10/1/2002	Ross	$0.08	$0.44
Southwest/Mountain Plains/Midwest Regions				
TX	10/1/2002	Mead Johnson	$0.11	$0.55
MN	10/1/2002	Mead Johnson	$0.11	$0.27
IA	10/1/2002	Mead Johnson	$0.11	$0.47
CO	1/1/2003	Ross	$0.08	$0.42
OK	1/1/2003	Nestlé	$0.08	$0.65
LA	2/1/2003	Ross	$0.08	$0.49
NY	7/1/2003	Mead Johnson	$0.89	$0.35
CA	8/1/2003	Ross	$0.12	$0.56
Southwest/Southeast Region				
AR	10/1/2003	Mead Johnson	$0.62	$0.70
NM	10/1/2003	Mead Johnson	$0.62	NA
NC	10/1/2003	Mead Johnson	$0.62	$0.43
IN	10/1/2003	Mead Johnson	$0.55	$0.60
Mountain Plains Region				
MO	10/1/2003	Mead Johnson	$0.58	$0.64
NE	10/1/2003	Mead Johnson	$0.58	$0.44
SD	10/1/2003	Mead Johnson	$0.58	NA
PA	10/1/2003	Ross	$0.11	$0.34

Source: USDA's Economic Research Service based on formula manufacturers' bids and ACNielsen Scantrack data.

In most States, the retail markup and not the net wholesale price is the largest component of infant formula costs. Furthermore, this may be an underestimate of the actual retail markup paid by WIC State agencies. An earlier analysis of retail infant formula prices found that being the WIC-designated brand of formula increased the retail price of formula (Oliveira et al., 2004). Since being the WIC-designated brand presumably would have less effect on retail prices in stores that do not participate in the program, estimates of the retail markup used in this analysis (which are based on both WIC-authorized as well as non WIC-authorized retailers) are probably less than the actual retail markup paid by WIC State agencies, which is based solely on the retail markup at WIC-authorized stores. Moreover, the data used in this analysis are representative of sales in supermarkets with $2 million or more in annual sales, and smaller WIC-authorized stores not included in the data set are likely to have larger retail markups than are indicated in tables 5 and 6.

Our analysis indicates that the retail markup makes up most of the infant formula costs to many WIC State agencies. However, it is unlikely that WIC vendor management practices can yield the magnitude of savings obtained through the manufacturers' rebates, primarily due to the vast number of participating retailers and the broad range of retailer pricing strategies.

Conclusions

The cost that WIC pays for each can of formula provided through the program has two components: the net wholesale price, which goes to the manufacturer, and the retail markup, which goes to the retailer. Results from this study suggest that the costs associated with both of these two components have increased in recent years and that the retail markup exceeds the net wholesale price in most instances. Since WIC is a discretionary program with a fixed funding level, higher costs mean that fewer persons will be served, or that additional funds need to be appropriated.

There have been several important changes in bidding for infant formula in recent years. Prior to 2004, most infant formula rebate contracts were bid on by two manufacturers, usually Mead Johnson and Ross, with Nestlé bidding on just more than one-quarter of all contracts.[58] However, since 2004, Nestlé has joined the two other companies in bidding on nearly all contracts. The entrance of a third active bidder for contracts may make it less likely that a manufacturer will be able to win a contract with an unusually low or seemingly out-of-line rebate that would result in a high net wholesale price to the State.

[58] An exception was the contract for New York in 2003, with only one bid submitted. That bid had an unusually high net wholesale price (i.e., low rebate).

While having three companies bidding suggests increased competition for the contracts, the real net wholesale prices bid by Mead Johnson, Nestlé, and, to a lesser degree, Ross have increased in recent years. This has resulted in higher net wholesale prices in contracts awarded by the States, and therefore higher costs to WIC. Of the 16 States that have awarded infant formula rebate contracts since 2003, 10 (63 percent) saw a net increase in real net wholesale price relative to their latest pre-2003 contract for powder and 13 (81 percent) saw a net increase in real net wholesale price relative to their latest pre-2003 contract for liquid concentrate.

Some of this recent increase in net wholesale price can be attributed to the introduction of formulas supplemented with DHA and ARA. The wholesale prices of the supplemented formulas exceed those of the unsupplemented formulas. Thus, if the amount of the rebate is held constant, this will result in higher net wholesale prices. Although not all States currently offer these new formulas to their WIC recipients, recent legislation requires that all States offer them as of their next rebate contract, presuming that the manufacturers submit bids based on these supplemented formulas.

During the second quarter of 2004, the retail markup was substantially greater for the new DHA- and ARA-supplemented infant formulas than for unsupplemented formulas (retail markups for the new supplemented formulas were also found to exceed the markup of unsupplemented formulas from 1994 to 2000, indicating that retail markups to WIC have increased over time). This means that WIC State agencies are paying more for formula (or will be paying more in the future for those States not currently offering the supplemented formulas to their participants), holding net wholesale price constant.

In many cases, the retail markup that States pay retailers is the largest component of the cost to WIC of infant formula. However, it is because of

the effectiveness of the rebate program that net wholesale prices are so low. If net wholesale prices were to increase to the level experienced in New York in 2003 (where net wholesale prices of powder were over three times the retail markup), total costs to States would increase significantly.

This analysis suggests that both cost components to WIC—net wholesale price and retail markup—have increased over time. However, much of the increase in costs is due to the higher priced DHA- and ARA-supplemented infant formulas. Because these supplemented formulas are relatively new to the market (first introduced in 2002), the market may still be adjusting to the new formulas. As a result, the conditions observed in this study may change once the market reaches long-term equilibrium.

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