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Where Will Milk for Manufacturing be Produced?

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The purpose of this article is to discuss the prospective impacts of deregulation on the availability of milk for manufacturing and farm level results. This analysis was conducted using price and macroeconomic projections made by University of Missouri Food and Agricultural Policy Research Institute (FAPRI). These impacts are generally believed to be consistent with similar estimates made by other university dairy analysts.

Both the trend and farm level analyses were conducted for six regions. These regions were proposed in one of the Freedom-to-Farm alternatives. They are believed to represent relatively uniform market areas from dairy supply and demand perspectives.

Milk for Manufacturing, 1980 and 1994

The approach of comparing two years of manufactured product production was taken because:

- Data on quantity of milk manufactured for each state are not available. Considerable effort was involved in developing even two years of

reliable data from USDA and state of California sources.

- Interim years production, particularly in the mid-1980s, was distorted regionally by the differing levels of participation in the dairy diversion (1983) and termination (1986) programs. Production in 1980 was also distorted by the 80 percent of parity support requirement, but it was judged to be the appropriate year for discerning longer-run trends.

The analysis of changes in milk available for manufacturing was completed for the overall supply of milk utilized for manufacturing from all sources (Grade A, Grade B, federal order, state order and unregulated). Since the main sources of data were from California and the USDA, it is possible that relatively small amounts of milk used to make manufactured products in some states were not directly accounted for. However, it was assumed these quantities were not sufficiently large to

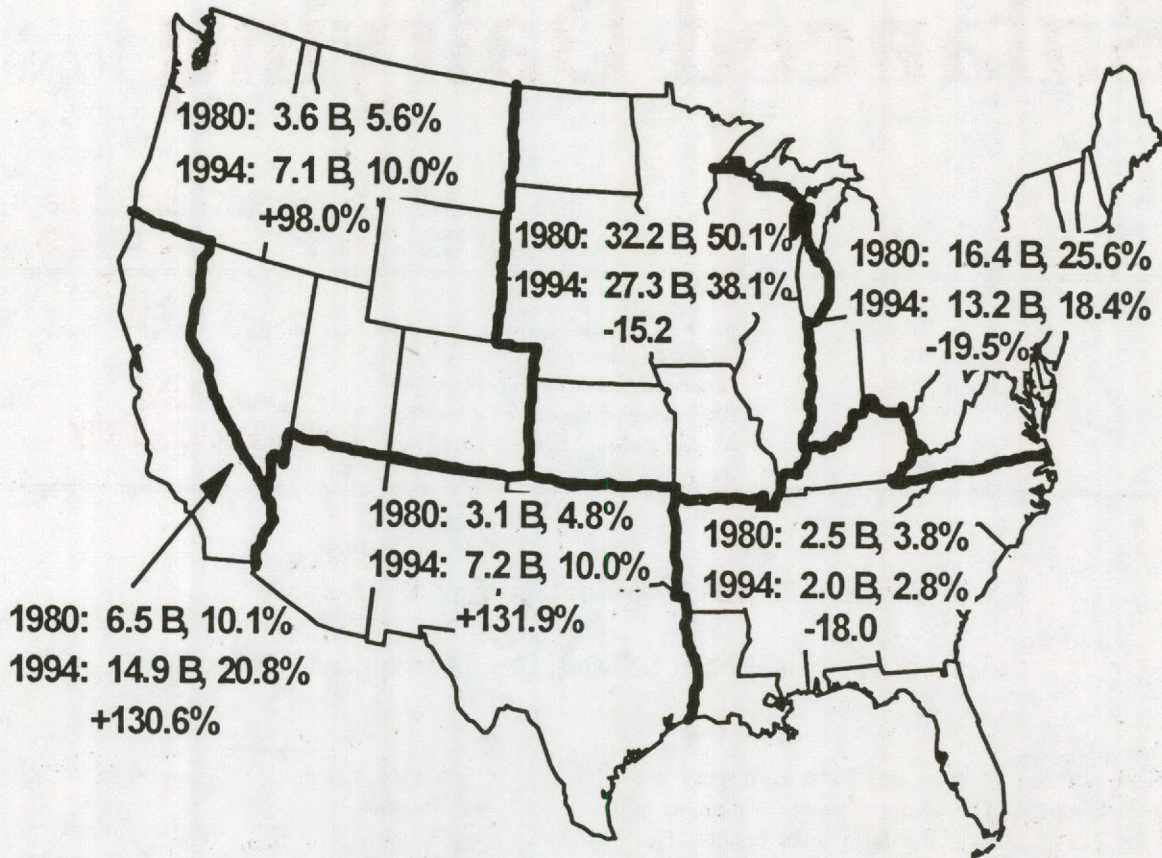
Presented at the Dairy Economist Workshop in Kansas City, Missouri on October 25, 1995.

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Figure 1. Milk Production for Manufacturing: 1980 and 1994



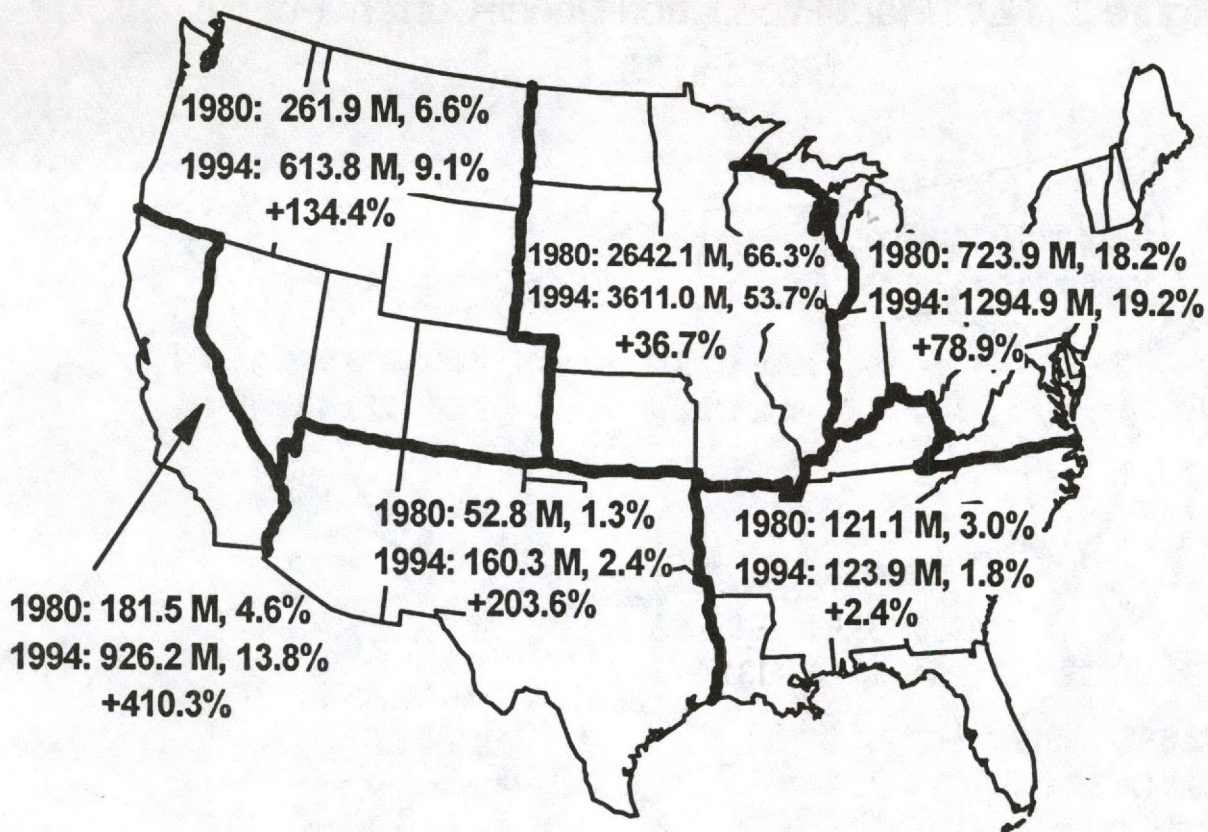
create distortions in aggregate national and regional totals for either 1980 or 1994.

Figure 1 indicates milk production used for manufacturing in 1980 and 1994 regionally, in billions of pounds, percent of the U.S. total, and percent change (+ or -) in pounds over the period. In terms of production, the country divides into two, three-region segments. From 1980 to 1994 the Northwest (NW), California and Southwest (SW) regions more than doubled milk available for manufacturing. The North Central (NC), Northeast (NE) and Southeast (SE) regions each realized a decline in available supplies of milk for manufacturing in the range from 10 to 20 percent. The reductions in the NC (4.9 billion pounds) and NE (3.2 billion) regions are particularly significant. These reductions, in the face of relatively favorable milk and feed price policies, raise important questions concerning how these regions might fare under deregulation. Figure 2 indicates changes in cheese production for 1980 and 1994. With sharply

expanding national production, all regions increased the number of pounds of cheese manufactured. However, a share of the cheese produced in each region was manufactured from milk produced in another region. Yet, there were large differences in growth regionally. Cheese production in California increased over 400 percent and its share increased from almost 5 percent of the total to nearly 14 percent of the U.S. total. The NW region likewise increased production sharply (134 percent) on a base of 262 million pounds. While the SW increase has received substantial press and is large in percentage terms (204 percent), it still accounts for less than 3 percent of national production. The other region increasing its share of national cheese production was the NE, rising 1 percentage point to 19 percent in 1994.

Both the NC and SE regions decreased their share of national cheese production. Of particular note is the 13 percentage point decline in the NC region. However, this

**Figure 2. Cheese Plant Production Under Current Policy:
1980 and 1994**



region still accounts for over half of the U.S. cheese production.

Figure 3 reveals the large regional shift that has taken place in the distribution of NDM production. While California and the NC region came close to trading production in poundage terms, the sharp expansion in the NW region accentuates the strong westward movement of powder production. Increased NDM production in the SW and SE regions appears to result from balancing seasonal supply fluctuations. The decline in NDM production in both the NE and NC reflect increased specialization in cheese production. NDM tends to be produced from locally produced milk.

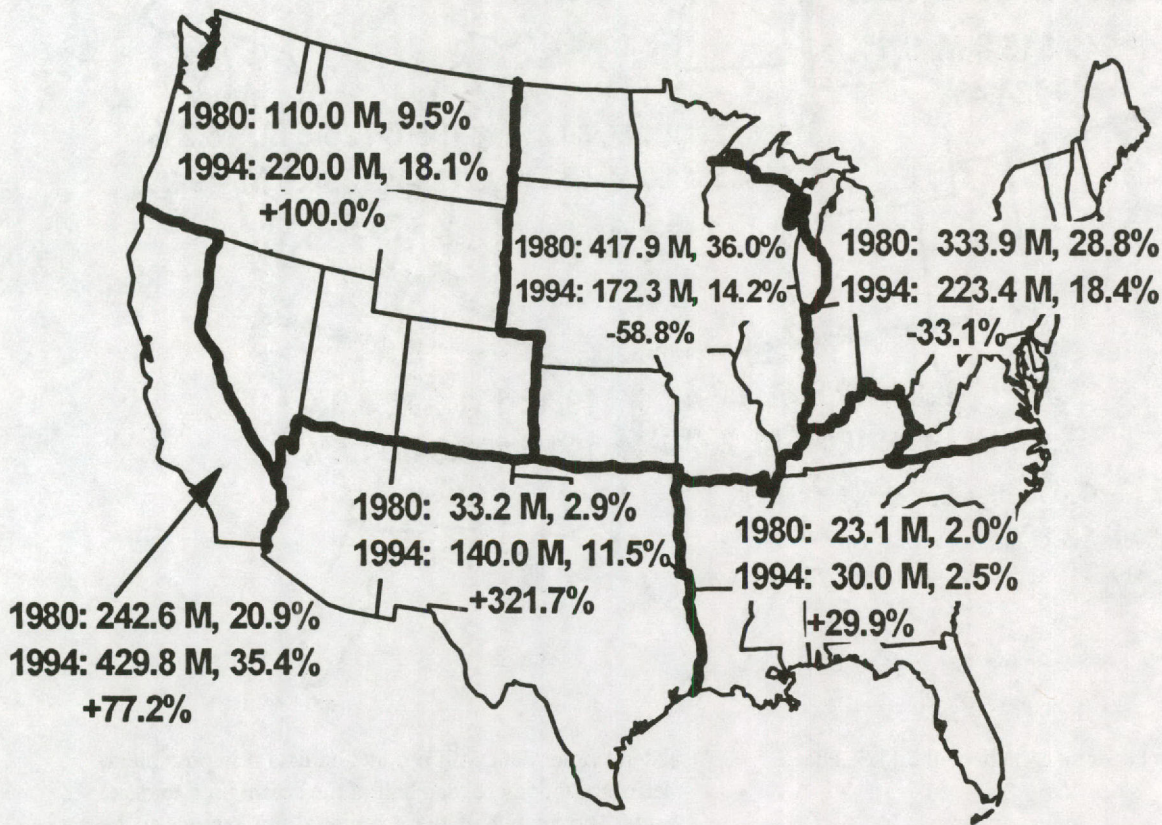
The trends in butter production show the effects of increased consumption of lowfat fluid milk (Figure 4). As a result, in many federal order markets, milk and cream utilized to produce butter range from 20-40 percent. Balancing the fluid needs of population centers, therefore, has become a major determinant of butter production. However, butter is not always manufactured locally. In some cases cream may move up to 1,000 miles to plants where butter is churned. By comparing

federal order data with production data it is possible to determine that more than half of the cream used to make butter moves out of these regions into regions to be churned.

Western butter production (NW and CA) has increased to the point where it now surpasses that of the North Central region. There was an 18 percent decline in NC butter production, also noteworthy because some of the best known butter manufacturers are located in the NC (Figure 4). Yet the NC region still produces 36 percent of the U.S. butter supply. All other regions increased production, although their share of U.S. production each declined.

Table 1 summarizes the changes on a single page. For the Northeast, it indicates increased specialization in cheese production, and balancing fluid needs results in stable butter production. The SE is a small factor in butter manufacturing. Production in the region results from balancing activities in conjunction with meeting the fluid demands of a growing population.

**Figure 3. NDM Plant Production Under Current Policy:
1980 and 1994**



While the NC region represented approximately 30 percent of the 1994 U.S. milk production and 38 percent of milk utilized for manufacturing, it is in a state of decline. This decline is particularly apparent in NDM and butter. Production in the NC region has increased cheese production by 37 percent, and its share of U.S. production has declined by 12 percentage points to 54 percent -- still a majority of U.S. production.

The SW has received publicity for its relatively high Class I differentials and its rapidly increasing milk production. While the percentage increases are impressive for milk available for manufacturing, these shares of U.S. cheese production and NDM production, are still relatively small. It is unclear whether this region can hold its production under deregulation.

Not surprisingly, the NW and California have experienced large increases in both absolute and relative terms. The magnitude of the increases are very

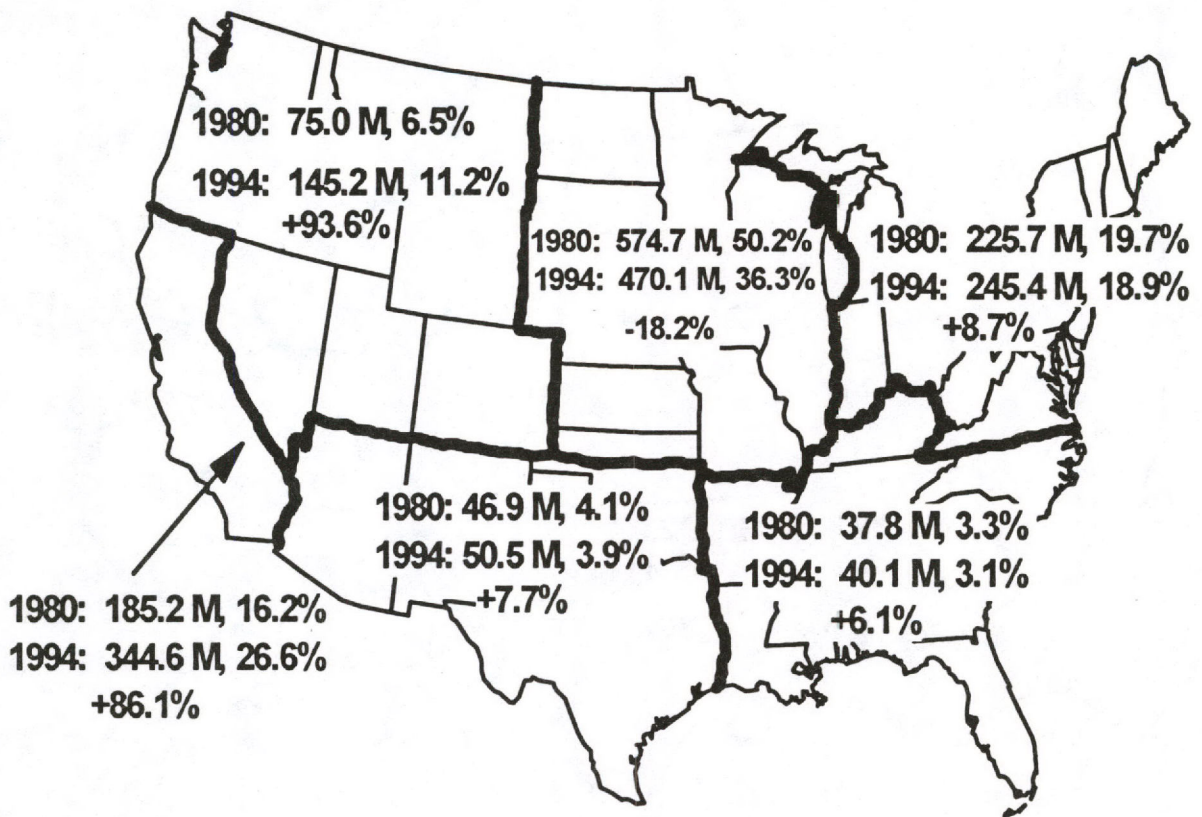
significant. These increases are particularly astonishing with the realization that producer prices in these regions are lower than in the other regions. How long this magnitude of growth can be sustained is of substantial interest.

Farm Level Impacts

The Agricultural and Food Policy Center, TAMU, maintains a system of about 80 representative farms in major production areas throughout the United States. Twenty-two of these are dairy farms. The locations of these farms are indicated in Figure 5. The number and size of farms in each location are indicated in Table 2. Each farm is abbreviated in subsequent tables by state and size as indicated in the right column of Table 2.

These 22 farms are developed by panels of producers as being representative of their region. The farms are

**Figure 4. Butter Plant Production Under Current Policy:
1980 and 1994**



simulated utilizing an accounting model that produces financial statements for the farm. These panel dairy farms have been tracked over six years.

Table 3 presents farm level results for the period 1994 to 2001 covering a number of analyses completed for the 1995 Farm Bill. The policy options simulated include no change in policy (status quo), no support prices while maintaining federal orders, and deregulation involving dropping both price supports and federal orders. The symbols used in Table 3 should be interpreted as follows:

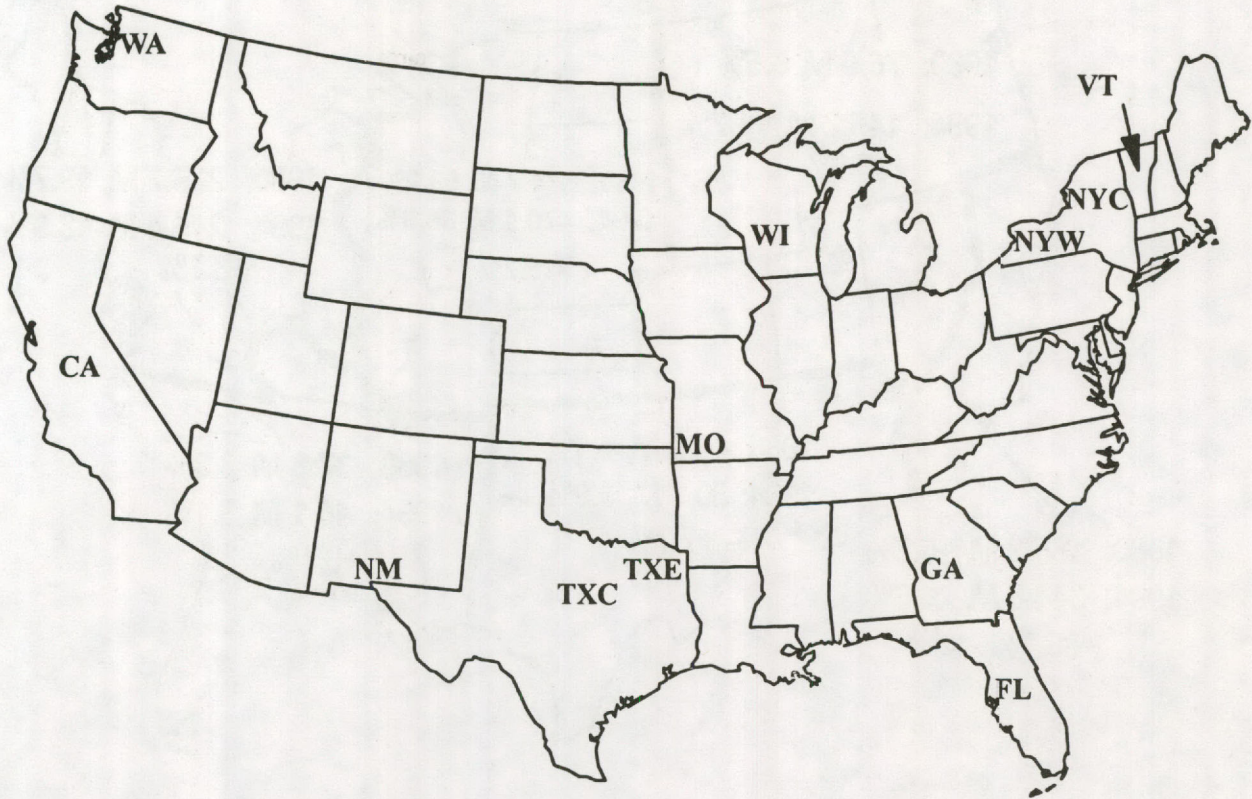
- A "+" means the present value of real net worth is consistently increasing and net cash income is sufficient to justify fixed investments needed to modernize and keep up with technological change.
- A "0" means the farm appears to be able to hold on to its equity, although it does not

indicate substantial growth in equity. It appears to have sufficient size and net cash income to keep up technologically as long as substantial fixed costs or investments are not required.

- A " " (blank) means that the farm is losing equity and does not have enough net cash income to keep up technologically. Farms in these areas are experiencing either a need to restructure to reduce unit costs or go out of business.

These farm level results indicate that even with no change in policy, moderate size farms in all regions are having substantial problems surviving. Both moderate and large Vermont farms lose equity under current policies. With no supports while retaining federal orders, most farms in the SE and SW would either experience substantial stress or would only be able to hold onto their equity (not grow). Even in the NC region only the larger Wisconsin farm is able to sustain growth without

Figure 5. Representative Farms Producing Milk



supports. This indicates greater pressure for structural change in these regions than currently exists.

The deregulation option suggests substantial accelerated pressure for structural change in all regions except California. Dairymen throughout the United States would shift decisively toward larger scale farms and/or exit the dairy industry. Regions continuing to experience real growth in equity but only on larger farms include Western New York, Central Texas, Wisconsin and California. It is important to note that large scale farms in both Florida and New Mexico lose equity in the absence of supports and federal orders. These deregulation results presented here represent best case scenarios. The models are not able to capture the within year effects of price variability nor the potential for longer-term cut-throat competition associated with either handler pooling or extensive structural adjustment.

Combination of Trend and Farm Analysis

Table 4 attempts to combine and summarize the results of the trend and farm-level analyses under the deregulation scenario. It indicates that increased quantities of milk available for manufacturing are likely to develop only in California. California and the NW are likely to produce all types of manufactured products. Structural change in this region will emphasize continued growth to larger size farms.

The Northeast will utilize declining milk supplies to specialize in serving fluid markets and cheese production. Most of the decline will be in New England and on small and moderate size farms in the rest of the region. Large farms such as those located in Western New York will tend to evolve and dominate the industry of the region.

The Southeast will restructure to serve the fluid market. Manufacturing will be related to the balancing

function in the market. It is possible that growing fluid markets will be served by new concentrated production areas removed from population centers and environmentally sensitive areas in Florida.

The North Central region will continue to experience declining production as it restructures to larger scale dairying. From a feed availability perspective, this region clearly has the ability to continue to be a major milk producing region. But a progressive "can do" posture of larger farms is required for the region to be competitive. Like the Northeast, this region will specialize in producing cheese. However, facilities and marketing firms will continue to be committed to producing butter, some of which will be supplied from other regions.

The Southwest has received much attention for its growth in milk and cheese production. Substantial new manufacturing investments in this region appear to signal continued growth in demand. However, all signs are not positive. New Mexico farms are experiencing higher feed costs because of competition from other regions for feed produced in New Mexico. In New Mexico, expanded hay production is limited by water availability. Growth in Central Texas utilizing corn silage as roughage is possible. Declines in production could be experienced with deregulation. Substantial structural change will continue in East Texas as it seeks a competitive strategy for producing milk in a traditionally dense milk producing area.

Conclusions

Three overall conclusions are warranted from this analysis under a deregulation policy scenario:

- There will be a rapid consolidation of the U.S. dairy industry to larger farms located in the most efficient production areas. Many of these areas are known -- California, Idaho, and Western New York. Others are yet to be identified.
- Manufactured product production will become concentrated in the most dynamic production areas. The West is an obvious example. Attitudes in other traditional regions will need to change from negative to positive, from protective to aggressive, from finger pointing to self-evaluation in order to become dynamic.
- Fluid milk needs will be satisfied primarily out of local supplies. The very little fluid product will involve long distance procurement of bottled products.

Is there an alternative plausible scenario to that sketched out here that could be right? Surely there is. There may be several. One such scenario involves the potential that these models substantially overestimate the amount of price reduction associated with deregulation. Under this scenario, higher market prices resulting, for example, from increased export demand might reduce the magnitude of adjustment in traditional production areas. For this scenario to be plausible, substantial policy adjustment would have to occur in other countries, such as Canada and the European Union. While some of these adjustments are called for under GATT, they may not come fast enough. While not dismissing this scenario, we believe it to be less likely than the one presented in this paper.

Table 1. Regional Conclusions Under Current Policies From Trend Analysis

Region	Milk Available for Manufacturing		Cheese		NDM		Butter	
NE	Declining		Stable share		Declining		Stable	
	-20%	18% of U.S.	+79%	19% of U.S.	-33%	18% of U.S.	+9%	19% of U.S.
SE	Small amount		Small amount		Small amount		Small amount	
	-18%	3% of U.S.	+2%	2% of U.S.	+30%	3% of U.S.	+6%	3% of U.S.
NC	Declining		Decreasing share		Declining		Decreasing share	
	-15%	38% of U.S.	+37%	54% of U.S.	-59%	14% of U.S.	-18%	36% of U.S.
SW	Increasing		Increasing		Increasing		Small amount	
	+132%	10% of U.S.	+204%	2% of U.S.	+322%	12% of U.S.	+8%	4% of U.S.
NW	Increasing		Increasing		Increasing		Increasing	
	+98%	10% of U.S.	+134%	9% of U.S.	+100%	18% of U.S.	+94%	11% of U.S.
CA	Increasing		Increasing		Increasing		Increasing	
	+131%	21% of U.S.	+410%	14% of U.S.	+77%	35% of U.S.	+86%	27% of U.S.

Table 2. AFPC Representative Farms by Regional Location and Size

Region	Farm Location and Size	Abbreviation
NE	Vermont moderate 70 cows	VT70
	Vermont large 186 cows	VT186
	Central New York moderate 110 cows	NYC110
	Central New York large 225 cows	NYC225
	Western New York moderate 600 cows	NYW600
	Western New York large 1000 cows	NYW1000
SE	Georgia moderate 160 cows	GA160
	Georgia large 600 cows	GA600
	Florida moderate 375 cows	FL375
	Florida large 1500 cows	FL1500
NC	Wisconsin moderate 55 cows	WI55
	Wisconsin large 190 cows	WI190
	Missouri moderate 77 cows	MO77
	Missouri large 220 cows	MO220
SW	East Texas moderate 200 cows	TXE200
	East Texas large 812 cows	TXE812
	Central Texas moderate 300 cows	TXC300
	Central Texas large 720 cows	TXC720
	New Mexico 2000 cows	NM2000
NW	Washington moderate 175 cows	WA175
	Washington large 850 cows	WA850
CA	California 2150 cows	CA2150

Table 3. Assessment of Farms' Ability to Grow and Make Investments That Allow Them to Keep Up With Technological Change

Regional/Farm	No Change	No Support	Deregulation
NE	VT70 VT186 NYC110		
	NYC225 NYW600 NYW1000	0 + +	0 + +
SE	GA160 GA600	+	0
	FL375 FL1500	+	0 0
NC	WI55 WI190	0 +	0 +
	MO77 MO220	0 0	0 0
SW	TXE200 TXE812	0	0
	TXC200 TXC720 NM2000	+ +	+ 0
NW	WA175 WA850	+ +	+ 0
	CA	CA2150	++

Table 4. Regional Conclusion from Trend and Farm Analysis Under Deregulation

Region	Milk Available for Manufacturing	Emphasis in Manufacturing Production	Magnitude of Structural Change
NE	Declining	Cheese	Very Large
SE	Very Little	Butter/NDM Balancing	Very Large
NC	Declining	Cheese/Butter	Very Large
SW	Stable to Declining	Cheese	Large
NW	Stable	Cheese, Butter, NDM	Small
CA	Increasing	Cheese, Butter, NDM	Small

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