MILK SELF-SUFFICIENCY
DESIRABLE GOAL?

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How much milk should Texas dairy producers, or for that matter, any other state's industry produce? Is self-sufficiency desirable? Will the trend continue? Is it a problem? How should the dairy industry respond? In the absence of government intervention, the market will dictate answers to these questions. Even with government intervention, the answers are influenced by the forces of supply and demand within the political framework. What is important to producers, cooperatives and other agribusiness firms in determining the degree of self-sufficiency is the economics of supply and demand and the political environment shaping both the revenue and costs of producing and marketing milk.

Texas is currently expanding milk production at a rate faster than any other state. During the 1970s when both the Texas economy and population were growing rapidly, there was little doubt that increased milk production was welcomed in order to meet fluid needs. However, production increases, coupled with the stagnation of the Texas economy in the mid-1980s, and a reduction of fluid processing utilization, has meant a declining producer blend price. Given today's conditions, how much milk Texas dairies are, or should be, producing is a very important issue.

Some use the self-sufficiency argument to justify rapidly increasing milk production in Texas. The self-sufficiency argument is that since Texas dairies do not produce all the milk consumed by Texans in both fluid and manufactured products, then existing dairies should be encouraged to increase production or to relocate new dairies to Texas. Many current producers, however, will argue that given the current milk pricing mechanism, an increase in production going into the manufactured market will only further reduce the blend price and place financial pressure on current producers.

The purpose of this article, therefore, is to evaluate the issue of self-sufficiency milk production. The perspective of the overall supply-demand balance in Texas and the United
Texas Milk Production and Market Consumption: An Historical Perspective

Producer deliveries to processors regulated by the Texas Federal Order increased a total of 37 percent or about 2.9 percent per year (Figure 1) from 1976 through 1987. For most of this period, fluid consumption kept pace, averaging a 2.0 percent increase per year from 1976 through 1985. Conditions changed, however, in 1986 and 1987. The bankruptcy of a major California company and the leveraged buy out of a large retail grocer forced retailers to secure supplies from sources not regulated by the Texas Order.

In addition, fluid utilization declined due to the reduction in consumption which reflected the downturn in the Texas economy and the continuing erosion in the per capita consumption of fluid products. Reduced per capita consumption has averaged about 3 pounds per person over the last eleven years. It seems reasonable to assume this trend is continuing in other parts of the state outside the Texas Market Order (Figure 1). Producers in several states are pooled on the Texas Order, but almost 70 percent of the producers in Texas share in the Texas Order pool. Almost 85 percent of the people living in Texas live within the bounds of the Texas Order.

Producer deliveries continued to increase on the Texas Marketing Order despite these changing conditions. As a result, fluid utilization began to progressively drop from a peak of 87 percent in 1979 to 62 percent in 1987 (Figure 2). This decline in Class I (fluid) utilization pushed the minimum order blend price down for every milk producer pooled on the Texas Order. This decline was only briefly interrupted by the diversion and termination programs.

Motivations for Increased Milk Production

Why did Texas producers continue to increase production despite the leveling and eventual decline in Class I utilization? The reason is that producers' returns and costs are determined, partially, in the national and international market and are not due solely to the Texas market place.

Producers increase production when it is profitable or when there are expectations of future profits. In the short-run, for example, dairies adjust feeding rates and ration quality in response to changes in the cost of these inputs. In other words, changes in feed prices
(roughage and concentrate) are as important in influencing milk production decisions as the price of milk.

The long-run relationship of milk prices and production costs is the major factor encouraging increased production. USDA milk production cost data indicate a marked reduction in Texas costs per cwt since 1980 (Figure 3). This decline in production costs has occurred in both absolute terms and relative to other regions such as the Upper Midwest (Figure 4). The reasons are many; technology adoption, favorable climate, and improved management to name a few.

Increased production per dairy has more than offset declines in Texas producer numbers. The increase in dairy size reflects the extensive economies of size which have been found to exist in dairying (Figure 5). Although no economies of size studies have been conducted in Texas, the increased prevalence of large dairies suggests substantial economies may exist.

In summary, there are economic incentives for increased Texas milk production, even though Class I utilization has declined. Producers are responding to cost-price relationships. The point at which production incentives disappear depends on costs, prices and alternative opportunities to dairy resources within and outside agriculture.

How Much Milk Should Texas Dairies Produce?

Will Texas be self-sufficient in milk production? That is, will all the milk and milk products consumed in Texas be produced in Texas? The answer to these questions depends on the competitive position of the Texas dairy industry relative to other states. Competitive position depends on the efficiency of Texas milk production relative to other states and on the profitability of dairying relative to other enterprises (opportunity costs). In other words, how much milk Texas dairies produce depends on their competitiveness in the national market for milk.

Operating within the framework of the current federal dairy program, competition among dairies located in different states depends on the nature of the market for milk. The primary market distinction is between fluid and manufactured products. The fluid market is more restricted in scope than the manufactured product market due to the costs of transportation. In
other words, the costs of transporting fluid milk, in most instances, exceed the differences in costs of production between markets. Intermarket movement of fluid milk, therefore, is less feasible.

There is no law, economic or man-made, that dictates that Texas producers should produce all the milk consumed by Texans. The U.S. Constitution in providing that no state shall enact laws that impedes the movement of products across state lines, guarantees that milk production shall be determined on the basis of economic competition among dairies across the United States.

In contrast to the fluid market, the manufactured (hard) product market is national in scope. That is, since transportation costs for manufactured products (butter, nonfat dry milk and cheese) are sufficiently low, all producers can effectively compete in a single national market. The reality of a national market for hard products has been implemented into federal orders by pricing manufactured products at the same level as plants pay for Grade B milk in Minnesota and Wisconsin—the M-W price.

A controversial exception to using the M-W price for pricing milk used for manufacturing purposes exists in California where a state milk marketing order establishes the manufactured product use price (Class IV) about $0.86 per cwt below the M-W price. The argument by the Californians is that the cost of processing milk into cheese in California is greater than the processing cost USDA estimates for the Minnesota/Wisconsin area. Therefore, the state order ensures the competitiveness of their processing industry at the short-run expense of California producers. Through the state order, California seeks to ensure that processing capacity remains in the state.

**Producing for Fluid Use Markets**

The local nature of the market for fluid milk use implies that Texas should be relatively self-sufficient in the production of Class I milk. Because of daily and seasonal variation in the use of milk, some “surplus” above Class I utilization is usually encouraged. This “surplus” is used for “soft” products such as ice cream and cottage cheese or for manufactured products. With Class I utilization currently running 62 percent, the Texas Order and, consequently Texas itself,
both appear more than self-sufficient with respect to the fluid market. This is a marked change from the early 1970s when the Texas Order was barely self-sufficient in fluid needs.

Producing for Manufactured Use Markets

Rapidly increasing consumption of cheese with a relatively stagnant demand for fluid milk has resulted in a larger share of the total U.S. milk supply being used for manufactured products (Figure 6). Traditionally, most of the manufactured products have been produced in the Upper Midwest, where fluid utilization is less than 20 percent, or in the Northeast where fluid utilization is about 50 percent. Recently, California has received extensive criticism for producing milk in excess of their fluid needs and selling the resulting manufactured products to the federal government. If current trends continue, Texas could be subject to similar criticism.

Since the manufactured product market is a national market, there is no economic reason why any particular state should be self-sufficient in milk production for manufactured products. Likewise, there is no reason that a particular state should be criticized or discriminated against solely because its production of manufactured products increases or a larger share of its production is sold to the Commodity Credit Corporation (CCC). How much manufactured products a state should be producing is an issue of interregional competition. To compete in the national market for manufacturing grade milk, Texas costs of production must remain as low or lower than alternative milk producing areas for manufactured products. Changes in cost relationships among states or regions, as previously indicated in Figure 3, justify shifts in regional patterns of milk production.

We estimate that in 1987, Texans consumed the fluid milk equivalent of about 9.6 billion pounds. Of this, just over 3.0 billion was in the form of fluid products, 0.6 billion was soft products, and 5.4 billion was manufactured (hard) products. With 4.3 billion pounds of milk produced in Texas, the state was 45 percent self-sufficient in total milk production. Obviously, if Texas continues to increase milk production at a faster rate than fluid consumption, as it has in recent years, the state will continue to place an increasing proportion of its production into manufactured products. This is the same trend as California has experienced.
Will Texas ever be completely self-sufficient in manufactured product production? Should it be self-sufficient? These are difficult questions to answer. More information is needed on potential relative changes in costs of production and in the potential returns from alternative enterprises. For example, little is known about the magnitude of economies of size that can be realized by Texas dairies. Are Texas economies of size as large as exist in California? What regional differences in potential cost economies exists between West Texas, Central Texas and East Texas? What will happen to the continued availability of quality feed and its costs if Texas milk production continues to increase? USDA information on cost trends indicates that Texas is becoming more cost competitive relative to other regions (Figure 4). But many important questions remain unanswered.

Milk Supplies and Milk Prices

What happens to milk prices as milk supplies increase? The blend price dairies receive for milk is as important in determining the competitive position of Texas dairies as is the cost of production. Within the federal order structure, as fluid utilization declines, the blend price declines. For example, based on average 1987 Federal Order class prices, if Texas were to be self-sufficient in production, fluid utilization would decline from 62 percent to 33 percent. The Texas blend price would drop from $13.46 per cwt to $12.43, or 8 percent. Such an analysis assumes that a self-sufficiency level of production could be sustained at a price of $12.43 per cwt. Not enough is known, however, about how producer costs would be distributed if Texas produced over 9 billion pounds of milk annually.

Where milk is produced is also influenced by opportunity costs. Some economists assert that even though the total cost of production per cwt is higher in the Upper Midwest than in California or Texas, the Upper Midwest will continue to produce most of the manufactured products because there are few profitable alternatives to milk production. This assertion, however, has not been adequately researched to draw any conclusion.

If the blend price falls as total milk supplies increase and fluid utilization declines, then, for many, it is a foregone conclusion, prices will continue to fall. If prices get low enough, many producers would be forced out of business.
However, as long as some milk producers can cover their cost, and feel their returns are adequate, they will produce milk. One strategy followed by some milk producers, or their cooperatives, has been to increase their returns by integrating forward in the marketing channel. This strategy is meant to capture some of the value added returns from milk processing.

Conclusions and Observations

Predicting the future degree of self-sufficiency for the Texas dairy industry is very difficult. Economics, within the scope of government policies, will determine where and how much milk will be produced and consumed in Texas. Current trends in costs, production and consumption suggest a higher degree of future self-sufficiency under the current market structure. Cost relationships and the market structure, however, change over time. There is no assurance that government policies will remain the same.

Reduced “blend prices” are not necessarily going to drive Texas producers out of business. As long as producer returns remain above costs and there are no more profitable returns outside dairying, milk production can be expected to continue to increase, despite declining blend prices.
FIGURE 1: PRODUCER DELIVERIES & FLUID USE, TEXAS ORDER 126
FIGURE 2: CLASS I (FLUID) UTILIZATION, ORDER 126 AS A PERCENT OF PRODUCER DELIVERIES
FIGURE 3: TEXAS MILK PRODUCTION COSTS
VARIABLE & TOTAL

![Graph showing Texas milk production costs over years from 1970 to 1988. The graph displays the variable and total costs in dollars per hundredweight (CWT). The costs show a trend of increase and decrease over the years.]
FIGURE 4: TOTAL COST OF PRODUCING MILK
TEXAS & MINN--WIS

$/CWT

1975 76 77 78 79 80 81 82 83 84 85 1986

Year
Figure 5. Total Cost per Cwt of Milk by Herd Size and State, 1982.

Figure 6. Percent Utilization of the Annual Total Market Milk Supply, 1970–86.

* Other products include frozen desserts, NFDM, sour cream, etc. SOURCE: Economic Research Service, Dairy Outlook and Situation.
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