5

Agriculture

The NAFTA agreement on agricultural trade consists of three bilateral agreements—between the United States and Mexico, the United States and Canada, and Canada and Mexico. The US-Canada agreement largely carried into NAFTA the tariff and nontariff barrier rules that had been adopted in the Canada-US Free Trade Agreement (CUSFTA). Under the CUSFTA, most agricultural tariffs between the United States and Canada were to be phased out by January 1998, and NAFTA adopted this schedule. However, Canada was allowed to maintain permanent tariff rate quotas (TRQs) on imports of dairy products, poultry, and eggs from the United States,[1] and the United States was allowed to maintain TRQs on imports of sugar, dairy products, and peanuts from Canada (appendix table 5A.1).[2] Although a tariff snapback provision remains in effect until 2008, Canada has rarely used

1. Under NAFTA, the overquota tariffs for products subject to a TRQ regime are the lower of either the existing tariff rate when NAFTA took effect or the current most-favored nation (MFN) rate. In-quota imports are charged the more favorable NAFTA tariff. Under NAFTA's TRQ arrangement, the members must gradually expand each quota while gradually eliminating the associated overquota tariff during the transition period. See USDA (2002a).

2. The TRQ system does not cover agricultural products subject to special safeguards (Article 703). Special safeguards apply only to Canada-Mexico and US-Mexico trade but not to Canada-US trade. When a special safeguard is applied, tariffs on goods listed in Annex 703.3 may be raised to higher levels if imports reach the quota levels specified in the tariff schedules. A NAFTA country, however, cannot simultaneously apply a safeguard against a good listed in Article 703 and invoke Chapter 8 emergency action on that good. Mexico, for example, uses special safeguards on imports of live swine, pork, potato products, fresh apples, and coffee extract. The United States applies special safeguards on selected horticultural crops. Sensitive agricultural commodities subject to Canadian special safeguards include fresh cut flowers, tomatoes, onions, cucumbers, broccoli, cauliflower, and frozen strawberries. See USDA (2002a).

Box 5.1 Support for NAFTA, by major agricultural interest groups, 1993

Favoring liberalization	Against liberalization
American Farm Bureau Federation	National Farmers' Union
The National Grange	American Corn Growers Association
American Soybean Association	National Association of Wheat Growers
National Corn Growers Association	National Peanut Council of America
US Feed Grains Council	Southwest Peanut Growers
National Cattlemen's Association	Florida Sugar Cane League
National Pork Producers Council	US Beet Sugar Association
National Milk Producers Federation	Florida Citrus Mutual
The Agribusiness Council, Inc.	Florida Fruit and Vegetable Association
Sweetener Users Association	Western Growers
Food Marketing Institute	United Food and Commercial Workers (AFL-CIO)

Source: Orden (1994).

it. Virtually the same restrictions limited agricultural trade between Mexico and Canada. As might be expected, some agricultural trade associations favored NAFTA while others opposed it. Box 5.1 summarizes the lineup of important trade associations.

In contrast to the US-Canada agreement, Mexico and the United States took far-reaching steps toward complete liberalization of agricultural trade. The ultimate goal of their bilateral agreement was to eliminate all import quotas and tariffs—with no exceptions. Liberalization was not, however, implemented on a rapid schedule, and the phaseout terms for sensitive products were often backloaded. Mexican tariffs on corn and dry beans were subject to a 15-year phaseout period, and the United States insisted on similar transition periods for tariffs on winter vegetables, orange juice, peanuts, and sugar (USDA 2002a). Appendix table 5A.1 gives duty rates on US-Mexico agricultural trade as of 2003, and box 5.2 summarizes the phaseout arrangements. Given these restraints, in 2000, just nine commodities—some of them minor agricultural products—represented 55 percent of the value of US-Mexico agricultural trade: beer,[3] coffee, tomatoes, cattle, peppers, cucumbers, grapes, cauliflower, and broccoli.

Mexican agriculture is passing through a familiar phase in the history of industrialization. As countries become richer, agriculture inevitably plays a smaller role in the economy and employs a smaller share of the

3. Beer, of course, represents a highly processed agricultural product, and the issues surrounding trade in beer (and other alcoholic beverages) are very different from those surrounding primary agricultural products. Since alcoholic beverage trade now faces few barriers in North America, beer issues are not discussed in this chapter.

Box 5.2 Timeline of NAFTA tariff phaseouts

January 1994	Elimination of Mexican tariffs on US sorghum, certain citrus fruit, fresh strawberries, and seasonal tariffs on oranges
	Elimination of US tariffs on Mexican corn, sorghum, barley, soymeal, apples, pears, peaches, fresh strawberries, beef, pork, and poultry, and of seasonal tariffs on oranges
January 1998	Elimination of leftover CUSFTA tariffs
	Completion of US-Mexico four-year transition period
	Elimination of Mexican tariffs on US pears, plums, and apricots
	Elimination of US tariffs on Mexican nondurum wheat, soy oil, and cotton, and of seasonal tariffs on oranges
January 2002	Elimination of Canadian agricultural tariffs on Mexican fish, meat, sugar, flour, dairy, and beer[1]
January 2003	Completion of US-Mexico nine-year transition period
	Elimination of Mexican tariffs on US wheat, barley, rice, dairy, soybean meal and soy oil, poultry, peaches, apples, frozen strawberries, hogs, pork, cotton, and tobacco, and of seasonal tariffs on oranges
	Elimination of US tariffs on Mexican durum wheat, rice, limes, winter vegetables, dairy products, and frozen strawberries
October 2007	Elimination of US-Mexico sugar tariffs
January 2008	Completion of US-Mexico 14-year transition period
	Elimination of US tariffs on Mexican frozen concentrated orange juice, winter vegetables, and peanuts
	Elimination of Mexican tariffs on corn and dry beans

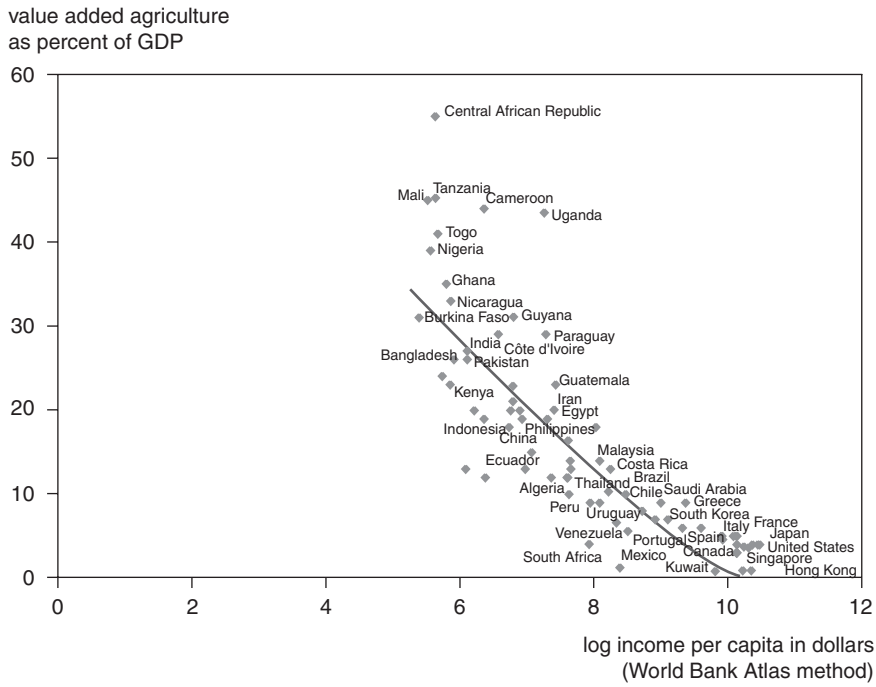
1. Specifically refers to the following agricultural commodities by 2-digit Harmonized Tariff Schedule (HTS) code: fish and crustaceans (HTS 3); edible preparations of meat, fish, crustaceans, molluscs, or other aquatic invertebrates (HTS 16); sugars and sugar confectionery (HTS 17); and preparations of cereals, flour, starch or milk, and bakers' wares (HTS 19).

Note: Under NAFTA, traditional Mexican licensing requirements were converted to tariffs or tariff rate quotas (TRQs). As an example, in January 2003, Mexican quotas that were converted to tariffs covered wheat, tobacco, cheese, milk, and grapes (seasonal basis).

Source: US Department of Agriculture, Economic Research Service.

workforce. In figure 5.1, a cross-country regression covering about 76 countries illustrates how a 1 percent increase in income per capita is associated with a reduction in agriculture value added as a share of GDP by about 0.6 percentage points. Time-series analysis tells the same story. Just as the agricultural sector in advanced economies accounted for a declining share of GDP in the first half of the 20th century as income per capita increased, the agricultural share of GDP in South Korea declined from

Figure 5.1 Agriculture and income in selected countries, 2000



y = –55.2Ln(x) + 127.7
t-statistic = –12.55
R^2 = 0.71

Note: The sample consists of 76 countries, both early and late growers.

Source: World Bank, *World Development Indicators* (2003).

about 25 percent in 1970 to 5 percent in 2000. Mexico will be following the same path for at least the next two decades. Agricultural production has been increasingly centered on large-scale farms, factory-type livestock lots, and capital-intensive food processing, putting pressure on small-scale farms, particularly on subsistence household farmers in Mexico.

Overview of Agricultural Trade in NAFTA

Trade and Agriculture

Media reports on NAFTA and agriculture tend to highlight the negative:[4] small farmers driven from the land, huge income disparities within the

4. See, for example, "Controversial Study Says NAFTA Has Little Direct Impact on Problems of Mexican Agriculture Sector," *SourceMex Economic News*, April 14, 2004; "US Consumer Group Report: NAFTA Has Hurt Farm Sector," *Reuters*, June 26, 2001; and "Agriculture Can Take No More: Demands Reconsideration of NAFTA," *Corporate Mexico*, March 3, 2003.

agricultural sector, trade barriers not reduced on schedule, and sanitary and phytosanitary (SPS) disputes. In response, much of this chapter dwells on agricultural problems rather than achievements. Stepping back from the litany of real and imagined agricultural woes, however, it is important to emphasize that agricultural trade has clearly prospered in the NAFTA era.

US agricultural exports to NAFTA partners increased by 93 percent during 1993–2003, while total US exports to the world expanded by only 39 percent (appendix table 5A.2). In 1993, the share of US agricultural exports to Canada and Mexico represented only 12 and 8 percent, respectively, of US agricultural exports to world markets. By 2003, US agricultural exports to Canada and Mexico increased to 16 and 13 percent, respectively, of US agricultural exports to the world (table 5A.2).

Between 1993 and 2003, US agricultural exports to NAFTA partners increased by very large percentages in key agricultural products: oilseeds (130 percent), grains and feeds (128 percent), vegetables and preparations (90 percent), and animals and animal products (69 percent). North America has become an increasingly important market for US agricultural exporters. Canada is now the largest importer of US agricultural goods, displacing Japan in 2002. Mexico surpassed the European Union as an export market for US agriculture in 2000 (Vollrath 2004). Similarly, between 1993 and 2003, Canadian and Mexican agricultural exports to the United States also increased significantly: beverages excluding fruit juices (319 percent), sugar and related products (244 percent), vegetables and preparations (197 percent), fruit and preparations (196 percent), fresh cut flowers (1,885 percent), and grains and feeds (131 percent) (table 5A.2).

Canadian and Mexican agricultural trade with the rest of the world expanded less rapidly than that with the United States (table 5A.2). For example, the average annual growth rate of US agricultural exports to Canada under NAFTA is 5.1 percent, while that for the rest of the world is only 1 percent (Myles and Cahoon 2004). During 1993–2003, Canadian and Mexican agricultural exports to world markets (excluding the United States) increased 52 percent compared with agricultural exports to the United States, which increased by 125 percent.[5] The United States thus remains a key market for Canadian and Mexican agricultural goods.[6] US agricultural imports from Canada and Mexico increased from $7.4 billion

5. Canadian and Mexican agricultural exports to the world (excluding the United States) are calculated based on total Canadian and Mexican agricultural world exports minus their exports to the United States. See UNCTAD's statistical database, 2003; and USDA Foreign Agricultural Service (FATUS) database, 2003.

6. Canadian agrifood exports to the United States increased from $6.8 billion in 1993 to $13.3 billion in 2003; total Canadian agrifood exports to the world increased from $12.2 billion to $20.5 billion in the same period. Similarly, Mexican agrifood exports to the United States increased from $2.4 billion in 1993 to $7.9 billion in 2003 while total agrifood exports to the world increased from $3.6 billion in 1993 to $9.3 billion in 2003. See Statistics Canada, Canada Trade Online, 2004; UN Food and Agriculture Organization FAOSTAT database, 2004; and USDA (2004c).

in 1993 to $16.6 billion in 2003; Canadian and Mexican agricultural imports from the United States increased from about $9 billion in 1993 to $17.2 billion in 2003.[7]

US agricultural exports to Mexico increased from $3.6 billion in 1993 to $7.9 billion in 2003. US agricultural imports from Mexico likewise increased from $2.7 billion in 1993 to $6.3 billion in 2003. US agricultural trade with Mexico thus doubled between 1993 and 2003 (table 5A.2). US agricultural exports to Mexico sharply increased during 1993–2003 in fruit juices (175 percent), vegetables and preparations (267 percent), and grains and feeds (149 percent). Meanwhile, Mexican exports sharply expanded in sugar and related products (595 percent), beverages excluding fruit juices (584 percent), and grains and feeds (328 percent). Mexican horticultural exports to the United States, a large-volume category, increased by nearly 100 percent from $1.8 billion in 1993 to $3.5 billion in 2003.[8]

The expansion of US-Mexico agricultural trade in basic products accompanied the growth of foreign direct investment (FDI) in high-value processed foods. US FDI stock in the Mexican food processing industry more than doubled from $2.3 billion in 1993 to $5.7 billion in 2000. US FDI is concentrated in high-value products such as pasta, confectionery, and canned and frozen meats.

Canada's agricultural exports to Mexico represented only a small share of Canada's total food and agrifood product exports. Nonetheless, since 1993, Canadian agricultural exports to Mexico have increased by 149 percent, from $300 million in 1993 to $746 million in 2003 (table 5.1).[9] Six key agricultural products represent 88 percent of total Canadian agrifood exports to Mexico: meat, dairy, lentils, canary and canola seeds, wheat, and beer.

Sharp trade and investment gains in the NAFTA era do not mean that the agricultural sector, particularly in Mexico, has not had adjustment problems. In the aggregate, however, static and dynamic gains from expanded trade under NAFTA auspices probably exceed the adjustment costs within Mexico by a factor of five or higher. Estimates for the United States indicate that GDP gains from globalization amount to about 10 percent of GDP and exceed adjustment costs by a ratio of 20 to one (Bradford, Grieco, and Hufbauer 2005). William Cline (2004) concludes that an increase in the ratio of merchandise trade to GDP by 10 percentage points ultimately raises the GDP of a representative developing country by about

7. See USDA Foreign Agricultural Service (FATUS) database, 2003; and Canada House of Commons (2002).

8. As NAFTA has eliminated tariffs, SPS restrictions have become the trade barrier of choice in the horticultural sector. NAFTA avoided harmonizing SPS standards. Instead, each NAFTA country reserves the right to determine its own standards necessary to protect consumers from unsafe products or to protect domestic livestock and crops from invasive pests and diseases.

9. Canada's agrifood product imports from Mexico increased by 60 percent, from $255 million in 1999 to $409 million in 2003 (AAFC 2002b).

Table 5.1 Canadian agricultural trade with Mexico, 1993–2003 (millions of US dollars)

Year	Canadian exports to Mexico	Canadian imports from Mexico	Canadian trade balance
1993	300.0	136.0	164.0
1994	386.6	160.0	226.6
1995	316.9	197.2	119.7
1996	432.3	230.5	201.8
1997	396.3	255.2	141.1
1998	543.2	266.6	276.6
1999	534.3	254.2	280.1
2000	664.0	268.3	395.7
2001	785.8	282.4	503.4
2002	702.8	301.6	401.2
2003	745.8	409.0	336.8

Sources: SECOFI, Mexico's Ministry of Economy, 2003–04, Sistema de Información Empresarial Mexicano, www.secofi-siem.gob.mx/portalsiem (accessed in June 2003); Statistics Canada, Agriculture Economics Statistics, 2004; and Canadian Embassy in Mexico City.

5 percentage points. During the post-NAFTA era, Mexico's trade ratio has increased about 18 percentage points (IMF *International Financial Statistics Yearbook 2004*), indicating potential GDP gains of about 9 percentage points. Since agriculture contributed only 4 percent of Mexican GDP in 2003 (World Bank *World Development Report 2005*), it seems fairly certain that national gains to Mexico from trade liberalization will ultimately swamp income losses in the agricultural sector.

Nevertheless, the adjustment costs are both real and painful, particularly to affected farms and communities. At market prices, value added by Mexican agriculture dropped from around $32 billion in 1993 to around $25 billion in 2003 (World Bank's *World Development Report 1995* and *2005*). Over the same period, the number of Mexicans employed in rural agriculture declined from 8.1 million to 6.8 million.[10]

10. As an illustration of the adjustment burden, Mexican hog farms have attracted considerable notice. See, for example, Ginger Thompson, "NAFTA to Open Floodgates, Engulfing Rural Mexico," *New York Times*, December 19, 2002. According to an advocacy calculation by the Mexico Hog Farmers Association, a third of the 18,000 swine producers in Mexico will be forced out of business by the elimination of tariffs in January 2003. While no estimates have been published since the tariffs were removed, US pork and live swine exports to Mexico have soared. In response, Mexico has applied antidumping (AD) duties on US live swine exports and initiated AD investigations into US exports of various ham and pork products. See Anne Fitzgerald, "Mexico Goes Whole Hog for US Pork," *The Des Moines Register,* September 19, 2004; and "Mexico Lifts Duties on Live Swine, Keeps AD Investigation on US Pork," *Inside US Trade*, May 23, 2003.

Domestic Agricultural Policies

United States

In 1996, the United States enacted the landmark Federal Agriculture Improvement and Reform Act, also known as the Freedom to Farm Act. The Act attempted to gradually eliminate many traditional agricultural subsidies and decouple support payments from farm prices. Direct income payments were supposed to be phased out over seven years (1996–2002), and price supports and supply management programs were to be gradually eliminated.[11] The schedule for reduced income payments and price supports was based on optimistic predictions of future prices and expanded world markets. Not only were the price and market assumptions underlying the projections of the Freedom to Farm Act too rosy but also successive droughts and floods prompted Congress to pass a series of supplemental relief bills in the late 1990s that sharply increased US farm subsidies. Recent studies estimate that the Freedom to Farm Act programs and supplemental relief cost US consumers and taxpayers at least $19 billion annually in the late 1990s (Gardner 2000).

After several years of "emergency aid," the United States returned to a more permanent version of its erstwhile subsidy system. In May 2002, Congress enacted the Farm Security and Rural Investment Act (Farm Act of 2002), which will govern federal farm programs through 2007. The Farm Act provides income support for wheat, feed grains, upland cotton, rice, and oilseeds through three programs: direct payments, countercyclical payments, and marketing loans (table 5.2).[12] The US government also supports domestic producers through generous "loan" rates at which stocks can be forfeited to the Commodity Credit Corporation.[13] While

11. Under the Freedom to Farm Act, income support was given to eligible producers of wheat, feed grains, upland cotton, and rice during 1996–2002. The Act eliminated the Acreage Reduction Program, gradually reduced dairy price supports, and modified US peanut and sugar programs. However, the proposed Freedom to Farm Act budget, starting at $6 billion per year and then supposedly declining, frequently was supplemented due to falling agricultural commodity prices and aid after natural disasters. See Burfisher, Robinson, and Thierfelder (1998); and presentation by Dale Hathaway at the North American Committee Conference on Agriculture, Washington, March 21, 2003.

12. The 2002 Farm Act capped individual farmer subsidies at $360,000, but this limit is widely abused as farmers create legal entities with interests in the same land, each entitled to a payment. See "Harvesting Poverty: Welfare Reform for Farmers," *New York Times*, November 10, 2003.

13. The Commodity Credit Corporation is a government-owned institution, established to promote US agriculture. See David Orden's testimony before the US Committee on Agriculture, Nutrition, and Forestry, "Is It Time for Domestic Sugar Policy Reform?," July 26, 2000. See also LMC International (2003).

Table 5.2 Direct US and Canadian agricultural government payments, 2003 (millions of dollars)

Program	Preliminary forecast
United States	
Total direct payments[a]	17,380
Marketing loan gains[b]	712
Production flexibility contracts[c]	–300
Direct payments	7,702
Countercyclical payments	1,895
Loan deficiency payments	615
Compensation payment to peanut quota holders	250
National dairy market loss payments	900
Conservation[d]	2,286
Emergency assistance[e]	3,300
Miscellaneous[f]	20
Total	34,760
Canada	
Gross Revenue Insurance Plan	n.a.
Net Income Stabilization Account	518
Income disaster assistance	315
Western Grain Stabilization	n.a.
Provincial stabilization	510
Tripartite payments	n.a.
Crop insurance	1,222
Dairy subsidy	n.a.
Other	843
Total rebates reducing expenses	70
Total	3,477

n.a. = not available

a. This category includes only those funds paid directly to farmers within the calendar year.
b. In publications before May 2001, marketing loan gains were included in cash receipts rather than in government payments.
c. The enactment of the Farm Act 2002 terminated the authority for production flexibility payments.
d. This category includes all conservation programs. In publications before July 2003, this category included only payments to the Conservation Reserve Program, Agricultural Conservation Program, Emergency Conservation Program, and Great Plains Program.
e. This category includes all programs providing disaster and emergency assistance payments to growers. In publications before July 2003, this category included only emergency assistance payments attributed to supplemental legislation.
f. Miscellaneous programs and provisions vary from year to year. In publications before July 2003, this category included some program payments that are now considered either as conservation or ad hoc and emergency.

Sources: USDA (2004a); Statistics Canada, Agriculture Economics Statistics, 2004.

recent studies conclude that the 2002 Farm Act will have only a small incremental impact on world prices beyond the effects of the 1996 Freedom to Farm Act, high US wheat and corn subsidies draw considerable ire from NAFTA and other US trading partners.[14]

Under the 2002 Farm Act, the United States continued its export subsidies through the Export Enhancement Program (EEP). Until June 1995, 80 percent of EEP aid was allocated to wheat products. Between 1995 and 2002, the United States gradually phased out the EEP, replacing it with various export subsidy programs that helped US wheat producers stay competitive in third-country markets.[15] US dairy producers benefited from export subsidies under the Dairy Export Incentive Program, though the payments were only a modest $32 million in fiscal 2003.[16] Besides EEP and the dairy program, the United States operates huge "food aid" programs. In particular, the GSM-102 program provides $4.6 billion to support agricultural exports (including wheat) to third-country markets. The GSM-102 program is part of the Export Credit Guarantee Program (GSM-102 and GSM-103) that promotes wheat and other agricultural exports. The annual budget for this program totaled $5.7 billion in 2002.[17] Some portion of these funds confers benefits akin to export subsidies and will likely be phased out under the terms of a prospective World Trade Organization (WTO) accord on agriculture under negotiation in the Doha Round.

As a concession to its trading partners in the course of Uruguay Round negotiations, the United States withdrew its Section 22 waiver, which was adopted in 1955 and which allowed the United States to impose quotas

14. Studies estimate the 2002 Farm Act will have relatively small output effects, causing world prices to decline between 1.5 and 6 percent depending on the commodity. See Hathaway (2003). In particular, the extension of US export subsidies and country-of-origin label requirements were unpopular in Mexico and Canada, respectively. See Anson et al. (2003).

15. The US government maintains official allocations for wheat and grains under EEP but has not disbursed any of those funds since 1995. Currently, EEP funds only a few agricultural commodities: frozen poultry, table eggs, and vegetable oil. Interview with Debbie Seidband, policy analyst, USDA Foreign Agricultural Service, Grain and Feed Division, March 5, 2003.

16. Under the 2002 Farm Act, the US government established a new dairy payment program, the Dairy Market Loss Payments. The program supports the income of small dairy producers by providing countercyclical payments as an incentive to increase production at the margin. Despite high tariff rates on overquota imports into Canada, US exports of dairy and dairy-containing products to Canada have more than tripled from $75.9 million in 1994 to $254.6 million in 2002. See Orden (2003) and Myles and Cahoon (2004).

17. Other export subsidy programs include the Supplier Credit Guarantee Program and the Facility Guarantee Program. Details about the breakdown of funding for wheat exports under the GSM-102 federal program are not available. However, in 2002, GSM-102 registrations totaled $3 billion for exports to 11 countries and six regions. See USDA (2002d).

on imports that might undercut domestic support programs.[18] Without recourse to Section 22, the United States has found it more difficult to limit wheat imports from Canada—the main source of bilateral agriculture friction.

Canada

In 1991, Canada enacted the Farm Income Protection Act, which provided subsidies for grains and oilseeds through a voluntary insurance program organized and partly financed by the federal and provincial governments (table 5.2).[19] While subsidized exports from the United States and Mexico to world agricultural markets have increased recently, Canadian subsidized exports to world markets declined from 37 percent in 1995 to zero percent in 1998 (OECD 2000, 2003; Qualman and Wiebe 2002). In other words, so far as Canada is concerned, overt agricultural export subsidies are largely a thing of the past.[20]

According to the Organization for Economic Cooperation and Development (OECD), Canada's aggregate measure of support (AMS) has declined because of several policy reforms, including the elimination of internal transportation subsidies for western grains provided under the Western Grain Stabilization Act and phaseout of the Gross Revenue In-

18. Section 22 authority is based on the Agricultural Adjustment Act (1933), which allows the US government to impose fees or quotas on agricultural imports that threaten any USDA commodity stabilization program. After the Uruguay Round Agreement on Agriculture (1995), the United States agreed that Section 22 restrictions could be imposed only on imports from non-WTO countries. As a result, the United States can levy quantitative trade restrictions only on a WTO member as part of a Section 201 safeguard measure.

19. The Farm Income Protection Act provides crop loss protection through a production guarantee and reinsurance agreement. The production guarantee is based on a producer's probable yield: If current production falls below the farmer's production history, he will be eligible for an indemnity. The reinsurance agreement allows the federal government to provide additional funding to provinces when indemnities exceed accumulated premium reserves due to severe crop losses. See Alston, Gray, and Sumner (2000) and AAFC (2003b).

20. Only a fraction of US government export credits ($5.5 billion under the Export Credit Guarantee Program) can be classified as export subsidies. Nevertheless, by comparison with recent Canadian government funding for agricultural exports (totaling $33 million), the US government provides very substantial assistance. See BNA (2003a). However, the WTO Appellate Body *Dairy* ruling, in December 2002, determined that the Canadian Commercial Export Milk Program was in fact an export subsidy that violated WTO obligations. Both Canada and the European Union worry that the Appellate Body *Dairy* decision creates a new and higher standard, based on a comparison between export prices and the average cost of production, which makes it difficult for countries to prove that agricultural exports are not subsidized. Similarly, the recent WTO ruling in *Subsidies on Upland Cotton* characterized US export credit guarantee programs that benefit agricultural commodities as export subsidies in part. The exact measurement of export subsidies is being negotiated within the current WTO Doha Round talks. For a detailed analysis of US export credit guarantee programs, see Hanrahan (2004) and WTO (2004a).

Table 5.3 Average annual farm support by country/region
(producer support estimates)

Country/period	PSE in billions of dollars	Percent PSE	Producer NPC
Canada			
1986–88	5.7	34	1.40
2001–03	4.7	19	1.13
Mexico			
1986–88	–0.3	–1	0.91
2001–03	7.3	21	1.20
United States			
1986–88	41.8	25	1.19
2001–03	44.2	20	1.12
European Union			
1986–88	93.7	42	1.87
2001–03	101.7	35	1.34
OECD			
1986–88	238.9	38	1.58
2001–03	238.3	31	1.31

PSE = producer support estimate
NPC = nominal protection coefficient
OECD = Organization for Economic Cooperation and Development

Note: The table shows average PSE over the given period. PSE measures the annual monetary value of gross transfers from consumers and taxpayers to agricultural producers. The percentage PSE is the ratio of the PSE to the value of total gross farm receipts, measured by the value of total production (at farm gate prices), plus budgetary support. NPC measures the nominal rate of protection for consumers using the ratio between the average price paid by consumers (at farm gate) and the border price of imports, before tariffs or other restrictions.

Source: OECD, *OECD Agricultural Policies 2004: At a Glance.*

surance Program (OECD 2000, 61). The Canadian federal government also slashed federal spending on agriculture from $6.1 billion in 1991–92 to about $3.3 billion in 2001–02.[21] As a consequence, during the period between 1986–88 and 2001–03, Canada's producer support estimate declined by about 18 percent (table 5.3).

Nevertheless, domestic measures still ensure high internal prices for selected commodities. The Canadian government supports poultry, dairy, and eggs through supply management programs based on a combination of production and import quotas designed to maintain farm prices (especially in Quebec) at high levels. Moreover, Canada charters state trading enterprises that handle import and export sales. The most controversial is the Canadian Wheat Board (CWB), discussed further below.

21. See Agriculture and Agri-Food Canada (AAFC), *Farm Income, Financial Conditions, and Government Assistance Data Book*, 2004; and Qualman and Wiebe (2002).

Mexico

Following its accession to the General Agreement on Tariffs and Trade (GATT) in 1986, Mexico lowered its tariff protection and converted most import quotas to tariffs.[22] While Mexico maintained import quotas on some staple food products, notably corn, beans, and dry milk, it reduced subsidies for corn and wheat millers and eliminated most retail food price controls by 1991.[23] The government also revised Mexican land-tenure laws to permit greater flexibility in owning, selling, and renting land.

The Mexican government continues, however, to support its domestic sugar industry. In recent years, Mexico's public development bank, Financiera Nacional Azucarera SA (FINASA), is estimated to have provided over $1.3 billion of loans on very easy terms to the Mexican sugar industry.[24]

In anticipation of joining NAFTA, Mexico established in 1993 its Program of Direct Support for the Countryside (Programa de Apoyos Directos para el Campo, or Procampo). Procampo provided income support to farmers, over a 15-year transitional period, through hectare-based direct payments to producers.[25] Partly due to budget austerity following the peso crisis, government expenditure on Procampo steadily declined from $1.4 billion in 1994 to just over $1 billion in 1998. The number of agricultural producers who benefited from Procampo also declined by 14 percent, from 3.29 million in 1994 to 2.95 million in 1998.[26] To complement Pro-

22. After eliminating import licenses in 1988, Mexico imposed tariffs on 67 agricultural products, including milk powder, sugar, beans, wheat, barley, corn, coffee, animal fats, meat, and edible offal. See WTO (1997, 2003).

23. Although Mexico's market price support for agricultural staples such as corn declined slightly, output payments as a share of total producer support increased from zero to 5 percent during 1985–2001. During 1998–99 alone, the market price support was equivalent to 18 percent of total production value of barley, corn, rice, sorghum, soybeans, and wheat. Prices Mexican farmers received were on average 17 percent higher than the world market, though well below the OECD average. See OECD's *Agricultural Policies in OECD Countries*, 1998–2002.

24. The government of Mexico maintains other programs, including a 1997 sugar policy that penalized producers who sold sugar in the domestic market, encouraging Mexican producers to export sugar abroad. See Haley and Suarez (1999).

25. To increase support for small farmers, the minimum Procampo rate was paid on one hectare for all farmers, including those who farm less than one hectare. In 2000, Procampo payments accounted for more than 75 percent of payments under publicly funded policies that are regarded as minimally trade-distorting. Procampo was a decoupled program that substituted for previous direct price supports for farmers growing barley, beans, corn, cotton, rice, sorghum, soy, sunflower, and wheat. In 2002, expenditure on Procampo accounted for only 1.2 percent of public spending. See OECD's *Agricultural Policies in OECD Countries*, 1998–2002.

26. If inflation is taken into account, Procampo government payments declined in real terms from about $100 per hectare to less than $62 per hectare. Some critics argue that 85 percent of Procampo funding benefits large-scale farmers in the north. See Taylor (2003). See also Hugh Dellios, "10 Years Later: NAFTA Harvests a Stunted Crop," *Chicago Tribune*, December 14, 2003, A1.

campo, Mexico created its Alliance for the Countryside program (Alianza para el Campo, or Alianza) in 1995 to improve agricultural productivity with modern equipment and technology. In 2002, Alianza provided $903 million to 4.3 million producers.[27] A third program, Produce Capitaliza, provides infrastructure and extension-type assistance and support to livestock producers for upgrading pastures. Counting all three subsidy programs, together with recent protective measures (discussed below), Mexico has significantly augmented its support programs since the late 1990s.[28] However, there remains a huge disparity in subsidy levels between the United States and Mexico. During 1998–2000, for example, average US subsidies given to each agricultural producer amounted to $20,803 per year; the comparable Mexican figure was an average $720 for each producer.[29] Of course the disparity reflects the fact that on average, US firms are large, run like modern business firms, whereas Mexican firms are small, operated as family enterprises. Relative to farm sales, the level of public subsidies is about the same in both countries. During 2001–03, annual average US farm support measured in producer support estimate terms reached $44.2 billion, about 20 percent of gross farm receipts; the comparable Mexican figure was $7.3 billion, or 21 percent of gross farm receipts (table 5.3).

Until 2002, agricultural trade disputes were addressed only under NAFTA Chapters 19 and 20. This changed when, in January 2002, US Corn Products International filed a Chapter 11 claim against the Mexican government's decision to impose a tax on high fructose corn syrup (HFCS). In addition to the HFCS case, another active agriculture case was initiated under Chapter 19, concerning the final antidumping (AD) duty determination by Mexico on US exports of bovine carcasses.[30] As of January 2004,

27. Alianza provides payments to first-hand buyers of wheat, corn, and sorghum in certain Mexican states. Other Alianza-based initiatives include liquid fertilization irrigation systems, quality seeds, livestock genetics and management practices, mechanization, and training programs. See USDA (2002a) and Larre, Guichard, and Vourc'h (2003).

28. Mexico's overall direct agricultural support, as measured by the OECD producer support estimate, increased from $4.5 billion in 1999 to $6 billion in 2000. Under pressure from the farm lobby and with the prospect of mid-term congressional elections in June 2003, the Mexican government provided an additional $1.3 billion in agricultural subsidies and protection. (This figure includes new import barriers on agricultural goods, especially US exports of apples and chicken parts.) See Larre, Guichard, and Vourc'h (2003) and OECD (2003). See also David Luhnow, "Of Corn, NAFTA, and Zapata," *Wall Street Journal*, March 5, 2003, A13.

29. See Sarmiento (2003) and "NAFTA Crisis Worsens," *Latin American Economic and Business Report*, February 11, 2003. See also David Luhnow, "Of Corn, NAFTA, and Zapata," *The Wall Street Journal*, March 5, 2003, A13.

30. While the US-Mexico HFCS dispute under Chapter 19 was settled in June 2002 (MEX-USA-98-1904-01), it was reopened under Chapter 11 by US Corn Products International. Parallel to the NAFTA dispute settlement process, the United States also brought the HFCS case against Mexico under the WTO in 1998. Other agricultural product disputes initiated under

most agricultural cases have been brought under Chapter 20. In fact, a total of 8 out of 10 cases proceeding in the framework of Chapter 20 are either directly or indirectly related to agriculture.[31] The two active agriculture cases under Chapter 20 panels concern US TRQs on tomato imports and sugar. A few agricultural disputes have been headed off through government or industry negotiations (Burfisher, Norman, and Schwartz 2002). Six key agricultural commodities in US-Mexico trade—sugar, meat (pork/beef/chicken), corn, beans, tomatoes, and avocadoes—that might eventually be addressed within the NAFTA dispute settlement mechanism are analyzed below.[32]

US-Canada Wheat Dispute

Types of Wheat Involved

Canadian wheat exports to the United States are small compared with total US wheat production. However, wheat exports to US and world markets are very important to Canada given its limited domestic market (table 5.4). Two types of wheat dominate the US wheat import menu: hard red spring wheat, which represents 73 percent of total US wheat imports, and durum wheat, which accounts for 23 percent (USITC 2001). A key difference between hard red spring and durum wheat products is their degree of substitutability for other wheat varieties. Durum wheat, used mainly for producing pasta, has few close substitutes. Hard red spring wheat, used to make breads and other baked goods, has important close substitutes, notably hard red winter wheat.[33]

Domestic US concerns are correlated with the growth of wheat imports from Canada. In 2003, Canada was the single largest supplier of hard red spring wheat, accounting for 93 percent of US imports of that type of wheat, and practically the only supplier of durum wheat to the United

Chapter 19 include apples (CDA-94-1904-01, CDA-95-1904-01), sows and boars (USA-94-1904-01), beer (CDA-95-1904-01), sugar (CDA-95-1904-04), prepared baby food products (CDA-USA-98-1904-01), cattle (USA-CDA-99-1904-06, USA-CDA-99-1904-07), bovine carcasses (MEX-USA-2000-1904-02, MEX-USA-2002-1904-01), and tomatoes (USA-CDA-2002-1904-04, USA-CDA-2002-1904-06). See appendix tables 4A.4 and 4A.5 in chapter 4 on NAFTA dispute settlement.

31. While only three Chapter 20 panels have been initiated, we assign several other disputes to the framework of Chapter 20, prior to the panel stage. See appendix 4A.3 in chapter 4 on NAFTA dispute settlement.

32. Trade disputes over avocadoes have partly been resolved through negotiated agreements. As a result, Mexican avocado exports have increased steadily under NAFTA. See "Free Trade on Trial," *The Economist*, December 30, 2003. We thank Tim Josling for this observation.

33. Hard red spring wheat is also comparatively higher in protein and gluten content than durum wheat.

Table 5.4 Volume of durum wheat exports by principal exporters, 1994–2003 (millions of tons, percent of world exports in parentheses)

Year	Canada	United States	European Union	Others	Total
1994–95	4.0 (58.7)	1.0 (14.5)	1.6 (23.0)	.3 (3.8)	6.9 (100)
1995–96	3.2 (62.0)	.8 (15.9)	.2 (4.5)	.9 (17.6)	5.2 (100)
1996–97	4.1 (65.4)	1.0 (16.7)	.4 (6.4)	.7 (11.4)	6.3 (100)
1997–98	4.2 (58.9)	1.2 (16.2)	.3 (4.0)	1.5 (20.9)	7.2 (100)
1998–99	3.9 (63.3)	1.0 (16.9)	.3 (4.7)	.9 (15.1)	6.1 (100)
1999–2000	3.6 (57.5)	.9 (14.9)	.3 (4.7)	1.4 (22.8)	6.2 (100)
2000–01	3.5 (52.2)	1.2 (17.6)	.7 (10.1)	1.3 (20.1)	6.7 (100)
2001–02	3.6 (49.7)	1.2 (16.8)	.6 (8.1)	1.9 (25.4)	7.3 (100)
2002–03[a]	3.0 (45.2)	1.0 (15.1)	1.3 (19.8)	1.3 (19.9)	6.6 (100)

a. Data for 2002–03 are preliminary.

Note: Data include semolina.

Sources: Statistics Canada, Agriculture Economics Statistics, 2004; USDA (2004b); and Canadian Wheat Board statistical tables 2003–04.

States, representing nearly 90 percent of total US wheat imports. During 1993–2003, US imports of Canadian hard red spring wheat increased steadily from over 1 million metric tons to nearly 2 million metric tons in 2001 but declined to 779,000 metric tons in 2003 on account of adverse weather.[34] Similarly, imports of Canadian durum wheat rose to 595,000 metric tons in 2002 but declined sharply to 40,000 metric tons in 2003 (tables 5.5 and 5.6).[35]

34. Widespread drought in western Canada in 2002–03 was the primary reason for declining production and exports of Canadian hard red spring wheat. In fact, drought and poor harvest weather in three of the world's largest wheat exporters (Australia, Canada, and the United States) created opportunities for nontraditional exporters, including Russia and Ukraine. See CWB (2003) and Vocke and Allen (2005).

35. North Dakota is the main US producing state, accounting for 47 percent of US hard red spring wheat production and 81 percent of US durum wheat production. Montana is the other key wheat producer, accounting for 22 percent of US hard red spring wheat production and 9 percent of US durum wheat production. See USDA (2002e).

Competition for Third-Country Markets

The United States remains the world's leading wheat exporter, with foreign sales averaging about $3.5 billion, representing about 24 percent of total world exports during 1998–2002.[36] Over the same period, Canada was also a major wheat exporter, with exports averaging $2.4 billion, accounting for about 16 percent of total world exports. Canada is a particularly keen competitor of the United States in wheat sales to developing countries. Anecdotes suggest the strength of Canadian competition. Between 1991 and 1996, for example, Moroccan imports of US wheat declined from over 60 percent of total Moroccan wheat imports to less than 20 percent; meanwhile, Moroccan imports of Canadian wheat increased from close to zero to about 20 percent of the market.[37] Faced with such episodes, the US wheat industry, led by the North Dakota Wheat Commission, has raised alarms over declining US wheat exports to eight key developing-country markets: Algeria, Brazil, Colombia, Guatemala, Peru, Philippines, South Africa, and Venezuela (table 5.7).

Wheat Industry Concerns about Pricing

The CWB handles about 18 percent of the world wheat and barley trade.[38] The United States claims that CWB export pricing practices lack transparency.[39] Of course the same can be said of the pricing practices of large private grain companies. Both private companies and state trading enterprises, like the CWB, deliberately keep their transaction prices a secret to facilitate price discrimination between customers. The key question is whether state trading enterprises should be held to a higher standard than large private grain traders. If the answer is "yes," then the United States has grounds to complain. If the answer is "no," then the complaint loses force. The main rationale for "yes" is that state trading enterprises implement public policy while also operating as commercial firms. The inherent dilemma is that the government policy component cannot be easily sepa-

36. These data are based on USDA Foreign Agricultural Service (FATUS) database, 2004; and UN Food and Agriculture Organization FAOSTAT database, 2004.

37. See "North Dakota Files Section 301 to Lure Canada to Negotiating Table," *Inside US Trade*, September 15, 2000.

38. Data are based on Statistics Canada database, www.statcan.ca(accessed in May 2004); conversation with Sergio Novelli, market analyst at Agriculture and Agri-Food Canada, April 2003; and Edward Alden and Ken Warn, "US Seeks to Dismantle Canada Wheat Sales," *Financial Times*, December 18, 2002.

39. The CWB "posted" wheat prices are based on export deals that have already been negotiated. The CWB uses the Minneapolis Grain Exchange for guidance to establish its own prices. See Gardner (2000). See also "Wheat Industry Letter," *Inside US Trade*, March 30, 2001.

Table 5.5 US hard red spring wheat trade with NAFTA partners, 1993–2003 (volume in thousands of metric tons and value in millions of dollars)

	1993		1994		1995		1996		1997	
Country	**Volume**	**Value**	**Volume**	**Value**	**Volume**	**Value**	**Volume**	**Value**	**Volume**	**Value**
US exports to										
Canada	26	4	3	1	14	3	78	17	75	13
Mexico	952	132	623	91	753	139	1,513	319	1,031	171
NAFTA subtotal	978	136	626	92	767	142	1,591	336	1,106	185
Total world (including NAFTA)	34,516	4,490	29,329	3,820	31,303	5,230	30,105	6,084	24,425	3,911
US imports from										
Canada	1,289	142	2,110	226	1,188	170	1,061	191	1,783	272
Mexico	0	0	0	0	0	0	0	0	0	0
NAFTA subtotal	1,289	142	2,110	226	1,188	170	1,061	191	1,783	272
Total world (including NAFTA)	1,295	143	2,141	230	1,207	172	1,064	192	1,784	273

Note: Data are based on hard red spring wheat by HTS code 1001.90.

Source: USDA Foreign Agricultural Service (FATUS) database, 2004.

rated from the commercial component (Sumner 1999). A pragmatic solution is to adopt transparent pricing practices, which would enable competitors to make an informed guess about the public policy component.[40]

Nearly all Canadian farmers sell their wheat and barley for export through the CWB. Based on what little is known about CWB pricing practices, the CWB initially compensates farmers about 70 to 75 percent of the expected final return for grain. The balance is paid after sales are consummated. As a "single-desk seller," the CWB does not have to worry about competition from other Canadian grain trading firms.[41] The "sin-

40. The August 2004 WTO Council Declaration agreed to put the question of disciplines on export sales of state trading enterprises like the CWB on the agenda of the Doha Round. A recent WTO ruling, however, dismissed US claims against the CWB, weakening the case for including state trading enterprises under new export subsidy disciplines. In particular, the Appellate Body rejected US claims that the CWB violates GATT Article 17.1, which requires state trading enterprises to offer other WTO member companies the opportunity to compete for purchases and sales. The Appellate Body determined that under Article 17.1, the CWB can use its "special privileges" to export wheat as long it is done "solely in accordance with commercial considerations" and "in a manner consistent with the general principles of nondiscriminatory treatment." The Appellate Body then upheld the panel ruling that Article 17 applies only to companies seeking to buy from or sell to a state trading enterprise and not to buy or sell in competition with such an enterprise, as the United States had claimed. See Pruzin, Yerkey, and Menyasz (2004); and WTO (2004b).

41. The CWB uses any surplus revenue to finance price reductions for selected customers (or markets). See Carter and Loyns (1996, 1998).

1998		1999		2000		2001		2002		2003	
Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value
12	2	7	1	22	3	38	6	8	2	22	4
1,500	204	1,823	215	1,795	205	2,128	269	2,324	351	2,509	380
1,511	206	1,830	216	1,816	209	2,165	275	2,332	353	2,531	383
25,536	3,465	27,381	3,406	26,072	3,155	24,381	3,184	23,380	3,476	24,139	3,736
1,564	205	1,570	187	1,561	185	1,636	211	1,200	161	779	104
14	1	0	0	0	0	0	0	0	0	0	0
1,578	206	1,570	187	1,561	185	1,636	211	1,200	161	779	104
1,579	207	1,571	187	1,562	185	1,637	211	1,311	173	836	110

gle desk" feature may have other significant advantages, but these are debated.[42]

State Trading Enterprises and the CWB

The wheat dispute in NAFTA is unique because of the different marketing systems and political influence of key wheat producers in the United States and Canada. Private farmers are the base of wheat production in both countries, but marketing systems differ. In the United States, large private grain companies, such as Cargill and Bunge, buy most of the crop and sell wheat around the world.[43] In Canada, the CWB acquires virtually

42. The CWB's ability to extract a premium on wheat sales is the most debated issue. Some studies argue that since the CWB is most active in markets where price counts more than quality, Canadian grain has been priced competitively but not necessarily at a CWB price premium. See Kraft, Furtan, and Tyrchniewicz (1996) and Carter and Loyns (1998). See also GAO (1998).

43. According to a recent USITC report, Cargill and Continental each own a 29 percent share of US grain storage capacity; Archer Daniels Midland is the third largest company with a 28 percent share. Four large US firms account for 47 percent of US wheat exports. Private firms are gaining importance in the Canadian industry as well. Two US companies own 70 percent of Canadian milling capacity. Among Canadian pasta plants, for example, 90 percent are foreign-owned, of which 67 percent are owned by US investors. See USITC (2001) and Qualman and Wiebe (2002).

Table 5.6 US durum wheat trade with NAFTA partners, 1993–2003
(volume in thousands of metric tons and value in millions of dollars)

	1993		1994		1995		1996		1997	
Country	**Volume**	**Value**	**Volume**	**Value**	**Volume**	**Value**	**Volume**	**Value**	**Volume**	**Value**
US exports to										
Canada	0	0	14	2	4	1	0	0	0	0
Mexico	23	4	3	1	58	9	47	7	36	4
NAFTA subtotal	23	4	17	3	62	10	47	8	36	4
Total world (including NAFTA)	1,232	189	1,209	235	1,143	234	995	212	1,454	285
US imports from										
Canada	513	70	376	55	313	66	250	56	433	86
Mexico	0	0	0	0	0	0	0	0	0	0
NAFTA subtotal	0	70	376	55	313	66	250	56	433	86
Total world (including NAFTA)	513	70	376	55	313	66	250	56	433	86

Note: Data are based on durum wheat by HTS code 1001.10.

Source: USDA Foreign Agricultural Service (FATUS) database, 2004.

all wheat and barley, and (like its private competitors) sells on a global basis.[44] As a crown corporation, the CWB enjoys special privileges:[45]

- Financing is guaranteed by the Canadian government, which compensates for any shortfalls in sales revenue from wheat or barley.
- The government of Canada also guarantees certain export credit sales of the CWB.[46]
- The CWB can borrow money at favorable interest rates.[47]

44. Three commissioners appointed by the Canadian government manage the CWB. The only province that does not operate through the CWB is Ontario, which established its own marketing board controlled independently by farmers. However, most of Ontario's exports are soft wheat and represent only 5 percent of total Canadian wheat exports. See Carter and Loyns (1998) and GAO (1998).

45. Crown corporations are companies designated by the government of Canada to administer and manage public services.

46. Government expenditure for wheat and barley operations decreased from $3.2 billion in 1990 to $922 million in 1996 but then increased to reach $1.2 billion in 2003. See GAO (1998) and Treasury Board of Canada Secretariat's Web site, www.tbs-sct.gc.ca/est-pre/p2_0304e.asp (accessed October 2004).

47. The CWB control over transportation and merchandising are additional factors in Canada's competitive trade policy. Under the Wheat Access Facilitation Program (1990), the CWB controls 1,100 primary elevators that handle US wheat exports to Canada.

1998		1999		2000		2001		2002		2003	
Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value
0	0	10	2	2	0	14	2	6	1	2	0
96	11	23	3	18	3	72	9	81	13	145	22
96	11	34	5	20	3	86	12	87	14	147	23
1,320	225	1,214	191	1,647	219	1,354	190	876	154	1,099	199
427	77	644	86	291	43	437	67	595	91	40	8
0	0	0	0	10	1	25	3	10	1	36	5
427	77	644	86	301	44	462	71	605	93	75	13
427	77	644	86	301	44	462	71	605	93	75	13

The CWB's influence on the Canadian wheat industry is evidenced by its control over the "middleman sector" between producers (farmers) and users (millers or foreign buyers). The US wheat industry's middleman sector comprises several producer cooperatives and small and large grain trading firms. By contrast, Canada's middleman sector is based on the CWB producer pool system, which amounts to a monopoly over the marketing of western Canadian wheat.[48] In turn, the CWB has created a network of accredited exporters, who act as marketing agents.[49] In 1998,

48. Under the producer pool system, the CWB has the flexibility to market over long periods. The US government argues that a pooling system makes it difficult for end users of wheat to manage their risk because they are prevented from selling surplus wheat stocks except to the CWB. The CWB sets initial prices for four marketing pools at the beginning of the crop year; the Canadian government guarantees the pools. The CWB-controlled pool system has proven costly. In January 2003, the Saskatchewan Wheat Pool nearly filed for bankruptcy with debt reaching $191 million. In June 2002, the Canadian House of Commons recommended that grain farmers be free from obligations to sell all of their wheat and barley crops to the CWB. See "Saskatchewan Wheat Pool in Financial Crisis," Canadian Broadcasting Corporation, January 31, 2003, www.cbc.ca (accessed in March 2003); and "Canadian Committee Recommends Change to Wheat Board Operation," *Inside US Trade*, June 21, 2002.

49. Accredited exporters are Canadian grain companies, Canadian subsidiaries of international grain companies, or other international grain companies. They are instrumental in allowing the CWB to sell into markets that previously depended on centralized buyers but now have many private companies sourcing grain. While they may sell grain to many customers, they have to buy Canadian grain solely from the CWB. Conversation with Brenda Brindle, general manager, Alberta Grain Commission, March 2003; and Martin, Mayer, and Bouma (2002).

Table 5.7 Comparison of US and Canadian wheat exports to third-country markets
(thousands of tons)

Country	1997–98	2002–03
US exports to		
Algeria	197	244
Brazil	—	570
China	323	202
Colombia	405	734
Japan	3,204	3,038
Morocco	488	153
Peru	208	566
Philippines	913	1,438
South Africa	133	181
Turkey	260	0
Venezuela	558	618
Canadian exports to		
Algeria	2,314	734
Brazil	621	170
China	1,331	177
Colombia	597	273
Japan	1,449	1,088
Morocco	368	311
Peru	636	148
Philippines	411	515
South Africa	257	n.a.
Turkey	216	118
Venezuela	600	228

— = less than 500 metric tons
n.a. = not available

Sources: USITC (2001); USDA (2004b); Canadian Grain Commission (2003); and UN Comtrade database, 2004.

the CWB estimated that accredited exporters made 30 percent of its sales.[50]

The primary means for US wheat producers to sell their wheat directly to the Canadian market is through the Canadian Wheat Access Facilitation Program. On paper, this program allows US wheat producers to negotiate sales contracts with prospective Canadian buyers on price, quantity, and delivery of wheat. Private companies participating in the program include Agricore, Pioneer, Cargill Limited, and Louis Dreyfus.[51] However, according to US wheat producers, the reality is that the pro-

50. While historical figures on exports of accredited exporters are not available, it is widely believed that values have grown significantly over the past 10 years. According to Bruce Gardner (2000), the CWB negotiates each export deal, and wheat transaction prices are closely held secrets.

51. See the Canadian Grain Commission's Web site at www.grainscanada.gc.ca (accessed in January 2003).

gram entails excessive regulation, making it costly for Canadian elevator operators to buy US grain through the program.[52]

Differences between Canada and the United States dominate NAFTA wheat disputes.[53] The crux of the current wheat dispute centers on different government policies and marketing strategies used by Canada and the United States. After the CUSFTA was implemented in 1989, all wheat trade barriers were eliminated, causing a surge in US imports of Canadian wheat. The US Congress then requested the US International Trade Commission (USITC) to investigate the "conditions of competition" between Canadian and US durum wheat. The USITC determined that the CWB had not sold durum wheat below its acquisition cost. In the terminology of trade remedy law, Canadian durum wheat sales were neither dumped nor subsidized.

Following this decision, the United States requested a binational panel under CUSFTA Chapter 18; the panel's final decision in 1993 concurred with the USITC determination.[54] The binational panel determined there was "no compelling evidence" of CWB dumping but suggested that a bilateral working group be established to audit the CWB. Audits of sales during 1989–92 revealed that only three durum wheat contracts out of 105 were sold below acquisition price, thereby violating the CUSFTA (GAO 1998).

In 1994, yet another USITC investigation in the wheat dispute led to a three-way split decision. The final negotiated settlement, also referenced

52. In a recent USITC survey, major US wheat exporters complained that exports to Canadian mill elevators are "difficult, burdensome, and infrequent." An example of successful bilateral efforts to facilitate wheat trade is the US-Canada in-transit program (1999), which uses Canadian railroads to ship US grains through Canada to final destinations in the United States. See Paddock, Destorel, and Short (2000).

53. Mexico is the third largest export destination for both Canadian and US wheat producers (Mexico imports about a third of its wheat needs). Recently, US wheat producers edged ahead of their Canadian competitors in Mexico's wheat market. In 2001, US wheat exports (3 million bushels) to Mexico were twice those of Canada. Under NAFTA, Canada has no restrictions on imports of Mexican wheat, but the United States imposes a declining schedule of tariff rates on durum wheat. Mexican nondurum wheat exports to the United States are tariff-free, but Mexican durum wheat exports face declining US tariffs starting at 0.77 cents per kilogram. Mexico phased out its wheat tariffs on US and Canadian wheat exports from 15 percent in 1994 to zero in 2004. See USDA *World Agricultural Supply and Demand Estimates Report on Grains* (March 2003) and Canadian Grain Commission (2003). See also NAFTA Provisions, Chapter 7a on Agriculture, available at www.sice.oas.org/summary/nafta/nafta7a. asp (accessed in May 2003).

54. The CUSFTA binational panel used the definition of "acquisition cost" provided by Ann Veneman, USDA deputy secretary, and Clayton Yeutter, US Trade Representative. Both officials defined "acquisition cost" as the CWB's initial payment. In 1988, when Veneman and Yeutter testified before the US House Subcommittee on Trade and the Senate Finance Committee, respectively, both officials confirmed that the CWB only made initial payments, and the measure of Canadian "acquisition cost" should not include final payments made after the crop is marketed. See Carter and Loyns (1998); see also the final report of the CUSFTA binational panel decision on "The Interpretation of and Canada's Compliance with Article 701.3 with Respect to Durum Wheat Sales," CDA-92-1807-01, February 8, 1993, available at www.nafta-sec-alena.org/app/DocRepository/1/Dispute/english/FTA_Chapter_18/Canada/cc92010e.pdf (accessed in September 2004).

as the US-Canada Memorandum of Understanding on Grains, joined a Canadian agreement to limit wheat exports with a US decision not to pursue the wheat dispute under GATT.[55] But the memorandum of understanding was short-lived: In September 1995, the agreement was dropped due to pressure from US wheat interests, which believed they could profit more from selling wheat at market prices.[56]

One Unsuccessful Answer: The Export Enhancement Program

Canadian wheat exports to the United States increased significantly after the Canadian government eliminated freight subsidies for overseas sales in 1995. Taking into account higher transpacific freight charges, the net returns from shipping to the US market exceeded the net returns from shipping to Asian or Latin American markets. Just as freight subsidies arguably subsidized Canadian wheat exports, the US EEP, established in 1983, arguably subsidized US wheat exports. Designed to counter unfair foreign trading practices in world agricultural markets, the EEP provided cash bonuses to US wheat exporters.[57] But the EEP boomeranged: It encouraged Canada to maintain its own agricultural export subsidies for wheat, further depressing world wheat prices and making the net returns from Canadian wheat exports to the US market still more attractive.[58]

The Current US-Canada Wheat Dispute

The US-Canada wheat dispute heated up in March 2003, when the United States filed formal charges against the CWB in the WTO.[59] The United

55. The memorandum of understanding was instrumental in creating a one-year TRQ that limited access to wheat imports at the lower NAFTA tariff levels. When this "peace clause" ended in September 1995, the US government announced it would closely monitor Canadian grain exports to the United States. See USDA (2000).

56. US wheat interests believed that market prices would exceed US-Canada memorandum of understanding prices. See Alston, Gray, and Sumner (2000).

57. Since mid-1995, rising world prices and the Uruguay Round Agreement on Agriculture have prevented the United States from using the EEP to support wheat exports. In any event, according to Gardner (2000), the EEP was never large enough to achieve significant gains in US wheat exports. See also Hanrahan (2004).

58. Consequently, in 1998, August Schumacher, former undersecretary of agriculture for farm and foreign agricultural services, stated that reviving the EEP for wheat exports would not raise farmgate prices. Instead, the EEP could lead to outcomes that are "only marginally helpful or even detrimental to American farmers." See "USDA Fends Off Pressure to Reactivate EEP Despite Falling Prices," *Inside US Trade*, July 10, 1998.

59. On March 7, 2003, the United States initiated a request to establish a WTO panel regarding Canadian wheat exports. Canada has so far not initiated a case against US wheat exports under either NAFTA or WTO dispute settlement mechanisms. See "US Request For Wheat Board Panel Blocked, US Faces Panel on Cotton," *Inside US Trade*, March 21, 2003.

States contended that as a consequence of the CWB's monopoly on certain grain sales, the CWB engages in unfair price discrimination, and that the CWB itself receives direct and indirect government subsidies. Specifically, the US government raised the following arguments:

- The CWB practices "discriminatory" trade policies that violate Canada's GATT obligations under Article 17.[60]
- US wheat exports into Canada receive less favorable treatment than like Canadian grain.[61]
- Canada's limits on the revenue that railroads can receive on the shipment of domestic grain constitute a violation of Canada's GATT Article 3 obligations.[62]

In August 2004, the WTO Appellate Body ruled against US claims that the Canadian government violated WTO rules by allowing the CWB to sell wheat on noncommercial terms.[63] While the Appellate Body's final report undermines US efforts to overhaul CWB operations, Canada still faces significant transition problems as ongoing WTO nego-

60. The US government alleges that the CWB is given exclusive rights that conflict with Canada's obligations under GATT Article 17. Article 17, paragraph 1(b) requires state trading enterprises to make sales "solely in accordance with commercial considerations" and to give other WTO members opportunities to compete for such sales. According to the United States, some privileges given by the Canadian government to the CWB include exclusive right to sell western Canadian wheat, government guarantees of the CWB's financial operations, and rights to purchase and export Canadian wheat at prices determined by both the Canadian government and the CWB. For complete details, see "Request for the Establishment of a Panel by the United States," www.wto.org/english/tratop_e/ dispu_e/dispu_e.htm (accessed in April 2003).

61. Under the Canada Grain Act (1970), imported grain must be segregated from domestic Canadian grain throughout the handling system. Even though Canadian elevators are mandated under the joint Wheat Access Facilitation Program (WAFP) to facilitate US wheat exports, US wheat cannot be stored in the same grain elevators. The United States argues that such handling restrictions act as a de facto ban on US wheat exports into Canada through Canadian grain elevators. In response, Canada argues that phytosanitary and varietal registration measures are designed to guarantee the purity of wheat varieties.

62. The United States assumes that removing existing caps on railway freight rates for transporting domestic grain would give US wheat producers better access to the Canadian market.

63. According to the US government, the CWB does not function as a commercial actor because it uses monopoly privileges to undercut prices and gain market share in wheat. While the WTO ruled against US claims that the CWB used "special privileges" to make sales on a noncommercial basis, the WTO did support some US claims. Specifically, the WTO determined that the Canadian grain distribution system and "rail revenue cap" were inconsistent with national treatment obligations. See WTO (2004b).

tiations focus on stronger discipline in the operations of state trading enterprises.[64]

In a separate case, the North Dakota Wheat Commission asked the US government to impose countervailing duties (CVDs) and AD duties up to $500 million on Canadian wheat imports.[65] While the commission could not provide evidence on actual CWB prices, it argued that Canadian exports of durum and hard red spring wheat are suppressing domestic US wheat prices.[66] Moreover, according to US wheat producers, the Canadian government and the CWB provide direct export subsidies on Canadian wheat ranging from 14.7 to 25.5 percent, plus indirect transportation and financial subsidies. Following the USITC's preliminary determination of material injury to domestic wheat farmers, the US Department of Commerce imposed preliminary CVD rates at around 4 percent on Cana-

64. Bob Friesen of the Canadian Farmers Association argues that the CWB is a necessary supply management mechanism that stabilizes rural infrastructure by directly subsidizing Canadian farmers to the extent of about $130 million per year. Bill Kerr of the University of Saskatchewan argues that if the CWB is eliminated, companies like Cargill, which can easily move grains from North Dakota to Canada, and vice versa, could dominate Canada's wheat market. Third parties to the WTO wheat dispute, including Australia, the European Union, and China, concur that the US proposal to limit state trading enterprises puts their countries at a competitive disadvantage compared with countries like the United States that historically have relied on private grain firms. Kerr points out that when the United States succeeded in eliminating Canadian government transportation subsidies, Canadian agricultural exports into the US market actually increased. In other words, revamping the CWB might lead to greater dominance by US marketing firms but more Canadian exports to the United States. Based on Kerr's presentation at the North American Committee Conference on Agriculture, Washington, March 21, 2003. See also Pruzin, Yerkey, and Menyasz (2004); "Appellate Body Rejects US Appeal of WTO Wheat Board Decision," *Inside US Trade,* September 3, 2004; and WTO (2004b).

65. For its part, the North Dakota Wheat Commission filed a Section 301 petition to pressure the USTR to investigate whether the CWB violated a trade agreement. In response to complaints from US wheat producers, the US Department of Commerce and US International Trade Commission launched investigations to determine whether Canadian wheat was dumped or subsidized in the US market. See Steven Chase and Barrie McKenna, "US Targets Wheat Board, Files Challenge at WTO over 'Monopoly,' " *Toronto Globe and Mail*, December 18, 2002; Peter Morton, Tony Seskus, and Ian Jack, "US Moves to Dismantle Wheat Board," *Financial Post*, December 18, 2002; "USA: US Commerce Department Delays Canada Wheat Duty Ruling," *Reuters,* January 31, 2003; Joel Baglole, "The Economy: US-Canada Trade Dispute Erupts over Sales of Wheat," *Wall Street Journal*, October 1, 2002; "North Dakota Files Section 301 to Lure Canada to Negotiating Table," *Inside US Trade*, September 15, 2000; and "Canada May Contest Final US Finding on Wheat in NAFTA Panel," *Inside US Trade*, May 9, 2003.

66. Pressured by North Dakota farmers led by the North Dakota Wheat Commission, the US government initiated a WTO dispute. A preliminary WTO ruling dismissed the US complaint against the CWB but allowed the United States to bring a second panel request if it provided more specific arguments. By August 2005, the US Department of Commerce issued a redetermination that imposed a combined AD and CVDs of 11.4 percent. See "Commerce Launches Cases on Canadian Durum, Hard Spring Wheat," *Inside US Trade*, October 25, 2002. See North Dakota Wheat Commission, "Commerce Department Reaffirms Canadian Subsidization of Wheat Sales to US Market," August 9, 2005.

dian exports of hard red spring and durum wheat products into the United States.[67] In May 2003, it imposed an additional AD duty of 8 percent on Canadian durum wheat and 6 percent on Canadian hard red spring wheat products.[68] Some studies estimate that total US subsidies per ton of wheat are three times higher than Canadian subsidies ($108 subsidies versus $31).[69] However, the fact that the United States subsidizes the same product is no legal defense against a CVD petition.

Wheat Recommendations

While multinational grain companies may resemble state trading enterprises, the Canadian government guarantees CWB loans and covers its losses. WTO negotiations are pointed toward the elimination of "trade-distorting practices with respect to exporting state trading enterprises," according to the August 2004 decision of the WTO General Council. Specifically, the decision targets the elimination of "export subsidies provided to or by them, government financing, and the underwriting of losses." In addition, the "future use of monopoly powers" in state trading enterprises will be the subject of further WTO negotiations.[70]

Given the draft WTO agriculture text, the Canadian government may need to substantially recast how the CWB does business. Our primary recommendation is for Canada to follow the example of the Australian Wheat Board and gradually privatize the CWB.[71] By deregulating the domestic wheat market over a period of up to 10 years, the CWB can move toward a producer-owned company. For example, the Canadian government might provide significant capital funds to set the CWB on the road to privatization.

If reforming the CWB is not feasible, our alternative recommendation is to negotiate a bilateral US-Canada memorandum of understanding that

67. In addition to CVD of 3.94 percent on Canadian durum and hard red spring wheat, the US Commerce Department imposed 8.15 percent AD duties on Canadian durum wheat and 6.12 percent on Canadian hard red spring wheat in May 2003. See BNA (2003d).

68. See "Canadian Wheat Hit with New US Tariffs," Canadian Broadcasting Corporation, May 2, 2003, www.cbc.ca/stories/2003/05/02/wheat_030502 (accessed in May 2003).

69. See Jeffrey Simpson, "The American Way of Trading," *Globe and Mail*, January 22, 2003; and "Commerce Launches Cases on Canadian Durum, Hard Spring Wheat," *Inside US Trade*, October 2002.

70. See the WTO General Council Decision, WT/L/579, Annex A, para. 18, August 2, 2004. www.wto.org/english/tratop_e/dda_e/draft_text_gc_dg_31july04_e.htm (accessed in June 2005).

71. In 1999, the Australian Wheat Board was privatized and is now known as the Australian Wheat Board Limited. The Australian government provided significant funding for the board to reform itself within 10 years and also gave special levies to fund capital assets such as grain storage and handling facilities.

establishes a TRQ for Canadian wheat exports. This memorandum of understanding could resemble the 1994 one. For example, the within-quota limit for Canadian total wheat exports to the United States might be 1.5 million metric tons or a percentage of the US market, whichever is higher, with a sublimit on durum wheat exports. Canadian wheat exports above the limit would be subject to a tariff, say 10 percent. While the memorandum of understanding is in effect, Canadian wheat would not be subject to AD or CVD penalties.

In order for the WTO Doha Round to succeed, the United States, Canada, and the European Union must curtail their amber and blue box supports for agriculture, including wheat. Farm subsidies in the amber box (trade-distorting, such as price supports) and blue box (trade-distorting but with production limits) will need to be sharply reduced, but to some extent the funds may be redirected to the green box (decoupled, nondistorting subsidies, such as income supports). Whatever formula is finally agreed on, it is virtually certain that the Doha Round will *not* altogether eliminate amber and blue box farm subsidies.[72]

Therefore, after the WTO package is concluded, the United States, Canada, and Mexico should take an additional bold step: a NAFTA agreement that after the Doha agreement has been fully implemented, remaining amber and blue box subsidies for wheat will be phased out altogether over an additional 10 years. Each country could choose, if it wished, to cushion the impact on farm values by redirecting the funds to green box supports. Green box supports could, for example, take the form of a contractual acreage payment that declines year to year, scaled to the historic wheat acreage in each farm, whether or not the acreage is planted to wheat in future years. This NAFTA agreement would serve as a valuable example not only for other subsidized crops in North America but also for support programs in Europe and elsewhere. More immediately, it would pave the way for completely free wheat trade within North America.

The Sugar Saga

The United States and Mexico share a long tradition of maintaining artificially high internal sugar prices.[73] Moreover, since 1998, as world sugar prices have declined, government assistance to sugar has increased.

72. For more detailed analysis of the Doha Round negotiations on agriculture, see Josling and Hathaway (2004).

73. Sugar has been a highly protected product for centuries—literally since the regime of Emperor Napoleon Bonaparte. In the interest of space, we pass over the rich history of policy intervention and start our NAFTA account in the 1990s. However, it is worth noting that while the United States and Mexico generously protect their domestic sugar producers, Canada does not.

Among OECD countries, US policies ensure the third highest domestic sugar prices, after the European Union and Japan.[74] But the industrial countries are not alone: Colombia, Mexico, South Africa, and Turkey all maintain domestic sugar prices higher than the United States.[75] Major sugar exporters include Australia, Brazil, China, Colombia, Cuba, the European Union, Guatemala, India, Japan, Mexico, South Africa, Thailand, and Turkey. The fact that several major exporters maintain exceptionally high domestic price levels testifies to the mammoth distortion in sugar production and trade.

While liberalization in sugar trade would be highly desirable, there are good reasons for maintaining high sugar prices as a means of discouraging sugar consumption. Sugar-related illnesses are estimated to kill 300,000 adults annually in the United States. A recent World Health Organization (WHO) and Food and Agriculture Organization (FAO) joint report on diet and nutrition confirmed links between sugar and obesity, diabetes, heart, and dental diseases.[76] Daily consumption of nondiet soda, a popular drink throughout North America and heavy in sugar or HFCS, is closely linked to weight gain and type 2 diabetes.[77] In turn, excessive weight and obesity

74. Average agricultural protection pales in comparison with government support for sugar. During 2001–03, total support to US producers, measured by the producer support estimate, was about 20 percent and remained below the OECD average; support for US sugar producers averaged above 55 percent during the same period. In the European Union, total support for producers in 2001–03 was about 35 percent, higher than the OECD average of 31 percent; support for EU sugar producers was about 55 percent. In Japan, total support was 58 percent, nearly twice the OECD average; support for Japanese sugar producers was 40 percent. See OECD's *OECD Agricultural Policies 2004: At a Glance* and Center for International Economics (2002).

75. According to the USDA, the domestic wholesale price for raw sugar in the United States was 18 cents per pound in 2000, and American businesses that need sugar to make their products pay close to 21 cents per pound. By comparison, the following countries support even higher domestic sugar prices, measured in cents per pound and ranked from highest to lowest: Japan (65.4), European Union (30.4), Turkey (27.9), Mexico (25.6), Colombia (21.1), and South Africa (20.9). The world sugar price is about 7 cents a pound. See LMC International (2003); Haley and Suarez (2000); and the editorial in the *New York Times*, November 29, 2003.

76. According to a 2004 study cosponsored by the US Centers for Disease Control and Prevention (CDC), the United States spends about $75 billion annually on obesity-related illnesses. A recent US CDC study confirmed that obesity-related deaths reached almost 200,000 in 2000. The WHO recommends sugar be restricted to 10 percent of calories consumed. The sugar industry, by contrast, insists a 25 percent sugar intake is safe. See WHO (2003). See also Edward Alden and Neil Buckley, "'Big Sugar' Fights to Maintain the Status Quo," *Financial Times*, February 26, 2004; Fiona Symon, "Cost of Obesity in the US," *Financial Times*, January 22, 2004; and Betsy McKay, "New Doubt Cast on Death Toll from Obesity," *Wall Street Journal*, December 3, 2004, A15.

77. See Rob Stein, "A Regular Soda a Day Boosts Weight Gain," *Washington Post*, August 25, 2004, A1. The longitudinal study on nondiet soda, involving 50,000 US nurses, was conducted with the assistance of the Harvard School of Public Health.

increase a person's risk of cancer.[78] After the WHO published a critical report in 2003, the global sugar and food industries rallied to dilute WHO efforts to combat obesity.[79]

In the short run, sugar demand is highly inelastic, but consumers are probably more responsive to sugar price increases in the long run.[80] Even though there are persuasive health reasons for keeping sugar prices high—and even raising them as a means of discouraging consumption—that does *not* mean that high prices should confer a windfall on sugar producers, the world norm today. It makes no more sense to enrich "Big Sugar" than it would to foster a Tobacco Monopoly or Whisky Trust. Instead, high sugar taxes, used to augment public revenues, should be preferred. That said, we turn to the actual practice of sugar policy under NAFTA.

NAFTA and Sugar

Within NAFTA (as in the world at large) the basic fight is over who gets rich from the high sugar prices that result from multiple means of protection. Since the government does not receive revenues, the contest is between competing producer interests.

North America contains two major sugar producers, the United States and Mexico.[81] The United States is the world's fourth largest sugar producer; Mexico is the seventh largest producer. Both countries extensively protect and support domestic sugar production. The key difference is that for most of the past decade Mexico has been a net sugar exporter, while the United States is a net importer (table 5.8). Over the past five years, US net sugar imports from the world averaged 1.3 million metric tons per

78. See Philip Abelson and Donald Kennedy, "The Obesity Epidemic," *Science,* June 4, 2004.

79. The US sugar lobby is the largest agricultural industry donor to political campaigns, giving more than $20 million to federal politicians since 1990. For details about the political economy of the US sugar industry, see Elliott (2005). In response to the 2003 WHO report, the US Sugar Association claimed the WHO used faulty science and threatened to ask congressional appropriators to challenge future US contributions to the WHO (running at some $400 million annually). See Edward Alden, Neil Buckley, and John Mason, "Sweet Deals: 'Big Sugar' Fights Threats from Free Trade," *Financial Times,* February 27, 2004. We thank Tim Josling for comments on an earlier draft.

80. Tobacco taxes illustrate the potential for limiting sugar consumption through vigorous application of the price mechanism. During 1990–93, when the Canadian government used taxes to double the real price of cigarettes, annual cigarette consumption per capita declined from about 81 packs to 52. Through high sugar prices, a similar decrease in sugar consumption might be achieved. See World Bank (1999).

81. Canada is a minor producer; imports cover almost all of the domestic consumption (see table 5.8).

Table 5.8 World production, supply, and distribution of centrifugal sugar (thousands of metric tons, raw value)

Country/year	Production	Imports	Exports	Domestic consumption[a]
United States[b]				
1992–93	7,111	1,827	389	8,343
1993–94	6,945	1,604	415	8,334
1994–95	7,191	1,664	472	8,470
1995–96	6,686	2,536	327	8,667
1996–97	6,536	2,517	191	8,868
1997–98	7,276	1,962	162	8,903
1998–99	7,597	1,655	209	9,079
1999–2000	8,203	1,484	112	9,318
2000–01	7,956	1,443	128	9,306
2001–02	7,174	1,393	124	8,978
2002–03	7,600	1,554	129	8,864
2003–04	8,070	1,437	145	8,573
Canada				
1992–93	123	1,110	42	1,200
1993–94	123	1,155	43	1,321
1994–95	182	1,090	50	1,158
1995–96	164	1,156	34	1,220
1996–97	157	1,062	19	1,190
1997–98	105	1,056	21	1,235
1998–99	95	1,129	13	1,240
1999–2000	73	1,207	13	1,265
2000–01	121	1,211	13	1,242
2001–02	88	1,239	14	1,254
2002–03	54	1,190	18	1,315
2003–04	98	1,350	157	1,275
Mexico				
1992–93	4,330	78	7	4,217
1993–94	3,823	94	0	4,393
1994–95	4,556	49	235	4,344
1995–96	4,642	234	646	4,343
1996–97	4,818	191	966	4,301
1997–98	5,486	31	1,076	4,391
1998–99	4,982	41	524	4,422
1999–2000	4,979	37	318	4,445
2000–01	5,220	43	155	4,481
2001–02	5,169	52	413	5,004
2002–03	5,229	65	46	5,092
2003–04	5,464	103	66	5,195
North America total				
1992–93	11,564	3,015	438	13,760
1993–94	10,891	2,853	458	14,048
1994–95	11,929	2,803	757	13,972
1995–96	11,492	3,926	1,007	14,230
1996–97	11,511	3,770	1,176	14,359
1997–98	12,867	3,049	1,259	14,529
1998–99	12,674	2,825	746	14,741
1999–2000	13,255	2,728	443	15,028
2000–01	13,297	2,697	296	15,029

(table continues next page)

Table 5.8 World production, supply, and distribution of centrifugal sugar (thousands of metric tons, raw value) *(continued)*

Country/year	Production	Imports	Exports	Domestic consumption[a]
2001–02	12,431	2,684	551	15,236
2002–03	12,883	2,809	193	15,271
2003–04	13,632	2,890	368	15,043
World total[c]				
1992–93	113,237	28,566	28,782	86,101
1993–94	111,015	30,538	29,734	85,849
1994–95	117,517	32,313	30,618	100,762
1995–96	122,568	33,228	34,920	103,073
1996–97	123,108	33,915	37,153	106,918
1997–98	125,265	33,494	37,208	109,265
1998–99	131,112	36,299	37,346	113,576
1999–2000	136,532	36,208	41,448	115,920
2000–01	130,495	38,786	37,686	117,531
2001–02	134,888	37,835	41,228	121,489
2002–03	147,336	39,309	45,724	123,521
2003–04	144,635	37,237	45,107	125,119

a. Domestic consumption reflects changes (not shown) in sugar stocks.
b. The US production, supply, and distribution estimates conform to those released in the World Agricultural Supply and Demand Estimates (WASDE), with the WASDE "miscellaneous" category allocated to domestic consumption. All data are presented on a fiscal year (October-September) basis. The US data include Puerto Rico.
c. Total distribution includes unrecorded imports.

Source: USDA Production, Supply, and Distribution database, 2002–04.

year;[82] Mexico's net exports to the world averaged a little less than 0.2 million tons.

Mexico has high tariffs of 18.33 percent on sugar imports from Canada and 17.31 percent on sugar imports from the United States. The United States has a minimal tariff rate of 0.85 percent on Canadian sugar exports and 1.02 percent on Mexican sugar exports. However, severe quantitative limits buttress US tariffs. By contrast, Canada is a net sugar importer and does not have TRQs or special export programs for sugar products. Canada imports between 85 and 90 percent of its sugar needs at the world market price, and domestic sugar prices move closely in parallel with world prices. Since 2001, Canada has eliminated its import tariffs on sugar imports from Mexico and the United States. As a result, low market prices of Canadian sugar attract US food processing companies, which are starting to relocate and take advantage of Canada's free-market sugar policy.[83] Practically the

82. To put the import figures in perspective, in 2001, US sugar production was 7.2 million metric tons raw value, and the United States imported 1.4 million metric tons. Domestic sugar consumption, taking into account stock drawdowns, reached 9.3 million metric tons. See USDA (2002b), Haley and Suarez (2002), and LMC International (2003).

83. For example, in 2003, Kraft Foods planned to close its Michigan-based Life Savers manufacturing plant and shift production to Montreal. Relocating to Canada is expected to save Kraft about $10 million per year. See "Sweet Subsidy," *Time*, February 25, 2002.

only Canadian concern is the absence of parity with Mexican access to the US refined sugar market, which is a consequence of the absence of US-Canadian agricultural liberalization.[84]

Since NAFTA, Mexico has successfully adapted technology and incentives to boost sugarcane recovery rates. Mexican sugar exports to the United States increased in raw value from an average of 2,000 metric tons per year during 1990–93 to 32,000 metric tons in 1994–2000.[85] Nevertheless, Mexican exports have been held back by the long-standing dispute over the NAFTA side letter agreement on sugar and the sugar-sweetener dispute. Mexican sugar producers want to gain completely free access to the US sugar market, and the US sugar producers want to prevent the projected flood of Mexican sugar into the United States.[86]

Similarly, US sweetener exporters want to gain free access to Mexico's market for soft drink sweeteners (table 5.9). Sweeteners, mainly HFCS, are a sugar substitute.[87] HFCS becomes progressively more popular as domestic policies push up the price of cane and beet sugar. Before January 2002, when the Mexican government imposed an HFCS tax, US sweetener producers successfully exported a small amount of HFCS to Mexico.[88] Since then, US exports of HFCS have dwindled. These sugar and sweetener disputes under NAFTA are direct offshoots of domestic sugar policies.

Domestic Sugar Policies

United States

US sugar policy is based on three mechanisms: loans that support domestic sugar production; TRQs, which restrict foreign sugar imports; and

84. In 1997, Canada's refined sugar exports to the United States were capped at 10,300 tons compared with Mexico's allocation of 27,954 tons. See Canadian Sugar Institute (2003). Both quotas gradually increase over time.

85. Based on US cane and beet sugar imports from Mexico. According to Haley and Suarez (1999) at the USDA, new technologies have led sugarcane recovery rates to rise from 9.08 percent in 1992 to 10.77 percent in 1997. See also Zahniser (2002).

86. Total Mexican sugar exports to the world declined from 1.1 million metric tons raw value in 1998 to 66,000 metric tons in 2004, mainly because of rising Mexican consumption. In the same period, total US sugar exports (which are historically small in absolute terms) declined from 162,000 to 124,000 metric tons. Canada is even less of a sugar exporter than the United States, and Canadian sugar exports declined from 21,000 to 14,000 metric tons in this period. Based on USDA Production, Supply, and Distribution database, November 2003. See Haley and Suarez (2002).

87. Other sugar substitutes include crystalline fructose, and high-intensity low-calorie sweeteners (aspartame).

88. From 1991 to 2001, the value of US exports to Mexico of HFCS and crystalline fructose increased from about $5.3 million (8,634 metric tons) in 1991 to $42 million in 2001 (117,124 metric tons). See Haley and Suarez (2002).

Table 5.9 US high-fructose corn syrup trade with NAFTA partners, 1993–2003 (volume in thousands of metric tons and value in millions of dollars)

	1993		1994		1995		1996		1997	
Country	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value
US exports to										
Canada	50	15.9	17	9.0	25	7.2	23	6.7	66	16.2
Mexico	49	9.4	91	24.6	46	17.5	152	27.6	187	76.3
US imports from										
Canada	224	48.9	165	42.3	96	24.4	149	34.0	140	30.0
Mexico	0	0.1	0	0.0	0	0.0	0	0.0	3	0.9

Note: Data are based on HFCS-42 sweeteners and HFCS-55 syrups (HTS codes 1702.40.0000 and 1702.60.0050).

Source: USDA Foreign Agricultural Service (FATUS) database, 2004.

a reexport program to boost US sugar exports to world markets.[89] The economic cost for maintaining the sugar program is huge. According to the US General Accounting Office (GAO 2000), US sugar programs cost the economy about $900 million annually.[90] US sugar programs indirectly benefit sweetener producers, since artificially high sugar prices encourage the production of HFCS from corn.[91]

The 2002 Farm Act continued the price support loans provided under the 1996 Freedom to Farm Act, with one important difference: The 2002 Farm Act also requires the US Department of Agriculture (USDA) to operate the overall US sugar program at no budget cost to the government.[92] This trick is accomplished by giving the USDA authority to restrict sugar

89. The US government is slowly moving toward more direct income support programs. In August 2000, the USDA implemented the payment-in-kind program to reduce the US government's sugar inventory and lower the potential for loan forfeitures. Under the program, US sugar cane and beet producers can choose to divert acreage from sugar production in exchange for sugar held by the Commodity Credit Corporation. See USDA (2002b).

90. As of 1997, there were 973 farms in the entire United States growing sugarcane and 11,800 farms growing sugar beets. High yields in Florida and rising acreage and yields in Louisiana contribute to the growth of cane sugar production (see table 5.8). High domestic sugar prices in turn provide an incentive for US farmers to grow sugar beets instead of other crops, such as wheat. In 1998, the US General Accounting Office estimated that the sugar program cost domestic sweetener users about $1.9 billion per year (GAO 2000). See also Goombridge (2001).

91. Executives from the Corn Refiners Association, which represent HFCS manufacturers, argue that HFCS producers do not benefit from the sugar program because domestic HFCS prices are not directly linked to sugar prices. However, given the high rate of substitution between HFCS and sugar, the indirect benefit of high sugar prices is substantial. See GAO (2000); Gokcekus, Knowles, and Tower (2003); and David Orden's testimony (July 26, 2000).

92. Sugar loans (maximum term nine months) are nonrecourse, which means that when a loan matures, the USDA must accept sugar forfeited as collateral instead of cash repayment.

1998		1999		2000		2001		2002		2003	
Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value
166	47.4	101	30.3	92	25.7	79	25.4	90	29.1	92	30.5
186	53.1	165	54.9	132	40.7	111	34.9	5	1.6	2	1.0
53	30.7	147	31.8	147	28.9	182	36.9	167	33.1	151	34.5
1	1.2	2	1.9	2	2.5	1	1.3	0	0.2	26	6.2

imports and manage domestic marketing allotments and sugar payment-in-kind programs so that domestic sugar prices do not fall below effective price support levels, thereby removing the incentive for producers to forfeit their collateral.[93]

US import restrictions take the form of a TRQ. Under the TRQ, a low in-quota tariff of 1.66 cents per pound is levied on imports within the quota volume. A higher overquota tariff of 7.56 cents per pound (in 2003) was levied on Mexican imports that exceed the quota volume.[94] Under the 2002 Farm Act, the United States can restrict imports that exceed the minimum import quota of 1.2 million tons bound in the WTO. The US government assigns the raw cane sugar TRQs among 40 nations, based on sugar trade during 1975–81. In addition, the United States has a separate (albeit disputed) agreement under NAFTA that creates a separate TRQ for Mexican raw cane sugar. There are also TRQs on refined sugar, with separate allocations given to Canada and Mexico.[95]

By forfeiting sugar, the processor withdraws sugar from the market, thereby supporting higher US domestic sugar prices. By contrast, recourse loans would not allow sugar processors to simply forfeit sugar; instead, processors would have to repay the loan, plus interest, or declare bankruptcy. See Haley and Suarez (2002).

93. The current forfeiture price or loan rate is 18 cents per pound for cane sugar and 22.9 cents per pound for beet sugar. Unlike most commodity programs, sugar loans are made to processors rather than to producers, because sugarcane and sugar beets are perishable. See Haley and Suarez (2002). For a detailed analysis of the new sugar program provisions under the 2002 Farm Act, see Jurenas (2003).

94. The US above-quota, or second-tier, tariff on Mexican sugar declined from 15.2 cents per pound of raw cane sugar in 1995 to 7.56 cents in 2003 under NAFTA schedules. In contrast, the US above-quota tariff on sugar imported from the rest of the world declined from 17.62 cents in 1995 to 15.36 cents in 2002 pursuant to WTO commitments. See Roney (2003).

95. All other countries claim refined sugar TRQs on a first-come, first-served basis.

US sugar reexport programs, established in 1984, are another policy for bolstering the sugar market. There are two reexport programs—one is the Refined Sugar Re-Export Program for licensed raw sugarcane refiners; the other is the Sugar-Containing Product Re-Export Program, which benefits food processors.[96] Both reexport programs are controversial because raw cane sugar imports under these programs are not subject to TRQs.[97] However, these reexport programs allow the US processors to remain competitive in world markets. Of the two programs, the US Sugar-Containing Product Re-Export Program is more contentious for Canada because benefits extend to a broader range of industrial sugar users and affect a greater volume of sugar exports.[98] In 1996, Canada initiated a NAFTA Chapter 20 consultation with the United States over the reexport programs. In 1997, Canada dropped the NAFTA consultations in exchange for a mutual understanding that preserved a fixed share of existing quotas. The bilateral agreement did not, however, address Canadian market access concerns. As of 2001, Canada's access to the US refined sugar market was significantly lower than Mexico's—10,300 tons compared with Mexico's 140,742 tons.

Mexico

The Mexican government subsidizes sugar through a combination of high import tariffs, domestic sugar production quotas, debt restructuring initiatives, and tax breaks. As a result, Mexico increased sugar production from 3.8 million metric tons in 1994 to 5.3 million metric tons in 2003. As of 2003, Mexico was exporting about 0.4 million metric tons of sugar per year.[99]

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96. The Refined Sugar Re-Export Program allows licensed firms to import sugar at world prices (i.e., below US sugar prices) for refining and export, or for sale to licensed manufacturers of sugar-containing products that will be sold on world markets. While there are no limits on the quantity of sugar imports, the program had only eight licensed raw sugarcane refiners. Under the US Sugar-Containing Products Re-Export Program, US firms can buy sugar from any licensed refiner (refiners that will use world-priced sugar) for use in products that will be reexported onto the world market. According to the USDA's Foreign Agricultural Service, about 325 food-processing firms are licensed to participate in this program. See Haley and Suarez (2002) and USDA FAS (2002).

97. Imports and exports under the two programs averaged between 300,000 and 400,000 short tons raw value between fiscal years 1995 and 1999.

98. Eligible participants under the Sugar-Containing Products Re-Export Program include major industrial sugar users, small firms, and agricultural cooperatives. The total number of food processing firms benefiting from this program increased from 150 during the 1980s to 325 in 2002. During the same period, the volume of quota-exempt sugar exports jumped by about 160 percent from 50,000 tons to 130,000 tons. See also USDA FAS (2002).

99. Based on average Mexican sugar exports since 1998. See David Orden's testimony (July 26, 2000). See also LMC International (2003).

Import tariffs and other government controls serve to maintain high domestic sugar prices.[100] For example, Mexico's applied tariffs on sugar imports from the United States were around 17 percent in 2001 and about 18 percent on imports from Canada.[101]

While Mexico finished privatizing its sugar mills and partially deregulating its sugar industry in 1992, it increased protection for sugar by raising tariffs on raw sugar from 65 to 136 percent and from 73 to 127 percent on refined sugar (Mitchell 2004). As a result, domestic sugar prices increased by 60 percent and sugar production increased by 50 percent from 1990 to 2002. To manage the oversupply of sugar, the Mexican government has since 1997 acquired predetermined amounts of sugar for sale in export markets.[102] Nevertheless, in 2001, Mexican sugar production was so great that domestic sugar prices dropped by 40 percent, driving several Mexican sugar mills into bankruptcy.[103] To alleviate the resulting financial distress, the Mexican government created a $270 million last minute line of credit to pay farmers.

A government-controlled development bank also offers loans on easy terms to help the sugar industry pay its debt. Since 1998, FINASA has granted *quitas* or borrowing concessions to cane millers. As of 1999, FINASA held over $1.3 billion of concessional Mexican sugar industry debt.[104]

As Mexican government programs kept domestic sugar prices high in the late 1990s, one result was to attract imports of HFCS for use as a sweetener, especially in the soft drinks industry.[105] A combination of Mex-

100. Mexico's domestic wholesale price for refined sugar was 25.6 cents per pound in 2002, even higher than the US price of 21.5 cents per pound in 2003, which makes Mexico the fifth highest country in terms of price support for domestic sugar producers. US wholesale refined sugar price estimates are based on futures contract prices for number 14 raw cane sugar on the New York Coffee, Sugar, and Cocoa Exchange. For sugar price market information, see www.csce.com (accessed in November 2004). See also LMC International, Inc. (2003) and GAO (2000).

101. Applied tariffs do not include Mexico's AD duties of 20 percent on HFCS imports from the United States. Based on the World Bank's World Integrated Trade Solution (WITS) database, April 2003. See Mitchell (2004).

102. Domestic sugar production over the government-allocated sugar quota is either held in stocks, sold for nonfood uses, or exported. The Mexican government helps keep at least 600,000 metric tons raw value sugar from the domestic market. See Haley and Suarez (1999).

103. Among 60 Mexican sugar mills, some 30 are under receivership with a debt totaling $2 billion with the Mexican government alone. See Andrea Mandel-Campbell, "Commodities and Agriculture: Debt Mountain Threatens Mexican Sugar," *Financial Times*, June 28, 2001.

104. All outstanding sugar industry debt was supposed to be transferred from FINASA to another agency, FIDELIQ. But in 2003, FINASA was still offering concessions at 21.8 percent of any outstanding principal repaid by borrowers.

ico's large HFCS market and excess supply of HFCS among US sweetener producers makes Mexico a natural market for US exports.[106] To curb the use of HFCS, the Mexican government imposed AD duties in 1998 on US imports of sweetener products. After these measures were successfully contested and removed, Mexico then imposed in January 2002 a 20 percent tax on HFCS used in soft drinks.[107] As a result, US HFCS producers have struggled to enter the Mexican HFCS market. From 1998 to 2003, US HFCS exports to Mexico declined from 186,000 metric tons ($53.1 million) to 2,000 metric tons ($1 million) (table 5.9).

Sugar Side Letter Controversy

Under the original NAFTA sugar provisions, Mexico's maximum duty-free access to the US sugar market was supposed to increase from 25,000 metric tons raw value to at least 150,000 metric tons beginning in 2000.[108] After that, the Mexican quota would increase by 10 percent per year. Quantitative restrictions on US imports of Mexican sugar could end by 2009. However, if Mexico became a "net surplus producer" for two consecutive years, it would gain quota-free access to the US market starting in 2001. These terms provoked a squall in Congress at the time of NAFTA ratification and led former USTR Mickey Kantor to negotiate a NAFTA side letter agreement on sugar.

The controversial NAFTA sugar side letter changed key provisions for Mexican sugar exports to the US market. Unlike the original provision, which did not impose caps on Mexican sugar exports to the United States, the revised side letter curtailed Mexico's duty-free access to the US market to a maximum of 250,000 metric tons annually. More important, the side letter changed the formula for calculating surplus production, making it harder for Mexico to qualify as a net surplus producer. The original NAFTA provisions calculate Mexico's status as a net surplus sugar pro-

105. Before the Mexican government imposed taxes on HFCS exports from the United States, Mexican soft drink producers were using corn syrup as a close substitute for sugar. HFCS is also a leading competitor for the US sweetener market and, even as HFCS prices declined, domestic production expanded from 6.8 million tons in 1992 to 9.5 million tons in 1999. See GAO (2000) and Bolling (2002).

106. Mexico is the world's second largest market for soft drinks.

107. Most corn syrup used in Mexico is imported from the United States or made in Mexico by two subsidiaries of US companies. Since 1994, Arancia has been associated with the US firm Corn Products International. The other Mexican company, Almidones Mexicanos, is affiliated with Archer Daniels Midland Co. See "Mexico's New Soft Drink Tax Raises Stakes in Sweetener Fight with US," *Inside US Trade*, January 11, 2002.

108. In addition, under the original NAFTA agreement, Mexican sugar exports were also limited to no more than Mexico's net surplus production of sugar, defined as domestic sugar production less domestic sugar consumption. See Haley and Suarez (2002).

ducer based on its domestic sugar production minus domestic sugar consumption. The two countries disagree, however, on whether the side letter indicates that Mexico's sugar production needs to exceed its domestic consumption of both sugar and HFCS.[109]

Even more confusing, there are two versions of the side letter. The US version of the side letter is dated November 3, 1993, and was sent to Congress as part of its NAFTA legislative package. Unlike the US version of the side letter, Mexico's amended side letter, dated November 4, 1993, does not include revised calculations for Mexico to reach net sugar producer status. In essence, the dispute revolves around two issues: the amount of Mexican sugar access to the US market beginning in fiscal 2001 and the mechanism through which Mexican sugar would have unlimited access to the US market (see table 5.10 for a comparison between sugar provisions under the original NAFTA and revised side letters).[110]

Mexico and the United States have never been able to agree on key details of the side letter and whether it limits Mexican sugar imports to 250,000 tons annually. Moreover, Mexico claims it never signed the November 3 side letter that helped ratify NAFTA (table 5.10).[111] Instead, the Mexican government argues that its November 4 side letter does not include HFCS consumption in the formula used to define net producer status. The Mexican version allows Mexico to export its total net surplus production of sugar duty-free to the United States beginning in October 2000. US sugar and sweetener producers are fighting this interpretation: If the US version of the sugar side letter is abandoned, the NAFTA tier-two tariff would allow Mexican sugar exports to enter the United States outside current quota restraints and at a progressively lower tariff.[112]

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109. Under the original NAFTA sugar side letter, Mexico would gain unlimited access to the US sugar market in 2001 instead of being permitted to ship 250,000 tons annually until gaining unlimited market access by 2009. In response, the US sugar industry, led by eight sugar associations, voiced concerns to US congressional members about the potential for Mexican sugar to replace HFCS in the US market. As a result, US negotiators reneged on the original draft NAFTA sugar agreement and submitted to Congress a controversial second side letter that Mexico claims it never signed. We thank Tim Josling and Kim Elliott for this observation and for providing written comments to an earlier draft. See "Sugar Lobby Eschews Legislative Fix, Keeps Up Push for Side Letter," *Inside US Trade*, October 22, 1993; and "US-Mexico Talks Fail to Resolve Conflicting Views on Sugar Access," *Inside US Trade*, April 24, 1998.

110. See "US, Mexican NAFTA Sugar Side Letters Reveal Two Key Differences," *Inside US Trade*, March 20, 1998; Pav Jordan, "Mexico Senator Says NAFTA Sugar Side Letter Invalid," *Reuters*, October 11, 2000; and "Text: US-Mexico Draft Side Letter on NAFTA Sugar," *Inside US Trade*, November 5, 1993.

111. For details about the two versions of the side letter, see "US, Mexican NAFTA Sugar Side Letters Reveal Two Key Differences," *Inside US Trade*, March 20, 1998. See also "US Abandons Side Letter as It Forges Ahead with Sugar Talks," *Inside US Trade*, August 16, 2002.

112. As of April 2003, the tier-two tariff for sugar is 7.5 cents per pound and will be reduced by 1.5 cents a pound per year until the sugar tariff is eliminated in 2008. See "Zoellick To Raise Mexico Sugar in Hopes of Resolution This Year," *Inside US Trade*, February 28, 2003.

Table 5.10 Comparison of sugar side letter provisions

Original side letter	Revised side letter	November 3, 1993 US version	November 4, 1993 Mexican version
Fiscal 1994–2008 (first 15 years): ■ Maximum Mexican sugar exports limited to no more than net surplus production of sugar, equivalent to the difference between domestic sugar production and consumption ■ Minimum Mexican sugar export of 7,258 metric tons raw cane sugar duty-free into United States	■ Changed definition of surplus production of sugar that would limit Mexico's ability to export sugar to the United States ■ Revised surplus production status defined by whether Mexican sugar production was greater than Mexican consumption of both sugar and high-fructose corn syrup (HFCS)	**Fiscal 2000–08:** ■ If Mexico reaches net surplus producer status, the United States would allow maximum Mexican sugar exports of 250,000 tons ■ Beginning fiscal 2001 marketing year (year 7), Mexico can export up to 150,000 tons ■ From fiscal 2002 to fiscal 2008 (years 8 to 14), Mexico can ship 110 percent of previous marketing year's ceiling according to original NAFTA terms	Unlimited Mexican access to the US sugar market (i.e., no stipulation to exclude paragraph 16)
Fiscal 1994–2000 (first six years): ■ Maximum duty-free access for Mexican sugar exports at no more than 25,000 metric tons raw value (mtrv)	**Fiscal 1994–2000** (first six years): ■ Maximum duty-free access for Mexican sugar exports equal to the projected net surplus production up to 25,000 metric tons	■ Denies Mexico unlimited access to the US sugar market by stipulating that paragraph 16 of Section A of NAFTA Annex 703.2 (waiver for quantitative limits) would "not apply"	

By fiscal 2001 (year 7): ■ Maximum duty-free access for Mexican sugar exports raised to 150,000 metric tons ■ Maximum duty-free access for Mexican sugar exports will increase by 10 percent every year	■ If Mexico does not qualify as a net surplus sugar producer, it can still export maximum 7,258 metric tons duty-free (as bound in US WTO schedule).		
Condition for unlimited Mexican sugar exports into the United States: ■ Mexico must achieve net surplus producer status for two consecutive marketing years	■ No conditions provided for unlimited Mexican sugar exports into the United States. ■ 2001–07: Maximum duty-free access for Mexican sugar exports to the United States is measured by its surplus of up to 250,000 metric tons.	Vague definition for calculating Mexican net surplus producer status: ■ Only indicates that calculation should include "consumption" of HFCS	Vague definition for calculating Mexico net surplus producer status: ■ Only indicates that calculation should include HFCS ■ Mexican officials claim surplus producer status suggests both HFCS production and consumption are used to determine net producer status (i.e., making it easier to achieve net sugar surplus producer status)

Note: The side letters use the term "marketing year," which closely coincides with fiscal year.

Sources: USDA (2002c); "US-Mexico Draft Side Letter on NAFTA Sugar," *Inside US Trade,* November 5, 1993.

US-Canada Agreement on Sugar

NAFTA allows Mexico and Canada to maintain their tariffs on sugar. However, before NAFTA, the United States and Canada had negotiated their own bilateral agreement on sugar. The CUSFTA barred the United States from imposing trade restrictions on Canadian food exports containing 10 percent or less sugar.[113] This changed when the United States created a quota for refined sugar imports under the WTO, which significantly reduced Canada's access to the US sugar market.[114] In 1997, a bilateral understanding was reached. The United States would allow Canada an extra quota for refined sugar access on the condition that Canada would not challenge US reexport programs under the NAFTA dispute settlement mechanisms.[115]

Sugar Disputes under NAFTA

After Mexico imposed AD duties on HFCS imports in 1998, US firms initiated two claims against Mexico, invoking NAFTA dispute settlement Chapters 11 and 19.[116] The United States initiated its first sugar dispute against Mexico under NAFTA Chapter 19 in 1998.[117] According to the US

113. According to CUSFTA Article 707, the United States "shall not introduce or maintain any quantitative import restriction or import fee on any good originating in Canada containing 10 percent or less sugar by dry weight for purposes of restricting the sugar content of such good."

114. In 1994, the United States imposed a global TRQ of 22,000 tons of refined sugar under the WTO.

115. The 1997 bilateral understanding allowed Canada to export up to 10,300 tons of refined sugar and a maximum of 59,250 tons of sugar-containing products. Canada could also compete for the unallocated portion of the global sugar TRQ of about 7,500 tons of refined sugar. See AAFC (2001).

116. Partly in response to US tariffs on Mexican broom corn brooms, Mexico increased HFCS import duties in December 1996. After the United States complied with the NAFTA Chapter 20 determination on the *Broom Corn Brooms* case, Mexico reduced the 12.5 percent ad valorem rate on US HFCS imports to the NAFTA-specified rate of 6 percent in 1998. However, the US-Mexico HFCS dispute did not come to an end. Soon afterward, in May 1998, the United States initiated a Chapter 19 HFCS dispute against Mexico, which was settled in June 2002, and brought two separate cases under the WTO. In October 2001, the WTO Appellate Body upheld the panel determination that Mexico had not complied with requirements of the WTO Antidumping Agreement to justify imposing AD duties on HFCS. In 2000, Mexico initiated bilateral discussions with the United States over US sugar TRQs. The United States also initiated cases under NAFTA Chapter 11—one filed by US Corn Products International in January 2002 and another by Archer Daniels Midland Co. and A. E. Staley Manufacturing Co. in October 2003. See WTO (2001).

117. Mexico's administrative agency, SECOFI, imposed different AD duties on exports of HFCS grades 42 and 55. Specifically, SECOFI applied temporary AD duties on specific US HFCS exporters, ranging from $63.75 to $175.50 per metric ton. US exporters directly tar-

Corn Refiners' Association, the Mexican government encouraged domestic sugar and soft drink bottling industries to limit HFCS imports in exchange for a 20 percent price discount on sugar for soft drinks.[118] In August 2001, the NAFTA Chapter 19 panel decided Mexico should remove its tariffs against US HFCS exports and refund collected AD duties to the United States. Mexico complied with the NAFTA panel ruling but also limited the quantity of US HFCS exports.[119]

The dispute did not end there. In January 2002, the Mexican Congress passed legislation that imposed a 20 percent tax on soft drinks made with HFCS, and the US-based Corn Products International, Inc. initiated a second sugar-related dispute under NAFTA Chapter 11. The consequences of the newly imposed HFCS tax were immediate. As of early 2002, US HFCS exports plummeted by 69 percent from 117,000 metric tons in fiscal 2001 to about 36,000 metric tons in 2002.[120]

Arancia CPC, a subsidiary of Corn Products International, claims the HFCS tax costs the company between $35 million and $40 million in annual operating income and forced it to shut down its HFCS plant in Mexico.[121] Arancia CPC claims the HFCS tax led soft drink bottlers to cancel

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geted by SECOFI include A. E. Staley Manufacturing, Cargill, Inc., Archer Daniels Midland Co., and CPC International, Inc. In January 1998, SECOFI imposed permanent import tariffs on HFCS products. US producers argue that both the AD tariffs and the permanent tariffs are inconsistent with NAFTA. See Haley and Suarez (1999). See also "US Mulls WTO Case In Response to Mexican AD Decision on HFCS," *Inside US Trade*, January 30, 1998.

118. A restraint agreement between Mexican sugar producers and soft drink bottlers was intended to limit the usage of HFCS to 350,000 tons per year. See Haley and Suarez (1999). See also "NAFTA Panel Finds Against Mexican Duties on US Corn Sweetener," *Inside US Trade*, August 10, 2001.

119. Mexico allows US HFCS exports up to 148,000 metric tons at a low tariff rate of 1.5 percent. Any US HFCS exports above that amount will face an AD duty of 210 percent. This would adversely affect US HFCS producers as the United States historically exports more than 148,000 metric tons of HFCS per year into Mexico. See "Mexico Ends Antidumping Duties on Corn Syrup," *Kiplinger Agriculture Letter* 73 no. 9, May 3, 2002. See also final NAFTA Chapter 19 panel decision, available at www.nafta-sec-alena.org/images/pdf/ma98010e.pdf (accessed in April 2003).

120. Even with duties applied between 1998 and 2001, US producers still exported about 120,000 tons of HFCS into Mexico per year. Mexico's new HFCS tax does not apply to soft drinks made with cane sugar, which Mexico produces in excess. Under pressure from the USTR and US agricultural groups, President Fox temporarily suspended the tax until Mexico's Supreme Court overturned his decision in July 2002. See "Mexico Reinstates HFCS Tax," *Food & Drink Weekly* 8, no. 28, July 22, 2002. See Haley and Suarez (2003).

121. According to the US National Corn Growers Association and the Corn Refiners Association, US corn producers have lost market opportunities for more than 20 million bushels of corn. Jaime Gallo of Arancia CPC claims that the HFCS tax potentially jeopardizes 18,000 direct and indirect jobs. See Josefina Real, "New Tax Forces Shutdown of Mexico Fructose Plant," *Reuters*, January 10, 2002; BNA (2003b, 2003c).

sweetener orders and estimated the tax cost $220 million in losses for the domestic Mexican fructose industry in 2002.

Recent US-Mexican sweetener negotiations suggest a possible breakthrough. The January 2004 US draft proposal suggests that Mexico forego its right under NAFTA to unlimited access to the US sugar market after 2008. In return, Mexican overquota sugar exports would face either the high MFN tariff or lower tier-two NAFTA agreed tariff rate.[122] The fact that a proposed deal has been floated suggests that Mexico is willing to agree to reduced access to the US sugar market, though the market access numbers are far from agreed.[123]

Sugar Recommendations

The sprawling web of sugar claims and litigation reflects the difficulty of liberalizing trade in an agricultural commodity that has been protected and subsidized for decades. The fundamental problem is that neither the United States nor Mexico subscribes to free-market principles when it comes to sugar. Both countries seek to maintain sugar prices well above world levels—not to discourage consumption but rather to augment the revenues of cane, beet, and HFCS producers.

Given this objective, sugar side letters, tariffs, taxes, penalty duties, and litigation all essentially revolve around the division of economic rent created by the overarching regime of protection and subsidies. The original NAFTA text seemed to promise that Mexican and US sugar producers could eventually compete—free of border barriers—under a common umbrella of protection against the world sugar market. After the deal was sealed, both countries had second thoughts, centered on the intrusion of HFCS into the domain of cane and beet sugar. These doubts were compounded by ingenious and differentiated means of subsidization by the

122. The US sugar industry wants to prevent Mexican sugar exports from exceeding the 268,000-ton level. Higher Mexican shipments could push total US imports above the 1.523 million ton threshold and jeopardize the operation of the current US sugar program. The concern is that if US sugar imports exceed 1.523 million short tons, the US secretary of agriculture must lift marketing allotments that limit the quantity that domestic producers can sell in the United States. One potential result is that the high price of US sugar would sharply decline, which is something that US sugar producers want to avoid. See "US, Mexico Sweetener Talks Advance on Most Critical Hurdle," *Inside US Trade,* February 6, 2003. Under the draft US-Mexico sweetener agreement, Mexico sugar exports could reach 114,000 tons in 2004 and increase to 268,000 tons in the next two years. See "US, Mexico Sweetener Talks Advance on Most Critical Hurdle," *Inside US Trade,* February 2004.

123. Mexico and the United States also disagree on how to change reexport programs to prevent the circumvention of trade limits through sugar-containing products. See "US, Mexican Sweetener Industries Set for Fresh HFCS Talks Next Week," *Inside US Trade,* May 21, 2004.

Mexican and US governments. The result is a tangled web of claims and litigation with no resolution in sight. Indeed, Mexico cites the failure to resolve the sugar question as an argument to scale back its NAFTA commitments in other key commodities.[124]

Our recommendation differs sharply from the prevailing direction of NAFTA policy, which is focused, as we have said, on dividing the pie of protection and subsidy benefits between producer groups. In view of the significant adverse health effects of excessive sugar consumption, we urge NAFTA members to appoint a commission to recommend an appropriate excise tax on sugar and HFCS designed—like cigarette taxes—to both curtail consumption and raise revenue to offset the healthcare burden. Once the excise tax is imposed, free trade should be allowed in sugar and HFCS, but a portion of the excise tax revenue should be devoted to helping farmers and processors adjust, over a period of about 10 years. The excise tax should also provide significant funding for environmental purposes, including a reduction of sugar acreage in the ecologically sensitive Florida Everglades. Excise tax funds could be used to purchase sugar acreage and return the land to its natural condition. The funds could also be used to compensate sugar plantations that do not use environmentally harmful phosphorous fertilizers.[125]

To manage the transition toward free trade in HFCS and sugar, the United States and Mexico should also establish a comprehensive interim agreement. As an example, the United States could agree to a higher quota for Mexican sugar exports of 268,000 metric tons (compared with the existing 250,000 metric tons), starting in 2006, with an equivalent amount of US HFCS exports to Mexico. To mollify US sugar industry concerns, Mexican sugar shipments could be split 60 percent raw and 40 percent refined. Similarly, US HFCS exports could be split as 60 percent soft drink industry and 40 percent bakery industry.[126]

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124. As of January 2003, all tariffs on pork, poultry, and rice were eliminated under NAFTA. However, Mexico recently hinted that without a sweetener deal allowing Mexican sugar exports duty-free into the United States by 2008, Mexico might impose trade barriers on pork and poultry. See "Mexico Weighs Request for Roll-Back of NAFTA Farm Tariff Cuts," *Inside US Trade*, January 3, 2003.

125. For a detailed analysis of the environmental harm caused by sugar cultivation, see Humphreys, van Bueren, and Stoeckel (2003).

126. So far, transition proposals have been stalemated by US efforts to protect cane refiners and Mexican attempts to limit the presence of US HFCS in Mexico's soft drinks industry. The United States, for example, prefers that Mexican sugar exports to the United States be split 80 percent raw and 20 percent refined; Mexico proposes that US HFCS exports follow a 50/50 split between soft drinks and bakery industries. See Jurenas (2003).

The Corn Saga

Newspaper stories frequently blame NAFTA for the plight of Mexican farmers, especially poor corn farmers.[127] The implication is that NAFTA can be held responsible for destroying the rural way of life in Mexico and driving illegal migrants to US cities. Even the Carnegie Endowment for International Peace cites the liberalization of corn trade as a great NAFTA failure (Audley et al. 2003). But multiple adversities are behind the plight of rural Mexican corn farmers. In this section, we try to distinguish fact from fantasy in the Mexican corn saga.

The place to start is with the facts on corn production, acreage, and trade. Basically, there are two types of corn: yellow and white. Yellow corn—the kind that the United States produces in abundance—is predominantly used as livestock feed. White corn—the kind that Mexico mainly produces—is largely used for human consumption (though white corn is sometimes used as livestock feed in Mexico as well). Under NAFTA, yellow and white corn are treated as the same commodity, even though Mexican farmers cultivate primarily white corn and US producers have the strongest advantage in yellow corn.

Mexican tariffs on corn under NAFTA are supposed to be eliminated by January 1, 2008.[128] Starting from the implementation of NAFTA in January 1994, liberalization was to be achieved by gradually expanding the TRQ. The initial TRQ on corn in 1994 was set at 2.5 million tons per year. This figure was set to expand by 3 percent per year, reaching 3.8 million tons by 2008 (table 5.11).

The overquota tariff rate for US and Canadian corn exports to Mexico was set at 215 percent in 1994 ($206 per metric ton). This overquota tariff will gradually decline to zero by January 1, 2008 (box 5.3). But while Mexico's corn import quotas under NAFTA reached only 3.1 million tons in 2001, Mexican corn imports actually surpassed 5 million tons annually from 1998 to 2003. In fact, the Mexican government allowed tariff-free corn imports to exceed NAFTA-mandated TRQs almost every year since 1994 (table 5.11), partly to satisfy the demands of the Mexican livestock and starch industries.[129] The Mexican government waived at least $2 bil-

127. For example, one journalist recounted the trials of Domingo Tena, a corn farmer from Michoacan state, now working in Chicago. Hugh Dellios, "10 Years Later, NAFTA Harvests a Stunted Crop," *Chicago Tribune*, December 14, 2003, A1.

128. According to Tim Josling, the Mexican government invoked the spirit of NAFTA both to phase out quantitative restrictions on corn more quickly than the letter requires and to push for agricultural reforms generally.

129. Under NAFTA, the Mexican government allocates TRQs directly to privileged users, often on a first-come, first-served basis. At one time, Conasupo indirectly allocated corn quotas to tortilla producers. See Yunez-Naude (2003) and Seidband (2004).

Table 5.11 US overquota corn exports to Mexico, 1994–2008

Year	Tariff rate quota level set by NAFTA (millions of metric tons)	Actual US corn exports	
		Volume (millions of metric tons)	Value (millions of dollars)
1994	2.5	3.1	340
1995	2.6	2.9	359
1996	2.7	6.3	1,003
1997	2.7	2.6	317
1998	2.8	5.2	590
1999	2.9	5.1	527
2000	3.0	5.2	511
2001	3.1	5.7	626
2002	3.2	5.4	639
2003	3.3	5.7	688
2004	3.4	n.a.	n.a.
2005	3.5	n.a.	n.a.
2006	3.6	n.a.	n.a.
2007	3.7	n.a.	n.a.
2008	3.8	n.a.	n.a.

n.a. = not applicable

Source: USDA (2002a); USDA Foreign Agricultural Service (FATUS) database, 2004.

lion in tariff revenues, at least two-thirds on yellow corn imports, using the argument that cheaper corn imports were necessary to meet growing domestic livestock demand and control inflation. In fact, domestic demand for yellow feed corn increased more than fourfold, from 1.7 million metric tons in 1990 to 9.5 million metric tons in 2002 (table 5.12).[130] Mexican per capita consumption of beef rose from 12.3 to 16.4 kilograms in the same period. By contrast, US per capita consumption of beef remained about 29 kilograms during this period (table 5.13).[131]

130. According to Lloyd Day, USDA spokesperson, roughly 80 percent of US corn exports to Mexico is yellow corn used primarily to feed growing demand for Mexican livestock. See Olga R. Rodriguez, "Oxfam Reports on US Subsidies in Mexico," Associated Press, August 28, 2003.

131. Data are based on USDA Economic Research Service Food Consumption Per Capita Data System, 2003.

Box 5.3 Timeline of NAFTA corn tariff phaseouts

Canadian tariffs

On US corn:

- were completely eliminated on January 1, 1998, after a nine-year phaseout period

On Mexican corn:

- will be completely eliminated on January 1, 2008

Mexican tariffs

On US corn:

- immediate elimination of import licensing requirement on January 1, 1994
- immediate establishment of duty-free tariff rate quotas (TRQs)
- in-quota tariffs set at 2.5 million metric tons on January 1, 1994: In-quota tariffs will gradually increase by 3 percent per year during a 14-year transition period, until TRQ is completely eliminated by January 1, 2008; TRQ in 2001: 3.1 million metric tons
- overquota tariffs based on gradual transition period: Overquota tariff equaled $206 per metric ton but not less than 215 percent, of which 24 percent was gradually eliminated in 2000; remaining overquota tariff will phase out by 2008; 1994: overquota tariff equaled greater of 206.4 percent ad valorem or 19.7 cents per kilogram; 2001: overquota tariff equaled greater of 127.1 percent ad valorem or 12.1 cents per kilogram; 2001 scheduled overquota tariffs replaced with minor overquota tariffs of 1 percent on yellow corn and 3 percent on white corn until end of 2001

On Canadian corn:

- immediate elimination of import licensing requirement on January 1, 1994
- immediate establishment of duty-free TRQs
- in-quota tariffs set at 1,000 metric tons on January 1, 1994
- in-quota tariffs will gradually increase by 3 percent per year during a 14-year transition period, until TRQ is completely eliminated by January 1, 2008
- TRQ in 2001: 1,230 metric tons
- no overquota tariffs

US tariffs

On Canadian corn:

- were completely eliminated on January 1, 1998, after a nine-year phaseout period

On Mexican corn:

- were eliminated on January 1, 1994

Source: Zahniser and Link (2002).

Table 5.12 Corn feed used for domestic consumption in NAFTA countries
(millions of metric tons)

Year	Canada	Mexico	United States
1990	5.8	1.7	117.1
1991	5.4	2.6	121.9
1992	4.8	3.6	133.4
1993	6.0	5.5	118.9
1994	6.3	5.4	138.7
1995	5.9	8.1	119.2
1996	6.3	7.1	134.0
1997	6.8	7.2	139.2
1998	7.1	7.5	138.9
1999	7.0	8.3	143.9
2000	7.9	8.8	148.4
2001	9.7	8.4	148.9
2002	10.3	9.5	141.3
2003	9.0	11.0	147.3

Source: USDA Production, Supply, and Distribution database, 2004.

Corn Production

US corn production is concentrated in midwestern states with regular rainfall patterns and relies on heavy machinery, chemicals, and high-yielding varieties. Mexican corn production, by contrast, is carried out mostly by small-scale, labor-intensive farmers, who cultivate multiple varieties.[132] Between 70 and 80 percent of total Mexican corn production is on rain-fed farms. About 30 percent of these rain-fed farms are *ejidos*, collective communities that are usually poor (Rosson and Adock 2003). As a consequence, average Mexican corn production yields in 2003 were a fraction (2.8 tons per hectare) of average US corn production yields (9.8 tons per hectare; see table 5.14).[133] Nevertheless, Mexican corn production in-

132. Before NAFTA, about 60 percent of cultivated agricultural land was used for corn, and that land yielded about 60 percent of total agricultural output (measured by sales value). After NAFTA, some 67 percent of cultivated land was used for corn, but the monetary yield fell to about 36 percent of the value of agricultural output. See Nadal (2000).

133. A comparison with Argentina, a major corn producer and among the top three world corn exporters, reveals the low productivity of Mexican corn farmers. In 1960, average corn production yields in Argentina and Mexico were about 2 and 1 tons per hectare, respectively. By 2001, average corn production in Argentina reached about 6 tons per hectare while Mexican corn farmers yielded about 2.8 tons per hectare. Based on UN Food and Agriculture Organization FAOSTAT database, 2003.

Table 5.13 Per capita beef consumption (kilograms)

Country	1990	2002	Percent change 1990–2002
Canada	34.0	30.0	–12
Mexico	12.3	16.4	33
United States	29.0	28.7	–1

Source: USDA Production, Supply, and Distribution database, 2004.

creased by 44 percent from 14.6 million metric tons to 21 million metric tons between 1990 and 2003. US corn production rose just 27 percent, from 201.5 million metric tons to 257 million metric tons, while Canadian corn production increased 35 percent, from 7.1 million metric tons to 9.6 million metric tons (see table 5.14).

Corn Prices

The Mexican government embarked on its program of unilateral liberalization of corn and Mexican domestic corn prices fell in dollar terms from $4.69 per bushel in 1995 to $3.65 per bushel in 1997 (and have since remained at about that level; see table 5.15). Even though corn prices have fallen by about 20 percent since 1995, Mexican corn production remained high.[134] Since 1994, the area under corn has remained fairly constant at 7 million to 8 million hectares (see table 5.16). In other words, lower corn prices did not prompt Mexican farmers to permanently reallocate land to other crops or to leave farm life altogether.

Corn Trade

The United States is the largest corn exporter in the world. US global corn exports increased by 17 percent from 40.7 million metric tons (worth $4.5 billion) in 1993 to 47.6 million metric tons in 2002 ($5.1 billion).[135] US corn exports to NAFTA partners, expressed as a share of total corn exports, steadily increased from 3 percent in 1993 ($0.2 billion) to 21 percent in 2002 ($1.1 billion; see tables 5.17 and 5.18).[136] US corn exports comprise

134. Although Oxfam argues that real corn prices declined by more than 70 percent between 1994 and 2001, a careful analysis suggests Mexican corn prices declined by about 10 percent in dollar terms over this period (see table 5.15). See Oxfam (2003) and Nadal (2000).

135. US global corn exports declined slightly in 2003 to 43.2 million metric tons ($4.9 billion).

136. In 1993, the United States imported just $61 million worth of corn from the world, mostly from NAFTA countries (about 67 percent). By 2002, the total value of US corn imports reached $137 million, of which $34 million was from NAFTA partners. US corn exports to

Table 5.14 Corn yield and production in NAFTA countries

Country	1960	1970	1980	1990	2003
Yield (tons per hectare)					
Canada	5.1	5.8	6.2	7.6	8.6
Mexico	1.1	1.3	2.0	2.2	2.8
United States	4.3	5.0	6.3	8.2	9.8
Production (millions of metric tons)					
Canada	.7	2.6	5.7	7.1	9.6
Mexico	6.2	8.9	12.4	14.6	21.0
United States	91.4	105.5	168.6	201.5	257.0

Source: UN FAOSTAT database, 2004; USDA (2004b).

about 40 percent of total US grain exports to Mexico (USDA 2003a). Although there is some concern in Canada that rising US corn exports could injure Canadian corn producers, Canada plays a relatively minor role in corn disputes under NAFTA (table 5.19).[137] The corn saga is essentially a US-Mexico drama.

Mexico consistently ranks as the second or third largest market for US corn, buying virtually 100 percent of its imports from the United States (Seidband 2004). During 1993–2003, the value of US corn exports to Mexico increased from $75 million (0.3 million metric tons) to $688 million (5.7 million metric tons). Most of the increase was in yellow corn, and the value of US yellow corn exports to Mexico as a proportion of total corn exports increased from about 39 to 73 percent (tables 5.17 and 5.18).[138]

Background of US-Mexico Corn Dispute

Corn is a staple in the Mexican diet (notably tortillas) and currently represents around 36 percent of the value of agricultural output in Mexico (Nadal 2000). About 68 percent of the Mexican agricultural workforce,

Canada meet feed grain demand and ethanol and sweetener production; these exports reached 4 million metric tons valued at $395 million in 2002, more than five times their value in 1994. US corn imports from Canada were 0.2 million metric tons in 2002. Based on Statistics Canada (2003) and USDA Foreign Agricultural Service (FATUS) database. See also Myles and Cahoon (2004).

137. Canada does not trade much corn with Mexico. During 1993–2002, Canada exported on average about 74 percent of its corn to the United States and about 99 percent of its corn imports were from the United States.

138. Almost all US corn imports from Mexico during 1993–2003 were white corn for human consumption. The total value of US corn imports from Mexico increased from $0.5 million (about 1,000 metric tons) in 1993 to nearly $3 million (about 6,000 metric tons) in 2003 (see table 5.18). See USDA Foreign Agricultural Service (FATUS) database, 2003.

Table 5.15 NAFTA prices for corn
(US dollars per bushel)

Year	Canada	Mexico[a]	United States[b]
1991	2.22	4.39	2.37
1992	2.26	4.57	2.07
1993	2.52	4.84	2.50
1994	2.23	4.11	2.26
1995	3.81	4.69	3.24
1996	2.71	3.96	2.71
1997	2.53	3.65	2.43
1998	1.86	3.65	1.94
1999	1.81	3.54	1.82
2000	2.02	3.78	1.85
2001	2.15	3.72	1.91
2002	2.32	3.69	2.32
2003	2.15	3.75	2.20

a. White corn prices are calculated as weighted average of Conasupo buying prices for maize producers.
b. Data are average price.

Sources: Mexico: 1991–94 estimates are based on Nadal (2000); 1995–2000 data are minimum prices for corn producers based on OECD, *Agricultural Policies in OECD Countries*, 1998–2002; and 2001–03 data are based on SECOFI, Mexico's Ministry of Economy, 2003–04, Sistema de Información Empresarial Mexicano, www.secofi-siem.gob.mx/portalsiem (accessed in June 2003). United States: 1991–2001 data are based on CRB (2003); and 2002–03 data are based on *Grain Price Outlook*, University of Purdue and University of Illinois at Urbana-Champaign (2000). Canada: Data are based on AAFC (2003a).

and about the same percentage of cultivated land in Mexico, is engaged in growing corn (Nadal 2000; Veeman, Veeman, and Hoskins 2001). At the turn of the 20th century, some 2,000 families owned 87 percent of the rural land in Mexico. The Mexican revolution, in 1910, distributed much of this land to ejidos. Today about 3.5 million farmers hold over 103 million hectares, and the individual *ejidatorios* on average cultivate small plots of about 5 hectares or less.[139] Ejidos are responsible for about 62 percent of total domestic corn production, about 70 percent on rain-fed land. Most ejido holdings are too fragmented to enable economies of scale and use

139. About 50 percent of Mexico's farmers till plots of 5 hectares or less (1 hectare = 2.741 acres). These farmers cultivate about 15 percent of total ejido land, and they earn less than a third of their income from agriculture. See Williams (2004). More than 20 percent of ejidatorios have farms split among three or more plots. See Giugale, Lafourcade, and Nguyen (2001).

Table 5.16 Area under corn in NAFTA countries, 1960–2003 (millions of hectares)

Year	Canada	Mexico	United States
1960	0.2	5.4	28.9
1965	0.3	7.5	22.4
1970	0.5	8.0	23.2
1975	0.6	7.9	27.4
1980	1.0	8.1	29.5
1985	1.1	6.2	30.4
1990	1.1	6.6	27.1
1995	1.0	7.8	26.4
2000	1.1	7.1	29.3
2001	1.3	7.8	27.8
2002	1.3	7.1	28.1
2003	1.2	7.7	28.8

Source: USDA Production, Supply, and Distribution database, 2004.

modern farming techniques. As a consequence, the Mexican agricultural sector provides temporary and part-time employment but does not provide a decent standard of living.

In recent years, Mexican government policy has favored the larger, and more successful, industrialized farmers concentrated in northern Mexico rather than the small, impoverished ejido farmers in southern and central Mexico.[140] Larger, more successful export-oriented farmers represent only 3 percent of private farmers but own almost 30 percent of total private land (Soloaga 2003, World Bank 2001). By contrast, in the poor ejidos, subsistence farming is the rule, and about half of the agricultural production is destined for household consumption.[141] To the extent that poor Mexi-

140. About 42 of every 100 Mexicans live in poverty in rural areas, and the majority of the poorest people are concentrated in southern states. Nevertheless, Mexican Agricultural Minister Javier Usabiaga is pursuing a strategy of support for successful Mexican farmers, mostly in northern states, who are expected to give temporary seasonal work to poorer farmers. See "NAFTA Crisis Worsens," *Latin American Economic and Business Report*, February 11, 2003. See also Lustig (2001) and Wiggins et al. (2002). Similarly, the top 10 percent of US farmers receive 65 percent of all agricultural subsidy payments in the United States. See the editorial in the *New York Times,* November 10, 2003.

141. Some studies estimate as much as 55 percent of agricultural production under 5 hectares of land is used for household consumption. See Taylor (2003) and Yunez-Naude (2003).

Table 5.17 US yellow corn trade with NAFTA partners, 1993–2003
(volume in thousands of metric tons and value in millions of dollars)

	1993		1994		1995		1996		1997	
Country	**Volume**	**Value**	**Volume**	**Value**	**Volume**	**Value**	**Volume**	**Value**	**Volume**	**Value**
US exports to										
Canada	785	77	695	69	1,001	109	847	135	1,027	117
Mexico	241	29	2,310	247	2,411	301	5,401	881	2,311	282
NAFTA subtotal	1,026	106	3,005	316	3,412	410	6,248	1,015	3,338	399
Total world (including NAFTA)	39,432	4,145	34,581	3,800	58,921	7,161	50,968	8,239	41,123	5,103
US imports from										
Canada	323	30	356	39	258	29	332	51	200	24
Mexico	0	0	0	0	0	0	0	0	0	0
NAFTA subtotal	323	30	356	39	258	29	332	51	200	24
Total world (including NAFTA)	323	30	356	39.0	258	29	332	51	234	27

Note: Besides yellow, most other corn products are white.

Source: USDA Foreign Agricultural Service (FATUS) database, 2004.

can farm households eat what they produce, they are isolated from the price effects of NAFTA and trade with the United States.

In addition to small and inefficient land holdings, there are multiple reasons for low agricultural productivity in the central and southern states. Poor transportation and irrigation networks are part of the problem. It is three times more costly to deliver corn by rail from Sinaloa to Mexico City than by shipping from New Orleans via Veracruz.[142] Access to credit is notoriously difficult. Credit provided to the agricultural sector was 21 percent larger in 1983–90 than in 1996–2000.[143] Rural financial markets are "personalized" operations with little or no collateral required but at very high costs (Giugale, Lafourcade, and Nguyen 2001; Oxfam 2003). Without government guarantees, Mexican commercial banks hesitate to provide loans because of the historically high default rate on agricultural loans and the record of large-scale debt forgiveness. As a partial answer, the Mexican government created Financiera Rural in 2002, which aims to provide access to microcredits for farmers to buy machinery, equipment, and technology.

142. See "Floundering In a Tariff-Free Landscape," *The Economist,* November 28, 2002.

143. Moreover, most credit on easy terms goes to large farmers. Procede, established in 1993, provided property titles for rural households that could be used as collateral for loans. However, even though Procede issued more than 3 million property rights certificates, households did not get much credit in return. See Davis et al. (2000) and Larre, Guichard, and Vourc'h (2003).

1998		1999		2000		2001		2002		2003	
Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value
1,123	115	938	82	1,446	128	2,940	256	3,980	377	3,453	372
4,298	474	3,790	382	3,829	370	4,650	492	4,012	452	4,348	506
5,421	588	4,729	464	5,274	498	7,590	748	7,992	828	7,801	878
39,958	4,243	50,278	4,802	46,152	4,395	46,474	4,468	45,096	4,714	41,397	4,644
210	21	324	29	177	17	121	12	189	19	235	34
0	0	0	0	1	0	0	0	0	0	0	0
210	21	324	30	177	17	121	12	189	19	235	34
223	43	343	56	194	49	133	37	210	44	257	74

Domestic Corn Policies

Mexico

Throughout the 1980s, the state-owned enterprise known as the National Company of Popular Subsistence (La Compañía Nacional de Subsistencias Populares, or Conasupo) controlled Mexican corn trade and determined the level of imports. Conasupo's first concern was to guarantee high prices for domestic corn producers. At the same time, Conasupo subsidized millers to produce cheap tortillas for domestic consumption. Broad agricultural reforms were introduced in 1990, but direct price supports for corn were maintained.[144] After the 1995 peso crisis, Conasupo replaced these direct price supports with a policy of "last resort buyer."[145] As a "last resort buyer," Conasupo bought corn at average international prices based on the Chicago Commodity Exchange (with some regional variation). It bought white corn for human consumption and sold it to *nixtamaleros* (makers of corn dough used to produce tortillas) and corn

144. However, in the 1990 reforms, import controls and basic price supports were removed for copra, cottonseed, grain barley, rice, soy, sorghum, sunflower, and wheat.

145. As a result of the "last resort buyer" program, Conasupo purchases of corn declined from 45 percent of domestic production of grain in 1994 to 12 percent in 1998. See Yunez-Naude (2002a).

Table 5.18 US white corn trade with NAFTA partners, 1993–2003
(volume in thousands of metric tons and value in millions of dollars)

	1993		1994		1995		1996		1997	
Country	**Volume**	**Value**	**Volume**	**Value**	**Volume**	**Value**	**Volume**	**Value**	**Volume**	**Value**
US exports to										
Canada	55	21	54	24	54	26	38	26	37	33
Mexico	76	46	777	126	476	82	947	142	284	61
NAFTA subtotal	131	67	831	150	530	109	986	168	321	95
Total world (including NAFTA)	1,232	359	1,405	397	1,191	360	1,420	386	736	323
US imports from										
Canada	8	11	15	16	13	12	16	16	20	14
Mexico	1	0	2	1	3	1	3	1	5	2
NAFTA subtotal	9	11	16	17	15	13	19	17	25	16
Total world (including NAFTA)	30	31	41	45.6	37	37	55	65	67	76

Note: Besides yellow, most other corn products are white.

Source: USDA Foreign Agriculture Service (FATUS) database, 2004.

millers at a somewhat lower price (table 5.20).[146] Conasupo was dismantled in December 1998, but government market price supports to Mexican corn producers were increased.[147]

Mexican price support programs were maintained through various channels, including Conasupo, the Agricultural Marketing Board (ASERCA), and Alianza. From 1997 to 2000, ASERCA complemented Conasupo for corn-market interventions.[148] In 2003, the Mexican government emphasized ASERCA's target income program for a broader range of crops, aimed at compensating producers for the gap between target and market prices (Larre, Guichard, and Vourc'h 2003). Alianza also subsidized farmers' input use (Yunez-Naude 2003). Established in 1996, Alianza provides matching grants, with the aim of boosting agricultural productivity.

146. Mexican corn millers received an in-cash subsidy, administered by ASERCA, for corn bought from the domestic market.

147. According to the OECD, market price supports badly distort production and trade and are not efficient at transferring income to producers. Mexican market price support programs accounted for 62 percent of producer support in 2001.

148. Established in 1991, ASERCA largely replaced Conasupo for direct interventions in sorghum and wheat. However, cotton, rice, and soy producers in selected regions have also been included in ASERCA programs. See Lederman, Maloney, and Serven (2003).

1998		1999		2000		2001		2002		2003	
Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value
78	40	57	35	80	41	136	54.9	166	54	64	16
979	137	1,306	170	1,350	162	1,005	134	1,372	187	1,309	182
1,057	176	1,363	205	1.431	202	1,140	189	1,538	242	1,372	198
1,360	375	1,753	324	1,820	300	1,503	286	2,481	394	1,765	290
18	13	46	8	43	12	24	10	46	13	31	5
8	3	11	5	8	3	11	4	5	2	6	3
26	16	56	13	50	15	35	14	52	15	37	8
78	99	116	100	99	111	77	97	90	93	80	77

United States

On a crop-by-crop basis, corn is the largest recipient of US government subsidies, averaging $3.7 billion annually during 1994–2003.[149] This should not be surprising, since corn is also the leading US crop in terms of area cultivated (about 76 million acres in 2001) and value of production ($21 billion in 2002).[150] Indirectly, large agribusinesses, such as Cargill and Archer Daniels Midland (which market about 70 percent of US corn exports), benefit from corn subsidies because they can sell a larger crop at lower prices.[151]

149. US corn subsidies, which rise when the price falls, were very high in 2000, totaling $10.1 billion. They dropped to $1.7 billion in 2003. The Commodity Credit Corporation figures include direct government payments, countercyclical payments, and market loan payments. Based on USDA Table 35, CCC Net Outlays by Commodity and Function, www.fsa.usda.gov/dam/bud/bud1.htm (accessed in July 2005).

150. See Foreman (2001) and USDA's National Agricultural Statistics Service (NASS) statistical database, January 2004.

151. The Mexican government indirectly subsidizes both companies. Cargill, for example, receives support from the Mexican government for the sale and transport of grain. Cargill and Archer Daniels Midland, Co. also hold stakes in the largest Mexican tortilla and flour processing firms (Maesca and Minsa), which historically have benefited from public subsidies.

Table 5.19 Canadian corn trade with NAFTA partners, 1993–2003
(volume in thousands of tons and value in millions of US dollars)

	1993		1994		1995		1996		1997	
Country	**Volume**	**Value**	**Volume**	**Value**	**Volume**	**Value**	**Volume**	**Value**	**Volume**	**Value**
Canadian exports to										
Mexico	0	0	0	0	0	0	0	0	0	0
United States	517	44	234	58	392	43	303	70	151	40
NAFTA subtotal	517	44	234	58	392	43	303	70	151	40
Total world (including NAFTA)	522	49	350	63	622	65	364	102	163	50
Canadian imports from										
Mexico	0	0	0	0	0	0	0	0	0	0
United States	580	92	1,112	89	840	129	817	153	1,469	146
NAFTA subtotal	580	92	1,112	89	840	129	817	153	1,469	147
Total world (including NAFTA)	580	93	1,113	90	841	130	821	154	1,495	148

Sources: Statistics Canada, Strategic Policy Branch; AAFC (2003a); and UN Comtrade database, 2004.

US corn producers receive payments from three key programs: direct payments, marketing loan programs, and countercyclical payments.[152] US export credit guarantee programs, such as the Supplier Credit Guarantee Program, also underwrite credits that pay for US food and agricultural products sold to foreign buyers. The dollar volume of agricultural export credit programs (for all crops) totals about $3.4 billion per year. In 2002, exports to Mexico received about one-fifth of total US export credits, close to $680 million.[153]

Potential Disputes

So far corn disputes have not erupted between the United States and Mexico.[154] However, agrarian unrest within Mexico and calls to renegotiate

152. Direct payments are based both on land area cultivated and past (rather than current) output. For example, a US corn producer can receive direct payments without necessarily producing corn that year. The marketing loan program is designed to promote agricultural exports. Finally, when the effective corn price is below the target price, US corn producers are entitled to countercyclical payments irrespective of their production level. See USDA (2003b).

153. Based on total US export credits under the Facility Guarantee Program, which reached $3.4 billion in fiscal 2002. See the program's details at www.fas.usda.gov/excredits/facility.html (accessed in May 2004). See also Oxfam (2003).

154. However, two cases related to HFCS are pending under NAFTA Chapter 11 (investment disputes).

1998		1999		2000		2001		2002		2003	
Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value
0	0	0	0	0	0	0	0	0	0	0	0
418	36	320	41	132	30	233	23	358	36	267	43
418	36	320	41	132	30	233	23	358	36	267	43
861	43	481	96	144	38	241	25	377	41	268	44
0	3	0	14	0	108	0	73	0	141	0	32
937	150	1,080	113	2.920	165	3,907	303	3,978	419	3,458	373
937	153	1,080	127	2,921	274	3,907	377	3,978	559	3,458	406
941	157	1,084	118	2,936	170	3,917	319	3,978	429	3,461	383

NAFTA's corn and bean provisions suggest that US-Mexico corn disputes are waiting in the wings. In April 2003, Mexican farmers pressured President Vicente Fox to create a $270 million emergency fund and sign a national agriculture agreement that pledged to limit Mexican white corn imports.[155] Recently, when the Mexican Senate voted to extend the HFCS tax on soft drinks, it also agreed to a prospective overquota tariff of 72.6 percent on imports of US white corn.[156]

Canada is also concerned about US corn exports. In 2000, Canada almost levied AD duties on US corn.[157] In 2002, the Canadian Grain Commission banned US corn exports that contain traces of Starlink corn, a

155. In April 2003, agriculture protesters numbering 60,000 demonstrated against the prospect, at the end of 2008, of tariff-free NAFTA agricultural trade in corn, beans, powdered milk, and sugar. The National Agriculture Agreement also seeks to study the effects of NAFTA and the US Farm Act of 2002. See Pav Jordan, "Mexico to Seek Some NAFTA Changes," *Reuters News*, April 28, 2003.

156. Reports suggest US yellow corn exports to Mexico might also be subject to higher overquota tariffs depending on the domestic supply and demand situation determined by the Mexican Commerce and Agriculture Ministries. See "Mexico Extends HFCS Tax," *Inside US Trade*, January 2, 2004.

157. The Manitoba Crown Growers filed an AD and CVD action against the United States in August 2000. The Canadian government did not levy duties on US corn imports, partly because most US corn exports are used to feed the expanding Canadian livestock industry.

Table 5.20 State-owned Conasupo corn prices and subsidies in Mexico (US dollars per ton)

Category	1996	1997	1998	1999	2000
Average Conasupo purchasing prices for					
White corn	180	166	143	—	—
Yellow corn	95	108	126	—	—
Average Conasupo selling prices to					
Tortilla factories					
Mexico City	53	59	116	—	—
Other	60	59	116	—	—
Flour companies[a]	60	59	116	—	—
DICONSA shops[b]					
White corn	155	157	119	—	—
Yellow corn	147	129	116	—	—
Feed sector [c]	111	105	91	—	—
Retail corn price ceilings for					
Tortilla[d]	n.a.	227	194	397	438
Flour[e]	n.a.	152	466	497	540

— = not applicable because Conasupo was dismantled in December 1998.
n.a. = not available
Conasupo = La Compañía Nacional de Subsistencias Populares (Mexico's National Company of Popular Subsistence)

a. Since 1985, flour companies have purchased most of their corn grains directly from producers and received payments from Conasupo to lower selling prices to tortilla factories.
b. DICONSA shops are government retail shops that distribute corn and other staple products to rural consumers at low prices.
c. Since 1996, corn grain sales from Conasupo to the feed sector have declined significantly.
d. Retail prices of tortilla and flour were different in Mexico City from the rest of the country up to 1996.
e. Excludes flour sold in bulk, defined as 1 kg or more, for which retail prices were liberalized in 1995.

Source: OECD, *Agricultural Policies in OECD Countries*, 1998–2002.

biotech variety that, according to the commission, has not been proven safe for animal or human consumption.[158]

According to the Canadian International Trade Tribunal (CITT) 2001 annual report, US dumping and subsidization significantly reduced domestic Canadian corn prices. On the other hand, CITT found that corn used to feed livestock benefited farmers through lower costs of production. Nev-

158. The challenge is how to separate genetically modified corn used for feed grain from that approved for human consumption. As an example, while Starlink corn was never allowed for human consumption because of fears that it might trigger allergic attacks in humans, the Starlink gene inadvertently contaminated grain elevators and food processing plants. By 2000, traces of Starlink were found in taco shells and corn products across the United States, prompting prices for US corn to drop in export markets. We thank Tim Josling for this observation and for providing written comments to an earlier draft. See Erin Galbally, "Second Round of Concern Over Starlink Corn," *Minnesota Public Radio*, April 25, 2001.

ertheless, subsidized US corn gives US livestock producers a significant feed cost advantage over Canadian livestock producers (Loyns 2002).

Corn Recommendations

To evaluate the liberalization of corn under NAFTA, three issues are central: the NAFTA agreement itself, agricultural subsidies, and corn prices in Mexico. Under NAFTA terms, Mexican barriers to corn imports were to be liberalized over a 15-year transition period, which gradually phased out the TRQs. There is no evidence of US government pressure to liberalize the Mexican corn sector faster than the NAFTA timetable. On its own initiative, Mexico eliminated price supports for corn during the mid- to late 1990s, and corn prices (expressed in US dollars) fell by 22 percent between 1995 and 1998. Lacking alternatives, poor Mexican farmers continued producing corn despite the falling prices; in fact, they increased both the acreage and labor devoted to corn cultivation.

US agricultural subsidies are enormous, second only to the European Union's, and US corn producers benefit from this largesse.[159] While the United States should be held accountable for the fact that agricultural subsidies help drive down the price of corn in Mexico (as well as other commodities in other markets), subsidies are not responsible for the relatively low productivity of Mexico's corn sector. In general, the growth of Mexican agricultural production is lower than its population growth rate. However, the Mexican agricultural sector has historically served as the repository for excess labor, and Mexico has been relatively slow to adopt agricultural technology that would both boost productivity per hectare and reduce demand for farm labor (de Janvry and Sadoulet 2001).

In the long run, international competitive pressure and improved domestic farm technology, throughout Mexican agriculture, will induce rural emigration—sending people both to urban Mexico and the United States. Rural-urban migration is an important transmission mechanism for reducing poverty, and within Mexico, this process still has a long way to go.[160] International comparisons suggest that the Mexican agricultural labor force as a proportion of total labor remains very high. In 2000, the share of workers in Mexican agriculture was about 21 percent, compared with 17 percent in Brazil, 10 percent in Korea, and 2 percent in the United States and Canada.[161] One study estimates that radical free trade in agriculture—the elimination of all tariffs, all Mexican agricultural support pro-

159. Some experts estimate US subsidies for corn are as high as 30 cents a bushel. See Steven Chase, "Corn Farmers Flock to Cancun," *Globe and Mail*, September 10, 2003.

160. Recent studies suggest that rural emigration contributed to a very substantial decline in the number of Mexican rural poor. See de Janvry and Sadoulet (2001).

161. Data are based on UN Food and Agriculture Organization FAOSTAT database, 2004.

grams, and all US export subsidy programs—would lead to a decline in Mexican corn production by 19 percent and reduce total farm employment by an estimated 800,000 rural workers. These workers would in turn emigrate to urban Mexico and the United States.[162] If the estimate is accurate, free trade would reduce the share of Mexican workers engaged in agriculture from 21 to 19 percent.

We recommend that the Mexican government set its sights on free trade in corn over a period of six years, between 2008 and 2014. The liberalization period should be stretched out from the original NAFTA timetable through negotiation. During this period, as a consequence of WTO negotiations in the Doha Round, the United States will very likely cut its corn (and other agricultural) subsidies, perhaps by a large dollar amount and percentage. Export subsidies on agricultural products are likely to be eliminated altogether. If the United States continues to subsidize corn, either through distorting amber or blue box supports,[163] Mexico should be permitted to impose safeguard measures, with a lower injury threshold (e.g., "market disruption") than customary for safeguard actions.

Conclusions and Recommendations

Agriculture remains the make-or-break issue for multilateral and regional trade agreements. This is equally true for bilateral FTAs. To resolve the agricultural hurdle, the US-Chile FTA has long phaseout periods for sensitive agricultural products (notably dairy, sugar, avocadoes, and orange juice). In the US-Australia FTA and the Central American Free Trade Agreement (CAFTA), sugar is either excluded altogether or liberalized very little, and barriers on other sensitive products (dairy, beef, rice, and poultry) are phased out over long periods. Compared with other free trade pacts, the US-Mexico component of NAFTA ranks among the better agreements so far as farm products are concerned. By adhering to built-in timetables and by launching new negotiations on residual barriers (especially between the United States and Canada), NAFTA can achieve nearly free agricultural trade—what may be called "approximate free trade"—within a decade.

As a prelude to our recommendations, we note that NAFTA is far from an integrated economic area. Much remains to be done. According to one estimate, in 2000, the intensity of within-country trade was still 12 times greater than the intensity of between-country trade among the NAFTA

162. Under this scenario, Mexican horticultural exports would increase and partly compensate for the decline in corn and basic crop production. See Yunez-Naude (2002b).

163. Amber box subsidies either support prices or increase production quantities, or both. Blue box measures are government payments (such as deficiency payments) linked to production restraint programs. See WTO (2004c).

partners (Vollrath 2004). Since agricultural markets are subject to some of the highest barriers, the trade intensity difference is probably greater for farm products.

While much remains to be done, it makes little sense to alter the scheduled profile of farm barriers within NAFTA while Doha and FTAA talks are still under way—probably until 2007. However, NAFTA partners should use this window to chart a course toward "approximate free trade" over the decade 2007–17.

The starting point is to recognize that domestic agricultural subsidies will not be negotiated down across the board within NAFTA, because the United States and Canada will agree to "disarm" only with the assurance of comparable commitments from the European Union and other major agricultural producers. At most, trial programs, such as we have advocated for amber and blue box wheat supports, might be negotiated within NAFTA. Moreover, because agricultural subsidies have been capitalized into hundreds of billions of dollars of farmland values,[164] they can be reduced only slowly, even in the context of WTO negotiations. A likely outcome of the Doha Round will be a partial transformation of amber and blue box subsidies (those that support agricultural prices and production) into green box subsidies (decoupled from price levels and production decisions).

With this context in mind, NAFTA partners should seek to phase out existing border barriers and eliminate them totally by 2017. However, to deal with the subsidy problem, NAFTA partners should negotiate their own "WTO-plus" commitments to eliminate or substantially reduce amber and blue box subsidies on a product-by-product basis beyond the reforms undertaken in the Doha Round. In addition, on a purely national basis, each partner should retain its privilege to invoke special agricultural safeguards, triggered by a market disruption test that could be applied for one year. (The market disruption test could have a lower threshold, and the safeguards period could be longer, if amber and blue box subsidies were a factor.) "Snapback" tariffs should be the preferred means to revert to the previous level of protection, if an import surge caused a severe drop in domestic market prices.

As a second goal, by 2017, NAFTA members should adopt a common external tariff (CET) on agricultural products. In the final chapter, we recommend that a CET on nonagricultural products be accomplished on a much faster timeline. The slower phase-in of an agricultural CET reflects the high sensitivity of this sector.[165] By harmonizing their national tariff rates toward a negotiated CET, NAFTA countries will eliminate differences in the most-

164. Over 1994–2003, US agricultural subsidies and market access barriers have averaged $40.3 billion annually on a producer support estimate basis. Even if these supports are discounted at the high rate of 15 percent, taking into account market and political uncertainties, they could have created some $270 billion of higher US farmland values.

165. To be saleable, the CET would need to be phased in very slowly for key agricultural imports (such as sugar). See Hufbauer and Schott (2004).

favored nation (MFN) tariffs applied on imports from third countries.[166] The CET goal should be reached by a NAFTA accord that all countries would implement—over the course of 10 years—the lowest rate applied by a NAFTA member for each tariff line and eliminate quota barriers.[167]

A third area that needs to be addressed is the application of SPS restrictions that hamper trade in farm products across NAFTA borders. SPS regulations can act as a de facto nontariff barrier, especially on horticultural and meat products. We recommend, on a product-by-product basis, that the NAFTA partners create common SPS standards (or mutual recognition) and a common inspection service. Both the common standards and common inspection service could start on a bilateral basis and eventually reach a trilateral basis.[168] To illustrate, while cross-border US-Canada markets for live cattle are well integrated, the partners still do not have common beef grading standards nor do they recognize the equivalency of their individual beef grades. The beef story was a key driving force for a common US-Canada SPS regime, which ultimately led to the NAFTA Security and Prosperity Partnership pledge signed in March 2005.[169] The broader goal, over a 10-year period, should be the establishment of common NAFTA standards and joint inspection services, beginning with low-controversy products (such as onions or mangoes) and ultimately reaching high-controversy products (such as genetically modified varieties and meats).

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166. The CET in agriculture and other sectors will eliminate a major rationale for protective rules of origin. Rules of origin are justified as a means of preventing "trade deflection," namely the practice of routing imports through the lowest-tariff country in an FTA. Unstated is the intentional protective effect of rules of origin. Despite this intent, it is our hope that once the CET is established, rules of origin would be waived for tariff-free trade within NAFTA.

167. In 2001, the simple average MFN tariff rate for agricultural products was 4.7 percent in the United States, 3 percent in Canada, and 23.4 percent in Mexico. See WTO *World Trade Report*, 2003. These figures suggest that Mexico would have to cut its MFN tariffs much further than Canada or the United States in order to achieve a common external tariff by harmonizing down.

168. As an example, the United States and Mexico recently resolved outstanding SPS issues in poultry, allowing most Mexican states to export poultry products into the US market. See "NAFTA: The Future of Poultry," *NAFTA Works* 9, no. 2, February 2004.

169. In March 2005, US President Bush, Mexican President Fox, and Canadian Prime Minister Martin announced the establishment of a "Security and Prosperity Partnership of North America," which includes promoting a "safer and more reliable food supply while facilitating agricultural trade." Specifically, the NAFTA trilateral agreement addressed the need to "pursue common approaches to enhanced food safety and . . . recovery from foodborne and animal and plant disease hazards." See White House press release, "Security and Prosperity Partnership of North America Prosperity Agenda," March 23, 2005; and John D. McKinnon, "Canada, Mexico, US Reach Deal to Bolster Trade," *Wall Street Journal*, March 24, 2005, A4.

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Appendix 5A

Table 5A.1 US tariffs on dutiable agricultural imports from Canada and Mexico, 2003[a] (percent)

HTS code	Description	Canada	Mexico
Dairy			
040130	Milk and cream, not concentrated, not sweetened, fat content 0 to 6 percent but not 0 to 45 percent, not subject to general note 15 or additional note 5 to Chapter 4	44	0
040130	Milk and cream, not concentrated, not sweetened, fat content 0 to 45 percent, not subject to general note 15 or additional note 6 to Chapter 4	20	0
040210	Milk and cream in powder/granules/other solid forms, fat content by weight not exceeding 1.5 percent whether/not sweetened, nesoi	49	0
040221	Milk and cream, concentrated, not sweetened, in powder, granules, or other solid forms, with fat content 0 to 1.5 percent but not 0 to 3 percent, not subject to general note 15/Chapter 4 US note 7	51	0
040221	Milk and cream, concentrated, not sweetened, in powder/granules/other solid forms, fat content 0 to 3 percent but not 0 to 35 percent, not subject to general note 15 or Chapter 4 US note 7	43	0
040221	Milk and cream, concentrated, not sweetened, in powder, granules, or other solid forms, with fat content 0 to 35 percent, not subject to general note 15 or Chapter 4 US note 9	47	0
040229	Milk and cream, concentrated, sweetened, in powder, granules, or other solid forms, with fat content 0 to 1.5 percent, not subject to general note 15 or Chapter 4 US note 10	50	0
040291	Milk and cream, concentrated, in nonsolid forms, not sweetened, in airtight containers, not subject to general note 15 or additional US note 11 to Chapter 4	41	0
040291	Milk and cream, concentrated, in other than powder, granules, or other solid forms, unsweetened, other than in airtight containers	45	0
040299	Condensed milk, sweetened, in airtight containers, not subject to general note 15 or additional US note 11 to Chapter 4	43	0
040299	Condensed milk, sweetened, not in airtight containers, not subject to general note 15 or additional US note 11 to Chapter 4	44	0
040299	Milk and cream (except condensed milk), concentrated in nonsolid forms, sweetened, not described in general note 15 or additional US note 10 to Chapter 4	56	0
040310	Yogurt, in dry form, whether or not flavored or containing additional fruit or cocoa, not subject to general note 15 or additional US note 10 to Chapter 4	46	0

040390	Sour cream, fluid, not over 45 percent by weight butterfat, not subject to general note 15 or additional US note 5 to Chapter 4	42	0
040390	Sour cream, dried, not over 6 percent by weight butterfat, not subject to general note 15 or additional US note 12 to Chapter 4	68	0
040390	Sour cream, dried, 0 to 6 percent but not over 35 percent by weight butterfat, not subject to general note 15 or additional US note 8 to Chapter 4	54	0
040390	Sour cream, dried, 0 to 35 percent but not over 45 percent by weight butterfat, not subject to general note 15 or additional US note 9 to Chapter 4	77	0
040390	Sour cream, 0 to 45 percent by weight butterfat, not subject to general note 15 or additional US note 6 to Chapter 4	27	0
040390	Curdled milk/cream/kephir and other fermented or acidified milk/cream subject to general note 15 or Chapter 4 US note 10	17	0
040410	Modified whey (except protein concentrated), whether/not concentrated or sweetened, not subject to general note 15	53	0
040410	Whey (except modified whey), dried, whether or not concentrated or sweetened, not subject to general note 15 or additional US note 12 to Chapter 4	41	0
040490	Dairy products of natural milk constituents (except protein concentrated), described in additional US note 1 to Chapter 4 and not subject to general note 15 or Chapter 4 US note 10	59	0
040510	Butter not subject to general note 15 and in excess of quota in Chapter 4 additional US note 6	102	0
040520	Butter substitute dairy spreads, over 45 percent butterfat weight, not subject to general note 15 and in excess of quota in Chapter 4 additional US note 14	82	0
040520	Other dairy spreads of a type provided in chapter 4 additional US note 1, not subject to general note 15 and in excess of quota in Chapter 4 additional US note 10	54	0
040590	Fats and oils derived from milk, other than butter or dairy spreads, not subject to general note 15 and in excess of quota in Chapter 4 additional US note 14	119	0
040610	Chongos, unripened or uncured cheese, including whey cheese and curd, not subject to general note 15 or additional US note 16 to Chapter 4	57	0
040610	Fresh (unripened/uncured) blue-mold cheese, cheese/substitutes for cheese concentrated or processed from blue-mold cheese, not subject to Chapter 4 US note 17 or to general note 15	14	0
040610	Fresh (unripened/uncured) cheddar cheese, cheese/substitutes for cheese concentrated or processed from cheddar cheese, not subject to Chapter 4 US note 18 or general note 15	35	0
040610	Fresh (unripened/uncured) American-type cheese, cheese concentrated or processed from American-type, not subject to additional US note 19 to Chapter 4 or general note 15	61	0

(table continues next page)

Table 5A.1 US tariffs on dutiable agricultural imports from Canada and Mexico, 2003[a] (percent) *(continued)*

HTS code	Description	Canada	Mexico
040610	Fresh (unripened/uncured) edam and gouda cheeses, cheese/substitutes for cheese concentrated or processed therefrom, not subject to Chapter 4 US note 20 or to general note 15	60	0
040610	Fresh (unripened/uncured) Italian-type cheeses from cow's milk, cheese/substitutes concentrated or processed therefrom, not subject to Chapter 4 US note 21 or to general note 15	29	0
040610	Fresh (unripened/uncured) Swiss/emmenthaler cheeses excluding eye formation, gruyere-process cheese, and cheese concentrated or processed from such	39	0
040610	Fresh cheese, and substitutes for cheese, nesoi, with 0.5 percent or less by weight of butterfat, not described in additional US note 23 to Chapter 4 or general note 15	30	0
040610	Fresh cheese, and substitutes for cheese, concentrated cow's milk, nesoi, 0 to 0.5 percent by weight of butterfat, not described in additional US note 16 to Chapter 4 or general note 15	25	0
040620	Blue-veined cheese (except Roquefort or Stilton), grated or powdered, not subject to general note 15 or additional US note 17 to Chapter 4	38	0
040620	Cheddar cheese, grated or powdered, not subject to general note 15 or additional US note 18 to Chapter 4	19	0
040620	Colby cheese, grated or powdered, not described in general note 15 or additional US note 19 to Chapter 4	49	0
040620	Edam and gouda cheese, grated or powdered, not subject to general note 15 or additional US note 20 to Chapter 4	35	0
040620	Romano, reggiano, provolone, provoletti, sbrinz, and goya, made from cow's milk, grated or powdered, not subject to Chapter 4 US note 21 or to general note 15	24	0
040620	Cheese containing or processed from blue-veined cheese (except Roquefort), grated/powdered, not subject to additional US note 17 to Chapter 4	68	0
040620	Cheese containing or processed from cheddar cheese, grated or powdered, subject to additional US note 18 to Chapter 4	0	0
040620	Cheese containing or processed from cheddar cheese, grated or powdered, not subject to additional US note 18 to Chapter 4	19	0
040620	Cheese containing or processed from American-type cheese (except cheddar), grated or powdered, subject to additional US note 19 to Chapter 4	0	0
040620	Cheese containing or processed from American-type cheese (except cheddar), grated or powdered, not subject to additional US note 19 to Chapter 4	56	0

040620	Cheese containing or processed from edam or gouda cheeses, grated or powdered, subject to additional US note 20 to Chapter 4	0	0
040620	Cheese containing or processed from edam or gouda cheeses, grated or powdered, not subject to additional US note 20 to Chapter 4	12	0
040620	Cheese containing or processed from Italian-type cheeses made from cow's milk, grated or powdered, not subject to additional US note 21 to Chapter 4	60	0
040620	Cheese containing or processed from Swiss, emmenthaler or gruyere-process cheeses, grated or powdered, not subject to additional US note 22 to Chapter 4	55	0
040620	Cheese (including mixtures), nesoi, not over 0.5 percent by weight of butterfat, grated or powdered, not subject to additional US note 23 to Chapter 4	34	0
040620	Cheese (including mixtures), nesoi, 0 to 0.5 percent by weight of butterfat, w/cow's milk, grated or powdered, not subject to additional US note 16 to Chapter 4	21	0
040630	Blue-veined cheese (except Roquefort), processed, not grated or powdered, not subject to general note 15 or additional US note 17 to Chapter 4	37	0
040630	Cheddar cheese, processed, not grated or powdered, not subject to general note 15 or in additional US note 18 to Chapter 4	14	0
040630	Colby cheese, processed, not grated or powdered, not subject to general note 15 or additional US note 19 to Chapter 4	83	0
040630	Edam and gouda cheese, processed, not grated or powdered, not subject to general note 15 or additional US note 20 to Chapter 4	61	0
040630	Gruyere-process cheese, processed, not grated or powdered, not subject to general note 15 or additional US note 22 to Chapter 4	18	0
040630	Processed cheese concentrated/processed from blue-veined cheese (except Roquefort), not grated/powdered, not subject to additional US note 17 to Chapter 4, not to general note 15	48	0
040630	Processed cheese concentrated/processed from cheddar cheese, not grated/powdered, not subject to additional US note 18 or general note 15	40	0
040630	Processed cheese concentrated/processed from American-type cheese (except cheddar), not grated/powdered, subject to additional US note 19 to Chapter 4 or general note 15	0	0

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Table 5A.1 US tariffs on dutiable agricultural imports from Canada and Mexico, 2003[a] (percent) *(continued)*

HTS code	Description	Canada	Mexico
040630	Processed cheese concentrated/processed from American-type cheese (except cheddar), not grated/powdered, not subject to additional US note 19 to Chapter 4 or general note 15	56	0
040630	Processed cheese concentrated/processed from edam or gouda, not grated/powdered, not subject to additional US note 20 to Chapter 4 or general note 15	0	0
040630	Processed cheese concentrated/processed from edam or gouda, not grated/powdered, not subject to additional US note 20 to Chapter 4 or general note 15	84	0
040630	Processed cheese concentrated/processed from Italian-type cheese, not grated/powdered, not subject to additional US note 21 to Chapter 4 or general note 15	33	0
040630	Processed cheese concentrated/processed from Swiss/emmenthaler/gruyere-process, not grated/powdered, not subject to additional US note 22 to Chapter 4 or general note 15	39	0
040630	Processed cheese (including mixtures), nesoi, not over 0.5 percent by weight butterfat, not grated or powdered, not subject to Chapter 4 US note 23 or general note 15	27	0
040630	Processed cheese (including mixtures), nesoi, with cow's milk, not grated or powdered, not subject to additional US note 16 to Chapter 4 or general note 15	49	0
040640	Blue-veined cheese, nesoi, not subject to general note 15 of the HTS or to additional US note 17 to Chapter 4	43	0
040690	Cheddar cheese, nesoi, not subject to general note 15 of the HTS or to additional US note 18 to Chapter 4	26	0
040690	Edam and gouda cheese, nesoi, not subject to general note 15 of the HTS or to additional US note 20 to Chapter 4	46	0
040690	Goya cheese from cow's milk, not in original loaves, nesoi, not subject to general note 15 or to additional US note 21 to Chapter 4	45	0
040690	Sbrinz cheese from cow's milk, nesoi, not subject to general note 15 or to additional US note 21 to Chapter 4	95	0
040690	Romano, reggiano, parmesan, provolone, and provoletti cheese, nesoi, from cow's milk, not subject to general note 15 or Chapter 4 US note 21	28	0
040690	Swiss or emmenthaler cheese with eye formation, nesoi, not subject to general note 15 or to additional US note 25 to Chapter 4	40	0
040690	Colby cheese, nesoi, not subject to general note 15 or to additional US note 19 to Chapter 4	34	0
040690	Cheeses and substitutes for cheese (including mixture), nesoi, with romano/reggiano/parmesan/provolone/etc., from cow's milk, not subject to Chapter 4 US note 21 or general note 15	71	0

040690	Cheeses and substitutes for cheese (including mixture), nesoi, with or from blue-veined cheese, not subject to additional US note 17 to Chapter 4 or general note 15	36	0
040690	Cheeses and substitutes for cheese (including mixture), nesoi, with or from cheddar cheese, not subject to additional US note 18 to Chapter 4 or general note 15	16	0
040690	Cheeses and substitutes for cheese (including mixture), nesoi, with or from American cheese except cheddar, not subject to additional US note 19 to Chapter 4 or general note 15	44	0
040690	Cheeses and substitutes for cheese (including mixture), nesoi, with or from edam or gouda cheese, not subject to additional US note 20 to Chapter 4 or general note 15	48	0
040690	Cheeses and substitutes for cheese (including mixture), nesoi, with or from Swiss, emmenthaler, or gruyere, not subject to Chapter 4 US note 22 or general note 15	69	0
040690	Cheeses and substitutes for cheese (including mixture), nesoi, with butterfat not over 0.5 percent by weight, not subject to additional US note 23 to Chapter 4 or general note 15	18	0
040690	Cheeses and substitutes for cheese (including mixture), nesoi, with cow's milk, with butterfat 0 to 0.5 percent by weight, not subject to Chapter 4 US note 16 or general note 15	26	0
Sugar			
170111	Cane sugar, raw solid form, without flavoring or coloring, nesoi, not subject to general note 15 or additional US note 5 to Chapter 17	89	27
170112	Beet sugar, raw, in solid form, without added flavoring or coloring, nesoi, not subject to general note 15 or additional US note 5 to Chapter 17	44	13
170191	Cane/beet sugar and pure sucrose, refined, solid, w/added coloring but not flavor, not subject to general note 15 or additional US note 5 to Chapter 17	38	11
170191	Cane/beet sugar and pure sucrose, refined, solid, w/added flavoring, 0 to 65 percent by weight sugar, described in Chapter 17 US note 2, subject to Chapter 17 US note 7	6	6
170191	Cane/beet sugar and pure sucrose, refined, solid, w/added flavoring, 0 to 65 percent by weight sugar, described in Chapter 17 US note 2, not subject to general note 15/Chapter 17 US note 7	83	0
170191	Cane/beet sugar and pure sucrose, refined, solid, w/added flavoring, 0 to 10 percent by weight sugar, described in Chapter 17 US note 3, not subject to general note 15/Chapter 17 US note 8	61	0

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Table 5A.1 US tariffs on dutiable agricultural imports from Canada and Mexico, 2003[a] (percent) *(continued)*

HTS code	Description	Canada	Mexico
170199	Cane/beet sugar and pure sucrose, refined, solid, w/o added coloring or flavoring, not subject to general note 15 or additional US note 5 to Chapter 17	0	16
170230	Glucose and glucose syrup not containing or containing in dry state less than 20 percent fructose; blended, see additional US note 9 (Chapter 17)	6	6
170230	Glucose and glucose syrup not containing or containing in dry state less than 20 percent fructose; blended syrups (Chapter 17 note 4), nesoi	28	0
170240	Blended syrup described in additional US note 4 (Chapter 17), containing in dry state 20 to 50 percent by weight of fructose, see additional US note 9 (Chapter 17)	6	6
170240	Blended syrup described in additional US note 4 (Chapter 17), containing in dry state 20 to 50 percent by weight of fructose, nesoi	20	0
170260	Other fructose and fructose syrup containing in dry state >50 percent by weight of fructose, blended syrup (see additional US note 4 to Chapter 17) and see additional US note 9	6	6
170260	Other fructose and fructose syrup containing in dry state >50 percent by weight of fructose, blended syrup (see additional US note 4 to Chapter 17), nesoi	159	0
170290	Cane/beet sugars and syrups (including invert sugar); nesoi, w/soluble nonsugar solids, 6 percent or less soluble solids, not subject to general note 15 or Chapter 17 US note 5	0	15
170290	Blended syrups described in additional US note 4 to Chapter 17, nesoi, subject to additional US note 9 to Chapter 17	6	6
170290	Blended syrups described in additional US note 4 to Chapter 17, nesoi, not subject to additional US note 9 to Chapter 17	93	0
170290	Sugars nesoi w/o 65 percent by dry weight sugar, described in additional US note 2 to Chapter 17 and subject to additional US note 7 to Chapter 17	6	6
170290	Sugars nesoi w/o 65 percent by dry weight sugar, described in additional US note 2 to Chapter 17 and not subject to additional US note 7 to Chapter 17	17	0

Peanuts			
120210	Peanuts (groundnuts), not roasted or cooked, in shell, subject to general note 15 of the HTS	164	164
120210	Peanuts (groundnuts), not roasted or cooked, in shell, subject to additional US note 2 to Chapter 12	164	164
120210	Peanuts (groundnuts), not roasted or cooked, in shell, subject to additional US note 2 to Chapter 12	164	164
120210	Peanuts (groundnuts), not roasted or cooked, in shell, not subject to general note 15 or additional US note 2 to Chapter 12	164	164
120220	Peanuts (groundnuts), not roasted or cooked, shelled, subject to general note 15 of the HTS	132	132
120220	Peanuts (groundnuts), not roasted or cooked, shelled, subject to additional US note 2 to Chapter 12	132	132
120220	Peanuts (groundnuts), not roasted or cooked, shelled, subject to additional US note 2 to Chapter 12	132	132
120220	Peanuts (groundnuts), not roasted or cooked, shelled, not subject to general note 15 or additional US note 2 to Chapter 12	132	132

nesoi = not elsewhere specified or included.

a. In the case of US imports from Canada, the figures show out-of-quota tariffs, which are not scheduled for reduction. Major exceptions to agricultural trade liberalization include US imports of Canadian dairy products, peanuts, peanut butter, cotton, sugar, and sugar-containing products, and Canadian imports of US dairy products, poultry, eggs, and margarine. In the case of US imports from Mexico, the figures show out-of-quota tariffs, which again are not scheduled for reduction. Agricultural commodities not subject to tariff and quota elimination until 2008 include Mexican exports of frozen concentrated orange juice, sugar, and peanuts, and US exports to Mexico of corn, dried beans, and nonfat dry milk. However, in-quota imports are subject to lower (often zero) tariffs, and the quotas are gradually expanded. All other agricultural products that are duty-free from both Canada and Mexico are not listed in this table.

Sources: USDA Economic Research Service (correspondence with John Wainio, 2003); and Zahniser (2005).

Table 5A.2 US agricultural trade with NAFTA partners, 1992–2003 (millions of dollars)

Commodity	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
NAFTA												
US exports[a]												
Agriculture, total	8,742	8,926	10,136	9,316	11,563	11,957	13,144	12,682	14,050	15,525	15,905	17,193
Animals and animal products	2,150	2,114	2,383	1,847	2,145	2,702	2,864	2,813	3,212	3,545	3,422	3,569
Grains and feeds	1,877	1,772	2,186	2,093	3,196	2,374	2,909	2,831	3,048	3,634	3,811	4,048
Fruits and preparations	788	837	871	795	810	881	880	937	1,041	1,071	1,140	1,223
Fruit juices	166	170	184	210	227	230	256	267	277	266	272	298
Nuts and preparations	170	171	169	179	198	203	206	223	247	228	246	270
Vegetables and preparations	1,230	1,321	1,516	1,373	1,487	1,701	1,917	1,872	2,036	2,186	2,362	2,504
Oilseeds and products	1,007	1,028	1,184	1,193	1,562	1,827	1,630	1,559	1,594	1,781	2,045	2,360
Cattle, live, including calves	173	110	172	67	91	169	148	166	261	259	125	48
Tomatoes	139	121	119	100	95	122	111	109	143	135	123	135
Sugar and related products	215	231	254	230	266	294	331	304	326	326	304	343
Cut flowers	129	127	135	132	134	149	155	156	161	163	158	193
Beverages, excluding fruit juices	163	165	226	166	173	200	211	226	234	255	239	260
Nonagricultural, total	114,706	123,789	143,272	149,371	163,102	192,167	201,155	215,013	242,795	220,702	213,546	215,633
Agriculture as percent of total exports	7	7	7	6	7	6	6	6	5	7	7	7
US imports[b]												
Agriculture, total	6,520	7,376	8,191	9,464	10,553	11,555	12,473	12,871	13,738	15,128	15,866	16,587
Animals and animal products	2,226	2,464	2,323	2,737	2,797	3,048	3,124	3,286	3,780	4,413	4,338	3,722
Grains and feeds	828	1,008	1,372	1,403	1,669	1,862	1,707	1,815	1,875	2,063	2,271	2,324
Fruits and preparations	391	380	438	570	616	639	808	993	852	934	967	1,126
Fruit juices	37	42	66	94	88	90	107	96	89	76	91	85
Nuts and preparations	77	72	79	87	70	75	113	101	112	76	98	126
Vegetables and preparations	1,072	1,379	1,491	1,746	2,066	2,201	2,727	2,715	2,979	3,389	3,524	4,102
Oilseeds and products	361	439	662	639	810	794	865	697	630	610	620	775
Cattle, live, including calves	1,245	1,341	1,151	1,409	1,121	1,119	1,144	1,000	1,152	1,461	1,447	867
Tomatoes	139	310	326	423	618	576	668	609	573	652	725	992
Sugar and related products	244	250	310	304	354	389	451	494	483	620	762	859

Cut flowers	16	18	21	31	30	39	41	43	47	47	45	366
Beverages, excluding fruit juices	373	387	460	494	607	715	865	1,019	1,199	1,390	1,523	1,623
Nonagricultural, total	124,105	140,237	167,516	195,419	218,278	239,417	253,140	291,831	347,107	329,369	325,826	341,496
Agriculture as percent of total imports	5	5	5	5	5	5	5	4	4	4	5	5
US agricultural exports to world	43,237	42,965	46,164	56,192	60,408	57,134	51,801	48,378	51,246	53,658	53,005	59,561
US nonagricultural exports to world	386,636	400,581	440,821	496,745	528,389	593,770	589,674	597,676	666,043	618,888	582,238	598,477
Agriculture as percent of total exports	10	10	9	10	10	9	8	7	7	8	8	9
US agricultural imports from world	24,796	25,117	27,024	30,255	33,511	36,148	36,894	37,673	38,974	39,366	41,935	47,376
US nonagricultural imports from world	496,385	545,738	625,317	704,360	752,505	820,334	863,635	971,052	1,156,376	1,083,150	1,102,205	1,192,123
Agriculture as percent of total imports	5	4	4	4	4	4	4	4	3	4	4	4
Mexico												
US exports[a]												
Agriculture, total	3,799	3,618	4,587	3,521	5,441	5,177	6,151	5,624	6,410	7,404	7,252	7,879
Animals and animal products	1,254	1,173	1,357	818	1,083	1,529	1,662	1,569	1,802	2,097	2,021	2,157
Grains and feeds	1,064	888	1,234	1,060	2,069	1,165	1,639	1,578	1,686	2,061	2,048	2,208
Fruits and preparations	77	110	185	85	95	117	128	190	246	259	242	234
Fruit juices	7	8	12	6	7	8	15	16	29	24	27	22
Nuts and preparations	37	37	44	33	45	44	46	60	78	71	73	81
Vegetables and preparations	158	172	250	141	250	281	432	376	457	559	565	633
Oilseeds and products	717	656	852	833	1,100	1,247	1,161	1,046	1,027	1,097	1,304	1,471
Cattle, live, including calves	149	63	99	14	56	132	85	58	81	103	75	21
Tomatoes	10	10	14	1	2	13	4	4	22	20	12	8
Sugar and related products	66	59	81	59	108	101	99	97	105	78	50	66
Fresh cut flowers	0	0	0	0	0	0	0	0	0	0	0	0
Beverages, excluding fruit juices	52	71	103	40	43	42	36	41	54	78	68	77

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Table 5A.2 US agricultural trade with NAFTA partners, 1992–2003 (millions of dollars) *(continued)*

Commodity	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Nonagricultural, total	36,272	37,095	45,038	41,798	49,902	63,927	70,189	76,377	94,805	84,146	79,496	76,017
Agriculture as percent of total exports	9	9	9	8	10	7	8	7	6	8	8	9
US imports[b]												
Agriculture, total	2,378	2,718	2,894	3,835	3,764	4,109	4,686	4,881	5,077	5,265	5,518	6,301
Animals and animal products	374	459	386	601	174	230	271	362	477	485	378	579
Grains and feeds	53	60	85	105	128	158	156	161	168	197	215	258
Fruits and preparations	321	314	358	475	508	530	676	854	701	763	784	900
Fruit juices	26	31	58	80	74	65	91	71	67	51	62	43
Nuts and preparations	63	51	55	66	45	48	86	72	83	43	67	99
Vegetables and preparations	809	1,058	1,125	1,306	1,499	1,484	1,791	1,679	1,779	2,020	2,047	2,405
Oilseeds and products	42	29	27	32	37	32	50	43	39	44	37	39
Cattle, live, including calves	341	430	352	546	122	177	206	293	406	408	301	471
Tomatoes	133	304	315	406	580	517	567	490	412	485	552	761
Sugar and related products	31	38	69	91	121	129	158	176	175	215	296	267
Fresh cut flowers	10	12	13	19	15	16	18	18	22	21	21	15
Beverages, excluding fruit juices	169	186	219	275	360	484	631	759	884	1,030	1,178	1,271
Nonagricultural, total	31,213	35,556	45,249	57,315	69,859	80,260	87,691	103,436	128,720	124,394	127,785	130,023
Agriculture as percent of total imports	7	7	6	6	5	5	5	5	4	4	4	5
Canada												
US exports[a]												
Agriculture, total	4,943	5,308	5,550	5,794	6,122	6,780	6,993	7,058	7,640	8,121	8,654	9,314
Animals and animal products	897	941	1,025	1,029	1,062	1,173	1,202	1,244	1,410	1,448	1,376	1,412
Grains and feeds	814	884	952	1,032	1,127	1,209	1,270	1,253	1,363	1,573	1,761	1,840
Fruits and preparations	711	727	686	709	715	764	752	746	794	812	898	989
Fruit juices	159	162	171	204	220	222	241	251	248	242	245	276
Nuts and preparations	133	134	126	145	154	159	160	163	169	157	173	189
Vegetables and preparations	1,072	1,149	1,266	1,232	1,237	1,421	1,485	1,497	1,579	1,626	1,798	1,871
Oilseeds and products	290	372	332	360	463	580	469	512	566	684	749	889

Cattle, live, including calves	24	48	73	53	35	37	63	109	180	156	50	27
Tomatoes	129	111	105	98	94	109	107	104	121	115	112	126
Sugar and related products	149	172	173	172	158	193	232	207	221	248	254	278
Fresh cut flowers	16	17	17	15	15	20	22	24	25	27	27	29
Beverages, excluding fruit juices	110	94	123	126	130	158	175	185	180	177	171	183
Nonagricultural, total	78,435	86,693	98,234	107,573	113,200	128,240	130,966	138,636	147,990	136,556	134,050	139,616
Agriculture as percent of total exports	6	6	5	5	5	5	5	5	5	6	6	6
US imports[b]												
Agriculture, total	4,143	4,658	5,298	5,629	6,789	7,446	7,787	7,990	8,661	9,863	10,348	10,286
Animals and animal products	1,852	2,005	1,937	2,136	2,623	2,818	2,853	2,924	3,303	3,928	3,960	3,144
Grains and feeds	775	948	1,287	1,298	1,541	1,704	1,551	1,654	1,706	1,866	2,056	2,065
Fruits and preparations	70	66	80	95	108	109	132	139	150	171	183	226
Fruit juices	11	11	9	14	14	25	16	25	21	24	28	41
Nuts and preparations	13	21	24	22	26	27	26	29	28	34	32	27
Vegetables and preparations	263	321	366	439	568	716	936	1,037	1,200	1,369	1,476	1,696
Oilseeds and products	319	410	635	607	773	762	816	654	591	566	583	736
Cattle, live, including calves	903	911	799	863	999	943	938	708	746	1,052	1,146	396
Tomatoes	6	6	10	17	37	59	101	120	161	167	173	231
Sugar and related products	213	212	241	213	234	260	293	317	308	405	466	593
Fresh cut flowers	4	4	5	7	10	14	15	15	17	18	17	20
Beverages, excluding fruit juices	204	201	241	219	247	231	235	260	315	360	345	352
Nonagricultural, total	92,892	104,681	122,267	138,104	148,419	159,157	165,449	188,396	218,387	204,974	198,041	211,473
Agriculture as percent of total imports	4	4	4	4	4	4	4	4	4	5	5	5

a. US domestic exports.
b. US imports for consumption.

Sources: USDA Foreign Agriculture Service (FATUS) database, 2004; and USITC Interactive Tariff and Trade Dataweb, 2004; and US Department of Commerce, International Trade Administration, 2004.