CONSUMER BEHAVIOR: IMPLICATIONS FOR FOOD DEMAND AND AGRICULTURAL MARKETING

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INTRODUCTION

Current financial conditions within the agricultural sector focus our attention on imbalances between quantities supplied, quantities demanded, and price levels which are sufficient to cover production costs for significant numbers of producers. Often the blame is placed on a shrinking demand for exports. This emphasis tends to downplay the long standing importance of the domestic market as an outlet for the produce of American farmers. In fact, many agricultural subsectors are highly or totally dependent on the domestic market.

Thus, in addition to revitalizing export demand, it is imperative that we continue to closely monitor the domestic market and adjust to its changing characteristics and needs. Ultimately the financial success of farmers and the food system is determined by the demand for their products and by their ability to anticipate and adjust to demand changes.

Consumer demand is the end result of the interaction of many sociological, psychological, and economic stimuli. We need to understand these stimuli and how they impact purchasing/consumption behavior in order to best coordinate production and marketing activities in the most efficient way.

These statements imply; (a) that consumer preferences can and do change over time, (b) that we can determine the causes of change, and (c) that producers and marketers have the ability to react in a way that exploit changes in consumer preferences to their benefit. This paper is oriented along these three themes. Consumption patterns for key commodity areas with emphasis on apparent fundamental changes over time are addressed. Subsequently, the probable causes of changing consumption patterns are discussed. The paper concludes with a delineation of the major implications for producers and marketers of food products. The emphasis throughout will be on food demand for human consumption.

CHANGING CONSUMPTION PATTERNS

Trends in food consumption during the last two decades have been dynamic. Some are well known, some are less obvious.

Trend #1: Between 1965 and 1985, the importance of foods derived directly from crops increased relative to foods derived from animal products. In the 1980 to 1984 period, per capita consumption of crop derived foods averaged 10% above 1967 levels. By contrast, per capita consumption of foods derived from animal products exceeded 1967 levels by less than 2%. The index of consumption of animal based foods is subject to more year to year variation than the crop foods index due to livestock production cycles. Despite the yearly variations, when we look at five year averages it is clear that consumers' have been placing increased emphasis on crop products in their diet selections. In the 1986 presidential address to the American Agricultural Economics Association, Joseph Havlicek identified this trend as one of five megatrends having profound affect on American agriculture [2].

Trend #2: While total per capita meat and fish consumption increased 12% between the 1965-69 period and 1980-84, the relative importance of specific types of meats within the diet have changed dramatically. Beef composed about 42% of total meat and fish consumption through the 1975-79 period. During the 1980s the beef share dropped to 36%. The poultry meat share increased steadily from 23% in 1965 to 29% in 1984. Pork consumption remained relatively constant, both with respect to volume and market share of total meat and fish consumption. The dynamics within the meat industry during the 1980s have stimulated much discussion and concern about possible fundamental changes in consumer preferences for beef.

Trend #3: After a long period of decline, the per capita consumption of dairy products, on a milk equivalent basis, has been increasing since the mid-1970s. The increases were modest until 1982 and 1983 when per capita consumption increased 3.3% each year. Aggregate statistics for dairy products mask important industry dynamics which serve to illustrate how difficult it is to generalize about the causes of changes in consumer preferences. Fluid milk consumption declined about 17% between 1965 and 1984 in an almost uninterrupted trend. Whole milk consumption declined 50% over the 20 year period while other fluid milk consumption increased dramatically from 19 pounds per capita in 1965 to 111 pounds in 1984. This trend is certainly consistent with the widely held belief that consumers are more health

conscious and strive to reduce consumption of animal fats.

Contrary to fluid whole milk consumption, cheese consumption increased steadily over the past 20 years 1965-1985. Total cheese consumption increased from an average of 10.2 pounds per capita during 1965-69 to 19.7 pounds during 1980-84. Since cheese tends to be high in fat content, this trend would seem to be inconsistent with the fluid milk consumption trend. Obviously there are factors other than concerns about cholesterol and fat intake which shape consumption patterns. With respect to cheese, some of the increase can be accounted for by increased government donations, which averaged 1.7 pounds per capita during the 1980s. Also, preferences for foods like pizza which use cheese as a major ingredient have been suggested as partial reasons for the increase. Perhaps more than any other food category, the patterns within the dairy products group illustrate the fact that consumption behavior is shaped by different forces and the net effects may not be consistent with any single explanation.

Trend #4: Consumers' changing preferences may be manifested in changing demand for the particular form in which the product is processed and marketed. Per capita consumption of all vegetables averaged 10% more during the 1980s than during the base year of 1967. During the same period, per capita consumption of canned vegetables fell nearly 15%, fresh increased 13% and frozen increased nearly 24%. This may reflect three major forces; processing technology, consumer concern over nutrient content, and the addition of salad bars in food service establishments.

Fruit consumption patterns also illustrate the importance of changing preferences for product form. Compared to 1967, average 1980-84 consumption of fruit juices increased 57%, fresh increased 15%, canned fruit declined 26%, and frozen/dried fruit consumption declined 11%. Processing technology, desire for convenience, and commodity promotion efforts are three factors that may be affecting these trends.

Trend #5: Per capita consumption of fats and oils has shifted from animal derived fats to vegetable based oils. In the 1960s vegetable oils and fats comprised 68% of the total consumption of fats and oils. By the 1980-84 period vegetable sources accounted for 79% of the total. This is not surprising. However, a closer look at the data shows that during the 1980s the use of animal based fats has actually increased in both absolute and relative importance. On a poundage basis, per capita consumption of animal fats increased 14% between the 1975-79 period and 1980-84. The vegetable based oils and fats share declined from 81% to 79%. Thus, the 1980-84 statistics are not entirely consistent with increasing concern about saturated fat consumption and other commonly expressed behavior patterns. However, the away-from-home market is a large user of fats and oils and usage decisions in this sector tend to be based on relative prices and perceived taste advantages. Also, it is generally difficult for consumers to know the source of ingredients used to prepare restaurant foods. Evidence exists that increasing awareness of cooking and preparation practices within the fast food industry may provide encouragement for this sector to favor vegetable based fats and oils relative to past experience.

Trend #6: The final trend in food consumption, addressed in this paper, is the steadily increasing trend toward consumption of food at away from home locations. In the 1960s, 70% of the total expenditures for food was for food consumed in the home. In 1984, this proportion had declined to about 58%. This is certainly one of the most important trends in consumer food purchase behavior with respect to implications for producers and marketing firms.

Summary

These six trends serve to illustrate that food consumption behavior is dynamic and diverse. Careful examination of the patterns forces us to the conclusion that simple explanations of the causes and possible implications are not likely to be accurate. The next section of the paper addresses the causal factors affecting consumption patterns. We will draw on existing research where possible and suggest some hypotheses where sufficient research evidence is lacking.

FORCES SHAPING FOOD CONSUMPTION PATTERNS

Consumer demand is the end result of many sociological, psychological, and economic stimuli. Three general categories of forces shaping consumption patterns are identified and related to observed consumption characteristics. The three factors are (1) socio-demographic influences, (2) economic, and (3) industry marketing practices.

Socio-demographic Factors

With respect to implications for food consumption, the following demographic and socioeconomic changes are most critical:

1. The slowing of the overall population growth rate, with the projected growth over the next 30 years being 24%. This is half of the actual 50% growth in the U.S. population between 1950 and 1980.

2. Changes in the age distribution toward an older population. For example, the median age was 30.6 years in 1982. By the year 2000, the median is projected to be 36.3 years.

3. The dramatic increase in one-person households. These households increased from 17% of total households in 1970 to 23% in 1980.

4. The trend toward single-female-parent families with children under 18 years of age. These families increased from 4.5% of all households in 1970 to 6.7% in 1980.

5. Changing geographic distributions of the population with increasing population shares for the South and West and declining shares for the Northeast and North Central regions.

6. The changing racial mix within the total U.S. population with blacks, orientals and hispanics gaining population share relative to the white population.

Recently completed research in the U.S.D.A. was designed to identify how food expenditure patterns differ across demographic groups and to evaluate the long term implications for various food categories (1). Major results based on Bureau of Labor Statistics' food expenditure data for 1980 and 1981 are reviewed in this section. The analysis is designed to capture the net effect on food expenditures due to changes in certain demographic variables. The results are reported in percentages relative to a "base" number. In each case, all explanatory variables, except those of interest, are held constant at their average values. Thus, results represent the marginal or net impact of certain factors on food expenditures, holding all other factors constant.

When adjusted for other socioeconomic and demographic variables, regional differences in food consumption expenditures for aggregate food groups tend to be small. The most variation appears in the poultry group with expenditures in the Northeast averaging 19% above the national average and North Central expenditures averaging 17% below the base. Expenditures for fruits also exhibit some regional variation. Expenditures for this food group vary from 12% above the national average in the West to 9% below average in the North Central region.

Some regional difference in food expenditures may represent regional differences in average prices over the 1980-81 period. Also, regional differences might be more important in determining the particular form in which a food is consumed rather than the absolute level for a given commodity type.

Estimates of average per capita food expenditures change as the consumer's age changes; other factors constant, are expressed relative to the 45 to 64 year old 'base' group. Food away from home expenditures are 40% to 50% higher for persons between 20 and 44 than they are for persons 45 and over. On the other hand, at home expenditures are 20 to 30% lower for the 20 to 44 year old age group as opposed to those 45 and older. Expenditures for specific food groups are only available for purchases for at home consumption. Thus, the analysis of expenditures for specific foods will generally reflect smaller expenditures for younger people than for older age groups.

Per person expenditures for the pork, fruits, vegetables, and fats and oils food groups show steady increases as the consumer's age increases. Beef, poultry, and dairy product per capita expenditures tend to peak in the 45 to 64 year old group. Within the dairy group, the decline after age 64 is due entirely to fluid milk and cream. Cheese and other dairy product expenditures are higher in the 65-75 age group, other factors constant.

Nonblack households spend more per person than their black counterparts for most food groups. Total food expenditures by black households average 11 percentage points below the average for nonblack families with similar characteristics. Across food groups, the results imply that black and nonblacks allocate their food dollar in substantially different ways.

Nonblacks's per capita expenditures for dairy products average nearly 35 percentage points above the per capita expenditures by blacks. However blacks tend to spend more for pork and poultry. In fact, the data suggest that expenditures by blacks for poultry are nearly 37 percentage points higher than expenditures by nonblacks.

Single member households spend more for food eaten away from home than the national average. On a per capita basis, away from home food expenditures by single member households exceeded the national average by 84% during 1980 and 1981. On the other hand, food expenditures for at home consumption exceeded the average by only 9%. This group tends to spend relatively more on frozen meals and prepared foods, fresh fruits and vegetables, cheese, fish, and poultry. They tend to spend less for milk, pork and beef for at home consumption than the overall U.S. average.

While on the average single member households spends more on food per capita than the average household, the growth trend for single female parent households with children under 18 seems to be a negative factor. This group spends less than average for nearly all food categories. Expenditures for milk and poultry are affected the least, while expenditures for beef, fresh fruits and vegetables and cheese are 30% or more below the national average.

Economic Factors

Economists contend that changes in the consumer demand for specific foods can largely be explained by changes in the levels of consumer incomes and by the price of the food item relative to other foods and consumer goods and services. Recent research conducted by the Economic Research Service, U.S.D.A. attempted to measure the responsiveness of food purchases to price and income changes for

40 food commodities using time series data for the 1953 through 1983 period [3]. A summary of the results illustrates how economic factors impact different food categories.

Consumers will either increase, decrease, or maintain their purchases of a particular food as their incomes increase. Knowing which foods fall in each response category will help us determine potential growth markets as economic growth stimulates higher per capita incomes. Of the 40 foods studied, consumer purchases of 17 were determined to respond positively to increases in consumer incomes. Holding relative prices constant, a 10% increase in per capita income is estimated to result in purchase increases ranging from 11.2% for fruit juices to 2.3% for lettuce. Performance of the general economy is important to the markets for these 17 foods, because just as they benefit from income growth, their sales will tend to suffer relatively more than the other food groups during recessionary periods.

The research did not reveal a statistically significant relationship between income changes and the consumption of 19 other food items. These tend to be from the staple foods, however some fruits and vegetables are also represented. The failure to measure a significant income response for fresh and processed fish may be due to data measurement problems and not an accurate reflection of consumer behavior.

Finally, four foods were found to have negative relationships to income changes. These are foods which could be expected to perform relatively better during periods of slow or negative real income growth.

Price changes affect the consumption of individual foods in different ways depending on the degree to which food is considered an essential part of the diet and the extent to which other foods can provide similar nutrient characteristics, that is are close substitutes. For example, per capita consumption of beef and chicken has reacted to changes in the relative price of beef compared to chicken prices. During the 1975 through 1977 period, beef consumption averaged 12% to 20% higher than during 1967 and beef prices were only 5% higher relative to chicken prices than they were in 1967. Between 1979 and 1985, beef prices averaged close to 40% higher relative to chicken than in 1967. During the same period beef consumption dropped back to 1967 levels but poultry consumption averaged over 40% higher than in 1967. Although preferences for beef relative to chicken may be changing, much of the changing consumption pattern is consistent with relative price incentives.

Marketing Initiatives

The third category of forces shaping consumer demand for food relates to efforts by food marketing firms to gain market share and increase profits. Marketing firms, particularly those selling highly processed foods, assume that they can influence consumer purchase behavior to their advantage through a variety of activities. These differ somewhat across industries and food groups, but generally involve the following activities:

1. Advertising - during 1985, food marketing firms, including commodity groups, spent over $9 billion on media advertising and promotions for food products. Commodity groups are increasingly looking toward consumer advertising as a way to bolster consumer demand for their products. Major new promotion programs have recently been initiated for dairy, beef and pork as a result of federal enabling legislation. Economic studies designed to quantify the impact of advertising expenditures on consumer sales have produced varying results depending on the particular commodity characteristics and the period of study. Much research is needed in this area to determine the cross-commodity effects of advertising and the degree to which effectiveness at the consumer level is transmitted back to producers.

2. Menu proliferation and selection in restaurants and fast food outlets can also affect consumption trends. The role of the consumer in specific food choice decisions in the away from home market is not well conceptualized or measured. In this market, firm behavior may have much more impact on product demand trends. For example, during the 1980s many fast food firms expanded their menu selection in an attempt to gain market share and to achieve overall market growth. The market here is so large that the decision to serve baked potatoes, for example, can have major impact on the overall demand for potatoes.

3. Value added processing is increasingly being used by manufacturers to capture added revenues from slow volume growth markets. Thus, consumers can now purchase partially or wholly prepared foods for home consumption which have many of the taste and convenience characteristics of food consumed in restaurants.

4. Firms continually introduce new consumer food products -- 2200 in 1985. The most active food groups for new product introductions include: frozen foods, dairy products, cereals and bakery products, beverages, deserts and snacks, and sauces and spices.

5. Brand differentiation is a way that firms try to influence consumer preference for specific foods. This effort has been traditionally the most active in highly processed foods. Recently more brand differentiation and associated advertising effort has been observed in poultry and dairy products. We are just beginning to see some evidence of brand differentiation in beef products.

These are some of the primary ways that firms try to influence consumer demand. Clearly their success or failure can have significant implications for producers.

IMPLICATIONS

This section summarizes the implications resulting from the various factors which affect food demand. Based on our research relating economic, social and demographic characteristics to food demand we developed estimates of the likely percentage change in total consumption of various food groups between 1980 and 2005. These projections embody an assumption of 2% income growth per year, census population projections, census projections of age distributions, and the expectations that the South and West will continue to gain population share.

Total expenditure for food are projected to grow 49% over the 25 year period, assuming constant relative prices. Food away from home expenditures are likely to grow 63% compared to 40% growth for at home food consumption expenditures. Given the underlying assumption of 2% per year income growth, the food categories growing the most are expected to be beef, fruits, and vegetables. The least growth is expected for dairy, sugars, and cereals. The growth projections for individual food groups are for at home consumption only since we do not have sufficient information on the commodity breakout for away from home consumption sales.

Some other implications are as follows:

1. As commodities are increasingly marketed as food consumed in food service outlets, the linkage between farm level prices and consumer prices becomes less direct. To the extent that retail prices respond less to changes in farm level prices, consumers are less likely to adjust consumption levels as production levels fluctuate. This could, in turn, make farm level prices somewhat more sensitive to production changes.

2. The need for steady supplies of consistent quality commodities for the food service markets and for branded products will continue to encourage production - processing - marketing coordination. Efforts to expand consumer demand through commodity and brand advertising may also encourage more system coordination in order to assure that consumers are supplied with those product attributes being promised in the advertising message.

3. Overall growth in the quantity of food consumed will be driven largely by population growth. Because of this, most food marketing firms will try to achieve growth by product proliferation, incorporating food preparation convenience, and experimenting with different taste combinations. The impacts on food demand could be dramatic for specific food commodities, however, it is probable that for many commodities the efforts by marketing firms designed to increase food expenditures will have minimal impact on farm level prices and volumes. Therefore, it is important that the producing sector be well informed on current market conditions, product quality requirements, and forces impacting supply in order to best allocate resources between alternative enterprises.

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