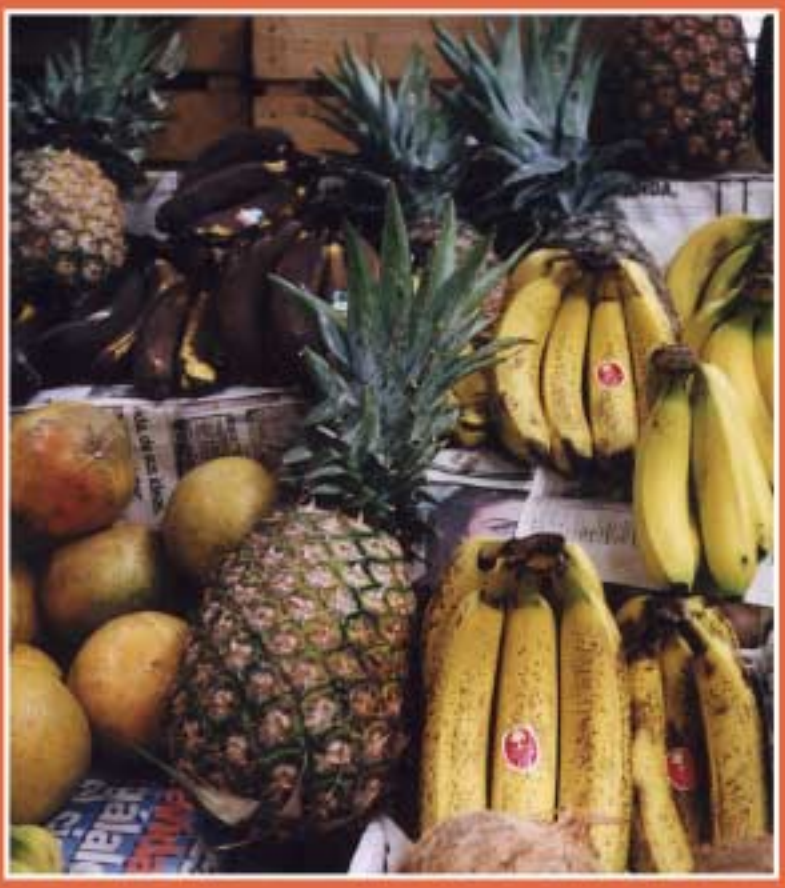

Mexico's Changing Marketing System for Fresh Produce: Emerging Markets, Practices, Trends, and Issues

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Mexico's Changing Marketing System for Fresh Produce: Emerging Markets, Practices, Trends, and Issues

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Foreword

Changes in marketing practices and the structure of marketing channels have been taking place in Mexico since the mid-1980s when Mexico began to open its economy. These changes have accelerated since 1994 when the North American Free Trade Agreement was implemented. One of the key market sectors affected by the expansion of trade and foreign investment in Mexico in recent years has been the fresh produce sector, where the rapid expansion of national and international supermarket chains has forced significant change in traditional distribution practices. Nonetheless, the adoption of modern handling and transportation practices for perishable fruits and vegetables in Mexico continues to be inhibited by the absence of well-defined quality standards, poor supply chain management, and inadequate physical infrastructure. This report looks in detail at the supply side and demand side changes that have taken place in Mexico's fresh produce distribution system in recent years, the challenges that continue to undermine efficient distribution of fresh fruits and vegetables, and the implications of these changes and challenges for U.S. fresh produce growers and shippers.

Acknowledgments

The authors wish to thank the Agricultural Marketing Service, the Economic Research Service, and Texas A&M University for their willingness to undertake this study and to the Foreign Agricultural Services's Emerging Markets Office for funding the study. Special thanks goes to the Foreign Agricultural Services's Office of Agricultural Affairs in Mexico City and Monterrey and Mexico's *Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca, y Alimentación* (SAGARPA) for helping arrange contacts, appointments, travel, and information and data on the project. And a very special thanks also goes to the many government officials, farmers, food merchants, and retail store managers who generously shared their information, data, insight, and general knowledge of Mexican markets with us. Without their cooperation, this project could never have taken place.

The authors also wish to recognize the valuable contributions of Bill Kost of the Economic Research Service, who provided many useful editorial suggestions and helped improve the quality of this report, and to thank Juanita Butler of the Economic Research Service's Information Services Division for her assistance with word processing.

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Mexico's Changing Marketing System for Fresh Produce: Emerging Markets, Practices, Trends, and Issues

Executive Summary

Mexico began liberalizing its economy in the mid-1980s. It joined the General Agreement on Tariffs and Trade, gradually deregulated domestic commerce, and privatized many state-owned enterprises. While the July 2000 election brought a major change in political leadership, the new administration has advanced the economic reform agenda initiated by the previous administration. The 1994 North American Free Trade Agreement (NAFTA) eliminated tariffs on most agricultural products. Tariffs for sensitive agricultural commodities will gradually reduce to zero by 2008. NAFTA also encouraged the reform of Mexico's complex system of import licensing and addressed issues of investment, intellectual property, sanitary and phytosanitary regulations, transportation, environmental conservation, and labor law.

These events mark an acceleration of North American economic integration, which is stimulating structural changes in Mexico and provides the basis for expanded trade and rapid economic growth. Integration is transforming all levels of the Mexican economy, including the agriculture and food distribution sectors.

Following Mexico's rapid recovery from the 1994 peso devaluation, the increase in trade fostered by NAFTA and the prospects of further economic integration with its northern neighbors have boosted confidence in Mexico's long-term economic stability and growth. This has boosted foreign and domestic investment.

The flow of direct investment in Mexico has accelerated in recent years in all sectors, including food distribution and retailing. In many cases, investment is the vehicle for technology transfer and organizational innovation. These innovations induce and promote change in the traditional structures of production and marketing.

More open markets, rising per capita incomes, urbanization, and foreign and domestic investment are transforming the Mexican fresh fruit and vegetable marketing system. Traditional marketing channels are adapting to new forces and new entrants. Participants face new challenges and opportunities.

The liberalization of the past decade encouraged U.S.- and European-based retail store chains—Wal-Mart, Price Club, HEB, Auchan, Carrefour, among others—to establish and expand operations in Mexico, often in partnership with existing Mexican supermarket chains. These new entrants bring with them management and marketing practices developed in their home market and in other foreign markets. This extensive experience includes modern technologies and know-how regarding supply chain management, procurement arrangements, stock optimization, quality standard control, cold storage maintenance, product handling, shelf life preservation, and consumer services.

Mexican consumers have enthusiastically received the unprecedented services and quality provided by the newly arriving stores, allowing them a very successful introduction. The competition has forced local stores to enhance their services and efficiency, generating a chain reaction of improved service and rationalization of food retailing. The success of the supermarket/convenience chain store format has generated a remarkable expansion of retail outlets and selling areas in Mexico. Traditional supermarket chains that used to target only high-income urban households broadened their market horizon to include medium- and low-income neighborhoods and expansion into smaller towns in the late 1990s.

These developments are changing the way perishable items reach consumers in Mexico. Small, specialized shops and stalls—corner stores, public markets, and street stalls—that procure produce from government-built central wholesale markets still account for

a big portion of total produce purchases. But things are changing rapidly, especially in the northern Mexican states. The supermarket chain format embodies economies of scale, improved quality standards, cold chain management, and centralized inventory optimization. Supermarkets also attempt to purchase produce directly from producing regions, bypassing, and thus threatening, the dominant role of traditional wholesale markets.

The major challenges facing Mexico's fresh produce distribution system brought on by the rapid expansion of the supermarket format include:

- The lack of a common marketing nomenclature and clearly enforceable quality standards;
- Insufficient cold storage availability and unreliable cold transportation management;
- Inadequacy of some rural roads;
- Limited services and assembly capacity for produce in rural areas; and
- Poor development of grower marketing associations.

Free trade and market integration with the United States and Canada are expected to stimulate strong economic growth in Mexico in the medium and long term. Because Mexico is integrating from a lower income level than the United States or Canada, its national income is expected to grow faster. For example, the Food and Agricultural Policy Research Institute (FAPRI) estimates that Mexico's Gross Domestic Product (GDP) growth will be almost twice as rapid as that of Canada and the United States in the next decade. It is also expected to outperform the rest of Latin America. This growth also implies an increased share of GDP by the manufacturing and services industries and a decline in the share contributed by primary sectors (agriculture, mining, and oil). The types of new jobs generated will reinforce the existing trends toward further industrialization and urbanization of the country. The main avenues through which this income growth would influence the Mexican produce consumption and distribution systems are:

- Higher per capita incomes will shift the Mexican diet to favor more fruits, vegetables, and meat over traditional food staples;
- Higher average incomes will also translate into better equipped households (refrigeration, microwaves) and increased access to automobiles;
- Women will increase their participation in the workforce; and
- More urban and industrial jobs will translate into less time for food shopping.

Expenditure elasticities for traditional food items like tortillas and beans are very low (increases in per capita income will not translate into more consumption of these items) but expenditure elasticities for fruits and vegetables are high. This means that the higher per capita income expected in the long term will certainly translate into increased purchases of produce and meat products, which, due to their perishable nature, require different handling and distribution methods.

The availability of home refrigeration and family-owned automobiles played a critical role in the development of the U.S. food retail chain store system. Not all Mexican households have refrigerators, and the rate of automobile ownership is one car for eleven people (compared to one car for every two people in the United States). However, rapid growth in per capita income will allow growing numbers of Mexicans to afford refrigerators and automobiles, which, in turn, may change their food purchasing habits.

The modernization of the Mexican economy and improved educational levels are creating growing job opportunities for women. In recent years, the number of women in the labor force has expanded considerably, and the trend will continue or accelerate with Mexico's economic growth. The number of two-income households is expected to keep increasing as well.

More manufacturing and service jobs, increased urbanization, rising incomes, and higher levels of women's labor force participation lead to a "scarcity of time" and a growing demand for convenience in food shopping. The Food Marketing Institute reports that the average number of trips per week to purchase groceries in Mexico has declined sharply from 11.5 in 1995 to 7.5 in 1998. Still high by U.S. standards (2.2 trips per week), this trend will surely continue with the long-term demographic and income changes that economic growth will bring about in Mexico.

Finally, good roads and modern infrastructure, critical elements in the development of a modern and efficient food distribution system, are slowly emerging in Mexico and are sure to improve with the country's development.

A modern food distribution system in Mexico, an expansion of the retail chain format, and the increase in quantity, quality, and mix of the Mexican demand for fresh produce will generate increasing opportuni-

ties for all potential suppliers. The U.S. exporter's special advantage in this context is probably related to the following factors:

- The United States has a geographical advantage with respect to Mexico, compared with some potential competitors such as Chile and Argentina.
- The United States has a free trade agreement with Mexico that will eventually remove all remaining border barriers to produce trade. Border crossings between the United States and Mexico can be expected to become more fluid and less costly as transportation, logistical, and legal barriers to trade are reduced and finally eliminated.
- Except for a few well-organized, export-oriented growers, few producers in Mexico currently have the capability (whether individually or as part of a collective marketing organization) to *directly* supply large volumes of well-sorted, market-ready fresh produce supplies to the domestic Mexican supermarket industry. Meanwhile, supermarket chains in Mexico are increasingly attempting to streamline procurement by receiving produce deliveries at their own regional distribution centers, rather than depending entirely on deliveries of produce from local wholesalers. Consequently, to the extent that U.S. exporters have the organizational and operational capability of supplying large volumes of market-ready produce items directly to Mexican supermarket chain distribution centers, U.S. exporters may have a logistical advantage over many Mexican produce growers.
- Some of the long-term procurement relationships that multinational supermarket chains have already established with U.S. suppliers may carry over into their Mexican-based operations, enabling the Mexican chain affiliates to obtain high-quality produce supplies from U.S. sources at a less expensive price than would be possible otherwise, and to enjoy the same level of quality and reliability as chain affiliates in other locations.

CHAPTER 1: The Economic Landscape

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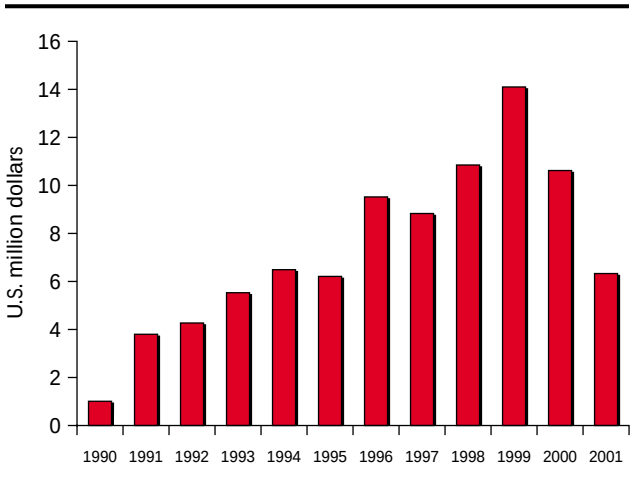
Introduction

The United States is the leading external supplier of tomatoes, onions, avocados, lettuce, oranges, and potatoes to Mexico (figure 1.1). Mexico is normally considered a source of these products, not a destination. However, Mexico is an expanding market for fresh fruit and vegetables. While Mexico will supply much of the growing demand itself, it will not supply all of it and certainly not all products. Given its location, the United States is the natural supplier. California and Texas are closer to Mexico City than to Chicago or New York. And northern Mexico, where demand is growing the most, is even closer. Shipping produce from the United States to Mexico should be no more remarkable than shipping produce among States. Indeed, as the two economies have become more closely integrated, channels of distribution have expanded, and barriers to free exchange are being removed.

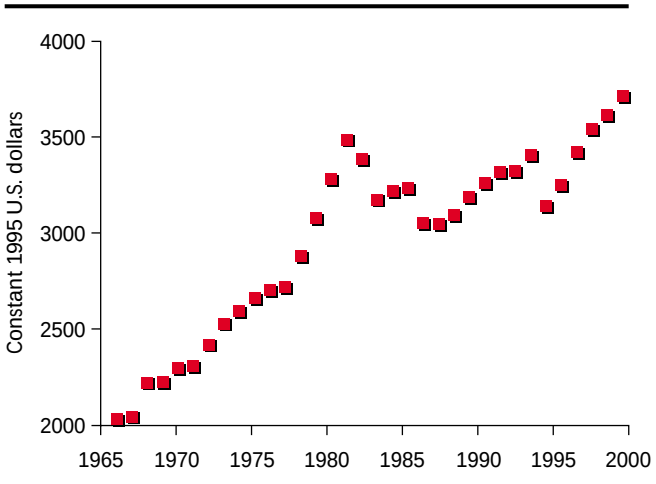
This report examines the development of Mexico's produce distribution system. The introductory chapter places the developments discussed in chapter 2 in a longer term and comparative context. There are three main themes:

1. As family incomes increase and as families move from the farm to the city, their spending patterns and diets change.
2. Supermarkets change what and how families buy. Moreover, they change the way producers and shippers handle produce. The expansion of supermarkets in Mexico only began in the 1980s. The changes that took place over the course of 50 years in the United States are happening in Mexico in less than 20 years.
3. Economic policies influence produce marketing. Mexico embarked on a major liberalization of its domestic economy in the 1980s. In the 1990s, Mexico joined the United States and Canada in the North American Free Trade Agreement (NAFTA), setting the foundation for an increasingly integrated North American economy.



Source: Foreign Agricultural Trade of the United States, USDA Economic Research Service, various issues.

Figure 1.1—*U.S. exports of fresh potatoes to Mexico, 1990-2001*



Source: World Development Indicators 2002, International Bank for Reconstruction and Development.

Figure 1.2—*Mexico, per capita Gross Domestic Product, 1965-2000*

Growth Fundamentals

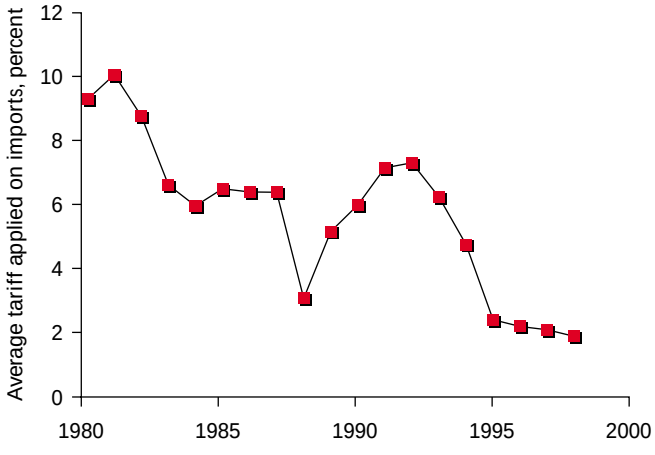
Economic growth is primarily behind the growing demand for produce in Mexico. Mexico has weathered two major economic crises in the last quarter century (figure 1.2). As a major petroleum exporter, Mexico benefited from oil price increases in 1973 and 1979 and borrowed heavily based on expected future oil earnings. When oil prices declined and interest rates increased, Mexico was unable to meet its debt repayments, and in 1982, it defaulted on its external debt. The economy entered a deep recession. To revive the economy, Mexico unilaterally liberalized its foreign trade regime and substantially reduced tariffs on most products in 1987 (figure 1.3). In addition, it began to privatize many state-owned corporations and deregulate many industries. The economy recovered rapidly, and growth was strong through 1994.

But when economic conditions deteriorated again, Mexico was forced to devalue the peso in December 1994 to avoid a more severe crisis. The Mexican economy fell into another recession, but it was relatively short-lived, and the economy rebounded by 1997. The peso crisis, as this episode has come to be known, provided an awkward beginning for NAFTA, the free trade agreement among Canada, Mexico, and the United States. NAFTA helped solidify the reforms of the 1980s and led to new reductions in trade barriers. But the peso crisis, which increased the cost of imports in peso terms, sharply reduced Mexican import volumes and increased its exports. If one looks only at imports, NAFTA appears to have reduced trade rather than increased it. But if one looks at merchandise trade as a proportion of the Mexican economy, NAFTA has had a large positive impact (figure 1.4).

Mexico's economic growth can be divided into two factors: population growth and income growth. Mexico's population will soon exceed 100 million, but the rapid rate of increase of the middle of the past century has gradually moderated, falling from an annual rate of over 3 percent to about 1.5 percent today. The Mexican economy has rapidly industrialized since 1968. The population is more urban and more highly educated, household size is smaller, and incomes on average are considerably higher.

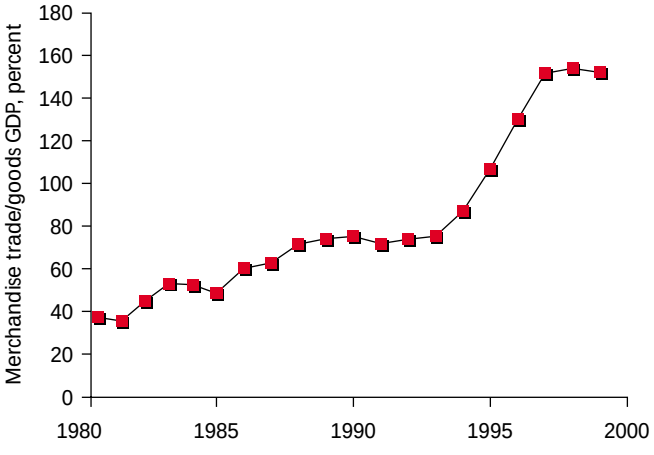
Income, Diet, and Food Spending

The development and future of produce marketing in Mexico reflects the long-term changes in Mexican diets and in produce distribution. There are a few universal laws governing household expenditures. One is that, as household income increases, the share of income spent on food declines. Once essential food requirements are purchased, households use the remaining funds for other things, such as education, better housing, transportation, entertainment, or savings and investment. But spending within the food budget also changes as income increases. Results



Source: World Development Indicators 2002, International Bank for Reconstruction and Development.

Figure 1.3—*Liberalization of Mexican import tariffs, 1980-1998*



Source: World Development Indicators 2002, International Bank for Reconstruction and Development.

Figure 1.4—*Merchandise trade as percentage of Mexican gross domestic product, 1980-1999*

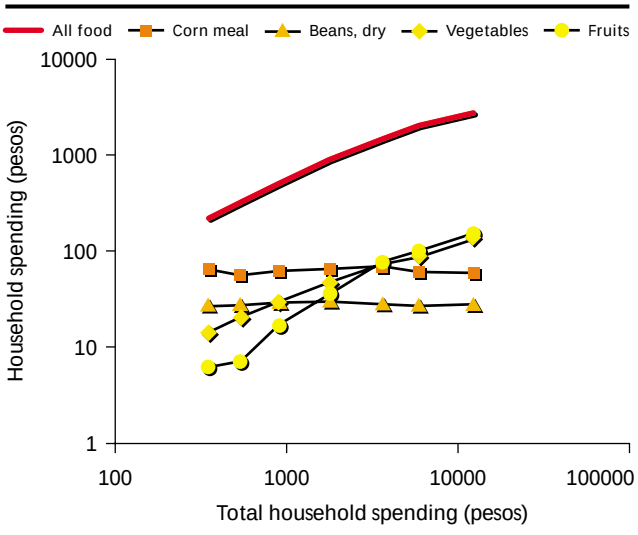
from several surveys of Mexican household food expenditures allow a comparison of a cross-section of households. For example, figure 1.5 shows how food spending patterns varied with household income in 1968. This snapshot is now over 30 years old, but it reveals how Mexican household food spending could be transformed in the next 30 years.

The most striking feature of the graph is that all lines slope upward except the two that represent expenditures on beans and on corn and corn products. Corn and beans are staples of the Mexican diet. The lowest income households spent 64 percent of their disposable income on food. Of their food spending, corn accounted for 29 percent and beans for 12 percent. Upper-income households had 17 times as much disposable income but spent virtually the same amount of money for corn and beans as the lowest income households. But corn accounted for 3 percent of the upper-income food budget and beans for 1 percent.

The other side of the corn and beans story is that, as household income increases, more money is spent to diversify the diet. Wheat and rice products supplement the calories provided by corn, meats and dairy products supplement the proteins provided by beans, and fresh fruits and vegetables round out the diet.

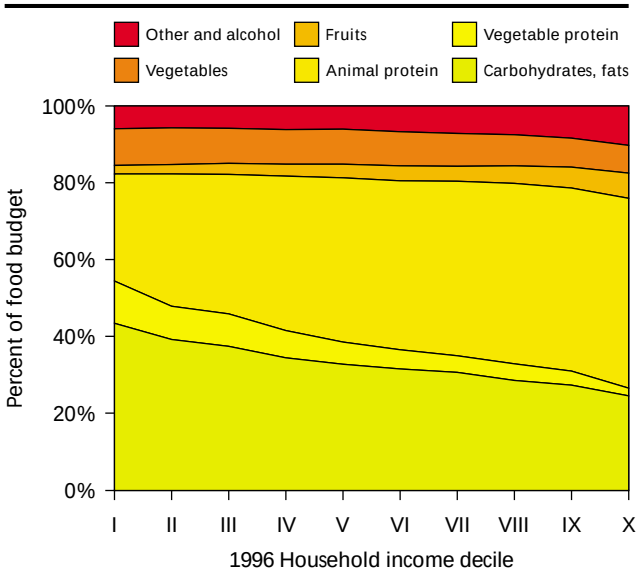
The Mexican Statistical Institute (INEGI) conducts a survey of household income and expenditures every 4 years. The most recent detailed data available are for the last 4 months of 1996. Households are grouped according to their "monetary income"; that is, income from wages and salary but not from interest, dividends, capital gains, or in-kind transfers. There are 10 income groups or deciles; each decile has 2.047 million households. The average household income per decile ranges from 2,050 pesos (about $260) for the bottom decile [decile 1] to 44,465 pesos (about $560) for the highest decile. Figure 1.6 shows the composition of household expenditures on food and beverages for home consumption by income decile. The lowest income decile spends over half of its food budget on carbohydrates, vegetable oils, and vegetable proteins (beans). This is the traditional corn and beans diet. As incomes increase, the share of food spending on these products declines. The sharp decline in vegetable proteins is balanced by the large increase in animal proteins, including milk, eggs, and dairy products. The share spent on fruits increases with household income, while the share for vegetables increases and then declines.

Figure 1.7 focuses on how household income influences spending on fruits and vegetables. It graphs spending on vegetables and fruit by income decile against household income. The graph uses logarithmic scales. It plots equal percentage changes equally; that is, the distance between 200 and 400 is the same as the distance between 100 and 200. The slopes of these lines show the rate of change in



Source: Encuesta National de Ingresos y Gastos de los Hogares, *Instituto Nacional de Estadistica, Geografia e Informatica,* Aguascalientes, México.

Figure 1.5—*Mexican household food spending, 1968*



Source: Encuesta National de Ingresos y Gastos de los Hogares, *Instituto Nacional de Estadistica, Geografia e Informatica,* Aguascalientes, México.

Figure 1.6—*Allocation of food budget for home consumption by income decile, Mexico, 1996*

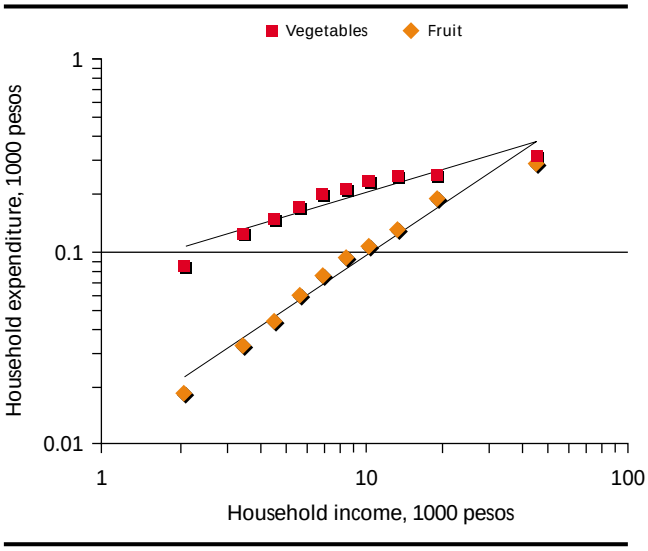


Figure 1.7—*Elasticity of Mexican produce expenditures by income, 1996*

expenditures. Although more money is spent on vegetables than on fruit at all income levels, the percentage change in fruit spending is greater than the percentage change in vegetable spending.

In addition to the observed expenditure values from the INEGI survey, the figure also plots lines statistically fitted to the observed values. The slopes of these lines can be used to measure the sensitivity of expenditures to income changes. For total fruit expenditures, the slope is 0.93; for total vegetable expenditures, the slope is 0.42. This means that if household income increases 1 percent, total fruit expenditures will increase by about 0.93 percent and vegetable expenditures by about 0.42 percent. Thus, spending on fruit is more than twice as sensitive as spending on vegetables to changes in household income.

Table 1.1 shows the estimated elasticity and the level of expenditures for decile 4 and decile 7, households with incomes ranking between 30 and 40 percent and between 60 and 70 percent in the distribution of household incomes.

Within each commodity group, individual commodities are listed in descending order of expenditure elasticity. There are large differences. Among vegetables, lettuce has the highest elasticity, followed by carrots. There are three categories of chiles listed. Serrano and jalapeno chiles (the traditional ingredients in many basic recipes) have zero elasticity, meaning that households of all incomes spend about the same amount on them. In contrast, poblano chiles have an elasticity of 0.71, and the category "other chiles: arbol, habanero, etc." has an elasticity of 0.46. The zero elasticity for serranos and jalapenos parallels that for dried beans and corn meal. The higher elasticities for the other chiles reflect the diversification of Mexican diets as household income increases. The steady increase in the shares for avocados, carrots, squash, and the "other" category also reflects this diversification.

In the fruit category, papaya is the most elastic, followed by "other: apple, pear, mango, mamey," and oranges. Each has an elasticity greater than 1.00. This is significant for potential exporters to Mexico. Mexico is a major producer and exporter of papayas and mangos, but it relies increasingly on imports to meet the growing demand for apples, pears, and other Temperate Zone fruits.

Note on Expenditure Elasticities. The expenditure elasticities are provided as simple indicators. The coefficients reported in table 1.1 are the slope parameters, β, estimated from the equation: $\ln(x_i) = \alpha + \beta \ln(y_i)$, where $\ln(x_i)$ is the natural logarithm of the average expenditure on commodity x by households in i^{th} decile and $\ln(y_i)$ is the natural logarithm of the average monetary income of households in ith decile. The two estimated parameters, α and β, define the line representing the estimated relationship between income and expenditures. Except for the few cases marked with asterisks, the estimated equation explained over 90 percent of the variation in expenditures and the β coefficient was positive and significantly different from zero at the $p < 0.005$ level of significance using a one-tailed t-test. Those few cases that were not significant were commodities with very low expenditure elasticities: dried beans, serrano and jalapeño peppers, corn tortillas, sugar, and honey.

This is a very simple relationship and ignores many other variables that can determine household expenditures. Among these variables is the number of individuals in a household, the age composition of households, the proportion of households living in rural or urban areas, and the nonmonetary income of households. The estimates do capture the relative sensitivity of expenditures on selected commodities with respect to income and are certainly accurate for the purposes of this chapter. Detailed forecasts of future expenditures in Mexico should be made from more detailed and less aggregated estimates based on the rich INEGI survey database.

Supermarkets Transforming Produce Marketing

The Mexican food distribution system is undergoing major structural change. Small, specialized shops and stalls account for the bulk of consumer food and produce purchases, but supermarket chains are rapidly gaining market share. These developments are changing the way that food makes it way from the farm to the Mexican consumer. Mexican firms are constructing state-of-the-art supermarket chains that

Table 1.1—*Elasticity of produce expenditures by commodity, 1996*

		Household income group	
	Expenditure elasticity	30-40% ($5,600.79)	60-70% ($10,291)
All fresh fruits and vegetables	0.40	$40.82	$46.94
Tubers	0.40	$40.82	$46.94
Other tubers: camote, yuca, etc.	0.46	0.54	$0.60
Potatoes	0.35	37.64	$43.69
Fresh vegetables	0.42	$158.43	$213.39
Lettuce	1.16	2.28	5.91
Carrots	0.93	4.04	7.79
Other vegetables: nopal peas, spinach, etc.	0.80	$13.86	$20.78
Chayote	0.77	2.38	4.77
Poblano chiles	0.71	3.79	8.75
Avocado	0.66	9.30	12.65
Squash	0.64	7.72	9.97
Vegetables: mixed and bagged	0.62	3.98	4.75
Cilantro	0.58	0.86	1.23
Garlic	0.50	0.97	1.57
Other chiles: arbol habanero, etc.	0.46	3.71	6.55
Green tomatoes	0.42	10.31	14.08
Corn (sweet, on cob)	0.42	4.04	4.92
Onion	0.40	21.02	29.67
Cabbage	0.34	1.54	1.98
Red tomatoes	0.22	51.63	62.76
Serrano and jalapeno chiles*	0.02	16.98	15.25
Legumes (total)*	-0.04	$134.07	$119.98
Frijoles (dry beans)*	-0.09	121.90	110.78
Fresh fruit	0.93	$58.32	$104.42
Papaya	1.49	2.16	5.76
Other: apple, pear, mango, mamey, etc.	1.11	21.00	46.30
Oranges	1.03	5.72	7.91
Limes, grapefruit, tangerines	0.89	1.72	3.43
Lemons	0.85	6.08	11.02
Guava	0.82	3.85	5.41
Plantains, other bananas	0.61	2.69	4.29
Bananas	0.55	15.10	20.31
Processed fruits	1.31	$0.35	$1.02

* Elasticity is not significantly different from zero.

challenge the capacity of the country's distribution network. This is particularly so for perishable products such as produce, meats, and other products that require refrigeration as they move through the marketing chain. Truck fleets, wholesale markets, processors, packers and shippers, and farmers are all trying to adapt to new demands.

Supermarkets have existed in Mexico for decades, but until the 1980s, they were few in number and catered principally to upper-income households and expatriates. The recent expansion of the Mexican supermarket sector has extended the customer base to lower income households. Table 1.2 illustrates that the likelihood of shopping regularly at a supermarket increases with income and education. The propensity to patronize supermarkets also varies by region and city. Supermarkets are the dominant venue along the U.S. border and in northern cities such as Monterrey, but in the poorer southern states and in most rural areas, supermarkets are still rare.

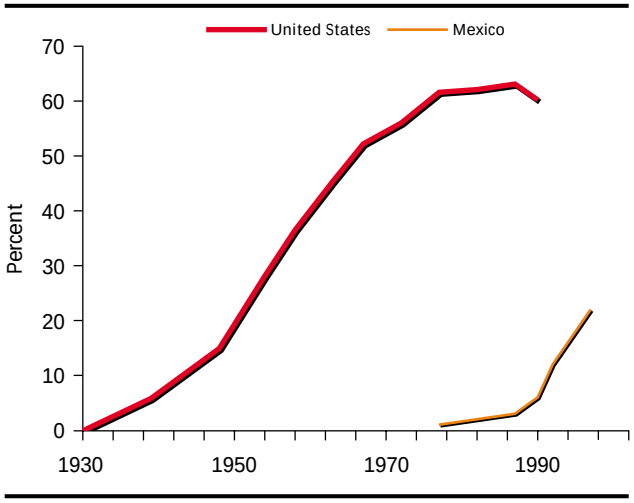
Changes in consumer behavior and the growth of supermarkets are forcing changes in the produce supply chain. The Mexican supply chain is following the path charted by the United States, Canada, and Western Europe, but it is evolving at a much faster pace (figure 1.8). The development of supermarket chains in the United States and Europe in the 1950s and 1960s was spurred in part by infrastructure development (figure 1.9). The U.S. interstate highway system and the growth of refrigerated truck transportation freed suppliers from dependence on railroads and allowed deliveries to facilities outside central market districts. This enabled chain stores to build their own distribution centers and to accommodate a high volume of direct shipments from producers under central inventory control.

In the United States and Europe, supermarkets gained retail market share by contracting with cooperatives, growers' sales agents, or brokers to deliver products from production areas directly to the supermarkets' private distribution centers. Money is saved and margins enhanced by internalizing wholesale services within the firm. As direct procurement by

Table 1.2—*Mexican produce shopping patterns, 1996*

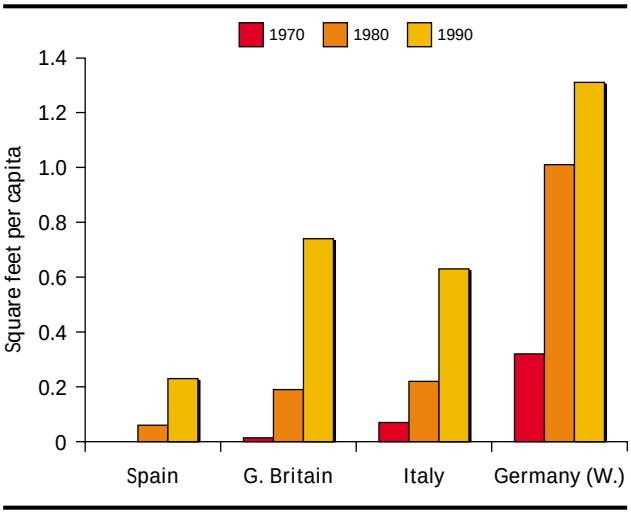
	Primary store type		
Shopper characteristic	Self-service supermarket	Corner store (percent)	Other markets
Income			
$2,000 or less	47	14	39
$2,000 to 4,000	76	13	12
$4,000 or more	82	4	12
Education			
Primary	42	16	42
Secondary	53	22	25
Post-secondary	67	10	23
College or more	90	4	4
All	59	13	27

Source: Trends in Mexico: Consumer Attitudes and the Supermarket, 1996, Food Marketing Institute, Washington, DC, 1996.



Source: Manchester, Alden C. "Rearranging the Economic Landscape: The Food Marketing Revolution, 1950-91," Agricultural Economic Report No. 660, USDA Economic Research Service, 1992.

Figure 1.8—*Supermarket share of food sales for home use, United States and Mexico*



Source: Manchester, Alden C. "Rearranging the Economic Landscape: The Food Marketing Revolution, 1950-91," Agricultural Economic Report No. 660, USDA Economic Research Service, 1992.

Figure 1.9—*European supermarket growth, 1970-1990*

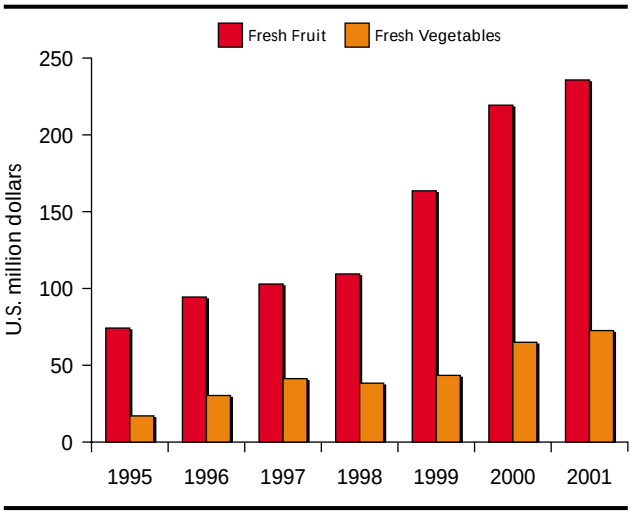
chains expands, the share of fresh product flowing through central wholesale markets contracts.

The supermarket boom in Mexico and the demands that it places on the Mexican food marketing system pose new challenges for farmers, policy makers, and analysts. As the supply chains of North America become more closely integrated, it is anticipated that more strategic alliances will form among U.S., Canadian, and Mexican firms, including a fully integrated truck and rail network; harmonization of product standards, contracts, and dispute resolution; and greater complementary trade.

The direct effect of NAFTA was to reduce tariffs and other government-imposed barriers to trade. An indirect effect is, by increasing the volume of trade, to spur institutional innovations that reduce natural barriers to trade, such as transportation costs and other transaction costs. As volumes increase and procedures harmonize, transactions become more predictable and less costly. The result is a "virtuous cycle" of innovation and integration.

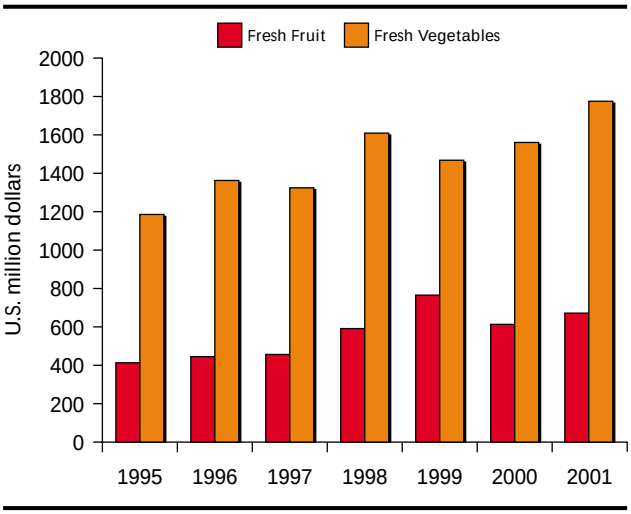
Produce Trade Profile

While Mexico is a large and growing market for fresh produce, it will remain a major produce exporter. It has a wealth of productive land in both tropical and temperate climates. It is the world's leading producer and exporter of mangos and an important exporter of bananas, tomatoes, avocados, and many other produce items. Mexico exports far more produce to the United States than the United States ships to Mexico. Figures 1.10 and 1.11 show that produce trade grew steadily during 1995-1999, both northbound and southbound. The scale on the Mexican export graph is nearly 10 times that of the U.S. export graph. In 2001, Mexican produce shipments to the United States totaled about $2.5 billion, and U.S. produce shipments to Mexico totaled about $300 million. Besides relative magnitude, the graphs reveal other contrasts. Vegetables account for most of



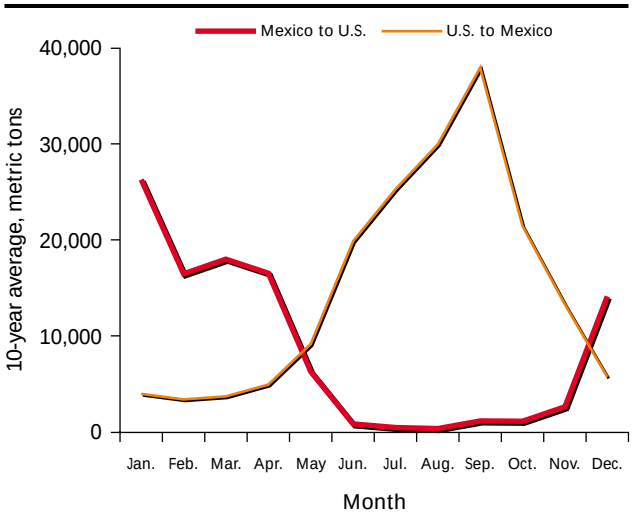
Source: Foreign Agricultural Trade of the United States, USDA Economic Research Service, various issues.

Figure 1.10—*U.S. produce exports to Mexico, 1995-2001*



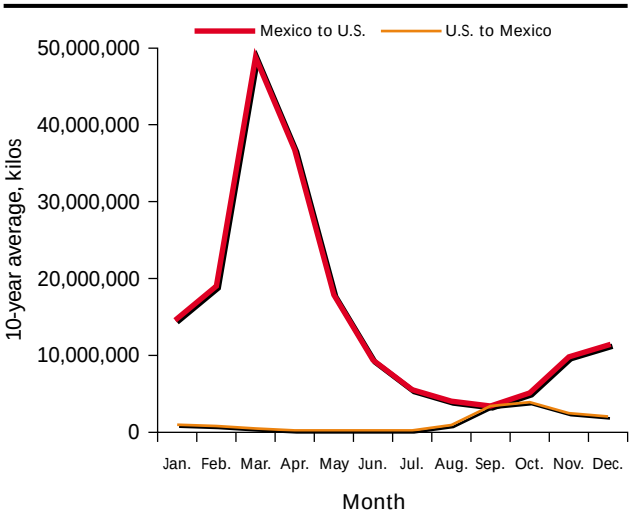
Source: Foreign Agricultural Trade of the United States, USDA Economic Research Service, various issues.

Figure 1.11—*Mexican produce exports to the United States, 1995-2001*



Source: Foreign Agricultural Trade of the United States, USDA Economic Research Service, various issues.

Figure 1.12—*Lettuce shipments between the United States and Mexico, 1990-1999*



Source: Foreign Agricultural Trade of the United States, USDA Economic Research Service, various issues.

Figure 1.13—*Onion shipments between the United States and Mexico, 1990-1999*

Mexico's shipments, while fruit constitutes most of U.S. shipments. And, since 1995, U.S. shipments have been growing much more rapidly than Mexican shipments, albeit from a lower base.

Mexican-U.S. bilateral produce trade is largely complementary. That is, the United States purchases products from Mexico that are not or cannot be produced efficiently in the United States; bananas, for example. Similarly, the United States tends to export produce in which it has a comparative advantage, such as apples and pears. Much of the complementarity stems from differences in growing seasons.

Trade in lettuce, which has the highest expenditure elasticity of all vegetables, is an excellent example of season complementarity (figure 1.12). Mexican lettuce is shipped north during the winter months when it is too cold to grow enough in the United States to meet U.S. domestic demand. Conversely, U.S. lettuce is shipped south during the summer and early fall when it is either too hot or too dry to produce sufficient quantities in Mexico. In most years, the United States shows a trade surplus with Mexico for lettuce. Bilateral onion trade shows a similar seasonal pattern, although Mexican shipments north almost always exceed U.S. shipments south. Mexican shipments peak in the spring, and U.S. shipments peak in the fall (figure 1.13).

Table 1.3 shows the annual value of U.S. produce exports to Mexico for each major category during 1990-99. It also shows the logarithmic change in export sales between 1990-1992 and 1997-99; that is, between the average of the first 3 and last 3 years. Fresh fruit exports doubled between these two periods, while fresh vegetable exports increased 43 percent. These rates of change are consistent with the finding above that the expenditure elasticities for fruit and vegetables are, respectively, 93 and 43 percent. The similarity in values, however, is largely coincidental. Growth in Mexican household consumption does

Table 1.3.—*U.S. fresh produce exports to Mexico by commodity, 1990-1999*

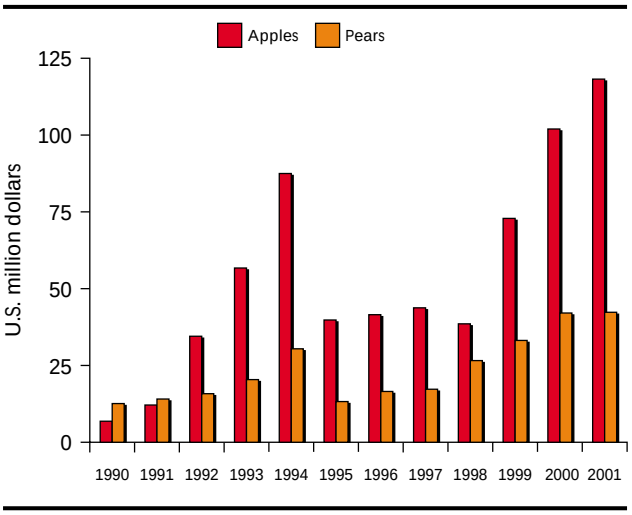
Code	Commodity	Million dollars 1990-92	Million dollars 1997-99	Logarithmic change (%)
800	Fresh fruit	47.2	127.8	100
804	Dates, figs, pineapples, avocado, guava, mango	0.2	0.6	140
805	Citrus	0.7	3.3	157
806	Grape/raisin	3.9	26.4	191
8061	Grapes	2.4	24.1	230
807	Melon/papaya	0.8	0.8	9
808	Apple/pear	32.0	77.4	88
8081	Apples, fresh	17.8	51.7	107
8082	Pears/quinces	14.2	25.7	59
809	Apricot, peach, plum	8.3	13.4	48
8093	Peaches/nectarine	5.4	7.6	33
810	Berries, kiwi, other berries	1.4	5.8	145
8101	Strawberries	0.6	4.7	203
700	Fresh vegetables	28.1	43.3	43
701	Potatoes	3.8	11.9	115
7019	Fresh, not seed	3.0	11.3	131
702	Tomatoes	5.4	7.2	29
703	Onion, garlic	10.2	8.9	-14
704	Cabbage, cauliflower	0.5	2.0	142
705	Lettuce	4.7	8.2	55
706	Carrots, radishes, etc.	0.2	1.2	176
707	Cucumbers, etc.	0.0	0.1	204
708	Fresh peas, legumes	0.9	0.4	-93
709	Other fresh vegetables	2.5	3.5	33

Source: Foreign Agricultural Trade of the United States, USDA Economic Research Service, various issues.

not directly translate into U.S. export growth; changes in Mexican production and competition from other foreign suppliers also determine the volume of trade. This is apparent when export growth is examined in finer detail. For example, U.S. potato exports to Mexico increased about twice as rapidly as lettuce exports, although lettuce is far more expenditure elastic than potatoes.

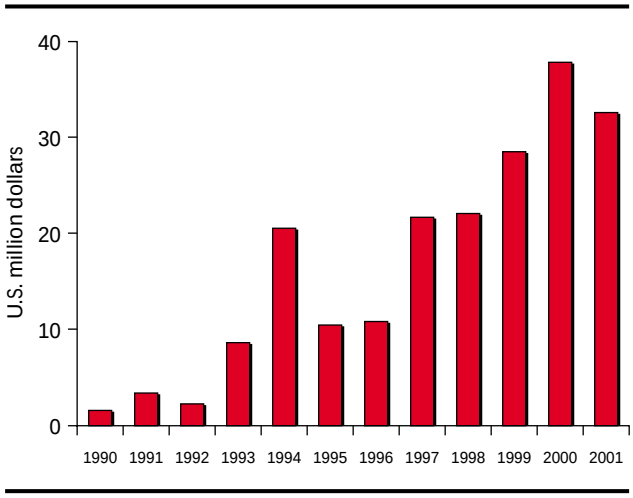
Among the largest valued categories of produce, a single commodity often accounts for most of the trade. Most of these key commodities are included as subcategories in table 1.3. Grapes account for most of the value in the grape/raisin category, apples account for about two-thirds of the apple/pear group, peaches/nectarines account for most of the apricot/peach sales, and strawberries account for most of the sales in the small but rapidly growing berries category (figures 1.14 and 1.15).

There are, of course, preferred varieties of specific fruits. For example, Red and Golden Delicious are the leading varieties of apples imported by Mexico, and d'Anjou pears are preferred to Bartlett pears. Under NAFTA, Canada and the United States face very low



Source: Foreign Agricultural Trade of the United States, USDA Economic Research Service, various issues.

Figure 1.14—*U.S. exports of apples and pears to Mexico, 1990-2001*



Source: Foreign Agricultural Trade of the United States, USDA Economic Research Service, various issues.

Figure 1.15—*U.S. exports of fresh grapes to Mexico, 1990-2001*

and declining tariffs on most produce exported to Mexico. This tariff preference only adds to the location advantage the NAFTA partners enjoy. Chile has tariff preferences under its bilateral agreement with Mexico, but they are not more favorable than the NAFTA preferences.

Summary

As Mexican economic growth continues and Mexican incomes increase, Mexican produce con-

sumption will also increase. Mexico will supply most of its growing demand for produce but not all of it. Innovations in distribution, particularly the growth of supermarkets, are changing the way Mexican households buy produce. Investments in refrigerated transport and storage are changing the kinds and quality of produce consumers can buy. Most of these changes took place in the United States between 1930 and 1965. In Mexico, they only started to happen on a large scale in the 1980s. The changes have been rapid, and there are more to come.

As North American agricultural markets continue to integrate, opportunities for specialization will expand. The United States and Canada are likely to further specialize in Temperate Zone produce and import tropical and winter produce from Mexico. The season complementarity that exists for many products, such as lettuce and onions, will no doubt continue. Consumers in all three countries will expect to find seasonal products year-round.

Although the United States is Mexico's closest and largest trading partner and enjoys many cost and location advantages as a supplier of produce to the Mexican market, there are other competing sources of produce. Chile and New Zealand ship many of the same produce items to Mexico that they export to the United States. Mexico has preferential trade agreements with several Central and South American countries. Guatemala, for example, is an important supplier of berries to both the United States and Mexico.

On the export side, Mexico has recently concluded a trade agreement with the European Union (EU) that allows some scope for increased Mexican exports to the EU. Under this agreement and through the general liberalization of agricultural trade, Mexican agriculture is becoming more integrated into the world trading system. It will specialize in producing and exporting produce in which it has an advantage and will rely increasingly on imports for products in which it is less competitive.

Finally, the process of economic liberalization that Mexico began in the mid-1980s is firmly on track. The election of Vicente Fox in July 2000 signals an endorsement of this process and may accelerate it. Although the Fox election represents a major change in political leadership, it may also be seen as a continuation of the reforms initiated and implemented by Presidents Salinas (1988-1994) and Zedillo (1994-2000).

CHAPTER 2: Preferences and Habits of the Mexican Produce Consumer and Their Impact on the Local Retail Environment

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Diversity of Retail Marketing Channels in Mexico

A narrow majority (57 percent) of Mexican household grocery shoppers currently uses a modern self-service supermarket as its primary store for food purchases. However, traditional market formats—such as enclosed public market facilities, open-air *tianguis* (mobile street markets), specialty stores, and corner grocery stores—still comprise a significant share of consumer food purchases. Also, these traditional markets frequently outstrip the importance of supermarkets in certain product categories, including fresh fruits and vegetables.[1]

In a January 1998 survey conducted by the Washington, DC-based Food Marketing Institute (FMI), only 21 percent of Mexican household shoppers indicated that they usually purchase fresh produce in a supermarket. Forty-seven percent said they usually buy fresh produce at an enclosed "public" market, 11 percent at an open-air market, and 11 percent at either a specialty store (such as an independent greengrocer) or at a corner grocery store.[2] Moreover, the percentage of household shoppers who usually purchase fresh fruits and vegetables at a supermarket slipped in recent years from 26 percent in May 1993 to 21 percent in January 1998 (table 2.1).[3]

The diversity of traditional and modern retail outlets patronized by Mexican grocery shoppers contrasts sharply with the behavior of most U.S. grocery shoppers, who rely much more heavily on self-service supermarkets and mass-merchandise chain stores for household food purchases.[4] This chapter explores some of the reasons why most Mexican household shoppers continue to patronize a broad spectrum of traditional and modern markets for grocery items and how demographic characteristics influence the food retail preferences of various consumer segments.

Table 2.1.—*Store format preferences of Mexican consumers for fresh fruit and vegetables, 1993-1998 (in percent)*

	Covered [public] market	Open-air market	Self-service supermarket	Corner or convenience store	Specialty store
1993	25	38	26	2	9
1995	39	23	20	4	9
1996	41	20	23	2	8
1998	47	11	21	4	7

Source: Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 68. Numbers may not add up to 100 percent because hypermarkets and other formats are not included.

Traditional Markets Still Appeal to Mexican Consumers, Despite Rapid Chain Store Growth. The appeal of traditional retail markets among a sizable percentage of Mexican household shoppers continues to linger even though supermarkets and mass-merchandise chain stores selling food products in Mexico are multiplying at a healthy clip. Representatives of Mexico's chief trade association for retail chain stores, the *Asociación Nacional de Tiendas*

[1] Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 66.
[2] Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 68.
[3] Ibid.
[4] According to statistics cited in the "66th Annual Report of the Grocery Industry," Progressive Grocer, New York, NY, April 1999, p. 10. Self-service supermarkets (including mass-merchandise retail food stores such as hypermarkets and supercenters) overwhelmingly represent the most important retail channel for grocery products in the United States, accounting for approximately 77 percent of U.S. grocery industry sales in 1998.

Autoservicio y Departamentales (ANTAD), noted in December 1998 that the number of chain store outlets for food in Mexico had grown 5 to 8 percent per year since 1992.[5] Nonetheless, the enhanced accessibility of supermarkets and chain stores alone has not been sufficient to lure the average Mexican consumer away from traditional food market formats, especially for purchasing perishable grocery items such as fresh fruits and vegetables.

According to the 1998 FMI survey, the average Mexican consumer continues to strongly prefer public markets over supermarkets for fresh fruits and vegetables and other perishable commodities. The percentage of household shoppers in Mexico who reported that they usually purchase fresh fruits and vegetables at a covered public market grew steadily from 25 percent in May 1993 to 47 percent in January 1998. Fresh chicken and red meat (beef/pork) purchases posted similar gains in market share.[6]

Frequent Food Market Visits Diminish Importance of One-Stop Shopping. One factor that may contribute to the relative attractiveness of public markets for perishable foodstuffs is that the average Mexican grocery shopper visits food markets much more frequently than the average U.S. grocery shopper. Also, the average shopper in Mexico appears to be more comfortable seeking food supplies from a variety of sources, rather than depending on one store to fill all of his or her needs.

The average Mexican household grocery shopper now makes sharply fewer visits to food stores per week than a few years ago. Local market observers attribute this development to improved local employment conditions and the increased entry of Mexican women into the paid workforce. Nonetheless, the average Mexican household grocery shopper currently visits a food market *more than three times as often* as the average U.S. shopper. The average U.S. grocery shopper visits a food store approximately 2.2 times per week, while the average Mexican shopper visits a food store *more than once a day* at 7.5 times per week.[7] Remarkably, the high rate of food market visits by Mexican household shoppers is down significantly from January 1995, when visits averaged 11.5 times per week.[8]

Moreover, when focusing on the types of markets patronized by various groups of consumers, it becomes apparent than a sizable share of Mexican food shoppers actually visits food stores more frequently than the average alone would suggest. Grocery shoppers who indicated they primarily purchase household food supplies at a neighborhood corner store—11 percent of the sample population—reported they visited food markets an average of 11.4 times per week. Those shoppers who typically purchased household food supplies at enclosed public markets, open-air markets, and specialty stores—14 percent of the sample population—reported they visited food markets an average of 10 times per week.[9] In contrast, consumers who indicated they primarily shop at a supermarket visited food stores only about half as frequently as other Mexican grocery shoppers, approximately 5.6 times per week. Nevertheless, even though supermarket shoppers in Mexico patronize food stores far less frequently than other Mexican food shoppers, they still visit food markets nearly three times as often as the average U.S. supermarket shopper.[10]

Not only do average Mexican household grocery shoppers visit food stores far more frequently than average U.S. shoppers, but they appear far more willing to patronize a *variety* of stores. The average Mexican food shopper interviewed by FMI in January 1998, for example, reported that he or she visited approximately three different food stores *per week*, compared with three different food stores *per month* visited by the average U.S. grocery shopper.[11]

The tendency for Mexican consumers to visit retail food markets on a frequent basis is especially pronounced in the case of fresh fruits and vegetables. Sixty percent of Mexican fresh fruit and vegetable shoppers interviewed by FMI reported they shopped for fresh produce *at least* twice per week, while more than 33 percent indicated they shopped for fresh produce on a daily basis (between five and seven times per week).[12] Only tortillas, milk, fresh bread, and nonalcoholic beverages were purchased with equal or greater frequency.[13]

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[5]Information obtained during December 1998 interview in Mexico City with Alfonso Rodea Sandin, Assistant General Director of *Asociación Nacional de Tiendas Autoservicio y Departamentales*.

[6]Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 68.

[7]Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 42.

[8]Ibid.

[9]Ibid.

[10]Statistics on Mexican consumer behavior obtained from Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 42. Statistics on U.S. supermarket shoppers obtained from the "66th Annual Report of the Grocery Industry," Progressive Grocer, New York, NY, April 1999, p. 39.

[11]Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 116.

[12]Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 124.

[13]Ibid.

Fruit and vegetable shoppers who usually patronize traditional markets and specialty stores are also more likely to visit food stores more frequently than shoppers who prefer other store formats. A majority (57 percent) of the shoppers interviewed by FMI who typically visited traditional markets and specialty stores for fresh produce reported that they purchased produce on a "daily" basis (i.e., five to seven times per week), compared with only 28 percent of self-described corner store shoppers and 26 percent of self-described supermarket shoppers.[14]

Why Mexican Consumers Shop More Frequently Than U.S. Consumers for Perishables

Limited Access to Automobiles. Anecdotal evidence from field interviews with retail produce buyers and chain store managers in Mexico in March and December 1998 suggests that a large share of household grocery shoppers—including those who patronize supermarkets and mass-merchandise retail stores—frequently walk or take public transportation to stores, thereby limiting how much they are able to carry home. One produce procurement official from a multinational retail firm interviewed in December 1998 by members of the Agricultural Marketing Service (AMS), Economic Research Service (ERS), and Texas A&M University research team noted that as many as 70 percent of his customers in Mexico walked to his firm's stores, while the stores' parking lots were largely empty most of the time. Thus, issues such as the population density of nearby residential neighborhoods, pedestrian access, and availability of public transportation are said to figure far more prominently than access to a major highway in determining the location of a new supermarket in Mexico. In contrast, proximity to a major highway is often given primary attention in the United States for determining the location for a new supermarket.

Government statistics appear to support the widely held belief among Mexican supermarket and chain store managers that motor vehicle ownership in Mexico remains comparatively rare and presents a real constraint to how much food the average shopper is able to purchase during any single food market visit. Privately owned automobiles in Mexico during calendar year 1997, based on official motor vehicle registration records, totaled just over 8.6 million, compared with an estimated population of 93.7 million.[15] Consequently, there was approximately one automobile for every eleven Mexican residents. In contrast, U.S. motor vehicle registration records show that there were more than 128.4 million privately and commercially owned automobiles in the United States during calendar year 1997. With the U.S. population estimated at 267.8 million, private/commercial car ownership amounted to nearly one automobile for every two residents.[16]

Limited (or Nonexistent) Household Refrigeration Capacity. Several supermarket buyers in Mexico noted that many of their retail customers had limited access to refrigerated storage at home and were, therefore, likely to purchase only small amounts of perishable produce during each food store visit. Indeed, recent Mexican government statistics indicate that significant percentages of Mexican households continue to live without such basic household amenities as indoor plumbing. As of 1995, nearly 7 percent of Mexican households surveyed were living without electricity, and almost 15 percent were still living without running water.[17]

Customer Preferences. Retail produce buyers in Mexico indicated that local consumers often prefer to purchase fresh produce items for immediate use only, to ensure that the ingredients are as fresh and as suitable for use in a particular dish as possible. For example, the condition and quality of tomatoes that the Mexican consumer would typically purchase for making *salsa fresca* would be quite different from the tomatoes he or she would purchase for use in a salad. The extreme importance that average Mexican food shoppers accord the quality of fresh produce at retail markets appears to be supported by the FMI's January 1998 survey. The survey revealed that fully 92 percent of the interviewed shoppers rated "good quality produce" as a "very important" factor in determining which food store they preferred to patronize. This factor was surpassed only by "food safety" as the

[14]Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 126.

[15]From the table, "Vehiculos de Motor Registrados en Circulación," accessible from the Internet home page of the *Banco de Informacíon Económica*, part of the *Instituto Nacional de Estadistica Geografia e Informatica*. The table is located at the following Internet address: http://dgcnesyp.inegi.gob.mx/BDINE/G10/G100071.htm.

[16]Data obtained from the table, "State Motor-Vehicle Registrations—1997," available from the U.S. Department of Transportation's Federal Highway Administration at http://www.fhwa.dot.gov/ohim/1997/section2.html.

[17]From "Viviendas Particulares Habitadas y su Disponibilidad de Agua Entubada, Energía Eléctrica y Drenaje 1990, 1992, y 1995," *Instituto Nacional de Estadistica Geografia e Informatica* (INEGI), Mexico City. Accessible from the INEGI Web site located at www.inegi.gob.mx.

most important factor determining their food market choices.[18]

Food shoppers who typically patronized open-air *tianguis* and enclosed public markets rated "good produce quality" even more strongly as a factor in food market choice than the general sample population, with 97 percent rating "good produce quality" as "very important." In addition, 97 percent of the members of the two highest income tiers of the sample population also ranked "good produce quality" as a "very important" factor in choosing a food market.[19] Therefore, the ability to purchase fresh produce at a market that meets precise quality characteristics clearly remains very attractive and important to large segments of the Mexican population, including its highest income segments, which represent a primary target of Mexico's burgeoning supermarket and chain store firms.

Differences in Merchandising Strategies Between Traditional and Modern Food Markets

Many supermarket firms in Mexico—recognizing the lingering attraction of traditional food markets among large numbers of Mexican consumers—have attempted to invoke the image of traditional food markets in their retail stores. They've done this by creating countertop bulk displays of popular fresh fruits and vegetables (such as oranges or tomatoes) in the center of their produce departments and by advertising weekly "market" days that feature deep discounts on fresh produce items (figure 2.1).

Despite these efforts, the ways these firms typically display and market perishable merchandise differ considerably from the practices typically used at enclosed public markets and open-air *tianguis*. These distinct merchandising practices may be categorized as follows:

Pricing Policies. While supermarkets typically charge the same price for the same variety of commodity, regardless of size, maturity, or cosmetic appearance, produce merchants at public markets and *tianguis* often apply different prices to products with different sizes, maturity, or cosmetic appearance. This practice gives many customers the perception that they receive better value for their money at traditional markets, since they are charged a specific price for a specific quality of merchandise. Competitive pricing policies alone do not appear to be sufficient to shift consumer preferences from traditional markets to self-service supermarkets and mass-merchandise chain stores. Supermarket buyers indicated that the produce price war that had occurred in the Monterrey area (once or twice a week, various supermarkets deeply discounted produce items, sometimes selling them below wholesale prices as loss leaders) appeared to have done little to broaden the general customer base of supermarkets, at least not in terms of household consumers. However, the discounts may have increased the number of small institutional buyers such as restaurant owners.

Product Selection. Another reason why supermarket and chain store buyers admit that they have difficulty competing with alternative markets is that the average Mexican consumer still shops several times a week for groceries and places a very high value on purchasing and consuming perishable commodities at the peak of ripeness and freshness. For the large share of Mexican grocery shoppers who place great importance on obtaining fresh fruit and vegetables with precise freshness or maturity characteristics, it may well be easier to locate merchandise with the desired freshness or maturity at a public market or a *tiangui*. Merchandise in these outlets tends to be grouped by condition or maturity, in contrast to standard supermarkets or mass-merchandise chain stores, where merchandise tends to be displayed in bulk and is rarely, if ever, sorted on the basis of quality characteristics.

The possibility that fresh fruit and vegetable shoppers in Mexico may be drawn to public markets and *tianguis* because they are seeking precise quality and maturity characteristics appears to be borne out by FMI's January 1998 survey of Mexican household grocery shoppers. The survey revealed considerable differences between those who usually patronized an enclosed public market, an open-air *tiangui*, or a specialty store and those who usually patronized a self-service supermarket. Thirty-one percent of self-declared "market/specialty store" grocery shoppers ranked "the quality of food, products, or fruit/vegetables" as the single most important factor affecting their food purchase decisions, while 28 percent

[18] Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 90. The response, "very important," refers to the top box of a 4-point scale. Interviewed shoppers were able to rank 21 variables as possible influential factors in determining their choice of food store.

[19] Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, pp. 94 and 96. The response, "very important," refers to the top box of a 4-point scale. Interviewed shoppers were able to rank 21 variables as possible influential factors in determining their choice of food store.

Figure 2.1—*Billboard promoting* "tianguis" *day in supermarket chain outlet*

reported that "food freshness" was the single most important factor affecting their food shopping habits. In contrast, only 23 percent of self-declared "supermarket" food shoppers indicated that "the quality of food, products, or fruit/vegetables" was the most important factor in their food purchasing decisions, and only 16 percent indicated that "food freshness" was most important.[20]

Product Handling. Buyers for several large supermarket and hypermarket chains in Mexico City acknowledged to AMS/ERS/Texas A&M University research team members in a December 1998 interview that public market and *tiangui* merchants often do a better job of taking care of their produce than supermarkets and chain stores do. Unlike some supermarket and chain store personnel, who are salaried employees that may feel little personal responsibility for the condition of their store's produce, *tiangui* and public market vendors know that maintaining product quality contributes directly to their livelihood.

No single type of retail establishment appears capable of satisfying the culinary needs and preferences of all segments of the Mexican consumer population. Therefore, a comprehensive understanding of the fresh produce retail distribution system in Mexico requires an understanding of how both traditional and modern retail distribution channels operate and how they compete with one another in various regions of the country and among members of different socio-economic classes.

Traditional Distribution Channels

The two primary forms of traditional markets that compete with modern supermarkets and mass-merchandise chains are enclosed *public markets (mercados públicos* in Spanish) and open-air *tianguis*. The term "public market" in the Mexican context generally

[20] Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 100.

refers to a permanent, enclosed facility that was built with state or local government assistance and continues to be managed by local government authorities. Commercial space at public markets is typically leased to large groups of independent small merchants, who sell their wares from individual small kiosks—often numbering in the hundreds—lined up next to each other (figure 2.2). Depending on the public market in question, the kiosks are often divided along merchandise lines; for example, one row of kiosks might feature prepared food vendors, and another might feature fresh produce vendors.

Public markets are quite abundant in urban neighborhoods in Mexico, with more than 2,600 in operation throughout the country (table 2.2). Nearly 40 percent of these facilities are located in the densely populated states of the *Distrito Federal* (D.F.), *Estado de México*, and *Jalisco*, home to Mexico's largest metropolitan areas, Mexico City and Guadalajara. Statistics indicate that public markets are continuing to grow in number. Between 1987 and 1997, for example, the number of public markets operating within the *Distrito Federal* grew from 301 to 312 facilities.[21]

The size of individual market facilities can vary considerably. According to a survey of public markets in the *Distrito Federal* carried out by municipal government officials in 1987, the average public market had 217 tenants. However, the markets in this survey ranged from only 50 or 60 tenants, to one facility—located in the central building of the La Merced market, the former site of Mexico City's central wholesale market—with nearly 4,000 tenants.

[21]Public market numbers compiled by the municipal authority in charge of overseeing public markets in the D.F. (*Directorio de los Mercados Públicos*) in 1987 and 1997. Figures for 1987 cited in Abasto y Distribución de Alimentos en las Grandes Metrópolis: el Caso de la Ciudad de México, Fernando Rello and Demetrio Sodi, Mexico, D.F., 1989, p. 132.

Figure 2.2—*Produce vendor at public market in downtown Mexico City*

Table 2.2—*Mexican public markets by state*

State	Number	Percent of total
Aguascalientes	18	0.7
Baja California*	2	0.1
Baja California Sur	8	0.3
Campeche	34	1.3
Coahuila*	19	0.7
Colima*	15	0.6
Chiapas	68	2.6
Chihuahua*	48	1.8
Distrito Federal**	312	11.8
Durango	19	0.7
Guanajuato	95	3.6
Guerrero	223	8.4
Hidalgo	39	1.5
Jalisco*	254	9.6
Mexico	471	17.8
Michoacán	104	3.9
Morelos	70	2.6
Nayarit*	24	0.9
Nuevo León*	21	0.8
Oaxaca	130	4.9
Puebla	121	4.6
Querétaro	34	1.3
Quintana Roo	27	1.0
San Luis Potosí*	35	1.3
Sinaloa	50	1.9
Sonora	14	0.5
Tabasco	86	3.3
Tamaulipas	20	0.8
Tlaxcala	17	0.6
Veracruz	145	5.5
Yucatán	85	3.2
Zacatecas	35	1.3
Total	2,643	100.0

Sources: Unless otherwise noted, data obtained from Statistical Annual by State, 1997, *Instituto Nacional de Estadistica Geografia e Informatica*, México, D. F.
*Reflects data published in *Sistema de Infraestructura Comercial, Secretaría de Comercio y Forresto Industrial,* México, D. F., 1995.
**Reflects data collected by the Mexico City public market authority.

Most of the merchants at public markets specialize in various types of perishable or prepared foods, although nonfood items such as clothing and toiletries are frequently added to the overall merchandise mix. A 1987 survey of public market tenants conducted by *Distrito Federal* government officials revealed that 28 percent of the tenants sold fruits and vegetables, 7 percent sold various types of fresh meat and seafood products, 7 percent sold other grocery items (including dairy products and cured meats), 12 percent sold prepared food, 14 percent sold ready-to-wear clothing, and 33 percent sold other items.[22] The strong orientation toward perishable merchandise observed at Mexico City public markets in the late 1980s is consistent with the observations of AMS/ERS/Texas A&M University research team members during their visits to several public market facilities in Mexico City and Guadalajara in December 1998.[23] (Detailed descriptions of these site visits will appear later in this chapter.)

Similar in format to enclosed public markets are *tianguis*, temporary open-air market facilities erected at street intersections in urban neighborhoods, where groups of small merchants—often unregulated by local government authorities—sell wares from small outdoor stands that are easily disassembled and transported from location to location. In contrast to the heavily food-oriented merchandise sold at most public markets, merchandise sold at *tianguis* typically is more diverse, ranging from items such as seasonal fresh fruits and vegetables, bread, cheese, snack foods, and fresh flowers to clothing, leather accessories, toys, books and magazines, and even auto parts.

Individual *tianguis* often stretch for several city blocks. The average *tiangui* operating in the Guadalajara metropolitan region, for example, features nearly 200 stalls, while one of the largest of Guadalajara's *tianguis*, "*El Baratillo*," occupies 48 city blocks.[24] The typical fresh produce stall at a *tiangui* consists of no more than a table or two covered with cartons or bins of fresh fruit and vegetables. Well-equipped stalls may be surrounded by collapsible metal poles and covered by a piece of fabric to provide minimal protection from the sun (figure 2.3), while other *tiangui* stalls are completely exposed to the elements.

In keeping with the temporary nature of their construction, many *tianguis* rotate from one urban neighborhood to another on a weekly cycle, in accordance with a preestablished route, while others operate daily in the same location. (The number of vendors who sell merchandise at a particular *tiangui* varies from season to season.) The buying and selling of merchandise at itinerant markets in Mexico is a well-established custom that reportedly dates back to pre-Hispanic times. Indeed, the pre-Hispanic legacy can be detected in the fact that these types of markets still bear their traditional indigenous name.

Statistics on the poorly documented and rapidly evolving *tiangui* sector of the Mexican economy indicate that the number of tianguis operating in major

[22]Cited in Abasto y Distribución de Alimentos en las Grandes Metrópolis: el Caso de la Ciudad de México, Fernando Rello and Demetrio Sodi, Mexico, D.F., 1989, p. 132. Survey conducted by *the Directorio de los Mercados Públicos del D.F.* in 1987.

[23]Ibid.

[24]"Vertiginoso Crecimento de Tianguis," Ocho Columnas, Guillermo Gómez , Guadalajara, Jalisco, December 7, 1998, p. 6A.

Figure 2.3—*Merchants selling fresh produce at a Mexico City* tiangui

Mexican cities far surpasses the number of enclosed public markets and self-service retail food stores operating in the same metropolitan areas. This suggests that one reason for the enduring popularity of *tianguis* may be their growing accessibility. Surveys taken in 1987 and 1998 by municipal authorities in charge of food distribution in Mexico City revealed that approximately 833 *tianguis* operated in at least one neighborhood per week in the *Distrito Federal*, making them nearly three times as prevalent as the area's 301 enclosed public markets and more than three times as prevalent as the 257 private self-service store outlets (including 110 supermarkets and hypermarkets and 147 convenience stores or independent grocery stores).[25]

Despite the rapid and extensive growth of self-service retail outlets in the 1980s and 1990s, the *tiangui* has retained a preeminent position in the retail distribution channel for foodstuffs in the Mexico City metropolitan area. According to the Mexican agribusiness trade publication Enlace, the number of *tianguis* operating routinely in the Mexico City metropolitan area by the end of 1996 had grown to 1,116, compared with 318 public market establishments and 500 self-service supermarkets and hypermarkets operating in the same region.[26]

Mexico City is not the only urban population center in Mexico where the *tiangui* appears to present powerful competition to alternative retail outlets. A study commissioned by the Chamber of Commerce in Guadalajara and published in late 1998 revealed that the number of *tianguis* operating regularly in the Guadalajara metropolitan area had climbed 62 percent since 1991 to 292 establishments (table 2.3). As

[25]Cited in Abasto y Distribución de Alimentos en las Grandes Metrópolis: el Caso de la Ciudad de México, Fernando Rello and Demetrio Sodi, Mexico, D.F., 1989, pp. 134 and 138.

[26]Enlace, Mexico City, D.F., vol. 2, no. 10, 1998, p. 1.

Table 2.3—*Growth of* tianguis *in the Guadalajara metropolitan area, 1991-1998*

Category	1991	1992	1993	1994	1995	1996	1998
Number of *tianguis*	180	196	212	229	245	267	292
Number of stalls	34,103	36,831	39,410	42,563	46,876	52,665	n/a
Number of merchants	102,309	110,493	118,230	127,689	143,678	160,654	170,000
Average number of merchants per *tiangui*	568	564	558	558	586	602	582

Sources: Guadalajara Chamber of Commerce, "Análisis del Comercio Informal 1995-1997," published by the *Universidad de Guadalajara* and the Jalisco Center for Urban Studies. Reprinted in "Vertiginoso crecimento de tianguis," Ocho Columnas, Guillermo Gómez Sustaita, Guadalajara, Jalisco, December 7, 1998, p. 6A.

a result, the number of *tianguis* in the Guadalajara metropolitan area now surpasses the number of public markets (254) said to be operating in the entire state of Jalisco.[27] The importance of *tianguis* to the local economy has grown to such an extent that they are now believed to account for 40 percent of commercial sales transactions in the Guadalajara region, while numerous stalls at enclosed public market facilities in the same neighborhoods stand empty or are severely underused.[28]

According to investigative journalist Guillermo Gómez Susaita, writing for the Guadalajara newspaper, Ocho Columnas, the aggressive growth of tianguis in recent years can be attributed to the following factors:

- The economic crisis in Mexico in the mid-1990s and the subsequent devaluation of the peso led individuals to seek full- or part-time employment in the "informal" economy (which includes street vending).
- Lax enforcement of commercial regulations by local government officials has permitted a number of *tiangui* merchants to operate without paying required taxes and/or license fees for selling goods on public streets, prompting new entrants into this presumably profitable sector of the economy.

While the absolute number of *tianguis* might surpass the number of public markets, however, only a small percentage of *tiangui* transactions appear to involve food items purchased for future consumption at home. FMI reports that the percentage of Mexican consumers who state that they usually purchase fresh fruits and vegetables at an open-air market has actually declined consistently in recent years, from a reported 38 percent in May 1993 to 11 percent in January 1998.[29] This downward trend contrasts directly with the steady gain in consumer patronage of public markets for fresh fruit and vegetable purchases during the same period.[30]

Studies by the Guadalajara Chamber of Commerce of 12 major local *tianguis* tend to confirm FMI's findings. Their studies show that, during most of the 1990s, the share of *tiangui* sales derived from transactions in household grocery items remained stable at between 16 and 17 percent. Although sales of food at these 12 open-air establishments accounted for 27.4 percent of total sales in 1996, compared to only 22.7 percent in 1991, virtually all of this increase could be accounted for by a 4.4-percent increase in sales of food destined for "immediate consumption" (figure 2.4). Meanwhile, sales of "basic foodstuffs" barely rose as a percentage of total sales from 16.4 percent in 1991 to 16.7 percent in 1996.

The following factors may help explain the limited attractiveness of open-air *tianguis* as a source of household groceries among Mexican food shoppers:

- Growing price-sensitivity of the average Mexican consumer following the peso devaluation and economic recession of the mid-1990's;
- Competitive supermarket and chain store pricing policies on perishable merchandise;
- Lax government oversight of *tiangui* merchants and their commercial practices; and
- Rising consumer concerns about food safety.

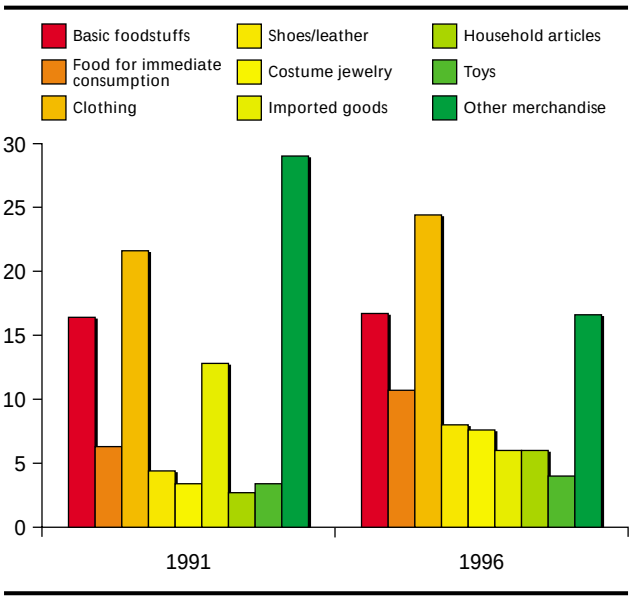
Price Issues. Although many *tiangui* merchants may lack some of the overhead expenses of public market merchants and are certainly subject to far fewer overhead and operational costs than supermarket managers, the relative absence of overhead expenses at *tianguis* does not necessarily translate into significant savings for the average Mexican consumer. Studies suggest that the prices charged by *tiangui* merchants for fresh fruits and vegetables are often

[27] *Tianguis* figures were compiled by the Guadalajara Chamber of Commerce and were reprinted in the newspaper article, "Vertiginoso Crecimento de Tianguis," written by Guillermo Gómez Sustaita and published in Ocho Columnas, Guadalajara, Jalisco, December 7, 1998, p. 6A. The latest public market figures available for the state of Jalisco were compiled by the Business Infrastructure System section of the Mexican Secretariat of Commerce and Industrial Development in 1995.

[28] "Vertiginoso Crecimento de Tianguis," Ocho Columnas, Guillermo Gómez Sustaita, Guadalajara, Jalisco, December 7, 1998, p. 6A.

[29] Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 68.

[30] Ibid.



Source: "Vertiginoso crecimento de tianguis," Ocho Columnas, Guillermo Gómez Sustaita, Guadalajara, Jalisco, December 7, 1998, p. 6A. Data obtained from Guadalajara Chamber of Commerce.

Figure 2.4—*Breakdown of goods sold at Guadalajara* tianguis

comparable to those charged at public markets and supermarkets/self-service chain stores for the same commodities. (The maturity and condition of these commodities may, of course, differ at each market location.)

Table 2.4 shows some examples of the differentials that have been reported between the retail prices of similar fresh produce items at *tianguis*, public markets, and self-service supermarket outlets in Mexico City, based on information collected between 1987 and 1989 by the municipal government agency in charge of overseeing food distribution and wholesaling activity in Mexico City (*Coordinación General de Abasto y Distribución* or COABASTO). These price differentials reveal that *tianguis*, while conveniently located and possibly offering a superior range of produce sizes and maturities, may not always provide the best bargain in terms of prices alone.

The table presents retail price indices for nine primary fresh produce items purchased over a period of several years by Mexico City consumers at supermarkets, *tianguis*, and public markets. These indices were calculated using actual average food market prices collected between 1986 and 1989 by COABASTO, which attempted to analyze the differences, if any, between the average retail price charged by self-service supermarkets and more traditional retail outlets for those fresh produce items most commonly purchased by Mexico City consumers.

Rather than hovering at the high end of the retail price range, as might have been expected given their higher operational costs, the prices charged by supermarkets often hovered near the average retail price recorded in other Mexico City food market outlets. Moreover, in the case of four produce items (tomatoes, avocados, papayas, and limes), the average monthly supermarket price actually fell below the

Table 2.4—*Retail prices of produce by channel, Mexico City, 1986-1989 (Mexico City average = 1.00)*

			Retail price index			
Produce item	Month(s)	Year	Public markets	Tianguis	Supermarkets	Supermarket/ *tiangui* price ratio
Tomatoes	May	86	1.24	0.96	0.96	1.00
	August	86	1.16	0.87	1.04	1.19
Papayas (red)	May-October	89	0.93	0.90	1.12	1.24
Papayas (yellow)	May-October	89	1.00	0.95	0.95	1.00
Avocados	October	88	1.19	1.10	0.86	0.78
	January	89	1.08	1.01	1.05	1.04
	July	89	0.99	0.94	1.14	1.21
	October	89	1.22	1.12	0.86	0.77
Limes	March	88	1.15	0.88	0.85	0.96
Oranges	December	87	1.02	0.99	1.06	1.07
	July	87	1.01	0.97	1.12	1.15
Chile peppers	February	88	1.06	0.94	1.21	1.28
	June	88	1.03	0.96	1.25	1.30
	August	88	1.10	0.89	1.00	1.12
Onions	December	86	0.93	0.89	1.08	1.21
	May	86	0.98	0.92	1.11	1.21
Potatoes	April	87	0.97	0.90	1.13	1.25

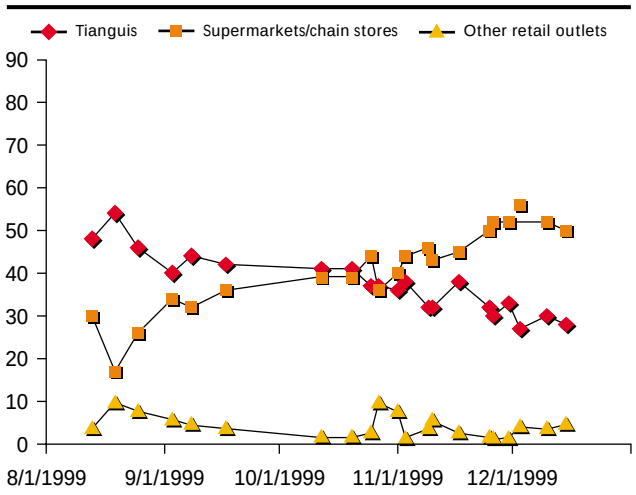
Source: Calculated by Texas A&M University Market Research Center using the average retail prices in Mexico, D.F., provided in the series of publications, Sistema Producto Para el Distrito Federal, produced by the organization *Coordinación General de Abasto y Distribución* between 1987 and 1991.

overall average for Mexico City food markets. Overall, the ratio of supermarket prices to the average retail price for the same commodity at a variety of modern and traditional market outlets ranged from a low of 0.85 (limes) to 1.25 (chile peppers).

The idea that supermarket prices for fresh produce in Mexico are often competitive with prices charged by traditional markets is also supported by retail price data recently gathered by the federal agency in charge of enforcing Mexico's Law of Consumer Protection, *El Instituto Nacional del Consumidor y la Procuraduría Federal del Consumidor*, known by the acronym PROFECO. Figures 2.5 and 2.6 depict the results of 5 months of retail price data collected by PROFECO during the summer and fall of 1999 to determine which category of retail store—open-air *tianguis*, supermarkets/chain stores, and other retail food markets—was responsible for charging consumers the "minimum" and "maximum" retail prices for individual produce items. During each survey period, price data were collected on 80-90 fresh produce commodities/different commodity varieties. The data indicate that the maximum price for a fresh produce item was far more likely to be found at a supermarket or chain store than at an open-air *tiangui* or other retail market outlet on any given day. However, individual supermarkets and chain stores were also responsible for offering the *lowest* retail price for fresh produce commodities more frequently than any other retail distribution channel. According to 21 price surveys carried out by PROFECO between August 13 and December 15, 1999, individual supermarkets/chain store outlets accounted for the greatest number of "minimum" retail prices for fresh produce. Supermarkets/chain stores offered the lowest retail prices on most of the surveyed commodities 57 percent of the time (12 out of 21 occasions), compared to 43 percent of the time for open-air *tianguis*.

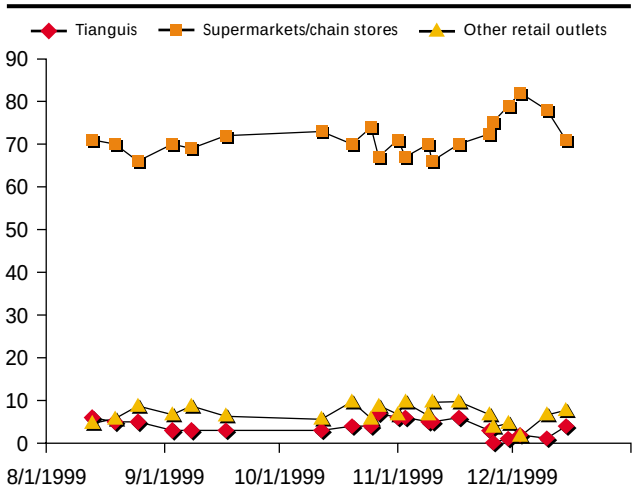
Information collected by members of the AMS/ERS/Texas A&M University research team during December 1998 at various Mexico City food markets tends to reaffirm the observations of COABASTO and PROFECO. The information suggests that individual supermarkets, even those located in affluent neighborhoods, may offer prices on perishable fresh produce items that are highly competitive with neighborhood tianguis (table 2.5).

Supermarket executives in Mexico frequently claim that the *tiangui* is a major source of competition in selling perishable food to retail consumers because



Source: *Instituto Nacional del Consumidor y la Procuraduria Federal del Consumidor,* Mexico D.F., posted on the following Internet site between August 1999 and January 2000: http://www.profeco.gov.mx/precios/fruta.htm.

Figure 2.5—*Number of produce items sold at low end of retail price range by channel*



Source: *Instituto Nacional del Consumidor y la Procuraduria Federal del Consumidor,* Mexico D.F., posted on the following Internet site between August 1999 and January 2000: http://www.profeco.gov.mx/precios/fruta.htm.

Figure 2.6—*Number of produce items sold at high end of retail price range by channel*

the extremely limited overhead costs of *tiangui* merchants enable them to pass along cost savings to the consumer. However, the price information collected by COABASTO, PROFECO, and members of the AMS/ERS/Texas A&M University research team suggests that, contrary to popular opinion, supermarkets are frequently quite price-competitive with neighbor-

Table 2.5—*Comparative retail prices of selected fresh produce commodities, Mexico City, D.F., December 1998*

Product type	Weekly *tianguis*, Condesa (middle-class community)	Wal-Mart Supercenter, Satelite (upper-middle class community)	Auchan hypermarket, Coyoacán (middle-class community)	Carrefour hypermarket, Polanco (affluent community)
Globe tomato	15.00 pesos/kg (68 cents/lb.)	n/a	13.00 pesos/kg (59 cents/lb.)	13.75 pesos/kg (63 cents/lb.)
Iceberg lettuce	8.00 pesos/head (36 cents/head)	4.90 pesos/head (22 cents/head)	4.90 pesos/head on special (22 cents/head)	n/a
Chayote squash (without spines)	4.00 pesos/kg (18 cents/lb.)	5.40 pesos/kg (25 cents/lb.)	2.30 pesos/kg (10 cents/lb.)	n/a

Source: Direct observations, AMS/ERS/Texas A & M University research team, December 1998. Peso conversion based on U.S. Federal Reserve midday exchange rates for the Mexican peso for December 9, 1998 (9.954 Mexican pesos=1 U.S. dollar).

hood *tianguis* with regard to fresh produce prices. As discussed earlier, the price-competitiveness of Mexican supermarkets, compared with traditional retail outlets, appears to be related to the perishability of the produce item in question (table 2.4). In the case of produce commodities that are relatively durable (e.g., potatoes, onions, chile peppers), supermarkets appear to be less price-competitive than alternative market outlets, while they tend to be the most price-competitive with respect to those produce commodities that are highly perishable (such as tomatoes and avocados).

The relationship between product perishability and supermarket price-competitiveness may be explained by two factors. The first is that supermarkets may appear to offer more attractive prices on average for specific perishable commodities than traditional markets because they tend to charge the same flat price for each item within a specific product category. In contrast, most *tianguis* and public markets tend to sort and display individual items within each commodity category according to their specific size, condition, or level of maturity and price these items to reflect these underlying differences in product quality. Thus, in the case of goods where slight differences in ripeness and maturity contribute substantially to the perceived value of the product, such as tomatoes and avocados, *tianguis* and public markets are more likely to charge a premium for the highest quality product within a given commodity category.

Moreover, given the relatively small volume of merchandise that the standard operator of a *tiangui* or public market stall is able to handle on a daily basis, a merchant at a *tiangui* or public market has a great financial incentive to handpick merchandise at the local wholesale market with an eye toward maximizing the profit that he or she can obtain from each individual produce item. Thus, it is quite possible that this incentive leads *tiangui* and public market merchants to stock their shelves with an unusually high percentage of perishable goods that meet exacting quality standards and can be expected to bring a price premium in the marketplace.

Another factor that may help supermarkets and chain stores offer more competitive prices on highly perishable produce items is the fact that supermarkets and chain stores typically have vastly superior access to refrigeration than either *tianguis* or public markets. This substantially reduces the possibility that they will lose sensitive inventory through spoilage.

While traditional markets such as open-air *tianguis* may still edge out Mexican supermarkets and chain stores in terms of overall price competitiveness in fresh produce, it is important to reflect that the current competitive pricing policies of Mexican supermarkets have yet to fully reflect the benefits that may accrue from greater dependence on direct procurement and improved logistical efficiency. The establishment of regional produce distribution centers by individual supermarket and chain store firms is just beginning to take root in Mexico. Supermarket procurement officials estimate that it takes about 20 retail stores in a region to justify the construction and operation of an independent produce distribution center in Mexico. Consequently, the ability of supermarkets and chain stores to compete on price against traditional retail market channels may well increase in future years, as a greater number of supermarkets and chain stores succeed in reducing their dependence on intermediaries in the supply procurement process.

Oversight Issues. The waning popularity of *tianguis* as a primary source for fresh produce may also be

related to perceptions that customers might be more vulnerable to fraudulent business practices at a *tiangui* than at another type of market. At both public markets and *tianguis*, it is standard practice for a merchant to select and weigh fresh produce items on behalf of a customer, frequently on a scale that is obscured from the customer's view. However, merchants at public markets, who lease space from publicly managed buildings and return to the same commercial location every day, are reportedly subject to greater scrutiny and inspection by local government officials—and are more likely to use reliable weights and measures—than merchants at transient *tianguis*. Guillermo Gómez Gustaia's December 1998 article on *tianguis* in the Guadalajara newspaper, Ocho Columnas, comments that a chief social problem created by the surge of *tianguis* in recent years has been the lack of supervision over weights and measures, prompting some unscrupulous *tiangui* merchants to sell 800 or fewer grams of a food item for the price of one kilogram.[31]

Food Safety Issues. Another reason that *tianguis* may not be faring quite as well among fresh fruit and vegetable shoppers relates to food safety and concerns about spoilage. Since the mid-1990s, the confidence of Mexican household shoppers in the safety of the food they purchase from their primary food market appears to have dropped considerably. Whereas 82 percent of the shoppers interviewed by FMI in January 1995 and 1996 indicated they were "mostly" or "completely" confident in the safety of the food they purchased from their primary food store, this percentage dropped to 70 percent by January 1998.[32] The most dramatic change was related to concerns about spoilage, with 27 percent reporting in January 1998 that they considered spoilage and germs a threat to food safety, compared with similar responses from 5 percent of the interview sample in January 1995 and 14 percent in January 1996.[33]

The consumers with the least confidence in the wholesomeness of their food were those who most regularly patronized a public market or *tiangui* (compared with those who most regularly patronized a corner grocery store, convenience store, or self-service supermarket). Only 60 percent of regular public market/*tiangui* consumers interviewed by FMI in January 1998 indicated that they were "completely" or "mostly" confident in the safety of food purchased from their primary food market. This compares with 70 percent of those who usually purchased their food at a corner or convenience store and 74 percent of those who usually purchased their food at a supermarket.[34] Because open-air *tiangui* markets tend to provide less protection from heat and humidity than other markets and reportedly operate with less regulatory oversight than other retail food outlets, the limited patronage of *tianguis* as a source of fresh fruit and vegetables may reflect concern among increasingly safety-conscious Mexican consumers about the wholesomeness of perishable food sold at *tianguis*.

Merchandising Practices at Traditional Markets

Whether fresh fruit and vegetables are sold at an enclosed public market or an open-air *tiangui*, produce merchants at both markets typically share the following practices:

- Focus on bulk produce. Most produce merchants at public markets and tianguis display their fresh fruit and vegetables in shallow bins sitting on top of a counter or table, usually packed until they overflow. Individual groups of commodities are typically displayed to maximize their color and eye-catching appeal, and merchants frequently cut open pieces of ripe fruit so that prospective buyers can taste and smell samples. Given the emphasis of traditional markets on allowing customers to have tactile exposure to the fresh fruits and vegetables they are interested in purchasing, it is unusual to see displays of wrapped or packaged produce at traditional market stalls.
- Narrow product specialization but strong attention to differences in quality. Produce merchants at public markets and *tianguis* generally carry a far more limited selection of produce than the average supermarket or chain store food retailer. The most extensive array of produce observed by the AMS/ERS/Texas A&M University research team at any public market or *tiangui* in December 1998 involved about 50 individual produce items, compared with the more than 200 produce stock-keep-

[31] "Vertiginoso Crecimento de Tianguis," Ocho Columnas, Guillermo Gómez Sustaita, Guadalajara, Jalisco, December 7, 1998, p. 6A.
[32] Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC. 1998, p. 148.
[33] Ibid.
[34] Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 150.

ing units carried on average in Mexican supermarkets and chain stores.[35] However, unlike most of their chain store competitors, public market and *tiangui* produce merchants typically attempt to distinguish themselves by offering several different categories of the same commodity *variety* (e.g., Roma tomatoes or Cavendish bananas) that have been sorted and assembled to reflect differences in appearance, size, or maturity (figure 2.7). Each of these product categories is priced differently to reflect the quality distinctions.

- Lack of climate control, which encourages quick turnover of merchandise. Merchants at public markets and *tianguis* usually store and display fresh fruits and vegetables at ambient temperature, and the only protection from the elements is the shade of an enclosed public market building or the fabric used to cover a *tiangui* stall. Without routine access to cold storage or refrigeration, public market and *tiangui* merchants typically purchase their daily inventory at central wholesale markets and limit their inventory to what they expect to sell during the course of a day. Therefore, they are able to purchase and resell perishable products with an extremely limited shelf life (such as fully ripened bananas and tomatoes).
- Limited self-service. Produce merchants at public markets often select and weigh items on behalf of a customer, rather than permit a customer to select and weigh his or her own merchandise. (Some merchants weigh merchandise on a scale that is within full view of the customer, while others do not.) Those public markets that allow customers to handle and select their own fresh fruit and vegetables frequently charge a premium for the privilege.
- Price bargaining. While many public market produce merchants—though certainly not all—post "official" prices for their merchandise, they are

[35]Information about Mexican supermarkets and chain stores obtained during interviews with representatives of the *Asociación Nacional de Tiendas de Autoservicio y Departmentales* in Mexico City, December 10, 1998.

Figure 2.7—*Different maturities of fruit displayed at a Mexico City public market*

often willing to entertain counteroffers from prospective customers.

- "Cash-only" sales. Cash is the only form of payment typically accepted by public market vendors.

Differences in Desirable Quality Characteristics In Traditional Mexican Markets, Compared to Typical U.S. Product Preferences. Another factor that should be considered when selling fresh produce to Mexico is that the average Mexican traditional market shopper may be accustomed to—and be willing to tolerate—fresh fruit and vegetables with quality characteristics that might be considered serious liabilities in the U.S. marketplace. Notable examples of differences in commodity preferences observed by members of the AMS/ERS/Texas A&M University research team included the following:

- Most oranges on display were (naturally) green in color.
- Carrots were generally very large and thick by U.S. standards (except for a few baby carrots) and frequently exhibited external scarring and cosmetic deformities (e.g. having crooked shapes rather than straight shapes).
- The selection of apples was dominated by small-sized fruit (primarily the Red Delicious variety).
- Jalapeño peppers were generally large and dark green in color, with extensive external scarring.

Highlights of Field Visits to Public Markets and Tianguis in Guadalajara, Jalisco, and Mexico City, D.F., December 1998

Mercado San Juan de Dios (Public Market, Located in Downtown District, Guadalajara, Jalisco). At this particular market, less than half of the selling area appeared devoted to perishable products. Many of the stalls in this popular tourist destination just prior to the Christmas holidays were dedicated to garments, electronics, and toys. Within the produce section, research team members observed no more than 30 fresh fruit and vegetable items on display. Most individual merchants—lacking any visible cold storage capability—appeared to carry no more than 10 to 15 fresh produce items in current inventory, practically all of them displayed in bulk bins on wooden countertops. However, while these merchants tended to carry a fairly narrow selection of fresh fruit and vegetables, they typically offered each commodity in a variety of sizes and conditions (such as small and large oranges or bananas at various stages of maturity).

Domestically produced tropical and semitropical commodities, such as oranges, limes, watermelons, pineapples, papaya, and guavas, dominated the selection of fresh fruit, though a small quantity of imported temperate fruits, such as apples and red grapes, were included in the merchandise mix. The predominant vegetables and herbs on display included tomatoes (both plum and globe), washed white Alpha variety potatoes (the favorite variety throughout most of Mexico), onions, lettuce (mostly iceberg, some romaine), jalapeño peppers, carrots, cilantro, jicama, *chayote* squash, and tomatillos. Merchants also offered smaller quantities of red radishes, squash blossoms, cucumbers, cauliflower, and broccoli. Roma (plum) tomatoes far outnumbered globe tomatoes (perhaps accounting for 80 percent of the total). The vast majority of onions were white onions, which most Mexican consumers strongly prefer (instead of the yellow onions commonly sold in U.S. supermarkets and the red onions that are most popular in northwestern Mexico). The only cucumbers in evidence were small pickling cucumbers (similar to the "Kirby" variety).

The cosmetic appearance and uniformity of some of the highly perishable commodities sold at this public market—most notably the lettuce and tomatoes—were visibly superior to the quality of the same commodity observed by research team members in nearby supermarkets. Virtually all of the produce at the market was displayed and sold in bulk. The exception was cellophane-wrapped Styrofoam trays of assorted vegetables labeled "soup sets" (consisting primarily of fresh corn and cabbage).

Most of the market's produce merchants visibly featured a small quantity of U.S.-origin fresh fruit in their stalls (either red grapes or d'Anjou pears in line with the December season). The merchants used the fruit's U.S. origin as a marketing tool, displaying it with tissue paper or mesh bags that indicated the fruit had been grown and/or packaged in the United States (figure 2.8). Unfortunately, most of the U.S.-origin fruit on display had suffered some apparent damage from bruising or crushing.

Mercado Campesino (Public Market Located in Working-Class Residential Neighborhood, Guadalajara, Jalisco). This market facility—poorly lit, rundown, and generally dirty—restricted its merchandise to perishable and prepared food exclusively. While produce merchants carried merchandise similar to the *Mercado de San Juan de Dios* in terms of basic product mix and the ranges of sizes and maturities

Figure 2.8—*U.S.-origin pears displayed with tissue paper featuring "USA Pears" logo at Mercado San Juan de Dios (public market), Guadalajara, Jalisco, December 1998*

within individual product categories, they featured a less extensive selection of commodities (about 15 produce items). The quality of the merchandise on display was frequently poorer than at the *San Juan de Dios* public market. Bananas, potatoes, tomatoes (mostly plum tomatoes), tomatillos, white onions, Red Delicious apples, oranges, and Key limes were the most popular items on display, with lesser quantities of *chayote* squash, green beans, guavas, pears, and cauliflower also offered for sale. The products that appeared to suffer the worst damage in the warm market were fruits and vegetables produced in temperate climates (some of which were imported from the United States)—apples, pears, and cauliflower. There was no evidence that any of the produce merchants had any on-site access to cold storage or refrigeration for their perishable product inventory. Although the produce merchants at the Mercado Campesino typically selected and weighed produce for their customers, some merchants offered customers the option of selecting their own merchandise for a small premium (they advertised this service with signs at their stalls).

Many of the individual fresh fruit and vegetable products on display at the *Mercado Campesino*—particularly the Key limes, plum tomatoes, and guavas—were very small. The smallness perhaps represented a way in which merchants attempted to appeal to their frequent-shopper and price-sensitive customer base by enabling customers to buy a very precise amount of an individual commodity at any single visit to the market. All of the produce items on display were merchandised and sold in bulk form, although in the case of tomatillos, some merchants provided the value-added service of peeling the husks from part of their tomatillo inventory so that they could charge a premium for the peeled version.

Tiangui "El Baratillo" (Located in Working-Class Residential Neighborhood, Guadalajara, Jalisco). This huge, open-air street market—stretch-

ing more than 40 city blocks with stalls selling everything from clothing to auto parts—contained a small selling area devoted primarily to fresh produce. The range of fresh produce available was very limited and heavily dominated by plum tomatoes, white onions, white Alpha potatoes, *nopal* (prickly pear cactus) leaves, winter squash, oranges, bananas, chile peppers, apples, mandarin oranges, watermelons, and U.S.-origin d'Anjou pears (in terrible condition). In general, the quality of the fresh produce at the "*El Baratillo*" *tiangui* appeared worse than that of most of the fresh produce on display at the public markets in Guadalajara. The poorer quality may have been related to the absence of shelter and protection from the sun at the *tiangui*. Unlike the *Mercado Campesino, tiangui* customers were not given the option of selecting their own merchandise. Produce was typically hand-selected by vendors and weighed by them on mechanical scales out of the viewing range of customers.

Mobile Open-Air Tianguis, Condesa, Mexico City, D.F. (Middle-Income Urban Neighborhood). This *tiangui*, which moves from one street corner to another on a 7-day cycle within the Condesa neighborhood, occupied the better part of a large city block with 40-50 open-air, cloth-covered stands. Most of the items offered for sale—perhaps 80 percent—consisted of fresh fruits and vegetables, although some prepared food and snack food was available as well. Members of the AMS/ERS/Texas A&M University research team counted about 50 separate produce items offered for sale. The product selection was highly concentrated among a handful of staple and seasonally available items, notably mandarin oranges (with leaves still attached), Roma (plum) tomatoes, white onions, iceberg and romaine lettuce, and bananas.

Several commodities on display were categorized by size and maturity and were being offered at different prices in accordance with their different quality characteristics. Most prominent among the commodities displayed at a wide range of sizes and maturity levels were Red Delicious apples (different sizes), bananas (different sizes—both standard and petite varieties—and different maturities), and avocados (different maturities). Green d'Anjou pears from the United States, the only visibly imported fresh produce item being sold at the *tiangui*, were displayed for sale still partially wrapped in the green tissue paper used during shipment. The produce vendors were apparently using the tissue paper—which prominently featured a "USA" logo—as a marketing tool.

Self-Service Supermarkets and Chain Stores Finding Niche in Mexican Food Marketplace

While public markets and *tianguis* remain appealing to many Mexican shoppers, especially for fresh produce items where product ripeness and maturity are strongly related to quality, modern self-service supermarkets and chain stores have grown and expanded aggressively in recent years and have become an increasingly available source of perishable foods. Between 1986 and 1997, the number of self-service supermarkets and mass-merchandise chain stores in Mexico that offer full-line grocery and perishable food departments nearly doubled from 522 to 1,028 establishments.[36] (While this aggressive growth rate is impressive, it is also important to recognize that the overall penetration of chain store food marketing in Mexico—and its influence on consumer behavior and food market choice—continues to lag far behind that seen in more developed economies such as the United States. At the end of 1997, the number of chain-operated, self-service food markets in Mexico represented only one store for every 91,163 residents, compared with approximately 8,671 residents for every supermarket/wholesale club store in the United States during the same period.[37])

ANTAD, Mexico's national association of self-service and department stores, defines the variety of Mexican chain stores currently operating in the country as follows:

- *Megamarkets* offer a full line of grocery and department store merchandise (such as clothing and electronics), usually occupy more than 10,000 square meters (approximately 107,639 square feet) of commercial space, and typically offer a variety of services to consumers in addition to retail goods.

[36]Figures for 1986 obtained from "Abasto y Distribución de Alimentos en las Grandes Metrópolis: el Caso de la Cuidad de México," Fernando Rello y Demetrio Sodi, Nueva Imagen, Mexico, D.F., 1989. Figures for end-1997 obtained from Directorio 1998 de la Asociación Nacional de Tiendas de Autoservicio y Departamentales, Mexico, D.F., 1998. These figures exclude 948 convenience stores that typically offer a limited selection of fresh produce.

[37]Mexican supermarkets statistics for end-1997 excerpted from Directorio 1998 de la Asociación Nacional de Tiendas de Autoservicio y Departamentales, Mexico, D.F., 1998, pp. 24-25. Mexican 1997 population data are drawn from "Encuesta Nacional de la Dinámica Demográfica, 1997: Methodología y Tabulados, 1999," available at http://www.inegi.gob.mx/poblacion. U.S. grocery industry statistics for 1997 (based on 30,300 supermarkets and 730 wholesale club stores) obtained from "65th Annual Report of the Grocery Industry," Progressive Grocer, New York, NY, April 1998, p. 10. U.S. population statistics for January 1, 1998, obtained from "Monthly Estimates of the United States Population: April 1, 1980 to June 1, 1999," U.S. Census Bureau, Washington, DC, posted at http://www.census.gov/population/estimates/nation/intfile1.1.txt.

- *Hypermarkets* offer an extensive line of grocery and nongrocery merchandise, usually occupy between 4,500 and 10,000 square meters (48,438 to 107,639 square feet) of commercial space, and typically offer a variety of services to consumers in addition to retail goods.
- *Bodegas* carry most grocery and nongrocery product lines, which they sell to customers at discount (wholesale and semiwholesale) prices. To keep operating costs and prices low, bodegas offer few if any services to customers and typically display merchandise with a minimum of decoration (the bodega format is similar to what is known as a "warehouse" retail store format in the United States). Individual bodegas in Mexico typically occupy more than 2,500 square meters (26,910 square feet) of commercial space.
- *Supermarkets* principally carry perishable goods, other grocery items, and general merchandise (such as health and beauty aids) and typically occupy between 500 and 4,500 square meters (between 5,382 and 48,438 square feet) of commercial space.
- *Membership clubs* principally carry groceries, perishables, clothing, and general merchandise (such as health and beauty aids), much of which is packaged for sale in bulk-sized or multiple-unit packaging and sold to club members at wholesale or semiwholesale prices. Individual membership club stores in Mexico typically occupy more than 4,500 square meters (48,438 square feet) of commercial space and display merchandise with a minimum of decoration in an attempt to reduce operating costs.

Similar to North America and Western Europe, the most aggressive growth among Mexican chain store grocery retailers has been by those firms that feature a diverse array of grocery and department store merchandise at a single location. Consequently, by the beginning of 1998, more than 60 percent of chain store grocery retail establishments in Mexico (excluding convenience stores) consisted of mass-merchandise stores that offered a broad mix of grocery and nongrocery merchandise.[38] Commercial display space in these stores averaged 6,000 square meters (about 64,583 square feet), more than three times that of average conventional chain supermarkets in Mexico (1,824 square meters, equivalent to 19,633 square feet).[39]

One result of Mexico's very recent expansion into chain store grocery retailing is the fact that Mexico's emerging (and comparatively tiny) self-service grocery industry may have become more heavily dominated by mass-merchandise operators—and have larger store facilities on average—than the U.S. self-service grocery industry. Compared to the chain-operated grocery sector in Mexico, nearly 60 percent of supermarket stores in the United States—defined as any full-line, self-service grocery store with annual sales over $2 million, regardless of format—still offered a conventional store format primarily restricted to grocery and general merchandise as of 1998.[40] Only 30 percent of U.S. supermarkets (so-called superstores and combination stores) offered customers an "extended" store format, featuring an extensive array of nonfood items and service departments in addition to traditional grocery items. Ten percent offered customers an "economy" format, emphasizing discount merchandise, much of it sold in bulk, multiunit, or institutional-sized packaging.[41]

The continued domination of older, conventional-format stores in the United States has meant that the retail display space of the average U.S. supermarket is considerably smaller than that of a chain store food market in Mexico. The average retail selling area of a U.S. supermarket in 1998 measured only 28,155 square feet (2,616 square meters), compared with an average of 47,318 square feet (4,396 square meters) among Mexico's 1,028 self-service chain store food markets during the same time period.[42] Thus, the marketing practices of most of Mexico's chain-operated food retailers—emphasizing an extensive selection of grocery and nongrocery items in a single location—in some ways reflect a more "cutting-edge" approach to food marketing than those followed by the average chain-operated U.S. supermarket.

[38]Ibid. Mass-merchandise stores are defined here as megamarkets, hypermarkets, *bodegas* and membership clubs.

[39]Ibid.

[40]Source: "66th Annual Report of the Grocery Industry," Progressive Grocer, New York, NY, April 1999, p. 10. Statistics exclude convenience stores and wholesale club stores.

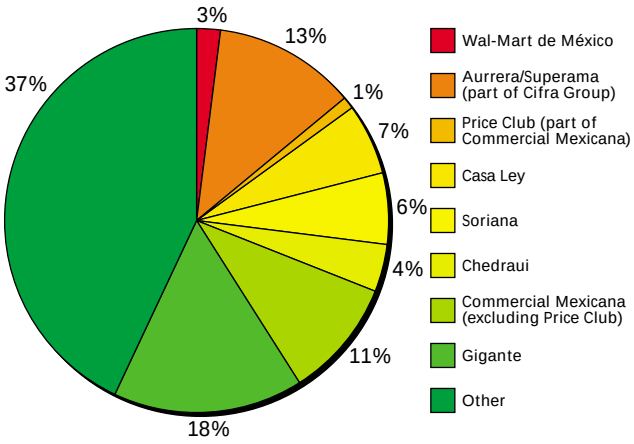
[41]Source: "66th Annual Report of the Grocery Industry," Progressive Grocer, New York, NY, April 1999, p. 10. U.S. supermarket statistics exclude convenience stores (57,000 establishments) and wholesale club stores (750 establishments). "Economy" format supermarkets cover a broad category of retail establishments, which specialize in discount merchandise, such as limited assortment and warehouse stores, which emphasize dry grocery items and offer few perishable items and service departments, to super warehouse, hypermarket, and supercenter stores, which typically feature an extensive array of nonfood items in addition to a full line of grocery and pharmacy merchandise.

[42]U.S. supermarket statistics excerpted from "66th Annual Report of the Grocery Industry," Progressive Grocer, New York, NY, April 1999, p. 12. Mexican statistics excerpted from Directorio 1998 de la Asociación Nacional de Tiendas de Autoservicio y Departamentales, Mexico, D.F., 1998, pp. 24-25. U.S. statistics exclude convenience and wholesale club stores, and Mexican statistics exclude convenience stores.

Market Share of Mexican Chain Store Food Retailers

Although Mexican-origin firms, such as Gigante and Comercial Mexicana, continue to dominate the local food retail scene, prominent international retail firms are increasingly staking their claim in the Mexican retail sector, often with help of joint venture arrangements with Mexican supermarket chains (figure 2.9).

The Mexico City metropolitan area remains the center of the country's food chain store activity, accounting for 22 percent of all supermarket and



Source: Directorio 1998 de la Asociación Nacional de Tiendas de Autoservicio y Departamentales, Mexico, D.F., 1998. Note that these figures exclude convenience stores from the total. In 2000, the Cifra Group officially changed its name to Wal-Mart de México (the majority owner).

Figure 2.9—*Market share of various retail food chains in Mexico, January 1998*

mass-merchandise retail chain stores selling grocery items in 1998. Nevertheless, chain supermarkets and mass-merchandise chain stores have spread to every state of the country in the past decade, although the southwestern region (including the states of Guerrero, Chiapas, and Oaxaca) still lags behind the rest of the country (table 2.6).

Reasons for Growing Popularity of Self-Service Stores in Mexico

Price Competition. One reason for the growing popularity of chain supermarkets and mass-merchandise retail outlets in Mexico appears to be linked to widespread perceptions that chain stores offer prices that are equally, if not more, competitive with alternative market outlets. As noted earlier, prices for fresh fruits and vegetables at large-scale chain supermarkets and mass-merchandise retail outlets often compare very favorably with prices for the same commodities at neighborhood public markets or open-air *tianguis*. This factor may well be related to the superior efficiency of the large-scale and centralized procurement and distribution systems used by many chain store firms.

Recent surveys of consumer food market preferences in Mexico suggest that attractive pricing policies may be a primary reason why certain Mexican grocery shoppers choose to patronize supermarkets. In FMI's January 1998 survey, 93 percent of the shoppers who usually purchased food at a supermarket indicated that "good, reasonable prices" heavily influenced where they shopped. That share compares with 88 percent of consumers who primary shopped at traditional markets or specialty stores and 86 percent who primarily shopped at corner stores.[43]

In addition to their perceived price-competitiveness, supermarkets and other mass-merchandise chain retailers provide a number of benefits that either cannot be obtained—or are not easily obtained—from alternative retail sources in Mexico. These include:

- Superior product selection in perishables;
- Superior product shelf-life through cold storage and refrigeration;
- Self-service;
- Safe shopping environment; and
- Fresh-cut/value-added produce items.

Broad Product Selection. Supermarkets and mass-merchandise chain stores, by virtue of their physical structure and cold storage capabilities, can accommodate much larger inventories than individual fresh produce vendors at public markets or *tianguis*. Consequently, supermarkets and those mass-merchandise chain stores in Mexico that feature produce departments tend to offer a far more extensive line of fruits and vegetables than their public market and *tiangui* competitors. However, their inventories still pale in comparison with the standard array of produce items offered by average U.S. chain supermarkets or mass-merchandise retailers.

According to representatives from ANTAD interviewed in December 1998, the average Mexican supermarket chain or mass-merchandise retail store

[43] Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 92.

Table 2.6—*Regional distribution of chain supermarkets and mass-merchandise retail food stores, January 1998*

Store format	Mexico City	N.W. region	Central	S.E.region	N.E.region	North	S.W.region	Total
	Number of stores							
Supermarket	56	92	27	88	52	73	7	395 (38.4%)
Bodega	72	1	29	10	10	4	8	134 (13.0%)
Hypermarket	76	100	117	34	62	35	13	437 (42.5%)
Megamarket	17	4	15	4	3	5	1	49 (4.8%)
Membership Club	3	3	5	1	0	0	1	13 (1.3%)
Total mass merchandise, chain-operated food stores*	168	108	166	49	75	44	23	633 (61.6%)
Total chain-operated food stores**	224 (21.8%)	200 (19.5%)	193 (18.8%)	137 (13.3%)	127 (12.4%)	117 (11.4%)	30 (2.9%)	1,028 (100.0%)

Source: Directorio 1998 de la Asociación Nacional de Tiendas de Autoservicio y Departamentales, Mexico, D.F., 1998. Note that these figures exclude convenience stores from the total. Regional categories are defined as follows:
"Central" includes Aguascalientes, Colima, Hidalgo, Estado de México, Guanajuato, Jalisco, Michoacán, Morelos, Puebla, Querétaro, San Luis Potosí, and Tlaxcala.
"North" includes Coahuila, Chihuahua, Durango, and Zacatecas.
"N.E." includes Nuevo León and Tamaulipas.
"N.W." includes Baja California Norte, Baja California Sur, Nayarit, Sinaloa, and Sonora.
"S.E." includes Campeche, Quintana Roo, Tabasco, Veracruz, and Yucatán.
"S.W." includes Guerrero, Chiapas, and Oaxaca.
*Excluding supermarkets
**Excluding convenience stores

currently offers approximately 224 stock-keeping units in its produce department, although the number handled by individual stores at any given time may range from 69 to 389.[44] Collectively, these supermarket and mass-merchandise firms may feature as many as 600 different produce items over the course of the year, many of them on a seasonal basis only.[45] In contrast, the average supermarket in the United States carries over 500 produce stock-keeping units, nearly twice as many as the average Mexican supermarket or mass-merchandise retail store. The largest U.S. supermarket firms report that they can get as many as 1,100 different produce items from their suppliers.[46]

While the range of produce offered by standard supermarkets or mass-merchandise retail stores in Mexico may be small by U.S. standards, the more than 200 produce items offered by these stores represent an enormous increase from the 50 or fewer items typically offered by alternative retail public markets and *tianguis*. Therefore, the expansion of chain store outlets in Mexico—and the consequent expansion of retail selling capacity that can accommodate a broader selection of specialty fruits and vegetables—has created new opportunities for marketing a broader range of imported fresh produce items to the Mexican public. The benefits of providing an expanded range of product choices to Mexican consumers have been felt most deeply by suppliers and marketers of U.S.-origin produce.

ANTAD estimates that 4-6 percent of all the produce currently sold in Mexican supermarkets/chain stores is imported and that the vast majority consists of "*frutas finas*," or fruit grown in temperate climates, such as fresh table grapes, peaches, pears, nectarines, kiwi fruits, apples, and apricots.[47] (These fruits are apparently known by the collective label, "frutas finas" or "finer fruits," because they are still regarded by many Mexican consumers as luxury items rather than a standard component of a daily diet, with the possible exception of apples.) The vast majority of the "finer fruits" that appear on Mexican retail shelves originate in the United States (table 2.7). However, a growing minority of these items, especially table grapes and peaches, are beginning to be shipped by ocean freight from Chile to the port of Manzanillo during the winter season in the Northern Hemisphere. The influx of Chilean imports in recent

[44]Information about Mexican supermarkets and chain stores obtained during interviews with representatives of the *Asociación Nacional de Tiendas de Autoservicio y Departmentales* in Mexico City, December 10, 1998.
[45]Ibid.
[46]Marketing and Performance Benchmarks for the Fresh Produce Industry, Edward W. McLaughlin, Kristen Park, and Debra J. Perosio, Cornell University, Ithaca, NY, October 1997, p. 36.
[47]Information obtained during interviews with representatives of the *Asociación Nacional de Tiendas de Autoservicio y Departmentales* in Mexico City, December 10, 1998.

Table 2.7—*Mexican imports of selected temperate fruits, 1997*

Product category	Total imports (MT)	Imports from United States	Imports from Canada	Imports from Chile	Imports from other countries	U.S. market share
	Metric tons					Percent
Apples	115,017	114,181	752	44	40	99.27
Pears	41,302	40,193	18	1,090	1	97.31
Table grapes	37,345	27,139	n/a	10,176	30	72.67

Source: "Mexico Remains Important Market for U.S. Deciduous Fruit," USDA Foreign Agricultural Service, U.S. Embassy, Mexico City, D.F., September 1998.

years has reportedly been prompted by the steady relaxation of fresh produce trade restrictions between Mexico and Chile since the passage of a free trade agreement between the two countries in 1991.

Despite ANTAD's claims that imported produce accounts for only about 5 percent of supermarket and chain store produce sales, information collected directly from retail produce buyers and produce department store managers by members of the AMS/ERS/Texas A&M University research team suggests that this aggregate figure may understate the relative contribution of imported produce at individual firms. Representatives of corporate produce procurement departments and managers of retail produce departments from six different supermarket and mass-merchandise chain store firms, contacted by the team in Mexico City, Monterrey, Guadalajara, and Culiacán between March and December 1998, noted that the proportion of imported produce items carried by their stores ranged from a low of 5 percent to a high of 20 percent. Aside from the demand for temperate fruits mentioned previously, corporate produce buyers, retail produce department managers, and receivers of perishable commodities noted that there was strong demand for certain U.S.-origin products (such as onions, tomatoes, and oranges) during times of the year when Mexican-origin versions of the same commodity were difficult to obtain. (One supermarket produce buyer noted that there were even times of the year when he would ship jalapeño peppers from the United States to Mexico!)

Superior Product Shelf-Life Through Cold Storage and Refrigeration. Climate-controlled supermarkets and mass-merchandise retail stores, which feature refrigerated display cases in their produce departments and often maintain their produce inventory in cold storage before moving it to retail shelves, clearly offer superior protection for highly perishable commodities than the standard public market or *tiangui*, where refrigeration is rare or nonexistent. According to representatives from ANTAD, the superior ability of supermarkets and mass-merchandise chain stores to preserve the quality of fresh fruits and vegetables has reportedly not gone unnoticed by those Mexican consumers living in regions with very hot climates. In a December 1998 interview, they estimated that probably 30-40 percent of Mexican consumers living in regions with hot weather usually purchased their fresh produce in a climate-controlled supermarket or chain store. This compares with the 21 percent of shoppers surveyed by FMI in January 1998 who indicated they usually purchased fresh fruits and vegetables at a self-service supermarket or mass merchandise chain store rather than at another type of retail market.[48]

Rising Concerns About Food Wholesomeness. When evaluating the potential appeal of a temperature-controlled retail environment among Mexican fresh fruit and vegetable consumers, it may be instructive to note the extreme importance that Mexican consumers accord food safety issues when making a decision about where to shop. Ninety-three percent of the participants in FMI's January 1998 survey reported that food safety was a very important factor in their choice of food market, topping the percentage of respondents who cited either "produce quality" or "reasonable prices" as very important influences.[49] Within the category of food safety, the single greatest threat to food safety was perceived to be related to "spoilage and germs." Twenty-seven percent of shoppers reported that they considered spoilage and germs one of the greatest threats to the safety of the food they purchased, up from only 5

[48]Information obtained during interviews with representatives of the *Asociación Nacional de Tiendas de Autoservicio y Departmentales* in Mexico City, December 10, 1998.

[49]Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 90.

percent in January 1995 and 14 percent in January 1996.[50]

To the extent that these food safety concerns—and concerns about spoilage in particular—continue to exert greater influence on the food market decisions of Mexican consumers, the supermarket sector can realistically be expected to capture a growing share of the perishable commodity market. Supermarkets already retain a considerably better reputation than alternative retail outlets for providing safe food. Although consumer confidence in food safety has waned substantially in Mexico in recent years, regardless of market preference, those consumers who typically patronize supermarkets are beginning to express a greater degree of confidence in the safety of their food purchases than patrons of traditional markets and specialty stores. Seventy-four percent of supermarket shoppers interviewed in January 1998 reported that they were "mostly" or "completely" confident in the safety of the food, compared with only 60 percent of public market, *tiangui*, and specialty store shoppers. This contrasts with virtually equal responses by both groups in January 1996 (with 82 percent of supermarket shoppers and 83 percent of public market/*tianguis*/specialty store shoppers indicating that they were "completely" or "mostly" confident in the safety of their food purchases).[51]

"Self-Service," a New Addition in Local Produce Marketing. "Self-service" retailers such as supermarkets and mass-merchandise chain stores offer Mexican consumers an opportunity to personally handle, select, and weigh their perishable merchandise, a comparatively rare advantage in a country where such practices are relatively uncommon in other market outlets. As noted earlier, it is standard practice for public market and tiangui merchants to select fresh fruit and vegetables on behalf of a retail customer, to the extent that some public market merchants will actually charge a premium to those customers who want the "privilege" of selecting their own merchandise.[52]

Similarly, merchants at public markets and *tianguis* typically weigh merchandise for their customers, often on scales that are obscured from their customers' view. Therefore, the customer at traditional market formats such as a public market or a *tiangui* is theoretically more vulnerable to being shortchanged than at a "self-service" supermarket or mass-merchandise retail store. The suspicion raised by business practices at traditional market facilities is particularly acute in the case of transient *tianguis*, since merchants at these mobile markets are believed to be subject to less regulatory oversight than merchants at permanent, government-managed, public market facilities. Also, the improper use of weights and measures is believed to be more prevalent at *tianguis* than at alternative—and more carefully regulated—market outlets.[53]

Personal Safety While Shopping. One variable that is reported to have an exceptionally strong influence on household shoppers in Mexico and may be a contributing factor to growing chain store popularity, especially among higher-income households, is the perception that chain supermarkets and mass-merchandise stores provide a superior degree of personal security than other retail outlets. Since 1995, the percentage of Mexican food shoppers surveyed by FMI who indicated that personal safety was a "very important" factor influencing their choice of food market has consistently equalled or surpassed 90 percent, making personal safety one of only five factors that were rated so strongly by consumers. (The other four factors were food safety, produce quality, good/reasonable prices, and fresh meat quality.[54]) The influence of personal safety on food shopping decisions appears to be more important among higher income households than among members of the general population. In FMI's January 1998 survey, 99 percent of the respondents within the top two income brackets—approximately 20 percent of the sample—indicated that personal safety was a "very important" influence on their choice of food market, making it the single most influential factor on store choice within this group.[55]

In terms of providing a safe shopping environment, chain supermarkets and mass-merchandise retail stores in Mexico appear to offer advantages that aren't readily available at alternative retail outlets. Supermarkets and mass-merchandise chain stores in Mexico usually feature brightly lit, wide shopping aisles, a stark contrast to the dim surroundings of the typical enclosed public market and the narrow shop-

[50] Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 148.

[51] Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 150.

[52] Observations by members of the AMS/ERS/Texas A&M University research team during site visits to public markets in Guadalajara, Jalisco, in December 1998.

[53] "Vertiginoso Crecimento de Tianguis," Ocho Columnas, Guillermo Gómez Sustaita, Guadalajara, Jalisco, December 7, 1998, p. 6A.

[54] Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 96.

[55] Ibid.

ping aisles and intense congestion found at most public markets and *tianguis*. In addition, many supermarkets and mass-merchandise chain stores in Mexico—especially branches of international firms such as Auchan, Carrefour, and Wal-Mart—have chosen to hire large numbers of private security guards to roam store aisles and parking lots, and their very visible presence may deter criminal activity.

Superior Selection of Value-Added/Convenience Foods. Another area in which supermarkets and chain stores are able to distinguish themselves from produce vendors at public markets and tianguis is their ability to offer fresh-cut and convenience-oriented produce items in refrigerated display cases that can maintain fragile items at proper handling temperatures. From the northern border town of Nuevo Laredo to the southern city of Villahermosa, Tabasco, supermarkets and mass-merchandise retailers—especially outlets of multinational firms—are beginning to introduce a greater number of fresh-cut items in their produce departments, a development that has apparently been well received. The most popular fresh-cut items are packaged salads—dominated by iceberg and romaine lettuce-based salad mixes and cabbage and carrot-based slaw mixes—with some individual stores (especially in more affluent communities) offering fresh-cut vegetables, such as baby peeled carrots and ready-to-eat fruit salads featuring melons and tropical fruits. (The specific assortment of fresh-cut merchandise offered by individual supermarkets and chain stores in various regions of Mexico will be described in further detail later in this chapter.)

The selection of fresh-cut produce currently offered by Mexican supermarkets and chain stores remains very limited by U.S. standards and often consists of no more than a handful of packaged salad items. Nevertheless, buyers and produce department managers throughout Mexico consistently noted during interviews in March and December 1998 that packaged salads may provide U.S. produce exporters some of the best opportunities for future sales growth. The rationale is that the quality of U.S. packaged salad products is perceived—by both supermarket buyers and consumers—to be far superior to the Mexican equivalent. Although a number of supermarkets and chain stores in Mexico carry fresh-cut salad items processed and packaged by domestic suppliers (most notably ProAgro, a Mexican/Chilean joint venture firm specializing in fruit and vegetable production, marketing, and distribution), local produce handlers indicated they greatly prefer packaged salad items from the United States for the following reasons:

- U.S. manufacturers and distributors are believed to uphold a higher standard of sanitary conditions and cold chain maintenance throughout the processing and handling process.
- U.S. manufacturers offer greater product variety.
- Brand recognition and confidence among Mexican consumers in the quality and reputation of U.S.-origin, fresh-cut products is far greater than for domestic-origin, fresh-cut products.
- U.S. manufacturers of fresh-cut products have access to a superior (and presumably more efficient) distribution system between origin and destination.

Prepackaged Food Product Labeling Tightly Controlled in Mexico

To take advantage of existing market opportunities in Mexico, shippers and exporters of packaged produce items to Mexico need to be aware that retail food packaging is subject to stringent Spanish-language labeling requirements. Since November 1, 1997, prepackaged food products offered for retail sale in Mexico—whether imported or domestic—have been required to carry certain basic product information in Spanish if the food package weighs at least 25 grams per unit (approximately 0.88 ounce) and the "main display area" of the packaging is at least 16 square centimeters (or 2.48 square inches).[56]

The mandatory label information includes:

- Name of product type and brand (a translation of the brand name itself is not required);
- List of ingredients in descending order of quantity for those ingredients equal to or exceeding 5 percent of the product composition, including added water, and the percent content of combined additives or colors;
- Net content or drained weight, as appropriate, in metric units (with commas used in the place of decimal points);
- Name and address of manufacturer or importer (this may refer to the actual manufacturer of the product, a merchant who commissions total or partial manufacture of the product from a third party, or an importer who represents himself/her-

[56]"Update No. 2—Mexican Labeling Standard NOM-051," American Embassy, Mexico City, D.F., October 14, 1997, p. 3.

self as a supplier of the product through use of a brand, trademark, or company name);
- Country of origin;
- Lot number, which may be any system the manufacturer chooses. (Its purpose is to facilitate product recall if it becomes necessary); and
- Expiration date, as determined by the manufacturer (as distinguished from a preferred consumption date).

Labels on prepackaged food products that make any qualitative or quantitative nutritional claims, such as "low-fat," "low-calorie," "low-salt," or "dietetic," must include specific information about the nutritional content of the food product per serving (based on the Mexican Health Ministry's standard, NOM-086). Examples of labeling requirements for prepackaged food with specific nutritional claims include the mandatory listing of the following ingredients:

- Saturated fat and cholesterol in milligrams (when a "low-fat" claim is used);
- Sodium in milligrams (when a claim of low-salt/low-sodium is used);
- Sugar in milligrams (when a claim of "low-sugar" is used); and
- Number of kilocalories (when a claim of "low-calorie" or "dietetic" is used).

Additional mandatory phrases are required when aspartame and sorbitol are used or when products claim to be "gluten-free."

Optional label information that may also appear on the product package include:

- Preferred consumption date (e.g., the phrase, "best consumed by. . .[date]";
- Complementary nutritional information, such as vitamin and mineral content, expressed as a percent of the Mexican daily recommended allowance; and
- Instructions for use or preparation.

The mandatory label information regarding product type, brand, and net content must appear on the primary surface of the food package, while other required and optional information (such as recommended consumption date information) may appear on any other surface of the packaging. Although manufacturers and importers are permitted to use a food package with other than Spanish on the label, the Spanish-language information that appears must have the same characteristics as the foreign language product information in terms of size, typographical proportions, and visibility. The only way that manufacturers and importers can exempt themselves from the "same size" requirement is if they completely obscure the foreign-language product information (by attaching an adhesive label, for example) so that it can not be seen by the consumer.

Compliance with the new food labeling regulations is verified by the use of one of two documents, a Certificate of Compliance (*Constancia de Conformidad*) or a Judgement of Compliance (*Dictamen de Cumplimiento*). These documents, either one of which must be presented to border inspectors or customs officials during the import clearance process for prepackaged food products, are issued by one of ten private companies authorized by the Mexican government to act as "verification units" for all food product labeling subject to NOM-051 or Mexico's General Labeling Specifications for Prepackaged Food and Nonalcoholic Beverages.

The Certificate of Compliance program allows importers to receive approval of a product label and package in advance of physical importation (and product packaging/stickering). Representatives of a verification unit preinspect a sample product label and package to ensure that it complies with NOM-051. If the label and packaging prove satisfactory, the verification unit issues a Certificate of Compliance, which is subsequently presented to a Mexican border inspector or customs official at the time of importation. As of early 1998, the one-time fee for a Certificate of Compliance was about $64.[57]

A single Certificate of Compliance can be issued to cover an entire "family" of products without any limit on the number of family members, as long as the members of the product family share the same basic ingredients, use the same product brand, and use identical or very similar labeling and container designs. (Examples of product groups that would qualify as members of the same product "family" on a Certificate of Compliance include foods that are essentially identical except for different artificial flavorings and colors or a line of dry pasta products that offers a variety of noodle shapes). As of early 1998, each additional member of the product family added about $7 to the total cost of the Certificate of Compliance.[58]

For products that have been kept in storage before entering Mexico or products entering the country

[57]"Update: Mexico's New Labeling Standards," Lewis Stockard, AgExporter, February 1998.
[58]Ibid.

under contract with a verification unit that are taken directly to the verification unit's facilities, an alternative document, the Judgement of Compliance (*Dictamen de Cumplimiento*), may be used. Under this program, representatives of the verification unit conduct an actual physical inspection of the packaged product at the time of importation. As in the case of Certificates of Compliance, a single Judgement of Compliance may be issued to cover an entire "family" of products, as long as the family members share the same basic ingredients, use the same product brand, and use identical or very similar labeling and container designs. As of February 1998, the fee for a Judgement of Compliance was about $107, with additional items in a product "family" costing approximately $12 apiece.[59]

According to receivers of prepackaged fresh produce in Mexico, interviewed by members of the AMS/ERS/Texas A&M University research team in March and December 1998, mandatory Spanish-language food labeling has definitely led to a small reduction in the variety of packaged produce items that supermarkets and mass-merchandise chain stores import from the United States. The most notable reduction has been in packaged salads. Given the relatively small number of food stores currently operated by chain store firms in Mexico, some U.S. suppliers have been unwilling to modify the packaging used for each item in their product line just to satisfy the new Mexican labeling requirements. In some cases, the suppliers have restricted their packaging modifications to those items that are perceived to have the greatest market potential.

More Intense Scrutiny of Prepacked Food Product Labels. In the September 17, 1999, issue of Mexico's Diario Oficial (the Mexican equivalent of the U.S. Federal Register), the Mexican Ministry of Commerce proposed modifications in the current labeling requirements for prepackaged imported food and nonalcoholic beverages. Several of the modifications were subsequently adopted by the Mexican government and were published in the February 29, 2000, issue of Diario Oficial.[60] Among the modifications was a section providing for the ongoing verification of label accuracy, which would require that labels covered by NOM-051 for prepackaged food and nonalcoholic beverages be reinspected every 6 months.

Following the publication of the change in labeling requirements, officials with the U.S. Embassy's Foreign Commercial Service in Mexico City expressed concerns that the proposed new regulations were potentially troublesome to the U.S. food industry as they did not allow for any tolerance of error. As drafted in the February 2000 announcement, the new labeling requirements would rely on a random sample of five items to demonstrate that the stated contents of a given label correspond exactly with the contents of a given product and are in proper compliance with the law. If any of the labels on the five random product samples were found to be less than 100 percent accurate, the product could theoretically be seized in stores and confiscated.[61]

Updated information about the current status of Mexican food product labeling requirements and enforcement may be obtained from the Foreign Agricultural Service (FAS) Agricultural Trade Office (ATO) in Mexico City, which can be reached by e-mail at atomex@avantel.net; by telephone at (011-52-55) 5280-5291, 5280-5277, 5281-6586, or 5281-6588; or by facsimile (from the United States) at 011-52-55-5281-6093. The ATO also maintains a Web site at http://www.fas-la.org/mexico/.

Primary Characteristics of the Mexican Chain Store Shopper

The standard chain store food shopper in Mexico appears quite different from the average Mexican household grocery shopper. The grocery purchasing habits of residents in regions such as the northern metropolitan area of Monterrey—where self-service supermarkets and hypermarkets are strongly preferred for food purchases (including perishables)—vary greatly from those in metropolitan areas in Mexico City and Guadalajara, where traditional food market formats such as *tianguis* and public markets continue to attract large numbers of household consumers.

Moreover, despite aggressive attempts by supermarket and chain store firms to attract shoppers from all income levels, the percentage of Mexican households that primarily relies on supermarkets and mass-merchandise chain stores for food supplies continues to be dominated by higher income segments of the population. Lower income households continue to rely

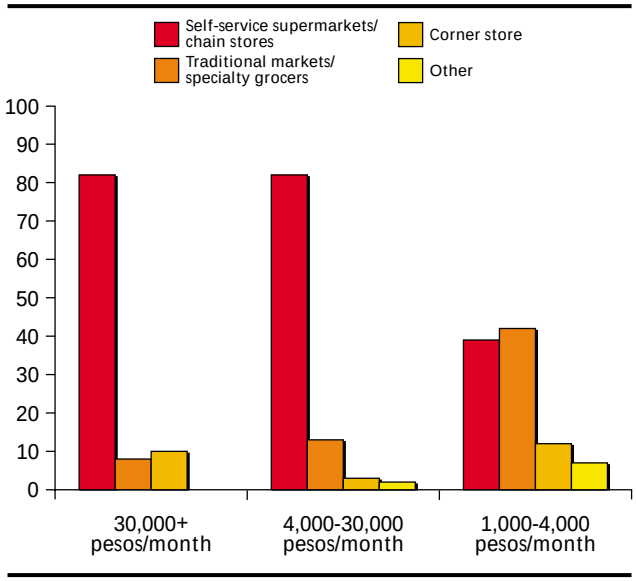
[59] Ibid.

[60] "SECOFI Publishes Modifications to Product Certification Requirements," Gabriel Hernandez, Agricultural Trade Office, U.S. Embassy, Mexico City, D.F., May 9, 2000.

[61] "SECOFI Published Proposed Changes to Product Certification Requirements," Sal Trejo, Benjamin Juarez, and Gabriel Hernandez, U.S. Embassy Foreign Commercial Service, Mexico City, D.F., October 19, 1999, p. 2.

heavily on traditional markets for most of their food purchases, especially perishable items. Some of the most prominent differences between typical supermarket and chain store food shoppers and traditional food market shoppers are explored below.

Differences in Income. Many supermarkets and mass-merchandise chain stores have aggressively tried to woo lower income shoppers by deeply discounting perishable grocery items–including using produce as a loss-leader (at times below wholesale prices). Nevertheless, the appeal of supermarket and mass-merchandise chain stores as a source of perishable groceries remains far more profound among members of higher income households, a comparatively small percentage of the marketplace (figure 2.10).



Source: Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 66.

Figure 2.10—*Percentage of groceries purchased at various types of retail outlets by income level*

While upper and middle-income consumers across Mexico appear to have eagerly embraced supermarkets for food purchases in general—with 82 percent reporting that they primarily shop for food at such stores—they express far less unanimity when it comes to relying on a supermarket as their primary source for fresh fruit and vegetables.[62] Food shoppers from households with the highest incomes (those with a minimum monthly income of 30,000 pesos) reported they were much more dependent on supermarkets as a primary source of fresh fruits and vegetables than shoppers from middle-income households. Although 43 percent of the top income earners surveyed by FMI in January 1998 reported that they usually purchased fresh fruits and vegetables in a supermarket, only 27 percent of participants in the middle-income category (monthly incomes ranging between 4,000 to 30,000 pesos) did the same.[63]

The dependence on supermarkets as a source of groceries and fresh produce dwindles even further among lower income households. As illustrated in figure 2.10, only 39 percent of the lowest income food shoppers (monthly household incomes from 1,000 to 4,000 pesos) reported that they relied on supermarkets as a primary source of food—roughly *half* the percentage reported by participants in higher income brackets—and only 17 percent reported that they usually purchased fresh fruits and vegetables at a supermarket.[64]

Two factors that may help explain the wide disparity between the store formats preferred by higher and lower income households are related to access to transportation and storage. Most households within the top and middle-income tiers own at least one automobile, whereas automobile ownership is very unusual among the lowest income segment of the survey population. In this context, it is understandable that the average consumer from a lower income household, who may have to carry merchandise home from the store on foot or depend on public transportation, might find neighborhood markets and corner stores considerably more attractive than supermarkets and mass-merchandise chain stores.

Consumers without access to a vehicle are likely to pay great attention to the convenience of traveling to and from a store when deciding where to shop and are inherently restricted in the amount of merchandise they can purchase and transport during any single store visit. Similarly, lower income households in Mexico frequently do not possess ample refrigeration and freezer capacity for perishable food products. Consequently, many advantages that chain stores offer—such as the ability to purchase a broad range of merchandise at one location or the ability to purchase large volumes of competitively priced merchandise in bulk—may be lost on this segment of the

[62] Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 66.

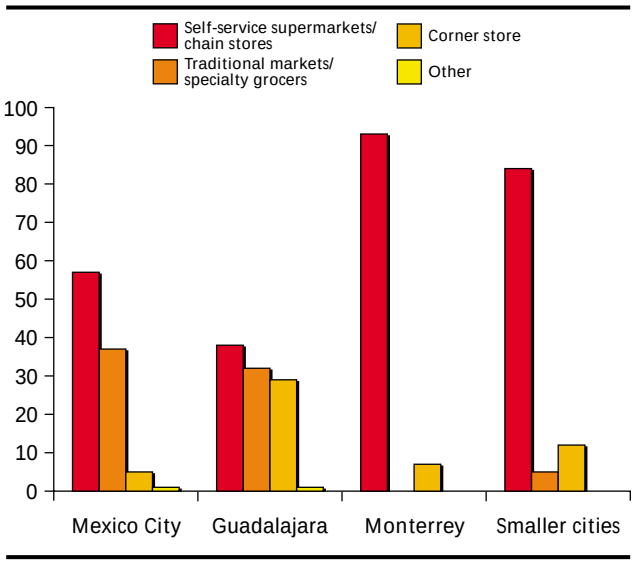
[63] Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 76.

[64] Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, pp. 66 and 76.

population. In apparent support of this hypothesis, representatives of Mexico's primary retail trade association, ANTAD, interviewed in December 1998, noted that the aggressive pricing policies used by many supermarkets and chain stores to lure non-chain store shoppers—such as sponsoring weekly "*tianguis* days" with deep discounts on fresh produce or meat—have not significantly changed their household customer base. However, they have seen an increase in the number of small institutional buyers, such as restaurant owners, who purchase products from chain retail outlets.

Regional Differences. Consumers in various regions of Mexico continue to exhibit very different and distinct food market preferences, with a commensurate impact on the local rate of supermarket growth and use. Recent surveys of consumer preferences suggest that the share of Mexico City food sales represented by supermarkets and mass-merchandise chain stores may still be fairly low, especially in the case of perishable grocery items. According to FMI's January 1998 survey, only 57 percent of Mexico City household grocery shoppers reported that they usually purchased food at a self-service supermarket, while 37 percent reported that they usually purchased food at a traditional market (*tianguis*/public market) or specialty store (figure 2.10).[65] When the market preferences of Mexico City consumers were analyzed with respect to perishable grocery items, the dependence on self-service supermarkets dropped substantially, with only 14 percent of consumers reporting that they typically purchased fresh fruits and vegetables at a self-service supermarket rather than another type of retail outlet (figure 2.11).[66]

Consumers in Guadalajara, Mexico's second largest city, appear at least as reluctant as Mexico City consumers to modify their traditional food shopping practices. In FMI's January 1998 survey, only 38 percent of Guadalajara food shoppers reported that self-service supermarkets were their primary food store, with 32 percent reporting that they usually purchased food at a traditional market or specialty store and another 29 percent reporting that they usually purchased food at a neighborhood corner store. (The share of individuals reporting that they used corner



Source: Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 66. "Smaller cities" category denotes aggregate survey results from Chihuahua, Culiacán, Mérida, and Veracruz.

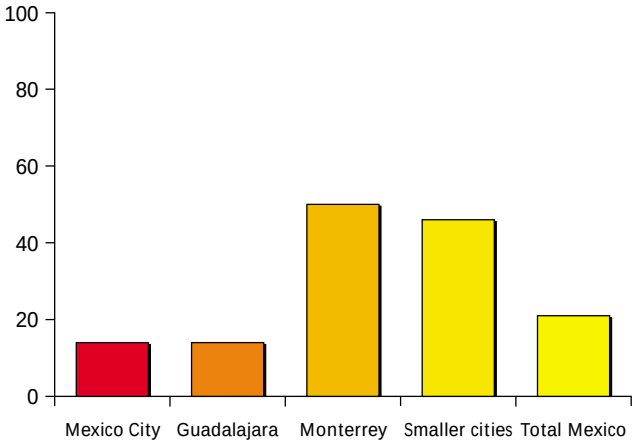
Figure 2.11—*Variation in supermarket patronage by region, in percent*

stores as a primary food source was more than twice that of any other region surveyed by FMI).[67] As in Mexico City, only a meager 14 percent of food shoppers in Guadalajara reported that they typically purchased fresh fruit and vegetables at a self-service supermarket (figure 2.12).[68]

On the other side of the spectrum, the popularity of self-service supermarkets has spread rapidly among food shoppers in the northern city of Monterrey, who have almost entirely abandoned traditional food markets for their standard grocery purchases. Sixty-two percent of household grocery shoppers in the Monterrey region reported that they shopped most frequently for food at a self-service supermarket, while an additional 31 percent reported that they usually purchase food in a chain-operated hypermarket (which carries a full line of nongrocery merchandise in addition to dry and fresh grocery items). These figures suggest that approximately *93 percent* of Monterrey residents are in the habit of purchasing household groceries at self-service retail store on a routine basis.[69]

In contrast, *fewer than 1 percent* of the household grocery shoppers surveyed in Monterrey reported that they usually purchased food in a traditional market or

[65] Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 10.
[66] Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, pp. 72.
[67] Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 62.
[68] Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, pp. 72.
[69] Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, pp. 66.



Source: Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, p. 72. "Smaller cities" category denotes aggregate survey results from Chihuahua, Culiacán, Mérida, and Veracruz.

Figure 2.12—*Percentage of fresh fruits and vegetables purchased at supermarkets/chain stores by region*

specialty store (down from 4 percent reported only 2 years earlier), and only 7 percent reported that they usually purchased food at a neighborhood corner store.[70] Even in the case of highly perishable goods such as fresh fruits and vegetables, fully half of Monterrey household food shoppers indicated that they typically purchase these items at a self-service supermarket, more than three times the percentage (14 percent) reported by Mexico City and Guadalajara food shoppers.[71]

Supermarket popularity also appears considerably more widespread among consumers in some of Mexico's smaller cities than in the more populated metropolitan areas of Mexico City and Guadalajara. According to the FMI January 1998 survey, 84 percent of food shoppers in the geographically diverse regional hubs of Chihuahua, Culiacán, Mérida, and Veracruz reported collectively that they primarily relied on a self-service supermarket. Only 12 percent of this group reported that they usually purchased food at a corner food market, and a mere 5 percent reported that they usually purchased food at a traditional market or specialty store. The share of consumers in these four smaller cities who indicated that they usually purchased fresh fruits and vegetables at self-service supermarkets was 47 percent, virtually identical to the 50 percent reported by Monterrey food shoppers and, once again, more than three times the percentage (14 percent) reported by food shoppers in Mexico City and Guadalajara.[72]

The striking difference between food market preferences in Mexico City/Guadalajara and other urban areas in Mexico does not appear to have a single explanation. Part of the attraction of self-service supermarkets and mass-merchandise stores for food shoppers in the Monterrey region may be the fact that shoppers in this region live near the United States and have become accustomed to visiting U.S. superstores with large, diverse merchandise selections at discount prices. (Monterrey is only 240 kilometers or approximately 150 miles from the U.S. border, and the heavy concentration of supercenter stores at sparsely populated U.S. border towns such as Laredo, TX, testifies to the popularity of such stores among Mexican consumers within commuting distance from the U.S.-Mexico border.) This theory is shared by several supermarket buyers interviewed by the AMS/ERS/Texas A&M University research team in March and December 1998, who contended that the greatest potential for near-term future supermarket expansion in Mexico exists within 200 miles of the U.S. border because of the influence and familiarity of U.S. retail practices.

Members of the food retail industry in Mexico have also attempted to explain the vast differences in store format preferences in different regions by focusing on local differences in weather conditions. During a December 1998 interview, representatives of ANTAD and produce buyers from several large supermarket firms commented that local weather patterns were a major factor influencing consumer choice of retail outlet. In regions with very hot weather, an estimated 30-40 percent of all fresh produce purchases took place in climate-controlled supermarkets and mass-merchandise chain stores, compared with a national average of approximately 21 percent.[73] However, in high-altitude central regions with milder climates, tianguis and public markets represented more of a competitive threat to supermarkets and mass-merchandise chain stores, since consumers in these regions were less concerned about purchasing fresh fruits and vegetables that had been stored and handled at ambient temperatures.

The possible influence of weather on local consumer behavior corresponds nicely with FMI's find-

[70]Ibid.
[71]Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, pp. 72.
[72]Ibid.
[73]Tendencias en México: Actitudes del Consumidor y el Supermercado, Food Marketing Institute, Washington, DC, 1998, pp. 68.

ings from its January 1998 survey. The survey indicated that traditional open-air and enclosed (non-air conditioned) food markets were far more popular in Mexico City and Guadalajara—cities that enjoy a relatively mild climate—than in the other cities included in the survey (Chihuahua, Culiacán, Mérida, Monterrey, and Veracruz), which typically experience much warmer weather. As table 2.8 illustrates, Mexico City and Guadalajara, which are located in high-elevation areas, experience considerably milder climates than other metropolitan areas in the FMI survey, especially during the evenings and throughout the summer months.

Another factor that may contribute to the relative attractiveness of supermarkets and chain stores as a source of fresh produce in various regions in Mexico is the extent to which local food shoppers consume fresh fruit and vegetables as part of their overall diet. ANTAD representatives pointed out in their December 1998 interview that the share of produce sales in relation to overall store sales can differ substantially among regions. In towns around the northern border areas with the United States, produce may account for as much as 12-15 percent of overall grocery sales, while the proportion of produce sales to overall grocery sales may dip as low as 5-8 percent in communities near the center of Mexico. To the extent that perishable fresh fruits and vegetables comprise a greater portion of local diets than comparatively shelf-stable commodities such as grains, legumes, and bread products, this may well affect local consumer preferences for purchasing groceries in a climate-controlled atmosphere.

Vehicle ownership may also play a role in the preferences of local consumers and the apparent strong preference of Mexico City and Guadalajara shoppers to patronize traditional markets for perishable foods. Per capita car ownership might reasonably be expected to be less prevalent in cities that are very densely populated and have well-developed public transportation systems.

Observations from Supermarket and Mass-Merchandise Chain Store Field Visits, December 1998

Provided below are highlights of observations collected by the AMS/ERS/Texas A&M University research team during visits to 14 supermarkets and mass-merchandise chain stores in the northern Mexican border town of Nuevo Laredo, the central metropolitan areas of Guadalajara and Mexico City, and the southeastern cities of Veracruz and Villahermosa in December 1998. The physical layout of chain store produce departments and the core selection of produce items offered remained roughly similar from region to region. Nonetheless, the research team discovered that the range of merchandise, the price of individual commodities, and the inclusion of imported produce items and fresh-cut vegetable/packaged salad products varied substantially from store to store, even when the physical size of the departments and the availability of shelf space were comparable.

Two factors that appeared to influence the range of produce offered and/or the inclusion of imported produce and fresh-cut vegetables/packaged salads in the stores' produce departments were:

- The income level of the store's clientele (based on store location and the likely customer base that a store attracts); and
- The degree to which the firm was managed/owned by a multinational company.

Not surprisingly, stores operating in higher-income residential communities generally carried a broader range of comparatively expensive imported, specialty, and fresh-cut produce than stores operating in lower income communities. Even so, consumer income alone did not appear to explain the entire difference in

Table 2.8—*Average maximum and minimum temperatures, selected Mexican cities*

City	January-March	April-June	July-September	October-December	Yearly
Chihuahua	4-21°C (39-70°F)	15-31°C (59-88°F)	18-31°C (64-88°F)	6-22°C (43-72°F)	11°C-26°C (52-79°F)
Culiacán	n/a	n/a	n/a	n/a	17-31°C (63-88°F)
Guadalajara	8-26°C (46-79°F)	14-30°C (57-86°F)	15-26°C (59-79°F)	10-25°C (50-77°F)	12-27°C (54-81°F)
Mérida	n/a	n/a	n/a	n/a	21-32°C (70-90°F)
Mexico City	7-23°C (45-73°F)	11-26°C (52-79°F)	11-24°C (52-75°F)	8-22°C (46-72°F)	9-23°C (48-73°F)
Monterrey	11-23°C (52-73°F)	20-31°C (68-88°F)	22-33°C (72-91°F)	13-24°C (55-75°F)	17-28°C (63-82°F)
Veracruz	19-26°C (66-79°F)	23-30°C (73-86°F)	23-31°C (73-88°F)	21-27°C (70-81°F)	22-28°C (72-82°F)

Sources: Mexico Handbook, Joe Cummings and Chicki Mallan, Moon Publications, Inc., Chico, California, pp. 14-17, and Historical Weather Search results from the Washington Post home page, located at http://www.washingtonpost.com/wp-srv/weather/historical/historical.htm.

produce merchandising practices among individual firms. Regardless of location, multinationally owned and operated mass-merchandise firms such as Wal-Mart, Sam's Club, and Carrefour generally appeared to be much more aggressive about dedicating prime shelf space to imported fresh fruits and vegetables and value-added fresh produce items than Mexican-based mass-merchandise firms (such as Soriana and Tiendas Chedraui). These differences may be traced to the fact that many of the multinational firms have more well-established business relationships with foreign suppliers than Mexican-run firms and may have superior leverage in procuring imported and/or value-added fresh produce at reasonable prices. The multinational firms may also benefit from the large volumes of product that they are already accustomed to purchasing for their retail outlets outside of Mexico.

Highlights of Supermarket/Chain Store Field Visits in Guadalajara, Jalisco

Soriana (Branch of Mass-Merchandise Retail Chain Based in Monterrey, Nuevo León). This relatively new retail outlet (1-1/2 years old at the time of the visit) represented one of only four Soriana stores in the Guadalajara area. Guadalajara is a fairly new territory for Soriana, which has traditionally had a stronger presence in northern Mexico and which maintains its primary produce distribution center facility in Monterrey, Nuevo León. In the case of retail stores that are located relatively far from the firm's produce distribution center, such as the Guadalajara outlets, store managers rely heavily on deliveries from the local central wholesale market for their produce. According to Ing. Francisco Velez, the local regional procurement manager for Soriana, the store we visited obtains about 40 percent of its fresh produce directly from the central wholesale market in Guadalajara and most of the remainder from the firm's produce distribution center in Monterrey. The distribution center also supplies all of its imported produce (which accounts for about *20 percent* of the overall selection of fresh produce, a very high percentage by Mexican standards). The primary imported fresh produce items offered at this point in the winter season were apples, pears, and grapes.

The store featured a very clean, brightly lit produce department, with ample refrigerated display space and a working misting system (one of only a handful spotted during 2 weeks of supermarket tours and the only one spotted in a store operated by a domestically owned food retailer). A quick count of the number of stock-keeping units in the produce department revealed about 140 items, about the average number for a Mexican supermarket or chain store food retailer. No wrapped or fresh-cut produce items were visible.

Ing. Velez pointed out that despite the impressive condition of the Guadalajara store's fresh produce department (far superior to one in another Soriana store located in a residential neighborhood of Nuevo Laredo), consumers in Guadalajara tend to buy less produce than residents of other metropolitan areas. Produce departments represent about 6-7 percent of total store sales in Guadalajara, compared with about 9 percent at the national level. Losses in the produce department typically amount to about 4 percent of total arrivals.

Gigante (Part of Mass-Merchandise Retail Chain Based in Mexico City). This store, featuring a combination food store/department store format, represented one of 36 retail outlets (with conventional supermarket, expanded, and warehouse-type store formats) operated by Gigante in the Guadalajara metropolitan area in December 1998 and one of 187 stores operated by Gigante throughout Mexico. Virtually all of the produce was delivered to the store from the company's regional produce distribution center in the Guadalajara area. The store received all of its merchandise in enclosed cartons, and losses amounted to about 7 percent of total produce arrivals.

The store's produce department was structured in standard Mexican supermarket fashion, featuring (unrefrigerated) tabletop bulk displays of product on a few center islands, while more exotic and specialty produce items were displayed in upright refrigerated cases along the perimeter of the department. Items carried in the store's produce department totaled about 70, at the low end of the typical range carried by Mexican food retailers, and accounted for merely 6 percent of total store sales. While most of the produce items on display appeared to be well sorted in terms of size and maturity, some appeared to suffer from a significant degree of damage or spoilage. For example, much of the lettuce was beginning to turn brown, while many of the tomatoes and apples were bruised.

The only apparent U.S.-origin fruit offered for sale during the December 1998 visit was a small selection of red grapes and pears. Although the produce department featured a considerable amount of adver-

tising for U.S.-origin fruit—with posters promoting U.S. strawberries, grapes, and pears—there appeared to be little if any coordination between the display of advertising materials and the display of relevant merchandise. The produce manager on duty noted that some customers ask for U.S. fruit products specifically and that U.S. fruit products enjoy a good reputation but that they are "too expensive" for many of his customers. Underscoring the "bargain-hunter" orientation of the store's customer base was the fact that the produce department used handwritten signs rather than commercially printed signs to indicate product names and prices, which conveyed the sense that the store was attempting to minimize overhead expenses. The only value-added fresh produce items on display were two wrapped lettuce and celery items marketed under the "Mr. Lucky" brand name, packed by a Mexico City-based produce wholesaler.

Highlights of Supermarket/Chain Store Field Visits in Mexico City, D.F.

Auchan (Part of Mass-Merchandise Retail Chain Based in France). This store—located in Coyoacán, a middle-class suburban neighborhood—was about 1-1/2 years old when members of the AMS/ERS/Texas A&M University research team visited in December 1998 and represented the only Auchan store operating in Mexico at the time. The produce department was relatively large by Mexican supermarket/chain store standards, displaying approximately 250 stock-keeping units of product. As usual in large Mexican supermarkets, the center aisles of the produce department featured large bulk tabletop displays of staple items (e.g., potatoes, zucchini, lettuce, citrus), with specialty/exotic items featured in refrigerated display cases along the perimeter of the department. One of the center aisle items on special during the day of our visit (displayed without refrigeration on a tabletop) was cellophane-wrapped, Mexican-origin iceberg lettuce marketed under the "Mr. Lucky" brand name. Normally priced at 6.00 pesos per head, the iceberg lettuce was selling that day for 4.90 per head (about 49 cents per head at prevailing exchange rates).[74] However, the condition of the lettuce was terrible; many of the leaves had turned brown, and several heads were spoiled.

Other notable items displayed in the produce department's center aisles included fresh *chayote* squash (without spines) for an unusually low price by Mexican standards of 2.30 pesos per kilogram or about 10 cents per pound. (Many of the pieces of *chayote* squash were still covered with pieces of newspaper, which had apparently been used as packing insulation.) There was also a tabletop display (unrefrigerated) of imported pears from the United States that were displayed in green tissue paper featuring a "USA" label, a marketing tool to both advertise the product's country of origin and disguise the product's underlying condition.

The store carried a handful of packaged salad items, all of which appeared to be produced by ProAgro, a Mexican/Chilean joint venture firm specializing in fruit and vegetable production, marketing, and distribution. The most prominent fresh-cut produce item on display (occupying two rows of shelf space) was a so-called "Italian Mix" salad product, which contained a largely romaine lettuce-based mixture of salad greens, packaged in rigid, clear plastic cartons, and marketed by ProAgro under the brand name, "Daily Salad." This item sold for 22.90 pesos per package or approximately $2.30 for 250 grams (just over one-half pound). Other packaged fresh-cut products featured on Auchan's retail shelves were:

- ProAgro "Ensalada Mixta" shredded coleslaw mix (white cabbage, red cabbage, and carrots), which sold for 9.90 pesos per 400-gram package or about 99 cents for 14 ounces;
- Caesar salad with dressing included in the package, which sold for 13.30 pesos per 385-gram package or about US $1.34 for 13.5 ounces; and
- Shredded carrots.

Carrefour (Part of Mass-Merchandise Retail Chain Based in France). This store—located in Polanco, a largely affluent midtown neighborhood—carried the largest selection of produce items of any retail food store visited by the AMS/ERS/Texas A&M University research team in December 1998. A quick count of the items in the produce department indicated there were 300-350 stock-keeping units, including many specialty items and many dried fruit and nut items (probably an unusually high percentage because the visit took place shortly before Christmas).

The produce department featured several central islands with tabletop bulk displays of staple items, with dozens of other specialty and exotic items displayed along the perimeter. Distinguishing the store's

[74]Based on Federal Reserve Bank midday exchange rates for December 9, 1998, of 9.954 pesos per U.S. dollar.

display of produce was the unusual amount of shelf space devoted to fresh-cut and packaged items (no doubt owing to its location in an affluent neighborhood). Unlike any other store visited by the research team, the Carrefour store in Polanco maintained a stand-alone refrigerated case for packaged salads that prominently featured U.S.-origin packaged salad items (notably "Salad Time"-brand salad, shredded carrots, and baby carrot products manufactured by the California-based firm, Tanimura and Antle). Other produce items in Carrefour's Polanco store that were explicitly advertised as originating in the United States were kiwi, red grapes, Bosc pears, and red and yellow d'Anjou pears (the red pears were in good condition, but the yellow pears had some brown spots and scarring).

Besides selling U.S.-origin packaged salads and value-added vegetable products, the Carrefour store also sold a few types of branded Mexican-origin produce, including "Mr. Lucky" brand cellophane-wrapped heads of iceberg lettuce and bagged celery stalks (which were labeled as having been grown in the state of Guanajuato).

The signage in the Carrefour produce department was particularly striking and eye-catching, featuring bold graphics and color photographs. Several posters hung from the ceiling, each entitled "*Del Productor Al Consumidor*" and featuring color photographs of various Mexican fruit and vegetable growers holding samples of their production at their farms, an apparent attempt to emphasize the close relationship between the retailer and a variety of Mexican agricultural producers (figure 2.13). Below each photograph, the signs stated (in Spanish), "We select the country's best producers, not only to favor domestic production, but also to offer the best quality (available) in the market." Aside from the theme of close connection between the farmer and the store's merchandise, the store also had a poster entitled "Fruits and Vegetables," which indicated that the store's produce

Figure 2.13—*Signage at Carrefour supermarket, Mexico City*

department offered the "freshest" produce items possible and instructed shoppers to return merchandise if they weren't completely satisfied.

In addition to the signage in the produce department itself, the Carrefour store featured signs with the slogan, "*lo más bajo precio*" (the absolutely lowest price), across various departments. Therefore, the advertising strategy of the store with relation to produce items could be summarized as follows:

- *Price-driven* (declaring that it offers the lowest prices around);
- *Quality-driven* (emphasizing the freshness of its fruits and vegetables);
- *Consumer confidence-oriented* (guaranteeing returns if the shopper is not satisfied with product quality); and
- *Nationalist* (claiming a close relationship with domestic agricultural growers).

Superama (Part of a Chain of Conventional Supermarkets Operated by Wal-Mart de México, Formerly the Cifra Group). Superama is a member of Mexico's largest food retail firm, which also operates Wal-Mart, Sam's Club, and Bodega Aurrera stores. (Wal-Mart acquired controlling interest of the Cifra Group in 1997, and the firm officially changed its name to Wal-Mart de México in 2000.) The Superama supermarket chain has traditionally targeted higher income segments of the Mexican population.

During their December 1998 visit to Superama's store in Polanco, the AMS/ERS/Texas A&M University research team observed a variety of U.S.-origin products on display in a refrigerated case in the produce department, most notably packaged salad and vegetable products such as:

- Greenhouse-produced butter lettuce (packaged in rigid plastic cartons and in excellent condition);
- "Green Giant" brand cellophane-wrapped iceberg lettuce;
- Fresh-cut packed cauliflower and broccoli florets; and
- "Peter Rabbit" brand packaged baby carrots. (These were in extremely poor condition. They were visibly spoiled, and it appeared that some of the sell-by dates on the product packaging had been tampered with.)

Alongside the U.S.-origin packaged salad and fresh-cut vegetable items, the store also featured a Mexican-origin "hearts of romaine" packaged salad product.

In an unusual move for a Mexican chain store food retailer, Superama's Polanco store also carried a considerable quantity of imported "counter-seasonal" fresh produce from Chile, primarily stone fruits such as Bing cherries, peaches, nectarines, and plums.

Wal-Mart (Part of Mass-Merchandise Chain Based in the United States). This store—located in Satélite, a largely upper-middle class suburban neighborhood in northwest Mexico City—featured a layout similar to other Mexican retail food stores. The center of the produce department featured large overflowing tabletop displays of mostly staple produce items, and the shelves lining the perimeter of the produce department featured value-added, specialty, and exotic produce items. While the *physical layout* of the produce department was typical of most Mexican supermarkets and chain stores observed by the AMS/ERS/Texas A&M University research team, the *merchandising* of produce appeared to be quite distinct from the practices of other local chain stores in several notable ways:

- *A preponderance of wrapped and bagged produce.* Large quantities of the vegetables and fruit were either bagged or wrapped in cellophane and placed on Styrofoam trays. Considerably more produce was treated this way than in any other Mexican supermarket or chain store visited by the research team. Most unusual for a Mexican retail store, two of the items in the produce department's center island tabletop display were packaged (rather than displayed in bulk). This represented both the only time that members of the research team observed bagged items on a center island produce display throughout its visits to Mexican food retail stores and one of the few times that an item displayed in the produce department's center island was clearly labeled as imported. The two packaged items were bags of Red Delicious apples from the Mexican state of Chihuahua and 3-pound bags of "Fancy Small" graded green d'Anjou pears from Washington State, both containing smaller fruit than would typically be featured on U.S. retail shelves.
- *Greater attention to quality control.* The quality of the fresh produce at the Wal-Mart store was much more uniform and largely better than at most of the other Mexican supermarkets and chain stores visited by research team members. In addition, on one side of the refrigerated case along the perimeter of the produce department, the store featured a

working misting system for bulk salad greens and herbs, a fairly rare amenity among Mexican supermarkets and chain stores.

- *Substantial inclusion of prepared food in the produce department.* Wal-Mart was one of the few retail food stores visited in Mexico that displayed a number of ready-to-eat products, such as fresh-cut fruit and fruit salads in plastic containers, in its produce department. (The only other store visited by research team members in which fresh-cut items were offered for sale in the produce department, albeit to a more limited degree, was a branch of another multinational firm, Carrefour).

While the uniformity and appearance of its fresh produce appeared superior to other retail food stores in Mexico and prices appeared competitive with other retailers across a broad range of commodities, this particular Wal-Mart store offered only an average range of produce, compared with other Mexican supermarkets and chain stores. The number of stock-keeping units in the produce department totaled approximately 170 items. Aside from the U.S.-origin pears, other produce items clearly advertised as U.S. products included California kiwifruit (in bulk), bagged green grapes (in poor condition), and at least one Tanimura and Antle fresh-cut "Salad Time" product (the popular "Santa Fe" packaged salad mix with Jack cheese and ranch dressing). The salad mix was displayed next to comparably priced Mexican versions of packaged salad products, most notably the ProAgro brand "Italian salad" and Caesar salad items. The retail prices of selected products at the Mexico City Wal-Mart are shown in table 2.9.[75]

Other fresh fruit and vegetable retail prices appearing in the Wal-Mart/Aurrerá circular the second week of December 1998 in Mexico City were:[76]

- Domestic iceberg lettuce, 1.99 pesos (20 cents) per head;
- Domestic oranges (Veracruz origin), 1.99 pesos per kilogram (9 cents per pound);
- Jicama, 3.99 pesos per kilogram (18 cents per pound);
- Sugar cane, 3.99 pesos per kilogram (18 cents per pound);
- "Amameyada" variety papaya, 6.99 pesos per kilogram (32 cents per pound);
- Chilean "Starking" variety apples, 12.99 pesos per kilogram (59 cents per pound);
- "Calmeria" grapes (green, seeded), 19.99 pesos per kilogram (91 cents per pound); and
- Bing cherries, 69.99 pesos per kilogram ($3.19 per pound).

Store personnel at the Wal-Mart store in the Satélite neighborhood of Mexico City clearly consider Carrefour—another multinational operator of mass-merchandise retail stores—their primary source of competition in the local grocery market. At the time of the AMS/ERS/Texas A&M University research team's visit in December 1998, the front of the

[75]Based on Federal Reserve Bank midday exchange rates for December 11, 1998, of 9.938 pesos per U.S. dollar

[76]Conversion based on Federal Reserve Bank midday exchange rates for December 11, 1998, of 9.938 pesos per U.S. dollar..

Table 2.9—*Fresh produce prices at Mexico City Wal-Mart (Satélite store), December 11, 1998*

Item	Price
3-pound bags of green, medium-ripe, U.S.-origin d'Anjou pears (from Washington State)	10.90 pesos per bag (about 37 cents per pound)
Cellophane-wrapped heads of iceberg lettuce ("Duo" brand, Mexican-grown and packaged, in terrible condition with extensive leaf discoloration)	4.90 pesos (about 49 cents) per head, on sale
Washed white potatoes, Alpha variety	9.70 pesos per kilogram (44 cents per pound)
Red leaf lettuce and romaine lettuce (bulk)	6.50 pesos (65 cents) per head
Tanimura and Antle "Salad Time" brand "Santa Fe" packaged salad with Jack cheese and ranch dressing	9.90 pesos (99 cents) per package
ProAgro Caesar salad with dressing and ProAgro Italian salad	9.90 pesos (99 cents) per package
U.S.-origin green seedless grapes, in plastic mesh bags labeled "Product of USA," poor condition	23 pesos per kilogram ($1.05 per pound)

Satélite Wal-Mart store featured two grocery carts, one labeled Wal-Mart and one labeled Carrefour, filled with the same assortment of food and grocery products. Located next to the carts was a poster that recorded the differences in prices between both stores and listed how much money one would have saved by buying the products at Wal-Mart.

Highlights of Supermarket/Chain Store Field Visits in Nuevo Laredo, Tamaulipas

La Argentina (Part of a Small, Locally Operated Conventional Supermarket Chain Based in Nuevo Laredo, Tamaulipas).[77] The store primarily catered to a lower income population and offered only a limited selection of 60-70 produce items for sale. Virtually every item featured in the produce department was sold in bulk, except for a handful of cellophane-wrapped items produced and packaged in Mexico (heads of iceberg lettuce, celery stalks), suffering from significant discoloration. Unlike the large displays of bulk produce typically seen in larger stores, La Argentina only displayed a small quantity of each item, even on the tabletops in the center of the produce department.

Soriana (Part of a Mass-Merchandise Retail Chain Based in Monterrey, Nuevo León). As was customary among so many larger supermarkets and mass-merchandise retail outlets in Mexico, this Soriana store in Nuevo Laredo featured overflowing tabletop displays of bulk produce items in the center of its produce department. The displays consisted mostly of staples such as Roma (plum) tomatoes, white onions, avocados, potatoes, and iceberg lettuce. Smaller quantities of specialty and imported products were displayed along the perimeter of the department in refrigerated cases.

Several U.S. items were in evidence, including one featured in the center island display—red potatoes from Colorado (which, according to the cartons in which they were displayed, were produced in the San Luis Valley of Colorado and packed by Mundorf Packing in Fort Garland, CO). At 7.90 pesos per kilogram (approximately 36 cents per pound), the red potatoes were considerably less expensive than the washed Mexican-origin Alpha variety white potatoes on the adjoining table, which were offered at 9.90 pesos per kilogram (approximately 45 cents per pound).[78] (On balance, Mexican consumers prefer buying washed potatoes, rather than the unwashed potatoes most common in U.S. stores, and prefer domestic Alpha variety white potatoes to U.S.-origin white potatoes. However, supermarket produce buyers from northern Mexico indicated that there is growing demand for U.S.-origin Russet potatoes among Mexican consumers living near the U.S.-Mexican border.)

Other imported items in the produce department were U.S.-origin red seedless grapes, pears, and heads of white cauliflower, all displayed in refrigerated cases. The grapes, which remained in their original mesh plastic bag packaging and sat atop a Styrofoam carton that advertised their "Best Seller" brand name (marketed by the California-based firm, Hemphill and Wilson), appeared to be in decent condition (figure 2.14). Next to the grapes were bulk displays of four varieties of pears, many of which were significantly bruised and scarred. The store also displayed a small number of cellophane-wrapped heads of "Bonipak"-brand cauliflower (from Bonit Packing Company in Santa Maria, CA), many of which were significantly discolored.

Imported items weren't alone in suffering from insufficient quality control. A clerk, who was unpacking cardboard cartons of cellophane-wrapped, Mexican-origin iceberg lettuce ("La Alameda"-brand lettuce from the state of Querétaro), appeared to be discarding at least one-third of the carton's contents even *before* putting the products on display. Similarly, the bulk display of Roma (plum) tomatoes located in one of the center islands contained everything from entirely green tomatoes to overripe ones, and many were heavily scarred and bruised (although their sizes appeared relatively uniform) (figure 2.15).

The produce department contained almost nothing in the way of value-added or fresh-cut products. One of the few value-added items offered was an assortment of "soup greens" labeled "Sopa Puchero" and sold under the "Fresh Garden 1" brand (packed by Jorge A. Rodriguez, based in San Nicolas de los Garza, Nuevo León). Packed on Styrofoam trays, wrapped in plastic, and weighing 550 grams (approximately 1.l pounds), the soup greens package consisted of fresh *chayote* squash slices, an ear of white sweet corn, carrot slices (lengthwise), a few string beans, sliced green cabbage, and a sprig of cilantro.

[77] As of January 1998, La Argentina was composed of eight retail outlets, according to the Directorio 1998 de la Asociación Nacional de Tiendas de Autoservicio y Departamentales, Mexico, D.F., 1998, p. 24.

[78] Based on Federal Reserve Bank midday exchange rates for December 4, 1998, of 9.9950 pesos per U.S. dollar.

Figure 2.14—*U.S. red seedless grapes for sale at Soriana supermarket, Monterrey, Nuevo*

Figure 2.15—*Tabletop display of plum tomatoes at Soriana supermarket, Monterrey, Nuevo León, December 1998*

Highlights of Supermarket/Chain Store Field Visits in Veracruz and Boca del Rio, Veracruz

Alba (Small-Scale Conventional Supermarket, Part of a Small, Locally Operated Supermarket Chain Based in the City of Veracruz).[79] This store appeared to be a cross between a convenience store and a full-service grocery store in terms of store size and product selection. (According to ANTAD statistics, the average Alba supermarket is about 601 square meters or about 6,469 square feet, slightly larger than the average convenience store in the same region and less than one-tenth the size of the other grocery chain outlet visited by members of the AMS/ERS/Texas A&M University research team in the Veracruz suburbs, the Tiendas Chedraui hypermarket in Boca del Rio, which measures about 7,912 square meters or about 85,164 square feet.[80]) The merchandise at Alba, unlike most of the chain stores visited by the research team, appeared restricted to traditional grocery items, food products, cleaning products, and a small selection of health and beauty aids. While a small selection of fresh meat and produce items were available (the store offered 30 or so staple fresh fruit and vegetable items in its produce department, along with a refrigerated case for delicatessen items and fresh meats), most of the merchandise was canned or otherwise nonperishable. Because the store was located in the middle of a lower income, inner-city neighborhood, the emphasis on nonperishable merchandise might well reflect the limited amount of refrigerated storage available in nearby households.

The produce department was similar to the La Argentina store in Nuevo Laredo. The center of the department featured a wooden table with modest bulk displays of staple product items such as oranges and potatoes, while smaller quantities of individual fruits and vegetables were displayed in a refrigerated case along the wall. No fresh-cut or value-added products and no products clearly identified as imports were observed. Sample prices of selected fresh produce items included:[81]

- Washed white potatoes, 7.50 pesos per kilogram (around 34 cents per pound);
- *Chayote* squash, 2.30 pesos per kilogram (around 10 cents per pound);
- Roma tomatoes, 8.30 pesos per kilogram (around 38 cents per pound, poor quality);
- Iceberg lettuce, 5.80 pesos (about 58 cents) per head; and
- Romaine lettuce, 6.50 pesos (about 65 cents) per head.

Tiendas Chedraui (Part of a Mass-Merchandise Retail Chain Based in Xalapa, Veracruz). This store—located in a brand new shopping mall in an affluent suburban neighborhood—is a member of a 40-store hypermarket chain headquartered in the state of Veracruz, which has a very strong consumer following and regional presence in southern Mexico (11 of the 40 stores are in Veracruz state alone). The store, like many Mexican supermarkets, featured tabletop displays of bulk items in the center of its produce department for staple products (such as tomatoes, potatoes, onions, oranges, grapefruit, and limes), with smaller quantities of other produce displayed along the perimeter in refrigerated cases. The number of fresh fruit and vegetable items was approximately 150, roughly average for a Mexican supermarket or chain store retailer.

Unlike some of the displays at other large mass-merchandise chain stores in Mexico, especially in stores operated by multinational firms, the Tiendas Chedraui store appeared to carry few (if any) wrapped and fresh-cut produce items. In addition, for whatever reason, the bulk displays in the center of the produce department appeared less extensive than those at other Mexican mass-merchandise retail chains, such as Soriana and Gigante. Items imported from the United States were clearly labeled and advertised as such and included Red Delicious apples from Washington State, red seedless grapes, and d'Anjou pears. Various Mexican-origin products were advertised on the basis of their state of origin as well, such as "Oranges from Veracruz." Problems with product quality were evident among some of the commodities. For example, the *chayote* squash featured on special discount was displayed without regard for differences in product sizes, condition, and maturity, and pieces of the original material used for packing insulation (newspaper) were still sticking to the squash. Sample prices of selected fresh produce items included:[82]

[79]As of January 1998, Galerias El Alba was composed of eight retail outlets, all located in the city of Veracruz, according to information published in the Directorio 1998 de la Asociación Nacional de Tiendas de Autoservicio y Departamentales, Mexico, D.F., 1998, p. 24.

[80]Directorio 1998 de la Asociación Nacional de Tiendas de Autoservicio y Departamentales, Mexico, D.F., 1998, p. 71.

[81]Conversion of retail prices based on Federal Reserve Bank midday exchange rates for December 11, 1998, (latest previous trading day) of 9.938 pesos per U.S. dollar.

[82]Conversion of retail prices based on Federal Reserve Bank midday exchange rates for December 11, 1998, (latest previous trading day) of 9.938 pesos per U.S. dollar.

- Washed white Alpha variety potatoes, 7.80 pesos per kilogram (about 36 cents per pound);
- Pineapple, 8.41 pesos per kilogram (about 38 cents per pound);
- Oranges, 2.18 pesos per kilogram (about 10 cents per pound);
- *Chayote* squash, 1.25 pesos per kilogram (about 6 cents per pound, on special);
- Globe tomatoes, 14.00 pesos per kilogram (about 64 cents per pound);
- White onions, 9.40 pesos per kilogram (about 43 cents per pound);
- Grapefruit, 2.45 pesos per kilogram (about 11 cents per pound);
- Limes, 1.63 pesos per kilogram (about 7 cents per pound);
- Romaine lettuce, 4.45 pesos (about 45 cents per head, poor quality);
- U.S.-origin red seedless grapes, 32.70 pesos per kilogram (about $1.49 per pound); and
- U.S.-origin green d'Anjou pears, 10.70 pesos per kilogram (about 49 cents per pound).

Highlights of Supermarket/Chain Store Field Visits in Villahermosa, Tabasco

Bodega G (Part of the Gigante Group, a Mass-Merchandise Retail Chain Based in Mexico City). This store, which featured a warehouse-type format in its grocery departments, carried a limited, though well-priced, selection of fresh produce items. The comparatively small produce department only contained approximately 70 stock-keeping units, and colored lights were used throughout the refrigerated cases to make the sometimes tired-looking produce appear greener. Sample prices included the following:[83]

- Iceberg lettuce, 3.80 pesos (about 38 cents) per bag (poor quality, with brown outer leaves);
- Washed white Alpha variety potatoes, 7.95 pesos per kilogram (36 cents per pound);
- *Chayote* squash, 4.40 pesos per kilogram (20 cents per pound); and
- Roma (plum) tomatoes, 18.00 pesos per kilogram (83 cents per pound).

Carrefour (Part of Mass-Merchandise Retail Chain Based in France). This store, about 2-1/2 years old at the time of the December 1998 visit, featured a somewhat broader selection of produce items than Bodega G (about 100 stock-keeping units), as well as products that were more carefully sorted and appeared to be in superior condition. Nonetheless, produce selection in Carrefour's Villahermosa store was approximately one-third that of Carrefour's Polanco store in Mexico City, reflecting apparent differences in the income and preferences of each store's customer base. The Villahermosa store contained practically no fresh-cut or value-added items, apart from one shelf of selected cellophane-wrapped vegetables displayed on Styrofoam trays. Washed white Alpha variety potatoes were offered at the unusually low price (by local chain store standards) of 6.30 pesos per kilogram (approximately 29 cents per pound). The attractiveness of this price appeared to be confirmed by the fact that the large display of bulk potatoes was practically sold out at the time of the visit.

Sam's Club (Part of U.S.-Based Chain of Mass-Merchandise Wholesale Clubs, Sister Operation to Wal-Mart Supercenters). Of all of the supermarkets and mass-merchandise stores visited by the research team in the Villahermosa area, Sam's Club offered the highest product quality and greatest product uniformity in its fresh fruit and vegetable selection. In many cases—especially in bulk produce—its prices compared favorably with other local chain stores. The store displayed approximately 80 stock-keeping units in its produce department. (As at the U.S.-based Sam's Club stores, the Villahermosa store required customers to be members in order to purchase products at the store.) Selected prices for bulk produce included:[84]

- Roma (plum) tomatoes, 12.70 pesos per kilogram (58 cents per pound), nice quality; and
- Iceberg lettuce, 5.00 pesos (51 cents per head).

In an unusual merchandising strategy for a Mexican food retailer, the Villahermosa branch of Sam's Club featured a stand-alone refrigerated (coffin) case entirely stocked with fresh-cut packaged salad and produce items, all U.S.-origin products from the California-based firm of Tanimura and Antle. These items included packaged salads such as a "Santa Fe" salad mix with Jack cheese, a Caesar salad mix, and baby spinach leaves, all priced from 16 to 22 pesos per package (approximately $1.62 to $2.23). The

[83]Conversion of retail prices based on Federal Reserve Bank midday exchange rates for December 16, 1998, of 9.885 pesos per U.S. dollar.

[84]Ibid.

spinach-based salad mixes appeared to be in very good condition, but all of the mixes containing iceberg lettuce had some browning along the edges of the leaves.

Other U.S.-origin, fresh-cut packaged vegetable items in the refrigerated case included Tanimura and Antle's coleslaw mix and shredded carrots (each priced at 14 pesos per package or around $1.42 at prevailing exchange rates) and two different packages of baby carrots, a regular package and a so-called "kids lunch pack" that featured multiple small packages of carrots. (The Villahermosa Sam's Club was the only store visited by the research team where this particular item was observed.) In addition to fresh fruits and vegetables, Sam's Club carried a wide selection of frozen vegetables, including U.S.-origin branded items.

Aside from having a relatively large selection of produce items, Sam's Club had floors and merchandise displays that were exceptionally clean and orderly, compared with most other supermarkets and chain stores visited by the research team (with the possible exception of the Soriana store in Guadalajara, Jalisco). Store personnel were committed to removing waste and extraneous materials from the produce department as quickly as possible.

Tiendas Chedraui (Part of a Mass-Merchandise Retail Chain Based in Xalapa, Veracruz). This store, a member of a chain that is said to have the strongest following among local grocery shoppers, offered some of the worst quality fresh fruit and vegetables seen by members of the AMS/ERS/Texas A&M research team in Mexican grocery chains. Many of the 70 or so items in the produce department were bruised and spoiled, and most items were displayed on tabletops without regard to differences in size, maturity, and appearance. Probably the worst example of quality problems that members of the research team observed at the store involved a small selection of cellophane-wrapped specialty fruit items on Styrofoam trays (e.g., imported strawberries) that were displayed in a refrigerated case along the perimeter of the produce department. Much of this imported product was already turning green and moldy. In another case (involving the display of fresh *chayote* squash), the product was still covered with the bits and pieces of newspaper that had been used as packing insulation. Selected prices of bulk produce included:[85]

- *Chayote* squash, 1.25 pesos per kilogram (around 6 cents per pound); and
- Roma (plum) tomatoes, 12.70 pesos per kilogram (around 58 cents per pound).

Summary:

The rapid expansion and growing popularity of modern self-service supermarkets and mass-merchandise stores in Mexico in recent years should not obscure the fact that Mexican grocery shoppers continue to exhibit very different shopping habits and preferences from their U.S. counterparts. While the vast majority of U.S. grocery shoppers turn to supermarkets and mass-merchandise retailers for food supplies, grocery shoppers in most regions of Mexico continue to patronize a variety of modern and traditional markets for foodstuffs—and retain a distinct preference for purchasing fruits and vegetables in traditional street and public markets—despite the growing accessibility of modern retail outlets. Factors such as heavy dependence on public transportation and limited household refrigerated storage capacity often diminish the attractiveness of one-stop shopping for perishable products, with the result that the average Mexican household grocery shopper continues to visit food stores several times per week. In addition, the importance among many Mexican consumers of purchasing fruits and vegetables with precise quality characteristics (such as maturity) tends to give local street and public markets an advantage against the standard produce merchandising practices of most grocery chains. Nonetheless, chain supermarket and mass-merchandise stores retain their own distinct competitive edge and social cachet in the Mexican food marketplace; aside from offering a greater sense of personal safety and providing superior climate control for perishable products, they can offer a much broader (and highly price-competitive) selection of fruit and vegetable merchandise than traditional market outlets, including greater varieties of imported fruit from temperate climates and convenience-oriented fresh-cut products, such as packaged salads.

As a result of the growing importance of supermarkets and mass-merchandise retail stores in produce merchandising and distribution, Mexican consumers are being exposed to a greater variety of fresh fruit and vegetable products than ever before, creating new market opportunities for shippers and exporters of U.S.-origin product. The information provided in this

[85] Ibid.

chapter is intended to expand awareness among U.S. produce growers, shippers, and exporters about the changing character of the Mexican retail produce marketplace, the implication of supermarket and mass-merchandise store growth on future demand for imported produce, and the likelihood of continued steep competition between traditional and modern retail operations for portions of the Mexican consumer food dollar, given the complementary nature of products and services that each retail segment continues to offer the local produce consumer.

CHAPTER 3: The Changing Role of Wholesale Markets in Mexican Produce Distribution

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Current Function of Intermediaries in the Distribution of Mexican Produce

In the United States, nearly two-thirds of the fresh produce sold at supermarkets is shipped directly to the retailer from production regions (either by growers/shippers or by field brokers).[86] In contrast, the Mexican produce distribution system continues to be characterized by strong participation from urban-based intermediaries. In a 1997 article in Enlace magazine, a Mexican trade publication focused on food distribution issues, Luis Felipe Moreno noted that 60 *centrales de abasto* (central wholesale market facilities in urban population centers) handled more than 90 percent of all fresh products distributed to retail buyers.[87]

One facility alone, the *Central de Abasto de la Ciudad de México* (CEDA), Mexico City's primary wholesale market facility, handles a reported 40 percent of Mexico's domestic horticultural production.[88] Approximately 17,000 metric tons of fresh food products and 4,000 metric tons of processed food products move through CEDA every day from 2,000 market stalls.[89] The majority of the facility (1,650 wholesale stalls, or 83 percent of the total) is devoted to the fruit and vegetable trade. With a storage capacity of around 114,000 metric tons, the fruit and vegetable section of CEDA provides the 20 million residents of the Mexico City metropolitan area with an estimated 87 percent of its fruit and vegetable requirements. CEDA also represents an important source of fresh fruits and vegetables for communities in the south and southeast portions of Mexico.[90]

Many Mexican supermarkets and mass-merchandise chain stores have vigorously tried to bypass intermediaries and implement more efficient procurement systems. However, anecdotal evidence from interviews with produce growers, brokers, wholesalers, and retail buyers throughout Mexico confirms that most fresh fruits and vegetables—both imported and domestic—continue to be handled by at least one central wholesale market in an urban population center before being delivered to a retail market outlet or distribution center. The level of dependence on central wholesale markets differs significantly by firm. In interviews with the AMS/ERS/Texas A&M University research team, supermarket and mass-merchandise chain store buyers indicated that their firms purchased from as little as 25 percent to as much as 90 percent of their fresh produce from a central wholesale market. Only one of the seven chain stores surveyed reported obtaining less than half of its produce supplies from a central wholesale market. This particular firm had managed to reduce its dependence on the wholesale market from a previous level of 60-70 percent within a 4-year period.

Reasons for Continued Retailer Dependence on Wholesalers. The lingering dependence of even the largest Mexican retailers on the central wholesale market can be largely attributed to the absence of a well-developed marketing infrastructure in many Mexican fruit and vegetable production areas. This is especially true in those areas that have not historically been involved in export-oriented commerce. Mexican supermarket and chain store buyers note that relatively little of the domestic fresh produce destined for the internal market is adequately prepared for retail sale at

[86]U.S. figures obtained from Marketing and Performance Benchmarks for the Fresh Produce Industry, Edward W. McLaughlin, Kristen Park, and Debra J. Perosio, Cornell University, Ithaca, NY, 1997, p. 33.

[87]"Las Centrales de Abasto ante los Retos de Cambio," Luis Felipe Moreno, Enlace, Mexico City, vol. 2, no. 7, 1997, p. 15.

[88]"La Central de Abasto de la Ciudad de México: Redes de Frio y Modernización," Guillermo Tarrats Gavidia, Enlace, Mexico City, vol. 2, no. 7, 1997.

[89]Enlace Para El Abasto, published by the Trustees of the Mexico City Central Wholesale Market, Mexico City, 1994, p. 7.

[90]Enlace Para El Abasto, published by the Trustees of the Mexico City Central Wholesale Market, Mexico City, 1994, pp. 7 and 16.

the shipping point. Only the largest Mexican growers routinely sort and classify produce by size and maturity at their packing sheds. The items that receive this treatment are primarily commodities destined for export—such as onions, tomatoes, oranges, limes, avocados, and mangoes—which are shipped directly to foreign retail buyers.

In contrast, the sorting and classification of fresh produce for the internal market has historically been conducted at central wholesale markets in major population centers. The inconsistent or nonexistent application of quality product standards at many rural packing facilities (except those that are primarily geared toward exports) obliges Mexican retailers to depend heavily on wholesalers and other intermediaries for fresh produce that more closely meets their specifications for size, quality, appearance, and maturity.

Functions Typically Performed by Wholesale Firms for Large Retailers. The primary functions performed by produce wholesalers that Mexican supermarket buyers cited as critical to the success of their business operations were:

Product sorting. In the absence of well-defined and well-accepted uniform quality standards, most fresh fruits and vegetables for the domestic market are sorted and classified by individual firms at wholesale market facilities rather than at packing facilities. Most of this product selection and classification is done manually, with products typically being categorized and separated on the basis of either maturity or size (figure 3.1).

Product assembly. Wholesalers provide the valuable service of receiving fresh produce (often in bulk) from numerous individual small producers and their brokers and reassembling it in ways that make it easi-

Figure 3.1—*Hand sorting potatoes at central wholesale market, Monterrey, Nuevo León*

er for the retailer to accept delivery. These services might include:

- Packing items in appropriate containers for transport, storage, or retail sale (e.g., wooden and plastic crates, mesh bags, cardboard cartons);
- Packing items in unit sizes that meet the volume requirements of specific retailers;
- Palletizing packaged merchandise; and
- Creating mixed loads of perishable items for delivery to individual retail stores or retail warehouse facilities.

The need to have an intermediary reassemble fresh fruits and vegetables is particularly important in a rapidly evolving marketing environment such as Mexico's. On the supply side, producers for the domestic Mexican market are often small-scale farm operations that are individually unable to fulfill the volume requirements, product quality, or packaging specifications of retail grocery chains. On the demand side, even though the number of chain affiliated retail outlets is expanding rapidly, many supermarkets and chain stores in Mexico do not yet operate a sufficient number of retail outlets to justify building and operating their own proprietary distribution centers in every locality they serve. One representative of a multinational supermarket chain interviewed by the AMS/ERS/Texas A&M University research team notes that a supermarket chain needs to operate about 20 retail stores in a particular region before the establishment of an independent produce distribution center becomes cost-effective. The inability of many Mexican fruit and vegetable producers to deliver market-ready produce directly to destination markets, coupled with the inability of some chain retailers to receive and store full truckloads of perishable merchandise in certain parts of their operational territory, creates an important role for produce wholesalers and other intermediaries, who are able to receive single commodities by the truckload, discard merchandise that may have deteriorated in transit, repackage merchandise in unit sizes that are appropriate for retail sale, and deliver mixed truckloads of produce items to retail customers.

Specialized product handling requirements. Certain fresh fruit and vegetable items have special handling requirements that are best served by an intermediary such as a wholesaler in a primary population center. Two such items are the white Alpha variety potato, the most popular potato variety among Mexican consumers, and imported Washington State apples. In the case of the Alpha potato, Mexican consumers greatly prefer washed potatoes and will frequently pay a premium for them. Therefore, many wholesale operators maintain potato-washing facilities as close to the point of sale as possible to prevent serious product deterioration. Similarly, retail purchases of Washington State apples often require the services of a produce wholesaler because such apples may only enter Mexico in a sealed container. Therefore, any buyer interested in receiving less than a container load of Washington State apples must obtain them through a wholesaler.

Drawbacks of Wholesale Market Dependence

The widespread reliance on wholesalers by both small and large Mexican food retailers adversely affects the quality of the fresh produce that they sell. Fresh produce items that move through a central wholesale market facility are naturally subject to longer transit times than those that are shipped directly from a packing shed to a retail distribution center. Therefore, they face a greater risk of damage or loss during the distribution process, especially given the rudimentary state of cold storage and mechanization that exists at many Mexican wholesale market facilities.

Spotty and Inadequate Use of Refrigerated Storage. Supermarket buyers interviewed in Mexico City in December 1998 by the AMS/ERS/Texas A&M University research team uniformly expressed disappointment with the produce wholesalers at the Mexico City *Central de Abastos*. The buyers claimed the wholesalers failed to grasp the critical importance of cold chain maintenance for perishable products, observing that "nobody [in the Mexican wholesale sector] wants to invest in cold storage facilities because they don't understand the philosophy behind cold chain maintenance. . .[and] are more concerned about the products suffering from freezer burn."[91] The concern expressed by Mexican food retailers is confirmed by testimony from wholesale operators and wholesale market administrators and by official statistics of cold storage availability.

In U.S. wholesale markets, fresh produce items are routinely stored in temperature-controlled chambers to prevent deterioration and maximize shelf life. Also,

[91]Information obtained during interviews with representatives of the *Asociación Nacional de Tiendas de Autoservicio y Departmentales* in Mexico City, December 10, 1998.

produce commodities are typically separated and stored in one of several available cold storage chambers according to their specific humidity and temperature requirements. In contrast, sizable portions of the fresh fruit and vegetable inventory held at Mexican wholesale market facilities are frequently stored without any refrigeration. The volume of product stored in temperature-controlled conditions varies significantly by market location, with a notable decline as one moves into the interior of the country.

The AMS/ERS/Texas A&M University research team interviewed market administrators and merchants at four produce wholesale markets serving major Mexican population centers (Guadalajara, Mexico City, Monterrey, and Villahermosa) and one produce wholesale market in a major agricultural production region (Culiacán) during March and December 1998. The team learned that refrigerated storage was still regarded as a luxury rather than a standard business practice by many Mexican produce wholesalers. A brief overview of refrigerated storage conditions at individual wholesale markets from north to south follows.

Monterrey. Lic. Francisco Reyna Garza, market administrator of the "Star" wholesale market in Monterrey, observed in March 1998 that, while the majority of the market's wholesale stalls maintained some type of refrigerated storage capacity, only about 50 percent of the produce items handled by the market were actually kept in refrigerated storage. Most of the available cold storage capacity was devoted to highly perishable items such as tomatoes, avocados, bananas, and apples, while the majority of items, such as oranges, papaya, pineapple, jicama, watermelon, potatoes, and onions, were typically *not* held in temperature-controlled conditions.

Culiacán. At the Culiacán wholesale market—located in the northwestern Mexican state of Sinaloa, the source of much of Mexico's export-oriented agriculture—all of the fruit and vegetable merchants visited by members of the AMS/ERS/Texas A&M University research team appeared to offer some type of cold storage for fresh fruits and vegetables. However, some of the smaller merchants maintained only one or two tiny refrigerated chambers that were capable of holding only limited shares of their perishable inventory. The largest merchant at the facility, specializing in imported and domestic fruit, maintained 13 refrigerated chambers at two different temperature levels and had the capacity to hold about 600 wooden crates or cardboard cartons simultaneously. Another operator, a vegetable broker specializing in Roma tomatoes, sweet peppers, and chile peppers, remarked that approximately 75-80 percent of the merchandise he handled was refrigerated.

Guadajalara. The General Director of the Merchants Union at the Guadalajara *Central de Abastos*, Lic. Ruben Mendez Garcia, noted that the only produce items routinely kept in cold storage chambers are temperate fruits (e.g., apples, pears, stone fruits, grapes, and berries) and bananas (during the ripening process). Some of the vegetable handlers on the Guadalajara wholesale market remarked that they didn't see any particular need to maintain cold storage facilities on their premises. One merchant, who primarily sold Roma tomatoes, zucchini, and chile peppers, said he "doesn't need" cold storage because he buys only "what he can sell" and has twice as many customers as he needs to sell his inventory.

Mexico City. According to Serafin Quintero Garcia and Victor Vargas Flores of the Mexico City Central Wholesale Market's Producers and Merchants Union, who were interviewed in March 1998, "not every merchant at the *Central de Abastos* has refrigerated storage capacity." Cold storage was primarily used for a handful of sensitive goods, such as bananas (80 percent of which were held in refrigerated conditions), avocados, and grapes. The latest available statistics suggest that the overall use of cold storage in wholesale produce operations in Mexico City remains quite restricted. Survey responses to the first Census of Merchants at the Mexico City *Central de Abastos* carried out in 1997 indicated that only 12 percent of the merchants selling perishable grocery items at the market depended on any form of cold storage on their wholesale premises.[92]

Villahermosa. The most limited use of cold storage encountered during site visits to wholesale market facilities in Mexico occurred in Villahermosa, a major distribution platform for fresh produce in the southeastern part of the country. There were 40 produce wholesale stalls at this facility. Antonio de la Torre, manager of the Villahermosa wholesale market, revealed in a December 1998 interview that he knew of only one produce merchant on the market—someone who imports fresh fruit—who routinely refrigerat-

[92]La Central de Abasto de la Ciudad de México: Redes de Frio y Modernización," Guillermo Tarrats Gavidia, Enlace, Mexico City, D.F., vol. 2, no. 7, 1997, p. 4.

ed at least some of his merchandise (in a trailer adjacent to his wholesale stall).

Packaging Materials That Undermine Preservation of Product Quality. Insufficient cold storage space is only one of several problems that affect fresh produce held at Mexican wholesale market facilities. Additional product damage and deterioration also occur from inadequate packaging materials. Notable exceptions are a few domestic commodities—limes from Veracruz, tomatoes from Sinaloa, and bananas from Tabasco—which are primarily packed for the more lucrative and demanding export market and are typically received by wholesale market facilities in sturdy, well-insulated cardboard cartons. However, the majority of domestically produced fresh fruits and vegetables arrive at Mexican wholesale markets in bulk or in open, poorly insulated containers, such as burlap and mesh sacks or wooden crates insulated with newspaper. Even when these items are repacked by the wholesaler, they tend to be packed in open or partially exposed wooden or plastic crates filled to the brim, which leaves the merchandise vulnerable to crushing and bruising, especially when the crates are stacked on top of each other (figure 3.2).

Because of these wholesale practices, retail buyers in Mexico—even the largest supermarket and chain store buyers—often have difficulty obtaining fresh fruits and vegetables in packaging that is amenable to proper storage, palletization, and mechanical loading/unloading at their receiving warehouses and distribution centers. In a December 1998 interview in Mexico City with corporate produce buyers from three major supermarket and chain store firms, the buyers noted that only about 15-20 percent of their fresh produce items currently arrived in cardboard cartons, mostly items that were specifically packed to meet export quality standards.

Wholesalers and retailers expressed a wide variety of opinions as to why most domestically produced fresh fruits and vegetables handled by Mexican wholesale market facilities were stored and delivered to retailers in wooden and plastic crates rather than in more protective cardboard cartons. Wholesalers generally argued that they used wooden and plastic crates

Figure 3.2—*Tomatoes stacked in open wooden crates at central wholesale market, Mexico City*

because most price-sensitive retailers in Mexico are unwilling to pay the necessary premium to receive produce that has been stored in more heavily insulated and sturdier packaging. The price differentials between bulk and packaged fresh produce can be sizable indeed. One wholesale vegetable dealer in Culiacán estimated that cardboard cartons generally added an average of 25 pesos per kilogram or about $1.33 per pound to the wholesale price of fresh produce over product packed in bulk and 2 or 3 pesos more per kilogram or $0.11-0.16 more per pound than product packaged in wooden crates.[93] Because of these differentials, the choice of packaging can have a significant bearing on the total cost of merchandise, especially for heavy produce items that cost relatively little on a per-pound basis. "Star" wholesale market administrator, Lic. Francisco Reyna Garza, noted that, in Monterrey, virtually all items such as watermelons or pineapple were shipped to retailers in bulk, since "it's impossible to be price-competitive otherwise."[94]

The price sensitivity of some retailers may have been exacerbated by Mexico's recent experiences with currency devaluation, which raised fears that income-squeezed customers would not be able to afford merchandise that was packed in relatively expensive cardboard cartons. During a March 1998 interview, market administrator Reyna recalled some attempts to ship potatoes in cardboard cartons in 1994. This practice stopped, however, after the major peso devaluation of late 1994 because "people could no longer afford to pay for the more expensive packaging." (Mr. Reyna remarked that the bags most commonly used to pack and ship fresh potatoes in Mexico were six times less expensive than cardboard cartons.)[95]

A prominent tomato packer and exporter in Sinaloa offered another perspective on the enduring popularity of wooden crates in Mexican produce wholesaling and distribution. The packer remarked that he continued to use open wooden crates for part of his domestically oriented packing line because of buyer expectations. In his opinion, some domestic buyers prefer to receive product in partially exposed wooden crates "filled to the top," despite the increased risk of crushing and product losses, because they don't perceive that they have received a "good value" for their money otherwise.

Representatives from larger food retail firms, such as supermarkets and chain stores, also stated that they were reluctant to pay a premium for cardboard cartons. They argued that crates—especially plastic ones—provided better ventilation and preserved the quality of the produce better than cardboard cartons when cold storage was not used, as is so often the case at Mexican wholesale markets. In a December 1998 interview, two corporate produce buyers from prominent supermarkets and chain store firms commented that they might be willing to pay a premium for some fresh fruits and vegetables if they were packaged in plastic crates but only under a distribution system in which they didn't have to return the [recyclable] crates to the wholesaler.

Even in those comparatively rare circumstances in which Mexican produce wholesalers keep fresh fruits and vegetables under refrigeration and store them in cardboard cartons, the handling of produce items often appears less than optimal in terms of preserving product quality. In cold storage warehouses at the Culiacán wholesale market, for example, it was common to see relatively fragile items such as lettuce, green onions, and cilantro stored in *open* cardboard cartons overflowing with product, exposing the contents to potential crushing and damage (figure 3.3).

Heavy Reliance on Manual Labor, Prolonging Merchandise Exposure to Ambient Temperature. The standard U.S. practice of using mechanical forklifts to move palletized cargo from cold storage warehouses onto a transportation vehicle is very much the exception at Mexican wholesale markets for several reasons:

- Cold storage chambers and nonrefrigerated warehouses maintained by individual wholesale firms are frequently too small to permit the use of mechanical forklifts.
- Frequent use of poorly insulated and nonuniform packaging materials by growers and wholesalers makes it impractical to use mechanical forklifts for loading and unloading produce merchandise.
- Many vehicles that deliver and receive produce—notably, the small open trucks that are predominately used by market customers to deliver products to their final destination—are not compatible in height with the market's loading docks, requiring merchandise to be loaded manually (box by box).

[93]Dollar/peso equivalency based on an exchange rate of 8.5250 pesos for one U.S. dollar on March 25, 1998, the date of the interview. Exchange rates obtained from "Daily Mexican Peso Rate Against U.S. Dollar" chart, located at www.jeico.co.kr/cnc57mxc.html, and reflect noon buying rates as certified by the U.S. Federal Reserve Bank.

[94]From March 24, 1998, interview with "Star" wholesale market administrator, Lic. Francisco Reyna Garza in Monterrey, Nuevo León, México.

[95]Ibid.

Figure 3.3—*Storage of lettuce and herbs in wholesale market stall, Culiacán, Sinaloa, March 1998*

The reliance on manual labor is so firmly entrenched in Mexican wholesale market practices that members of the AMS/ERS/Texas A&M University research team observed cases in which manual labor was relied on even when it didn't appear necessary. At one Mexico City operation, the research team observed workers hand loading cargo into a refrigerated truck, even though the cargo was being removed from a pallet, forklifts were available, and the truck's height was compatible with the loading dock (figure 3.4). The obvious disadvantage of manual labor is that it greatly prolongs the time that the merchandise is exposed to ambient temperature at loading docks (few of which are connected directly to cold storage chambers).

Poor Wholesale Handling Contributing to Heavy Losses. Given the limited availability of refrigerated storage, the widespread use of nonprotective packaging materials, and the heavy reliance on manual labor, it is not surprising that wholesale produce merchants in Mexico reported extensive losses of perishable inventory. At the Culiacán wholesale market, for example, a representative of one of the largest produce firms who used refrigerated storage extensively (13 refrigerated chambers at two temperature levels) reported that his perishable product losses averaged about 15 percent and could reach as high as 20-25 percent for a sensitive commodity like bananas. In Villahermosa, where refrigerated storage at the wholesale market was almost nonexistent, the market manager estimated that average produce losses reached 25-30 percent of all fresh fruits and vegetables moving through the market. In addition, certain items—mangoes, Maradol papayas, and locally popular tropical fruits such as *zapote* and *guanabana*—were vulnerable to even worse damage because of their relative fragility.

Within Mexico as a whole, an estimated 50-60 percent of the total volume of perishable agricultural products produced in the country is lost between

Figure 3.4—*Manual loading of palletized cargo into containerized vehicle at central wholesale market, Mexico City*

harvest and the time the products reach the consumer.[96] To be sure, some of the heavy losses can be attributed to the general lack of attention paid to cold chain maintenance at most wholesale markets. Insufficient or nonexistent access to refrigeration at rural packing facilities and in transportation vehicles is also a factor.

Rural Road Conditions Impede Quality Preservation During Transport. Produce losses between point of origin and destination markets may also be exacerbated by the poor road conditions. The highway and toll-road system in Mexico appears primarily designed to support heavy passenger traffic between major cities and surrounding bedroom communities, rather than the efficient long-distance transport of commodities from rural areas to major population centers. Consequently, rural roads—even those serving as major arteries to agricultural production regions—often suffer from severe neglect.

During their December 1998 visit to agricultural production regions in the state of Veracruz, members of the AMS/ERS/Texas A&M University research team observed the poor condition of many rural roads throughout the state. The primary road linking the port of Veracruz to the town of Martinez de la Torre—primary shipping point for citrus and the country's second largest agricultural shipping point market—was so riddled with potholes that it was virtually impassible by truck. Meanwhile, in southern Veracruz state (near the pineapple production region of Ciudad Isla), research team members watched as local children filled potholes on the poorly maintained two-lane highway with dirt, held a rope across the highway, and asked for money from passing vehicles as compensation for their "repairs." The risk that fresh fruit and vegetable cargo may experience significant damage during long-distance transport on these poorly maintained rural roads is aggravated by the fact that relatively few Mexican growers (except those who primarily supply the export market) pack their produce

[96] "La Central de Abasto de la Ciudad de México: Redes de Frio y Modernización," Guillermo Tarrats Gavidia, Enlace, Mexico City, D.F., vol. 2, no. 7, 1997, p. 3.

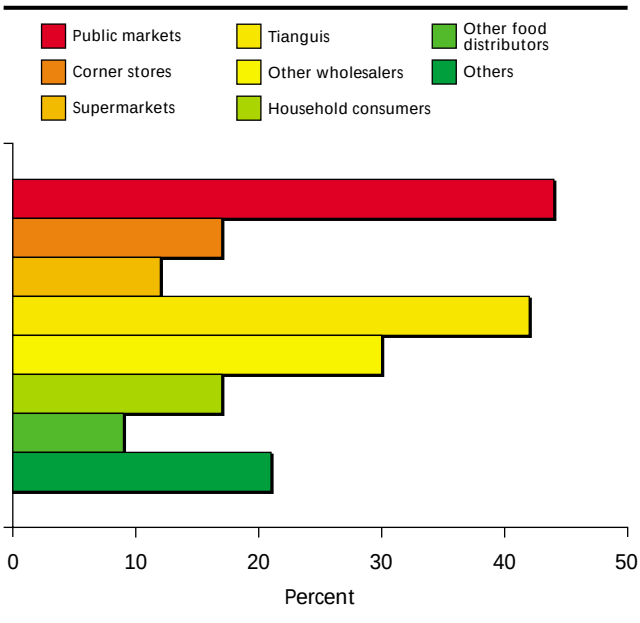
in enclosed cartons that offer substantial protection or insulation.

Reasons Why Wholesalers Resist Change in Business Practices. Faced with such a serious level of product deterioration, one might ask why more merchants at Mexican wholesale markets don't introduce refrigerated storage and adopt more careful storage practices for perishable products. The answer appears to lie with the wholesale market's customer base and whether these customers are willing to pay more to be ensured a higher, more uniform quality and extended shelf life. At the "Star" wholesale produce market in Monterrey, where supermarkets and chain stores account for roughly 70 percent of the market's overall turnover (15 percent goes to regional wholesalers and 15 percent to small retailers), a relatively large portion of the market's perishable produce items was stored under temperature-controlled conditions—approximately 50 percent as of March 1998.

"Star" market administrator Lic. Francisco Reyna Garza noted that the market's customer base had shifted dramatically from the late 1980s, when small retailers accounted for 90 percent of the market's produce sales. This phenomenon reflects the proliferation of chain grocery stores in northern Mexico over the last decade and a half and the displacement of many small greengrocers by large retail firms. As an example, Mr. Reyna pointed out that the prominent, Monterrey-based Soriana supermarket firm operated only one store in 1985, compared with 59 stores in the spring of 1998, with 24 stores in the Monterrey area alone. Alone among the managers of several produce wholesale markets in Mexico visited by the AMS/ERS/Texas A&M University research team, Mr. Reyna expressed concerns about the growing domination of chain stores and the role that his market will play in the local produce distribution system over the next 10 to 15 years. His concerns reflected the fact that chain store firms continue to build additional retail outlets, construct independent produce distribution centers to support inventories at these stores, and develop the capacity to receive an increased volume of direct shipments of fresh fruits and vegetables from growers.

At the other four produce wholesale markets in Mexico visited by the research team, however, most administrators and merchants appeared unconcerned—at least in the short run—that the proliferation of chain stores may undermine their businesses. Despite the aggressive growth of individual supermarkets and chain stores over the past few years, these stores still appear to represent a minor percentage of overall produce sales at most Mexican wholesale markets. Stall operators at covered and open-air markets (*tianguis*)—who purchase small quantities of perishable merchandise for almost immediate resale to retail consumers, are extremely price-conscious, and typically inspect merchandise on site before purchasing it—remain the primary distribution channel for the market's fresh produce (figure 3.5). In such a marketing environment, it becomes more understandable why relatively few wholesale produce merchants have chosen to invest in refrigerated storage capacity or to adopt other quality-preserving measures. The factors that appeal to the large retail and chain store buyer—such as extended shelf life, uniform product quality, and extended supply availability—are of relatively little importance to the majority of Mexico's wholesale market customers.

Another factor that may discourage wholesale produce merchants from pursuing chain store accounts more aggressively relates to the issue of credit. Wholesale produce merchants are accustomed to receiving prompt, if not immediate, payment from their retail and institutional clients. They are not necessarily inclined to increase the proportion of



Source: First Census of Merchants at the Mexico City Central de Abastos, 1997. The sum of percentages does not equal 100 because each merchant was able to select as many as three options.

Figure 3.5—*Principal customers of central wholesale market merchants, Mexico City, 1997*

accounts held with chain store firms, who frequently demand far more liberal credit terms than other customers. Market administrators at the Mexico City *Central de Abastos* commented that about 60-70 percent of the tomatoes handled by the terminal market were sold on a cash basis. On those comparatively rare occasions when the small retail buyer purchases merchandise on credit, he or she typically receives credit terms of 3-4 days, compared with 15-20 days that supermarkets and chain stores typically demand. Similarly, in bananas, the majority of sales were transacted on a cash basis. The average retail buyer purchasing bananas on credit usually received credit terms of about 8 days, compared with 20-30 days typically demanded by chain store clients.

Below are some perspectives offered by a number of produce wholesalers at various urban wholesale markets about the relative importance of supermarkets and other chain stores to their overall business operations:

Culiacán. An interview with a representative of the largest produce firm on the Culiacán wholesale market in March 1998 revealed that he sold about 80 percent of his produce to small full-line grocery stores and about 20 percent to other independent retailers. He didn't typically sell merchandise to chain stores at all because he "doesn't like to work with supermarkets." One of his competitors on the market, a vegetable broker, expressed similar sentiments about supermarkets and chain stores and remarked that he "refuses to do business with them" because they are "too risky." He sold all of his merchandise to small independent retailers and wholesalers. In his opinion, supermarkets and other chain stores imposed unrealistically tight standards on produce arrivals—supermarkets expect to receive full trailers without any waste or unusable product—and their inflexibility and tendency to reject deliveries have increased as their buying power has expanded. Although this broker commented on the growing buying power of supermarkets and chain stores, he also mentioned that he did not expect the growing importance of large chain stores to have any noticeable impact on wholesale markets in the Mexican food distribution system.

Guadalajara. Large chain stores such as the Culiacán-based supermarket firm Casa Ley maintain a receiving warehouse on the Guadalajara wholesale market, and assorted other firms—Aurrera, Wal-Mart, and Sam's Club—remain steady clients of the wholesale market. Nevertheless, the general director of the merchants union at the Guadalajara central wholesale market, Lic. Ruben Mendez Garcia, indicated in a December 1998 interview that the Guadalajara wholesale produce market was still primarily oriented toward servicing the *tiangui* trade. Recent declines in the volume of merchandise moving through the wholesale market were attributed to obsolescence—notably traffic congestion and the lack of convenient parking—and the development of new wholesale markets in towns previously served by the Guadalajara *Central de Abastos*. The declines were *not* attributed to an expansion of direct shipments to supermarket distribution centers by agricultural producers.

Commentary from a variety of produce merchants interviewed at the market on the same day in December 1998 tended to confirm Mr. Mendez's assertions that relatively little of the produce merchandise handled on the Guadalajara wholesale market was diverted to supermarket and chain store channels. One vegetable merchant, who specializes in Roma tomatoes, zucchini, and chile peppers, remarked that supermarkets and chain stores purchase less than 10 percent of the product he moves in a given year. He didn't consider supermarkets and chain stores particularly good customers for two reasons: they are prone to reject and return merchandise, and they typically pay their suppliers 15-20 days after delivery. He said most of his customers pay cash at the time of delivery.

A fruit merchant on the market—who sells his firm's own production of Chihuahuan apples as well as domestic and imported pears, grapes, and other fruit items—remarked that he sold merchandise to supermarkets and chain stores but only a small quantity because they were difficult to deal with, expected a 5-percent price discount, and tended to return too much merchandise. In fact, he said he would only sell merchandise indirectly to supermarkets and chain stores through an intermediary because he doesn't want to accept the responsibility of handling returns.

Two other citrus wholesalers—members of integrated producer/wholesaler firms—mentioned that they didn't sell to supermarkets and chain stores at all. One of the gentlemen, a lime merchant, objected to the standard terms of payment offered by supermarkets and chain stores and their expectations for a 5-percent price discount. He indicated that he "didn't feel any need" to cater to supermarkets/chain stores because "he had other options." Most of the limes he

sold (90 percent) were distributed outside the Guadalajara metropolitan region to regional market centers, and the remainder were distributed to local public markets.

Mexico City. Serafin Quintero Garcia, president of the Mexico City central wholesale market's producers and merchants union, was interviewed by the AMS/ERS/Texas A&M University research team in March 1998. He reported that about 80-85 percent of the central wholesale market's produce is sold to open-air *tianguis*, enclosed public market stall operators, and small independent shopkeepers, while only about 10 percent is sold to supermarkets. These figures correspond in general with statistics obtained during the first Census of Merchants at the Mexico City wholesale market in 1997. When asked to name their top three customers, 44 percent of the wholesale merchants who responded to the survey cited public markets, 42 percent named *tianguis*, and 30 percent indicated that other wholesalers at the market were among their top three. In contrast, only 12 percent of the merchants indicated that supermarkets represented one of their top three market outlets (figure 3.5).

Villahermosa: During interviews in December 1998, Villahermosa wholesale market general manager Antonio de la Torre and market analyst Eliseo Rodriguez Alzina disagreed about whether the growing influence of supermarkets and chain stores in the region had had an impact on the business operations of the wholesale market. Mr. de la Torre believed that multinational retail chain stores such as the French-based Carrefour and the U.S.-based Sam's Club—which frequently rely on direct shipments for supply procurement—had presented significant competition during the past 2-3 years that they had been open in the region. He noted, however, that while many prominent local chain stores such as Tiendas Chedraui, Gigante, and Carrefour had successfully instituted direct buying programs with Mexican growers for certain commodities, they were obligated to turn to the *Central de Abastos* for tropical and semi-tropical commodities such as pineapples, bananas, watermelons, and other melons. The chain stores had problems obtaining these commodities directly from domestic growers in proper condition (to some degree because the products required special handling such as ripening after harvest).

Mr. de la Torre's colleague, Mr. Rodriguez, argued that he didn't see any threat at all to Villahermosa wholesale market operations from local supermarkets and chain stores. He said most of the wholesale market business was conducted with small shopkeepers and restaurant owners, and supermarkets and chain stores weren't a critical element of the market's customer base. Data collected by Mr. Rodriguez suggested that the rise of local chain stores hadn't slowed the volume of product handled by the Villahermosa wholesale market. Nor did the rise slow the volume handled by the adjacent *tiangui campesino*, a type of open-air farmers market exclusively for locally grown produce from the state of Tabasco. (Contrary to standard U.S. practice, all of the merchants on the *tiangui campesino* were brokers selling products on behalf of agricultural producers, not the producers themselves.)

Between 1995 and 1997, the quantity of horticultural products handled by the wholesale market rose 32 percent to 164,172 metric tons, and cumulative arrivals between January and November 1998 were running 6 percent above comparable 1997 levels. Meanwhile, the quantity marketed through the adjacent *tiangui campesino* grew dramatically from an estimated 2,000 metric tons in 1994 to more than 104,000 metric tons in 1997, although cumulative 1998 volumes from January through November were running 8 percent below comparable 1997 levels. The particular success of the *tiangui campesino* can be partially explained by the sizable difference in rents charged to tenants at the wholesale market and tenants at the *tiangui campesino*. The difference may have enabled *tiangui campesino* merchants to offer comparable merchandise at more attractive prices. Wholesale market tenants paid an average rent of about 50 pesos (about $5.06) per week for each covered stall, while *tiangui* tenants paid as little as 18 pesos ($1.82) per week for an open-air stall.[97]

Barriers to Direct Linkages Between Produce Growers and Retailers

If most wholesale markets in Mexico remain so poorly suited to handle the fresh produce needs of the large food retailer, why do so many supermarkets and chain store grocers in Mexico continue to rely on wholesale markets for most of their fresh produce?

[97]Dollar/peso equivalency based on an exchange rate of 9.885 pesos for one U.S. dollar on December 16, 1998, the date of the interview. Exchange rates obtained from "Daily Mexican Peso Rate Against U.S. Dollar" chart, located at www.jeico.co.kr/cnc57mxc.html, and reflect the noon buying rates as certified by the U.S. Federal Reserve Bank.

The answer to this question, of course, is multifaceted. Mexican supermarkets and chain stores continue to source fresh fruits and vegetables from wholesale markets rather than from growers partly because many of them are still at the stage of corporate development where the cost of building and operating independent produce distribution centers is still not economically feasible—or at least not feasible in every market location. This fact obliges some firms to turn to wholesale suppliers to receive, store product, and deliver less than full truckloads of individual produce commodities for distribution in a particular market location.

Even if every Mexican supermarket and chain store firm eventually attained the economy of scale needed to justify building independent distribution centers in each region where it operated stores and had the physical capability to receive most produce directly from growers, an immediate transition to greater direct deliveries and a decline in wholesale market dependence would not necessarily follow. As noted earlier, supermarkets and chain stores in Mexico depend on produce wholesalers to provide the sorting and assembly functions for fresh fruits and vegetables that tend to be neglected in Mexican production areas. The absence of commonly agreed-upon and enforceable grades and standards for fresh produce, coupled with inadequate quality control in the produce supply chain, discourage the direct shipment of perishable agricultural products from the producer to the end buyer. This situation stands in sharp contrast to the U.S. produce marketing system, in which compliance with industry-generated quality grades and standards for fruits and vegetables are enforced by government authorities, and the Perishable Agricultural Commodities Act allows long-distance transactions to flourish by providing a legal mechanism for resolving payment and shipment disputes. U.S. produce shippers also typically have more routine access to a modern highway system and refrigerated transportation than their Mexican counterparts.

Beyond the legal and infrastructural barriers to direct retail shipments to Mexico, anecdotal evidence from interviews with large produce growers suggests that the development of direct business transactions between growers and retail clients has been inhibited by the perception that chain stores are more difficult to work with than other produce receivers. Chain store buyers typically demand more uniform product quality than other customers, reserve the right to reject products if they don't meet their precise specifications, and pay for products as much as 45 days after delivery. For growers that are used to being paid for merchandise by brokers and other intermediaries before or at the time of delivery and that have been able to dispose of merchandise without sorting or reassembling their produce, the stringent demands of the chain store retail sector have frequently been difficult to accept.

Nevertheless, some Mexican supermarkets and chain stores apparently are beginning to implement successful direct buying programs with some domestic producers. The factors that appear to contribute to the success of direct buying programs are explored later in this chapter.

Institutional Barriers to Direct Shipments. One reason why relatively few Mexican fruit and vegetable producers ship produce directly to domestic supermarkets and chain stores is that they often lack access to local packing facilities where their products can be sorted and assembled for direct retail sale. In interviews with the AMS/ERS/Texas A&M University research team, wholesale market managers and retail buyers repeatedly pointed out that most of the *centrales de acopio* (assembly centers) in rural areas were controlled by large producers with a strong export orientation. These centers were specifically designed to support the classification and packaging of a handful of commodities (e.g., bananas, limes, and melons). Consequently, those fruit and vegetable producers that supply the domestic Mexican consumer markets, often smaller scale growers who don't produce export-grade commodities or who produce commodities that aren't in demand by export markets, must typically rely on urban wholesalers to sort, wash, and package their products in appropriate unit sizes for sale to retail customers.

Vertical Integration of Production and Wholesale Functions. The often blurry distinction between produce "growers" and "wholesalers" in Mexico may well have contributed to the concentration of sorting, classification, and packing activities at urban wholesale markets rather than in production regions. Most of Mexico's largest produce wholesalers are also involved directly in agricultural production and are responsible for selling and distributing their own production (as well as the production of other, usually smaller growers) at their urban wholesale markets. During interviews in March and December 1998, wholesale market managers indicated that 20

percent of the produce wholesale firms at the "Star" wholesale market in Monterrey, 40 percent at the Mexico City wholesale market, and 70 percent at the Guadalajara market were directly involved with the production side of agriculture.

The vertical integration of Mexican fruit and vegetable producers into marketing and distribution was further documented in the 1997 Census of Merchants at the Mexico City central wholesale market. Thirty-three percent of the merchants responding to the survey were affiliated with firms that were directly involved with agricultural production, and 66 percent purchased fruits and vegetables directly from production zones, often providing assistance to the producers by subsidizing the cost of seeds, agricultural chemicals, and fertilizers.[98] For these large integrated grower/wholesale firms, moving sorting and assembly functions closer to the point of destination would appear to have two primary benefits:

- Wholesale firms can presumably achieve better *economies of scale* by consolidating merchandise deliveries at one central location and carrying out sorting and repacking functions at a relatively low cost per unit. (Carrying out these functions near the point of destination is particularly advantageous if the wholesale firm is sourcing product from a variety of suppliers and production regions.)
- Integrated growers/wholesalers can presumably achieve greater *quality control* by conducting product sorting and repacking functions near their primary retail customer base rather than at the point of origin.

Unfortunately, the concentration of sorting and assembly functions at a handful of urban wholesale market facilities can contribute to a phenomenon known as "product tourism." This occurs when agricultural products are shipped from farms or packing sheds in rural production regions to wholesale markets in major population centers before being redistributed to smaller consumer markets, even those that are near the original production region. For example, the largest produce merchant on the Culiacán wholesale market, located in the heart of one of Mexico's primary tomato growing areas, commented in March 1998 that he acquired most of his tomatoes from the Guadalajara wholesale market (730 kilometers or 450 miles away). He said he did this because he receives more uniform and better packaged products if he deals with an intermediary rather than a producer. The added transportation and handling costs involved in shipping perishable products through a series of intermediaries are presumably passed along to the final consumer, who ends up paying more for products of often inferior quality (since product quality has had a greater opportunity to deteriorate during the handling process).

The data in table 3.1 underscore the fact that the wholesale distribution of foodstuffs in Mexico is heavily concentrated in a handful of major population centers, notably Mexico City (located in the *Distrito Federal*) and Guadalajara (located in the state of Jalisco). More than 25 percent of Mexico's installed wholesale market capacity—and nearly 35 percent of its utilized capacity—is in the *Distrito Federal* and the state of Jalisco. The wholesale market occupancy rate elsewhere in the country averages just over 60 percent and frequently falls well below 50 percent, particularly in the southern and eastern portions of the country.

Infrastructural Obstacles and Challenges. Preserving product quality from origin to destination in Mexico cannot be ensured due to inadequate access to refrigerated transportation, poor roads, and the predominant use of thinly insulated packaging materials for domestic-oriented product by Mexican produce growers and packers. Therefore, it becomes preferable to conduct product sorting and classification functions further along in the distribution channel than is customary in the United States. According to interviews conducted by members of the AMS/ERS/Texas A&M University research team in March and December 1998, the consistent use of refrigeration to transport fresh fruits and vegetables entering the domestic market is still more the exception than the rule. This is true even among the largest supermarkets and chain store firms, although the desire of large retailers for extended product shelf life and quality preservation appears to be driving a greater adoption of cold chain maintenance at the wholesale and retail levels, especially in northern Mexico.

Wholesalers and retail buyers typically blame the lack of attention paid to temperature control during transport on the "mentality" of Mexican produce growers and packers, who don't fully understand the importance of cold chain maintenance in preserving product quality. On the other hand, produce packers

[98]Cited in "Abasto Alimentario en la Ciudad de México: La Central de Abasto y los Mercados Públicos," Marcel Morales Ibarra, Enlace, Mexico City, vol. 2, no. 10, 1998, pp. 8 and 9.

Table 3.1—*Installed and utilized capacity in Mexican central wholesale market facilities*

Location of wholesale market facilities	Wholesale market stalls	Share of country's wholesale market stalls	Occupied wholesale market stalls	Unoccupied wholesale market stalls	Share of wholesale market stalls that are occupied
	Number	Percent	Number		Percent
Estado de México (2000 population 13,096,686)	956	6.96	655	301	68.51
Distrito Federal (2000 population 8,605,239)	2,145	15.61	2,122	23	98.93
Veracruz (2000 population 6,908,975)	762	5.54	234	528	30.71
Jalisco (2000 population 6,322,002)	1,304	9.49	1,262	42	96.78
Puebla (2000 population 5,076,686)	1,078	7.84	611	467	56.68
Guanajuato (2000 population 4,663,032)	780	5.67	528	252	67.69
Michoacán (2000 population 3,985,667)	806	5.86	508	298	63.03
Chiapas (2000 population 3,920,892)	176	1.28	58	118	32.95
Nuevo León (2000 population 3,834,141)	1,019	7.41	677	342	66.44
Oaxaca (2000 population 3,438,765)	57	0.41	57	0	100.00
Guerrero (2000 population 3,079,649)	392	2.85	158	234	40.31
Chihuahua (2000 population 3,052,907)	470	3.42	262	208	55.74
Baja California Norte y Sur (2000 population 2,911,408)	152	1.11	0	152	0.00
Tamaulipas (2000 population 2,753,222)	295	2.15	249	46	84.41
Sinaloa (2000 population 2,536,844)	441	3.21	247	194	56.01
San Luis Potosí (2000 population 2,299,360)	400	2.91	320	80	80.00
Coahuila (2000 population 2,298,070)	252	1.83	252	0	100.00
Hidalgo (2000 population 2,235,591)	50	0.36	50	0	100.00
Sonora (2000 population 2,216,969)	158	1.15	126	32	79.75
Tabasco (2000 population 1,817,829)	80	0.58	80	0	100.00
Yucatán (2000 population 1,658,210)	56	0.41	23	33	41.07
Durango (2000 population 1,448,661	548	3.99	379	169	69.16
Querétaro (2000 population 1,404,306)	n/a	n/a	n/a	n/a	n/a
Zacatecas (2000 population 1,353,610)	201	1.46	113	88	56.22
Tlaxcala (2000 population 962,646)	n/a	n/a	n/a	n/a	n/a
Aguascalientes (2000 population 944,285)	750	5.46	551	199	73.47
Nayarit (2000 population 920,185)	130	0.95	13	117	10.00
Quintana Roo (2000 population 874,963)	120	0.87	72	48	60.00
Campeche (2000 population 690,689)	n/a	n/a	n/a	n/a	n/a
Colima (2000 population 542,627)	n/a	n/a	n/a	n/a	n/a
Total Mexico (2000 population 97,483,412)	13,745	100.00	9,684	4,061	70.45

Sources: Wholesale market statistics were compiled by the Domestic Business Promotion Agency, Mexican Secretariat for Business and Industrial Development, and appeared in the article, "Replanteamiento del Abasto Alimentario," by Marcel Morales Ibarra in Enlace magazine, vol. 2, no. 2, 1997, pg. 10. Mexican population statistics for 2000 were obtained from a table entitled "Social and Demographic Statistics: Mexican's Population, By State, 1895-2000," accessible from the *Instituto Nacional de Estadística, Geografía e Informática* web site at http://www.inegi.gob.mx/estadistica/ingles/sociodem/fisociodemografia.html. The 2000 population data that appear in this table are based on a February 2000 census.

and wholesalers argue that they don't routinely use refrigeration to deliver perishable merchandise to destination markets because their Mexican wholesale and retail clients are unwilling to absorb the additional costs necessary to receive produce that has been transported under temperature-controlled conditions.

Anecdotal evidence gathered by the AMS/ERS/Texas A&M University research team indicated that the cost of refrigerated transportation can significantly inflate the final price of delivered perishable merchandise. A produce buyer for a major supermarket firm on Mexico's west coast interviewed in March 1998 remarked that the cost of refrigerated transportation, on average, could be expected to equal about 6 percent of the final retail cost of a produce item. The buyer indicated the cost could well exceed this level during peak fruit and vegetable harvest seasons. (For example, he noted that December is typically a difficult time to find trucks because it coincides with the beginning of the primary harvest season in Baja California.) He also estimated that it would cost about 4,500 pesos (about $528.00) to transport a 45-foot refrigerated container of fresh produce from the Guadalajara wholesale market to his firm's retail distribution center in a major northwestern city, a distance of 731 kilometers (about 454 miles).[99] This translates into a refrigerated transporta-

[99]Dollar/peso equivalency based on an exchange rate of 8.5250 pesos for one U.S. dollar on March 25, 1998, the date of the interview. Exchange rates obtained from "Daily Mexican Peso Rate Against U.S. Dollar" chart, located at www.jeico.co.kr/cnc57mxc.html,and reflect the noon buying rates as certified by the U.S. Federal Reserve Bank.

tion cost for containerized fresh produce of about $1.16 per mile.

Meanwhile, short-haul deliveries in refrigerated vehicles (e.g., moving perishable products from a regional retail distribution center to individual retail stores) were reported to be far more expensive than longer trips. According to one chain store produce buyer in northern Mexico interviewed by members of the AMS/ERS/Texas A&M University research team, the cost of transporting 15 metric tons (33,069 pounds) of product 15 kilometers in a refrigerated vehicle could be expected to total 500 pesos. This equated to about $58.50 at prevailing exchange rates or approximately $6.28 per mile.[100]

The high cost of refrigerated transportation in Mexico is attributed to two major factors: the expensiveness of gasoline and diesel fuel and the limited availability of refrigerated trailers. The shortage of trailers makes it difficult for even the most well-capitalized produce handlers to reserve space on refrigerated trucks for every produce shipment, particularly for "less than container load" and short-haul deliveries. Chain store retail buyers note that the availability of refrigerated transportation services in Mexico hasn't kept pace with the rapid growth of new entrants into the retail marketplace for perishable commodities. This is most notable in the case of multinational retail firms that have historically operated their retail stores with a greater emphasis on cold chain maintenance than locally owned supermarket chains.

A spokesman for a major U.S.-based chain store firm noted in December 1998 that he only knew of one large food retailer in Mexico—a subsidiary of a U.S.-based company—that routinely used refrigerated transportation on a consistent basis for short-haul produce deliveries. In his experience, most short-haul deliveries from chain store distribution centers to local stores were in nonrefrigerated vehicles and took place at night to reduce the likelihood of heat damage.

In another illustration of the prevailing shortage of refrigerated vehicles, a representative of one chain store firm operating in northern Mexico interviewed in March 1998 remarked that his firm sometimes rented vehicles from its fleet of refrigerated trucks to a competing supermarket chain. Renting out its trucks helped this firm overcome the difficulty of arranging deliveries of its merchandise to local retail stores in refrigerated vehicles on demand. The shortage of refrigerated transportation services was causing at least one chain store to rethink its policy of outsourcing its transportation needs in favor of maintaining a fleet of refrigerated trucks. However, most chain store representatives interviewed by members of the research team remarked that their firms did not maintain an independent fleet of refrigerated trucks and questioned whether their current merchandise turnover justified such an expensive investment.

Cost does not appear to be the only constraint to the more widespread adoption of refrigerated transportation in Mexico. Other apparent constraints include cashflow concerns and lack of driver accountability. According to the produce growers and packers interviewed by research team members, growers and packers who ship their goods without using a broker are generally expected to arrange for the transportation and pay the costs in advance of delivery and often before receiving payment for their merchandise.

One prominent tomato and tomatillo grower and packer in the state of Sinaloa—whose firm packs about 85 percent of its production for export—commented in March 1988 that he customarily pays to ship his merchandise to local wholesale markets prior to delivery. He said, however, that he has no way of maintaining contact with the vehicle's driver once the vehicle leaves his packing shed. Thus, he generally has no idea of what has happened to the merchandise during transit and has no assurances that a driver of a refrigerated truck will take the precautions necessary to preserve the quality of his products. Some unscrupulous truck drivers will turn the refrigeration down or off to save on diesel fuel. (Given the financial commitments and risks involved in arranging transportation individually, many producers in Mexico, especially smaller ones, feel obliged to use a broker, as the broker generally assumes responsibility for making transportation arrangements and paying for them.)

The high level of integration between firms that provide agricultural transportation and companies that produce agricultural crops may also contribute to the limited use of refrigerated transportation services. According to the administrator of the "Star" wholesale market in Monterrey, Lic. Francisco Reyna Garza, approximately 25-30 percent of the trucking firms that transport perishable agricultural commodities are integrated with an agricultural producer. If transporta-

[100]Dollar/peso equivalency based on an exchange rate of 8.535 pesos for one U.S. dollar on March 23, 1998, the date of the interview. Exchange rates obtained from "Daily Mexican Peso Rate Against U.S. Dollar" chart, located at www.jeico.co.kr/cnc57mxc.html, and reflect the noon buying rates as certified by the U.S. Federal Reserve Bank.

tion resources are heavily or exclusively devoted toward the production of the affiliated firms during peak harvest periods, the overall shortage in refrigerated transportation services may be accentuated.

Below are selected comments from produce packers, wholesalers, brokers, and retail buyers gathered by members of the AMS/ERS/Texas A&M University research team during field interviews in March and December 1998. The comments underscore the inconsistent use of refrigerated vehicles to transport fresh fruits and vegetables throughout Mexico, especially between rural production regions and wholesale facilities/retail distribution centers in urban areas.

Monterrey/State of Nuevo León. Large retailers in this region indicated that they depend heavily on their own (or rented) fleet of refrigerated vehicles to transport merchandise between wholesale market facilities and their produce distribution centers/warehouses. (It was not clear whether refrigeration was used consistently to transport fresh produce from retail distribution centers/warehouses to individual retail stores.)

Representatives of a Monterrey-based chain store firm with convenience stores throughout Mexico commented to AMS/ERS/Texas A&M interviewers in March 1998 that they obtain about 70 percent of their fresh produce from central wholesale markets and the remainder from brokers. The firm uses its own fleet of refrigerated trucks to pick up all of its perishable merchandise from suppliers. Although the firm would like to move toward more direct buying, it does not usually purchase produce directly from growers or grower associations because of the "limited availability of refrigerated trucks capable of handling perishables properly."

Another supermarket chain based in Monterrey indicated that it used its own refrigerated trucks to transport about 85 percent of its perishable produce items from its grower and wholesale suppliers to its local produce distribution centers. The remainder was transported at ambient temperature.

The use of refrigeration and the emphasis on cold chain maintenance by wholesale produce handlers in Monterrey appear to be less frequent than among large chain store produce receivers. Most merchants at Monterrey's premier wholesale market for produce, the "Star" wholesale market, maintain some type of refrigerated storage for highly perishable fruits and vegetables at their stalls. However, the general administrator of the Monterrey market, Francisco Reyna Garza, remarked in a March 1998 interview that many perishable (but relatively durable) fresh produce items, such as oranges, papayas, pineapples, jicamas, watermelons, potatoes, and onions, are usually *not* received, handled, stored, and delivered to retail customers under temperature-controlled conditions. This was true, he said, regardless of whether the final retail buyer was a representative of a chain store that maintains a temperature-controlled produce warehouse or distribution center or a small retail merchant/shopkeeper who stores and markets all of his/her produce inventory at ambient temperature.

Many of the produce items typically stored at ambient temperature were among the most popular items traded at the "Star" wholesale market. Oranges, onions, watermelons, and potatoes, along with tomatoes, chile peppers, mangoes, and bananas, account for an estimated 60 percent of the market's annual volume in fresh produce. Consequently, only about 50 percent of the market's total fresh produce inventory is believed to be stored in a temperature-controlled environment at any time. Even those products that are typically stored in cold storage are frequently exposed to ambient temperature during the receiving and delivery process on open loading docks. (Mr. Reyna noted that the efficiency of the receiving and delivery process at the "Star" wholesale market varied significantly from commodity to commodity. While virtually all tomatoes received at the market were palletized and fairly easily transported between loading dock and storage warehouse, bananas were far more difficult to handle because the 30-year-old ripening rooms on the market were designed to handle small bunches of bananas rather than palletized cartons.)

Guadalajara/State of Jalisco. As in Monterrey, the extent to which fresh fruits and vegetables are transported to the local wholesale market in refrigerated vehicles and held in cold storage depends on the commodity in question. However, the use of refrigeration to store fresh fruits and vegetables appears to be less widespread than in Monterrey, where the majority of the market's produce (approximately 70 percent) is distributed to large chain stores.

Wholesale market administrators and merchants in December 1998 identified only a handful of fresh fruits and vegetables sold on the Guadalajara central wholesale produce market that were routinely packaged in well-insulated cardboard cartons, transported to the Guadalajara wholesale markets in refrigerated trucks, and held in cold storage by wholesale opera-

tors. The most notable items included apples from Chihuahua state (which compete with imported apples from the United States), limes from Veracruz state (which are sold for export as well as domestic use), and imported temperate fruits.

One wholesale merchant of limes on the market, whose firm produced its own lime crop in Veracruz and operated a packaging plant, commented that 95 percent of his inventory is delivered in refrigerated vehicles. (Not coincidentally, this producer/wholesaler, who now focuses exclusively on the domestic market, had previously been a lime exporter, and his packing facilities had been designed to support his export business.) Another fruit wholesaler, who sells his firm's Chihuahuan apple production, in addition to imported grapes, pears, and other temperate fruit from the United States, Chile, and New Zealand, commented that he almost always transports and stores his inventory under temperature-controlled conditions.

Nevertheless, most perishable produce items handled at the Guadalajara wholesale market—especially vegetables—were said to be delivered in nonrefrigerated trucks and stored at ambient temperature. A large tomato, zucchini, and chile pepper wholesaler remarked that he didn't use refrigerated storage at all because "he only buys what he can sell." While this merchant occasionally received deliveries from the northernmost reaches of his supply zone in refrigerated trucks (from places such as Ensenada in northern Baja California state, which is nearly 2,400 kilometers or approximately 1,500 miles away), most of the merchandise he received was transported in nonrefrigerated vehicles. Another produce wholesaler noted that his entire inventory of oranges was delivered in bulk in nonrefrigerated trucks and stored in nonrefrigerated warehouse space.

In terms of dependence on supermarket and chain store business, there appeared to be little difference between the produce merchants at the Guadalajara wholesale market who routinely practiced cold chain maintenance and those who handled perishable products at ambient temperature. The lime merchant remarked that "he never sold [merchandise] to supermarkets." The wholesaler of domestic apples and imported fruit commented that he only sold "small amounts" to supermarkets, and the tomato/zucchini/chile pepper wholesaler estimated that supermarket and chain store business accounted for "less than 10 percent" of his annual volume. Demands by supermarket and chain store procurement officials that they be allowed to return "unacceptable" merchandise to suppliers and routine demands for price discounts generally appear to have discouraged merchants at the Guadalajara wholesale market from catering to large retail firms.

In December 1998 the team interviewed a group of small vegetable producers from the state of Jalisco who were engaged in a cooperative marketing venture for *chayote* squash. These growers independently produced and marketed a host of other vegetable crops, such as white onions, tomatoes, cabbage, cilantro, parsley, and zucchini. The interviews revealed that the growers shipped all of their domestic-oriented production to destination markets in nonrefrigerated trucks. Even their export-oriented production was shipped in a nonrefrigerated truck to the delivery point in Guadalajara (a journey of about 2 hours). However, the merchandise was then packed for export and transported in refrigerated vehicles to its final destination (primarily Los Angeles at that time).

State of Veracruz. Local lime producers and packers in the northern citrus production center of Martinez de la Torre interviewed in December 1998 indicated they typically used two forms of transport from production areas to destination markets: enclosed refrigerated tractor-trailers (mostly but not exclusively for product headed for export markets) and open trucks covered with a tarpaulin. About 40 percent of the limes were shipped in refrigerated vehicles (and were primarily but not exclusively headed for export markets). In contrast, pineapple growers from southern Veracruz noted that virtually all of their pineapples—including those headed to distant locations—were shipped in bulk condition in nonrefrigerated trucks. The only pineapples that were routinely shipped to destination markets in refrigerated vehicles were those relatively few destined for export sale.

Villahermosa/State of Tabasco. Antonio de la Torre, general manager of the Villahermosa central wholesale market, remarked in a December 1998 interview that the high cost of refrigerated transportation is considered prohibitive by most of the produce merchants who sell merchandise at his market. He said his market facility has been known to receive perishable fruit and vegetables in nonrefrigerated vehicles from as far away as Sinaloa, a distance of nearly 2,300 kilometers (approximately 1,400 miles). During the hottest part of the year, from April through July, the Villahermosa central wholesale market receives most

of its produce from nearby regions because suppliers do not want to expose their products to the punishment of long-distance transport in a nonrefrigerated vehicle.

The limited availability and inconsistent use of refrigeration during transportation and distribution, the use of poor packaging materials, and the often inefficient routes used to ship products to their final destination predictably lead to sizable merchandise losses at both the wholesale and retail level. Some market observers in Mexico estimate that 50-60 percent of the domestic harvest of perishable agricultural products is lost between production and delivery to the consumer.[101]

Based on anecdotal evidence collected by the AMS/ERS/Texas A&M University research team, this 50-60 percent appears plausible with the inclusion of losses at the farm level. Wholesale market managers and produce receivers throughout the country reported that losses in fresh produce inventories typically ranged between 15 and 30 percent. Certain commodities, such as bananas, mangoes, Maradol papayas, and locally popular tropical fruits such as *zapote* and *guanabana*, were often vulnerable to more severe handling damage because of their fragility.

At the retail level, most chain store produce buyers reported that product losses at their regional produce distribution centers/warehouses averaged between 5 and 7 percent of total arrival volumes (the lowest level of product loss cited was 4 percent). They claimed that losses in individual commodities could reach as high as 20 percent on occasion, depending on the commodity and on weather conditions.

Legal Obstacles to Direct Shipments. Aside from institutional and infrastructural barriers, the development of direct business transactions between Mexican produce growers and retailers in urban areas is undermined by the absence of straightforward, accessible legal mechanisms that clearly define acceptable terms of trade and permit an inexpensive resolution of commercial disputes. One of the primary difficulties that growers and retailers in Mexico face when attempting to develop long-distance transactions in perishable is the fact that there are no commonly understood, accepted, and enforced definitions of quality grades and standards for fresh fruits and vegetables in Mexico. Although the Mexican government has developed quality norms for fresh fruits and vegetables, they are rarely if ever used, largely because growers for the domestic market consider them impractical and prospective buyers do not believe that they measure relevant product attributes. (This represents a marked difference from the existing system of fresh fruit grades and standards in the United States, where government standards for individual fresh fruit and vegetable commodities are initiated and developed by industry request and are structured and adjusted to reflect the interest of growers and handlers.)

As a general practice, produce items destined for domestic consumers are sorted by a packer or wholesaler into simple broad categories such as “first,” “second,” and “third” quality.

In the United States, a “number 1” grade or a “number 2” grade on a fresh fruit or vegetable commodity indicates the item conforms (or is supposed to conform) to a number of officially certified and precisely defined quality characteristics (usually involving size, color, and other appearance/physical condition factors) and meets explicit tolerances for defects or decay.

In contrast, a “first” or “second” quality grade on Mexican fresh fruits and vegetables has no such intrinsic meaning. The classification of “first” or “second” is frequently determined arbitrarily by the growers or wholesale operators themselves, with the attribution of a “quality” category most frequently determined by an individual product’s size or weight, rather than other pertinent quality aspects such as overall appearance, maturity, or condition. Consequently, many of the produce wholesalers and retail produce buyers interviewed by members of the AMS/ERS/Texas A&M University research team reported that they frequently received deliveries of "first quality" produce with large percentages of unripe, deformed, or rotten items. According to a major tropical fruit handler at the “Star” wholesale market in Monterrey, it wasn’t unusual to receive a load with 10-percent defects.

In this context, it should be acknowledged that some local producer organizations in Mexico, such as the association of tomato growers in Sinaloa, are working to combat the problem of unreliable product reputation by creating their own private quality standards. Nevertheless, without the official backing and enforcement of government regulators, the establishment of voluntary quality standards by isolated indus-

[101]“La Central de Abasto de la Ciudad de México: Redes de Frio y Modernización,” Guillermo Tarrats Gavidia, Enlace, Mexico City, vol. 2, no. 7, 1997, p. 3.

try groups and participants is likely to have only a limited effect in encouraging widespread adoption of direct buying programs.

Some supermarkets and chain stores report modest success in obtaining uniform products from a handful of Mexican tomato and citrus suppliers who already have a strong presence in the export market and are accustomed to meeting stringent export product quality requirements. In general, however, retailers reported extensive variability in the quality of products they receive directly from growers and find it difficult to obtain produce that consistently meets their internal quality standards. Representatives from one prominent supermarket firm operating in northern Mexico noted that their firm postponed plans to market a portion of its produce under a private label because it was so difficult to regularly obtain certain fresh fruits and vegetables from domestic growers that met their internal product quality standards.

In addition to problems in applying produce quality standards in Mexico, the development of direct linkages between fruit and vegetable growers and large retailers has been further impeded by the absence of a uniformly accessible legal mechanism such as the Perishable Agricultural Commodity Act (PACA) in the United States. PACA facilitates the arbitration of contract disputes between produce buyers and sellers. It requires most commercial produce shippers, handlers, and receivers to be licensed by the Federal Government, provides a forum for disputes between produce buyers and sellers to be arbitrated outside the courtroom, and authorizes USDA's Agricultural Marketing Service to punish contract violators with fines or commercial license removals.

In Mexico, however, it would be difficult to achieve the comprehensive regulation of the entire fresh produce distribution channel under the authority of one individual government agency even if desired, given the current division of government responsibility for agricultural product marketing. The Mexican Secretariat of Agriculture, Livestock, Rural Development, Fisheries, and Food (SAGARPA) is generally responsible for overseeing and regulating agricultural marketing activity at the farm gate and regional assembly level. On the other hand, the Mexican Secretariat of Commerce and Industrial Development (SECOFI) is generally responsible for overseeing and regulating agricultural product marketing activity at the wholesale and retail level. Without an easy legal resolution of contract disputes, Mexican growers and retailers are likely to remain cautious about conducting transactions with unfamiliar buyers and suppliers.

Producer Resistance to Direct Shipments. The psychological barriers on the part of many Mexican fruit and vegetable growers toward servicing the supermarket and chain store trade may be as much of an obstacle toward the development of direct shipments as any other factor. As outlined earlier, most small fruit and vegetable growers in Mexico are accustomed to selling their merchandise to an intermediary—either a broker or produce wholesaler—who typically pays cash at the time of delivery and takes full responsibility for arranging and paying for transportation to destination markets.

The dependence of growers on intermediaries for marketing product involves certain disadvantages for the grower, most notably the fact that brokers and other intermediaries usually charge a flat commission for their services and have little incentive to obtain a high price for a grower's merchandise. Most of the small Mexican growers interviewed by members of the AMS/ERS/Texas A&M University research team preferred to market their products through an intermediary rather than directly to retail produce receivers.

U.S. retail produce buyers frequently use a "free on board" (f.o.b.) contract, whereby they assume responsibility for all subsequent marketing charges after the product is placed by the transport vehicle in "suitable shipping condition."[102] In contrast, Mexican retail produce buyers generally expect growers to arrange and pay for the transportation of their merchandise themselves. Moreover, they also expect growers to wait 30-45 days (in an inflationary environment) before receiving reimbursement. Consequently, the idea of shifting away from dependence on intermediaries in favor of direct marketing channels with chain store operators is understandably seen by many small growers as a difficult and unrealistic goal.

The reluctance to engage in direct shipments with supermarkets and chain stores appears to be a widespread phenomenon. This is the case even among the most sophisticated produce growers, who possess a

[102] Marketing and Performance Benchmarks for the Fresh Produce Industry, Edward W. McLaughlin, Kristen Park, and Debra J. Perosio, Cornell University, Ithaca, NY, 1997, p. 31. According to this report, retail produce buyers in the United States reported using f.o.b. terms of trade for produce purchases an average of 42.5 percent of the time, compared with 41.4 percent for "delivered sale" terms of trade (which normally extend the legal responsibility of the shipper for merchandise and transportation charges to the wholesale/retail delivery dock). The larger the retail firm, the more frequently the firm was likely to purchase produce on an f.o.b. basis; companies with annual sales of over $1.5 billion reported using f.o.b. terms of trade 63 percent of the time.

strong track record in the export market, are accustomed to stringent buyer requirements for product quality and uniformity, and presumably would be competitive in meeting the product specifications of Mexican supermarket and chain store procurement officials.

Several fruit growers from Veracruz state interviewed in December 1998 spoke frankly about their unsatisfactory experience selling merchandise directly to large food retailers and gave the distinct impression that they were not particularly interested in—or concerned about—strengthening their business relationships with supermarkets and other chain store firms. The growers cited the adverse impact on short-term cashflow as the primary barrier to shipping product directly to large chain stores. Supermarket and chain store firms were said to demand unusually liberal credit terms by local standards, ranging from a minimum of 15 days to as long as 45 days after delivery. In contrast, brokers and wholesale merchants usually offered immediate cash payment.

The growers also stated that supermarkets and chain stores who purchase produce directly usually expect the grower to arrange and pay for transporting their merchandise, a practice that is completely contrary to the usual arrangements with brokers and wholesalers. Additionally, the growers were skeptical about the overall volume of merchandise that the supermarket and chain store sector—still a comparatively minor retail outlet for fresh fruit and vegetable items in Mexico—would be able to consume. They said they were also concerned that supermarkets and chain stores might be quick to eliminate them as a supplier if they weren't able to comply with certain product specifications during a particular delivery or if the firm made changes in its procurement staff.[103] Consequently, these growers continued to rely on the central wholesale market facilities in urban population centers as the primary market outlet for their domestically oriented product. Excerpts from some of these December 1998 interviews are provided below.

Lime growers, packers, and exporters in Martinez de la Torre (northern Veracruz). One representative of a lime packing firm noted for its excellent product quality and strong export orientation commented that only 1-2 percent of his firm's business was targeted toward the emerging Mexican supermarket/chain store sector. At the time of the interview, his firm shipped about 10-15 percent of his annual output to Europe, 5 percent to Japan, 10-15 percent to the domestic Mexican market, and the remainder to the United States. A few years prior to this interview, this individual had conducted business with a major Mexican supermarket firm, but he lost the account when the buyer he worked with left his position. To him, the incident illustrated "the [overriding] importance of personal relationships" in Mexican business transactions.

Since losing that initial chain store account, he had not felt any particular urgency about pursuing other sales opportunities with Mexican supermarkets and chain stores. In his opinion, such stores in Mexico were still "only capable of absorbing a limited volume" of largely low-quality and inexpensive merchandise, and the terms of sale weren't very attractive. Chains typically paid him 40 days after delivery, and he had to arrange and pay for transporting his merchandise to the firm's distribution center. Despite his disappointing experiences with supermarkets in the past, however, he also mentioned that he was beginning to toy with the idea of resuming sales to chain stores after having recently received a phone call from a multinational retail firm, especially since "in 3 or 4 years. . .the Mexican market might be capable of absorbing more volume and quality."

Another lime producer from Martinez de la Torre, one of the first in Mexico to pursue the possibility of shipping limes to Europe and Japan, had been exporting limes for 10 years. He noted that he primarily ships limes to the Monterrey *Central de Abastos* these days because of his negative experience shipping merchandise directly to some chain stores. The chains he worked with in the past would only pay their suppliers on a 30-day credit cycle and also expected their suppliers to arrange and pay for transporting merchandise to their distribution centers.

A pineapple grower in Isla (southern Veracruz). This gentleman, a self-described "medium-sized" pineapple producer with a 350-hectare (approximately 865-acre) farm, commented that he had "given up" on selling products directly to large retailers after a disappointing experience a few years ago with a large Mexican supermarket firm. When he sold directly to the supermarket chain, he had to arrange and pay for transporting his merchandise to the firm's distribution center in Monterrey (a distance of approximately

[103] According to Tendencias en México: Actitudes del Consumidor y el Supermercado, 1998, Food Marketing Institute, Washington, DC, 1998, p. 72, only 21 percent of the Mexican household food shoppers surveyed indicated that they usually purchased fresh fruit and vegetable items in a supermarket.

700 miles). He did not receive payment for his merchandise until at least 30 days after delivery. In contrast, when he sold product to a produce wholesaler, he not only got paid more quickly, but the wholesaler assumed the responsibility of making transportation arrangements and paying the costs of transporting his merchandise to a retail buyer.

At the time of the interview, the pineapple grower estimated that he was selling about 40 percent of his annual production to wholesale market merchants in Monterrey, 40 percent to wholesale market merchants in Guadalajara, and 20 percent to wholesale merchants in Puebla and Mexico City. Despite the enhanced risk of product deterioration during transit, this grower preferred to ship most of his merchandise to wholesale markets in Monterrey and Guadalajara rather than the more geographically convenient markets in Puebla and Mexico City. The reason was that he "trusts the wholesalers more" in Guadalajara and Monterrey, another testament to the important role personal business relationships play in Mexico.

Even the basic idea of using formal contracts to carry out business transactions is a relatively new concept for many Mexican agricultural producers, especially smaller ones, who have long transacted sales based on verbal contracts. At the *Bascula San Manuel* in Martinez de la Torre, Veracruz, the largest auction market in Mexico for citrus and the second largest auction market in Mexico, members of the AMS/ERS/Texas A&M University research team witnessed the typical process of negotiation between produce growers and buyers in rural production areas during a visit in December 1998. *Coyotes* (the nickname for brokers who act as an intermediary between growers and wholesale/retail buyers) would jump on the back of incoming trucks and yell out competing offers for merchandise, and sales would be settled almost immediately on a cash basis without any written contract or sale receipt. According to Alberto Barrera, a local agricultural business consultant who led the team members on a tour of the auction market, most of the producers who sell their merchandise at the market "don't know who they sell to. . .and don't care." He said that everything at the auction market is bought and sold on a strictly cash basis. Most suppliers won't even accept checks from trusted corporate accounts. According to Mr. Barrera, the auction market "is a totally speculative market. . .and the average producer—who only focuses on short-term gains—does not want to sell at a fixed price."

The resistance to formal contracts may be further exacerbated by the fact that in Mexico, contract terms for produce sales traditionally have been based on a fixed sales price. The contracts haven't allowed for the influence of future market fluctuations on the final selling price, as often occurs with contract pricing in the United States. Thus, Mexican produce suppliers who might otherwise consider participating in direct shipments with chain stores, may be concerned that they inherently forfeit any possibility of benefiting from a price move in their favor. Mr. Barrera observed that it might be somewhat easier to implement a direct buying program for a commodity such as oranges, where supply, demand, and prices tend to be relatively stable throughout the year (owing to the variety of regions where oranges are grown in Mexico). However, he thought that implementing direct buying programs over the short run is very problematic when it involves commodities that typically experience greater price volatility.

Chain Store Gravitation Toward Large Producers. Because many fruit and vegetable producers in Mexico are not accustomed to delivering products in a format that can be easily received by retail buyers and may be reluctant or unable to conduct long-distance sales transactions without advance payment, it comes as little surprise that Mexican supermarkets and mass-merchandise chains have most frequently established direct shipment contracts with a relatively small group of large producers and well-organized producer associations. Such producers and producer associations are accustomed to using formal contracts and are familiar with the quality standards of the export/international market or, in the case of Chihuahuan apple growers, are used to competing head-to-head with imported product in the domestic Mexican market. Veracruz-based agricultural business consultant Alberto Barrera notes that supermarket and mass merchandise chains may also lean toward forging business relationships with larger Mexican agricultural producers because these producers often maintain farming operations in more than one region, which enables them to take advantage of different harvest seasons and supply product for an extended period of time.

Below are some of the comments obtained from various chain store produce buyers interviewed by members of the AMS/ERS/Texas A&M University research team in March and December 1998. The respondents outlined the extent to which their firms

obtained fresh produce directly from Mexican growers and the barriers that exist in extending the spread of direct supply procurement.

Foreign-owned supermarket chain with primary sales territory in northern Mexico. Approximately 30-40 percent of the fresh produce this firm purchases for its retail stores in Mexico was shipped directly from individual growers or grower associations to the firm's produce warehouses/receiving centers. The remaining 60-70 percent was obtained from terminal market sources, including growers who operate their own wholesale stalls at terminal markets. The commodities that were most frequently received directly from individual growers and grower cooperatives were bananas, pineapples, tomatoes, lettuce, sweet peppers, and citrus fruits. Most of these commodities were procured from large growers who already had a strong presence in the export market and were accustomed to meeting uniform standards for product quality and packaging. A small quantity of sweet peppers and limes was procured from grower cooperatives. The reliance on direct procurement from growers fluctuated significantly depending on the specific commodity. For example, virtually all of the oranges were shipped directly from local Mexican producers, whereas direct shipments accounted for only about 50 percent of the firm's watermelon purchases and practically none of the firm's mango purchases.

At first, the company had some problems receiving product that met its desired specifications. For example, the firm initially asked growers to ship "full-ripe" produce. It took some time before growers were able to comply with this request because this was the first time most of them—largely accustomed to shipping hardier produce to distant export markets—had ever been approached about shipping a less durable product. However, over time and with constructive feedback from the company's procurement officials, the situation changed, and domestic growers were beginning to pack product more in line with what the firm wanted to receive.

To increase efficiency and reduce produce losses (by limiting the number of people handling the produce), the firm had recently embarked on an aggressive campaign to boost the volume of fresh fruits and vegetables it received directly from Mexican growers. The campaign was especially targeted to the small to medium-sized producers who were largely missing from the firm's regular supply channels. In this vein, the firm had recently hired a Mexican national with a background in category management who was assigned specifically to strengthen the firm's relationships with small and medium-sized fruit and vegetable producers. Nevertheless, development of these direct buying channels was very gradual and a bit of a challenge. Some prospective suppliers were still nervous about selling product directly to the company because the firm wouldn't pay in advance of shipment but waited at least 10 days after delivery before issuing a check. Once the company developed a proven track record for prompt payment, however, it was beginning to receive calls from Mexican growers asking to participate in direct buying programs.

Mexican-owned convenience store chain with stores throughout the country. Practically all of the fresh fruits and vegetables purchased by this firm were obtained from intermediaries, with about 70 percent purchased directly from wholesalers at the central terminal market and the remainder from other intermediaries. The company usually didn't purchase produce directly from growers because, according to its produce procurement manager, it is too difficult to coordinate produce shipments from different regions, especially given the limited availability of refrigerated trucks capable of handling perishables properly. At the time of the interview, the company used its own fleet of refrigerated trucks to pick up all of its merchandise from suppliers. However, the produce procurement manager envisioned moving toward more direct buying in the future if individual growers become capable of delivering larger volumes of product to the company's distribution centers.

Mexican-owned mass-merchandise retail chain with primary sales territory in northern Mexico. Procurement officials at this company indicated that they purchased between 60 and 70 percent of their produce items "directly" from a handful of growers and grower cooperatives. (The cooperatives were primarily relied upon for only two commodities, limes and prickly pear cactus.) However, these self-described "direct" purchases included transactions with [relatively large] growers who maintained wholesale stalls and sold their own production at terminal markets. As a result, far less than 60-70 percent of this company's produce needs were actually shipped directly from farms and rural packing sheds to the firm's distribution centers. The firm's dependence on direct procurement of fresh produce varied greatly depending on the individual commodity. Using the firm's definition of "direct" purchases, which includes

contracts with producers who may choose to deliver contracted supplies through their affiliated operations on terminal markets, the procurement officials indicated that the proportion of "direct" shipments varied by commodity as follows:

- Potatoes. All of the firm's domestically grown potatoes were purchased from local produce wholesalers because in Mexico, unlike the United States, consumers strongly prefer buying a washed potato. Because washing potatoes greatly reduces their shelf life, washing can't be performed at shipping point (at least not under current infrastructural conditions in Mexico), and potatoes are typically washed after being received by produce wholesalers at terminal markets located in urban population centers.
- Tomatillos. Fifty percent of the firm's domestically grown tomatillos were purchased "directly" from producers (including the percentage of the grower's production that was distributed to the retail firm from the grower's stall on the local terminal market). The remainder were purchased from other intermediaries.
- Onions. Seventy percent of the firm's domestically grown onions were purchased "directly" from growers (including the percentage of the grower's production that was distributed to the retail firm from the grower's stall on the local terminal market). The remainder were purchased from other intermediaries.
- Oranges. From 70 to 80 percent of the firm's domestically grown oranges were purchased "directly" from growers (including the percentage of the grower's production that was distributed to the retail firm from the grower's stall on the local terminal market). The remainder were purchased from other intermediaries.
- Avocados. All of the firm's domestically grown avocados were purchased "directly" from growers (including the percentage of the grower's production that was distributed to the retail firm from the grower's stall on the local terminal market).

Mexican-owned mass-merchandise retail chain with primary sales territory in northwestern Mexico. This firm reported spectacular growth in direct procurement of fresh fruits and vegetables over the previous few years. Until about 4 years prior to this interview, the company purchased 60-70 percent of its produce from wholesalers and brokers, mostly from the Guadalajara terminal market. Since then, however, the percentage bought from wholesalers and brokers had dwindled to 20-30 percent due to greater reliance on direct deliveries from producers. Part of the reason that the firm's supply channels shifted so rapidly was the fact that the company had finally expanded its operations and its turnover of fresh produce merchandise to the point at which it was capable of receiving a greater volume of individual produce commodities directly from growers.

According to the head of produce procurement, the primary motivation for increasing direct shipments was the cost savings realized from shortening the supply chain. This was done by eliminating the cost of using intermediaries and by minimizing the amount of handling and transportation required to move perishable merchandise from origin to destination, thereby reducing product losses. In addition, by buying a greater portion of its produce needs directly from growers, the head of produce procurement found that it became easier to negotiate with and exert influence over suppliers and receive the exact type of supplies the company needed. The firm made a special effort to buy "locally grown" produce to take advantage of the products' lower transportation cost and comparative freshness. The firm found that these local procurement strategies worked well for certain items like cilantro, bean sprouts, radishes, scallions, and potatoes. At that time, the firm was not maintaining any formal long-term marketing contracts with individual growers, nor did it contribute directly to growers' planting and harvesting costs.

The head of procurement noted that there were still some products, such as bananas, which were next to impossible to buy directly from growers with the desired quality. To more easily control the quality of its bananas, the firm was planning to build some banana ripening rooms at its produce distribution warehouse.

Representatives from two retail firms (one nationally owned, one with majority foreign-ownership) operating conventional supermarkets and mass-merchandise retail stores, primarily in central Mexico. The produce items these retail buyers indicated they were most likely to purchase directly were tomatoes, onions, avocados, citrus fruit, potatoes, cucumbers, chile peppers, bananas, and pineapples. (Most of the suppliers of these produce items were simultaneously involved in the export trade.) Dealing with Mexican grower associations to arrange direct shipments was considered very difficult and

was avoided wherever possible. Exceptions were the comparatively well-organized banana, apple, tomato, and avocado grower associations. While direct shipments have made significant inroads into produce procurement strategies in recent years, representatives of both chain organizations remarked that the overwhelming majority of their firms' fresh produce inventory—at least 90 percent—was still obtained from wholesalers on the terminal market.

Attempts of Retailers and Government Authorities To Help Mexican Growers Enhance Direct Delivery Capabilities Through Technical Assistance. Despite current grower reliance on wholesale and other intermediary marketing channels, the aggressive expansion of chain stores in Mexico—and the growing capacity of prominent retail firms to accommodate direct deliveries of perishable products—is beginning to be viewed by government policymakers in Mexico as a potential threat to the long-term viability of domestic small-scale horticulture. As their scope of operation expands, a growing number of supermarket and mass merchandise chains can be expected to construct and operate independent produce distribution centers throughout their operational territory. As a result of their additional capacity to receive truckloads of product directly from growers, retail dependence on local wholesale markets for fresh produce supplies can be expected to diminish over time, while direct supply contracts with large, export-oriented producers and well-organized producer groups—including U.S. and other foreign shippers—are likely to become more prevalent. (Long-term market opportunities for shippers and exporters of U.S.-origin fresh fruits and vegetables are addressed more comprehensively in chapter 4.)

By the same token, domestic fresh fruit and vegetable producers who lack the capacity to ship market-ready products directly to retail warehouses—and satisfy buyer demands for product volume, quality and uniformity—can be expected to lose their existing access to the retail market. This will happen as chain stores eliminate using wholesalers, who currently make it possible for small producers to sell perishable merchandise indirectly to large retail firms by consolidating deliveries, sorting products, and repackaging products to make them suitable for retail delivery. The probable erosion of the small producer's share of the retail grocery market over time is exacerbated by the fact that, if current trends continue, supermarkets and mass merchandise chain stores can be expected to capture a growing portion of Mexican household spending on fresh produce, further reducing potential retail outlets for small farmers by reducing the volume of fresh produce absorbed by smaller/independent produce retailers.

In the wake of this threat, the past few years have seen the emergence of new private and government-sponsored technical assistance initiatives in Mexico that seek to counteract the growing influence of larger/foreign firms as suppliers of fresh produce to the domestic retail grocery sector. By forging stronger linkages with retailers, enterprising grower associations and government agencies in Mexico are attempting to expand market access for small producers and boost farm income. In addition, some chain store retailers are developing their own outreach programs with farmers as a way to diversify their local supply base and procure products at competitive prices. Some of the most promising initiatives uncovered by members of the AMS/ERS/Texas A&M University research team during field interviews in March and December 1998 follow:

Retail investment and management of local repacking facilities. To source product more effectively from smaller Mexican produce growers who may not be able to handle, sort, and pack raw material in a manner that is acceptable for direct retail delivery, an international supermarket chain with stores in northern Mexico opened a facility for repacking fresh produce in the Guadalajara region in the fall of 1998. The facility is designed to supply both the firm's retail stores in Mexico and its retail outlets in the United States. The firm intends to use its own trucks to pick up cargo from the Guadalajara repacking facility and make deliveries either to its own produce distribution warehouse or directly to individual retail stores.

Seed money and technical assistance to selected rural cooperatives. Alberto Barrera, an agricultural business consultant in Veracruz state, observed that many of the smaller producers who have managed to develop direct linkages with supermarkets and mass merchandise chains in Mexico are members of a *sociedad producción rural* or SPR, a federally recognized designation for a small cooperative marketing organization that typically consists of eight to ten members. He attributed the relative success of these SPR organizations to the fact that their members are often related to each other and tend to have a stronger sense of

commitment to the organization and the mutual benefits received by each member than an ordinary grower organization.

Regardless of whether Mr. Barrera's theory was correct, members of the research team witnessed the marketing success of at least one SPR organization during a December 1998 visit to a farming community near the town of Tizapan in the state of Jalisco, about 2 hours away from Guadalajara. This particular group of 14 small producers with a total of 30 hectares (74 acres) under cultivation had not yet developed direct shipment contracts with local retail chains. However, they had been quite successful, breaking into the export market during the previous 2 years with their production of *chayote* squash, which is grown and harvested throughout the year. Emilio Diaz Rivas, one of the members of the marketing cooperative, commented that the cooperative's entry into the export market was initiated with assistance from Mexico's *Banco Nacional de Comercio Exterior* (BANCOMEXT), the Mexican Bank for Foreign Trade.

The cooperative operated two packing lines for *chayote* simultaneously: one for export-oriented product and one for domestic-oriented product (equivalent at the time to any product that did not meet export standards). In the export-oriented packing line, which took place under shaded conditions in a small packing shed, pieces of *chayote* were hand-selected for their relatively uniform [small] size and lack of defects. Once it was determined that a piece of *chayote* met the cooperative's standard for export-grade product, each piece received a price look-up sticker, was insulated with a separate plastic bag, and was packed by hand into heavy, well-insulated cardboard cartons that listed the contents of each box and the name of the cooperative (figure 3.6). In contrast, the leftover pieces of *chayote* that didn't meet export grade (because of size, scarring, and/or other visible defects) were field-packed without any protection from the sun, wrapped with thin layers of newspaper, and stuffed into noninsulated wooden crates without any regard to differences in product quality (figure 3.7).

Figure 3.6—*Assembling* chayote *squash for export market, Tizapan, Jalisco*

Figure 3.7—*Fresh* chayote *squash packaged for domestic Mexican market, Tizapan, Jalisco*

Virtually all of the domestic-oriented product is distributed to the internal Mexican market through wholesalers at the terminal market in Guadalajara.

The success of the *Productores Agropecuarios Tizapan* in cracking the export market is testament to the fact that—with guidance and financial assistance—small producers with access to only rudimentary infrastructure can substantially improve their ability to prepare products for retail sale. Nevertheless, it should be acknowledged that the marketing cooperative would not have been as successful without the strong commitment of an intermediary. In this case, the intermediary was the cooperative's business partner in Guadalajara, who makes all necessary arrangements pertaining to insurance, transportation, border-crossing documentation, and contracts with import brokers in the United States and furnishes the cooperative with materials to pack its export-oriented product. (Members of the cooperative have no involvement with the export cargo once it is shipped to their business partner.)

Government initiatives to promote direct linkages between small farmers and retailers. The government of Veracruz state, through the efforts of the Fruit and Vegetable Trade Program at the state Ministry of Agriculture, recently launched an initiative to strengthen ties between small local producers and retail buyers from *Tiendas Chedraui*. The firm is a hypermarket chain headquartered in Xalapa, Veracruz, and is one of the most prominent food retailers in southern Mexico. (At the beginning of 1998, *Tiendas Chedraui* was reported to be operating 40 retail stores in 11 Mexican states, all within the central and southeastern portions of the country.[104])

The Ministry of Agriculture provided assistance by identifying and recruiting potential participants in a direct delivery program for fresh produce. It was envisioned that local small producers would eventually supply 12 locally grown produce items directly to the Chedraui group, including oranges, mandarin oranges, grapefruit, Persian limes, "Manila" variety

[104]Data obtained from the 1998 Directory of the *Asociación Nacional de Tiendas de Autoservicio y Departamentales*, the chief Mexican trade association representing chain store retailers.

mangoes, pineapples, watermelons, plantains, *chayote* squash, wax peppers, and Chinese winter melons. As of December 1998, five agricultural firms and grower associations based in the state of Veracruz were already participating in the program, supplying nine different produce items directly to *Tiendas Chedraui*. When the pilot program is fully implemented, 17 local growers/grower associations are expected to ship fresh produce directly to the retail chain.

Visits to *Tiendas Chedraui* stores in Boca del Río, Veracruz, and Villahermosa, Tabasco, by members of the AMS/ERS/Texas A&M University research team in December 1998 revealed that the firm was promoting locally grown fruit very aggressively. It was doing this both by the use of signage (e.g., "Oranges from Veracruz") and by extremely competitive pricing on selected items that were produced locally and may well have been procured from local suppliers. At both stores, for example, *chayote* squash was being advertised on special for 1.25 pesos per kilogram (less than 6 cents per pound), compared with 4.40 pesos per kilogram (approximately 20 cents per pound) at another large retail chain store in Villahermosa (Bodega G) during the same week.[105]

The Mexican Farm-Retail Price Spread for Fresh Produce and Its Implications for the Efficiency of Produce Distribution

The farm-retail price spread, a widely used indicator of marketing efficiency, is the difference between the price producers receive and the price consumers pay for the equivalent amount of a particular commodity. When markets are functioning properly, adjustments in prices are quickly reflected through the distribution system from the farm gate to the retail level, resulting in a farm-retail price spread that closely represents the costs of marketing services.

As agricultural products move from the farm gate to retail outlets, a series of marketing services are often performed that add to the final retail price. In the case of fresh produce, these marketing services might include product assembly, sorting, grading, cleaning, packing, transportation, and storage. The farm-retail price spread also reflects any profits that might have been obtained by marketing agents (e.g., brokers, wholesalers, retailers) above the actual costs of providing marketing services, as well as the cost of product losses sustained during the distribution process. Consequently, analyzing the farm-retail price spread is often useful in understanding how efficiently a particular market operates.

It is difficult to accurately measure the farm-retail price spread in Mexico because farm-gate prices for individual fresh fruit and vegetable commodities are not systematically collected by government agencies or private entities. In the United States, the U.S. Department of Agriculture collects monthly producer and retail price statistics for major produce commodities, which allows for a fairly precise analysis of marketing margins. In Mexico, however, very few systematic attempts have been made to collect the data necessary to estimate marketing margins in fresh produce.

Some isolated efforts to estimate fresh produce marketing margins were performed between 1987 and 1989 by the *Coordinación General de Abasto y Distribución del DDF* (COABASTO), the primary municipal government agency responsible for overseeing food distribution practices in Mexico City. Many of the findings, representing probably the most comprehensive attempt to date to analyze the farm/retail spread for fresh fruits and vegetables in Mexico, are depicted in table 3.2. Included are additional farm-retail price spread estimates for individual fresh fruit and vegetable products, developed separately by faculty members from the *Centro de Investigaciones Económicas, Sociales, y Tecnológicas de la Agroindustria y la Agricultura Mundial* (CIESTAAM) at Chapingo Autonomous University. Equivalent U.S. farm-retail price ratios during the same period have been provided for comparison.

As might be expected, the least perishable products—potatoes, onions, and serrano chile peppers—were the ones that generally appeared to earn farmers the highest share of the retail price. Presumably, this is because these relatively durable products required less handling and repacking in the distribution process—and experienced less degradation in quality—than other, more perishable commodities. Conversely, farmers who sold products with particularly short shelf lives—such as tomatoes and avocados—generally obtained smaller percentages of the final retail price.

In what might initially appear to be a surprising finding, the farm-retail price ratios for most Mexican fresh produce items during the early 1990s were

[105]Peso/dollar conversion based on midday U.S. Federal Reserve exchange rate for December 16, 1998, of 9.8850 pesos per U.S. dollar.

Table 3.2—*Mexican and U.S. fresh produce farm price/retail price ratios*

Item	Mexico				U.S. (1989-93)
	COABASTO studies 1987-1988 [a]	SAGAR/ Chapingo 1994 [b]	Chapingo 1992 [c]	TAMRC 1989-93 [d]	
Tomatoes	.29	.25		.31	.37 [d]
Avocados	.23				
Onions	.20 - .40			.55	.36 [d]
Potatoes (Alpha)	.59		.32		
Serrano chile peppers [e]	.20 - .50		.51		.33 [d]
Oranges	.30 - .40				.38 [f]
Papayas	.31				
Limes	.28				.24 [f]
Carrots			.10		
Squash				.35	.21 [d]
Cucumbers				.52	.27 [d]
Fresh vegetable average (1987-89)					.30 [g]
Fresh fruit average (1987-89)					.26 [g]

[a] From "Sistema-Producto," a series of booklets published between 1987 and 1991 by the *Coordinación General de Abasto y Distribución del DDF, Servicio Nacional de Información de Mercados y Banco Nacional del Pequeño Comercio*.
[b] Sistema Producto Tomate Fresco—Problemática y Alternativas. *Universidad Autónoma Chapingo* and *Secretaría de Agricultura y Recursos Hidráulicos*, México, September 1994.
[c] El Consumo de Hortalizas en México. *Reporte Investigación 07*, CIESTAAM, *Universidad Autónoma Chapingo*, Chapingo, México, November 1991.
[d] "U.S. and Mexican Fresh Vegetable Markets: A Descriptive Analysis," Jaime Malaga and Gary Williams, International Research Report IM 5-96, Texas Agricultural Marketing Research Center, Texas A&M University, November 1996.
[e] U.S. indicator corresponds to winter bell pepper prices between 1988 and 1993.
[f] "Marketing California's Agricultural Production," California Agriculture Issues and Challenges, Hoy F. Carman, Roberta Cook and Robert J. Sexton, Giannini Foundation, University of California, August 1997.
[g] Agricultural Outlook, Economic Research Service, U.S. Department of Agriculture, January-February 1991.

roughly comparable to or even modestly higher than those in the United States during 1987-89; i.e., 26 percent on average for fresh fruit commodities and 30 percent for fresh vegetable commodities. However, it is important to note that most fresh produce flowing through the U.S. distribution system during 1987-89 most likely benefited from a much more elaborate and expensive array of marketing services (e.g., sorting, grading, packaging, cold storage, and refrigerated transportation) than produce distributed in Mexico. Also, very little fresh produce in Mexico was being sold in supermarkets and chain stores—outlets that require the greatest amount of market preparation for perishable commodities—at the time that the data were collected. These facts actually serve to illustrate the relative inefficiency of Mexican produce distribution during the period studied.

Mexican researchers who study the domestic produce market have often blamed Mexico's relatively low farm-retail price ratios on the fact that intense concentration in the domestic wholesale industry enables wholesalers to exert an unusual amount of market power in relation to agricultural producers. The continued dominant role of the wholesaler as a supplier to both large and small Mexican retailers certainly supports the allegation that produce wholesalers retain strong leverage in determining produce prices. As noted earlier, most chain store produce buyers interviewed in December 1998 said that the vast majority of their products came from one of Mexico's three major wholesale markets in Guadalajara, Mexico City, and Monterrey.

However, the interpretation that high concentration in the Mexican produce wholesale industry is primarily responsible for the low percentage of retail prices received by Mexican fruit and vegetable growers appears to be overly simplistic. First, this interpretation does not take into account the large role intermediaries play in produce distribution before products ever reach an urban wholesale distributor. For example, according to COABASTO's 1991 study on fresh tomato distribution, nearly 50 percent of the volume of tomatoes handled in the domestic Mexican market were distributed through channels that included *two or more* local and regional intermediaries between the grower and the wholesaler at an urban terminal market.

Second, the market power argument obscures the fact that heavy intervention of intermediaries to consol-

idate, sort, and assemble fruits and vegetables at various stages of the distribution process is often a *necessary* service, given the system's logistical, infrastructural, and regulatory challenges. Consequently, the creation of government policies and programs to improve such areas as rural road infrastructure, rural access to transportation, and postharvest handling practices might serve to narrow the differences between producer and retail prices just as effectively as policies focused on eliminating monopolistic tendencies in the produce wholesale industry.

Third, while chain stores still represent a comparatively minor share of fresh produce sales in Mexico, the share continues to climb, especially in selected regions of the country. This is likely to diminish the role of produce wholesalers in the distribution process over time. Between the late 1980s and early 1998, for example, the percentage of produce sold on the Monterrey central wholesale market to small retail firms dropped from 90 to 40 percent, while sales to grocery chains became the primary source of market revenue.[106]

As a growing number of Mexican supermarket and mass merchandise chains attain sufficient economies of scale to operate proprietary distribution centers in most or all of the regions they serve and gain the physical capacity to receive and store direct shipments from producers, they are likely to reduce their traditional dependence on central wholesale markets, thereby reducing the influence of wholesalers on price determination.

Summary

Prospective suppliers of fresh fruits and vegetables to the Mexican retail food sector need to remember that most retail food stores in Mexico—including supermarkets and hypermarkets operated by prominent multinational firms—are rarely able to implement the efficient supply chain management and practices that distinguish North American and Western European food retailing, with the result that product condition may suffer by the time perishable merchandise reaches Mexican retail shelves. Unlike the standard practice in the United States, direct long-distance shipments of fresh fruits and vegetables between agricultural production areas and retail produce distribution centers remain the exception in Mexico rather than the rule, with the vast majority of fresh produce destined for domestic retail sale still handled by wholesalers and/or brokers before being shipped to retail warehouses or stores, even merchandise destined for large multinational chains.

To some extent, the continued reliance on intermediaries in the distribution process reflects the fact that many food retailers, including large chain retailers, don't always have the capacity to receive full containers of produce items. Even chain store firms in Mexico that operate independent produce distribution centers don't necessarily have a distribution center in every region where they operate stores, since the construction of chain store produce distribution centers has necessarily lagged far behind the rate of chain store expansion. However, even if every supermarket and hypermarket firm operating in Mexico had sufficient physical capacity to accept direct produce deliveries, wholesalers and other intermediaries could still be expected to play a key role in the distribution of fresh produce between grower and retailer, especially in the case of domestically grown produce. Inadequate access to and the high cost of refrigerated transport, coupled with poor rural road conditions and the frequent use of nonprotective packaging for merchandise destined for domestic consumption, often result in high spoilage rates during the shipment process and make it necessary to sort and repack fresh fruits and vegetables near destination markets in order to make them acceptable for retail sale. Many Mexican fruit and vegetable growers are also disinclined to sell merchandise directly to chain store buyers because chain store buyers tend to reject deliveries of imperfect merchandise far more frequently than produce wholesalers and brokers and typically pay for merchandise several weeks after delivery, unlike the standard "cash in advance" payment schedule of produce wholesalers and brokers. Other impediments to the creation of direct business transactions between Mexican producers and retailers include the absence of well-defined and enforced produce quality standards and legal mechanisms to arbitrate contract disputes (such as the Perishable Agricultural Commodity Act in the United States), which discourages Mexican retail buyers from engaging in long-distance transactions out of concern that the merchandise they receive will not conform to their desired specifications. The prevailing inefficiency in the distribution of Mexican-grown produce to

[106]Based on information obtained during meeting with Lic. Francisco Reyna Garza, General Administrator, "Star" Wholesale Market, Monterrey, Nuevo León, Mexico, Tuesday, March 24, 1998.

Mexican consumers may actually give a marketing advantage to U.S. fruit and vegetable suppliers who are capable of supplying high-quality, well-sorted fruit and vegetable products to Mexican chain store operations under temperature-controlled conditions, especially in highly perishable product categories such as packaged salads.

CHAPTER 4: Long-Term Prospects for Opportunities Associated with the Expansion of Supermarkets/Mass Merchandise Chain Stores in Mexico

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The Mexican economic environment has changed rapidly in recent years due mainly to structural changes in place since the mid-1980s and direct and indirect effects of the North American Free Trade Agreement (NAFTA). The changes are considerably altering the Mexican fresh produce distribution and marketing system, creating a range of new challenges and opportunities. The changes should continue in the future due to the overall free trade and investment policies in place; market integration with the United States and Canada; and the consequent rapid industrialization, modernization, and urbanization of the country. This trend will translate into rapid growth in per capita income, more women at work, better equipped homes, less time available for food shopping and preparation, and changes in food consumption patterns. Increased demand for food quality, service, and convenience will provide additional bases for modern chain store expansion. This expansion should benefit from improvements in infrastructure and logistics and from new *economies of scale* induced by the regional and multinational distribution centers. The expansion of U.S.-based retail food chains in Mexico should open new opportunities for U.S. suppliers of quality fresh produce to compete in the Mexican market.

Dynamic Changes in the Mexican Economic Environment

Since the mid-1980s, Mexico has been steadily evolving from an inward-oriented, highly protected country with strong government intervention toward a more open and modern market-oriented economy. An important turning point was the negotiation and subsequent admission to the General Agreement on Tariffs and Trade (GATT) in 1986, which marked the beginning of Mexico's unilateral trade liberalization. At the same time, Mexico began gradually deregulating and dismantling its extensive market intervention system that had crippled its private-sector initiative. The signing of the NAFTA agreement in 1993 marked the beginning of an economic integration process that would lock up the structural changes in Mexico and provide the basis for steady trade and rapid economic growth. This whole process of reform and modernization is gradually reaching all levels of the Mexican economy, including the agriculture and food distribution sectors.

NAFTA implementation started in January 1994 with an immediate drop in the agricultural trade-weighted Mexican tariff with the United States from 10 to 5 percent. The tariff average will gradually reach zero by 2008. Most importantly, the complex system of Mexican licenses and other nontariff barriers was abandoned. NAFTA goes beyond direct trade liberalization and includes agreements on key aspects of investment, intellectual property, harmonization of sanitary/phytosanitary policies, transportation, environmental conservation, and labor issues.

Following Mexico's rapid recovery from the 1995 peso devaluation, the increase in trade propelled by GATT and NAFTA and the prospects of future economic integration with its northern neighbors have induced an environment in which confidence in long-term stability and growth is accelerating foreign and domestic investment. By 1999, Mexico's trade had tripled pre-NAFTA levels, and the country was exporting more than the rest of Latin America combined. Mexico has also experienced the highest economic growth rate in the Latin American region in recent

years and is expected to sustain this superior economic performance in the foreseeable future. Partly in recognition of this new business environment and its envisioned economic performance, Mexico was admitted to the Organization for Economic Cooperation and Development (OECD), the exclusive club of developed economies that includes Europe, the United States, Canada, and Japan. The flow of direct investment to the Mexican economy has soared in recent years to all sectors, including food distribution and retailing. Attracted by the new economic and business environment in Mexico, the annual flow of foreign direct investment tripled between 1994 and 1999. In many cases, this foreign investment flow has been accompanied by technological innovation and know-how, as well as modern business practices. These innovations are inducing and forcing changes in the traditional structures of production and marketing.

Effects of Changes on Fresh Produce Distribution

More open markets, increasing per capita incomes, growing urbanization, and facilitation of foreign investment have created conditions for important changes in the Mexican fresh fruit and vegetable marketing system. They are altering the traditional structure of marketing channels and generating new challenges and opportunities for participating agents.

The economic and business environment induced by the modernization of the Mexican economy and the implementation of NAFTA has also brought foreign investment to the food services and food retailing sector. In recent years, U.S.- and European-based retail store chains (Wal-Mart, Price Club, H-E-B, Auchan, Carrefour, and others) have been arriving and expanding operations in Mexico.

These store chains arrived with many years of experience and development in the very competitive environments of their respective countries. Their extensive experience includes modern technologies and know-how regarding supply chain management, procurement arrangements, stock optimization, quality standard control, cold storage maintenance, product handling, shelf-life preservation, and consumer services.

Mexican consumers enthusiastically received the unprecedented services and quality provided by these new multinational chains. The competition forced local firms to enhance their services and efficiency, generating a chain reaction of improved services and modernization throughout the Mexican retail grocery sector. At the same time, the spread of the chain store format in food retailing encouraged and reinforced the underlying trend toward increased consumption of fruits, vegetables, and meats in Mexico (see chapter 1) by permitting enhanced consumer access to an ever-wider variety of perishable products.

The success of the supermarket/mass merchandise chain store format in food retailing triggered a remarkable expansion of retail outlets and consumer market penetration in Mexico (see chapter 2). Chains that formerly targeted only high-income households in major metropolitan markets began to extend their reach to medium and even lower income households by the late 1990s and to expand their operations into less urbanized population centers.

Primarily because of the phenomenal success of the chain store format among Mexican food shoppers, the Mexican food distribution system is undergoing a major structural change in terms of how perishable items reach the consumer. While small/independent produce vendors (who typically depend on central wholesale markets in urban centers for their supplies) are still responsible for distributing the bulk of fresh produce to Mexican consumers, the traditional ways of distributing perishable products are beginning to give way to modern methods, especially in the northern states of Mexico. The widespread growth of chain store food retailing in supermarket and mass merchandise store formats is quietly forcing improvements in quality standards, cold chain management, and centralized inventory control. Supermarkets and mass merchandise chains are also increasingly attempting to purchase produce directly from agricultural regions, threatening the traditional dominant role of the central wholesale markets as a primary source of perishable merchandise.

The United States and other industrialized countries gradually achieved a similar change between the 1920s and the 1960s. That process resulted in the establishment of a modern food distribution system characterized by:

- Increases in regional concentration of agricultural production;
- Increased assembly and packaging of products at shipping point rather than at destination markets;
- Widespread development of private chain distribution centers capable of receiving truckloads of agricultural products directly from shipping points; and

- Reduction in the importance of urban wholesale markets as a retail distribution mechanism.

In Mexico, this evolution is occurring far more rapidly than it occurred in the rest of North America in the mid-twentieth century, with the sudden explosion of chain stores forcing changes along the entire production-marketing supply chain. However, the slow response of some market agents and some institutional rigidities are creating bottlenecks where state-of-the-art supermarket outlets coexist with anachronistic marketing practices by intermediaries. This dynamic process and the challenges generated by it were described extensively in chapter 3. Given the current economic, business, and policy landscape in Mexico, outlined below are some potential scenarios for the future development of Mexico's produce distribution system, based on current forecasts of Mexico's economic performance and anticipated near-term policy changes in the domestic and international trade spheres.

Long-term Macroeconomic Trends in Mexico and Their Potential Impact on Mexican Produce Imports

Despite the direct and indirect impacts of NAFTA already observed in Mexico, the treaty is not expected to reach the final implementation stage until 2008, when all tariff and nontariff barriers between the North American partners are scheduled to end. Not only will existing barriers to trade be phased out, but other areas governed by the agreement, such as investment legislation, transportation, border crossing logistics, and harmonization of sanitary/phytosanitary regulations, are expected to be fully implemented in 2008. Therefore, it can reasonably be expected that the full implementation of NAFTA will stimulate increased levels of trade between the United States and Mexico even beyond today's current sizable levels.

Moreover, as some economists like to point out, trade liberalization is just one step ahead of the next stage, which is market integration. The market integration stage implies a series of adjustments in business practices that include horizontal market integration of products and vertical integration of the entire food chain across national boundaries, a process that has yet to be accomplished. Also, it is relevant to note that Mexico's involvement and support for free trade goes beyond the confines of North America. By early 2000, Mexico had signed bilateral free trade agreements with 27 countries, including almost all Latin American nations. The free trade agreement signed with the European Union in March 2000 will gradually reduce tariffs through 2007 and is expected to double Mexican exports to Europe in the next few years. Mexico is now in the unique position of being a free trade partner in the two largest markets in the world, North America and Europe.

Free trade and market integration with the United States and Canada are expected to stimulate strong economic growth in Mexico in the medium and long term. Because Mexico is starting the integration process from a lower economic level than other developed countries, its national income is expected to grow at a faster rate. For example, the Food and Agricultural Policy Research Institute (FAPRI) estimates that long-term (10 years) growth in Mexican Gross Domestic Product (GDP) will be almost twice as rapid as that in Canada and the United States and above the rest of Latin America (table 4.1). An increased share of GDP is expected to be represented by the manufacturing and services sector, while the share of GDP contributed by the traditionally important industrial sectors of agriculture, mining, and petroleum is expected to decline. The types of new jobs generated by the manufacturing and services sector will almost certainly reinforce the existing trends toward further industrialization and urbanization of the country.

As in the United States, Canada, and other industrialized countries, higher per capita incomes and demographic changes induced by this type of economic growth will have important long-term effects on the evolution of Mexico's food distribution system. The main avenues through which this income growth would influence the Mexican produce consumption and distribution systems are:

- Higher per capita incomes would imply a modification of Mexican diets in favor of fruits, vegetables, and meat over more traditional food staples.
- Higher average incomes will also translate into better equipped households (refrigeration, microwaves) and increased access to automobiles.
- Women will increase their participation in the workforce.
- More urban manufacturing and service industry jobs will translate into less time for food shopping.

Dietary Changes. As described in chapter 1, Mexican consumers are moving away from a diet

Table 4.1—*FAPRI long-term real GDP projections (percentage change from previous year)*

Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
World	3.3	3.3	3.2	3.2	3.2	3.2	3.2	3.3	3.3	3.3
Mexico	4.4	4.9	5.1	5.4	5.3	5.2	5.1	5.1	5.1	5.1
U.S.	3.4	3.3	3.1	3.0	3.1	2.9	2.8	2.6	2.6	2.6
Canada	2.8	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.5
EU	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Japan	2.3	2.4	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Argentina	5.6	5.4	5.1	5.0	4.9	4.8	4.7	4.7	4.7	4.7
Brazil	3.6	3.8	3.7	3.7	3.6	3.5	3.4	3.4	3.4	3.4

Source: FAPRI 2000 World Agricultural Outlook.

based predominantly on corn and beans to a more diverse one that includes fruits, vegetables, and meats. Expenditure elasticities for traditional food items like tortillas and beans are very low (e.g., increases in per capita income do not translate into additional consumption of these items), but the expenditure elasticities for fruits and vegetables are high. This means that higher per capita income over the long term can be expected to translate into increased consumer purchases of produce and meat products. Recent research indicates that per capita consumption of fresh vegetables in Mexico is growing at a faster rate than in the United States and is correlated to income levels.[107] Additionally, the health-related concerns that promoted more fresh produce consumption in the United States are also spreading in Mexico. The "5 a day" campaign that promoted fresh fruit and vegetable consumption in the United States is also emulated in Mexico by public and private agencies.

Changes in Household Purchasing Power. The availability of home refrigeration and family-owned automobiles played a critical role in the development of the U.S. retail chain store system. At present, not all Mexican households have refrigerators, and the rate of automobile ownership is one car for eleven people (compared to one car for every two people in the United States). However, rapid growth in per capita income over the next few years should allow growing numbers of Mexicans to afford refrigerators and automobiles, which, in turn, may change their food purchasing habits.

Growing Female Participation in the Mexican Workforce. The modernization of the Mexican economy, the disproportionate expansion of jobs in the manufacturing and service sector, and improvements in educational attainment are creating new job opportunities for women. In recent years, the number of women in the labor force has expanded considerably and this trend is likely to continue as long as Mexico maintains its rapid pace of economic growth.

Scarcity of Time. As Mexico becomes more urbanized, work commutes grow longer, and the proportion of women and two-income families in the labor force continues to grow, households are likely to devote less time to food shopping and food preparation. Already by the late 1990s, the average number of food shopping trips by Mexican household shoppers had declined sharply from 11.5 per week in 1995 to 7.5 per week in 1998, according to a Food Marketing Institute survey. Since this number of weekly food store visits is still very high by North American standards (the comparable figure for the United States is 2.2 trips per week), the downward trend in food shopping frequency for at-home preparation/consumption will likely continue alongside future economic growth and household income improvements.

In summary, the same income, demographic, and institutional forces that shaped the modern food distribution system in the United States are already at work in Mexico and can be expected to continue. These forces will increasingly influence the way in which Mexican consumers purchase fresh produce and other perishable food items, as well as the variety of items they choose.

Retail Store Trends

Despite a slight decline in returns per square foot in recent years, most Mexican and foreign supermarket and mass merchandise chains operating in Mexico have aggressive near-term expansion plans. Not only does there appear to be room for substantial further development of the geographic territory that will be served by chain food stores—and the number of

[107]"U.S. and Mexican Fresh Vegetable Markets: A Descriptive Analysis," Jaime Malaga and Gary Williams, International Market Research Report IM5-96, Texas A&M University, November 1996.

chain food stores that operate in any single geographic area—but the logistical and distribution infrastructure supporting the supermarket and mass merchandise food retail sector can be expected to receive additional attention over the next few years. With several supermarket and mass merchandise chains reaching the point of development where they can afford to operate their own proprietary distribution centers in more than one region of the country, the construction of new regional distribution centers for perishable products can be expected to proliferate, with enormous implications for the future shape of food distribution practices in Mexico. The expansion of distribution facilities should permit a growing number of supermarket and mass merchandise food retailers to take advantage of additional *economies of scale*, reduce dependence on intermediaries, and lower their procurement and inventory management costs, potentially increasing their price-competitiveness in the local marketplace. Firms that operate such proprietary distribution facilities—and begin to receive a greater volume of fresh produce directly from shippers—can also be expected to be more concerned about proper temperature control maintenance in the supply chain to ensure that an increased reliance on direct shipments does not result in a degradation of produce quality and shelf life. These trends may well open up new marketing opportunities for those fruit and vegetable producers, including U.S.-based producers, who can efficiently provide the required combination of quality and price to the growing number of Mexican supermarket patrons.

Square Footage in Mexico for Chain Store Food Retailers Still Behind U.S. Levels. In 1998, per capita supermarket square footage in the United States (3.3 square feet) was more than four times larger than the Mexican average (0.78 square feet) (table 4.2). Moreover, there was great disparity among individual Mexican states, suggesting that there was tremendous potential for future grocery chain expansion in certain areas of Mexico, especially in the southern regions of the country. The northern border state of Baja California Norte led the country with 1.74 square feet of supermarket retail space per capita, a level 29 times greater than the state with the lowest amount of supermarket square footage, Tlaxcala (with 0.06 square feet per capita). Indeed, the northern states of Baja California Norte, Nuevo León, Sonora, Coahuila, Tamaulipas, and Sinaloa, along with the Distrito Federal (Mexico City) and Quintana Roo (which includes the major population center/tourist destination, Cancún), completed the short list of Mexican states that had more than 1 square foot of supermarket space on a per capita basis in 1998. The rest of Mexico—including virtually all of the central and southern states—continued to lag far behind in supermarket square footage, suggesting that supermarket penetration is strongly linked to the regional distribution of per capita income in Mexico. If the Mexican economy continues to grow rapidly over the next few years, as is currently predicted, it would be reasonable to expect substantial additional growth of chain store food retailing in Mexico from present levels, especially to the extent that the benefits of this economic growth are felt outside Mexico City and the northern border states. As the publication Business Latin America recently observed, although Wal-Mart de México operated in 53 Mexican cities with 80,000 or more inhabitants as of early 2002, there were still nearly the same number of cities with the same population size in Mexico (49) with no Wal-Mart to date, suggesting enormous potential for future development.[108]

Table 4.2—*Mexico's supermarket footage in selected Mexican states, 1998*

State	Square feet per capita
Baja California Norte (Tijuana)	1.74
Distrito Federal (Mexico City)	1.66
Nuevo León (Monterrey)	1.65
Sonora	1.48
Coahuila	1.36
Tamaulipas (N. Laredo)	1.29
Sinaloa	1.23
Quintana Roo (Cancún)	1.18
Chihuahua (Ciudad Juarez)	0.91
Jalisco (Guadalajara)	0.88
Yucatán (Mérida)	0.74
Veracruz	0.47
Puebla	0.45
Michoacán (Morelia)	0.22
Chiapas	0.20
Tlaxcala	0.06
Mexico average	0.78
U.S. average*	3.32

*Obtained from Progressive Grocer Annual Report, April 1999. Source: Calculations based on information from *Asociación Nacional de Tiendas de Autoservicio y Deparamentales*, Mexico City, D.F.

Retail Chains Gear Up for Expansion. The recent success of the supermarket/mass merchandise format for food retailing in Mexico appears to have inspired a

[108]"Wal-Mart—Mexico's Retail Goliath", Economist Intelligence Unit Briefs, March 26, 2002, located at http://biz.yahoo.com/ifc/mx/news/32602-2.html.

new round of retail expansion plans. Several supermarket and mass merchandise chains in the Mexican market, including prominent U.S.-based firms such as Wal-Mart and H-E-B, have near-term plans to expand the number of their food retail stores well beyond the pace of anticipated population growth. Wal-Mart de México, Mexico's largest food retailer (which operates Wal-Mart, Sam's Club, Bodegas Aurrera, and Superama stores) recently announced plans to increase its retail sales space 15 percent annually between 2000 and 2005.[109] Within the 18-month period from April 2002 to October 2003 alone, Wal-Mart de México projects that it will open 62 new retail stores at an estimated cost of US$700 million. Most of these new retail establishments (37 stores) will be supermarkets or mass merchandise retail outlets: fifteen Bodegas Aurrera outlets, eight Wal-Mart Supercenters, seven Sam's Clubs, and six Superamas.[110] H-E-B, the Texas-based supermarket chain which operated 18 stores in northern Mexico as of mid-2002, has also announced aggressive expansion plans. The chain's director in Mexico, Howard Edward Butt III, recently reiterated his firm's commitment to open an additional six stores per year, at an annual cost of about US$70 million, for the foreseeable future.[111]

The surge of new store openings in Mexico is not restricted to foreign-owned retail firms. Comercial Mexicana, Mexico's second largest Mexican food retail chain, opened 13 new stores in 2000, representing a 7.8 percent increase in retail selling space from the previous year's levels, and announced in early 2001 that it intended to open 10 additional stores in the coming year.[112] Meanwhile, Soriana, the largest food retail chain in northern Mexico, opened an additional eight retail hypermarkets in 2001 and has earmarked 2 billion pesos in 2002 to open 12 new stores, upgrade existing stores, acquire land, and improve information systems.[113]

Impact of Logistical Improvements on Future Expansion of Produce Imports in Mexico

The ongoing expansion of retail square footage for supermarkets and mass merchandise food retail chains in Mexico represents only one dimension of potential growth opportunities for marketing increased volumes and varieties of fresh produce—including U.S.-origin produce—to an ever-broader segment of Mexican consumers under temperature-controlled conditions. An equally important issue to consider is the fact that many potential gains in logistical efficiency have yet to be accomplished on several fronts, including:

- Improved *economies of scale* brought about by the construction of additional chain distribution centers that will serve new regions and in the case of H-E-B, possibly facilitate efficient trade in perishables on both sides of the U.S.-Mexican border;
- Reduction in produce losses and improved quality maintenance brought about by better handling methods throughout the supply chain (such as more prevalent use of refrigeration for storage and transport of perishable commodities, tighter cold chain management in the delivery and shipment of perishables from distribution points, and the use of better insulated and properly ventilated packaging materials); and
- Transaction efficiencies induced by the establishment and enforcement of market-defined quality standards.

As participants in the Mexican produce distribution system begin to address these issues—and abundant evidence exists to suggests that they are moving in this direction—Mexico's capacity to efficiently receive and market imported fresh produce should improve markedly. Listed below are some examples of how retailers, government officials, and growers serving the domestic Mexican market are attempting to enhance the efficiency of current distribution channels and pave the way for further expansion of U.S. fresh produce exports to Mexico.

Development of regional distribution centers may facilitate greater efficiency in the movement of perishable products. In the United States, the construction of private distribution centers by food retail firms played a key role in the development of the modern system of supply chain management by allowing chains to take control of procurement func-

[109]"Latin American Retail/Supermarkets' Rough Ride," Economist Intelligence Unit, February 7, 2000.
[110]"Walmex Profits Up," Lloyd Mexican Economic Report, April 2002, located at www.mexconnect.com.
[111]"More Foreign Supermarkets?," Lloyd Mexican Economic Report, August 2001, located at www.mexconnect.com.
[112]Controladora Comercial Mexicana Annual Report 2000, located at www.comerci.com.mx/press2001.
[113]Organización Soriana Fourth Quarterly Report, 2001, located at www.soriana.com.mx/infofin_eng/401.asp.

tions that were formerly the domain of wholesale and brokerage firms. Large food retail chains in the United States built modern distribution facilities on the outskirts of primary metropolitan destination markets so that they could efficiently receive truckloads of merchandise shipped directly from production areas and take charge of redistributing these products to individual retail stores. By taking steps to centralize procurement and improve the coordination of inventory management, these chains were able to shorten distribution times, improve produce handling (by minimizing the number of steps involved in distribution from origin to destination), and reduce per-unit marketing costs.

The same revolution in distribution methods is just starting in Mexico. Only a handful of chain-operated food distribution centers are currently operating in Mexico, in part because chains require a certain critical mass of retail stores in a region to operate a distribution center profitably (estimated at around 20 stores in Mexico and 12 in the United States). For example, Soriana still relies on its distribution center in Monterrey to supply product to its five Guadalajara-area stores from its distribution center in Monterrey, some 777 kilometers (or about 483 miles) away. Nevertheless, several food retail chains are moving in the direction of constructing additional distribution centers to reduce their dependence on central wholesale markets, and this process can be expected to accelerate as the number of retail outlets increase. In 2001, Comercial Mexicana began construction on a new distribution center in Mexico City and in early 2002, was believed to have earmarked an additional US$40 million for building up its distribution capabilities.[114] Meanwhile, Casa Ley began construction on a new 143,000-square-foot distribution center for produce and refrigerated/frozen meats and seafood in 2001, which it is expected to occupy in the summer of 2002.[115] H-E-B is even considering moving beyond the traditional concept of the regional distribution center; it plans to establish multinational distribution centers in the U.S.-Mexico border area that could serve their stores on both sides of the Rio Grande River.

Reaching a stage of development where regional distribution centers were easily accessible would surely help retail food chains in Mexico to circumvent traditional wholesale marketing channels. It would also increase their volumes of direct purchases (thereby gaining *economies of scale*) and improve produce handling and stock management as it did in the United States and other industrialized countries. The resulting quality improvements and the reduction in per-unit costs and product loss can be expected to give retail chains greater ammunition with which to compete against traditional produce markets. Therefore, despite recent stagnation in the proportion of fresh fruits and vegetables purchased by Mexican consumers in supermarkets and mass merchandise chains, the share of produce reaching Mexican consumers through chain-affiliated stores is likely to increase over the long term, an assertion also supported by ANTAD, Mexico's chief retail trade association.

The expansion of retail distribution centers can also be expected to encourage upstream changes in supply chain practices. As chain stores develop the capacity to handle a growing volume of direct purchases of perishable products from growers/shippers and engage in a greater number of direct transactions with agricultural suppliers, they are likely to exert greater oversight and control over the use of appropriate refrigerated transportation, storage, and packaging at various stages of the distribution process.

Better enforcement of quality grades and standards for fresh produce. Another source of potential improvement in produce marketing efficiency that has yet to be realized by Mexican retail chains relates to the clarification and enforcement of meaningful quality grades and standards for fresh fruits and vegetables. While the Mexican government has developed an official series of quality grades and standards for many fresh produce items (see chapter 3), they are rarely used because produce suppliers to the domestic market find them cumbersome and impractical and domestic produce buyers tend to believe that they do not measure relevant product attributes. Most produce marketing agents along the distribution chain still use ambiguous quality grades, such as "first, second, and third quality," which do not provide any meaningful information about a product's cosmetic appearance or physical dimensions.

The use of ill-defined quality grades and standards in Mexican produce marketing channels generates all sorts of problems and disputes between produce mar-

[114]From Controladora Comercial Mexicana Annual Report 2000, located at http://www.comerci.com.mx/press2001, and "Wal-Mart—Mexico's Retail Goliath," Economist Intelligence Unit Briefs, March 26, 2002, located at http://biz.yahoo.com/ifc/mx/news/32602.html.

[115]Obtained from the "The Stellar Report," July 2001, located at http://www.thestellargroup.com/newlsetter/StellarJuly%202001.pdf.

ket agents. For produce growers and shippers, the absence of strictly defined and enforced quality grades and standards in the domestic Mexican market can make it difficult to extract maximum revenue from sales of well-segregated, higher quality produce. Meanwhile, for retail chain operations, the lack of commonly enforced quality grades and standards represents a formidable obstacle to creating direct shipment programs by undermining confidence that delivered produce will meet desired specifications. Following the successful experience of the United States and other countries in this regard, Mexico may need to implement a quality standard strategy that includes:

- Government standards initiated and developed by industry requests, structured and adjusted to reflect the interest of growers and handlers; and
- A credible enforcement mechanism that can facilitate arbitration and dispute resolution.

Some producer organizations, generally those that are export-oriented (such as tomato growers), have developed their own quality standards. Also, some retail chains like H-E-B or Soriana have developed internal quality standards for particular produce items. However, without government backing and a legal enforcement system, these isolated efforts may have limited relative success. One consequence of the sketchy nature of quality control mechanisms for fresh produce in Mexican commercial marketing channels is that some retail chains operating in Mexico have postponed plans to market a portion of their produce items under private label. They made this decision because of the difficulty in obtaining certain fresh fruits and vegetables on a regular basis from domestic producers who could meet their internal product quality standards.

Both the Mexican government and the domestic produce industry are increasingly recognizing the importance of having a well-defined and enforceable quality standard system for fruits and vegetables. Under the leadership of the Mexican Secretariat of Commerce and Industrial Development, efforts in that direction have already begun through the development of pilot projects, whereby members of producer associations and marketing agents work together to define quality standards for specific fruit and vegetable commodities based on relevant and desired attributes. The successful implementation of such a system, even for a handful of commodities, could have a tremendous impact on future prospects for the expansion of direct procurement of Mexican-grown produce by supermarket and mass merchandise chains operating in Mexico and will be an important trend for shippers of U.S. produce to Mexico to observe over time.

Improvements in retail merchandising strategies. Retail chains may continue to adopt and refine merchandising strategies aimed specifically at attracting and retaining traditional market shoppers and expand their customer base beyond their core upper/middle-income patrons. For example, most of the major chain food retailers in Mexico offer a mass merchandise rather than a conventional supermarket format in most of their retail outlets, selling a wide selection of department store items (e.g., toys, electronics, clothing) alongside fresh and dry grocery items. This retail format is inherently familiar to patrons of traditional neighborhood street markets, since the eclectic assortment of merchandise found at a single retail location is similar to that typically found at large urban *tianguis*. Other adjustments to the conventional food retail store format have been incorporated to appeal specifically to the Mexican consumer who may need additional inducements to patronize chain stores on a regular basis and may be unfamiliar with the broader range of products offered on many chain store shelves. For example, Wal-Mart has begun introducing a "fiesta type ambiance" at several of its Mexican-based stores that includes far more extensive free sampling, product demonstrations, games, and family entertainment than is typically available in its U.S. store locations.[116]

Summary

The growing prominence of chain stores in the procurement and merchandising of fresh produce in Mexico should continue to open up opportunities for marketing high-quality fresh fruits and vegetables in that country by exposing Mexican consumers to a wider range of new consumption alternatives. This trend will likely be reinforced by changes in Mexican consumption patterns, as expected economic growth promotes increased diversity in dietary choices. As per capita incomes improve, Mexicans can be expected to modify their diets to include larger quantities of fruits, vegetables, and meats.

[116]"Free Samples Part of the Fiesta," Jenalia Moreno, Houston Chronicle, February 12, 2000, located at http://www.mexico-info.com/leadstories/fiesta.htm.

The adoption of modern produce distribution practices in Mexico; an expansion of the retail chain format; and the increase in quantity, quality, and mix of the Mexican demand for fresh produce should generate new opportunities for all potential suppliers, especially suppliers from the United States. The special marketing advantages accruing to the exporter of fresh fruits and vegetables from the United States are related to the following factors:

- Mexican food retail chains will require increasing numbers of high-quality, large-volume, year-round fresh produce suppliers. Except for a handful of largely export-oriented growers, these types of suppliers are not yet well established in Mexico.
- The United States has a geographical advantage with respect to Mexico, compared with some potential competitors such as Chile and Argentina.
- The United States has a free trade agreement with Mexico that will eventually eliminate all remaining barriers to cross-border produce trade.
- Border crossings between the United States and Mexico should become more fluid and less costly following the implementation of expected transportation, logistical, and legal improvements.
- U.S.-based retail chains may carry over into Mexico some of the long-term procurement relationships that they have already established with U.S. suppliers, giving these suppliers a "foot in the door" because of their established reputation for quality, price, and reliability.

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