



Reasons for the decline in beef consumption

Desmond A. Jolly

Health concerns played a part but price was most important

Between 1976 and 1980, annual per capita beef consumption declined sharply from 94.4 to 76.5 pounds — a decrease of 19 percent. Since this drop was accompanied by fairly consistent increases in production costs, the economic fortunes of the cattle industry have been less than buoyant in recent years. Cattle production, valued at \$1.3 billion in 1981, is California's second largest agricultural industry. A significant decline in the earnings of this industry has ramifications both inside and outside agriculture.

Among causes attributed to the decrease in beef consumption have been health concerns related to the effects of cholesterol, in particular, and animal

fat, in general, and economic factors, including the cost of beef.

Economic changes

In 1960, per capita beef consumption was 64.2 pounds. By 1970, it had increased 31 percent to 84.1 pounds, and then the level rose to 94.4 pounds in 1976, a 47 percent increase over 1960. After 1976, however, it turned downward, declining consistently to a level comparable to that which prevailed in 1966.

The theory and analysis of consumer demand assumes that it responds principally to (1) the number of consumers, (2) consumer income, (3) the price of the

product, (4) the price of substitutes and (5) consumers' tastes and preferences.

Consumers, in fact, generally purchase increasing amounts of a product when prices decrease and decreasing quantities when prices increase. If demand is inelastic, a price increase may not necessarily lead to reduced consumption. Also, when prices and incomes are increasing at a comparable rate, a price increase may not significantly affect consumption, since real incomes may not be materially affected. Thus, the potential effect of a price increase may be masked. If real incomes decline, however, a price increase tends to reduce consumption. It is instructive, therefore, to examine the behavior of some key economic variables in the period under consideration.

Aggregate income in the United States, in 1972 dollars, went from \$1122.4 billion in 1970 to \$1480.7 billion in 1980 — a 32 percent increase. Personal income similarly increased over the period from \$869.1 billion to \$1209 billion. However, average real spendable weekly earnings peaked in 1972 at \$97.11 and declined fairly consistently to \$83.56 in 1980 — a decrease of 14 percent (fig. 1). In the critical period, 1976 to 1980, average real spendable earnings went from \$91.42 to \$83.56 — a 9 percent drop.

Consumer demand responds to changes in the price of the product and in relative prices of substitutes. Examination of the behavior of the beef price index suggests that changes in beef prices may be partially responsible for the changes in demand. An index measures changes in the value, volume, or price level of an item relative to a base period. The beef price index relates the average retail cost of beef in any given year to the comparable cost in the base year.

Between 1960 and 1970, the beef price index went from 92.3 to 119.5 — an increase of 27.2 points or approximately 29 percent. During this period, per capita beef consumption increased by 31

Fig. 1

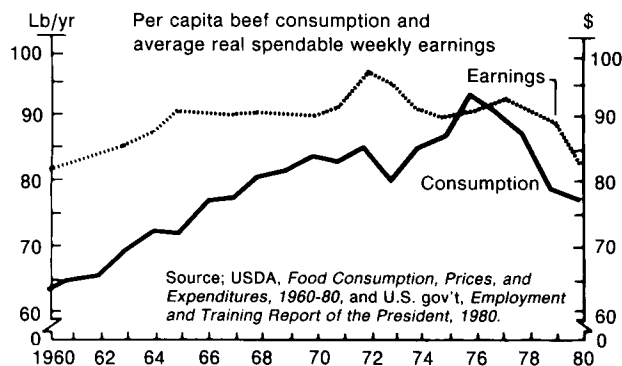
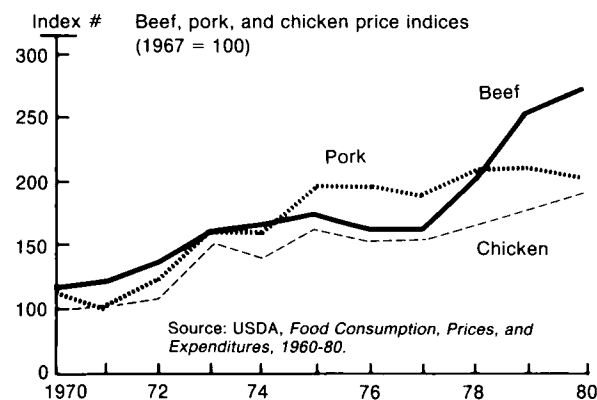


Fig. 2



Declining real earnings partially explain post-1976 drop in beef consumption (fig. 1). Beef prices increased noticeably after 1977 relative to other meat prices (fig. 2).

percent, nearly a third. By contrast, between 1970 and 1980, the index went from 119.5 to 270.3 — up 150.8 points or approximately 126 percent. On their own, beef price increases during the 1970s would have adversely affected consumer demand. But not only did the price of beef increase significantly, it increased noticeably relative to the prices of competitive products — pork and poultry.

The real prices of beef, pork, and chicken maintained approximately the same relationship in 1973, as in 1967, but after 1973, price relationships changed. Between 1974 and about 1977, the real price of pork was higher than that of beef. Not surprisingly, per capita beef consumption increased from 80.5 pounds in 1973 to 94.4 pounds in 1976 and declined only marginally to 91.8 pounds in 1977. Pork consumption decreased from 78.7 pounds in 1971 to only 50.6 pounds in 1975. By 1976, it was still only 55.8 pounds — a decrease of 29 percent. Beef prices began to increase at a noticeable rate in 1977, and by 1980, the beef price index was 61 points higher than that of pork (fig. 2).

Divergence between the beef price index and the chicken price index was not great between 1973 and 1977 (fig. 2). Subsequently, however, the beef price index increased at a fairly steep rate, reaching 270.3 by 1980 compared with 190.8 for chicken — a gap of 79.5 points. Between 1975 and 1980, the price index for chicken increased by 17.5 percent, the beef index by 59 percent.

Typically, there are substitutes for consumer products and, theoretically, consumers attempt to maximize their welfare by equating the marginal utility per unit cost among all the goods in their market basket. In the case of beef, consumers are satisfying a more general demand for meat, of which beef is one alternative. Moreover, they have an

even more general demand for protein, which can be partially met from non-meat sources — dairy products, cereals, and vegetables. Thus, the opportunity cost of beef, in terms of foregone products, becomes more significant as its price increases. Consumers are motivated to seek more economical sources of meats and proteins. The opportunity cost of beef in terms of both pork and chicken was increasing markedly between 1977 and 1980. Decreasing real purchasing power would only accentuate the effect of the price relationships.

Health concerns

Health concerns have played a part in the declining demand for beef. However, the impression gained from examination of the available evidence is that the influence has been overestimated, at least in the period up to 1980.

According to a consumer behavior survey conducted for the American Meat Institute in 1980, only 10 percent of households were eating more fresh meat than in the previous year, 56 percent were eating about the same amount, and 33 percent were eating less. One percent of the households had served no meat during the preceding year. Further, the survey indicates that fresh beef accounted for the bulk of the decrease in fresh market consumption — about 69 percent of the total reductions in servings of fresh meat. The survey cites cost as the primary reason for reduced consumption, noting that light and moderate users also mentioned health concerns (see table).

Cost, as a constraint to consumption, was most significant to heavy users, people who serve meat 21 times in a two-week period. Eighty-nine percent of these households cited cost as the reason for reducing fresh meat consumption. Among moderate-user

households, the comparable figure was 80 percent, while 62 percent of light users reported cost as a significant constraint. Only 5 percent of the heavy users cited health concerns as the reason for cutting back, as compared with 10 percent of moderate and light users.

Statistical relationships

Statistical analysis indicated the overwhelming significance of economic factors in explaining changes in per capita beef consumption between 1960 and 1980. Several different regression equations were estimated and compared. Only two are given here. The variables are measured in terms of their year-to-year variations.

In equation 1, changes in per capita beef consumption depend on changes in the average real spendable earnings per worker on private payrolls. Equation 2 uses earnings and changes in the price index of beef. The results are the following:

$$X_1 = .0081 + .9416X_2 \quad (1)$$

(0.9416) (0.0106)

$$R^2 = .9976 \quad D-W = 1.99 \quad F = 7842.32$$

$$X_1 = .0192 + 1.1526X_2 - 0.2084X_3 \quad (2)$$

(0.0112) (0.1102) (0.1084)

$$R^2 = .9980 \quad D-W = 2.10 \quad F = 4479.77$$

X_1 = log. of changes in per capita beef consumption

X_2 = log. of changes in average real spendable weekly earnings

X_3 = log. of changes in price index of beef

Equations 1 and 2 explain over 99 percent of the variation in beef consumption. However, equation 2, which includes the price index of beef as an explanatory variable, is statistically preferable to equation 1.

Conclusions

The role of economic factors in generating the decline in beef consumption has, in general, been underestimated. This analysis, in particular, indicates the importance of changes in consumer purchasing power, as well as in the relative prices of beef, pork, and chicken. Although health concerns have become more noticeable, economic factors are still paramount.

The outlook for beef consumption, based on these findings, would indicate slow recovery on the demand side. Specifically, increases in consumer demand will depend on an increase in real disposable incomes and favorable developments in the relative price of beef. Producers and beef suppliers, in the meantime, need to pay closer attention to adaptations and changes on the supply side.

Desmond A. Jolly is Economist, Cooperative Extension, and Adjunct Lecturer, Department of Agricultural Economics, University of California, Davis.

Reasons for serving less fresh meat than one year previously

Reasons (unaided)	Primary food shoppers*	Fresh meat frequency*		
		Heavy	Moderate	Light
	%	%	%	%
Cost/too expensive	73	89	80	62
Health reasons: e.g., high blood pressure	9	5	10	10
Change in household size	8	6	4	12
Prefer other food	8	5	7	10
Trying to save money	5	8	5	5
Eating out more	4	2	4	5
Change in tastes	4	3	4	4
Vegetarians	3	-	-	7
Poultry less expensive	3	3	5	3
Other	12	5	9	17

Source: American Meat Institute, *Consumer Climate Barometer Relevant to Meat Products*, Washington, D.C., May 1981. *Number responding = 100 (multiple responses given). Percentage in population: primary food shoppers = 100%; heavy meat users = 30%; moderate = 34%; light = 36%.