United States Department of Agriculture

WRS-05-02

February 2005

Outlook

Electronic Outlook Report from the Economic Research Service

www.ers.usda.gov

NAFTA At 11

The Growing Integration of North American Agriculture

Steven Zahniser, editor

Abstract

In the 11 years since implementation of the North American Free Trade Agreement (NAFTA), the agricultural sectors of Canada, Mexico, and the United States have become much more integrated. Agricultural trade among the NAFTA countries has grown dramatically, and Canadian and Mexican industries that rely on U.S. agricultural inputs have expanded. U.S. feedstuffs have facilitated a marked increase in Mexican meat production and consumption, and the importance of Canadian and Mexican produce to U.S. fruit and vegetable consumption is also growing. The farm policies of the three countries exhibit some similarities. Foreign direct investment in the Mexican processed food sector has increased, and sales by Canadian, Mexican, and U.S. multinational food companies throughout the NAFTA region have risen, giving consumers access to a wider variety of products. Integration of North America's dairy, poultry, and sugar and sweetener sectors, however, is lagging.

Keywords: North American Free Trade Agreement, NAFTA, Canada, Mexico, United States, trade, investment, transportation.

Acknowledgments

We gratefully acknowledge the comments of Mary Burfisher, Praveen Dixit, Joy Harwood, Demcey Johnson, Barry Krissoff, Daniel Pick, Greg Pompelli, Priscilla Smith, Leland Southard, and Thomas Vollrath (Economic Research Service—USDA/ERS); Lisa Anderson, Brenda Freeman, Suzanne Heinen, Hugh Maginnis, George Myles, Chris Patterson, and David J. Williams (Foreign Agricultural Service—USDA/FAS); and Carol Goodloe, David Stallings, and William Tierney (Office of the Chief Economist—USDA/OCE). Special thanks are extended to Linda Hatcher (USDA/ERS) for editorial assistance. Finally, some insights for this report were obtained through activities funded by the Emerging Markets Program of USDA/FAS.

Foreword

This is the fourth report on NAFTA's effects on U.S. agriculture and the rural economy to be submitted to the U.S. Congress in accordance with the North American Free Trade Agreement Implementation Act. The legislation requires that the U.S. Department of Agriculture (USDA) submit a biennial report on this subject, starting in 1997 and ending in 2011. This edition covers economic and policy developments through 2004.

Contributors

Steven Zahniser (editor), Christine Bolling (processed food), William Chambers (grains, cotton, and oilseeds), Kitty Chan (fruits and vegetables), William Coyle (transportation), Mildred Haley (hogs and pork), William Hahn (animal products), Linwood Hoffman (grains, cotton, and oilseeds), Dale Leuck (cattle and beef), James Miller (dairy), Agnes Prentice (appendix trade tables), Nydia Suárez (sugar and sweeteners), Fawzi Taha (poultry), John Wainio (Canadian farm programs), and Ed Young (U.S. farm programs).

Introduction

The dream of an integrated agricultural market in North America is not new. Throughout the 20th century, policymakers explored ways to lower the trade and investment barriers separating the U.S., Canadian, and Mexican markets. An ambitious effort by Canada and the United States to pursue this objective almost a century ago met with complete failure. In 1911, the governments of Canadian Prime Minister Wilfrid Laurier and U.S. President William Howard Taft negotiated a reciprocal trade agreement between the two countries, only to see it become a campaign issue that ultimately contributed to Laurier's electoral defeat (Cook, 1997: pp. 405-6). Lasting memories of this agreement's demise helped to undermine a similar proposal made in Canada during the late 1940s (Morton, 1997: p. 473).

A promising early attempt a quarter century ago to open the Mexican economy to greater integration with the United States and other foreign countries also was abandoned. In 1980, Mexican President José López Portillo opted to keep his country out of the General Agreement on Tariffs and Trade (GATT), even though substantial negotiations had already taken place on the subject of accession (Weintraub, 1990: p. 89). This decision, made at a time when prices for Mexican crude oil were unusually high, came in the face of mounting evidence that the country's inward-oriented economic strategy had exhausted itself by the late 1960s (see, for instance, Reynolds, 1978).

Mexico's decision not to join the GATT proved to be short-lived, as the country finally agreed in 1986 to enter the organization. Moreover, the decision in 1980 was followed by a sustained effort by the U.S. Government to engage its closest neighbors in free-trade negotiations. In 1985, Canadian Prime Minister Brian Mulroney accepted the invitation of President Ronald Reagan to initiate negotiations towards a bilateral free-trade agreement, an effort that culminated in the implementation of the Canada-U.S. Free Trade Agreement (CFTA) in 1989. Although Mexican President Miguel de la Madrid Hurtado declined a similar invitation from President Reagan, the next Mexican president, Carlos Salinas de Gortari, formally proposed that Mexico and the United States forge a free-trade agreement of their own, following an earlier informal suggestion by President George H.W. Bush. Canada joined these negotiations, and the end result was the implementation of a successor agreement called the North American Free Trade Agreement (NAFTA) in 1994.

Now, on the 11th anniversary of NAFTA's implementation, a number of developments provide insights into the extent to which market integration has taken hold in North American agriculture. Agricultural trade among the NAFTA countries has grown across a broad range of products, new cross-border investments have taken place in the region's processed food industry, and supply chains and productive activities across international borders have undergone restructuring. This edition of the NAFTA report takes stock of these and other developments and identifies the role that CFTA and NAFTA have played in their advancement.[1]

[1]Several recent USDA publications have also visited this subject. Vollrath (2003) synthesizes information presented at a 2-day symposium on this topic. A special issue of the Foreign Agricultural Service's magazine *Ag Exporter* contains two essays about the future of market integration in North American agriculture: Vollrath (2004) and Knutson and Ochoa (2004). Haley (2004) explains how the U.S. and Canadian hog sectors have become closely integrated, and Calvin, Avendaño, and Schwentesius (2004) examine the economics of food safety in the integrated U.S.-Mexico green onion industry.

What Is Market Integration?

Market integration is the extent to which one or more formerly separated markets have combined to form a single market. Integration is visible in increased flows of cross-border trade. This trade consists of not only final consumer products but also intermediate inputs and raw materials, as firms reorganize their activities around regional markets for both inputs and outputs, spurred in part by greater foreign direct investment (FDI). In addition, decisionmakers in both the government and private sector pursue a course of greater institutional and policy cooperation and coordination to encourage market integration.

Technological and institutional advancements in transportation and communications clearly spur this process, as geographic areas that once seemed remote become easily accessible and ultimately integrated economically. But another activity that advances market integration is the elimination of policies that frustrate international trade and investment. Prominent examples of such barriers to integration include tariffs, quotas, import licensing, limits on the amount of foreign ownership in a particular firm or industry, and the differential treatment of foreign and domestic investors. All of these policies were prominent aspects of the agricultural policies of one or more countries in North America prior to CFTA and NAFTA.

The benefits of market integration are many. In general, market integration enables agricultural producers and consumers throughout the newly integrated region to benefit more fully from their relative strengths and to respond more efficiently to changing economic conditions. For producers, market integration opens new territories for the sale of their output, possibly allowing for the further exploitation of economies of scale. It gives producers access to potentially cheaper suppliers of inputs and creates new opportunities for FDI, as firms restructure the vertical and horizontal arrangements of their enterprises. But market integration also opens the door to new competition from producers in formerly isolated locations. For consumers, market integration provides access to new varieties of food products and off-season supplies of fresh fruits and vegetables and may lead to faster income growth. Greater competition is also likely to make food more affordable, thereby expanding consumer purchasing power.

How Has NAFTA Contributed to Market Integration?

NAFTA's most obvious contribution to market integration is its dismantling of an extensive set of trade barriers among Canada, Mexico, and the United States. This massive housecleaning did not occur instanteously, but instead is taking place over a period of nearly 20 years. NAFTA is structured as three bilateral agreements, one between Canada and the United States, a second between Mexico and the United States, and a third between Canada and Mexico. The first accord is CFTA, which took effect on January 1, 1989, and is subsumed by NAFTA. The second and third agreements are found in NAFTA itself, which took effect on January 1, 1994.

Today, most agricultural trade within the NAFTA region is already free of tariff and quota barriers. Tariff elimination for U.S.-Canada trade concluded on January 1, 1998, although the two countries retain the option to apply temporary safeguards on bilateral trade in selected fruits, vegetables, and flowers until 2008. The liberalization of U.S.-Mexico (and Canada-Mexico) agricultural trade also is at an advanced state. Numerous restrictions were eliminated immediately upon NAFTA's implementation, while others were phased out over periods of 4 or 9 years. A handful of agricultural commodities, however, will not enjoy tariff and quota elimination until 2008. Examples include Mexican exports to the United States of frozen concentrated orange juice, sugar, and peanuts and U.S. exports to Mexico of corn, dried beans, and nonfat dry milk. Mexico and the United States also have the option to apply temporary safeguards on bilateral trade in selected agricultural products until 2008.

Despite the sweeping nature of these reforms, NAFTA contains several important exceptions to the process of agricultural trade liberalization. These exceptions all stem from CFTA: U.S. imports of Canadian dairy products, peanuts, peanut butter, cotton, sugar, and sugar-containing products and Canadian imports of U.S. dairy products, poultry, eggs, and margarine. The quotas that once governed bilateral trade in these commodities were redefined as tariff-rate quotas (TRQs)[2] to comply with the Uruguay Round Agreement on Agriculture (URAA), which took effect on January 1, 1995.

[2]A TRQ is a quota for a volume of imports at a favorable tariff. After the quantitative limit is reached, a higher tariff is applied on additional imports.

Another major contribution of NAFTA is the establishment of key principles regarding the treatment of foreign investors. These principles include a firm commitment from each NAFTA country to treat foreign investors from the other NAFTA countries no less favorably than it treats its own domestic investors. In addition, NAFTA prohibits the application of certain performance requirements on foreign investors, such as a minimum amount of domestic content in production. Although NAFTA specifies certain exceptions to the agreement's investment reforms, none of these exceptions directly concern agriculture or food processing.

Like the URAA, NAFTA requires that sanitary and phytosanitary (SPS) measures be scientifically based, nondiscriminatory, and transparent, and that these measures restrict trade in a minimal fashion, when possible. The agreement also establishes the NAFTA Committee on Sanitary and

Phytosanitary Measures to facilitate technical cooperation between the NAFTA countries in the development, application, and enforcement of such measures. To fulfill these responsibilities, the NAFTA governments have engaged in a concerted effort throughout the NAFTA period to fine-tune their SPS measures in ways that facilitate trade.

NAFTA also created several formal mechanisms for the resolution of disputes concerning the agreement's investment and services provisions, the application of national antidumping and countervailing duty laws, and the general interpretation and application of the agreement. Moreover, the private sector has assumed an active role in defusing many trade tensions before they take the form of a formal, full-blown dispute. These mechanisms, along with the agreement's other investment provisions, provide a strong assurance that the NAFTA region is safe and secure for cross-border economic activity. As a result, NAFTA's implementation was followed by a burst in FDI in the food and beverage industries of each NAFTA country.

Overview of North American Market Integration

This report defines three levels of market integration—*high, medium, and low*—and classifies the level of integration that currently exists across North American agriculture, as follows:

- **A *high* degree of market integration.** Virtually all of the major barriers to trade and investment (tariffs, quotas, investment restrictions, etc.) have been removed. Any remaining requirements, such as SPS standards, generally allow for substantial cross-border flows of trade and investment and are consistent with the country's obligations under its international trade agreements. Reaching a high degree of market integration in a particular sector comes with large flows of trade and investment, sometimes featuring intra-industry trade (trade in both directions within a particular industry). It also comes with structural changes in agricultural and food industries necessary for accommodating these new economic arrangements.

- **A *medium* degree of market integration.** One or more significant barriers to trade and/or investment linger. Examples include the remaining transitional restrictions specified by NAFTA, such as the TRQs governing U.S.-Mexico orange juice trade, and transportation and logistical problems in specific geographic areas. In a sector with a medium degree of market integration, trade, production, or consumption often have already changed substantially, but there is a perception that removing additional barriers will result in further economic change.

- **A *low* degree of market integration.** Markets are clearly prevented from integrating due to the presence of one or more significant barriers to trade and/or investment. In some instances, these barriers may be viewed as appropriate. For example, science-based SPS standards that assure the health and safety of the public or protect farms and ranches from the spread of damaging animal and plant diseases may inhibit integration in certain cases. In other instances, the persistence of significant barriers may represent an inability to address a lingering dispute for political, legal, or economic reasons. Two examples are the sugar and sweetener dispute between Mexico and the United States and the U.S. appeals court decision of January 2003 (overturned by the Supreme Court in June 2004) that delayed U.S. implementation of NAFTA's provisions for cross-border trucking. Geographical barriers and cross-country differences in the level of economic development are among the nonpolicy factors that can contribute to a low degree of integration.

Table 1 presents an overview of the current status of market integration in North American agriculture and how it has changed over the past 11 years. The degree of market integration clearly varies across agriculture, and within a given agricultural sector, the level of integration often varies by trading partner and the direction of trade between a particular pair of trading partners. For instance, the U.S. and Canadian poultry industries have experienced little integration due to the exclusion of U.S.-Canada poultry trade (and Canada-Mexico poultry trade) from trade liberalization under CFTA

Table 1—NAFTA has advanced the integration of many aspects of North American agriculture

Item	General comments	U.S.-Mexico	U.S.-Canada
Agricultural policy	Tendency for some aspects of each country's policies to move together: • Institutionalization of countercyclical programs. • Continued emphasis on decoupled support.	Mexico's concerns about the 2002 U.S. Farm Act, NAFTA, and the general state of Mexican agriculture prompt changes in Mexico's agricultural policies.	In 2001, Canada started a comprehensive overhaul of its agricultural policies. Revamped savings program for producers is centerpiece of this effort.
Grains and oilseeds	Important cross-border investments in grain milling. Sizable increases in U.S. exports to Mexico and Canadian exports to U.S.	***Medium degree of integration.*** NAFTA's restrictions on U.S. corn exports to Mexico scheduled to end in 2008. Strong linkages between U.S. grain and oilseed sectors and Mexican hog and poultry producers. Mexican direct investment in U.S. baking industry.	***High degree of integration, except for wheat.*** Growing two-way trade includes both bulk commodities and processed food products. Resolution of the fundamental incompatibility of certain national policies would facilitate further integration.
Cotton, textiles, and apparel	NAFTA fostered a continental market for final products as well as the cross-border vertical integration of the North American textile and apparel industries. Greater competition from China is expected with the implementation of the World Trade Organization's Agreement on Textiles and Clothing.	***High degree of integration.*** Division of labor in which U.S. supplies cotton and Mexico supplies cotton textiles and apparel. Some Mexican mills are geared for U.S. cotton. Mexican cotton production has declined.	***High degree of integration.*** U.S.-Canada trade in cotton, textiles, and apparel is another aspect of the continental textile and apparel industry
Livestock and meat	Continued development of integrated livestock and meat industries on a continental basis. Coordinated response by NAFTA governments to discoveries of Bovine Spongiform Encephalopathy (BSE) in Canada and U.S. illustrates integration of cattle and beef industries. With the removal of most traditional barriers to trade (i.e., tariffs and quotas), progress in addressing the sanitary concerns of importing countries becomes crucial to further market integration.	***Medium degree of integration regarding U.S. producers and the Mexican market, except for beef (high).*** U.S. exports to Mexico of beef, pork, and poultry meat all have doubled in volume during the NAFTA period. Second- and third-largest chicken producers in Mexico are affiliates of U.S. firms. Strong linkages have emerged between U.S. poultry industry and Mexican sausage and cold-cut producers. ***Low degree of integration regarding Mexican producers and the U.S. market, except for feeder cattle (high).*** U.S. recognition of Mexican progress in controlling certain animal diseases may eventually lead to more substantial Mexican exports of hogs, poultry, and pork to the U.S.	***High degree of integration in cattle, beef, hogs, and pork.*** Expanded Canadian hog exports to U.S. include larger proportion of feeder animals that are finished in U.S. Growing two-way trade in cattle and beef. ***Low degree of integration in dairy and poultry,*** due to the exclusion of these sectors from trade liberalization under CFTA and NAFTA.

See note at end of table.

Continued—

Table 1—NAFTA has advanced the integration of many aspects of North American agriculture—Continued

Item	General comments	U.S.-Mexico	U.S.-Canada
Fruits and vegetables	Trade expansion is related to increased consumption of fresh produce, particularly in Canada and the U.S., on both seasonal and aggregate levels. Private sector negotiates reference-price agreements to secure suspensions of key antidumping cases. Examples include Mexican tomato exports to the United States and U.S. apple exports to Mexico.	***High degree of integration regarding Mexican producers and the U.S. market.*** Mexico now trying to promote exports of nontraditional produce. ***Medium degree of integration regarding U.S. producers and the Mexican market.*** U.S. exporters should benefit from close ties to supermarket chains in Mexico.	***High degree of integration.*** Canadian consumers now have tariff- and quota-free access to full range of U.S. produce. Canada has emerged as an important supplier of tomatoes, cucumbers, and peppers to the U.S., in addition to fresh and frozen potatoes.
Sugar and sweeteners	Trade is still highly limited by border restrictions and other measures.	***Low degree of integration.*** U.S. and Mexico are locked in a dispute about how to interpret NAFTA's sugar and sweetener provisions. Mexico stifles high fructose corn syrup industry by imposing 20-percent tax on beverages containing sweeteners other than sugar.	***Low degree of integration.*** U.S. imports from Canada of sugar and sugar-containing products were exempted from trade liberalization under CFTA. TRQs now govern this trade, in accordance with the URAA.
Processed foods	Sales of Canadian and Mexican affiliates of U.S. processed food companies still exceed U.S. processed food exports to those countries, even though processed food trade within the NAFTA region is rising.	***Medium degree of integration.*** Substantial U.S. direct investment in the Mexican food industry, with important Mexican investments in segments of the U.S. food industry. Beer is Mexico's leading agricultural export to the U.S.	***High degree of integration.*** Substantial U.S. and Canadian direct investment in each other's processed food industries. Significant and growing intra-industry trade in intermediate and final food products.
Transportation	Increased security concerns of U.S. present additional challenge to NAFTA trade.	***Low level of integration.*** Implementation of NAFTA's provisions for Mexican trucking access to the U.S. may proceed following 2004 decision by U.S. Supreme Court.	***High level of integration.*** Canadian and U.S. trucks present on each other's roadways. Further integration and coordination among U.S. and Canadian railways.

Source: USDA/ERS.

and NAFTA. At the same time, sanitary concerns have shaped U.S.-Mexico poultry trade so that it, so far, consists primarily of U.S. exports to Mexico.

Agricultural Policy

NAFTA generally preserves the autonomy of each member country to define and implement its own domestic agricultural policies. Each member country has exercised this authority over the past several years by making substantial changes to its farm programs. In the United States, the Farm Security and Rural Investment Act of 2002 (2002 Farm Act) was signed into law on May 13, 2002, providing the legal framework for U.S. farm programs through 2007 crops. In Mexico, the Government issued two outlines of intended policy actions, one commonly referred to as "Agri-food Armor" (2002) and the other called the National Agreement for the Countryside (2003). And in

Canada, the Federal and Provincial governments have engaged in a comprehensive effort since 2001 to reshape their country's agricultural policy, within the context of the Agricultural Policy Framework (APF).

These reforms address different priorities, reflecting the unique structure and policy traditions of each country's agricultural sector. Through the 2002 Farm Act, the United States is retaining the extensive planting flexibility that the previous farm legislation offered farmers, while eliminating peanut quotas so that the commodity is treated similarly to other program crops. In addition, spending on conservation has expanded, with greater emphasis placed on lands in production. Through the APF, Canada has crafted new approaches to food safety and food quality, the environment, science's role in agriculture, and the overall reinvigoration of the agricultural sector. Mexico's reforms are part of a continuing effort to implement agricultural supports similar to those found in the developed economies, while still addressing the needs and wants of smaller producers who are less commercially oriented. To these ends, the Mexican Government has implemented a new program of energy discounts for its agricultural producers, and it has revamped its activities in the area of agricultural finance.

Despite the many unique features of each country's agricultural reforms, some aspects of the member countries' farm policies have moved together during the NAFTA period. Each NAFTA country now provides decoupled income payments to its agricultural producers, and each country has institutionalized countercyclical programs that provide income support to farmers when commodity prices (or net farm revenue, in the case of Canada) fall below a certain level. This legislative innovation follows a period during the late 1990s and early 2000s when Canada and the United States operated *ad hoc* programs of this type in response to a downturn in commodity prices. The United States has created a new program of countercyclical payments for 15 commodities based on historical areas and yields. Canada has incorporated disaster assistance within a subsidized savings plan for producers, called the Canadian Agricultural Income Stabilization program. Mexico has formulated the Subprogram of Direct Payments for Target Income for grain and oilseed producers. This subprogram provides countercyclical support in a manner somewhat akin to the U.S. marketing loan program.

Grains and Oilseeds

Over the short span of a decade, the grain and oilseed sectors of Mexico and the United States have achieved a medium degree of integration that is starting to approach the high degree of integration between Canada and the United States. Among all three countries, greater integration is clearly apparent in the increased regional trade in grains, oilseeds, and related products. In this broad category, U.S. exports to Mexico, Canadian exports to the United States, and U.S. exports to Canada have all more than doubled since NAFTA's implementation (app. tables 1-4).

Increased feed demand has been a powerful driver of market integration. In Mexico, poultry and hog producers heavily rely on feed imports from the United States as they seek to meet their country's growing demand for meat. For instance, imports account for about half of the feedstuffs used by the Mexican poultry industry (Juarez and Hernandez, 2003: p. 17). As a result, U.S. exports to Mexico of feed grains, oilseeds, and related products have

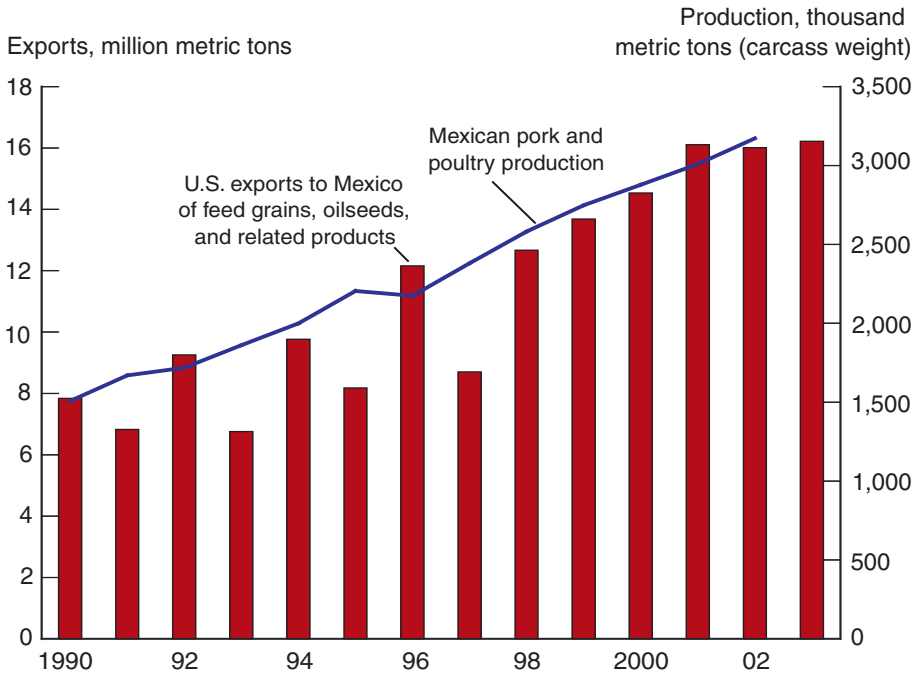
more than doubled during the NAFTA period, surpassing 16 million metric tons in 2003 (fig. 1). U.S. feedstuffs enable Mexican livestock producers to expand output, lower production costs, and compete more effectively with meat imports from the United States, Canada, and other countries. They also have made possible a marked increase in Mexican meat consumption. Between 1993 and 2003, Mexico's per capita consumption of broiler meat rose 54 percent, while per capita pork consumption increased 32 percent.[3]

In Canada, expansion of the livestock sector also has had an important effect on grain trade. Increased hog and cattle production in Canada's Western Provinces has increased feed demand in those areas. This increase has altered grain-use patterns in Canada and led to greater imports from the United States. Corn and soybean production has expanded outside of the traditional U.S. Corn Belt, and some of this new production—particularly in the Northern Great Plains—is produced for Canadian livestock.

The U.S. and Canadian grain and oilseed sectors are more highly integrated than the U.S. and Mexican sectors. Not only do Canada and the United States trade a wide variety of bulk commodities, but they also engage in a large amount of intra-industry trade in such processed products as mixes, dough, bread, cookies, and pastries (app. tables 1 and 2). Trade volume between Mexico and the United States in similar processed products is just starting to become appreciable (app. tables 3 and 4). Important cross-border investments have served to further integrate the grain milling and baking industries of the NAFTA countries. For example, the Canadian firm George Weston Ltd. is a prominent player in the U.S. baked goods industry, and Mexico's largest baking company, GIBSA (Grupo Bimbo), operates several bread-baking enterprises in the United States.

[3]These calculations are made using consumption estimates from USDA/FAS (2005) and population estimates from UN/FAO (2004).

Figure 1
U.S. feedstuffs are crucial to Mexican pork and poultry production

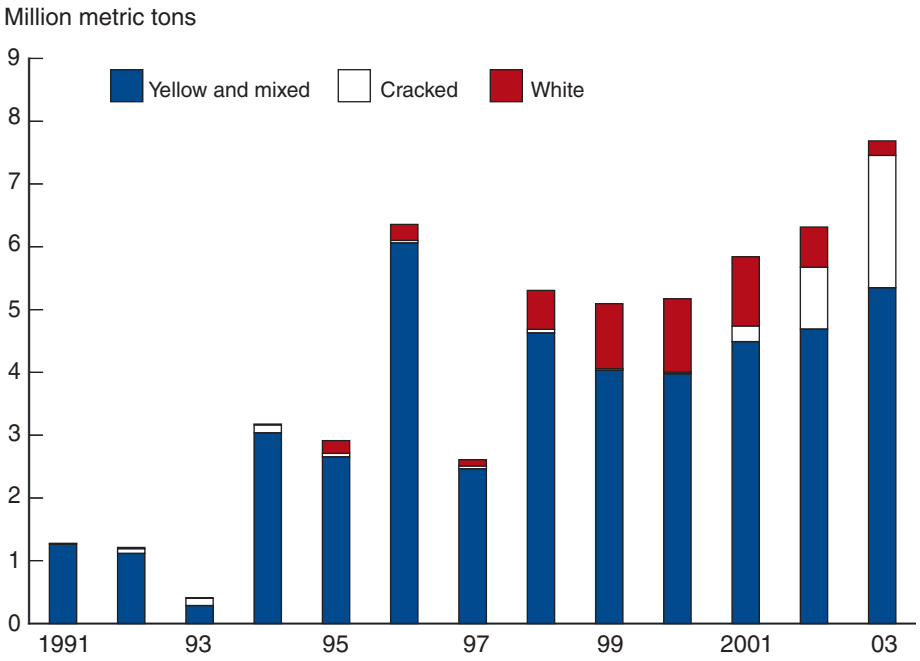


Sources: USDA/ERS (December 2004) (exports) and SAGARPA/SIAP (2005) (production).

In the coming decade, two commodities in the grains and oilseeds sector are likely to be the focus of further efforts towards integration: corn in Mexico and wheat in Canada. Corn is the only commodity among grains and oilseeds that is still subject to transitional Mexican trade restrictions under NAFTA. Until 2008, Mexico is entitled to apply a TRQ to U.S. corn. But the Mexican Government has generally pursued a more liberal trade policy toward corn than NAFTA requires so that the country can benefit more fully from the integrated grain market. For 2003, Mexico authorized import permits for U.S. yellow corn totaling about 3.8 million metric tons, in addition to the roughly 3.2 million metric tons associated with the NAFTA TRQ for corn in general (Juarez and Trejo, 2004: p. 20). The additional imports of yellow corn, used primarily as animal feed or to manufacture starch, were subject to an over-quota tariff of only 1 percent, rather than the prohibitive levy allowed by NAFTA. As these transitional restrictions draw to a close, the composition of U.S. grain exports to Mexico is likely to shift more toward corn and away from sorghum (USDA/OCE, 2004: p. 84).

Yellow corn continues to make up the bulk of U.S. corn exports to Mexico (fig. 2). Mexico is also a potentially attractive export market for white corn, which is used to produce tortillas and other corn-based foods in Mexico. However, the Mexican Government has fostered the domestic production of white corn by providing marketing payments to certain commercial producers of this commodity. In this context, U.S. white corn exports to Mexico have steadily declined since 2000, according to U.S. grain inspection data (Zahniser and Coyle, 2004). Moreover, the Mexican Congress has

Figure 2
U.S. corn exports to Mexico still consist primarily of yellow corn



Notes: Yellow and mixed corn exports are calculated by subtracting white corn exports from total corn exports. Cracked corn (broken or ground kernels) is defined as a distinct commodity from corn. Like yellow corn, it is primarily used as animal feed.

Sources: USDA/ERS (December 2004) (total corn and cracked corn exports) and USDA/AMS (1991-2003) (white corn exports).

mandated that the Executive Branch apply the NAFTA over-quota tariff to white corn. This tariff, 54.5 percent for 2005, is far higher than the 2 or 3 percent that the Executive Branch has traditionally applied to white corn.

In addition to Mexico's relatively small group of large-scale corn producers, a large number of small-scale farmers cultivate traditional and sometimes contemporary varieties of corn on rainfed lands. In many instances, the output of these producers is either consumed directly by the farm household or sold in local markets that are not fully integrated with the international market. Largely due to producers of rainfed corn, total corn production in Mexico has actually increased during the NAFTA period (Fiess and Lederman, 2004).

Further integration of the U.S. and Canadian wheat markets will depend on the resolution of the fundamental incompatibility of certain national policies, including the activities of the Canadian Wheat Board (CWB). For some time, the U.S. Government and the U.S. wheat industry have argued that the CWB "takes sales" from U.S. wheat producers through various noncommercial activities, including the cross-subsidization of sales, the sale of wheat with a higher protein content at the price of lower protein product, and the use of its special privileges to generate a "financial cushion" to discount export prices.[4]

[4]For details, see Goodloe (2004) and Schnepf (2004).

In 2004, a dispute settlement panel at the World Trade Organization (WTO) ruled that several aspects of Canada's grain distribution system violate the national treatment principles of the WTO. However, the panel also ruled that the CWB's export regime does not violate Canada's obligations under Article XVII of the General Agreement on Tariffs and Trade (GATT). This article governs the behavior of the CWB and other state-trading enterprises. Thus, multilateral trade negotiations may offer the best venue for fully addressing U.S. concerns related to the CWB. In the meantime, the United States has imposed an antidumping duty of 8.27 percent and a countervailing duty of 5.29 percent on U.S. imports of hard red spring wheat from Canada. The Canadian Government has filed to contest these duties before a NAFTA arbitration panel.

Cotton, Textiles, and Apparel

With the implementation of the WTO's Agreement on Textiles and Clothing (ATC), North America's textile and apparel industry is experiencing intense competition from China and other countries outside NAFTA. This industry became highly integrated during NAFTA's first decade, as a division of labor emerged in which the United States supplies raw cotton to Mexican textile and apparel producers and Mexico exports some of its textile and apparel output to the United States (fig. 3).

Since the turn of the century, however, this arrangement has come under duress. Gradual implementation of the ATC has dissolved the complex tangle of quotas that formerly restricted international trade in textiles and apparel, giving countries outside NAFTA much broader access to the U.S. market. As a result, Mexico's textile and apparel industry has struggled greatly, confronted with both heightened competition for the U.S. market and rising imports into Mexico. Between 2000 and 2003, Mexican textile and apparel exports to the United States fell from U.S. $9.7 billion to U.S. $7.9 billion (USDC/OTEXA, 2005), and employment in Mexico's textile and apparel sector slipped by roughly 20 percent (Encuesta Industrial Anual, as cited by

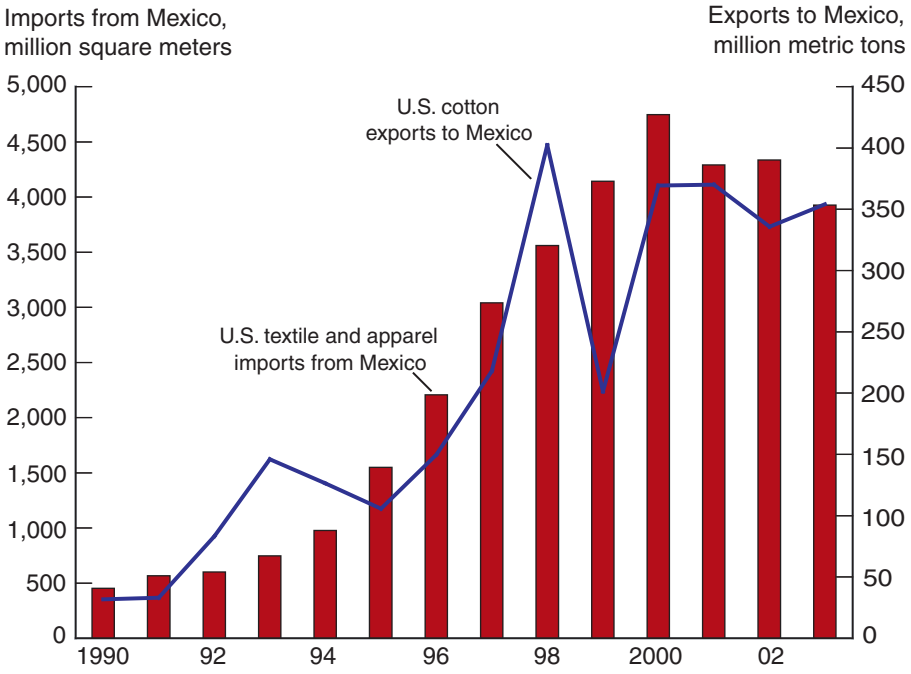
INEGI, 2004). U.S. textile and apparel employment also has continued to decline, from 1.2 million workers to about 1.0 million over the same period. With the recent economic upturn in the United States, Mexican textile and apparel exports to the United States for 2004 fell just short of their 2003 level, but the question of how North America's textile and apparel industry fits in a far more open international market is still a vital concern to the industry's participants, including U.S. cotton producers.

Livestock and Meat

The NAFTA period has witnessed the continuing integration of North America's livestock and meat industries, to the extent that one may increasingly think of these sectors as forming a continental animal products complex. Many trade barriers have been eliminated among the NAFTA countries. Those that remain vary by trading partner and sector (i.e., cattle and beef, hogs and pork, poultry, dairy). Consequently, the degree of market integration also varies by trading partner and sector.

Sanitary regulations significantly influence integration by allowing livestock and meat imports from areas without dangerous animal diseases, even if the disease in question is present in another part of the country. Both NAFTA and the URAA require, when possible, the regionalization of sanitary and phytosanitary standards. Once an outbreak of a specified animal disease is identified, sanitary restrictions are to be defined on a regional basis, where possible, so that international trade may continue. Regionalization allows

Figure 3
U.S. textile and apparel imports from Mexico have declined sharply in the face of heightened competition from China and other non-NAFTA countries



Sources: USDC/OTEXA (2005) (textile and apparel imports) and USDA/ERS (December 2004) (cotton exports).

exports to flow from regions within a country that are free of dangerous animal diseases, even when diseases are endemic in other regions within the country.

Regionalization of sanitary regulations has resulted in the removal of testing requirements that were no longer deemed necessary for U.S.-Canada trade in feeder cattle and U.S. hog exports to Canada. As a result, U.S. feeder cattle exports to Canada more than tripled between 1990 and 2003. When Bovine Spongiform Encephalopathy (BSE) was discovered in Canada in May 2003 and in the United States in December 2003, sanitary barriers were erected to prevent cattle and beef trade between the two countries. In the case of hogs, Canada no longer requires that hogs from U.S. States that are free of pseudorabies be tested for the disease. This regulatory innovation has not yet led to increased U.S. hog exports to Canada, however.

Under normal conditions, the cattle and beef sectors of Canada and the United States are highly integrated, with production systems that cross international boundaries, important instances of FDI, and substantial two-way trade in both cattle and beef. For the time being, however, the BSE discoveries of 2003 have dampened this integration, particularly with respect to cattle. U.S. and Canadian cattle exports continue to be subject to stringent trade restrictions, but the current regulations of the NAFTA countries allow for the importation of U.S. and Canadian boneless beef from cattle less than 30 months of age. Such animals are considered to have a minimal risk of transmitting BSE.

A high degree of integration continues to prevail among the cattle and beef industries of Mexico and the United States. The United States is a net importer of cattle from Mexico, primarily feeder calves. About one-fourth of U.S. cattle imports enter at a single port in Santa Teresa, New Mexico (Skaggs, Acuña, Torell, and Southard, 2004). Texas or New Mexico is the initial destination for most of the cattle that enter at Santa Teresa, but some animals imported through this port are shipped as far as Washington, Iowa, and Mississippi. Mexico is also a major market for U.S. beef. In 2004, U.S. beef exports to Mexico approached 107,000 metric tons (U.S. $372 million), compared with an annual average of 58,000 metric tons (U.S. $171 million) during 1991-93, despite the interruption of this trade from December 2003 to March 2004 due to the U.S. BSE discovery.

Hog production in Canada and the United States is highly integrated, with Canada exporting increasing numbers of animals to the United States for finishing (the last stage of production) and slaughter. Canadian hog exports to the United States began to increase after Canada eliminated its grain transportation subsidy in 1995. This reform provided a powerful incentive to produce hogs in Western Canada, where much of the country's grain production is located. Structural changes in the U.S. pork industry also helped set the stage for integration. Beginning in the 1980s, many of the smaller, farrow-to-finish producers that traditionally populated the U.S. Corn Belt exited the industry in favor of larger operations that specialize in finishing. In addition, consolidation in packing and processing has led to the emergence of much larger operations that use slaughter capacity more intensively through second shifts and the slaughtering of animals on Saturday. To further use capacity, U.S. packers have bid hog prices higher, effectively drawing Canadian slaughter hogs into the United States (Haley, 2004).

Gradual trade liberalization under NAFTA has facilitated a medium degree of integration with respect to U.S. pork and poultry producers and the Mexican market. For both the pork and poultry industries in Mexico, this integration has coincided with increased pressures to expand and consolidate. Although Mexican pork production has increased by more than 30 percent during the NAFTA period, imports are expected to account for about 26 percent of Mexican pork consumption in 2004, compared with 6 percent in 1996. Mexico's large, technically advanced hog producers are very efficient, but its small producers have high production costs, primarily because they buy commercial feed rather than manufacture it themselves.

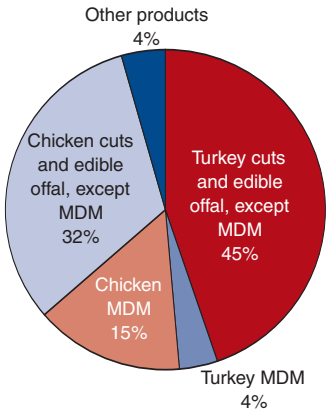
Rising imports and the restructuring of Mexico's hog industry have provided the context for several allegations of dumping concerning U.S. exports to Mexico. From early 1999 to May 2003, Mexico imposed antidumping duties on U.S. hogs—an action that dramatically reduced U.S. hog exports to Mexico. In May 2004, the Mexican Government initiated an antidumping investigation about U.S. pork leg exports to Mexico, after rejecting an earlier petition filed by a Mexican producer group concerning a broad range of pork products.

The Mexican poultry industry also is undergoing significant internal changes. Three firms have captured the lion's share of Mexican consumption growth in recent years and now account for about 60 percent of the industry's output. The largest of these producers (Bachoco) is a Mexican firm, while the second- and third-largest (Pilgrim's Pride and Tyson de México, respectively) are affiliates of U.S. corporations. These firms appear to be in an excellent position to supply Mexico's retail sector, which is expanding rapidly.

Compared with the Mexican hog industry, the Mexican poultry industry has faced less direct competition from the United States during the process of trade liberalization, a situation that may change in the future. In 2003, about two-thirds of Mexican poultry imports from the United States (in terms of value) consisted of either turkey meat or mechanically deboned meat (MDM), which is a key ingredient in sausages and cold cuts (fig. 4). Neither turkey meat nor MDM is produced in Mexico in large quantities. To give the Mexican poultry industry additional time to adjust to trade liberalization, a temporary safeguard TRQ is in effect until January 1, 2008, for U.S. exports to Mexico of chicken leg quarters.

Figure 4

In 2003, about two-thirds of U.S. poultry meat exports to Mexico (in terms of value) consisted of commodities that Mexico does not produce in large quantities



MDM = Mechanically deboned meat.
Source: Mexican Secretariat of Economy, as reported by Global Trade Information Services, Inc. (2004).

A low degree of integration persists regarding Mexican pork and poultry producers and the U.S. market. Although U.S. tariffs on Mexican pork and poultry were

eliminated upon NAFTA's implementation, the United States imports very little Mexican pork and poultry due to sanitary regulations. Regionalization and continued Mexican progress in controlling such animal diseases as Classical Swine Fever (CSF) and Exotic Newcastle Disease (END) are expected to create additional opportunities for Mexico to export pork and poultry meat to the United States. Mexico has already become an important supplier of pork to Japan.

Integration of the U.S. and Canadian dairy and poultry industries is limited by the exclusion of these sectors from bilateral trade liberalization under CFTA and NAFTA. Despite this obstacle, U.S. dairy and poultry exports to Canada have managed to grow in some product categories. Canada has a long history of offering supplemental import permits in addition to the duty-free amounts specified by the country's tariff-rate quota for imported poultry. This practice has enabled U.S. chicken exports to Canada to grow much faster than Canadian production, particularly since 1995. In addition, U.S. exports to Canada of relatively minor dairy-based products, such as food preparations for infant use, have recently risen, largely because these products face no import quotas and now enjoy duty-free status in Canada (app. table 1).

Fruits and Vegetables

An integrated continental market is the logical mechanism for responding on a year-round basis to rising consumer demand in North America for fresh and processed fruits and vegetables. With territory that stretches northward beyond the Arctic Circle and southward well past the Tropic of Cancer, the NAFTA region features multiple zones for fruit and vegetable production with growing seasons that are scattered across the calendar year.

Integration of the fruit and vegetable market has reached a medium degree with respect to U.S. exports to Mexico and a high degree with respect to Mexican exports to the United States. These levels are largely due to the development and growth over the past half century of a vibrant Mexican fruit and vegetable sector that is strongly oriented towards the U.S. market. Further institutional developments that broaden participation in fruit and vegetable trade in both directions are likely to increase the degree of integration to a consistently high level. Integration of the Canadian and U.S. fruit and vegetable markets was at a relatively high level prior to CFTA, as barriers to Canada-U.S. trade were already low. The completion of bilateral trade liberalization for fruits and vegetables in 1998, along with broader application of greenhouse technologies to Canadian vegetable production, has fostered even greater integration between the two countries.

A major result of this heightened continental integration is that imports from Mexico, Canada, and other countries have become more important to U.S. fruit and vegetable consumption. In 2001, imports (from all countries) supplied about 23 percent of domestic consumption of fresh or frozen fruit and 17 percent of domestic consumption of fresh or frozen vegetables. In 1990, these shares equaled 13 percent and 10 percent, respectively (Jerardo, 2003). Imports also have facilitated a shift in consumption away from processed fruits and vegetables and toward fresh produce. In 2001, fresh produce accounted for 47 percent of U.S. fruit and vegetable consumption, up from 44 percent in 1990 (USDA/ERS, 2005).

Net imports (i.e., imports minus exports) provide another indicator of the increased reliance on imports to supply U.S. fruit and vegetable consumption (table 2). Prior to NAFTA, net imports (from all countries) already exceeded 60 percent of U.S. consumption for fresh limes, fresh mangos, and frozen broccoli and cauliflower. Since NAFTA's implementation, fresh papayas have joined the group of commodities where net imports exceed 60 percent of consumption. A number of commodities—including cantaloupe, fresh asparagus, cucumbers, eggplant, and tomatoes—have experienced a noteworthy increase in net imports' share of consumption during the NAFTA period. Total U.S. imports of fruits and vegetables averaged about U.S. $10.1 billion during 2001-03. Mexico accounted for 30 percent of these imports, while Canada accounted for 17 percent. The United States is also a major exporter of fruits and vegetables. During 2001-03, the annual value of these exports averaged about $7.5 billion, of which 36 percent was destined for Canada and 11 percent for Mexico.

Mexican growers have been major participants in the expansion of North American fruit and vegetable trade. Since NAFTA's implementation, Mexican fruit and vegetable exports to the United States have more than doubled, reaching an annual average of nearly $3.0 billion during 2001-03. Meanwhile, Canada has emerged as an important supplier to the United States of fresh tomatoes (many of which are grown in greenhouses), peppers, and mushrooms, in addition to fresh and frozen potatoes (app. table 2). U.S. growers have been active participants in the Canadian market for some time, with annual fruit and vegetable exports to Canada averaging $2.7 billion during 2001-03. Eliminating the remaining tariffs on U.S.-Canada

Table 2—Net imports now account for a larger proportion of U.S. consumption of certain fruits and vegetables

	Net imports divided by consumption		Average per capita use	
Commodity	1991-93	2000-02	1991-93	2000-02
	——-Percent——-		*—-Kilograms—-*	
Selected fruits:				
Fresh grapes[1]	15	18	3.4	3.5
Fresh limes[1]	66	93	.4	.6
Fresh mangos[2]	92	100	.4	.8
Fresh papayas[3]	8	76	.1	.3
Fresh strawberries[3]	-8	-4	1.6	2.1
Cantaloupe	19	30	3.9	5.0
Watermelon	1	5	6.3	6.6
Selected vegetables:				
Asparagus, fresh	12	45	.3	.4
Bell peppers	5	16	2.5	3.0
Broccoli and cauliflower, frozen	66	70	1.4	1.3
Cucumbers	28	40	2.2	2.9
Eggplant	19	29	.2	.4
Onions, fresh	-20	-3	7.4	8.2
Tomatoes	9	26	7.1	8.1

[1]Information is reported for the 1990/91, 1991/92, and 1992/93 seasons instead of the 1991-93 calendar years and for the 1999/2000, 2000/01, and 2001/02 seasons instead of the 2000-02 calendar years.
[2]Trade data for 1991-92 also include mangosteens and guavas.
[3]Information is reported for 1999-2001 instead of 2000-02.
Source: USDA/ERS.

trade has given Canadian consumers tariff-free access to the full range of U.S. produce—facilitating the growth of U.S. exports of strawberries, cherries, pears, carrots, lettuce, and potatoes, among other commodities.

Even closer integration of the North American fruit and vegetable market is possible, particularly with respect to Mexico. U.S. exporters, who have already had some success in the Mexican market, are likely to experience additional benefits from their close ties to supermarket chains operating in Mexico. Rapid expansion of the Mexican supermarket sector is changing the way in which food is produced, marketed, and sold there, resulting in a supply system that is more closely connected with the United States. A USDA study of the Mexican produce industry emphasizes that U.S. exporters already possess the "organizational and operational capability of supplying large volumes of market-ready produce items" directly to distribution centers of supermarket chains. In addition, "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" (Tropp, Skully, Link, and Málaga, 2002).

To take full advantage of the integrated continental market, the Mexican Government has engaged in a series of institution-building activities related to fruits and vegetables. First, it has created the brand "Mexico Calidad Suprema" (Supreme Quality) to identify agricultural and food products of exceptional quality. This brand distinguishes qualifying Mexican products not only in foreign markets but also in the domestic market, particularly in supermarkets where labeled products are more likely to be sold. Second, the Government has established a voluntary quality certification program for agri-food products to minimize disputes among buyers and sellers and to ensure that the sale price reflects the quality of the product (SAGARPA/ASERCA, 2003: p. 57). Third, under the banner of "MexBest," the Mexican Government and private sector are working together to promote Mexican agri-food products of export quality at agricultural expositions and conferences (Consejo Nacional Agropecuario, 2004). Fourth, the Government is promoting nontraditional fruit and vegetable exports, such as litchis, maracuyás, artichokes, chayote, huanzontle, huitlacoche, mushrooms, nopal, and okra (Zamarano Ulloa, 2002).

Integration of formerly national fruit and vegetable markets requires that the correct incentives be in place in each NAFTA country so that individuals and firms throughout the supply chain adopt appropriate food safety practices. A recent study of North America's highly integrated green onion industry by ERS and Mexican researchers underscores the role of imperfect information in the outbreaks of foodborne illnesses that were associated with green onions in 2003 (Calvin, Avendaño, and Schwentesius, 2004). Buyers and sellers of produce cannot perfectly identify all characteristics of the product. Thus, participants in the supply chain who adopt more stringent food safety practices do not necessarily get a higher price for their output. Even so, many retailers and foodservice buyers now require that growers implement certain food safety practices as a precondition for purchase. Because the investments required to implement additional safety standards can be quite costly, some people opt not to make those investments, leaving the entire industry exposed to the risk of a catastrophic event. This is what happened in 2003, when the demand for green onions fell sharply following outbreaks of Hepatitis A in

the United States, since it was not possible to identify precisely at what point in the supply chain that the produce in question became contaminated.

Producer groups have played an important role in facilitating the integration of the continental fruit and vegetable market. For example, produce companies from each NAFTA country have joined together to form the Fruit and Vegetable Dispute Resolution Corporation (DRC). The DRC is a private, nonprofit organization "dedicated to the provision of fair, efficient, and affordable dispute resolution services" (DRC, 2004). One of the DRC's main contributions to market integration is the institution of a multi-step dispute resolution system that begins with preventative activities and cooperative problem-solving and then proceeds gradually to more binding measures. The DRC also maintains a public list of companies for which membership was suspended or terminated for not abiding by the organization's rules and standards. The DRC was established in 1999 in response to Article 707 of NAFTA, which called for an advisory committee on private commercial disputes regarding agricultural goods.

In addition, producer groups have successfully used negotiations as a way to address tensions among the NAFTA partners involving allegations of dumping. In cases involving U.S. apple exports to Mexico and Mexican tomato exports to the United States, producer groups have agreed to the suspension of the antidumping investigation for long periods in exchange for a reference price for the commodity in question. Compared with the imposition of a prohibitive antidumping duty, such agreements are likely to facilitate higher volumes of trade at a lower price, thereby improving consumer welfare.

Sugar and Sweeteners

Integration of the U.S. and Mexican sugar and sweetener markets has progressed very little in recent years, due to trade disputes concerning how to interpret NAFTA's provisions for sugar and sweetener trade. These disputes originated in a disagreement about the side letters used to modify the sugar provisions of the original NAFTA text.[5] In March 2003, Mexico announced that it would not specify how its TRQ for certain classifications of U.S. high fructose corn syrup (HFCS) would function until the dispute was resolved (Flores, 2003). And in Fiscal Years 2003 and 2004, the United States provided Mexico with its minimum market-access allocation for raw sugar under the WTO and its customary portion of the U.S. TRQ for refined sugar, but not the much larger additional allocation specified by the side letters (table 3).

Further complicating matters, the Mexican Congress has imposed a 20-percent sales tax on soft drinks and other beverages that contain any sweetener other than cane sugar. This action has stifled Mexico's domestic market for HFCS and reduced U.S. HFCS exports to Mexico to a trickle (fig. 5). The tax is being contested on many fronts. The World Bank's International Centre for Settlement of Investment Disputes has constituted tribunals to hear claims challenging the sales tax, one by Corn Products International and the other by Archer Daniels Midland Company and A.E. Staley Manufacturing Company. These challenges are taking place in accordance with procedures outlined in Chapter 11 of NAFTA, which governs the treatment of investors by member countries. In addition, the U.S. Government is contesting the tax and any related measures with the WTO's Dispute Settlement Body. The United States believes that the tax is inconsistent with

[5]The Policy Page in the ERS website's Sugar and Sweetener Briefing Room describes NAFTA's sugar provisions in great detail.

Table 3—U.S. sugar imports from Mexico under tariff-rate quota (TRQ), fiscal years 1996-2003

Item	1996	1997	1998	1999	2000	2001	2002	2003
				Metric tons, raw value (MTRV)				
NAFTA TRQ:[1]								
TRQ allocation	—	25,000	25,000	25,000	25,000	105,788	137,788	0
Actual imports	—	23,892	25,000	23,715	25,000	98,653	130,120[2]	0
Raw sugar TRQ:								
TRQ allocation	7,258	—	—	—	—	7,258	7,258	7,258
Actual imports	6,973	—	—	—	—	7,258	7,258	7,258
Refined sugar TRQ: (September allocation):								
TRQ allocation	—	—	2,954	2,954	2,954	2,954	2,954	2,954
Actual imports	—	—	2,954	2,954	2,954	2,954	2,954	0
Total TRQ:								
TRQ allocations	7,258	25,000	27,954	27,954	27,954	116,000	148,000	10,212
Actual imports	6,973	23,892	27,954	26,669	27,954	108,865	140,332	7,258

— = Not applicable.

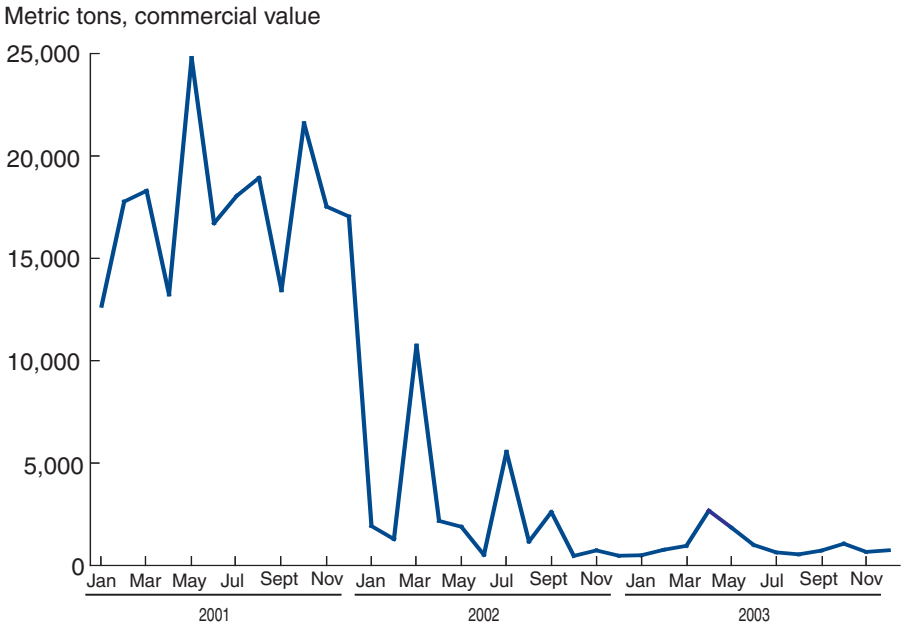
[1]Mexico's NAFTA allocation may be shipped either raw or refined.

[2]This amount includes (a) 18,985 MTRV that arrived after the end of FY 2002 and were unavoidably delayed in transit and (b) 2,900 MTRV that arrived on October 1, 2002, but were counted as having entered in FY 2002.

Source: USDA/FAS, as cited by USDA/ERS (July 13, 2004), Tables 23a-23c.

Figure 5

Mexico's sales tax on beverages containing sweeteners other than cane sugar has sharply curtailed U.S. exports to Mexico of high fructose corn syrup



Source: Mexico, Secretariat of Economy, as cited by USDA/ERS (July 13, 2004), Table 35.

Mexico's obligations under Article II of the 1994 General Agreement on Trade and Tariffs. This article requires that taxes on comparable domestic and imported products be applied in a nondiscriminatory manner (World Trade Organization, 2004).

Although sugar trade between Canada and the United States was formally exempted from trade liberalization under CFTA and NAFTA, bilateral trade in sugar-containing products has expanded over the past decade. The United States exports large quantities of chocolates and other sugar-containing confectionery, baked goods, and breakfast cereals to Canada. It also imports large quantities of baked goods, confectionery products, and chewing gum from Canada (app. tables 1 and 2). Mexico and the United States trade a sizable amount of sugar-containing products as well (app. tables 3 and 4). When trade with all countries is considered, the annual amount of sugar in U.S. imports of sugar-containing products has exceeded the sugar contained in corresponding exports since 1998, according to ERS estimates (Haley, 2003). In 2002, sugar in imported products exceeded sugar in exported products by some 79-86 percent.

Rising net imports in sugar-containing products may be linked to the recent decline in U.S. sugar deliveries to industrial end users. Between 1999 and 2003, these deliveries dropped from 5.6 million to 4.9 million short tons, refined value—a decline of 13 percent (USDA, National Agricultural Statistics Service and Farm Services Agency, as cited by USDA/ERS, September 2004). One explanation of this phenomenon is that the U.S. sugar program tends to make sugar within the United States more expensive than sugar abroad. Empirical analysis suggests that imports of sugar-containing products have negatively affected U.S. sugar deliveries to the confectionery industry and other segments of the processed food industry, but not to manufacturers of baked goods and cereals (Haley, 2003).

Processed Foods[6]

[6]Parts of this section are drawn from Doan, Goldstein, Zahniser, Vollrath, and Bolling (2004).

The Canadian and U.S. processed food industries have reached a very high level of integration, while the Mexican and U.S. processed food industries have achieved a medium level. Canada and the United States have a substantial amount of FDI in each other's processed food industry and large and growing flows of intra-industry trade in intermediate and final food products. The United States has sizable investments in the Mexican processed food industry, and Mexico has important investments in certain segments of the U.S. industry, such as baked goods and Mexican-style foods. A processed item, beer, is Mexico's leading agricultural export to the United States. In 2003, Mexican beer exports to the United States exceeded U.S. $1 billion for the first time.

Given that Mexico is more than three times larger in population than Canada, the investments linking the Canadian and U.S. processed food industries are much larger in relative terms than those connecting the Mexican and U.S. processed food industries. For this reason, integration of the processed food industry between Mexico and the United States may be viewed as being at a medium level. Income is a major determinant of processed food demand. Thus, further increases in per capita income in Mexico, along with additional improvements in the country's transportation and retail systems, are likely to advance the integration of the U.S. and Mexican processed food markets to a high level.

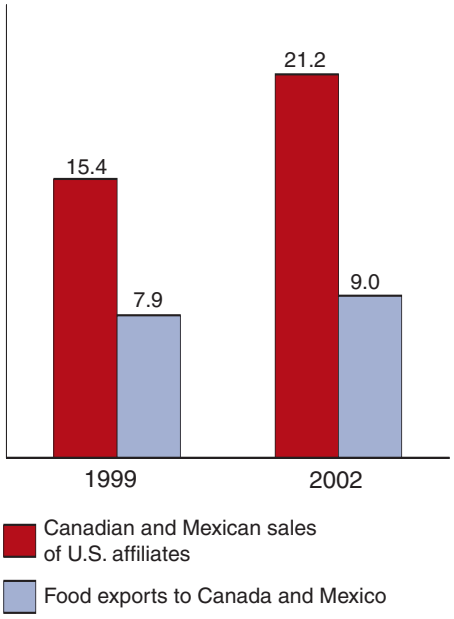
U.S. firms undertake most of the FDI in the North American processed food sector. In 2003, the stock of U.S. direct investment in the Canadian and Mexican food industries equaled U.S. $4.3 billion and U.S. $1.7 billion, respectively (app. table 5). In contrast, the stock of Canadian and Mexican

direct investment in the U.S. processed food industry was about U.S. $1.1 billion for both countries.[7] U.S. authorities do not routinely report similar statistics for the beverage industry and production agriculture, mainly to protect the confidentiality of individual companies. The stock of intra-NAFTA direct investment probably runs in the billions of U.S. dollars for the beverage industry and the hundreds of millions of U.S. dollars for crop and livestock production.

Food sales in Canada and Mexico associated with U.S. direct investment are substantial. In 2002, Canadian and Mexican affiliates (majority-owned) of U.S. multinational food companies had sales of U.S. $14.5 billion and U.S. $6.7 billion, respectively. Together, these sales are 136 percent larger than U.S. processed food exports to Canada and Mexico (fig. 6). Major U.S. brands of finished products are sold throughout Canada and Mexico, and some Canadian and Mexican brands are prominent in the United States, giving consumers throughout the region access to a wider variety of products. In intermediate product markets, U.S. direct investment plays an important role in Canadian and Mexican flour milling, grain trading, and meat processing.

Figure 6

Food sales of U.S.-owned affiliates in Canada and Mexico greatly exceed processed food exports to Canada and Mexico



Notes: Affiliate sales are those of nonbank majority-owned U.S. affiliates and do not include sales in the beverage industry. Food exports consist of those products that made up SIC 20 of the old Standard Industrial Classification system, minus the following beverages: fluid milk; malt beverages; wines, brandy, and brandy spirits; distilled and blended liquors; and bottled and canned soft drinks and carbonated waters.

Sources: USDC/BEA (July 2004) (affiliate sales) and USDA/ERS (December 2004) (exports).

NAFTA is widely believed to have fostered additional FDI in Mexico's food and beverage industries (Burfisher, Robinson, and Thierfelder, 2002; Vollrath, 2003; Worth, 1998). The agreement contains important provisions designed to facilitate foreign investment, including the equal treatment of domestic and foreign investors and the prohibition of applying certain performance requirements to foreign investors, such as a minimum amount of domestic content in production. More than a decade after NAFTA's implementation, Mexico's agricultural, food, and beverage industries continue to attract additional foreign investment. According to Mexican statistics, these industries received net inflows of U.S. $6.4 billion in additional foreign investment between January 1999 and September 2004 (Secretaría de Economía, 2005). Roughly two-thirds of this capital came from the United States.

North America's experience with market integration in the processed food industries demonstrates that FDI growth is compatible with

[7]The stock of Mexican direct investment in the U.S. processed food industry for 2003 is suppressed. Data for the previous year indicate that the stock of this investment was about U.S. $1.1 billion.

trade growth. U.S. direct investment is present in nearly every segment of the Canadian and Mexican processed food industries in which there are substantial U.S. exports to the NAFTA countries. There is a strong tendency for FDI and processed food exports to grow together because income growth is a driving force of increasing processed food consumption in general (Bolling and Jerardo, 2002).

Through direct investments in the other NAFTA countries, several large companies from Canada and Mexico have reinvented themselves as larger, stronger, and more viable firms. In some instances, the resulting operations outside the home country rival the operations in the home country in size and importance. Canada's McCain Food, for example, has evolved from a small producer of frozen French fries to the country's largest processed food company, supplying both retailers and foodservice providers. In the NAFTA region alone, the firm operates 11 processing facilities in Canada, 8 in the United States, and 1 in Mexico. Another Canadian example is George Weston Limited, the food-producing segment of which, Weston Foods, is prominent in the U.S. baked goods industry. Weston Foods has roughly a 5-percent share of the U.S. bakery products market, and in 2003, the United States accounted for about 75 percent of Weston Foods' sales.

Several Mexican food companies have similar histories. For example, Gruma has emerged as the world's largest producer of corn flour and tortillas, as well as the largest such producer in the United States, due partly to a joint venture with Archer Daniels Midland. For the last several years, Gruma's U.S. operations have accounted for about half of its total corporate sales. In addition, Mexico's largest baking company, GIBSA (Grupo Bimbo), has purchased several bread-baking enterprises in the Western United States. GIBSA is now the world's third-largest baker, with roughly a 5-percent share of the U.S. market for bakery products.

Transportation

Not only do Canadian and U.S. trucks share each other's roadways, but integration and coordination are greater among U.S. and Canadian railways, spurred partly by the merger of the Canadian National and Illinois Central railroads in 1999. Similar innovations have taken place in rail and maritime transport linking Mexico and the United States. NAFTA's motor carrier provisions allow Mexican trucks to operate throughout the United States. In June 2004, the U.S. Supreme Court unanimously overturned an earlier decision by a U.S. appeals court that had further delayed the implementation of these provisions. This action is likely to lead to the implementation of NAFTA's trucking provisions.

Conclusion

Integration is enabling the formerly segmented national markets of Canada, Mexico, and the United States to function more efficiently, creating an environment that facilitates economic growth (Vollrath, 2003). For farmers, ranchers, and food processors, integration is allowing competitive market forces to play a more dominant role in the allocation of resources, as economic agents more fully use their relative strengths. In this environment, U.S. feedstuffs are making possible an expansion of Mexican meat production, North America's fruit and vegetable producers are refining their efforts to supply the broader continental market, and multinational food companies are adapting and expanding their activities in each NAFTA country. For consumers, integration offers such benefits as lower food prices, greater variety in food products, and year-round availability of fresh produce. Some of these benefits are apparent in the rising level of per capita meat consumption in Mexico and the growing importance of Canadian and Mexican produce to U.S. fruit and vegetable consumption.

Nevertheless, the empirical research on these effects is still far from comprehensive. Much is known about the changes in regional agricultural trade since NAFTA's implementation and how these changes relate to supply-side aspects of North American agriculture. Linking these changes to the demand-side of agriculture has attracted far less attention, even though consumers as an aggregated group are the greatest beneficiaries of integration. This lack of attention may be partly attributable to the rising affordability of food. For U.S. consumers, food expenditures have accounted for about 10 percent of disposable personal income throughout the NAFTA period (USDA/ERS, July 2004). For Mexican consumers, in contrast, the share of household expenditures devoted to food, beverages, and tobacco has fallen from 36 percent in 1992 to 31 percent in 2002 (Encuesta Nacional de Ingresos y Gastos de Hogares, as cited by INEGI, 2003). Completing the circle of analysis to encompass both the demand- and supply-side effects of integration thus should be a focus of future research, which is likely to broaden the public's understanding of integration.

References

Bolling, Chris, and Andy Jerardo. "Investment in Agriculture and Food Processing," in Steven Zahniser and John Link (eds.), *Effects of North American Free Trade Agreement on Agriculture and the Rural Economy*, Electronic Outlook Report WRS-02-1, USDA/ERS, July 2002, available at: http://www.ers.usda.gov/publications/wrs0201/

Burfisher, Mary E., Sherman Robinson, and Karen Thierfelder, 2002. "Developing Countries and the Gains from Regionalism: Links Between Trade and Farm Policy Reforms in Mexico," *American Journal of Agricultural Economics* 84(3):736-48.

Calvin, Linda, Belem Avendaño, and Rita Schwentesius. *The Economics of Food Safety: The Case of Green Onions and Hepatitis A Outbreaks*, Electronic Outlook Report VGS-305-01, USDA/ERS, December 2004, available at: http://www.ers.usda.gov/publications/vgs/nov04/VGS30501/

Consejo Nacional Agropecuario. MexBest website, 2004, available at: http://www.mexbest.com.mx

Cook, Ramsay. "The Triumphs and Trials of Materialism (1900-1945)," in Craig Brown (ed.), *The Illustrated History of Canada*, Toronto: Key Porter Books, 1997, pp. 375-466.

Dispute Resolution Corporation (DRC). "Fruit and Vegetable Dispute Resolution Corporation" website, 2004, available at: http://www.fvdrc.com/en/main-e.htm

Doan, Darcie, Andrew Goldstein, Steven Zahniser, Thomas Vollrath, and Chris Bolling. "North American Integration in Agriculture: A Survey Paper," paper presented at the 2004 Workshop of the North American Agrifood Market Integration Consortium, May 6-7, 2004, Cancún, Quintana Roo, available at: http://naamic.tamu.edu/cancun/doan.pdf

Fiess, Norbert, and Daniel Lederman. *Mexican Corn: The Effects of NAFTA*, World Bank Trade Note 18, September 24, 2004, available at: http://wbln0018.worldbank.org/LAC/LACInfoClient.nsf/d29684951174975c85256735007fef12/026efe204f018bc885256f40006d1901/$FILE/TradeNote18.pdf

Flores, Dulce. *Import Criteria to Import HFCS into Mexico*, Global Agricultural Information Network Report MX3034, USDA/FAS, March 25, 2003, available at: http://www.fas.usda.gov/gainfiles/200303/145885036.pdf

Global Trade Information Services, Inc. *World Trade Atlas*, Internet Edition, Columbia, SC, 2004.

Goodloe, Carol. "The Canadian Wheat Board: Government Guarantees and Hidden Subsidies?" *The Estey Centre Journal of International Law and Trade Policy* 5(2)(2004):102-22, available at: http://www.esteycentre.ca/journal/

Haley, Mildred M. *Market Integration in the North American Hog Industries*, Electronic Outlook Report LDP-M-125-01, USDA/ERS, November 2004, available at: http://www.ers.usda.gov/publications/ldp/NOV04/ldpm12501/

Haley, Stephen. *Measuring the Effect of Imports of Sugar-Containing Products on U.S. Sugar Deliveries*, Electronic Outlook Report SSS-237-01, USDA/ERS, September 2003, available at: http://usda.mannlib.cornell.edu/reports/erssor/specialty/sss-bb/2003/sss23701.pdf

Instituto Nacional de Estadística, Geografía, e Informática (INEGI). *Banco de Información Económica, Sector Manufacturero*, Encuesta Industrial Anual, Empleo, 2004, available at: http://dgcnesyp.inegi.gob.mx/cgi-win/bdieintsi.exe

Instituto Nacional de Estadística, Geografía, e Informática (INEGI). "Distribución Porcentual del Gasto de los Hogares por Sexo del Jefe y Grandes Rubros del Gasto, 1992-2002," last updated June 16, 2003, available at: http://www.inegi.gob.mx/est/contenidos/espanol/tematicos/mediano/med.asp?t=ming06&c=3319

Jerardo, Andy. *Import Share of U.S. Food Consumption Stable at 11 Percent*, Electronic Outlook Report FAU-79-01, USDA/ERS, July 2003, available at: http://www.ers.usda.gov/Publications/fau/july03/fau7901/

Juarez, Benjamin, and Gabriel Hernandez. *Mexico Poultry and Products Semi-Annual 2003*, Global Agriculture Information Network Report No. MX3006, USDA/FAS, January 27, 2003, available at: http://www.fas.usda.gov/gainfiles/200301/145785177.pdf

Juarez, Benjamin, and Sal Trejo. *Mexico Grain and Feed Annual Report 2004*, Global Agriculture Information Network Report No. MX4033, USDA/FAS, March 5, 2004, available at: http://www.fas.usda.gov/gainfiles/200403/146105603.pdf

Knutson, Ronald D., and René Ochoa. "Achieving Market Integration," *Ag Exporter*, USDA/FAS, January 2004, pp. 9-10, available at: http://www.fas.usda.gov/info/agexporter/agexport.html

Knutson, Ronald D., R.M.A. Loyns, and René F. Ochoa. "Policy Options for Facilitating Change and Maintaining Competition Under Conditions of Free Trade Within NAFTA," in R.M.A. Loyns, Karl Mielke, Ronald D. Knuston, and Antonio Yunez-Naude (eds.), *Structural Change as a Source of Trade Disputes Under NAFTA: Proceedings of the Seventh Agricultural and Food Policy Systems Information Workshop*, College Station, TX: Texas A&M University, University of Guelph, and El Colegio de México, February 2002, pp. 342-406, available at: http://pdic.tamu.edu/teal.htm

Morton, Desmond. "Strains of Affluence (1945-1996)," in Craig Brown (ed.), *The Illustrated History of Canada*, Toronto: Key Porter Books, 1997, pp. 467-562.

Reynolds, Clark. "Why Mexico's 'Stabilizing Development' Was Actually Destabilizing (With Some Implications for the Future)," *World Development* 6(7/8)(July/August 1978):1005-18.

Schnepf, Randy. "U.S.-Canada Wheat Trade Dispute," Congressional Research Service (CRS), The Library of Congress, CRS Report for Congress, Order Code RL32426, updated version, June 14, 2004, available at: http://www.ncseonline.org/NLE/CRSreports/04Jun/RL32426.pdf

Secretaría de Economía. "Cuadro No. 5: País de Origen de la Inversión Extranjera Directa Materializada en Alimentos, y Bebidas y Tabaco," downloaded February 17, 2005, available at: http://www.economia.gob.mx/pics/p/p1177/ALISEP04.xls

Secretaría de Agricultura, Ganadería, Desarrollo Rural, Alimentación, y Pesca, Servicio de Información Agroalimentaria y Pesquera (SAGARPA/SIAP). "Resumen Nacional: Producción de Carne en Canal: 1990-2002," downloaded Feburary 17, 2005, available at: http://www.siap.sagarpa.gob.mx/ar_compec_serhis.html

Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca, y Alimentación, Apoyos y Servicios a la Comercialización Agropecuaria (SAGARPA/ASERCA). "Inspección de Calidad Agropecuaria," in *Claridades Agropecuarias* 113(January 2003):57, available at: http://www.infoaserca.gob.mx/claridades/revistas/113/ca113.pdf#page=57

Skaggs, Rhonda, René Acuña, L. Allen Torell, and Leland Southard. "Live Cattle Exports from Mexico into the United States: Where Do the Cattle Come From and Where Do They Go?" *Choices* (1st Quarter 2004):25-29, available at: http://www.choicesmagazine.org/2004-1/2004-1-05.htm

Tropp, Debra, David Skully, John Link, and Jaime Málaga. *Mexico's Changing Marketing System for Fresh Produce: Emerging Markets, Practices, Trends, and Issues*, USDA/AMS, October 2002, available at: http://www.ers.usda.gov/Briefing/NAFTA/PDFFiles/mexfreshprod.pdf

United Nations, Food and Agricultural Organization (UN/FAO). FAOSTAT Database, December 12, 2004, available at: http://faostat.fao.org

U.S. Department of Agriculture, Agricultural Marketing Service (USDA/AMS). *Grain and Feed Weekly Summary and Statistics*, various issues, 1991-2003, issues since 1998 available at: http://www.ams.usda.gov/LSMNpubs/mnsearch.htm

U.S. Department of Agriculture, Economic Research Service (USDA/ERS). *Food Consumption (Per Capita) Data System: Food Availability, Interactive Database*, last updated February 1, 2005, available at: http://www.ers.usda.gov/data/foodconsumption/FoodAvailQueriable.aspx#midForm

U.S. Department of Agriculture, Economic Research Service (USDA/ERS). "Food CPI, Prices, and Expenditures: Expenditures as a Share of Disposable Income," website, last updated July 23, 2004, available at: http://www.ers.usda.gov/Briefing/CPIFoodAndExpenditures/Data/table7.htm

U.S. Department of Agriculture, Economic Research Service (USDA/ERS). *Foreign Agricultural Trade of the United States Database*, last updated December 2, 2004, available at: http://www.ers.usda.gov/Data/FATUS/

U.S. Department of Agriculture, Economic Research Service (USDA/ERS). *Processed Food Trade Database*, 2003.

U.S. Department of Agriculture, Economic Research Service (USDA/ERS). "Table 21—U.S. Sugar Deliveries: Industrial and Nonindustrial Uses by Region," *Sugar and Sweetener Yearbook Tables: Excel (.xls) Spreadsheets*, September 21, 2004. available at: http://www.ers.usda.gov/Briefing/Sugar/Data/Table21.xls

U.S. Department of Agriculture, Economic Research Service (USDA/ERS). *Sugar and Sweetener Data Tables*, July 13, 2004. available at: http://www.ers.usda.gov/Briefing/Sugar/Data/data.htm

U.S. Department of Agriculture, Foreign Agricultural Service (USDA/FAS). *PSD Online*, interactive database, February 10, 2005, available at: http://www.fas.usda.gov/psd/

U.S. Department of Agriculture, Office of the Chief Economist (USDA/OCE). *USDA Agricultural Baseline Projections to 2013*. Staff Report WAOB-2004-1, February 2004, available at: http://www.ers.usda.gov/publications/waob041/

U.S. Department of Commerce, Bureau of Economic Analysis (USDC/BEA). "Foreign Direct Investment in the U.S.: Balance of Payments and Direct Investment Position," last updated December 16, 2004a, available at: http://www.bea.gov/bea/di/di1fdibal.htm

U.S. Department of Commerce, Bureau of Economic Analysis (USDC/BEA). "Sales by Majority-Owned Nonbank Foreign Affiliates, Country by Industry," last updated July 21, 2004, available at: http://www.bea.gov/bea/di/di1usdop.htm

U.S. Department of Commerce, Bureau of Economic Analysis (USDC/BEA). "U.S. Direct Investment Abroad: Balance of Payments and Direct Investment Position Data," last updated December 16, 2004b, available at: http://www.bea.gov/bea/di/di1usdbal.htm

U.S. Department of Commerce, Office of Textiles and Apparel (USDC/OTEXA). "U.S. General Imports in U.S. Dollars," downloaded February 13, 2005, available at: http://otexa.ita.doc.gov/scripts/tqads1.exe/ctrypage

Vollrath, Thomas L. "Gauging NAFTA's Successes and Confronting Future Challenges," *Ag Exporter*, USDA/FAS, January 2004, pp. 7-8. Available at: http://www.fas.usda.gov/info/agexporter/agexport.html

Vollrath, Thomas L. *North American Agricultural Market Integration and Its Impact on the Food and Fiber System*, Agriculture Information Bulletin No. 784, USDA/ERS, September 2003, Available at: http://www.ers.usda.gov/publications/aib784/

Weintraub, Sidney. *A Marriage of Convenience: Relations Between Mexico and the United States*. New York: Oxford University Press, 1990.

World Trade Organization (WTO). *Mexico—Tax Measures on Soft Drinks and Other Beverages: Request for Consultations by the United States*, Document No. WT/DS308/1, G/L/674, March 18, 2004, available at: http://www.wto.org/english/tratop_e/dispu_e/dispu_subjects_index_e.htm#sweetener_tax

Worth, Thomas. "Regional Trade Agreements and Foreign Direct Investment," in Mary E. Burfisher and Elizabeth Jones (eds.), *Regional Trade Agreements and U.S. Agriculture*, Agricultural Economic Report No. 771, USDA/ERS, November 1998, pp. 77-83, available at: http://www.ers.usda.gov/publications/aer771/

Zahniser, Steven S., and William T. Coyle. *U.S.-Mexico Corn Trade During the NAFTA Era: New Twists to an Old Story*, Electronic Outlook Report FDS-04D-01, USDA/ERS, May 2004, available at: http://www.ers.usda.gov/publications/FDS/may04/fds04D01/fds04D01.pdf

Zamarano Ulloa, José. "Oportunidades Comerciales y de Exportación de los Agroproductos no Tradicionales," presentation at the First Regional Outlook Forum of the Agrifood and Fishing Sector, organized by Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca, y Alimentación (SAGARPA), Mazatlán, Sinaloa, November 5-6, 2002, available at: http://www.siap.sagarpa.gob.mx/ar_comforos.html

Appendix table 1—Selected U.S. agricultural exports to Canada, 1991-93 versus 2001-03

Commodities	Value			Volume			Unit value		
	1991-93	2001-03	Change	1991-93	2001-03	Change	1991-93	2001-03	Change
	U.S. million dollars		*Percent*	*Thousand metric tons*		*Percent*	*U.S. dollars per kilogram*		*Percent*
Total	4,941	8,698	76	—	—	—	—	—	—
Animals and animal products	909	1,412	55	—	—	—	—	—	—
Beef and veal	363	294	-19	87	82	-6	4.19	3.59	-14
Pork	29	169	477	9	65	592	3.12	2.60	-17
Chickens, fresh or frozen	85	146	71	42	90	112	2.02	1.63	-19
Poultry meats, prepared or preserved	54	109	103	12	28	125	4.33	3.92	-9
Cattle and calves[1]	36	78	117	71	167	136	506.51	465.61	-8
Preparations for infant use, retail sale	4	61	1,315	1	20	1,802	4.13	3.07	-26
Other	338	555	64	—	—	—	—	—	—
Grains and feeds	779	1,724	121	1,658	5,561	235	.47	.31	-34
Corn	60	336	463	600	3,540	490	.10	.09	-5
Dog or cat food, retail sale	146	246	69	142	246	74	1.03	1.00	-3
Pastry, cake, bread, and pudding	94	160	69	58	86	49	1.64	1.87	14
Prepared food from swelling or roasting of cereal or cereal products	36	124	249	19	68	267	1.91	1.81	-5
Mixes and doughs	31	85	171	27	77	181	1.14	1.10	-3
Cookies, waffles, and wafers	48	84	74	25	42	68	1.93	2.00	4
Pasta and noodles[2]	21	69	228	19	62	219	1.08	1.11	3
Rice	56	67	20	142	175	23	.39	.38	-2
Stuffed or canned pasta	30	55	84	14	28	96	2.11	1.99	-6
Dextrins and other modified starches[3]	31	50	63	67	77	15	.46	.65	42
Other	227	449	98	546	1,160	113	.42	.39	-7
Fruits and preparations, excluding juice	708	900	27	872	1,052	21	.81	.86	5
Grapes, fresh	117	116	-1	112	93	-17	1.05	1.25	20
Strawberries, fresh	51	106	110	36	56	56	1.41	1.91	35
Oranges, fresh or dried	80	89	11	154	167	8	.52	.53	3
Apples, fresh	58	81	41	76	103	35	.76	.79	4
Peaches, fresh	46	53	17	50	59	19	.92	.91	-2
Other	357	454	27	444	576	30	.80	.79	-2
Fruit juices[4]	156	254	63	267	330	24	.59	.77	31
Orange juice[4]	83	140	69	155	193	24	.53	.72	36
Other	73	115	56	111	137	23	.66	.84	27
Wine[4]	41	89	119	32	48	50	1.28	1.87	46
Nuts and preparations	128	173	35	72	97	34	1.77	1.79	1

See notes at end of table.

Continued—

Appendix table 1—Selected U.S. agricultural exports to Canada, 1991-93 versus 2001-03—Continued

Commodities	Value			Volume			Unit value		
	1991-93	2001-03	Change	1991-93	2001-03	Change	1991-93	2001-03	Change
	U.S. million dollars		*Percent*	*Thousand metric tons*		*Percent*	*U.S. dollars per kilogram*		*Percent*
Vegetables and preparations	1,067	1,766	66	—	—	—	—	—	—
Lettuce, fresh	109	184	69	254	312	23	0.43	0.59	37
Tomatoes, fresh	114	118	3	137	132	-4	.83	.89	8
Potatoes, fresh[5]	62	86	38	179	253	41	.35	.34	-2
Carrots, fresh	26	77	203	71	133	86	.36	.58	63
Peppers, fresh	45	71	58	69	69	0	.65	1.03	57
Tomato sauces, other than ketchup	36	67	88	35	81	135	1.03	.82	-20
Onions and shallots, fresh	42	60	42	103	146	41	.41	.41	0
Broccoli, fresh	41	51	23	72	73	1	.57	.70	22
Other	592	1,052	78	—	—	—	—	—	—
Oilseeds and products	322	774	141	961	2,394	149	.33	.32	-3
Soybean meal	151	217	43	625	1,042	67	.24	.21	-14
Soybeans	37	142	282	154	638	316	.24	.22	-8
Rapeseed	8	58	661	29	228	694	.26	.25	-4
Other	125	357	185	154	486	216	.82	.74	-10
Cotton, excluding linters	60	95	57	37	61	64	1.61	1.54	-4
Essential oils	46	217	373	4	16	313	11.50	13.17	15
Mixtures of odoriferous substances for use in food and beverage industry	33	197	490	3	15	441	12.34	13.46	9
Other	12	20	61	1	2	43	9.72	10.92	12
Seeds, field and garden	67	116	74	39	92	140	1.73	1.25	-28
Sugar and tropical products	400	794	98	—	—	—	—	—	—
Coffee and coffee products	69	188	174	16	46	197	4.41	4.07	-8
Chocolate and preparations	95	202	112	35	76	119	2.75	2.67	-3
Confections, sweetmeats, and other sugar confections without cocoa	61	126	106	30	58	95	2.08	2.19	6
Cocoa	27	78	192	11	30	175	2.45	2.59	6
Other	149	200	35	—	—	—	—	—	—
Nursery and greenhouse products	109	139	27	—	—	—	—	—	—
Beverages, excluding juices and wine	111	177	60	—	—	—	—	—	—
Other	38	68	81	—	—	—	—	—	—

[1]Volume is measured in head, and unit value is measured in dollars per head.
[2]Excludes canned pasta and stuffed pasta.
[3]Excludes products derived from potato starch.
[4]Volume is measured in millions of liters, and unit value is measured in dollars per liter.
[5]Excludes seed potatoes.
Source: USDA/ERS (December 2004).

Appendix table 2—Selected U.S. agricultural imports from Canada, 1991-93 versus 2001-03

Commodities	Value			Volume			Unit value		
	1991-93	2001-03	Change	1991-93	2001-03	Change	1991-93	2001-03	Change
	U.S. million dollars		*Percent*	*Thousand metric tons*		*Percent*	*U.S. dollars per kilogram*		*Percent*
Total	4,046	10,166	151	—	—	—	—	—	—
Animals and animal products	1,784	3,677	106	—	—	—	—	—	—
Beef and veal	283	1,020	260	121	334	176	2.34	3.06	31
Cattle and calves[1]	802	865	8	1,127	1,168	4	711.50	740.16	4
Pork	368	799	117	177	379	114	2.08	2.11	1
Swine[1]	82	347	322	854	6,172	623	.10	.06	-42
Bovine hides, whole	65	64	-2	—	—	—	—	—	—
Edible offal, tongues, or livers of bovine animals	15	49	221	8	18	138	1.95	2.64	35
Other	168	534	217	—	—	—	—	—	—
Grains and feeds	762	1,997	162	—	—	—	—	—	—
Bread, pastry, cakes, biscuits, and puddings	146	308	110	77	173	123	1.89	1.78	-6
Wheat, excluding seed	154	214	39	1,268	1,559	23	.12	.14	13
Sweet biscuits, waffles, and wafers, not frozen	17	214	1126	8	100	1103	2.10	2.13	2
Oats, unmilled	54	126	134	576	1,072	86	.09	.12	26
Mixes and doughs for preparation of bakers' wares	14	119	741	12	112	826	1.17	1.06	-9
Prepared food from swelling or roasting cereal flakes or products	48	114	138	27	81	199	1.76	1.40	-20
Dog or cat food, retail sale	46	105	128	67	119	80	.69	.88	27
Pasta and noodles[2]	12	65	429	12	46	272	.99	1.40	42
Wheat or meslin flour	13	55	330	46	177	287	.28	.31	11
Other	258	679	164	—	—	—	—	—	—
Fruits and preparations	68	193	185	98	173	76	.69	1.12	62
Vegetables and preparations	281	1,514	439	—	—	—	—	—	—
Potatoes, frozen	54	413	671	99	661	569	.54	.62	15
Tomatoes, fresh	5	190	3379	4	112	2565	1.30	1.70	31
Peppers, fresh	5	75	1328	3	41	1486	2.04	1.84	-10
Potatoes, fresh[3]	33	66	100	189	264	39	.17	.25	44
Soups, broths, and preparations, not dried	4	54	1300	4	40	1023	1.09	1.36	25
Mushrooms, fresh or chilled	3	52	1692	2	20	1042	1.66	2.60	57
Other	177	664	275	—	—	—	—	—	—
Sugar and related products	193	488	152	—	—	—	—	—	—
Confectionery products, retail sale[4]	26	183	607	14	78	455	1.83	2.33	27
Chewing gum	30	98	226	17	34	106	1.81	2.86	58
Other	133	292	119	—	—	—	—	—	—
Cocoa and cocoa products	148	562	281	78	274	250	1.88	2.05	9
Coffee and coffee products	33	111	235	6	26	349	5.76	4.29	-26
Tea	24	55	135	37	49	34	.64	1.12	76

See notes at end of table.

Continued—

Appendix table 2—Selected U.S. agricultural imports from Canada, 1991-93 versus 2001-03—Continued

Commodities	Value			Volume			Unit value		
	1991-93	2001-03	Change	1991-93	2001-03	Change	1991-93	2001-03	Change
	U.S. million dollars		*Percent*	*Thousand metric tons*		*Percent*	*U.S. dollars per kilogram*		*Percent*
Beverages, excluding fruit juices	195	352	81	—	—	—	—	—	—
Beer[5]	148	220	49	262	405	54	0.56	0.54	-4
Other	47	133	179	—	—	—	—	—	—
Oilseeds and products	333	628	89	1,276	2,104	65	.26	.30	14
Rapeseed oil	151	246	63	297	490	65	.51	.50	-1
Rape or colza seed oilcake	67	117	75	520	938	80	.13	.12	-3
Other	116	265	129	458	677	48	.25	.39	55
Seeds, field and garden	50	116	131	74	195	164	.68	.59	-12
Nursery stock, bulbs, etc.	85	300	254	—	—	—	—	—	—
Other	91	172	90	—	—	—	—	—	—

[1]Volume is measured in thousands of head, and unit value is measured in dollars per head.
[2]Excludes stuffed pasta and canned pasta.
[3]Excludes seed potatoes.
[4]Includes products containing peanuts.
[5]Volume is measured in millions of liters, and unit value is measured in dollars per liter.
Source: USDA/ERS (December 2004).

Appendix table 3—Selected U.S. agricultural exports to Mexico, 1991-93 versus 2001-03

Commodities	Value, annual average			Volume, annual average			Unit value for period		
	1991-93	2001-03	Change	1991-93	2001-03	Change	1991-93	2001-03	Change
	U.S. million dollars		*Percent*	*Thousand metric tons*		*Percent*	*U.S. dollars per kilogram*		*Percent*
Total	3,476	7,516	116	—	—	—	—	—	—
Animals and animal products	1,186	2,093	76	—	—	—	—	—	—
Beef and veal	171	583	241	58	192	232	2.95	3.03	3
Beef variety meats	48	253	427	41	140	241	1.17	1.81	54
Pork	68	197	189	32	119	272	2.13	1.65	-22
Turkeys, fresh or frozen	66	108	64	46	93	103	1.43	1.16	-19
Chickens, fresh or frozen	68	100	46	74	164	122	.92	.61	-34
Nonfat dry milk	55	91	66	33	54	63	1.67	1.70	2
Bovine hides, whole	110	76	-31	—	—	—	—	—	—
Tallow, inedible	41	76	86	113	216	91	.36	.35	-3
Pork variety meats	46	72	57	62	86	38	.74	.84	13
Cattle and calves[1]	115	67	-42	179	91	-49	642.46	735.01	14
Other	398	470	18	—	—	—	—	—	—
Grains and feeds	896	2,107	135	6,507	14,849	128	.14	.14	3
Corn	104	600	477	914	5,499	502	.11	.11	-4
Sorghum	427	417	-2	3,949	3,997	1	.11	.10	-3
Wheat, unmilled	78	337	332	563	2,351	318	.14	.14	3
Cracked corn	13	171	1,213	68	1,111	1,534	.19	.15	-20
Dog or cat food, for retail sale	5	119	2,275	6	143	2,285	.83	.83	0
Rice	42	108	158	175	675	286	.24	.16	-33
Other	227	356	57	832	1,073	29	.27	.33	22
Fruits and preparations, excluding juice	81	245	203	143	376	163	.57	.65	15
Apples, fresh	34	91	168	68	157	131	.50	.58	16
Other	47	154	228	75	219	192	.63	.70	12
Vegetables and preparations	150	586	291	—	—	—	—	—	—
Soups, broths, and preparations thereof, dried	15	199	1,223	7	72	923	2.13	2.76	29
Other	135	387	187	—	—	—	—	—	—
Oilseeds and products	633	1,293	104	2,489	5,273	112	.25	.25	-4
Soybeans	400	843	111	718	4,014	459	.56	.21	-62
Soybean meal	68	95	40	313	451	44	.22	.21	-3
Soybean oil	13	72	457	27	151	458	.48	.48	0
Other	152	283	86	1,431	657	-54	.11	.43	305
Cotton, excluding linters	117	406	247	87	358	311	1.34	1.14	-16
Essential oils	21	47	126	2	5	125	10.39	10.43	0
Seeds, field and garden	109	226	107	181	379	109	.60	.60	-1
Sugar and tropical products	155	257	66	—	—	—	—	—	—
Chocolate and preparations	47	126	169	16	43	169	2.91	2.91	0
Other	108	131	21	—	—	—	—	—	—

See notes at end of table.

Continued—

Appendix table 3—Selected U.S. agricultural exports to Mexico, 1991-93 versus 2001-03—Continued

Commodities	Value, annual average			Volume, annual average			Unit value for period		
	1991-93	2001-03	Change	1991-93	2001-03	Change	1991-93	2001-03	Change
	U.S. million dollars		*Percent*	*Thousand metric tons*		*Percent*	*U.S. dollars per kilogram*		*Percent*
Beverages, excluding juices and wine	51	74	45	—	—	—	—	—	—
Beer[2]	12	47	279	22	76	240	0.55	0.62	12
Other	39	27	-30	—	—	—	—	—	—
Other	77	180	135	—	—	—	—	—	—

[1]Volume is measured in thousands of head, and unit value is measured in dollars per head.
[2]Volume is measured in millions of liters, and unit value is measured in dollars per liter.
Source: USDA/ERS (December 2004).

Appendix table 4—Selected U.S. agricultural imports from Mexico, 1991-93 versus 2001-03

Commodities	Value, annual average			Volume, annual average			Unit value for period		
	1991-93	2001-03	Change	1991-93	2001-03	Change	1991-93	2001-03	Change
	U.S. million dollars		*Percent*	*Thousand metric tons*		*Percent*	*U.S. dollars per kilogram*		*Percent*
Total	2,542	5,695	124	—	—	—	—	—	—
Coffee and coffee products	279	173	-38	182	112	-38	1.53	1.55	1
Cocoa and cocoa products	20	59	196	14	39	179	1.43	1.52	6
Animals and animal products	408	480	18	—	—	—	—	—	—
Cattle and calves[1]	377	393	4	1,104	1,062	-4	341.49	370.19	8
Other	31	87	182	—	—	—	—	—	—
Grains and feeds	51	223	337	—	—	—	—	—	—
Biscuits and wafers[2]	16	109	588	11	65	503	1.46	1.66	14
Other	35	115	225	—	—	—	—	—	—
Fruits and preparations	322	816	153	586	1,150	96	.55	.71	29
Grapes, fresh	59	202	243	40	244	509	1.48	.83	-44
Mangoes, fresh[3]	63	91	44	80	165	106	.79	.55	-30
Limes, fresh	20	67	230	87	206	138	.23	.32	39
Watermelons, fresh	18	57	215	89	194	118	.20	.29	44
Strawberries, fresh	15	51	243	12	37	209	1.25	1.39	11
Avocados	1	36	3482	1	25	4366	1.81	1.45	-20
Other	147	348	137	278	305	9	.53	1.14	117
Nuts and preparations	55	69	26	17	38	116	3.16	1.85	-42
Pecans	53	58	9	14	26	84	3.78	2.24	-41
Other	2	11	530	3	12	250	.54	.98	80
Vegetables and preparations	923	2,157	134	—	—	—	—	—	—
Tomatoes, fresh	229	599	162	312	729	134	.73	.82	12
Peppers, fresh	120	341	184	124	319	157	.97	1.07	10
Cucumbers, fresh	73	185	154	179	334	87	.41	.56	36
Squash, fresh	60	158	164	83	183	121	.72	.86	20
Onions, fresh	92	118	28	178	170	-5	.52	.70	35
Broccoli, frozen	89	109	22	133	140	5	.67	.78	16
Asparagus, fresh	29	68	135	21	37	76	1.38	1.84	34
Other	231	579	150	—	—	—	—	—	—
Sugar and related products	35	259	641	—	—	—	—	—	—
Confectionery products	23	173	654	15	120	700	1.53	1.44	-6
Sugar, cane or beet	1	48	4706	3	115	3731	.33	.42	25
Other	11	38	244	—	—	—	—	—	—
Beverages, excluding fruit juices	170	1,160	582	—	—	—	—	—	—
Beer[4]	145	983	578	179	1,125	528	.81	.87	8
Carbonated soft drinks[4]	15	94	527	19	161	746	.79	.59	-26
Other	10	83	727	—	—	—	—	—	—
Other	385	589	53	—	—	—	—	—	—

[1]Volume is measured in thousands of head, and unit value is measured in dollars per head.
[2]Includes sweet biscuits, waffles, wafers, pastries, cake, and bread, among other products.
[3]Data for 1991-92 also include guavas and mangosteens.
[4]Volume is measured in millions of liters, and unit value is measured in dollars per liter.
Source: USDA/ERS (December 2004).

Appendix table 5—Foreign direct investment within the NAFTA region's food industry

Origin/destination	Food and kindred products					Food industry				
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
	U.S. million dollars									
U.S. direct investment in Canada	4,021	4,498	4,265	4,649	4,985	3,693	3,431	3,421	3,404	4,253
U.S. direct investment in Mexico	2,660	2,929	3,579	4,484	4,723	1,281	1,427	1,250	929	1,671
Canadian direct investment in the U.S.	5,877	7,199	7,764	10,087	6,684	1,088	1,405	984	1,014	1,081
Mexican direct investment `in the U.S.	(D)	(D)	(D)	306	1,092	1,060	1,058	1,102	1,073	(D)

Note: Kindred products refers primarily to beverages.
(D) = Suppressed in order to avoid disclosure of data of individual companies.
Source: USDC/BEA (December 2004a and b).