

Managing for Today's Cattle Market and Beyond

Beef Industry Challenges & Opportunities

By

*James Mintert, Kansas State University
Ted C. Schroeder, Kansas State University
Gary W. Brester, Kansas State University
Dillon Feuz, University of Nebraska*

Dramatic changes in productivity, product developments, and meat product promotion have influenced consumer demand for meat. Although the beef industry has experienced increases in production efficiency, primary competing sectors, (i.e., pork and poultry) have experienced even larger productivity gains. In addition, the pork sector is well positioned for additional significant efficiency increases in the near future. Efficiency gains in the poultry sector caused part of the beef demand decline observed over the last fifteen years. Future productivity gains in pork production and marketing could have similar impacts on beef demand during the next decade.

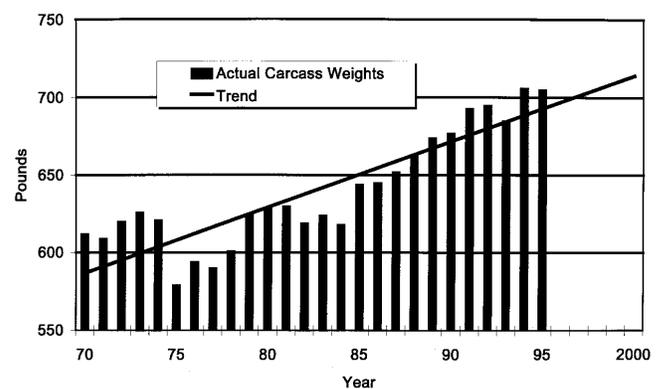
Product promotion has been used by the beef industry to mitigate declining demand. To date, promotion efforts have been small compared to major food marketing firms, and have had minor impacts on beef prices. To remain a profitable industry, the beef sector needs to closely examine its competitive position relative to other meats and focus its efforts where the impact will be greatest. This fact sheet discusses these issues and outlines strategies the beef industry should consider when positioning itself in this dynamic environment.

Beef Industry Productivity

Productivity in the beef sector has been increasing for many years. Despite the fact that total cattle slaughter (including farm slaughter) during

1996 will fall far short of the 47.8 million head record established in 1976, beef production is expected to break the 1976 record and exceed 26 billion pounds for the first time. The record large beef production of 1996 is primarily the result of a shift toward producing markedly heavier carcasses as increasing averaged dressed weights helped offset smaller slaughter numbers. For example, average commercial carcass weights increased 17 percent from 602 pounds in 1976 to 705 pounds by 1995 (Figure 1).

Figure 1. Estimated Commercial Cattle Carcass Weights

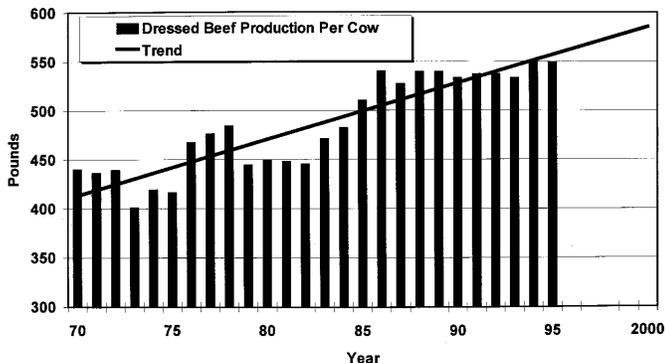


Source: USDA & KSU

Beef production per cow has also increased. Dividing commercial beef production by cow herd inventories shows that pounds of dressed beef produced per cow increased by nearly 25 percent from 449 pounds in 1980 to approximately 563 pounds in 1995 (Figure 2). The increase in beef production per

cow is the result of several factors. First, because of changes in genetics and feeding programs, fed cattle are now typically slaughtered at heavier weights. Second, calf slaughter has declined dramatically in recent years. Since 1976, calf slaughter has fallen 72 percent. Feeding dairy steers to slaughter weight has become an important component of the cattle feeding industry. In the past, many of those steers would have been slaughtered as calves. Finishing calves to slaughter weight effectively raises beef output per cow.

Figure 2. Dressed Beef Produced Per Cow Per Year



Source: USDA & KSU

What does the future hold for the beef industry? Beef sector productivity will continue to increase, but the odds do not favor rapid growth. Recall that the two primary reasons beef production per cow grew rapidly in recent years were increasing dressed weights and a long-term decline in calf slaughter. It appears that the big decline in calf slaughter is over and future productivity gains will have to come from feeding cattle to heavier slaughter weights, genetic improvements and from shortening the feeding period.

Pork Industry Productivity

The pork industry continues to change rapidly. The number of hog farms has been declining for many years and will continue to decline for the foreseeable future. The average number of hogs marketed per farm is increasing and this trend is expected to remain in place for some time.

As the pork industry has consolidated, dramatic improvements in productivity have occurred. Pork production set a record in 1995 at approximately 17.8 billion pounds. Slaughter during 1995 totaled 96.3 million head, breaking the previous all-time high of 96.1 million head established in 1980. Yet pork production was much larger than in 1980 because of heavier average dressed weights. The average dressed weight in 1995 was 185 pounds per head versus 171

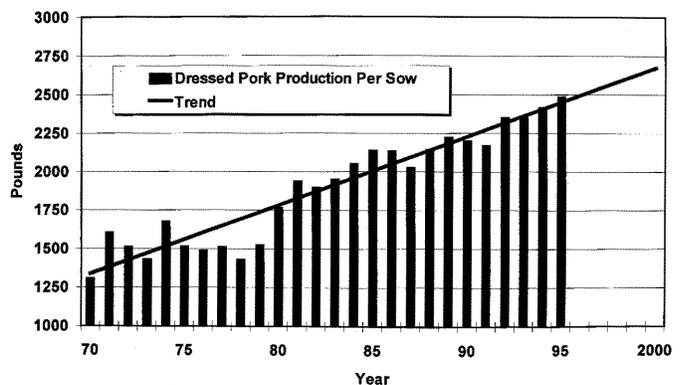
pounds per head in 1980, an increase of 8 percent. Although this trend has been present for many years, it has recently become more pronounced. Genetic and nutritional improvements have made it possible to feed hogs to heavier weights and still produce relatively lean carcasses.

One measure of productivity is annual pounds of pork produced per breeding sow. Dividing annual commercial pork production by the average number of sows in the breeding herd shows that productivity in the pork industry has been growing at an amazing pace. Since 1970, pounds of dressed pork produced annually per sow have grown from 1,307 to 2,485 pounds, an increase of 90 percent (Figure 3).

One source of productivity growth in the pork sector has been increases in average dressed weights. The second major productivity improvement has been the adoption of improved genetics coupled with better management, which allows top producers to wean as many as 50 percent more pigs annually per sow compared to 10 years ago. Well-managed farrow-to-finish operations now have a target of 24 or 25 pigs weaned per sow per year compared to objectives that were in the teens a few years ago.

This tremendous improvement in productivity means that the hog industry operates with a much smaller sow inventory today than it did a few years ago. A simple comparison between the sow herd of 1980 and the 1995 sow herd illustrates this point. In 1980, there were approximately 9.3 million sows in the breeding herd whereas in 1995 there were approximately 7.1 million sows, a decline of 24 percent. The much smaller breeding herd of 1995 was able to produce more slaughter hogs (and far more pork) than the 1980 breeding herd.

Figure 3. Dressed Pork Produced Per Sow Per Year



Source: USDA & KSU

What does the future hold for the pork industry? Despite all the improvements in productivity that have occurred, there is still a sizable component of the industry that has not fully adopted current technology.

Further consolidation is expected as firms take advantage of new technology to lower production costs and drive out firms that fail to adapt. Moreover, there is a great deal of new technology on the horizon, which is expected to yield a new round of productivity improvements. For example, wide-spread adoption of improved genetics, split-sex feeding, multiple site production, and segregated early weaning could contribute to future productivity gains in the pork industry. Technological change, combined with improved management, is driving the industry toward a lower cost structure. Ultimately, the reduction in the industry's cost structure will be reflected in lower cash hog prices and retail pork prices. In short, expected productivity gains in the pork sector the next few years could dwarf expected productivity gains in the beef sector.

Relative Production Costs Matter

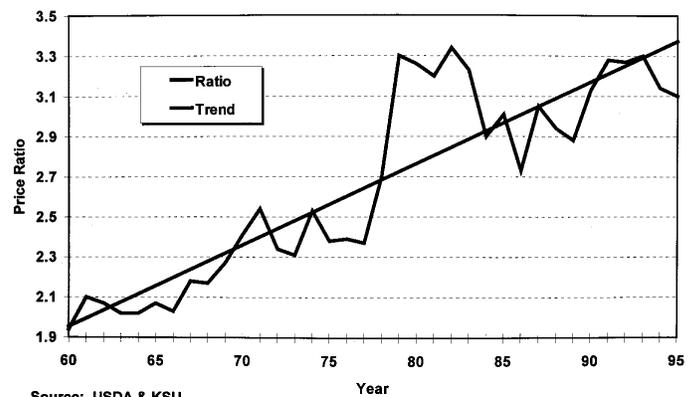
Why are differences in productivity across meat sectors important? Differences in productivity will be reflected in production cost differences across meat sectors. Ultimately, differences in production costs create differences in supplies, which result in a change in the retail meat price relationships consumers face at the supermarket. That is, increases in productivity increase supplies and reduce retail prices. Components of the meat sector unable to match these productivity gains will be at a competitive disadvantage as they become less price competitive.

An examination of meat consumption trends over the last 35 years reveals that while total meat consumption has been growing, individual meat commodities have not grown at equal rates. Per capita retail pork consumption has been relatively stable for some time, ranging from 50 to 60 pounds. Pork consumption has been near the low end of the range in recent years, partly because the USDA revised their procedure for estimating retail weights from carcass weights. Per capita beef consumption has declined markedly since the mid-1970s. As with pork, part of the downtrend in beef consumption in recent years has been attributable to changes in the procedure used to estimate retail consumption. Finally, both pork and beef have lost market share to poultry as both chicken and turkey consumption trended upward.

Changes in relative prices among the three meats explain a major portion of the consumption changes. Although beef prices were higher than chicken prices throughout the 1960-1995 period, the ratio of beef to chicken prices was increasing, which means beef

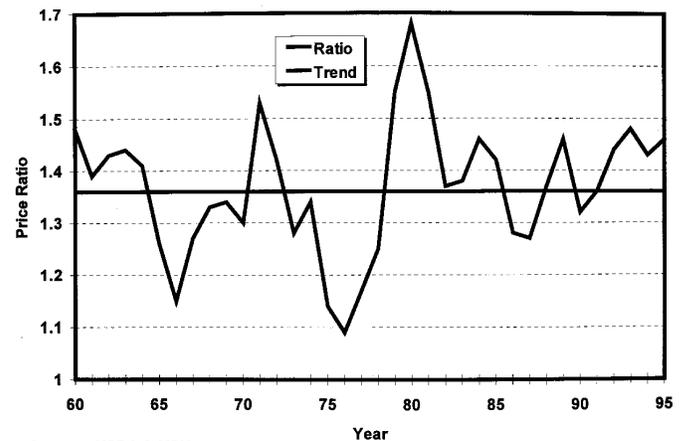
became more expensive relative to chicken (Figure 4). Consumers substituted lower priced chicken for more expensive beef in their diets. Beef prices relative to pork prices fluctuate considerably from year to year, but no long-term trend has been apparent (Figure 5). Since the beef/pork price ratio has changed little during this time period, it is not surprising that there has been no discernible trend in the beef/pork consumption relationship.

Figure 4. Beef/Chicken Annual Retail Price Ratios



Source: USDA & KSU

Figure 5. Beef/Pork Annual Retail Price Ratios



Source: USDA & KSU

There has been considerable debate regarding whether changes in relative prices among the competing meats explain all of the change in consumers' eating habits. Many believe that a change in consumers' tastes and preferences also occurred, which led to a shift away from red meat toward poultry consumption. Changes in preferences could have been caused by changes in the convenience attributes of products and/or health-related perceptions. There is little dispute, however, that changing price relationships explain much of the change in consumption patterns.

What will happen to the beef/pork price ratio in the future if pork productivity growth accelerates and

beef productivity growth stagnates? Over time, the beef/pork price ratio could increase, thereby encouraging consumers to shift their meat consumption away from beef toward pork. Beef has lost market share relative to poultry for an extended period of time. Given the expected differences in productivity gains in the future, the possibility exists that the pork sector will gain market share at the expense of beef.

Does this mean the pork sector can expect increases in demand similar to that experienced by the chicken sector? Answering that question requires an examination of both pork and chicken demand. Remember that an increase in demand implies selling the same quantity as before, but at a higher price; increasing quantity sold and selling it at the same price as before; or, the strongest case, simultaneous increases in price and quantity sold.

Chicken demand has been increasing, particularly in recent years, as the industry was able to increase the quantity sold, but hold the inflation-adjusted price steady. The picture for pork has not been as positive in recent years. Pork demand in 1995 was nearly the same as in 1993 and 1994, but weaker compared to the late 1980s. Consequently, recent data suggest that the poultry sector has a stronger demand structure than the pork sector. What could cause that to change?

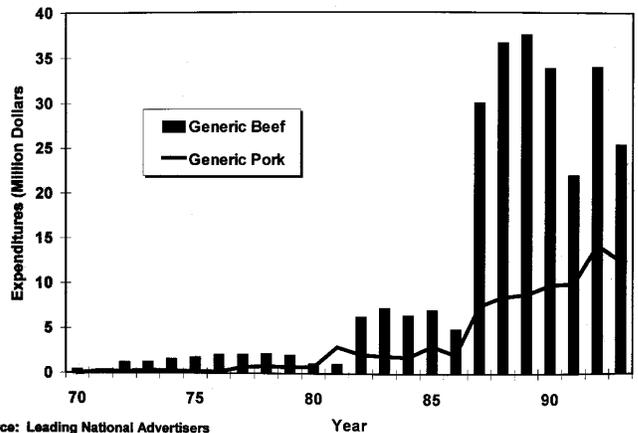
One reason the demand for chicken has been increasing is because the poultry industry has been very innovative and offers consumers a wide array of convenient, value-added chicken products that were not available just a few years ago. The introduction of new products has taken place at both the retail supermarket level and in the hotel/restaurant/institution (HRI) trade. Consequently, for the pork sector to be in the same position as the chicken industry, a variety of innovative pork products need to be developed to meet the needs of today's discriminating consumers.

Product Promotion

One strategy used by both the beef and pork industries to increase consumer demand is generic product advertising. Starting in 1986-87, beef and pork producers launched separate national generic commodity advertising programs (Figure 6). Prior to 1986, beef and pork producers typically allocated less than \$2 million annually to advertising expenditures. Since 1987 annual producer-funded beef advertising expenditures have ranged between \$25 and \$35 million. Similarly, annual producer-funded generic

pork advertising expenditures have ranged between \$7 and \$14 million since 1987. These generic advertising programs have been funded by producer check-off assessments. The fact that the beef and pork sectors instituted commodity advertising programs at about the same time is important because beef and pork compete for consumer food expenditures. This also means beef and pork advertising campaigns compete with each other in attracting consumers' food expenditures.

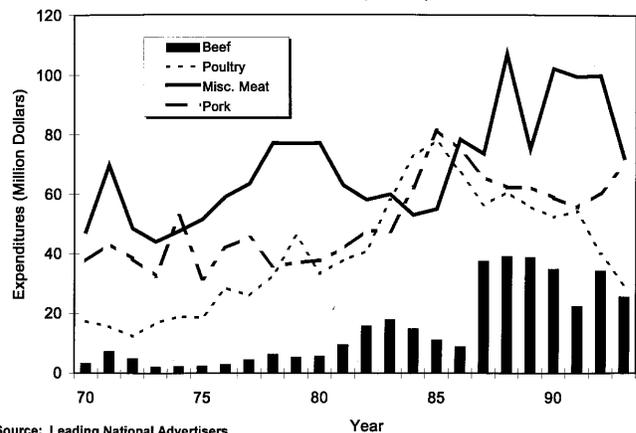
Figure 6. Generic Beef and Pork Advertising 1970-93 (1993\$)



Source: Leading National Advertisers

Although beef promotion expenditures appear large at first glance, annual beef advertising expenditures are small compared to other meats (Figure 7). Total beef advertising expenditures (generic plus branded) have been considerably smaller than those for miscellaneous meats (lunch meat, hot dogs, sandwich spreads, and other meat products), poultry, or total pork (generic plus branded). Since 1987, total beef advertising expenditures have averaged 53 percent of total pork advertising and 68 percent of poultry advertising.

Figure 7. Real Annual Advertising 1970-93 (1993\$)

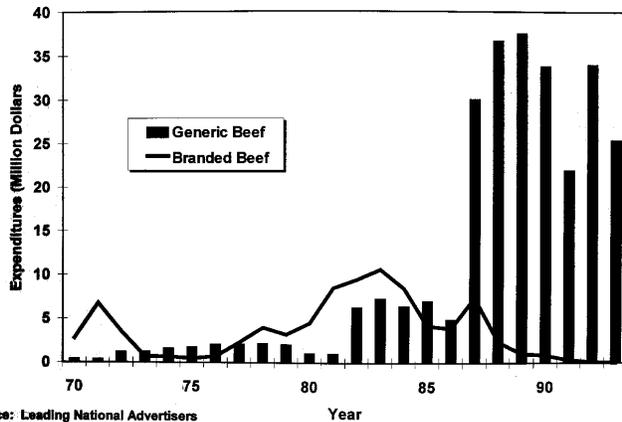


Source: Leading National Advertisers

Virtually all poultry advertising is of a branded form (i.e., products having the processor's name on

the label). Since 1987, 84 percent of pork advertising expenditures have been for branded products and were funded by pork processing and merchandising firms. The remaining 16 percent of pork advertising expenditures consist of producer-funded generic programs. This contrasts sharply with the beef sector where less than 5 percent of total advertising expenditures were for firm-branded products and 95 percent of total beef advertising expenditures were funded by beef producers (Figure 8).

Figure 8. Real Annual Beef Advertising 1970-93 (1993\$)



Source: Leading National Advertisers

Why such large differences in generic and branded product advertising expenditure mixes among beef, pork, and poultry? Most retail beef is not differentiated nor branded at the retail level, which means there is little incentive for beef processing and merchandising firms to advertise their products. In contrast, retail pork and poultry products are often more highly processed and differentiated than beef products (e.g., ham, bacon, sausage, etc. for pork and skinless, boneless, breaded, etc. for poultry). This greater degree of product differentiation (and less variability in quality among different packages of the same product) at the retail counter for pork and poultry relative to beef results in a much stronger incentive to advertise branded pork and poultry products.

Further examination of beef advertising expenditures indicates that, as an industry, beef advertising is small relative to specific food processing firms. Figure 9 shows the 1993 advertising expenditures by selected food processing firms and generic beef, pork, and dairy promotion programs. PepsiCo had advertising expenditures of \$633 million in 1993 and McDonalds spent \$410 million. In contrast, generic beef advertising totaled only \$25 million in 1993. The dairy industry spent about four times as much as the beef industry on generic advertising in 1993. Despite substantial expenditures by the beef industry on generic advertising, advertising expenditures by food

manufacturing firms dwarf these efforts.

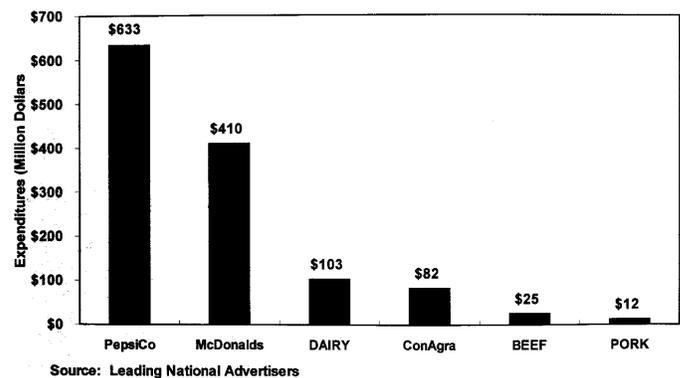
Advertising Impact

Research on the impact of advertising on beef demand and retail beef prices has yielded mixed results. Although there is no general agreement among economists on the total impact of beef advertising on retail beef prices, existing research does indicate that additional dollars devoted to domestic generic beef advertising are likely to have, at best, a very small positive impact on retail beef prices. Additionally, research that examined the respective impact of branded and generic advertising in the meat sector suggests that branded advertising is much more effective than generic advertising. Another important consideration for cattle producers is that retail price changes are not fully reflected in live price changes. Over the last ten years, a \$1/cwt (retail weight) increase in retail beef price has, on average, been associated with about a \$0.24/cwt (live weight) increase in live cattle price. This suggests that advertising intended to increase retail beef price will have a much smaller impact on live cattle price than on retail beef price. Finally, economists generally agree that the impact of generic advertising on beef demand is small compared to the impact of changes in relative prices and incomes.

Alternative Strategies

The relatively small impact of beef promotion on live cattle prices raises questions regarding alternative strategies for producer check-off fund expenditures. Figure 10 illustrates the Beef Promotion and Research Board's fiscal 1995 budgeted expenditures. More than \$25 million (54 percent of the total budget) was

Figure 9. Advertising Expenditures of Selected Firms and Generic Dairy, Beef, and Pork, 1993

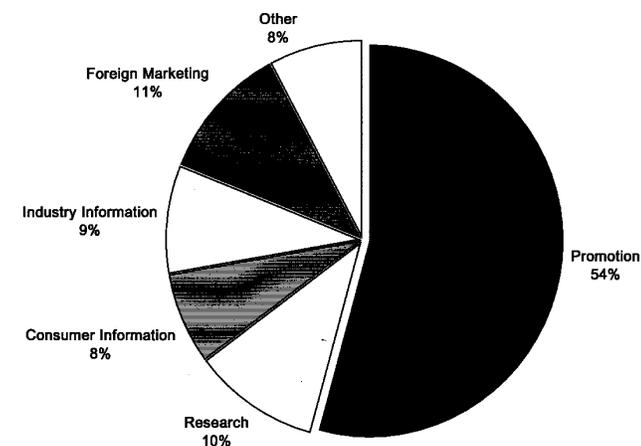


Source: Leading National Advertisers

spent on beef promotion whereas only 10 percent of the budget was allocated to research. Michael

Wohlgenant, in a 1993 *American Journal of Agricultural Economics* article, argues that producers should not be indifferent to the allocation of funds between research and promotion. In particular, he shows that beef producers benefit more from innovations that reduce costs than from promotion efforts that increase retail beef prices by the same amount. Thus, consideration should be given to allocating beef check-off expenditures toward cost-reducing research. This is consistent with the previous discussion indicating increases in consumer demand for poultry have resulted from relative price changes with respect to beef. Given this experience, it appears the pork sector will enjoy similar gains relative to beef if future productivity gains cause retail pork prices to fall relative to beef prices. Research that helps reduce beef production and/or marketing costs will help the industry compete with both the poultry and pork industries. Since allocating check-off funds to finance production cost-reducing research activities is not allowed under the Beef Promotion and Research Act of 1986, more emphasis should be placed on research designed to reduce marketing costs and help make beef more competitive at the retail level.

Figure 10. Beef Promotion and Research Board Budget, 1995
Total Budget \$47,524,613



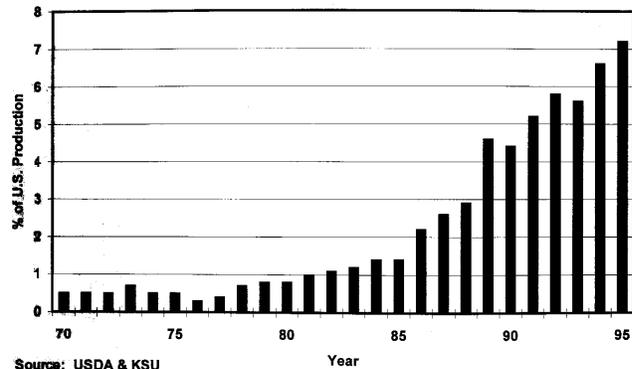
Source: Kansas Beef Council

Another alternative is to change the focus of the beef industry's promotion efforts. Advertising is typically used to provide consumers with information regarding new product developments. However, the beef industry has generally promoted existing products rather than new products. The poultry industry is a good example of a sector that introduced a plethora of new consumer oriented products and then followed these innovations with massive advertising campaigns. This suggests a more effective long run beef industry strategy would emphasize developing new consumer oriented products and then advertise

these products to inform consumers of their features, advantages and benefits.

Increasing the emphasis on export market development is another strategy the U.S. beef industry should consider. Growth in beef export volume since the early 1980s has been phenomenal. In 1980, less than one percent of U.S. beef production was exported, but by 1995, U.S. beef exports totalled approximately seven percent of U.S. beef production (Figure 11). As consumer incomes around the world grow, the potential to increase U.S. beef exports will increase as well. Devoting additional resources to export market development could help increase beef consumption abroad and help ensure the U.S. beef industry's share of world beef trade increases.

Figure 11. Beef Carcass Exports
Percent of U.S. Beef Production



Source: USDA & KSU

Concluding Comments

Beef producers have significantly increased productivity over the last 25 years. However, the pork and poultry sectors have enjoyed even larger productivity increases and pork production and marketing is on the brink of becoming even more efficient. Over time, increased productivity in the poultry sector caused increased poultry supplies relative to beef. This increased relative supply caused significant reductions in poultry price relative to beef price, which contributed to poultry demand increases and beef demand decreases. Because relative prices determine how consumers allocate their food budgets, the beef industry needs to focus on production and marketing costs.

Second, the beef industry needs to find a way to produce products consumers desire at attractive prices. A large percentage of U.S. slaughter cattle are traded in a cash market where animals with markedly different wholesale and retail values receive only slightly different prices. Cow-calf producers,

backgrounders and cattle finishers will not incur the added expense of producing cattle with desirable carcass qualities unless there are financial incentives. Until producers are rewarded for carcass characteristics that lead to the production of retail beef products consumers find attractive (i.e., value based marketing), consumers will continue to have trouble finding beef products that meet their needs. Cattle producers may benefit by assuming more responsibility in attracting premiums for higher quality beef by developing alliances with retailers and the HRI trade. To the extent that the beef industry fails to meet beef consumers' demand for quality, convenience and value, these same consumers will continue to be attractive targets for both the pork and poultry sectors.

Finally, generic promotion programs that were launched in the late 1980s by beef and pork producers have been relatively small in scale compared with typical product or firm advertising. In addition, price impacts of advertising on beef have been quite small. Producers should seriously evaluate the allocation of check-off funds and consider the returns to advertising compared to returns resulting from increased productivity, consumer-oriented product development and export market development.

References

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