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HOW MEXICO'S DAIRY INDUSTRY HAS EVOLVED UNDER THE NAFTA—IMPLICATIONS FOR U.S. DAIRY EXPORTERS AND U.S. INVESTORS IN MEXICO'S DAIRY-FOOD BUSINESSES

W. D. Dobson
Richard Proctor

The Babcock Institute for International Dairy Research and Development
University of Wisconsin, College of Agricultural and Life Sciences
240 Agriculture Hall, 1450 Linden Drive
Madison, Wisconsin 53706-1562

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The Babcock Institute
College of Agricultural and Life Sciences
240 Agriculture Hall, 1450 Linden Drive
Madison, Wisconsin 53706

Phone: 608-265-4169; Fax: 608-262-8852
Email: babcock@calshp.cals.wisc.edu
Internet: http://babcock.cals.wisc.edu

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W. D. Dobson and Richard Proctor*

Executive Summary

Introduction

- The North American Free Trade Agreement (NAFTA)—which became effective on January 1, 1994—opened the Mexican market to larger U.S. dairy imports.
- The purposes of this Discussion Paper were to:
  —Analyze impacts of developments in Mexico's economy and dairy industry under the NAFTA that affect U.S. dairy exporting opportunities and U.S. direct investment opportunities in Mexico's dairy-food businesses.
  —Analyze:
    a) Adjustments made by Mexican firms to limit or discourage dairy imports, and
    b) Challenges associated with exporting dairy products to Mexico or making direct investments in Mexican dairy-food businesses.
  —Draw implications from the study for U.S. dairy exporters and direct investors in Mexico's dairy-food businesses.

Developments Under the NAFTA that Have Affected U.S. Dairy Exporting and U.S. Direct Investment Opportunities in Mexico's Dairy-Food Businesses

- While Mexican demand for dairy products has risen under the NAFTA, this development did not unfold immediately or smoothly under the trade agreement. Mexico's economy experienced a recession, a sharp devaluation of the peso, and a bout of rapid inflation after 1994. It was not until the late 1990s and 2000 that robust growth began to manifest itself in Mexico, causing the country's economy to become arguably the strongest in Latin America. Gloomy scenarios for Mexico's economy emerged in late 2001 as the country's exports fell in response to the U.S. recession.
- The percentage of Mexican households in the middle and upper income categories grew to about 35% in the late 1990s, increasing the number of potential customers for imported dairy products, especially differentiated dairy products. However, the number of Mexican citizens in the two lowest income categories still comprises about 65% of the population.
- The pervasive and persistent poverty in Mexico suggests that nonfat dry milk (NFDM)—substantial quantities of which are imported—used for reconstitution into fluid milk for sale to low-income people at subsidized prices in Mexico will continue to be a very important dairy import for Mexico.
- U.S. export shares for fluid milk, yogurt, whey and lactose were large in 1999—over 85% for all four products.
- U.S. dairy exporters held an average 27% share of Mexico's NFDM imports from 1994 to 1999. Those shares varied from 7% in 1996 to over 50% in 1998 and 1999. U.S. exports of NFDM to Mexico are likely to remain approximately flat for the next several years at about 60 thousand metric tons.
- Per capita consumption of cheese in Mexico has increased since 1994. However, competition to supply Mexico's expanded cheese market has been brisk from non-U.S. sources and

* W.D. Dobson is Professor of Agricultural & Applied Economics, Program Director for Trade and Policy of the Babcock Institute, and Director of the Renk Agribusiness Institute at the University of Wisconsin-Madison. Richard Proctor is a Project Assistant and MBA in Agribusiness student in the School of Business at the University of Wisconsin-Madison.

domestic suppliers. For at least part of the late 1990s, U.S. exports of cheese to Mexico remained below pre-NAFTA levels.

- Mexico's dairy self-sufficiency levels will vary from product-to-product. Imports of NFDM as a percentage of consumption have declined sharply, falling from 91% in 1994 to about 44% in 2001. Mexico's cheese imports as a percent of consumption in 2001 differed little from the 1994 figure.
- Mexico's dairy farmers will likely produce 75% (± 5%) of the country's milk requirements for the next several years.
- The number of milk cows in Mexico increased by only about 5% from 1994 to 2000. However, milk production increased by about 23% during this period, mainly because of an increase in milk production per cow. While the increase in milk production per cow in Mexico was noteworthy, the figure was still only about 16% of the comparable U.S. figure in 2000. Mexico's average milk production per cow is depressed by the large number of cows on the country's semi-confined and dual-purpose farms.
- Price incentives and other developments will foster additional milk production in northern Mexico.
- Mexico has become a mature export market for dairy products that attracts world class competitors. Margins for commodity dairy exports to Mexico have become "razor thin."
- The presence of "razor thin" margins on dairy commodities means that failure of a major dairy importer to pay for a shipment can wipe out profits on a large batch of exports.
- Exporters' problems with obtaining payments (or long payment delays) have created incentives for U.S. dairy exporters to focus on sales of differentiated products to "A" customers (e.g., Nestle, McDonald's) and to channel bulk dairy products to other foreign markets.

Adjustments Made by Mexican Firms to Discourage Dairy Imports

- Adjustments made by Mexican dairy processors and farmers fall into three broad categories. The first is to increase domestic milk production to replace imports of fluid milk and milk powder with domestic production. This strategy, as noted above, has only been partially successful. The second relates to pricing strategies. The third relates to use of government regulations to discourage dairy imports.
- Because of location advantages, lower raw product costs of some Mexican producers, and other considerations, Mexican processors can offer dairy products to Mexican food markets at a lower cost than U.S. firms.
- Price appears to be an important competitive measure used by Mexican firms to acquire market share. A February 2001 price survey of Mexico City food markets showed that U.S. dairy products carried a price premium of 42% over fluid milk of Mexican origin and a 60% premium over ice cream of Mexican origin.
- If, as is likely, the quality of Mexican dairy products continues to improve in the next few years, it is doubtful whether such price premiums for U.S. dairy products can be maintained. The problems of European cheese exporters will be more severe because their products are priced higher than U.S. products in Mexican food stores.
- In the Mexicali/Tijuana area, local milk producers have made imports of U.S. milk unsaleable through local supermarkets with the help of regional government regulations that require local stores to sell all locally produced milk first. Other examples of use of government regulations to thwart dairy imports appear in the study.

Challenges Associated with Doing Business in Mexico's Dairy-Food Industries

- Corruption remains pervasive in Mexico, despite government efforts to reduce the problem. Transparency International's Corruption Perception Index places Mexico in the middle third countries. This is in the same general grouping as Latvia, Zambia, Colombia, Ethiopia, and Thailand.

- Corruption in Mexico manifests itself to dairy exporters in the form of occasional difficulties in getting paid for exports and problems associated with getting courts to settle payment disputes.
- The level of corruption in Mexico appears to correspond loosely to the level of regulation. A U.S. dairy exporter's complaint about problems with nontariff barriers to dairy sales in Mexico is related to this point.
- A senior agricultural attaché referred to corruption in Mexico as a tax that large firms are most able to pay. This point has obvious implications for the size of firms that will be able to export dairy products to Mexico successfully or make profitable direct investments in the country's dairy-food businesses.

Implications of the Study for U.S. Dairy Exporters and Direct Investors

- Demand for imported dairy products will continue to be strong in Mexico, especially after the 2001-2002 recession ends in Mexico and the U.S.
- Mexico's dairy markets no longer represent "low-hanging fruit" (if they ever did) for U.S. dairy exporters and direct investors. Mexico's dairy market has matured. As part of the maturity, a larger number of strong domestic firms have emerged and powerful European multi-nationals have increased their sales.
- Expansion of U.S. export sales of fluid milk, yogurt, whey and lactose to Mexico will be slow because U.S. market shares of imports of these products are already large. Expanded exports of these products will be mainly through expansion of the Mexican market through income growth, population growth, and development of new, demand-expanding uses for the products. Expansion via these avenues will be gradual.
- Margins on exports of bulk dairy products have become thin. This of course is no surprise and it means that suppliers of bulk commodity exports to Mexico must be low-cost exporters to be profitable. Exporters of bulk dairy commodities to Mexico must also manage risk so that default on payments by an importer does not bring financially ruinous results.
- Problems that U.S. firms have experienced in getting paid for dairy exports to Mexico are multi-faceted. Delays in getting paid for shipments (e.g., net 60 or 90 days) occur in part because some Mexican firms need to turn the product before they generate revenues to pay for imports. This situation emerges in part because, in much of Mexico, there is no well-developed business credit system that would permit firms to use inventories and accounts receivable as collateral for credit that could be used to pay for imports on a more timely basis. This situation is no surprise for experienced dairy exporters. Moreover, they can decide whether to export bulk dairy products to Mexico when importers' payments are routinely made on such a schedule. Of course, delays in payments also occur because of disputes over the specification of products delivered and related points. The lack of recourse to courts for dispute settlement in such situations presents a problem.
- Problems with margins and payment delays make exports of differentiated dairy products to "A" customers in Mexico attractive.

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Introduction

The North American Free Trade Agreement (NAFTA)—which became effective on January 1, 1994—incorporated changes that gradually opened the Mexican market to larger U.S. dairy exports. Impacts of the NAFTA on the U.S. dairy industry were analyzed by Babcock Institute researchers and others in the early to mid-1990s [2,9,10,23]. In earlier studies the analysts spelled out reasonably accurately—in broad terms—what the NAFTA would mean for the U.S. dairy industry. The researchers identified Mexico as a large market with sizable middle and upper classes that represented an important destination for U.S. dairy exports. They predicted that the country would be the largest export market for U.S. dairy products for the foreseeable future. The analysts also identified U.S. firms that were early movers into the Mexican dairy market—Kraft, Dean Foods, and Foremost Farms, to name a few. With few exceptions, the researchers suggested that Mexico would not approach self-sufficiency in dairy production for a large, but unspecified number of years. Moreover, authors of the early studies provided plausible estimates of the size of the price gains for U.S. milk producers from expanding dairy exports into Mexico. However, the researchers neglected to analyze fully the impacts of distinctive challenges associated with doing business in Mexico (e.g., dealing with nontariff barriers and corruption).

There also have been changes in Mexico's dairy industry and Mexico's economy since the beginning of the NAFTA that affect dairy exporting opportunities and dairy-food investment opportunities in Mexico for U.S. firms. The changes include adjustments made by Mexican firms to discourage dairy imports. Mexico has also become a more mature export market for dairy products, necessitating modifications in the exporting practices of U.S. firms. In addition, a 1998 Babcock Institute study produced new information about the nature of demand for dairy products in Mexico that has implications for U.S. dairy exports and foreign direct investment in Mexico's dairy-food businesses [20]. Information on new and/or imperfectly anticipated developments in Mexico's dairy industry under the NAFTA should be of interest to U.S. dairy firms. Accordingly, the purposes of this Discussion Paper were to:

I. Analyze impacts of important developments that have occurred in Mexico's dairy industry and economy under the NAFTA that affect U.S. dairy exporting and U.S. direct investment opportunities in Mexico.

II. Analyze impacts of
   a) Adjustments made by Mexican firms to limit or discourage dairy imports, and
   b) Nontariff barriers and corruption on opportunities to export dairy products to Mexico or make direct investments in Mexican dairy-food businesses.

III. Evaluate implications of developments identified in Parts I and II on exporting and foreign investment opportunities for U.S. firms in Mexico's dairy industry.

The research benefited from the authors' interviews with officials of the U.S. Dairy Export Council (USDEC), the Foreign Agricultural Service of the U.S. Department of Agriculture, U.S. dairy exporters, U.S. investors in Mexican dairy-food businesses, and Mexican dairy industry officials.

I. Developments Under the NAFTA That Have Affected U.S. Dairy Exporting and Investment Opportunities in Mexico's Dairy-Food Businesses

Information on Mexican dairy policies and Mexico's dairy industry before the NAFTA provides benchmark figures against which to evaluate changes that emerged under the agreement.

Readers familiar with Mexico's dairy industry before the NAFTA and what the NAFTA did may skip to the section describing how Mexico's economy and dairy industry have evolved under the NAFTA.

- Tariffs and import licensing arrangements were used by the Mexican government to protect the domestic industry, raise revenues, and achieve other policy objectives. However, Mexican tariffs on certain dairy imports were relatively small before the NAFTA, reflecting tariff reductions Mexico made when joining the GATT in 1986.
- From Mexico's standpoint, arguably the most important licensing arrangement related to nonfat dry milk, an important dairy product used to make reconstituted milk, ice cream, cheese and other dairy products. At times in the late 1980s, Mexico was the world's largest importer of nonfat dry milk.
- Before the NAFTA and for a few years thereafter, Mexico imported milk powder through a government monopoly importing agency called CONASUPO (Compania Nacional de Subsistencias Populares). CONASUPO in turn supplied another government organization named LICONSA (Leche Industurializada Conasupo) with milk powder, which the latter used to produce reconstituted milk sold at subsidized prices to low-income Mexican people.
- Mexico's government set retail and farm milk prices in the pre-NAFTA era. These and other regulations at times created situations in Mexico where Producer Subsidy Equivalents (PSE) for milk producers were negative and Consumer Subsidy Equivalents (CSE) for milk were positive. According to Hallberg's estimates for 1982 to 1989, the PSE as a percentage of the price of milk ranged from 1.2% in 1984 to -6.2% in 1989 [23, p. 25]. The CSE as a percentage of the price of milk, on the other hand, ranged from 1.9% in 1985 to 16% in 1989. Mexico's government stopped regulating farm level milk prices after 1989, but continued retail milk price setting until the late 1990s.
- Milk production in Mexico ranged from 5.6 billion liters to 7.1 billion liters in the five years prior to the passage of the NAFTA. Then, as now, Jalisco was the leading milk-producing state in Mexico.
- In the early 1990's, the percentage of cows and milk produced by different dairy farming systems in Mexico was approximately as follows [10, 23]:

System	% of Cows	% of Milk
Confinement	14%	55%
Semi-Confinement, Pastoral	23	15
Dual-Purpose	63	30

  Some confined system farms were similar to large-scale dairy farms in California and Arizona. The semi-confined pastoral farms were found throughout Mexico's central and northern regions. The dual-purpose farms, which produce milk mainly as a by-product of beef production, were located primarily in the Mexican tropics.

- An estimated 30% to 50% of Mexican milk in the early 1990s was consumed as unpasteurized, unchilled fresh milk or processed into cheese by dairy farmers and sold directly to consumers [23].
- In the early 1990s, the rapidly growing Mexican cheese market, which consisted predominantly of fresh and white cheeses was characterized by [2, p. 2]:
  —Per capita consumption at about 25% of U.S. levels.
  —High retail prices relative to incomes.
  —Prices close to U.S. prices.
  —Low packaging quality.
  —A 20% import tariff and import licenses on most U.S. varieties.
  —Dominance of the import market by Uruguayan and Dutch exporters.
  —Rapid growth in U.S. cheese exports to Mexico.

- Population growth in Mexico during the 1980s averaged at least 2.0% annually, which was approximately double the U.S. population growth rate [2]. In 1990, about 50% of Mexico's population was under the age of 20 and nearly 70% under 30.
- Prior to the NAFTA, the major domestic fluid milk processors included Grupo Alpura, Grupo LALA, Guilsa, and Boreal. Boreal, formerly a government cooperative, was privatized.
- Nestle, a strong and politically well-connected firm, operated processing plants in Mexico where the firm processed reconstituted milk, filled milk, ice cream, and other dairy products. Nestle was regarded by domestic processors as a powerful producer of high quality products. Nestle influenced Mexico's domestic dairy policies and trade agreements affecting Mexico's dairy industry.
- Danone, another large European-based firm, had more than 40 years of experience operating in Mexico's dairy-food business prior to the NAFTA.

What the NAFTA Did

Prior to the NAFTA, Mexico employed licenses and tariffs to limit access to Mexico's dairy markets. When the NAFTA became effective, Mexico converted its import licensing arrangement for milk powder into a tariff rate quota (TRQ) that would operate as follows:

- The TRQ for milk powder was scheduled to remain in effect during a 15-year transition period.
- Initially duty-free access to the Mexican market was provided for 40,000 metric tons of U.S. nonfat dry milk and whole milk powder. The amount of U.S. milk powder entering Mexico duty free was scheduled to grow at an annual compounded rate over the 15-year transition period.
- For the first year of the agreement, U.S. exports of milk powder in excess of 40,000 metric tons were subject to a 139% tariff. During the first six years of the NAFTA, 24% of the tariff was scheduled to be eliminated and the rest of the tariff was scheduled to be phased out during the remainder of the 15-year transition period.

For cheese, Mexico converted its import licensing arrangement to tariffs.

- Imports of cheese that were subjected to import licensing prior to the NAFTA initially were assessed a 20% tariff that was to be reduced to zero during a 10-year transition period.
- An exception applied to fresh cheeses, which were subject to a 40% tariff that was scheduled to be reduced to zero over a 10-year period.

Tariffs on most other dairy items were set to be phased out over a 10-year period. Thus, in 2003, tariffs for fluid milk and cheeses imported from the U.S. will go to zero. Mexico's over-quota tariff on nonfat dry milk imports will not be reduced to zero until 2008.

Predictions from Earlier Studies of the NAFTA's Impacts

The earlier studies summarized below identified broad changes that the NAFTA was expected to produce in Mexico's dairy economy and changes expected in Mexico's internal dairy policies under the NAFTA. Developments that remain largely as predicted in the previous studies will not be re-examined in this paper. However, the earlier studies identified additional hypotheses that need to be addressed to understand longer-term impacts of the NAFTA on Mexico's dairy industry, and on U.S. dairy exporting and direct investment opportunities in Mexico's dairy-food businesses.

Dobson, W.D., "Implications of the NAFTA for the Upper Midwestern Dairy Industry," Babcock Institute Discussion Paper No. 94-1, 1994 [10].

1) About 30% of Mexico's 85 million people in the early 1990s had the purchasing power to be commercial customers for dairy products, making the nearby Mexican market attractive to U.S. dairy exporters.
2) Mexican tariffs on dairy imports were already relatively low prior to passage of the NAFTA. Therefore, tariff reductions associated with the NAFTA will have a limited impact on U.S. dairy

products to Mexico. Forces other than the NAFTA will have a greater impact on Mexican dairy imports from the U.S. than the trade pact itself.

3) Mexico is a large market for dairy exports that enjoys vigorous competition for its business. U.S. firms exporting dairy products to Mexico will encounter vigorous competition from Nestle, the New Zealanders, Uruguayan exporters, and European Union (EU) firms.
4) CONASUPO's future as a monopoly dairy importer was being placed in jeopardy in the early 1990s. Officials of private dairy firms in Mexico and LICONSA officials complained that CONASUPO represented an unnecessary bureaucratic layer and had blundered in its importing practices.
5) Firms hoping to expand dairy products to Mexico will find it advisable to follow Mexico's progress toward achieving greater self-sufficiency in milk production under the NAFTA. Likely scenarios suggest that Mexico will make limited progress toward self-sufficiency in milk production and continue to import large quantities of dairy products for the foreseeable future.

Barham, B., J. Cornick, and T. Cox, "Prospects for U.S. Dairy Exports to Mexico Under the NAFTA: An Assessment of Mexico's Supply and Demand," Babcock Institute Discussion Paper No. 94-2, 1994 [2].

1) Burgeoning population growth and income growth are likely to induce rapid demand growth for dairy products in Mexico. In the early 1990s, Mexico imported about 40% of its domestic dairy consumption. For reasons noted in points 2-5 below, it is unclear how much of Mexico's demand for dairy products will be satisfied by imports.
2) NAFTA's provisions designate dairy as an "import sensitive" sector and give the Mexican dairy industry time for restructuring.
3) Because of the phased-in nature of trade liberalization for dairy products, the competitive effects of U.S. dairy exports are not likely to have significant price effects in Mexico during the next few years. Mexico's domestic pricing policies are likely to determine how much Mexico's dairy industry will expand. U.S. exports to Mexico will vary accordingly.
4) Most of Mexico's pasteurized dairy production comes from the country's arid northern region where water is scarce. This situation may constrain expansion of milk production in this region.
5) Mexican government policy is moving away from milk price ceilings toward liberalization of milk prices.

Cox, T., "Measuring the Regional Effects of U.S.-Mexico Dairy Trade Under the NAFTA [9]," 1993 and USDA, "Preliminary Analysis of the Effects of the NAFTA on U.S. Agricultural Commodities," 1992 [43].

1) For a "best guess" Mexican import demand scenario, the impact on U.S. producers' revenues will be small. For Wisconsin, the NAFTA-induced change in producer revenues will be small—+0.1% or about $0.01 per hundredweight, Cox [9].
2) The additional dairy export sales generated by the NAFTA ($63 million per year) translate into about a $0.04 per hundredweight increase in revenues, USDA [43]. This increase would be shared by dairy farmers, processors, exporters and transportation firms.

Hypotheses identified in previous studies that can be tested to analyze impacts of the NAFTA on opportunities for future U.S. dairy exports to Mexico and opportunities for investments by U.S. firms in Mexican dairy-food businesses include the following:

- The demand for dairy products will grow strongly in Mexico, fed by rapid population growth and growth of Mexico's economy.
- Self-sufficiency in milk production will be an elusive target for Mexico. Factors ranging from water shortages in northern Mexico to changes in domestic milk pricing policies will influence the level of self sufficiency achieved. However, the extent to which self-sufficiency by Mexico is achieved will strongly influence the amount of U.S. dairy exports to Mexico.

- Despite advantages bestowed on U.S. firms by the NAFTA, competition for dairy exports in Mexico will remain strong.

How Mexico's Economy and Dairy Industry Have Evolved Under the NAFTA

Will there be strong growth in the demand for dairy products in Mexico?

While Mexican demand for consumer goods (including dairy products) has risen under the NAFTA, this development did not unfold immediately or smoothly after the NAFTA became effective. Mexico's economy was characterized by recession, a sharp devaluation of the peso, and rapid price inflation (at least by U.S. standards) after 1994 (Table 1). It was not until the late 1990s and 2000 that robust growth began to manifest itself in Mexico, causing the country's economy to be labeled one of the strongest in Latin America. This label reflected the belief that Mexico could resist catching the worst of the economic maladies that emerged in Russia, Turkey, Brazil, and Argentina during the late 1990s to 2001.

Mexico's economic growth slowed in 2001 and will slow further in 2002 as the country's exports decline in response to depressed economic conditions in the U.S. In mid-2001, Mexican Central Bank officials and private economists forecasted that real GDP growth for 2001 in Mexico would fall to the 1.0% to 2.0% range [4,29]. More recent estimates paint gloomier scenarios for Mexico's economy for late 2001 and 2002. Contributing to the gloom was the layoff of almost half a million employees—many at foreign-owned plants—during the first 10 months of 2001.

Table 1. Selected Figures Describing the Nature and Performance of Mexico's Economy under the NAFTA*

Year	Population (Million)	Real GDP Growth	Exchange Rate (Pesos/U.S.$)	Consumer Price Inflation
1994	90.0	3.5%	3.4	7.0%
1995	92.0	-6.2	6.4	52.0
1996	92.4	5.1	7.6	34.4
1997	93.6	6.8	7.9	20.6
1998	94.8	4.9	9.1	15.9
1999	96.1	3.8	9.6	16.6
2000	97.4	6.9	9.5	9.5

* Source: Economist Intelligence Unit [13], U.S. Dairy Export Council [38], and United States-Mexico Chamber of Commerce [44].

Population increases continue to be an important driver of demand in Mexico, but the country's population growth rate has slowed. The average year-to-year increase in the population figures in Table 1 is about 1.3% per year, appreciably lower than growth rates in the decade before the NAFTA. Of course, aggregate figures conceal much variation in population growth within Mexico. For example, certain border cities in the maquiladora belt recorded population growth sharply higher than the national average [14].

The composition of Mexico's population appears to favor increased consumption of dairy products. Mexico's population in 1999 was relatively young, with an average age of 25 compared to 37 for the U.S. [38, p.2]. The young average age of the population, one surmises, would be accompanied by a relatively strong demand for dairy products in Mexico. However, families must recognize the nutritional value of dairy products and have the required purchasing power before the young average age of the population will translate consistently into demand. By 2010, Mexico's largest population groups will be the wage earner groups aged 15 to 40 years. This change in the composition the population should increase the demand for a host of consumer goods, including dairy products.

According to the Strategy Resource Corporation, Mexico's population can be divided into the following income groups [38, p. 4]:

Household Income Category	% of Households
Upper Income Households	1.6%
Middle to Upper Income Households	11.0
Middle Income Households	22.0
Lower Income Households	36.0
Subsistence or Poverty Level Households	29.4
Total	100.0%

The percentage of households in the middle and upper income categories totals about 35%, which is modestly higher than the 30% figure reported in Babcock Institute Discussion Paper 94-1 for the pre-NAFTA period. Such a difference might be expected given the growth of Mexico's economy in recent years. Mexican customers in the upper two income categories are potential customers for differentiated dairy imports. Mexican citizens in the two lowest income categories remain customers for imported milk powder used to produce reconstituted milk sold at subsidized prices.

Insights from the Gould-Kim and USDA Studies for Mexican Dairy Demand

While important implications can be drawn from aggregate information showing the percentage of Mexican households falling into the different income categories, it is useful to consider more detailed information on the nature of the demand for dairy products in Mexico. The Gould-Kim study completed for the Babcock Institute in 1998 and a USDA study on implications of the incidence of poverty in Mexico provide such information [20,21].

Gould and Kim noted the following differences in 1996 per capita dairy product consumption in the U. S. and Mexico [20]:

Product	Per Capita Consumption in Mexico (Pounds)	% of U.S. Per Capita Consumption
Milk	120.6	54%
Cheese	10.0	36
Butter	0.7	16
NFDM	4.6	121

Mexico's per capita consumption of cheese in 1996 (36% of U.S. per capita cheese consumption) is moderately higher than the 25% of U.S. level reported for the pre-NAFTA period in Babcock Insitutute Discussion Paper 94-2. The increase apparently came from domestic cheese production or cheese imported from other countries because, as noted later in Figure 1, U.S. cheese exports to Mexico in 1996 remained lower than in the period immediately prior to the NAFTA.

The more detailed dairy demand information in the Gould-Kim study analyzes regional data on dairy product consumption and impacts of income on purchases of dairy products in Mexico [20]. The authors used data from the 1994 Encuesta Nacional de Ingreso y Gastos del Hogar (ENIGH-Household Income and Expenditure National Survey) collected by the Instituto Nacional de Estadistica, Geografia e Informatica (INEGI) between August and November, 1994. In addition to household dairy product purchase information, the survey data included household characteristics such as state of residence, population of the residents' city/town, and appliance ownership. There were 12,753 households in the base data set.

Gould and Kim presented findings based on the 1994 survey data for the following 10 regions of Mexico:

Region 1:	Baja California, Baja California Sur,, Nayarit Sinaloa, and Sonora
Region 2:	Chihuahua, Durango, San Luis Potosi, Tamaulipas, and Zacatecas
Region 3:	Coahuila, Nuevo Leon, and Tabasco
Region 4:	Veracruz
Region 5:	Aguascalientes, Colima, Jalisco, and Michoacan
Region 6:	Guanajuato, Hidalgo, and Queretaro
Region 7:	Campeche, Chiapas, Quintana Roo, and Yucatan
Region 8:	Oaxaca, Puebla, and Tlaxcala
Region 9:	Guerrero, estado de Mexico, and Morelos.
Region 10:	Districto Federal

Major findings of the study based on the Mexican household survey data included the following:

- Slightly less than 60% of the Mexican households purchased fluid milk during the survey period.
- About a third of the households purchased cheese—commonly Chihuahua cheese, a white, fresh product.
- A strong relationship was found between income and purchase rates. Twenty percent of the households in the lowest income decile (lowest 10% of households) purchased milk compared to 80% of the households in the highest income decile.
- Eleven percent of the households in the lowest income decile purchased cheese versus 46% in the highest income decile.
- Not surprisingly, the positive relationship between household dairy purchase rates and income was linked to the availability of refrigerators. Thus, for the lowest income decile, less than 15% of the households owned a refrigerator compared to over 95% of households in the highest income decile.
- Regions 1, 5 and 10 recorded the highest percentage of households purchasing milk (all 70% or higher) and relatively large purchase quantities for the product.
- Regions 1 and 10 recorded the highest percentage of households purchasing cheese, both higher than 40% and generally higher purchase quantities.
- Regions 7 and 8 recorded the lowest percentage of households purchasing milk and relatively low purchase amounts for the product.
- Region 3 and regions 7 and 8 recorded the lowest household purchase rates for total cheese.

The geographic areas identified by Gould and Kim as high income and high dairy product purchase regions are broadly consistent with results of the USDA study describing the incidence of poverty in Mexico and effects of income on agricultural product purchases [21]. The USDA study based on 1995 figures indicated that the following Mexican states have the lowest and highest poverty rates:

States with Lowest Poverty Rates	**States with Highest Poverty Rates**
• Baja California	• Hidalgo
• Baja California Sur	• Zacetecas
• Districto Federal	• Guerrero
• Nueva Leon	• Chiapas
• Aguascalientes	• Oaxaca
	• Tabasco
	• Campeche

Regions 1, 5 and 10—identified in the Gould-Kim study as regions with high household purchase percentages for milk and cheese—include all but one of the states named in the USDA study as having the lowest poverty rates. Collectively, Regions 3 and 7—identified in the Gould-Kim study as regions with lowest household purchase percentages for milk and cheese—include three states in the group designated in the USDA study as having the highest poverty rates.

Two Mexican states with the lowest poverty rates (Baja California and Nuevo Leon) border the U.S. and a third state (Baja California Sur) is one removed from the U.S. The states listed in the USDA study as having the highest poverty rates define poverty as predominantly a rural problem. The five states with the highest poverty rates in the list are the five most rural states in Mexico.

The Gould-Kim and USDA studies underscore the importance of income growth for expanding the demand for dairy products and suggest that the Maquiladora belt and the Districto Federal (Mexico City) will be important markets for dairy products. The differences in milk and cheese purchase rates for Mexico's high and low income regions can be summarized using the following figures from the Gould-Kim study [20]:

Region and Product	**% of Households Purchasing Product**
1) High Milk Purchase Rate Regions 1, 5, & 10	75%
2) Low Milk Purchase Rate Regions 7 & 8	39
Difference (1 – 2)	36%
3) High Cheese Purchase Rate Regions 1 & 10	44
4) Low Cheese Purchase Rate Regions 3, 7, & 8	20
Difference (3 – 4)	24%

In the survey period, the average amount of milk purchased was 2.5 times larger in the high milk purchasing regions than in the low purchasing rate regions. For cheese, the comparable difference in the amount of purchase was only 21%.

The Economist's Economic Intelligence Unit commented as follows about the incidence of poverty in Mexico, its relationship to the NAFTA, and measures being put in place to deal with regional poverty [13, p. 19]:

> The introduction of the NAFTA has exacerbated regional growth trends, with the northern states benefiting from exporting opportunities with the U.S., leaving many southern states behind. As a result, President Fox is trying to address regional disparities… (One program would promote) investment in the states of Guerrero, Oaxaca, Chiapas, Veracruz, Tabasco, and Campeche.

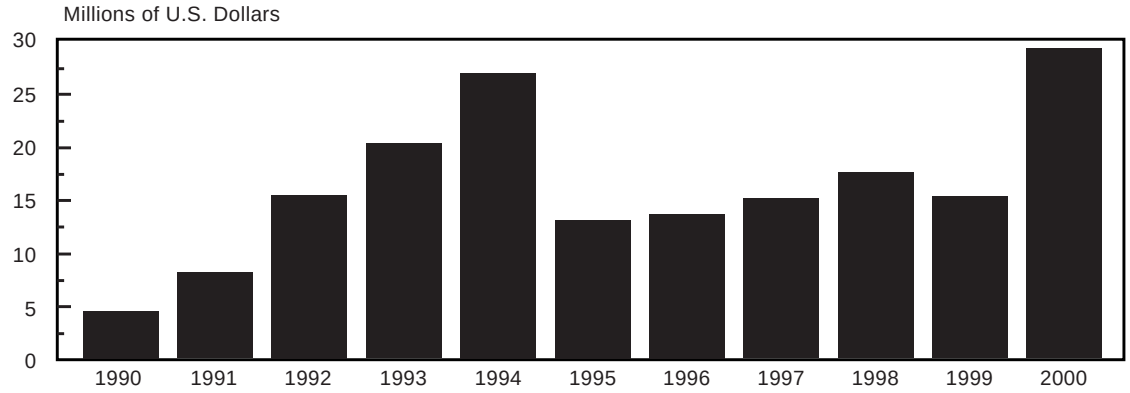
If rural poverty levels can be reduced, this would undoubtedly shrink the spreads between consumption levels among the Mexican states for milk in particular. While rural development initiatives and growth of Mexico's economy may reduce poverty in the rural regions of Mexico, the reduction of poverty is likely to be gradual. The pervasive (and persistent) nature of poverty in Mexico suggests that nonfat dry milk used for reconstitution into fluid milk and sale to Mexico's low-income people at subsidized prices will continue to be an important dairy product in Mexico.

Impact of Economic Conditions in Mexico on Import Demand for Different Groups of Dairy Products

Cheese. U.S. exports of cheese to Mexico appear to be sensitive to economic conditions in Mexico. As indicated in Figure 1, U.S. cheese exports to Mexico were expanding rapidly in the

first half of the 1990s. Those exports peaked in 1994, contracted sharply in 1995, and remained relatively low until 2000 when they reached 10,301 metric tons, a new record. The recovery of U.S. cheese exports coincided with the renewal of rapid economic growth, lower unemployment, and lower inflation in Mexico.

Figure 1. U.S. Cheese Exports to Mexico*



* Source: [32].

USDA analysts indicate that U.S. cheese exports to Mexico will be enhanced by the scheduled decline in Mexican tariffs, pointing out that [32]:

> A schedule was put in place (under the NAFTA) to reduce tariff levels annually until 2003 when they will be phased out altogether. Each year, as the tariff levels decline, U.S. cheeses become more competitive. Tariff rates for fresh cheeses were 12 percent in 2000 and 8 percent in 2001. All other cheeses were assessed a 6 percent tariff in 2000 and a 4 percent tariff in 2001. In comparison, tariffs for cheeses imported from other countries are over 20 percent. Additionally, NAFTA makes the documentation requirements and general access to the Mexican market easier for U.S. exporters.

If accompanied by favorable economic conditions in Mexico, it is probable that the preferential tariffs for U.S. cheese imports will help to expand U.S. cheese exports to that country. However, the competition facing U.S. firms for cheese sales in Mexico will be strong.

Milk Powder. Prior to the NAFTA, nonfat dry milk (NFDM) was arguable Mexico's most important dairy import item. The nature of domestic production and imports of this product have changed since 1994 (Table 2). Consumption of NFDM in Mexico increased modestly during 1994-2001, ramping up from slightly over 200,000 metric tons per year to about 270,000 metric

Table 2. Nonfat Dry Milk Production, Consumption, and Imports, Mexico, 1994-2001*

Year	Production (1,000 mt)	Consumption (1,000 mt)	Imports (1,000 mt)	% Change in Imports from a Year Earlier
1994	20	220	200	0.0%
1995	30	205	180	- 10.0
1996	119	251	127	- 29.4
1997	127	250	133	+ 4.7
1998	118	234	93	- 30.1
1999	140	256	123	+32.3
2000 (P)	140	272	127	+ 3.2
2001 (F)	140	275	120	- 5.5

* Source: USDA, Dairy: World Markets and Trade [41]. P=Preliminary, F=Forecast.

tons per year in the latter part of the post-NAFTA period. Mexico's NFDM imports declined during 1994-2001 in the face of higher domestic production. There was also pronounced year-to-year variation in Mexico's NFDM imports during this period.

Whey. U.S. dried whey exports to Mexico have grown during the NAFTA period, rising from about 13,700 metric tons in 1994 to 16,100 metric tons in 1999 [38]. The market share held by U.S. exporters is large, exceeding 90% in 1999. U.S. exports of this item to Mexico are expected to remain strong.

Approximate Shares of Dairy Product Imports Held by U.S. Firms. According to the USDEC, the shares of Mexican dairy imports supplied by U.S. firms, the largest competing exporters, and others in 1999 are indicated in Table 3. These market figures should be regarded as approximate because it is difficult to obtain precisely accurate market share figures for most agricultural products, including dairy products. However, the figures in Table 3 do underscore important developments. First, U.S. export market shares for fluid milk, yogurt, whey, and lactose are already large—over 85% for all four products. Thus, there is not much market share of these items to be captured from exporters from other countries. Expansion of U.S. export sales of these items to Mexico will require expansion of the Mexican market through income growth, population growth and new, demand-expanding uses for the products. Expanding U.S. export sales via these avenues is likely to be gradual. Second, the U.S. share of the Mexican market for imported cheeses is quite low—about 16% in 1999. Presumably there will be possibilities for U.S. firms to displace other foreign suppliers of cheese for the Mexican market. The step-up in USDEC's outlays to expand U.S. cheese exports to Mexico presumably takes into account this possibility.

Table 3. Shares of Mexican Dairy Imports Supplied by U.S. Firms and Home Country of Largest Competing Exporter Group, 1999*

Product	U.S. Firms' Share	Home Country of Largest Competing Exporter Group		Share Held by Others
Fluid milk	90%	Uruguay	10%	—
NFDM	48	Canada	21	31%
Yogurt	88	Spain	12	—
Whey	92	France	6	2
Butter	7	Uruguay	53	40
Cheese	16	New Zealand	23	61
Lactose	86	Netherlands	7	7
Ice cream	65	Chile	19	16

* Source: USDEC [38, p.20].

Recent figures compiled by the USDEC for the first four months of 2001 point to substantially higher U.S. exports of cheese and selected fluid items to Mexico compared to year-earlier levels, presumably indicating market share gains for these items by U.S. firms. U.S. dried whey and skim milk powder exports to Mexico were down from year-earlier levels during the first four months of 2001. It is not known whether these figures represent longer-term trends.

How Closely Will Mexico Approach Self-Sufficiency in Milk Production?

For obvious reasons, the answer to this question will have an important impact on U.S. dairy exports in the years ahead. Prior to the NAFTA, Mexico's level of self-sufficiency in milk production was variously reported as being 50% to 60%. USDEC estimates that Mexico's self-sufficiency levels will remain around 70% to 75% for the next few years [36]. According to FAS-USDA, key members of Mexico's dairy industry would like to see the country's fluid milk production increase to 12 billion liters by 2003, which represents about a 26% increase from forecasted milk production for 2001 [5].

Mexico's Self-Sufficiency Levels for Nonfat Dry Milk, Cheese and Butter

Self-sufficiency levels for dairy in Mexico will vary from product to product, of course. Table 4 indicates changes in self-sufficiency levels for NFDM, cheese, and butter for Mexico from 1994 to 2001. The important trend revealed in Table 4 is the decline in imports of nonfat dry milk. Mexico went from being about 10% self-sufficient in NFDM in 1994 and 1995 to about 53% self-sufficiency from 1998 to 2000. Mexico continued to import about the same percentage of cheese during the 1994-2001 NAFTA period—cheese imports dipped during the 1995 recession and its aftermath, but recovered to around 25% of consumption thereafter. Relatively little butter is consumed in Mexico, but imports of the product show a modest upward trajectory.

Table 4. Imports as a Percentage of Consumption for Selected Dairy Products in Mexico, 1994-2001*

Product & Year	Consumption (1,000 mt)	Imports (1,000 mt)	Imports as % of Consumption
Nonfat Dry Milk			
1994	220	200	90.9%
1995	205	180	87.8
1996	251	127	50.6
1997	250	133	53.2
1998	234	93	39.7
1999	256	123	48.0
2000 (P)	272	127	46.7
2001 (F)	275	120	43.6
Cheese			
1994	151	35	23.2%
1995	134	18	13.4
1996	130	20	15.4
1997	137	25	18.2
1998	155	28	18.1
1999	170	44	25.9
2000 (P)	167	45	27.0
2001 (F)	184	47	25.5
Butter			
1994	40	18	45.0%
1995	29	7	24.1
1996	31	18	58.1
1997	39	24	61.5
1998	38	25	65.8
1999	49	34	69.4
2000 (P)	49	31	63.3
2001 (F)	45	25	55.6

* Source: USDA, "Dairy: World Markets and Trade" [41]. P=Projected, F=Forecast.

The main story in Table 4 is thus the increase in self-sufficiency levels for NFDM in Mexico. The reasons for this change are not fully clear. One would assume that increases in milk production would be channeled to higher valued uses than NFDM. However, NFDM is a versatile product that is used to produce a host of dairy products (reconstituted fluid milk, ice cream, cheese,

etc.), some of which are high in value. Presumably, economic incentives exist in Mexico to channel domestically produced NFDM into these higher valued products.

Changes in Aggregate Milk Production in Mexico

Changes in milk cow numbers and milk production in Mexico provide additional insights into how much milk production is likely to increase in Mexico and how this might affect self-sufficiency. The number of dairy cows in Mexico increased only about 5% from 1994 to 2000 (Table 5). Milk production on the other hand, increased by about 23% during this same period. Much of this increase was due to a 16% increase in milk production per cow in Mexico from 1994 to 2000—which was larger than the 12% to 13% increase in milk production per cow in the U.S. during this period. While the increase in milk production per cow in Mexico from 1994 to 2000 was noteworthy, average milk production per cow in Mexico was still only a fraction of that of the U.S. in 2000 (see schedule).

Table 5. Milk Cow Numbers and Milk Production in Mexico, 1994-2001*

Year	Number of Dairy Cows (1,000 Head)	% Change from Year Earlier	Milk Production (1,000 mt)	% Change from Year Earlier
1994	6,480	0.0%	7,547	-1.1%
1995	6,440	-0.6	7,399	-2.0
1996	6,440	0.0	7,586	+2.5
1997	6,500	+0.9	7,850	+3.5
1998	6,600	+1.5	8,366	+6.6
1999	6,700	+1.5	8,877	+6.1
2000 (P)	6,800	+1.5	9,305	+4.8
2001 (F)	6,800	0.0	9,485	+1.9

* Source: USDA, Dairy: World Markets and Trade, [41]. P=Preliminary, F=Forecast

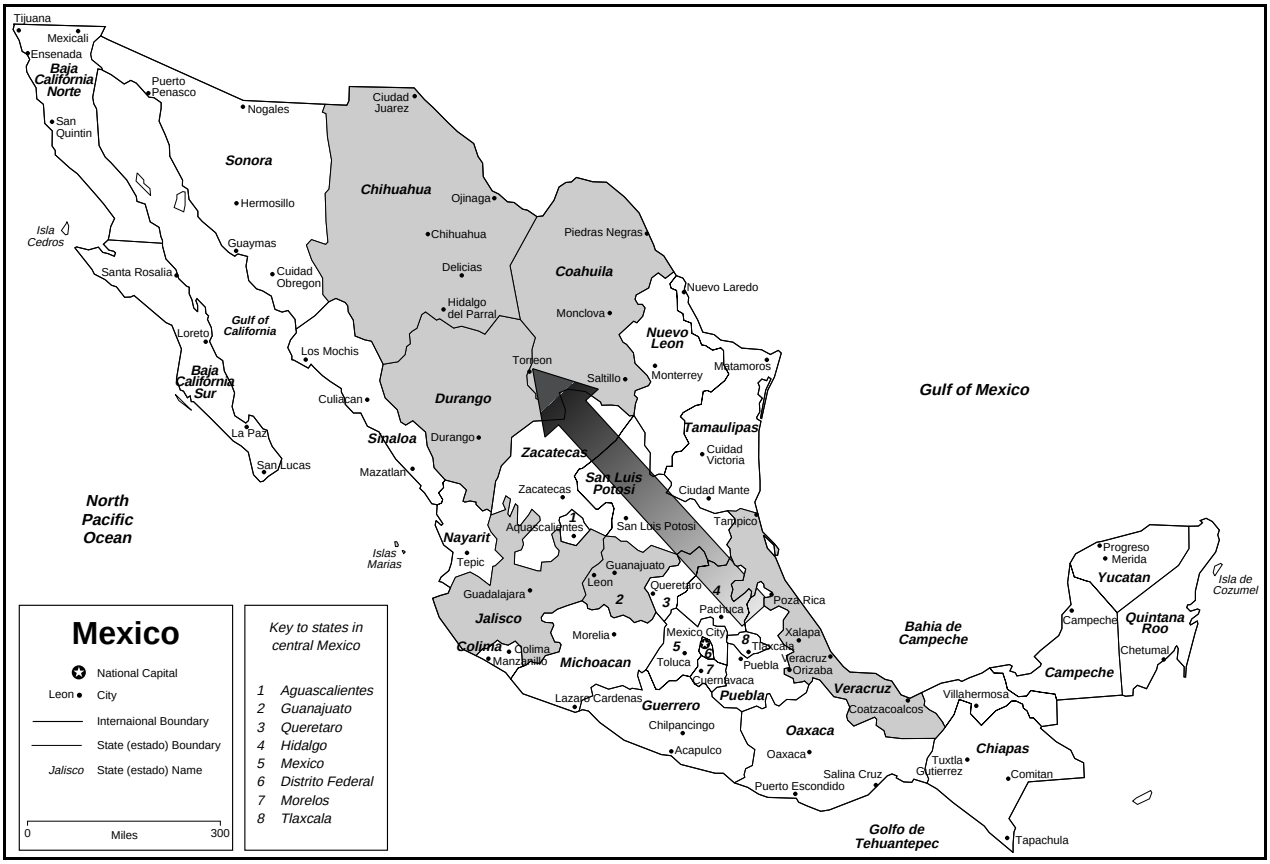
The low average milk-production-per-cow figures reflect, in part, large numbers of cows on semi-confined and dual purpose farms in Mexico. For example, the USDA reports that only about one-third of the 6.8 million cows in Mexico in 2000 were dairy cows—the remainder were dual-purpose cows [5, p. 21]. Milk production per cow on many commercial (confinement) dairy farms in northern Mexico is reportedly near levels found on farms in the southwestern U.S.

Year	Annual Milk Production/Cow (Pounds)		Mexican Production/Cow as % of U.S. Production
	Mexico	U.S.	
1994	2,568	16,175	15.9%
2000	2,983	18,204	16.4

Changes in the Location of Milk Production in Mexico

A USDEC report characterizes the change in the location of milk production in Mexico as a "Production Shift to Northern States" (Figure 2). If this shift becomes large, it would mean that the nature of dairy farming would change in fundamental ways in Mexico. In particular, a substantially larger share of Mexico's milk production would originate on large dairy farms—more like farms in California and Arizona than the farms of the Mexican tropics or semi-confinement dairy operations.

Figure 2. Production Shift to Northern States of Mexico*



* Source: Promar.

The shift in Mexico's milk production to the northern states of the country may appear less than dramatic since the beginning of the NAFTA. Durango's share of national milk production increased by three percentage points from 1994 to 2000 (Table 6). Three of the other major milk producing states (Jalisco, Coahuila, and Chihuahua) recorded increases of one percentage point in national production share during this period. But, the shift in the location of milk production in Mexico is roughly similar in percentage terms to that which has occurred in the United States [42]. Of course, the shift in location of production in the U.S. has been from the East and Upper Midwest to the West, and occurred from different base levels. For example, California producers increased their share of U.S. milk production from about 16% in 1994 to 19% in 2000, roughly the same percentage increase in national production share recorded by Durango producers in Mexico during this period. While Idaho producers nearly doubled their milk production from 1994 to 2000, they increased their U.S. production share by only about two percentage points during this period. Wisconsin's milk producers increased output by nearly four percent from 1994 to 2000, but they witnessed a decline in national production share of about three-quarters percentage point in this period. The lesson from both the Mexican and U.S. figures is that large shifts in state production shares do not occur rapidly. However, shifts as large as three percentage points—the Durango shift, for example—can have important impacts on the location of processing and the character of the industry. New milk processing facilities tend to be built in areas of expanding milk production.

Table 6. Percent of Milk Production in Mexico's Leading Dairy States, 1994 and 2000*

State	% of Milk Production		Change, 1994-2000
	1994	2000	
Jalisco	17%	18%	+1%
Durango	7	10	+3
Coahuila	8	9	+1
Chihuahua	7	8	+1
Veracruz	9	7	-2
Guanajuato	8	7	-1
Others	43	41	-2

* Source: USDEC [38, p.14] and [5].

Will there be price incentives for Mexican milk producers to expand production and bring the country nearer to self-sufficiency? The figures in Table 7 shed some light on this question. After the recession year of 1995, the average prices paid to Mexican milk producers averaged 88% of the U.S. All Milk Price. In 2000, the average farm milk price for Mexico exceeded the depressed U.S. All Milk Price.

The prices in Table 7 conceal important deviations from the average. For example, an Alpura official reported that some supplier-members of his cooperative have received prices of U.S.$0.45 per liter (U.S.$19.80 per hundredweight), giving those producers some of the highest pay prices in the world [1]. At the other extreme, we heard references to pay prices of as low as 2.0 pesos per liter (U.S.$9.65 per hundredweight) for milk supplied by dual-purpose farms in the south of Mexico in mid-2001.

Table 7. Selected Average Farm Milk Prices for Mexico, 1995-2000*

Period	Price in Pesos Per Liter	Price in U.S.$ Per Cwt	U.S. All Milk Milk Price (U.S.$ Per Cwt)	Mexico Price % as % of U.S. Price
March 1995**				
- Chilled	1.07	$6.95	$12.70	54.7%
- Non-Chilled	0.95	6.17	12.70	48.6
1996	2.34	13.54	14.75	91.8
1997	2.08	11.56	13.36	86.5
1998	2.31	11.11	15.46	71.9
1999	2.62	12.07	14.38	83.9
2000	2.76	12.85	12.34	104.1

* Sources: USDA-FAS Attaché reports [5,8, 25, 26] and Agricultural Outlook, various issues [40].

** Prices for Mexican producer milk for March 1995 are average prices for nine states. Other producer milk prices are national average prices.

On balance, prices received by Mexico's milk producers appear relatively high in comparison to the purchasing power of the average Mexican consumer. This is especially true of farm milk prices received by producers in Jalisco (the largest Mexican dairy state) and Durango (the fastest growing Mexican milk-producing state). These two states were in the top-10 states in terms of prices in 1996, presumably contributing to the expansion of milk production in these states during the NAFTA period.

In the early 1990s, costs of milk production in modern, confinement milk production systems in Mexico compared favorably with costs of production on similar farms in the southwestern U.S.

[10]. Persons interviewed about dairy farming conditions in Mexico pointed out that the following developments have affected milk production costs on commercial dairy farms in Mexico in the 1994-2000 NAFTA period:

- Mexico's commercial dairy farmers have rapidly adopted new, cost-reducing technologies including BST.
- Many of Mexico's commercial dairy farms have imported high quality genetics from the U.S., Canada, and Europe in the past 20 years, upgrading their herds.
- Prices for grains imported by Mexican dairy farmers from the U.S. have been relatively low in the late 1990s and 2000.
- Labor costs on commercial dairy farms in Mexico—while still low by U.S. standards—have risen in recent years.
- Costs for pumping water from deep wells have increased in recent years.
- Costs of imported replacement dairy cattle have been high in recent years.

The overall impact of these items has been to produce a modest rate of expansion in milk production on commercial dairy farms in Mexico. The more rapid increase in milk production in states characterized by large numbers of commercial farms suggests that incentives to expand milk production has been greater in these states than in states where dual-purpose and semi-confined dairy farms predominate.

How Strong is the Competition Facing U.S. Dairy Exporters in Mexico and U.S. Direct Investors in Mexico's Dairy-Food Business?

The material presented to this point in the paper suggests that the Mexican market will remain attractive for dairy products, and that the domestic industry will not be positioned to supply more than approximately 75% of the market. How strong will the competition be for U.S. dairy exporters and investors in this attractive market? The answer to this question is brief: The competition will be very strong despite location advantages possessed by U.S. firms and tariff advantages bestowed on U.S. firms by the NAFTA.

P. Gutierrez, Director of International Sales for Century Foods International of the U.S., described Mexico as a mature export market that has attracted many world class competitors [22]. He added that margins for commodity dairy exports to Mexico have become "razor thin." In this connection, Gutierrez noted that Dairy Export Incentive Program (DEIP) margins for sales to Mexico have been pushed to low levels in part by competition from European-owned firms, M.E. Franks and Hoogwegt.

A problem created by "razor thin" margins on commodity exports is that one major buyer's failure to pay for a shipment will wipe out profits on a large batch of dairy exports to Mexico. This condition led Gutierrez to remark that the most important challenge facing his firm on commodity dairy exports to Mexico was, "getting paid, getting paid, and getting paid." He added that Mexican courts were often not readily accessible for settling payment disputes. The problem with accounts receivable is sufficiently serious that his firm has chosen to redirect dairy exports to Mexico away from commodity whey products to differentiated cheese products and differentiated health food products containing whey or whey fractions. A key to exporting dairy products to Mexico successfully, Gutierrez said, is to find a Mexican customer for differentiated niche products who really needs your product.

Established Mexican importers of bulk dairy products apparently can obtain concessions from U.S. and European exporters, such as 60 to 90 day payment terms with no required collateral. The competitive conditions are such that the established importers of dairy products in Mexico typically do not need to use bank drafts or letters of credit in dealing with dairy exporters.

Newman and Moeller of Schreiber International, Inc. said that suppliers' problems with accounts receivable differ substantially depending upon the type of dairy product sold to Mexican firms [30,31]. They believe that Mexican buyers of bulk dairy commodities have a different

payment schedule—one that allows them to sell items made from the product before paying suppliers—than buyers of differentiated products. To illustrate, they noted that as of November 2001 Schreiber International had experienced no problems with obtaining timely (typically net 30 days) payments from "A" customers (e.g., Nestle, McDonalds and other multinationals) for differentiated dairy products sold in Mexico. However, the Schreiber officials predicted that shrinkage of the Mexican hotel and restaurant business in the aftermath of 9/11/2001 ultimately may delay payments to suppliers of dairy products to these and related businesses.

Fonterra (successor to the New Zealand Dairy Board), the world's largest private dairy exporting firm, remains an important dairy exporter to Mexico. L. Solberg, chief USDEC representative in Mexico, said that U.S exporters had recently increased their share of Mexican cheese imports, partly at the expense of the New Zealanders [34]. Presumably the lower tariffs for imports of U.S. cheese contributed to this gain of market share.

As in pre-NAFTA days, Nestle remains a powerful competitor for both dairy exporters and foreign direct investors in the country. One of Nestle's initiatives from 1997 to 1998 was the opening of a new milk powder processing plant in Chiapas. This plant will focus on supplying powdered milk to the Central American market. Nestle obtained, by Presidential decree, authorization to import 27 thousand metric tons of milk powder (bypassing CONASUPO) during the start-up phase for the Chiapas plant [7]. While this was a one-time concession by the Mexican government, it reveals that Nestle still has influence on dairy issues with the Mexican government. Gutierrez speculated that Nestle's influence with Mexico's government stems partly from the fact that the firm provides employment in Mexico's rural areas.

Strong competition for U.S. dairy exporters and direct investors in Mexico's dairy-food businesses will be encountered from Danone. Danone was the market leader in yogurt sales in Mexico in the late 1990s, with about 40% of the market share [6]. Danone is aggressively seeking to expand the firm's yogurt sales in Mexico by distributing information about the nutritional value of the product, sending nutritionists to schools, and establishing supermarket promotions. Danone finds Mexico's yogurt market attractive partly because it is rapidly growing (15% per year in the late 1990s), albeit from a small base.

Parmalat of Italy—a well-known processor and distributor of UHT milk—has made processing and marketing investments in Mexico in the NAFTA era, aggressively pursuing market share. The firm had U.S.$60 million in sales in Mexico in 2000, 76% of which consisted of milk. Parmalat apparently aims to increase those sales to U.S.$400 to $500 million by 2003 to lead the Mexican market and create a flow of exports to the U.S. [15]. It is unclear whether Parmalat, which went on a dairy-food acquisition spree in the 1990s and will need time to digest those acquisitions, will be able to achieve such an objective.

II. Adjustments Made by Mexican Firms to Discourage Dairy Imports and Challenges Associated with Exporting Dairy Products to Mexico and Investing in Mexican Dairy-Food Businesses

How Strong is the Competition Facing U.S. Dairy Exporters in Mexico and U.S. Direct Investors in Mexico's Dairy-Food Business?

The adjustments made by Mexican dairy processors and farmers fall into three broad categories. The first is to increase domestic milk production to replace imports of fluid milk and milk powder with domestic production [5, p.3.]. This point was discussed earlier.

The second adjustment relates to price. Because of location advantages, lower raw product costs of some Mexican firms, and other considerations, Mexican processors presumably can under-price U.S. dairy firms for sales of dairy products in Mexican food markets. The figures in Table 8 shed light on this matter. These figures were obtained from a USDEC survey of selected Mexico City supermarkets in February 2001. Supermarkets included in the survey included Commercial

Mexicana, Superama, Aurrera, Wal-Mart, Gigante, Carrefour, Sam's Club, and Price Cost Co. The prices gathered in the price survey were converted to U.S. dollars using a March 1, 2001 exchange rate of 9.85 Mexican pesos equals one U.S. dollar.

Table 8. Retail Prices for Selected Dairy Products of U.S. Origin, Mexican Origin, and Other Country Origins Sold in Mexico City Supermarkets, February 2001*

Items	Prices for Dairy Products of		
	U.S. Origin	Mexican Origin	Other Country Origin
Fluid Milk	$4.70/gal	$3.30/gal	—
Cream Cheese	3.80/lb.	3.61/lb.	$2.82/lb.
Whipped Cream	2.75/lb.	2.46/lb.	—
Ice Cream	18.48/gal.	11.54/gal.	—
Imported Cheese (Except Brie & Camembert)	4.46/lb.	N.A.	7.96/lb.
Brie & Camembert	11.15/lb	8.97/lb	15.91/lb

* Source: USDEC, Dairy Export Price Survey, February 2001 [37].

The prices must be interpreted with caution for a number of reasons. First, figures obtained in the survey do not represent a random sample of prices. Second, prices for different-sized packages were converted to gallons or pounds. Such conversions ignore the fact that smaller packages typically carry a higher price per unit, and potentially misleading figures may result from converting prices for such packages to U.S. dollars per gallon or pound. Finally, in some cases, there were a limited number of prices for U.S. firms in the survey. For example, the average fluid milk price in Table 8 reflects prices for only three U.S. firms. The price for fluid milk of Mexican origin reflects the average for 67 Mexican firms.

While the figures in Table 8 clearly have limitations, they do suggest that price is used as an important competitive factor by Mexican firms. This is indicated by the price premiums or discounts for U.S. dairy products sold in the Mexico City food markets shown in Table 9.

Table 9. Price Premiums or Discounts for U.S. Dairy Products Sold in Mexico City Food Markets, February 2001*

Items	Price Premium or Discount for U.S. Dairy Products Relative to:	
	Products of Mexican Origin	Products of Other Country Origins
Fluid Milk	+42%	—
Cream Cheese	+ 5%	+35%
Whipped Cream	+12%	—
Ice Cream	+60%	—
Imported Cheese (Except Brie & Camembert)	—	-44%
Brie & Camembert	+24%	-30%

* Source: Computed from figures in Table 8. A +% sign in the country of origin column indicates that the U.S. dairy product sold at a premium to products of Mexican or other country origins. A -% sign indicates that U.S. products sold at a discount.

If, as is likely, the quality of Mexican dairy products continues to improve during the next few years it is doubtful whether price premiums for U.S. dairy products of the size reflected in the schedule can be maintained. The problem for other exporters (mainly European dairy exporters)

will be even more challenging because their prices carry a premium to U.S. prices in the Mexican food markets.

The third adjustment can be categorized as efforts by Mexican producers and processors to use government regulations to discourage dairy imports, as noted below:

- In the Mexicali/Tijuana area, local milk producers have made imports of U.S. milk unsaleable through local supermarkets and specialty stores with the help of regional government regulations that require local stores to sell all locally-produced milk first. In response to this problem, U.S. milk processors have set up sales outlets near border crossings. Mexican nationals who cross the border into the U.S. can buy milk at these outlets and return to Mexico with U.S. fluid milk [5].
- As noted earlier, the Mexican dairy industry has a goal of increasing domestic milk production to 12 billion liters by 2003. The domestic industry claims that "the key to achieving this goal is to have the Mexican government reduce milk powder imports on a larger scale" [5, p.1]. FAS reduced its estimates of Mexico's NFDM imports for 2001 in part because of "pressure exerted on government authorities by domestic producers to reduce imports (of the product)." [12].
- Between 1996 and 1999, imports of NFDM and sodium caseinate blend products increased by 257%, from 13,803 metric tons to 46,760 metric tons. Mexican dairy farmers have pressured the Mexican government to regulate the imports of this product [36, p.125].
- Early in 2000, milk dumping and street demonstrations were held at government offices by domestic milk producers who were upset because, according to protesters, the Mexican government had done little to intervene and obligate processors of whey into fluid milk substitutes to label their product as "milk-type beverage" and not as milk. In addition, there were allegations that many processors have imported milk powder disguised as food preparations with a minimum of 10% dairy solids. These products had entered Mexico with a 10% duty and no quota. In 1999, total imports under this classification were 26,851 metric tons, and imports for the first half of 2000 were 23,284 and were expected to reach almost 50,000 metric tons by the end of 2000. The food preparations containing dairy products were used for reconstituting into milk and other dairy products [12, pp.27-28].

It is not clear how much impact these measures have had on U.S. dairy exports to Mexico. The fact that FAS-USDA reduced its estimates of Mexican milk powder imports for 2001 to reflect pressures put on Mexican authorities to reduce such imports suggests that there might have been some impact. Mexico's domestic processors apparently will not be required by the Mexican government to label as "milk beverages" the fluid milk substitutes made partly from whey powder. This is a noteworthy concession because many Mexican processors are good at formulating a reasonable-tasting milk from different ingredients—e.g., whey powder, vegetables fats, etc. Moreover, Mexico's government would be placed in an unusual position if it required such products to be labeled as milk beverages, because LICONSA produces a product that frequently includes vegetable fats and sells it as milk to low-income people.

While the domestic industry will continue efforts to prevent the tariff on NFDM imports from the U.S. from going to zero in 2008, certain firms appear well-equipped to deal with a zero tariff situation. J.G. Gonzalez, Director General of CANILAC (Mexican dairy processors' organization), listed the following firms in order of level of preparedness to deal with a zero tariff on Mexico imports of U.S. NFDM [19]: Nestle, Lala, Alpura, Chilchota, Ticlac, La Mesa, Danone, Sigma, Unilever, Esmeraldo, and American Creamer.

Challenges Associated with Doing Business In Mexico's Dairy Industry

Challenges associated with exporting dairy products to Mexico and making direct investments in Mexico's dairy-food businesses are suggested by points in the preceding section and Gutierrez's comments. Gutierrez's comments, in particular, identify corruption as a problem that needs further analysis.

Corruption remains a problem in Mexico despite government efforts to reduce the problem. Transparency International ranks countries according to a Corruption Perceptions Index (CPI), where 10 equals highly clean and 0 equals highly corrupt. The CPI is based on perceptions of the degree of corruption as seen by business people, risk analysts, and the general public. The CPI is admittedly an imperfect measure of corruption, partly because the index is based on a small number of observations. Mexico's CPI for 2000, for example, is based on only eight observations. Shortcomings associated with such indexes have caused World Bank officials to conclude that the CPI and similar indexes are useful mainly to group countries into broad categories. Accordingly, the CPI averages for 90 countries in 2000 appear in Table 10 in three broad categories. Mexico's CPI score (3.3) fell near the bottom of the middle third country group. Countries with similar CPI scores in 2000 were Latvia and Zambia (3.4), and Colombia, Ethiopia, and Thailand (3.2). Mexico's CPI score for 1999 was 3.4, approximately the same as in 2000.

Table 10. Corruption Perception Index Numbers for Country Groups, Mexico, and the U.S., 2000*

Country Groups and Countries	Corruption Perception Index**
Top Third	7.7
U.S.	7.8
Middle Third	4.2
Mexico	*3.3*
Bottom Third	2.4
Overall Average	4.8

* Source: Transparency International Corruption Perceptions Index, 2000 [35].

** 10=highly clear, 0=highly corrupt.

Corruption manifests itself in a number of ways to firms exporting dairy products to Mexico. As Gutierrez indicated, it is sometimes difficult to get paid for bulk shipments of dairy products to Mexico and the courts are not a fully effective mechanism for settling payment disputes.

Moeller of Schreiber International, Inc. made a related point [30]. She said that the biggest challenge associated with exporting dairy products to Mexico is nontariff barriers. The nontariff barriers included changing government requirements, delays in getting approvals to export dairy products to Mexico from Mexican government officials, and questionable complaints from businesses and government officials about product quality. At least some of these nontariff barriers probably reflect corruption.

Corruption also manifests itself in ways suggested by analyst Robert Samuelson, who argues that bribes and corruption correspond loosely to the level of regulation [33, p.208]. Mexican producers' use of regional regulations in Mexicali/Tijuana to require that locally-produced milk be sold before imported milk in food stores appears to be consistent with Samuelson's claim.

The pervasiveness of corruption in Mexico is suggested by the following comments that accompanied Citigroup's decision to purchase Banamex in 2001 [46]:

> Corruption and inefficiency constitute an enormous drag on a country's economic growth, and ordinary Mexicans are likely to gain what Citibankers call the "corruption dividend" that Citibank generates when it sets up abroad… *Citibank is well-known as one bank where qualified borrowers do not have to pay a bribe to get a loan* (emphasis supplied). Taken together, these contributions will almost certainly promote economic stability in a country that badly needs it.

William Polushin, Head of Canada's Chamber of Commerce in Mexico City, ticked off the following problems associated with doing business in Mexico, claiming that corruption is endemic in Mexico [28]:

- Government rules and regulations are often opaque and spring all sorts of hidden traps.

- The system of laws and justice is strange and whimsical, making it difficult to get a fair shake from a Mexican court in a contract dispute.
- Corporate governance is far from open and minority shareholders seldom get much consideration.

Corruption thus adds to costs and risks for U.S. exporters of dairy products to Mexico. Drennan, a Senior FAS-USDA Agricultural Attaché stationed in Mexico, characterized corruption as a tax that large firms are most able to pay [11]. Such comments and characterizations, of course, should not be interpreted as a blanket indictment of all buyers of dairy products in Mexico. U.S. firms in many cases sell to established multinationals in Mexico. While competition for these sales is brisk, such sales typically present few problems with accounts receivable for U.S. dairy exporters. It is beyond the scope of this study to suggest how corruption might be reduced. However, it appears that it will be persistent problem that will require more attention from Mexico's government if it is to be reduced.

III. Implications of Parts I and II for Dairy Exporting and Foreign Direct Investment Opportunities for U.S. Firms in Mexico's Dairy Industry

Important implications of Part I and II for U.S. dairy exporters and U.S. investors in Mexico's dairy-food industry will be presented in part using findings generated for the three hypotheses relating to demand, self-sufficiency, and competition facing U.S. firms in Mexico.

Demand

Demand for U.S. dairy products in Mexico will be sensitive to macroeconomic conditions, poverty levels in the country, and market shares already held by U.S. dairy exporters.

- Mexico's cheese imports will probably continue to vary with economic conditions, much as they did in the mid-1990s when Mexico's recession sharply curtailed cheese exports. Similarly, Mexican cheese imports will likely expand when economic conditions improve. How much of those exports will be supplied by U.S. dairy exporters is unclear. European and New Zealand firms will compete strongly for the sales. The additional emphasis USDEC has placed on expanding U.S. cheese exports to Mexico should help U.S. dairy exporters.
- The NAFTA benefited Mexico’s northern states most—these states capitalized on exporting opportunities to the U.S. These states and the Mexico City area represent regions with the highest consumer incomes in Mexico. The Gould-Kim study indicates that such areas will represent the best opportunities for U.S. fluid milk exports.
- While rural development initiatives and growth of Mexico's economy will reduce poverty in Mexico, the reduction in poverty will be gradual. This means that NFDM imports for reconstitution will continue to be large. The U.S. is well-positioned to supply a large share of those imports. Margins on those exports are likely to be thin.
- U.S. exporters' shares of Mexican imports of fluid milk, yogurt, whey and lactose are already large—over 85% for all four products. Substantial expansion of U.S. exports of these products to Mexico will require expansion of the Mexican market via income growth, population growth, and development of new, demand-expanding uses of the products in Mexico. These sources of expansion are likely to be gradual. This situation will place a premium on strategies to expand U.S. cheese exports to Mexico—cheese being a product for which U.S. market shares are low.
- While Mexico will remain an attractive market for U.S. dairy exports, the maturing of the market and successes already achieved there by U.S. exporters will place a premium on seeking out additional attractive foreign markets for dairy exports.

Self-Sufficiency

While Mexico has made progress toward achieving greater self-sufficiency in milk production, there is little evidence that the country will soon achieve self-sufficiency goals.

- Garcia, an analyst who follows milk production and milk use trends in Mexico, remarked that the country's producers already produce enough milk to satisfy most of the commercial demand emanating from high income Mexican consumers [18]. This is a reasonably accurate assessment. However, it has few implications regarding Mexico's demand for dairy imports and opportunities for foreign direct investment in Mexico's dairy-food businesses since there will be no opportunity for Mexico's domestic firms to capture all the commercial sales of dairy products to high-income consumers.
- Mexico's efforts toward achieving self-sufficiency in milk production are hampered by the low production per cow recorded by the still large number of semi-confined (pastoral) and dual-purpose herds in Mexico. Reflecting the low production of these herds, milk production per cow for the country as a whole is a small fraction (less than 20%) of that for the U.S. While some dairy herds in Durango and Mexico's northern states achieve production levels similar to those obtained by California and Arizona herds, these herds are in the minority. Moreover, limits faced by these dairy farmers on the number of deep wells that can be dug and the high cost of pumping water from the deep wells will constrain milk production in Durango and the northern Mexican states.
- Given current milk production and dairy product consumption trends in Mexico, there appears to be little chance that domestic production will satisfy domestic consumption requirements any time soon. Several estimates suggest that milk production in Mexico will equal 75% (± 5%) of domestic consumption for the next several years.
- Mexico has increased self-sufficiency levels on milk powder, moving from about 10% of self-sufficiency on the product to 53% self-sufficiency from 1994 to 2000.

Competition

Competition remains exceedingly strong for the opportunity to serve Mexican dairy-food markets.

- Domestic firms have emerged as strong competitors in Mexico's domestic market. Alpura and Lala, two relatively large cooperatives, have emerged as strong competitors for U.S. and other foreign firms in Mexico's dairy markets. Boreal represents an exception. This now privatized firm, which was once a government cooperative, is bankrupt or near bankruptcy.
- Nestle, Danone, Unilever, and Fonterra (successor to New Zealand Dairy Board) remain strong competitors as foreign direct investors or exporters of dairy products to Mexico. Parmalat has plans to expand sales in Mexico's dairy industry. It is unclear whether Parmalat can realize its expansion plans.
- Several firms, including Nestle, Alpura, and Lala, appear strongly positioned to operate effectively in an environment where the tariff on milk powder imports from the U.S. goes to zero in 2008.

Adjustments Made by Mexican Firms to Discourage Dairy Imports

Mexican firms have attempted to discourage imports of fluid milk by securing enforcement of government regulations that require local stores in the Mexicali/Tijuana area to sell all locally-produced milk first. In addition, efforts were made to obtain government support for measures to limit imports of dairy blends, require products made with nontraditional dairy products or partly with nondairy ingredients to be labeled as "milk-type beverages." To date such measures appear to have had little deterrent effect on dairy imports. Mexican firms will likely increase their efforts to secure government support to limit U.S. dairy imports when the tariff on milk powder imports from the U.S. begins to approach zero.

Pricing strategy probably will assume more importance as a deterrent to U.S. dairy exports to Mexico. U.S. dairy products sold in Mexico City food markets carried price premiums of 5% to

60% over roughly comparable dairy products of Mexican origin. Price premiums near the upper end of this premium range are not likely to be sustainable if, as seems likely, the quality of Mexican dairy products continues to improve.

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