



Consumers Benefit From Competitive Sugar Prices

**A report prepared for the
Sweetener Users Association**

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EXECUTIVE SUMMARY

Consumer prices for foods and beverages eventually reflect changes, whether positive or negative, in the cost of sugar. If food manufacturers could ignore changes in the cost of sugar, they could ignore changes in the cost of other ingredients, labor, energy and other inputs; set prices wherever they want; and be immensely profitable. Yet according to the respected *Value Line Investment Survey*, food industry profitability is about in the middle range for all U.S. industries.

It is difficult to see price adjustments. The way in which cost savings get passed on to the consumer depends on the type of product and how it is marketed. Cost savings to consumers can be through increased couponing, more frequent specials, or an outright price reduction. In many cases, the savings just offset rising costs for labor, energy or other inputs. Labor costs account for the largest share of the retail food dollar – 37% – and as wages go up with the underlying 2-3% inflation rate, food prices go up even if some ingredient costs are declining.

About 27% of the sugar used in the United States is purchased at retail, mostly in five-pound bags. Historically, the retail price for sugar has clearly moved up or down in tandem with the producer price. For the last five years, the retail price has remained stuck at about 42 cents per pound due to greater concentration in both grocery retailing and sugar processing. But the longer-term Consumer Price Index for sugar and sweeteners indicates that consumers can benefit from any reduction in sugar prices.

The available price data for sugar-containing products also supports the conclusion that downward changes in sugar prices are passed through to consumers. While rising costs for labor, energy, packaging and other inputs have continued to push food prices up, the increases in the price indexes for sweetened foods and beverages since 1996 are well below the increases for other food categories due to the decline in sugar prices since 1996. For these products, lower sugar costs have offset increases for other inputs.

We see further evidence of how consumers benefit in the aftermath of the 2002 reform of the peanut program, with its 42% price support cut. Lower peanut costs resulted in a fall in peanut butter prices and a consequent increase in consumption, which will also increase peanut producer incomes, as U.S. peanut production continues to grow.

SECTION I: THE CONSUMER PASS-THROUGH ISSUE

In 30 years of policy debates since New Deal-era sugar programs were temporarily abandoned in 1974, one argument has come up again and again: whether consumers would really benefit from a reduction in the price of sugar. This is the so-called consumer “pass-through” issue. Would food and beverage manufacturers, wholesalers, or retailers just pocket the savings themselves, or would the lower ingredient costs ultimately be passed along to the final consumer?

Answering this question requires looking at various types of evidence:

- Wholesale and retail sugar prices,
- Retail prices of sugar-containing products like candy or breakfast cereal,
- Profits of food and beverage companies, and
- How manufacturers and retailers set product prices.

For most food products, the cost of the sugar in a single package or serving is small relative to the price of the product, so it can be hard for the average person to believe that reducing the production cost of that product by a fraction of a cent as a result of a lower sugar price is going to affect the price he or she pays.

It does, though. In this paper we review the evidence and demonstrate why changes up or down in the cost of sugar (or any other ingredient, for that matter) are ultimately passed along to consumers.

Of course, food and beverage companies that have campaigned for sugar program reform would also benefit from competitive pricing. Sweetened products have to compete with a whole range of other food and snack items. Lower costs permit lower pricing and/or greater promotional expenditures, leading to higher sales and improved profits.

We therefore begin by describing how sugar fits in as an input for food and beverage manufacturers, and then review all the price evidence that is available.

SECTION 2: SUGAR IN THE FOOD BUSINESS

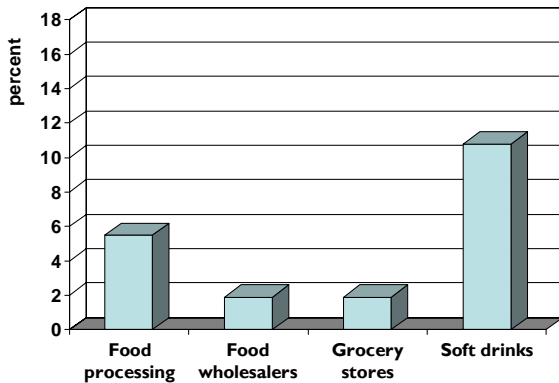
2.1 Profitability of food processing

There is a basic flaw in the argument that U.S. food and beverage companies would just pocket any cost savings resulting from reform of the sugar program. Sugar is just one of the many ingredients that go into foods. If manufacturers can ignore changes in sugar costs, they can ignore changes in the cost of flour, vegetable oil, milk, packaging, labor, energy and every other input.

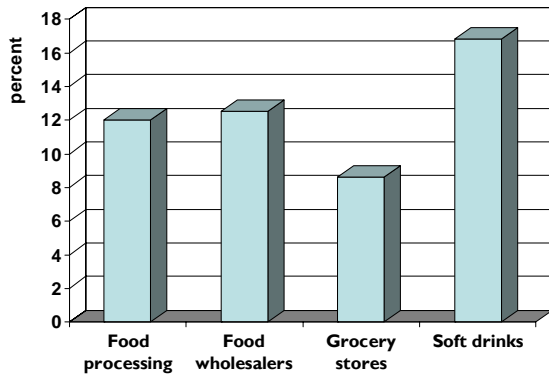
If manufacturers could ignore changes in all these costs, they could set prices to achieve whatever profit level they desired. And yet food and beverage companies are not particularly noted for their profitability, which is about in the middle of the range for American industries.

The Value Line Investment Survey tracks the financial performance of all major publicly traded companies and evaluates them both individually and by sector. Value Line published a quarterly analysis of companies involved in food and beverages on August 6, 2004. As the charts below indicate, the average net profit margin of food processors from 2000 through 2004 was less than 6%. For wholesalers and grocery stores it was 1.9% and for soft drink companies 10.8%. Average return on total capital was 12.0% for food processors, 12.5% for wholesalers, 8.6% for grocery stores, and 16.8% for soft drinks (which these days barely use any sugar at all). These are well within the norms for American businesses. The averages for Value Line’s Industrial Composite (680 industrial, retail and transportation companies) were a net profit margin of 6.1% and a return on total capital of 10.4%.

Average net profit margin: 2000-2004



Average return on total capital: 2000-2004



Food manufacturing is a very competitive sector. There are a lot of players and they are all after the consumer’s dollar. Consumers have lots of choices of what to buy and where to buy it, and the rise of the big discount retailers in recent years has proven this proposition to manufacturers in many different industries.

2.2 How companies price their products

Most businesses operate with some type of budgeting process that looks out at least a year or two ahead. They project costs for raw materials, manufacturing, distribution, advertising, etc., and they project sales of their various product lines based on past experience. They establish targets for pricing of their products that will cover all their costs and provide a desired rate of profit relative to sales, capital employed, or some other metrics. They then negotiate with their major customers, and these negotiations have many dimensions, including not just product pricing but supply chain collaboration, promotional activities, and various contingencies.

Things seldom turn out exactly as projected. Costs may end up higher or lower, and the same is true for sales. Consumers after all have many choices, and new choices appear every year. When costs turn out lower for some reason, companies can either keep the extra net revenue as profit, invest in research and new product development, use some of it for additional advertising and promotion to increase sales and market share, and/or reduce prices with the same objective in mind. Usually it is some combination of all four initially, but eventually competitive pressures tend to drive prices to whatever level provides the normal rate of return in that industry.

It can be difficult to see price adjustments. The way cost savings get passed on to the consumer depends on the type of product and how it is marketed. It can be through increased couponing, more frequent specials, packaging or product changes, or an outright price reduction. In many cases the savings just offset rising costs for labor, energy or other ingredients. Labor costs account for the largest share of the retail food dollar – 37% – and as wages go up with the underlying 2-3% inflation rate, food prices go up even if some ingredient costs are declining.

Some product price changes also occur in five or 10 cent increments – in vending machines for example. The price of a candy bar or soft drink sold in a vending machine will not drop by a penny if ingredient costs fall. But in supermarkets or restaurants, where most food and soft drinks are purchased, specials and discounts are common.

Consumers can therefore take advantage of food processors' actual lower costs by choosing where to shop and what to purchase. The same candy bar can be \$1.00 in an airport, \$0.69 in a convenience store, or three for a dollar on sale at a supermarket. And even for consumer sized packages of refined sugar there is wide price variability, as illustrated by the prices we found on a single day in October in Northern Virginia shown in the table below.

Sugar in the standard 5-pound bag ranged from about 38 cents to 48 cents per pound, and a 10-pound bag at Costco was only 36.9 cents per pound. Strangely, a 10-pound bag at two local grocery chains was more expensive on a per pound basis than the 5-pound bag. There are ways to spend even more on sugar. Confectioners sugar and light or dark brown sugar ranged from 59

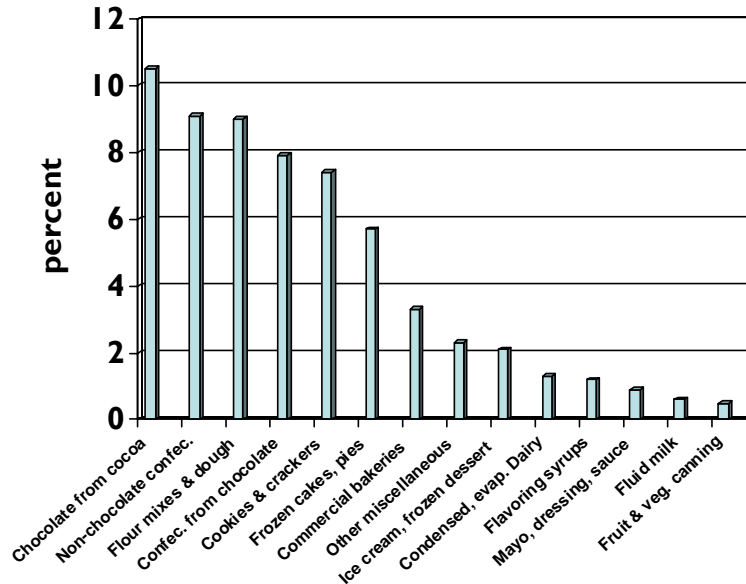
to 89 cents per pound in our survey. Organic, raw, and turbinado sugar were \$1.49 - \$2.53 per pound.

Package size (pounds)	Costco	Walmart	Shoppers		Safeway		Giant		Rite Aid
	National brand	Store brand	National brand	Store brand	National brand	Store brand	National brand	Store brand	National brand
2			59.5	48.5		74.5		62.5	84.5
5		37.6	47.8	39.8	39.8	45.8	47.8	39.8	
10	36.9		52.8	44.0	74.9	39.9		38.9	
25	34.8								
50	32.8								

2.3 Significance of sugar as an ingredient

The 2002 Economic Census gives us an industry by industry picture of the role that sugar plays in the cost structure. This survey by the Department of Commerce reports expenditures on materials along with a variety of other economic indicators. For food industries that use sugar, expenditures on materials (which include packaging as well as food ingredients) average about 50% of the wholesale value of the final products they ship out. Sugar generally accounts for less than 10% of purchased materials, even for high sugar content items like confectionery, and therefore less than 5% of the shipment value. By the time wholesalers and retailers add their markups, the share of the retail price accounted for by sugar as an ingredient is quite small.

Sugar's share of materials purchased



Of these sugar-using industries, the companies that process their own chocolate confectionery from cocoa beans had the highest dependence on sugar, but even in these cases, sugar only accounted for 10.5% of total material purchases and 5.6% of the value of a company's shipments. Thus to get the average cost of its products down one percent, a company's sugar costs would have to decline about 20%. But even a small decline in costs would be noticeable for an industry that spent \$230 million on sugar in 2002 according to the Economic Census.¹

The next three industries had sugar costs at 8-9% of total material costs and 3-4% of shipment value. These industries are the sugar-intensive manufacturing of non-chocolate confectionery, confectionery made from purchased chocolate and flour mixes and doughs. For cookies and crackers, sugar represents 7.4% of total material costs.

After that, sugar's significance drops off rather rapidly and there are another 11 industries not shown in the chart for which sugar is 0.5% or less of total material costs. But collectively, the 25 industries for which the Census breaks out sugar as a material accounted for 4.9 million tons of sugar use, or almost 80% of the 6.2 million tons delivered in other than consumer sized packages.

If a lower sugar support price reduces the cost of that 4.9 million tons of sugar, it will be reflected in shipment values, i.e. wholesale prices, and on through the marketing chain to the final consumer.

2.4 The structure of U.S. sugar use

In order to understand how sugar prices work through to the consumer level, one needs to have a picture of how sugar is sold. USDA collects data every month on the end uses and the form of packaging of the sugar that is sold – consumer size, packages of 50 pounds or more, or bulk shipments in rail cars or trucks. The breakdown for the most recent calendar year is shown in the chart on the next page.

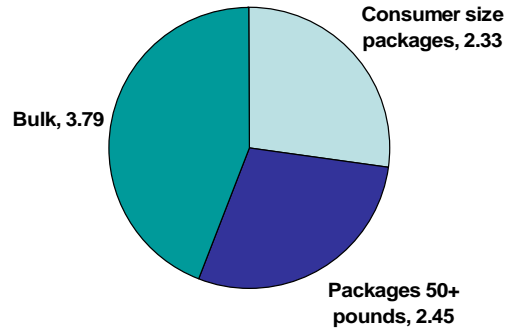
During 2003, there were total sales of 8.57 million tons of refined sugar, of which 2.33 million tons or 27% were in consumer sized packages of less than 50 pounds. This form of packaging is about 8% lower than in 1970, despite a 42% increase in the U.S. population since that year, mostly because people do much less home food preparation today.

Bulk shipments to food and beverage manufacturers accounted for 3.79 million tons or 44% of U.S. sales (with beverages accounting for less than 3%). This is down about 2 million tons from 1970 because high fructose corn syrup replaced sugar in most caloric soft drinks. Finally,

¹ Data is not shown for the breakfast cereal industry for which sugar costs in past Census reports have normally been in the mid-teens as a percent of total material costs. The 2002 Census showed costs at 26% of the total, but there was clearly incomplete data because the value and tonnage of sugar were inconsistent and shipment value dropped to \$9 billion from \$11 billion the three prior years.

packages 50 pounds or greater represented 2.45 million tons or 29%. Most of this went to smaller companies making candy, baked goods, etc., or to restaurants and institutions for food service use.

2003 Sugar Sales By Package Size (million tons)



SECTION 3: THE PRICE EVIDENCE

3.1 Sugar price data

There are three sugar prices that can be analyzed in order to understand how retail prices are affected by changes at the producer level. The United States produces both cane sugar and beet sugar. Sugarcane mills produce raw sugar which is sent to refineries where the final white sugar product is produced. Most sugar cane refineries are on the East, West or Gulf Coasts because we also import raw sugar from other countries. (Note: Because the U.S. sugar program has encouraged more domestic sugar beet production and imports have been reduced through deliberate government policy, many cane refineries have closed.)

There is a commodity futures market for raw sugar and prices are reported daily for different months of delivery. The price for the nearest month is considered the best representation of the value of raw sugar, delivered to a coastal refinery. This price is called the “Number 14” after the designation of the futures contract.

When sugar beets are processed, the end result is white refined sugar, with no intermediate raw sugar stage. The price at the factory is reported weekly by a publication called Milling & Baking News. Their reporters phone both buyers and sellers of refined beet sugar and then publish their estimate of prices for bulk shipments at plants in the Midwest and on the West Coast, usually in the form of a one-cent range. USDA and others use the lower end of the Midwest range as the best single indicator of the wholesale market price for refined sugar.

The Midwest location is used because that is where beet sugar production is concentrated and where a lot of food processing facilities are located, so it is a competitive market. It is recognized that prices for refined sugar at coastal refineries are generally higher, and that prices paid by end users also reflect the cost of transporting the sugar from the factory or refinery.

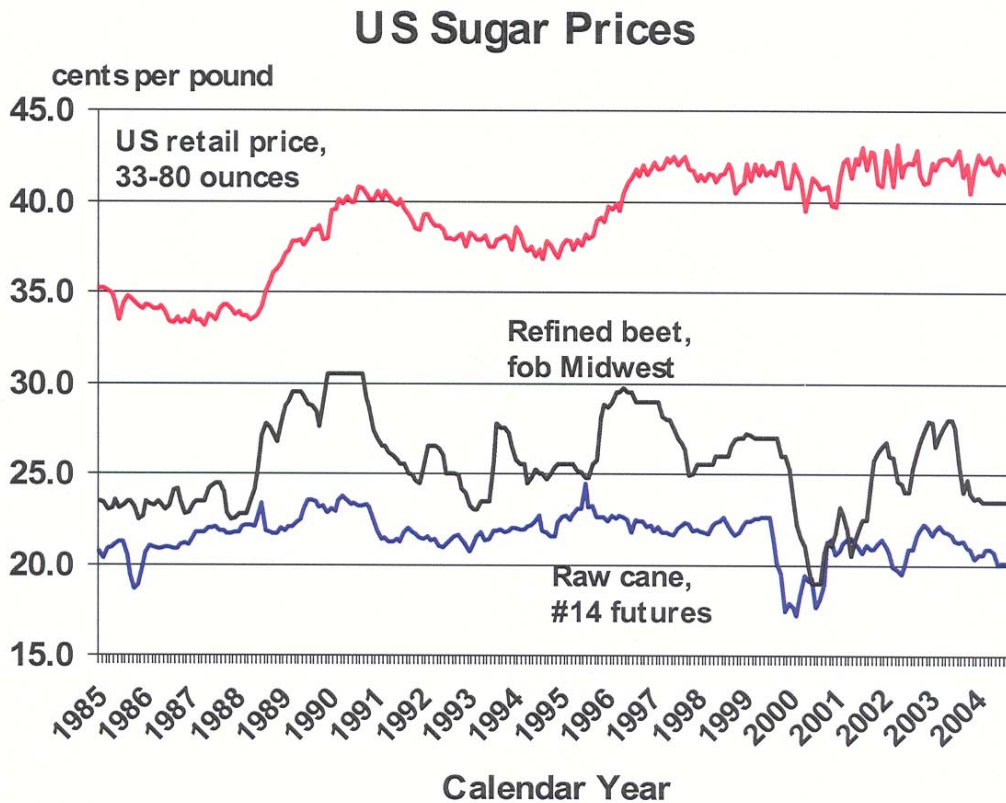
The third published price series is the retail price. The Bureau of Labor Statistics (BLS) publishes this monthly price in connection with the nationwide survey it conducts each month in order to calculate the Consumer Price Index (CPI). This survey covers all food retailer, including mass merchandisers. BLS actually publishes two price series – one for all package sizes and one for 33-80 ounce packages. The latter captures primarily the traditional 5-pound bag, but also includes 4-pound and 2-kilogram packages. The former series includes everything from 1 and 2-pound boxes to 100-pound bags. Since most consumers purchase the 5-pound bag, we usually use that series.

The chart below compares the retail price to the monthly average Midwest beet sugar price at the factory from 1985 to the present. Up until about 1998, the two refined price series tracked each other rather closely, as one can see in the chart. When the price received by the sugar producer went up, the retail refined price went up, with a lag of a few months. When the

producer price went down, the retail price went down, again with a lag. If one graphs prices from 1970 to 1985, a similar pattern prevails.

This direct linkage of the retail price to the producer price was always the most convincing argument that consumers are directly affected by changes in the sugar support price. Since the late 1990s, however, the linkage seems to have been broken. The retail price has fluctuated narrowly around roughly 42 cents per pound (or \$2.10 for a 5-pound bag) despite significant ups and downs in the producer price. The two-dollar price point for a 5-pound bag may have an influence. Stores can put a brand on sale for \$1.99 to attract shoppers, while keeping the normal price above that level. But many analysts attribute the inflexibility to the increased market power of retailers due to consolidation in the retailing sector.

However, there has also been a great deal of concentration in the sugar processing industry itself, and it is not implausible that the industry could be partly responsible for the recent inflexibility of retail sugar prices. It is possible that while the bulk industrial sugar market has remained competitive, the marketing of sugar for retail sale has become less so. Quoted wholesale prices for refined sugar reflect what large bulk customers pay, not the wholesale price for consumer packaged sugar paid by retailers or distributors. These prices are typically higher but are not readily available. Whatever the cause, the spread between the two price series has jumped from about 10 cents/pound in the late 1980s to almost 20 cents/pound in 2004.

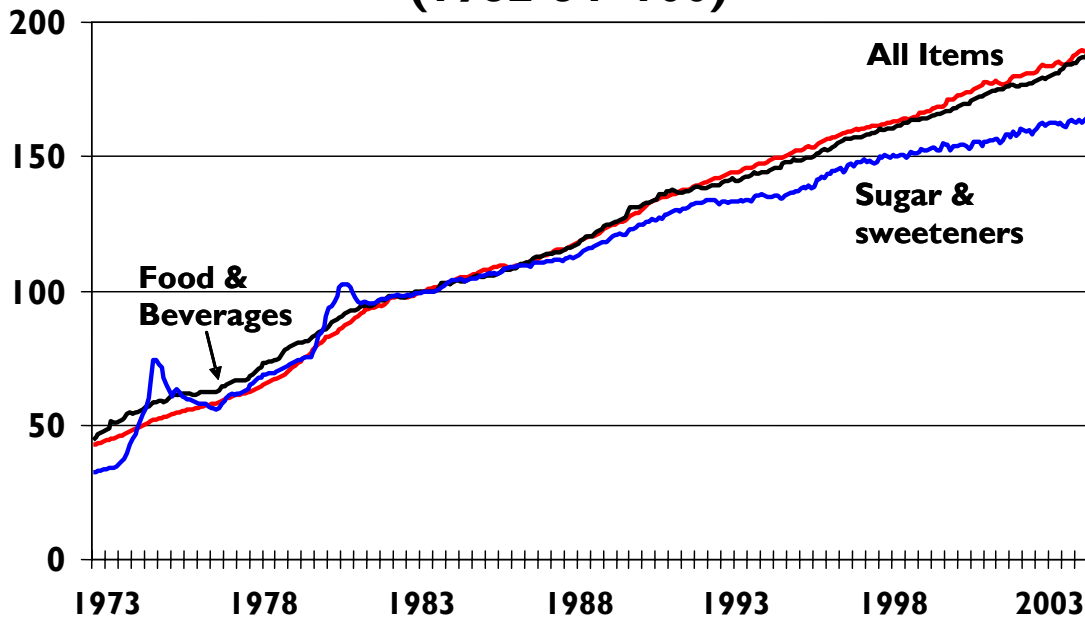


It should be noted that the relationship of the retail price to the raw sugar price is much looser. Refined cane sugar prices have to compete with refined beet sugar prices, and the two almost always move together. The raw sugar price is the cost of the raw material for refiners but does not always move in parallel with the refined sugar price which is heavily affected by the size of the sugar beet crop and the resulting supply of competing beet sugar. Periods like the late 1980s or 2000-2001 were very challenging for refiners because a depressed refined market made it virtually impossible to cover their costs for raw sugar and all the other inputs needed to make refined cane sugar.

If retail sugar prices remain inflexible, the way to address that is through measures that deal with the competitiveness of the marketplace, like antitrust policy. But even under current conditions, one can see direct evidence that sugar price support affects consumers.

The chart below compares the CPI for all items, for food and beverages, and for sugar and sweeteners since 1970. The 1982-84 period, just after the current sugar program was introduced, equals an index of 100. The 1970s were periods of rapid food price inflation and this is apparent in the food and beverage index being above the all items index during that period. The effects on the sugar price index of the two world shortages in 1974 and 1980 are also illustrated in the chart below. Since the early 1980s, however, the food index has gone up in tandem with the index for all items. The high sugar price support level established in 1982 has stayed constant for the last 22 years, and partly as a result, the index for sugar and artificial sweeteners has not gone up as much as that for all foods. In short, consumers do benefit if sugar prices are reduced or do not go up.

U.S. Consumer Price Index (1982-84=100)



This graph clearly refutes the sugar lobby's central claim that product prices do not rise or fall in relation to changes in ingredient costs. If that were so, the sugar and sweetener index should have gone up in tandem with the index for all foods and beverages. It did not. Instead, the constant price support level and periods of lower prices like 1999-2000 were obviously translated into savings for consumers relative to all other food and beverage items.

The benefit to consumers of lower sugar prices is clearly evident in countries like Canada, which imports sugar at the world price, and Australia or Brazil, are producing sugar competitively at recent world price levels.

3.2 Prices of sugar-containing products

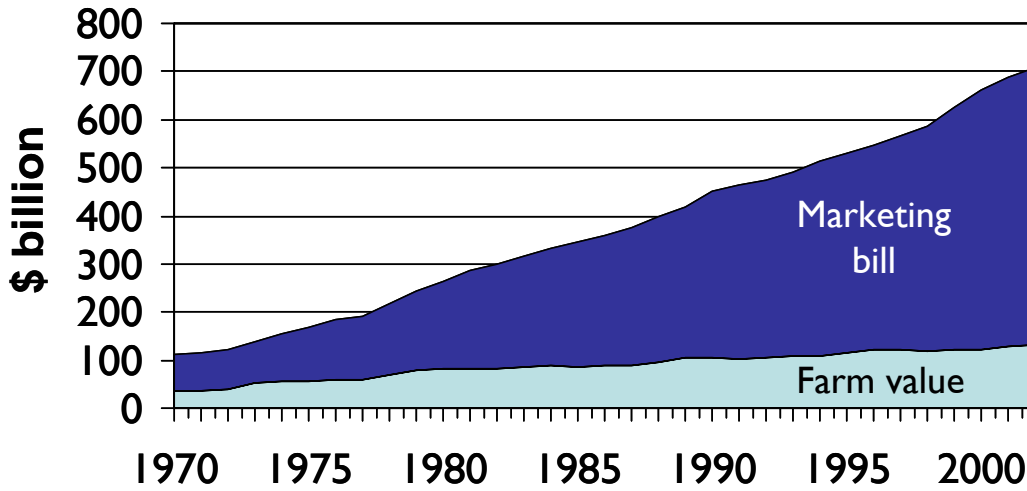
The American Sugar Alliance (ASA), representing sugar producer interests, often uses a chart showing that while raw and refined sugar prices have declined since 1990 or 1996, prices of various sugar-containing products have risen. ASA's choice of those two years for comparison was not accidental – 1990 had the highest refined sugar prices since the world shortage of 1980, and 1996 was second highest. Naturally, sugar prices subsequently declined. More importantly, prices of the sugar-containing products they cite have gone up by *less* than the increase for all foods and beverages or for all items. This is strong evidence that a decline in or moderation of sugar prices does have a negative effect on food prices.

As one might have guessed from the previous chart showing the slow but relentless increase in the overall consumer price level, the main determinants of processed food prices are not commodity costs. Today the farm value of food ingredients makes up less than 20% of what consumers actually spend for food.

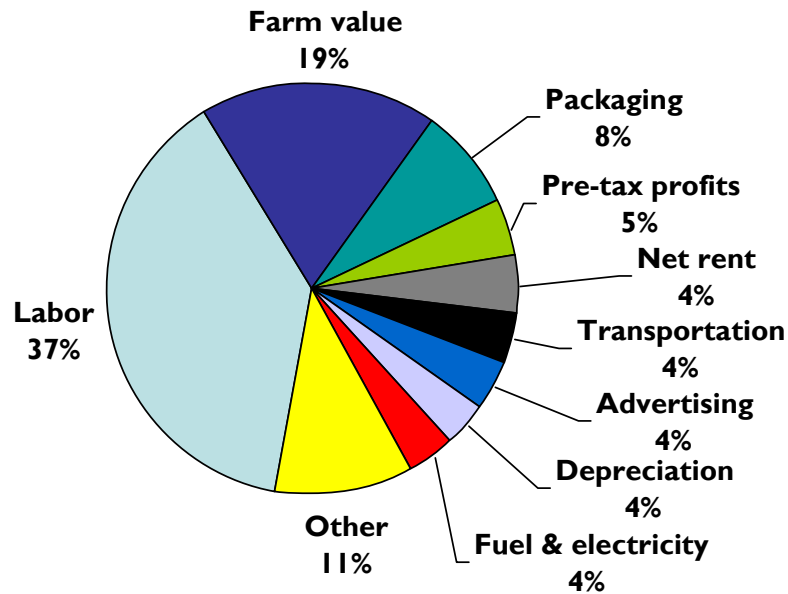
According to USDA, in 2002 consumers spent \$709 billion for domestically produced foods, including both food at home and food away from home. Of that total, \$577 billion or 81% was accounted for by what the Department calls the marketing bill. The chart below plots the farm value and marketing bill, and it is clear that the farm share has steadily declined. This is primarily because impressive long-term productivity growth in agriculture continues to give us declining real prices for all farm commodities. But it is also attributable to the fact that we demand more convenience, do less cooking at home, and eat more meals away from home.

The main components of the food dollar are illustrated in the second chart on the next page. The marketing bill is comprised of everything but the farm value. Labor is obviously the most important at 37%, followed by packaging at 8 percent. Then there are several categories that each account for 4-5% of the final cost of food to the consumer – depreciation, advertising, transportation, rent, and pre-tax profits.

Consumer expenditures for domestically produced farm foods



Components of the U.S. food dollar: 2002



When costs and prices of almost everything in the economy are going up by 2-3% per year, it becomes very difficult to trace the impact of a change in the cost of a single food ingredient on the final retail price.

There are some examples, however. The Bureau of Labor Statistics publishes a limited amount of price data from the surveys it conducts to prepare the Consumer Price Index. In addition to the sugar prices mentioned above, the three sugar-containing products for which they publish prices are chocolate chip cookies, peanut butter, and ice cream. The BLS price charts for those three products are reproduced on the following pages.

Chocolate chip cookie prices are essentially the same in 2004 as they were in 1990. There have been some ups and downs, but the comparative flatness of that price series is partially attributable to the fact that sugar prices have been flat.

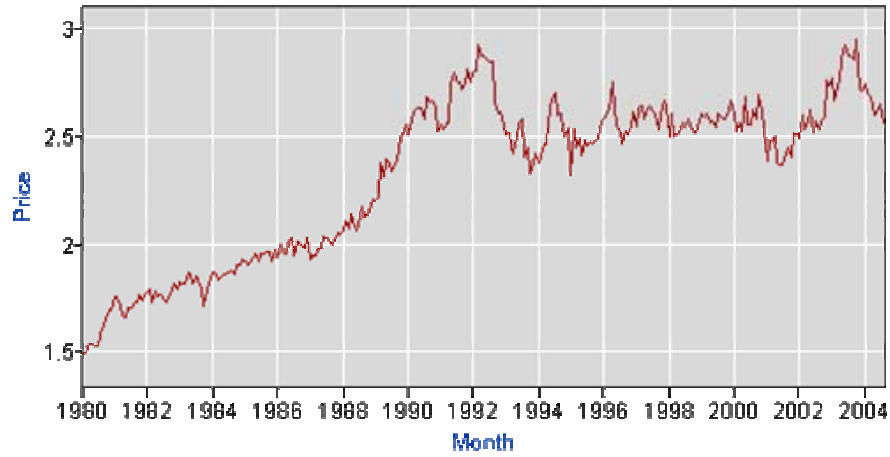
Peanut butter prices are interesting because they visually demonstrate how both increases and decreases in farm prices are reflected at retail. In 1990, the combination of a poor peanut crop and high prices for both peanuts and sugar led to a significant increase in retail peanut butter prices, but those subsequently came down as costs returned to normal. More recently, one can see the decline that has taken place since the 2002 farm bill as a result of the buyout of the peanut marketing quotas and the 42% decrease in the peanut price support level. Equally important, sales of peanut butter and other peanut products have gone up as a result of the price cut. This increase in demand has benefited producers, processors and consumers. Meanwhile, producers' incomes have been safeguarded through direct payments under the reformed peanut program.

In the case of ice cream, prices have risen sharply since the mid-1990s due principally to the doubling of butterfat prices.

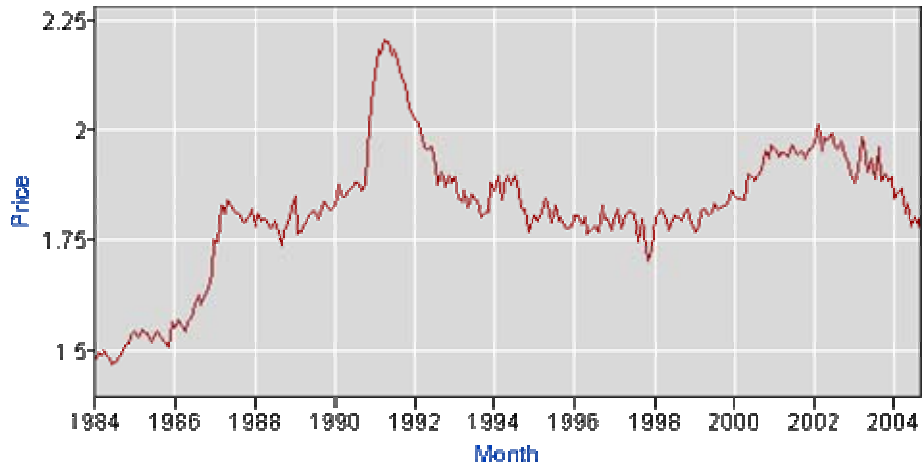
Soft drinks are another good example of how consumers benefit from moderation or declines in ingredient costs. BLS does not publish a long-term price series for carbonated soft drinks, but the price index is charted on page 15. It graphically demonstrates the impact of the industry's switch from sugar to high fructose corn syrup (HFCS) in the 1980s, and the subsequent flat prices for that sweetener. Since the 1982-84 base period for the index, soft drink prices have risen less than 30%, while the overall CPI has gone up 90%.

Another clear sign of the significance of price competition is that in 2004, Beverage Digest reported that one of the leading companies lost market share precisely because it increased prices more than competing beverage companies.

Chocolate chip cookie prices (\$/pound)



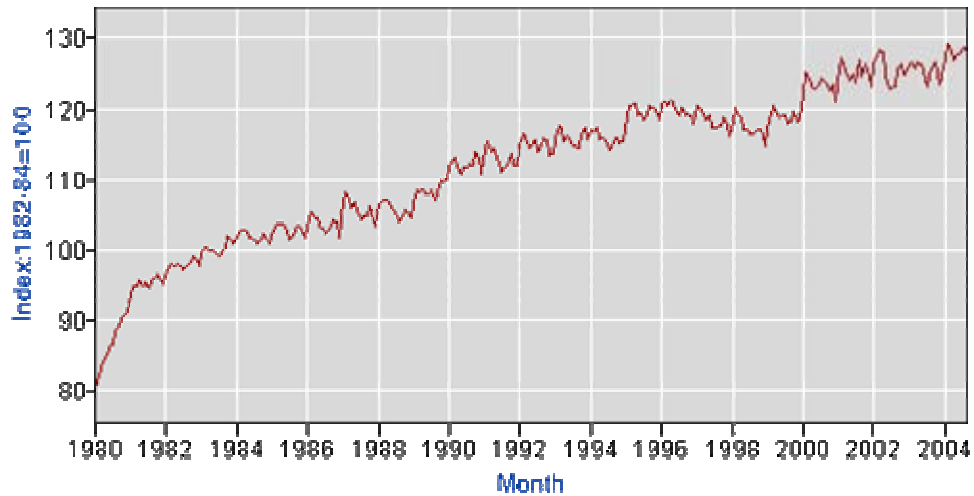
Peanut butter prices (\$/pound)



Ice cream prices (\$/half gallon)



CPI for carbonated drinks (1982-84=100)



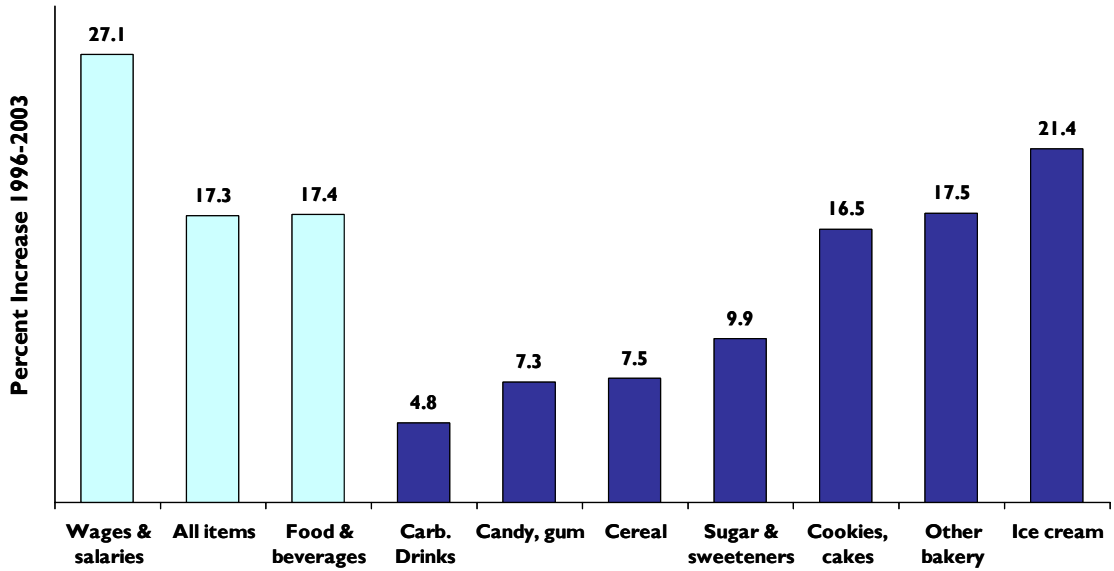
Consumers and food and beverage manufacturers have been campaigning for reform of the sugar program for over 20 years. One tangible result is that at least the price support level has not been increased during that period. Market prices for refined sugar have fluctuated mostly within a range of plus or minus 4 cents per pound. Consequently, when prices fall back from one of those peak levels, it helps to moderate prices of sugar-containing products for a time.

The American Sugar Alliance likes to contrast the fall in sugar prices since 1996 with increases in prices of sugar-containing products. The real context for those price changes is evident in the chart below, which shows that price indexes for most sugar-containing products have gone up much less than the CPI for all items, or the CPI for all foods and beverages.

An equally important point is that wages and salaries went up an even greater 27.1% between 1996 and 2003. Labor costs are the single largest cost component in food prices. Productivity growth in the food sector has kept food price increases well below the increase in labor and other costs.

The chart demonstrates that ASA's central argument lacks credibility. Food manufacturers have, in fact, passed through price declines, and these have moderated prices that were under upward pressure because of other cost factors. Five of seven sugar-intensive products rose *less* in price than all foods and beverages; one rose at an almost identical rate; and the only sugar-intensive product whose price rose at a faster than average rate was affected by commodity costs totally unrelated to sugar. In short, ASA's own evidence demonstrates that moderating sugar prices kept sugar-containing product prices from rising at a normal rate, resulting in direct, tangible consumer savings.

Consumer price increases for sugar and sweetened products were very moderate from 1996 to 2003



SECTION 4: CONCLUSIONS

The United States has an intensely competitive food system, and consumers benefit when unduly generous commodity price support levels are reduced. In the most recent USDA study of competition in food markets, USDA reached the following conclusion: “At the national level, our tests provide evidence of competitive conduct in both the sale of final food products and the purchase of farm ingredients.”²

Sugar is no exception. Consumers benefit when sugar prices are reduced. To summarize,

- While sugar is a major food ingredient, it still represents a small part of the cost of producing most food and beverage products.
- It can therefore be difficult to detect the effect of a decline in sugar prices because of the offsetting increases in labor and other costs.
- Nevertheless, food companies cannot simply ignore cost changes and set their prices at whatever level they want. If they could, food companies would be immensely profitable, yet they are not.
- Cost savings get passed on to the consumer in a variety of ways: increased couponing, more frequent specials, an offset to increased costs for other inputs, or an outright price reduction.
- The available price data and price indexes from the Bureau of Labor Statistics demonstrate the fact that cost reductions are passed on to consumers after a certain lag.
- The Consumer Price Index for sugar and sweeteners has risen less than that for all items because the sugar support price has been frozen at its high level for many years; and during periods of sugar price decline, indexes for sugar-containing products have risen **less** than the index for all foods and beverages.
- Manufacturers of sweetened foods and beverages want lower sugar costs because their products have to compete with many other types of food and snack products. Lower costs lead to lower prices, greater sales volume, and greater profitability.

² A.J. Reed and J.S. Clark, *Structural Change and Competition in Seven U.S. Food Markets*, Economic Research Service, USDA, Technical Bulletin Number 1881, February 2000.