

Database Description: WIC Infant Formula Rebates

by
David E. Davis*

September, 2008
Update, May 2016

*Professor, Department of Economics, South Dakota State University, Brookings, SD 57007,
PH: 605-688-4859, email:David.Davis@sdstate.edu

Introduction

The purpose of this report is to describe the database of rebate bids made by infant formula manufacturers to state WIC agencies. The database was constructed by compiling bids from a number of sources. Every effort was made to assure the accuracy of bids, but since this record is compiled from historical data from multiple sources who supplied minimal documentation, minor inaccuracies likely remain. This report documents the methods used to create the database and the instances where subjective judgments were used to ascertain appropriate bids and net prices.

The database is organized as a flat file, with each state in the United States serving as a row observation. Additional agencies include the District of Columbia and Puerto Rico, some Indian Tribal Organizations, and other territories.

At the time of this writing, the database includes a nearly complete compilation of winning and losing rebate bids for thirteen-ounce cans of milk-based liquid concentrate, from 1986 to 2008, for each cross-sectional unit. Soy-based, liquid concentrate bids are reported when they were available. Bids for milk-based formula in a powdered form are available for mid-1998 to date. Bids for soy-based powdered formula are also available for mid-1998 to date, but some bids are missing for some states. Indian Tribal Organizations' (ITO) WIC agencies frequently operated independently of the agencies of the state in which they reside. ITO bids are largely missing.

Many state WIC agencies have organized into alliances in which they jointly contract with infant-formula suppliers. The data base includes an indicator variable for whether a state belonged to an alliance, or operated independently. So users should be able to easily reorganize the database so that alliances serve as cross-sections, rather than states.

A short history of WIC infant-formula rebate contracts

The WIC program, established in 1972, provides a variety of services and supplemental foods for low-income women, infants, and young children. The program is administered jointly by the U.S. Department of Agriculture (USDA) Food Nutrition Service (FNS) and authorized state agencies. Funding is provided through FNS to state agencies with annual congressional appropriations. Each state's cash grant includes a food grant and a Nutrition Services and Administration (NSA) grant. Because available funds are limited, state agencies have enacted a variety of measures to control costs attempting to ensure the efficient use of funds and the full participation for all eligible individuals.

Food benefits are typically distributed through retail outlets. Participants receive food vouchers that can be redeemed at authorized retail stores, insulating them from price considerations when purchasing supplemental foods. Federal mandates dictate allowable quantities of supplemental foods, which are noted on food vouchers. State regulations also frequently impose further restrictions on the types of foods (brands, package sizes etc) that can be purchased, in the interest of controlling costs (Davis and Leibtag, 2005). Based on redeemed vouchers, states reimburse retail outlets for the items sold to WIC participants.

Infant formula is a food item available to participating infants less than one year old. Because of the large number of infants in the US who participate in WIC, WIC purchases of infant formula account for over 50 percent of the product's sales (GAO, 1998).¹ During the 1980s infant formula prices increased more than the rate of inflation and the rising cost of infant formula limited the ability of state agencies to serve all eligible individuals leading them to investigate ways to limit infant-formula costs. While most agencies distribute formula through retailers, a few agencies use other methods of distribution. Vermont currently uses a home-

¹ In 2005, 49.5 of all US infants participated in the WIC program.

delivery system and Mississippi uses a direct-distribution system, and some counties in Ohio and Maryland have used direct-distribution methods in past years (Harvey et. al., 1988). These states were successful in providing infant formula at reduced costs by using a variety of methods that gave preference to one brand of infant formula. In particular Mississippi used a system of warehouses across the state to distribute infant formula. The state purchased infant formula in bulk and starting in 1984 used a competitive bidding process to select the manufacturer that would sell formula to the state at the lowest cost (Harvey et. al, 1988). Using the experiences of these states as examples, WIC officials in Tennessee developed a system whereby a single manufacturer was awarded the exclusive right to provide infant formula in that state in exchange for a rebate on each unit sold through the program in that state. Distribution remained through approved retail vendors. Manufacturers offered their rebates for consideration via sealed bids and the contract was awarded to the manufacturer who offered to provide the highest rebate per unit sold. The success of this system led other states to adopt similar systems, although some developed systems that did not use competitive bidding. Contracts that provide exclusive selling rights and that solicit sealed rebate bids have become known as “competitive sole-source” contracts. Wyoming and Florida developed a system whereby the states negotiate with manufactures for contracts to provide rebates for their products sold in the state. These so-called “open-market” contracts did not provide manufacturers the exclusive right to sell in a state, and did not usually use sealed bids when asking manufactures for their rebate offer. The method that would provide the greatest cost savings, competitive sole-source contracts versus open-market contracts, was in doubt during the early years of adoption.² In April, 1988 Florida requested bids under both an open-market system and a competitive sole-source system. Because the

² For example, in Texas in 1998 Ross Laboratories contended that open market contracts would provide equal or greater cost savings over sole-source competitive contracts.

competitive system resulted in a higher rebate, the state adopted the competitive system. A few other states adopted the “Florida” method of requesting rebate bids under both systems, attracted by the opportunity for hard data suggesting which method provided the greatest cost savings. This usually led to the adoption of a sole-source competitive bidding system.

In October 1988, federal law required all WIC agencies to explore implementing cost-containment methods for procuring infant formula and to begin implementing cost-containment practices if they proved to lower costs. In 1989, federal law required all state agencies to adopt a competitive bidding process or another process that provided equal or greater savings. The law “defined competitive bidding as a procurement process in which the State WIC agency selects the single source offering the lowest price for the infant formula, as determined by the submission of sealed bids (Oliveira et. al., 2004).”³

Other developments include the practice of several state agencies allying together to collectively seek rebate contracts. The 2004 reauthorization of the WIC program restricted alliances in instances where total infant participation in the allying states was greater than 100,000. More recently, manufacturers have been making their rebate bids on new formulations of formula supplemented with fatty acids similar to those found in breast milk. These supplemented formulas are usually higher in prices than other similar unsupplemented formulas (Oliveira and Davis, 2004).

Database layout

Each row in the database represents manufactures’ responses to WIC agency requests for proposal (RFP). RFPs typically request bids from manufacturers to supply infant formula to the agency. RFPs describe the characteristics of a contract that will be entered into between the agency and the manufacturer, should the manufacturer be chosen from those responding to the

³ A thorough history of WIC rebate contracts can be found in Oliveira et. al, 2004.

RFP. Most of the columns in the database either describe the manufactures' responses to request for proposal (e.g., their rebate offer and wholesale price) or the characteristics of the contract (e.g., dates, durations etc). Definitions for the columns are as follows.

Order: An index variable that counts the number of observations and that can be used for sorting.

State ID: A numerical agency identifier, usually denoting a state.

State: A text agency identifier. Usually a US state, but could be a territory or tribal organization.

ITO: A zero/one dummy variable taking a value of one if the "state" is an Indian tribal organization, zero otherwise.

INT: A A zero/one dummy variable taking a value of one if the "state" is an international territory, zero otherwise.

Approximate RFP date: The approximate date an RFP was announced. These dates are from records maintained by the Center on Budget and Policy Priorities (CBPP). They sometimes vary from the dates from RFP dates in a database maintained by FNS.

Because the persons that maintained these databases in the early years are no longer with their organizations, it is not possible to clarify any discrepancies. This date is important because records note the rebate offered by each manufacturer. However, the relevant price to agencies is usually the net price. Net price is the manufacturer's wholesale price minus their rebate. So, it is necessary to know a manufacturer's wholesale price on the date of the RFP to calculate the net price. This is a point where I used my subjective judgment to determine the appropriate RFP dates and wholesale prices.

Date Contract Began: This is the starting date for a contract. This date is almost always accurate. I used FNS' rebate summary sheets to identify contract start dates. The summary sheets were printed at the time contracts were in place. So, they are a historical document printed contemporaneously with active contracts and should be very accurate. Summary sheets noted beginning dates and ending dates starting in early 1991. So, in a few instances starting dates are approximate. I also used a CBPP document, *Serving to Save More*, to establish some contract dates for some very early contracts. If I was uncertain about a start date, I noted it in the "Notes" column of the database.

Date contract expired: This is the date the original contract was scheduled to expire. Some contracts were extended, and some contracts were renegotiated. Some contracts did not survive until their expiration date. In some cases it appears agencies joined alliances and initiated another contract before the expiration of their prior contract. Wyeth left the infant formula market in 1996, even though it had contracts in place at that time. Usually, another manufacturer took on Wyeth's obligations. Whatever the case, this date is the originally planned expiration date, not the actual cessation date.

Calendar Year Contract Began: This is the year in which the contract started. Note that it is not the fiscal year the contract began. FNS maintains records based on a fiscal year that starts October 1st.

Length of Original Contract: A count of the number of days between a contract's begin date and expiration date.

Type of Formula: A variable that indicates the type of formula. I used the following designations:

LC-M = milk-based liquid concentrate.

LC-S = soy-based liquid concentrate.

PW-M = milk-based powder.

PW-S = soy-based powder.

MULTI-STATE Alliance: A variable that indicates whether a state is part of a multi-state alliance. N=no, the state is not part of alliance. Other alliance abbreviations are defined in a separate worksheet in the workbook, "Multi-State Coalitions".

Composite: Some RFPs asked for a composite rebate. It is not always clear what is meant by a composite rebate. My understanding is that a composite rebate is a weighted average rebate, where weights are the proportions of milk-based and soy-based formula by physical form (liquid concentrate, powder, or ready-to-feed). So the "composite" rebate for soy-based and milk-based formula would be equal. In some cases it is possible to calculate the "true" (un-weighted) soy-based and milk-based rebates. True rebates can be calculated when FNS rebate summary sheets report the weighted average wholesale price, and the composite (weighted average) rebate. In these cases, there is enough information to solve for the weights and then solve for true milk and soy rebates.

In some instances, RFPs asked that soy-based formulas received the same percent discounts as milk-based formulas, by physical form. That is, the rebate for soy-based formula when divided by its wholesale price, would yield same percentage (discount) as did the milk-based rebate when divided by its wholesale price.

I use the following designations.

N=no, the rebate is not a composite rebate.

Y= yes, the rebate is a composite rebate, and there is not enough information to calculate the true rebates.

Y-T= the rebate was requested to be a composite rebate, but there is enough information to calculate the true rebates.

S%D = RFP requested the same percent discount on milk- and soy-based formulas, by physical form.

Uncoupled Bid (soy and milk bids solicited separately): Some RFPs allowed for separate suppliers of soy-based versus milk-based formulas. These contracts were referred to as uncoupled contracts, but now are sometimes referred to as "separate solicitations." Oliveira and Davis (2004) use the latter convention.

PREVIOUS CONTRACT PROVIDER: This variable notes which manufacturer supplied the state under its previous contract. It takes the following values:

None= There was not a previous contract, because this is the states first RFP.

Open= The previous contract was an open-market contract, so there was not a unique supplying manufacturer.

W=Wyeth

R=Ross

MJ=Mead Johnson

C=Carnation (Nestle).

Auction Winner or Provider (Manufacturer name if sole-source, none if comparative and other method used, or open; none if bids not accepted): The manufacturer who was awarded the contract. The manufacturers name if the contract was

a sole-source contract. The variable takes the value “none” if the RFP was comparative and the other contract type was chosen by the agency, or if for some reason none of the rebate offers were accepted. The variable takes the value “Open” if the RFP was for an open market contract and there was not a unique supplying manufacturer.

SealedBids: All RFPs that designated a “competitive sole-source” contract, used sealed bids. Most open market systems did not use sealed bids. However, the so-called Florida method asked for rebate bids under an open market system and a sole-source system. In this case, the rebate bids in the open market system and the sole-source system were sealed. And, some RFPs using open market systems used sealed bids. The variable takes the values:

Y= yes, rebate bids were sealed.

N=no, rebate bids were not sealed.

Does RFP allow for comparing bid systems? Some RFPs allowed for the comparison between alternative contract types. For example, the so-called Florida method detailed above. This variable takes the values:

Y=yes, the RFP compared this system to another system.

No=no, the RFP did not compare this system to another system.

Type of bidding system (Competitive or Open Market): A competitive bidding system used sealed bids. An open market allowed for multiple suppliers. The variable takes the values:

C=competitive, sealed bid system.

O=open market, multiple source system (may or may not have required sealed bids).

Potential Number of Suppliers allowed for in RFP (Single or Multi): Sole source contracts gave a single supplier the exclusive right to sell to an agency’s WIC participants. Open market systems allowed multiple manufactures to sell to WIC customers.

Contract Extension, Reassignment, or Renegotiation? I attempt to account for all contracts for each state from their first contract to date. If an existing contract was extended, I accounted for this with a single observation, even if a contract was extended multiply times. When Wyeth left the market, its contracts were reassigned. Some contracts were renegotiated. This variable takes the following values:

N = no, the contract is not an extention.

REN = this contract is a renegotiation.

R = this contract was reassigned.

E = the previous contract was extended.

Contract Type: This is a short text description of the contract type which summarizes the information in previous columns (variables).

Mead Johnson Rebate bid (open): This is the rebate bid on the date the RFP was announced. I used the approximate RFP date to determine the wholesale price. For some later dates, the approximate RFP date is not available. In that case, the values are reported as NA (not available).

Mead Johnson Wholesale price (open): This is the wholesale price on the date RFP was announced. For some later dates, the approximate RFP date is not available. In that case, the values are reported as NA (not available).

Mead Johnson Net Cost (open): The wholesale price minus the rebate at the (approximate) time the RFP was announced.

Mead Johnson Rebate bid [wholesale price] [net price] (effective): This is the rebate [wholesale price] [net price], on the date the contract became effective. It is often unclear whether the rebate bid reported in original spreadsheets are reporting the rebate on the RFP opening date or on the date the contract became effective. This is important because frequently, wholesale prices changed between the opening date of an RFP and the effective date of a contract. And, it was not always the case that rebates were adjusted cent for cent with wholesale price increases. In early contracts inflation provisions differed between contracts. Competitive sole-source contracts included cent-for-cent inflation provisions. But, open market contracts were less clear on inflation provisions. Some contracts included cent-for-cent inflation provisions, but others did not (Harvey et al., 1988). So, the result is that there is some uncertainty again in the final net price.

My convention was to assume cent-for-cent inflation increases whenever wholesale prices increased between an RFP's announcement date and the contract's effective date. This is undoubtedly correct for competitive sole-source contracts, but is likely incorrect for some open market contracts. In some instances, evidence suggested that the rebate reported in the originating documents was for the effective date and not the open date, and so I did not adjust for inflation increases.

I used FNS's rebate summary sheets to double check my assumptions, when possible. However, for the years prior to 1990 there are no summary sheets available. For years after 1990, the summary sheets suggest that competitive sole-source contracts are accurate, but that some open market contracts may not be. However, I used my best judgments to arrive at the current database and it is as accurate as I can make it with available sources.

After about 1991, open market contracts largely disappear and rebate summary sheets are frequent. So, after 1991 most rebates, wholesale prices, and net prices should be accurate.

Finally, I believe the rebates, wholesale prices, and net prices in the (effective) column are the most accurate since I have multiple sources to double check their accuracy.

Mead Johnson Can Size (ounces): This is always 13 ounces for liquid concentrate, but varies for powder. Different manufacturers sell powder in different size cans, and manufacturers varied their can sizes over the years.

MJ Enhanced? This variable captures whether the rebate, wholesale price, and net price are for DHA and ARA enhanced formulas.

0 = no, the formula is not enhanced

1 = yes, the formula is enhanced.

Ross [Wyeth] [Carnation] Rebate bid [wholesale price] [net price] (open) [(effective)]

The remaining columns, except for the final column, report rebates, wholesale prices, net prices, can sizes, and whether the prices are for enhanced formula, for other infant formula manufacturers on the RFP announcement date and on the contract effective date. The same caveats and explanations for the Mead Johnson columns apply.

The Wyeth and Carnation columns merit some further explanation. Wyeth exited the infant formula market in 1996. After their exit, their rebates and wholesale prices are noted NA, not available. Similarly, Carnation has not been active in the infant formula

market nor in WIC infant formula rebate auctions for the duration of this data set. If there is no wholesale price available for Carnation, I assume they are not in the market and the rebate, wholesale price, and net price take the value NA. However, if there is a wholesale price reported for Carnation, I assume they are in the infant formula market and report their wholesale price. If there is a wholesale price reported for Carnation, but no rebate reported, I enter a value of 0 for their rebate bid, and their net price is equal to their wholesale price. In effect, I assume they bid 0 for their rebate. Which is my common practice, if a manufacturer did not bid in reply to an RFP, their rebate “bid” takes the value of 0 in this data base.

Notes: In this final column, I make notes about unusual aspects of the RFP in that row. I also make notes about the sources for the information contained in that row.

Conclusion

This document describes a database of wholesale prices and rebate bids for infant formula manufacturers bidding in WIC infant formula rebate auctions. Users of the database should carefully read this document before undertaking any research. I have endeavored to make everything in the database as accurate as possible, but some inaccuracies likely remain. However, the rebates and wholesale prices reported for effective dates are likely the most accurate. If inaccuracies exist, they are more likely to occur in periods prior to 1991. And if inaccuracies exist, it is unlikely that they are otherwise systematic. That is, they should occur randomly in the data.