

Estimated Impact of Various Consumer and Policy Factors on Peanut Product Consumption¹

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ABSTRACT

After reaching 585,000 mt of shelled peanuts (*Arachis hypogaea* L.) used in peanut butter and snack peanuts in 1989, use has decreased. In a national survey consumers agreed strongly that peanuts were good tasting, a good source of protein, and could be part of a balanced diet. Less than one-half agreed that peanuts are a healthy snack and are low in saturated fat. When thinking of snack foods, peanuts were placed low on the list of preferences.

In policy discussions, price is mentioned as the factor that may inhibit consumption growth. Retail price data on peanut butter and peanut snacks indicated a wide range in prices among cities, among stores within cities, and among brands.

The farmer's share of the retail price of a jar of peanut butter averages 26%. Retail prices increased 39 cents per 510 g jar from 1984 to 1992, while the farm value of the peanuts increased seven cents. Decreasing the support price for peanuts by \$250 per 907 kg, decreases the farm value of peanuts in a jar of peanut butter from 56 cents to 35 cents. The decrease would result in an increase in peanut butter use of about five percent or about 35,000 mt. Price may be only one of several factors impacting consumption trends.

Key Words: Peanut price, farm value, peanut policy, consumers, peanut products.

Peanut products are important food items in the consumer's market basket in the United States. It has been estimated in Consumer Reports (1990) that every day of the year one out of six Americans eat peanut butter. This translates into an estimated 10 billion peanut butter and jelly sandwiches consumed by the American population each year.

Peanut use in edible products, after reaching a high of 1,057,300 mt of farmers's stock equivalent in the 1989/1990 marketing year, decreased to near 975,000 mt in 1992/93. The use of peanuts for peanut butter and snack peanuts, after decreasing substantially in 1990/91 because of factors related to the drought, has not made a comeback to the high levels reached in the 1988/89 and 1989/90 marketing years. Factors hypothesized for the lower use include prices that are high relative to competing products, health concerns (e.g., fat), general nutritional aspects, and the lack

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of promotion and advertising.

Given the importance of peanut products, the domestic peanut program frequently comes under attack as being costly to consumers of peanut products. In the debate of the peanut section of the 1990 farm bill, statements were made that without the production quota and price support policies consumers could save as much as 40 cents on a 510 g (18 oz) jar of peanut butter priced at \$1.79. Consequently, Congressman Armey (1990) claimed that consumers pay a subsidy of more than \$553 million a year in higher prices for peanut products. On the other side of the issue, Congressman Rose (1990) indicated that the peanut farmer receives \$0.46 for the peanuts in a 510 g jar that may sell in a range of \$1.41 to \$3.49.

In an analysis of the peanut program, the U.S. General Accounting Office (GAO) (1993) stated that the peanut program adds, on average, anywhere from \$314 million to \$513 million a year to consumers' costs. In subsequent testimony before the U.S. House of Agriculture Specialty Crops and Natural Resources Subcommittee, the GAO clarified that their definition of a consumer was not the household consumer, but the first buyers of peanuts (i.e., shellers and/or manufacturers). In news articles on the General Agreement on Tariffs and Trade (GATT) negotiations, suggestions were made that consumers of peanut butter would be better off if import restrictions on peanuts were taken off since it would greatly reduce the cost of peanuts in peanut products.

The overall purpose of this analysis is to examine the possible impact of several factors on purchases of peanut products by consumers. The specific objectives are to 1) ascertain the consumer perceptions concerning peanut products, 2) estimate farm value and retail price relationships for peanut products, and 3) estimate the impact of price changes in the peanut program on consumers.

Materials and Methods

Data on consumer perceptions and use of peanut products were obtained from two national surveys conducted for the National Peanut Council (NPC) by the Gallup Organization in late 1992 and early 1993. The data included the use of snack products including snack peanuts, consumers attitudes toward various food issues and the relationship of the food issues to peanuts in particular. The two surveys included a survey immediately preceding a promotion campaign and then a post campaign survey. The data were statistically tested using the Chi-square procedure to determine if the data were from two different populations. The results indicated that the two populations were not different from one another. Therefore, for this analysis data from the two surveys were combined.

Retail price data were obtained from a survey of peanut products in food

stores and from information published in Supermarket Business. These data are shown in a cross tabulation form including ranges and means. Farm price data were obtained from reports issued by the National Agricultural Statistics Service, USDA. Farm value of peanut products was determined from statistical methods used by USDA in the annual published information on farm value and retail price spreads. Projected changes in peanut use as a result of varying farm prices were estimated by application of established coefficients obtained in previous research (Zhang *et al.*, 1993a).

Results and Discussion

The total use of raw shelled peanuts in edible peanut products in the U.S. for the marketing years 1978 to 1991 increased 14.8 mil kg annually (Table 1). The use of peanuts in peanut butter increased about seven mil kg, in snack peanuts 4.5 mil kg, and in candy 2.4 mil kg annually. However, peanut use in these various products leveled off and became more variable in the early 1990s (Fig. 1). One cause of decreased use in 1990/91 was a severe drought in the southeastern U.S. production region in 1990 resulting in a decrease in supplies and the resulting increase in retail prices. However, with subsequently lower prices in late 1991 and 1992, peanut use did not respond upward as expected.

Consumer Response Concerning Foods and Peanuts

Consumers have been bombarded with suggestions on eating the right kind of foods to remain healthy. In turn, they have responded by changing their food purchasing habits. There has been concern expressed by the peanut industry about consumer perceptions of peanut products.

The national survey for the NPC indicated that the overall nutritional value of food was ranked as very or somewhat

important by 81% of the respondents. Next in importance of concern was the amount of saturated fat in food (78%) followed by cholesterol level in food (77%), additives (74%), and salt content (71%). Calories, protein, unsaturated fat, fiber and vitamins were the next levels of concern about food.

When asked about peanuts as a food item; 85% of the consumers agreed strongly that peanuts are good tasting (Table 2). More than 75% agreed strongly that peanut butter and peanuts are a good source of protein with 71% agreeing that the two products can be a part of a well-balanced diet. However, only 46% strongly agreed that peanuts are a healthy snack. There appeared to be some misconceptions about peanuts in that 29% agreed strongly and 27% disagreed strongly that peanuts are high in vitamins and 28% agreed and 35% disagreed that peanuts are low in saturated fat. Consumers thought dry roasted peanuts are better for you than salted peanuts and peanuts in the shell are better for you than peanuts without the shell.

The importance of peanut products to consumers was explored by asking for the first response they had when thinking of snack foods. Consumers responded by placing potato chips well above any other snack food (Table 3). Only 4% responded that peanuts came first in their thinking of snack foods. When asked about salty snacks, 40% listed potato chips as first. However, peanuts were nearly even with pretzels with 16% of the consumers indicating peanuts. In asking about eating snacks, 21% indicated they had eaten potato chips in the last 30 days as their first choice. Peanuts was fourth in order of first choice with 6% eating them. Popcorn and snack crackers were a first choice by a higher percent than was peanuts.

Table 1. Trends in use of raw shelled peanuts in peanut products, U.S., marketing years 1978 to 1991.

Peanut product	Constant ^a	Trend ^a	R ²
----- mil kg -----			
Peanut butter	283.72	7.03	.572
Snack peanuts	114.33	4.50	.584
Candy	115.02	2.39	.523
Total use	518.53	14.81	.710

^a Based on the equation: mil kg use = b₀ + b(trend), trend 1978 = 1, 1979 = 2, 1980 = 3, etc: all coefficients were statistically significant at the .001 level.

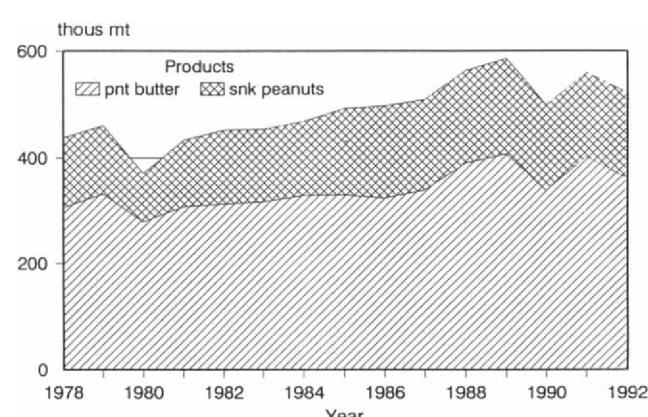


Fig. 1. Shelled peanuts used in peanut butter and snack peanuts, United States marketing years 1978 to 1992.

Table 2. Agreement expressed on the following statement about peanuts.

Statement	Degree of agreement ^a	
	Agree strongly	Disagree strongly
----- % -----		
Peanuts are good tasting	84.6	7.1
Peanut butter is a good source of protein	78.8	7.9
Peanuts are a good source of protein	75.3	6.8
Peanut butter and peanuts can be part of a well-balanced diet	71.3	10.2
Peanuts are a natural snack	68.3	12.9
Peanuts are high in calories	60.5	14.0
Peanuts are a good value for the money	55.3	17.2
Peanuts are a good snack any time of the day	55.1	22.3
Dry roasted peanuts that come in a jar are better for you than salted peanuts that come in a can	51.8	17.1
Peanuts are a healthy snack	46.1	15.8
Peanuts in the shell are better for you than peanuts without the shell	43.2	24.6
Peanuts are high in vitamins	28.6	26.9
Peanuts are low in saturated fat	27.8	35.3

Source: Survey by the Gallup Organization, Inc. for the National Peanut Council.

^a In a range of 1 through 5, agree strongly includes 4 and 5 and disagree strongly includes 1 and 2; 3 is in the middle of the range and is not shown. Includes 826 respondents.

Table 3. First response given when thinking of snacks and salty snacks eaten in last 30 days.

Snack food	First response given for		
	Snacks	Salty snacks	Eaten last 30 days
----- % -----			
Potato chips	30.6	40.1	20.8
Popcorn	8.5	4.9	9.6
Snack crackers	7.2	8.2	8.8
Tortilla chips	4.1	3.2	3.8
Peanuts	3.9	16.2	6.1
Pretzels	3.3	17.3	5.0
All other	37.8	5.6	41.4
No response	4.6	4.5	4.5
Total respondents	826	826	825

Source: Survey by the Gallup Organization, Inc. for the National Peanut Council.

Nearly one-half of the consumers indicated eating peanuts or peanut products at least once a week (Table 4). Another 22% indicated a frequency of two or three times a month and 13% at least once a month. Approximately 14% of the respondents consumed peanuts or peanut products less than once a month or never consumed the products.

Retail Prices of Peanut Products

Information obtained from several stores within several

Table 4. Frequency of eating peanuts or peanut products.

Frequency	Response
-- % --	
Everyday	7.7
Once a week	41.2
Two or three times a month	22.0
Once a month	13.3
Less than once a month	12.3
Never	2.1
No response	1.4
Total respondents	826

Source: Survey by the Gallup Organization, Inc., for the National Peanut Council.

cities for the same major brand of a 510 g jar of creamy peanut butter was used to show the range in prices (Table 5). In 1992, there was a range of \$.90 per jar among stores in some cities. In the same cities in 1993, the range in prices was narrower and in three cities the prices were the same among all stores.

Retail prices of peanut butter obtained from a survey of food stores in a small and large city are shown in Table 6. Prices averaged lowest in national chain supermarkets and highest in convenience stores with prices ranging from \$.97 to \$4.20 per 454 g (16 oz). In both cities national brands of peanut butter averaged highest in price and private store

Table 5. Retail price of 510 g (18 oz) creamy peanut butter among stores within cities, by dates, 1992 and 1993.

Store	W. Springfield, MA 3/5/92	Rockland County, NY 2/15/92	Charlotte, NC 2/15/92	Detroit, MI 2/15/92	Anaheim, CA 2/15/92
----- dollars -----					
A	2.39	2.59	1.89	2.49	2.89
B	2.29	2.59	1.89	2.77	1.99
C	2.69	2.59	1.89	2.77	2.19
D	2.39	2.59	1.89	2.49	2.09
E	1.79	2.69	1.82		2.55
F					2.09
G					2.47
Hi-Low diff.	.90	.10	.07	.28	.90
Store	Dallas, TX 4/2/93	Rockland County, NY ^a 4/9/93	Charlotte, NC 4/6/93	Detroit, MI 4/3/93	Anaheim, CA 4/3/93
----- dollars -----					
A	1.79	2.98	1.79	2.49	2.19
B	1.98	2.98	1.79	2.49	2.07
C	2.45	2.98	1.79	2.49	1.95
D	2.45	2.98	1.79	2.49	2.05
E	1.99	2.98	1.79		2.09
F	1.98				1.97
G	2.13				2.05
Hi-Low Diff.	.66	0	0	0	.24

Source: *Supermarket Business* (1992 and 1993).^a Size listed was 340 g (12 oz). This is the estimated 510 g equivalent price.

Table 6. Range and mean retail prices of 454 g (16 oz) peanut butter, by category, small and large city, May 1992.

Category	Small City		Large City	
	Range	Mean	Range	Mean
----- dollars ^a -----				
<u>Store type</u>				
National chain supermarket	.97 - 2.79	1.85	1.15 - 2.44	1.76
Local supermarket	1.24 - 2.65	2.02	1.15 - 2.60	1.87
Neighborhood grocery	1.40 - 3.19	2.39		
Convenience store	1.50 - 4.20	3.24		
<u>Brand label</u>	1.50 - 2.29	1.81		
National	.97 - 4.20	2.21	1.15 - 2.60	1.89
Regional	1.40 - 3.93	1.95	1.50 - 2.29	1.81
Private store	1.15 - 1.97	1.45	1.19 - 2.12	1.44
Private other	1.24 - 1.99	1.61	1.15 - 2.12	1.47
<u>Container size</u>				
12 oz (340 g)	1.45 - 4.20	2.61	1.45 - 2.60	2.17
18 oz (510 g)	1.15 - 2.66	1.91	1.15 - 2.36	1.68
28 oz (794 g)	.97 - 2.39	1.85	1.37 - 2.17	1.85
40-48 oz (1.13 - 1.36 kg)	1.20 - 2.02	1.76	1.19 - 2.08	1.67
56-80 oz (1.58 - 2.26 kg)	1.40 - 2.00	1.68	1.47 - 1.75	1.70
	1.15 - 2.60	1.77		
<u>Peanut butter type</u>				
Creamy	.97 - 4.20	2.07	1.15 - 2.60	1.77
Crunchy	1.15 - 2.39	1.64	1.15 - 2.39	1.53
Super crunchy	.97 - 3.99	2.17	1.15 - 2.60	1.88
Old fashioned	1.50 - 2.59	2.07	1.41 - 2.29	2.08
With jelly	1.64 - 2.48	1.98	1.63 - 2.21	1.85

Source: Store survey conducted in two cities.

^a Prices converted to 454 g (16 oz) basis for comparison purposes.

label brands averaged lowest. By container size, prices decreased on a per unit basis as container size increased with the 340 g (12 oz). container averaging substantially higher than any other size.

About 25% of the peanuts are used in snack peanuts. Snack peanuts compete within the market place with potato and corn chips, popcorn, and other nuts. Therefore, the relative retail price for snack peanuts is important to consumers. Results from a store survey indicated on a per unit basis that the price difference was relatively small in the range of \$.70 to \$.82 per 100 g (Table 7). One store label brand of dry roasted peanuts was on special at \$0.48 per 100 g. Since consumers face a large array of package sizes, they should be concerned with per unit pricing.

Farm Value of Peanuts in Products

The apparent differences in opinion about the direction that the peanut program should go and the consumer perceptions about peanuts as a healthy and nutritious food have resulted in serious discussions among the peanut industry leadership. One of the primary issues centers on the prices that consumers pay for peanut products. The debate centers on the probable impact of price changes on consumption, the sheller-manufacturer sector, and the peanut farmer.

The government price support for peanuts establishes a minimum price on farmers' stock peanuts used for domestic consumption. Therefore, the cost of the peanuts

in a jar of peanut butter or in a package of snack peanuts within any marketing year should be about the same regardless of city, brand, or type. Peanut prices change from year-to-year because of adjustments in the support price, and/or because of production variation that affects the supply-demand balance. Total production that is lower than normal can lead to prices that range above the support price level.

Table 7. Retail prices of snack peanuts, by brand label, May 1993.

Package size	National label		Store label	
	Per package	Per 100g	Per package	Per 100 g
----- dollars -----				
<u>Regular</u>				
141.7	-	-	1.19	.840
184.3	1.29	.700	-	-
311.8	2.59	.757	-	-
340.2	2.79	.820	2.59	.761
<u>Dry roasted</u>				
454	3.39	.747	2.19	.482

Source: Major supermarket survey conducted in one city.

Table 8. Support price, farm value, retail price, farm-retail spread, and farmers' share of the retail price of 454 g (16 oz) of peanut butter, 1984 to 1992.

Year	Support price	Farm value	Average price of peanut butter	Farm-retail spread	Farmer's share
----- \$/454 g -----					
1984	.2750	.41	1.49	1.08	27
1985	.2795	.42	1.54	1.12	27
1986	.3037	.44	1.60	1.16	27
1987	.3037	.46	1.80	1.34	26
1988	.3076	.46	1.79	1.33	26
1989	.3076	.46	1.81	1.35	25
1990	.3157	.48	1.89	1.41	25
1991	.3213	.51	2.15	1.64	24
1992	.3374	.48	1.88	1.40	26

Source: Dunham (1991, 1992).

Also, the recent event of increasing imports of peanut paste and peanut butter may affect raw product costs.

The farm value of peanuts in 454 g of peanut butter increased seven cents from 1984 to 1992 while the average retail price increased 39 cents (Table 8). The farm-retail price spread increased 32 cents from \$1.08 in 1984 to \$1.40 in 1992. The farmer's share of the retail price of 454 g of peanut butter has averaged about 26%. This is approximately equal to the average farmer's share for all foods. Deflating prices by the Consumer Price Index, to adjust for the effect of price inflation, showed that retail prices were down about 7.5% from 1984 to 1992 while the farm value of the raw peanut was down about 16%. The farm-retail spread was up slightly more than inflation at 2.7% over 1984.

Using the published retail price data, the difference between the lowest and highest price per jar (510 g) was \$1.79 to \$2.89 in early 1992 and \$1.79 to \$2.98 in early 1993 (Table 5). This implies that the farm-retail spread for 1992 varied by \$1.10 and for 1993 by \$1.19 among the stores. Therefore, peanut farmers received from about 17% to 27% of the retail price of peanut butter depending on the retail price level.

Estimated Impact of the Price Support Program

The price support program for peanuts has been criticized for increasing the price of peanut butter. The change in the farm value of peanuts used in peanut butter follows closely the change in the support price (Table 8). There are differences as a result of lags in retail price changes and changes in the farm value that are greater than the support price change. For example, the percentage change in the farm value for peanut butter in 1990 and 1991 was greater than the percentage change in the support price as a result of the drought caused short crop in 1990. In 1992, the farm value decreased even though the support price increased. In 1991 and 1992, the production was more than adequate so that farm value decreased to near the support price level.

The impact of the price support program on the price of peanut butter was estimated by evaluating the difference between the cost of peanuts under the current price support level and the estimated cost under a reduced price support. The best estimate that may be obtained for the cost of peanuts without price supports is the price for U.S. peanuts in world markets, primarily in Rotterdam, estimated in Carley *et al.* (1992). Since several countries sell peanuts in

that market, the price is established under relatively competitive conditions. An analysis of the prices indicated that in most years U.S. shelled peanuts have sold in a range of \$700 to \$1000 mt. At the world price range, the farm value of the peanuts in a 510 g (18 oz) jar of peanut butter would range from \$.205 to \$.355 (Dunham 1991). In comparison, at the 1992 price support of \$674.80 per 907.2 kg, the farm value of farmers' stock peanuts in the jar of peanut butter would be an estimated \$.56.

The farm value of the peanuts in a 510g jar of peanut butter may range from \$.205 to \$.355 less at the world price for peanuts than the value at the support price. If the decrease in the farm value was passed on to consumers in its entirety, a jar of peanut butter priced at \$2.12 could be reduced to \$1.77. Thus, the retail price could be reduced 10% to 15% from the current level. Given that the peanut butter manufacturing industry is quite concentrated, implying an oligopolistic structure, economic theory predicts that all raw peanut product price decreases probably would not be passed on to the consumer. Preliminary research by Zhang *et al.* (1993b) indicates that at most about 50% of the savings would be passed on.

The average price for a 340 g package of snack peanuts in May 1993 was \$2.74. The farm value of the peanuts in the package was estimated to be about \$0.38. Reducing the farm price of peanuts to a range of \$250 to \$425 per 907.2 kg (world price equivalent of \$700 to \$1000 mt shelled) would decrease the farm value \$.14 to \$.24 per 340 g package of snack peanuts, if the entire savings was passed on to consumers.

Quantity-wise, peanut butter and snack peanuts would be the most affected of the peanut products by a decrease in the price of farmers' stock peanuts. The domestic use of these two products ranges from 510,000 to 580,000 mt of shelled peanuts annually, or about 75% of all product use. On a per capita basis, the annual use of peanuts in peanut butter would total about four 510 g jars and snack peanuts about two 340 g packages. At a decrease in the price of farmers' stock peanuts to the range of world prices of \$250 to \$425 per 907.2 kg, if all the price decrease was passed on the consumers in lower retail prices, consumers would save about \$1.00 to \$1.90 per capita annually. This would be \$4.40 to \$7.60 per family of four out of an average of \$2,725 spent annually on food consumed at home.

The peanut industry has had a somewhat slow growth. Peanut butter consumption has been increasing .028 kg per capita per year or about 2.1% annually. In an analysis of price-quantity relationships by Zhang *et al.* (1993a), a 10% change in shelled peanut prices resulted in a 1.62% change in peanuts used in peanut butter and a 2.4% change in peanuts used in snack peanuts in the opposite direction. Therefore, if the farm price of peanuts was decreased as much as \$275/907.2 kg to a price of \$400/907.2 kg, shelled peanut prices may decrease about 32%. With such a decrease, use of peanuts in peanut butter may increase about 5% and use in peanut snacks about 7.5% (Table 9). With these increases in peanut use, total peanut use in the two products could increase about 35,000 mt or about 6%.

Table 9. Estimated change in peanut use resulting from price changes.

Support or farm price \$/907.2 kg (ton)	Percent change in wholesale value of shelled peanuts		Percent change in use in	
	Peanut butter	Snack peanuts	Peanut butter	Snack peanuts
700	3.1	-0.5	-0.7	
675	0	0	0	
600	-9.3	1.5	2.2	
550	-15.5	2.5	3.7	
500	-21.7	3.5	5.2	
400	-31.7	5.1	7.5	

Source: Zhang, *et al.* (1993a).

Conclusions

The use of peanuts in peanut products has increased at a relatively slow rate in the 1980s, and in fact the use in the early 1990s has shown little or no growth. Whether the factors are nutritional, health, promotion, or price issues are open to debate. Consumers indicated concerns about nutrition, fat, and cholesterol in the food they consumed. They said that peanuts are good tasting, a good source of protein, and can be a part of a well-balanced diet. However, they also indicated peanuts are high in calories and did not rank them high as a healthy snack. When asked what they chose first as a snack, peanuts ranked well below potato chips in fifth place. Even though less than 10% had eaten peanuts in the last 30 days, nearly 85% indicated eating peanuts or peanut products at least once a month with 41% indicating once a week. One would conclude that consumers opinions and use of peanuts is a somewhat mixed issue.

Peanut product retail prices may be one issue that tends to

limit purchases. Retail prices move up rather sharply during short production years which probably discourages purchases. Consumers may choose other snacks as substitutes and then when prices decrease, lag in again purchasing peanut products. Decreasing the farm price of peanuts as a primary method for increasing consumption of peanut products may be only one option. The analysis indicates that even with a decrease in farm prices of more than one-third, the effect on the use of peanut butter would be in the range of a 5% increase and in snack peanuts about a 7% increase. Total peanut use in the two products may increase about 35,000 mt of farmers' stock peanuts.

The evaluation of farm peanut cost effects on the retail price of peanut butter indicates that peanut prices at the farm level have a relatively small impact on the retail price of peanut butter. Other factors such as price leaders, specials, and discounting may be more responsible for the differences in retail prices than the farm value. Such factors change and vary among store locations and types, brands, container sizes and types of peanut butter.

In conclusion, the peanut industry faces some tough issues. Competition in the food industry is severe, consumers are becoming increasingly aware of food nutrition and health factors, and price may be only one of several factors impacting on the longer-term trends.

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