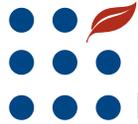




United States
Department
of Agriculture

LDP-M-131-01
May 2005



Electronic Outlook Report from the Economic Research Service

www.ers.usda.gov

Market Integration of the North American Animal Products Complex

**William F. Hahn, Mildred Haley, Dale Leuck,
James J. Miller, Janet Perry, Fawzi Taha,
and Steven Zahniser**

Abstract

The beef, pork, and poultry industries of Mexico, Canada, and the United States have tended to become more economically integrated over the past two decades. The North American Free Trade Agreement (NAFTA) had a large role in this integration. NAFTA did little to integrate North American dairy markets or Canadian poultry markets with the rest of North America, however. Sanitary barriers, which are designed to protect people and animals from diseases, are some of the most significant barriers to fuller integration of meat and animal markets. In addition, diseases such as Bovine Spongiform Encephalopathy (BSE), also known as mad cow disease, have caused major disruptions to beef and cattle trade.

Keywords: Livestock trade, meat trade, poultry trade, United States, Mexico, Canada, North American Free Trade Agreement, trade barriers, non-tariff barriers, sanitary barriers, market integration.

Acknowledgments

The authors wish to thank the many reviewers of this document, including Joy Harwood, USDA-ERS, Rene Ochoa, Texas A&M, Rhonda Skaggs, New Mexico State University, David Williams and Claire Klotz, USDA-Foreign Agricultural Service, Shayle Shagam, USDA-World Agricultural Outlook Board, Carol Goodloe, USDA-Office of the Chief Economist. Appreciation is also extended to the editor, Martha Evans, and to Wynnic Pointer-Napper, for her efforts in designing the report.

Introduction

Markets in North America are transcending borders and becoming less national and more regional in nature. Trade agreements such as the Canadian-U.S. Free Trade Agreement (CFTA), North American Free Trade Agreement (NAFTA) and the Uruguay Round Agreement on Agriculture (URAA) under what is now the World Trade Organization, have eliminated or reduced trade barriers among the three North American countries—the United States, Mexico, and Canada—and these changes in trade policy have led to increasing integration of the North American animal products industries.

Market integration is the extent to which one or more formerly separated markets have combined to form a single market. Integration is visible in increased flows of cross-border trade made possible by the elimination of policies that stop international trade and investment (see Zahniser for a more complete discussion of North American market integration). Examples of these policies are tariffs, quotas, import licensing, different sanitary or labeling restrictions, limits on the amount of foreign ownership in a particular firm or industry, and other differential treatment of foreign and domestic investors. Market integration in the animal products sectors has also been increased by policy changes that indirectly affect animal products, for instance, the end of Canada's grain transportation subsidies and the liberalization of Mexico's grain import controls.

Through trade agreements, the North American countries have developed several formal mechanisms for the resolution of disputes and for the adjudication of national antidumping and countervailing duty laws. These mechanisms, along with NAFTA's investment provisions, assure players in the market that the North American countries are safe and secure for cross-border economic activity. While many trade barriers for animal products have been eliminated, those that remain vary from one sector to another (i.e., cattle and beef, hogs and pork, poultry, dairy). Consequently, the degree of market integration also varies from one sector to another.

Current trade agreements require that barriers to trade set up as sanitary and phytosanitary (SPS) measures be scientifically based, nondiscriminatory, and transparent, and that these measures restrict trade in a minimal fashion, when possible. NAFTA also established a Committee on Sanitary and Phytosanitary Measures to facilitate technical cooperation among Canada, the United States, and Mexico in developing, applying, and enforcing such measures.

Sanitary barriers are now the major factors limiting further integration of the North American livestock and meat products industries. Sanitary regulations in international trade have an important influence on the process of integration by prohibiting livestock and meat exports from areas with potentially high-impact animal diseases, such as Bovine Spongiform Encephalopathy (BSE), bovine tuberculosis and brucellosis, Classical Swine Fever (CSF), Exotic Newcastle Disease (END), and Avian Influenza (AI).

Before NAFTA and the URAA, the general practice in dealing with problem diseases was to prohibit exports of the (potentially) infected animals and their

meat from the entire country. Both NAFTA and the URAA now support the use of regionalization—isolating only the regions in which animals are infected. If the countries with the disease have adequate internal controls, the regionalization process allows exports to flow from regions within a country that are free of animal diseases, even when the diseases may be endemic in other regions within the country. This report reviews the progress towards livestock and meat market integration among the United States, Canada, and Mexico, with a special eye on the impacts that SPS barriers have had on the further integration of the markets in the three countries.

Cattle and Beef

Prior to 2003, the cattle and beef sectors were the most economically integrated of the animal product sectors in North America, with few trade policies blocking free trade. Mexican trade policies for beef and cattle varied greatly before NAFTA, and that agreement liberalized Mexican cattle and beef trade with the rest of North America. Cattle and beef tariffs between the United States and Canada were low even before NAFTA. Both the United States and Canada had beef import quotas which sometimes limited beef and slaughter-cattle imports. Sanitary barriers were also relatively low and becoming less important due to U.S. and Canadian efforts to harmonize their SPS regulations. However, integration across all three markets was hindered by the discovery of BSE in Canada in May 2003, in the United States in December 2003, and two more Canadian cases in January 2005.

Finding BSE in cattle in Canada and the United States has disrupted international beef trade as well as flows among all three of the North American countries.¹ Countries across the globe immediately banned cattle and beef exports from both countries, and the ban included trade among the three North American countries. As cattle 30 months of age or younger are considered to have little risk of transmitting BSE, and because boneless beef has even lower risk, the regulations currently in force allow trade among the North American countries in boneless beef from cattle less than 30 months of age. As of May 2005, Canadian and U.S. cattle are still under trade restrictions, and the timing of the opening of the border is in question. Under normal conditions, the North American cattle and beef sectors are marked by substantial volumes of trade that cross international boundaries. The sector will almost certainly return to this state in the future as terms for resumption of cattle and beef trade are negotiated.

Industry Structure. The United States and Canada have similar beef production systems. Both countries produce high-quality, grain-fed beef from cattle bred for meat production (as opposed to dairy breeds), and calves are born on ranches, raised on pasture, and then moved to feedlots for finishing on grain.

Mexican cattle production practices vary regionally. Northern Mexico's producers traditionally focused and continue to focus on supplying beef calves to the U.S. market. Northern Mexico raises the same breeds of beef-type cattle as Southwest U.S. cattle producers: mostly English or mixed-English beef breeds, with some Brahma and English crosses. The cattle that the United States imports from Mexico tend to be young—weighing 300-500 pounds (feeder calves)—and are destined for further pasturing and feedlot finishing, and then slaughtered in the United States. The cattle in tropical Mexico are primarily Zebu and Zebu-crosses. Zebu genetics give the cattle more resistance to heat and humidity, but their frames are not built for meat production. Many of these tropical cattle are dual-purpose (dairy and beef) cattle. Mexico has only a small cattle-feeding sector.

Under normal trading conditions, the United States is a net importer of cattle from both Canada and Mexico (fig. 1). U.S. imports from Mexico are primarily feeder calves, primarily from northern Mexico. Approximately 25

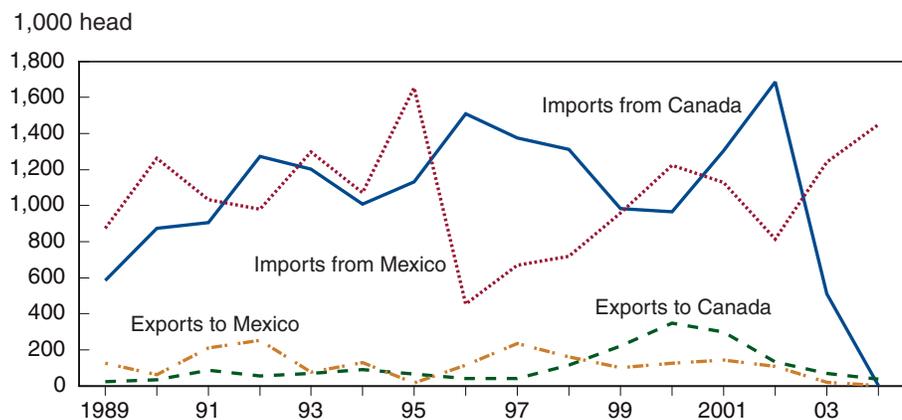
¹ For up-to-date information about the status of BSE testing, and the opening of the borders, see the APHIS BSE site at: <http://www.aphis.usda.gov/lpa/issues/bse/bse.html>

percent of U.S. imports of Mexican cattle enter through Santa Teresa, New Mexico (see Skaggs, et al.), bound for pastures, feedlots, and slaughterhouses throughout the United States (fig. 2). While Santa Teresa boasts a modern, state-of-the-art facility that can accommodate up to 10,000 cattle, significant improvements have been made at most other ports. The United States shipped culled cows (beef and dairy) for slaughter as well as high-quality breeding stock (heifers and bulls) to Mexico. A small number of cows culled from U.S. herds are sold as breeding stock in Mexico.

During the 1990s, the United States became a net importer of beef from Canada, and the growth in beef imports from Canada outpaced the growth in beef exports to Mexico (fig. 3). Given strong U.S. demand for grain-fed beef

Figure 1

After the outbreak of BSE, the United States remains a net importer of cattle from Mexico

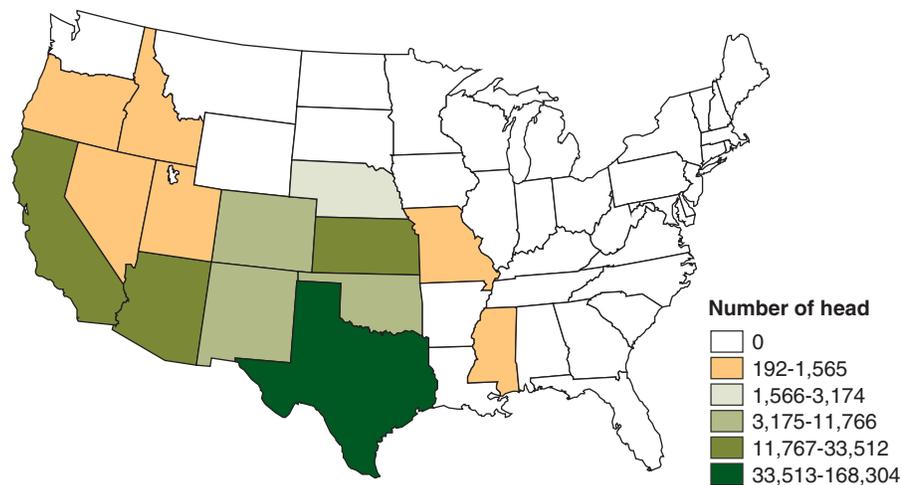


2004 forecast.

Source: USDA, Economic Research Service, *Red Meat Yearbook*.

Figure 2

U.S. States of destination for live cattle imported from Mexico via the Santa Teresa, NM, port of entry, August 2000-July 2001



Source: Skaggs, et al.

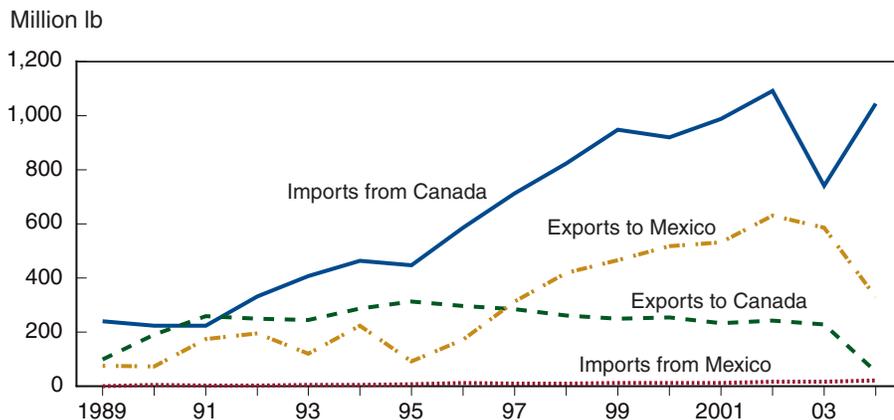
and Mexico's general lack of well-developed feed grains and cattle-feedlot sectors, it makes economic sense for Mexico to export feeder cattle (and import beef) rather than produce beef from grain-fed cattle for export or the domestic Mexican market. Normal trading patterns have since been disrupted, but prior to trade bans as a result of BSE, Canada shipped beef mostly from western Canadian packers to the western United States, while U.S. beef exports went mostly from the midwestern packers to eastern Canada. In both cases, transportation efficiencies are gained because the other country is the closest major source of beef to a particular regional market.

Low Tariff Barriers Have Long Facilitated North American Livestock Trade. Before enactment of the CFTA in 1989, Canada and the United States had allowed breeding and dairy cattle from each other to enter duty-free, while levying tariffs of 2.2 cents per kilogram on slaughter and feeder cattle and 4.4 cents per kilogram on beef. Beef and slaughter-cattle imports were sometimes limited by each country's beef import quotas. Under CFTA, the United States and Canada no longer subjected each other to their import quotas, and the beef and cattle tariffs were phased out. U.S. cattle imports from Canada rose, peaking in 1996. Because the tariffs were already low, their elimination probably had only a minor effect in increasing cattle trade.

The more important factors driving the growth in cattle trade were the rapid economic growth in the United States and heightened demand for U.S.-produced beef in foreign markets. This increased demand came at the same time that cattle inventories in the United States were approaching the low in the cattle cycle. Inventories were further depleted by drought conditions in many cow-calf areas since 1998. In 2001 and 2002, feedlots and slaughter facilities began to pull in Canadian cattle because of the declining U.S. cattle inventories. Cattle were also pushed from Canadian herd liquidations due to drought conditions in that country and the resultant poor pasture and feed conditions.

With CFTA, the United States increased beef exports to Canada with no immediate impact on the reverse trade. However, exports of beef to Canada

Figure 3
Beef exports to Mexico and imports from Canada have risen dramatically



2004 forecast.

Source: USDA, Economic Research Service, *Red Meat Yearbook*.

leveled off in the early 1990s as beef imports from Canada began to grow. These imports continued to increase during the 1990s, helped by rapid economic growth in the United States, a depreciating Canadian dollar, and increased Canadian beef production. The U.S. ban on imports from Canada due to BSE was modified in August 2003 to allow imports of boneless meat from animals less than 30 months of age. Similarly, after the discovery of BSE in the United States late in 2003, Canada imposed a ban of U.S. meat and animal exports, but later relaxed the ban in March 2004 to allow beef imports from animals under 30 months of age. It is expected that normal trade will resume over time.

Elimination of another trade restriction may have had a more significant effect on bilateral beef trade. The U.S. Meat Import Act of 1964, as amended in 1979, set upper limits on total U.S. beef imports. The Act allowed the United States to negotiate voluntary restraint agreements (VRAs) with its beef-supplying countries. Suppliers could ship more beef to the United States under a VRA than they could under the Act's quota, so most suppliers would negotiate a VRA. The U.S. beef quotas were set high enough that they were not binding in every year. Quotas and VRAs would affect beef imports only in the last few months of a year. VRAs were relatively frequent during the 1970s, a period of cyclically high U.S. demand for processing beef. Thus, the Act afforded some protection to U.S. cattle producers, and the increase in beef imports from Canada during the 1990s may be partially attributed to the removal of Canada from the Act's coverage.

As part of CFTA, the two countries agreed not to count imports from each other toward their beef quotas, and in order to meet commitments negotiated under the URAA, the absolute quotas were replaced with tariff-rate quotas (TRQs). Neither country counts imports from its North American trading partners toward its TRQ; therefore, over-quota tariffs on beef imports are not charged either.

Mexico had few limits on beef and cattle imports before NAFTA. In late 1992, however, Mexico began to levy a 15-percent tariff on non-breeding cattle, a 20-percent tariff on fresh beef, and a 25-percent tariff on frozen beef. These tariffs, which previously had been zero, applied to imports from all countries. Once NAFTA took effect, Mexico eliminated these tariffs for U.S. and Canadian products, and it phased out its 20-percent tariff on U.S. and Canadian beef offal over the 9-year period that ended on January 1, 2003. Later, other problems arose. Mexican beef producers complained that the United States had dumped beef into Mexico during June-December 1997. The Government of Mexico imposed provisional antidumping duties in August 1999 and final duties in April 2000. These duties were complicated, with different rates applied to different cuts, qualities, and packers. The U.S. Government appealed these duties, at both NAFTA and World Trade Organization panels. The NAFTA panel found against Mexico in March 2005.

Along with tariff elimination, NAFTA also had a timetable for the removal of barriers affecting the free movement of international cargo and passengers. Animal product trade has been affected by these barriers because most cattle and feed are moved by truck. It was intended that Mexican trucks be allowed in 1995 to carry their cargoes anywhere in the four border States of California, Arizona, New Mexico, and Texas, as opposed to being limited to cities and

counties adjacent to the border crossing, with U.S. trucks getting similar privileges. The U.S. Department of Transportation (DOT) has developed a website that contains information on the U.S. implementation of this part of NAFTA at: <http://www.fmcsa.dot.gov/cross-border/nafta-rules/new-mexrule.htm>. In 2002, the DOT issued its final rule, Revision of Regulations and Application Form for Mexico-Domiciled Motor Carriers To Operate in United States Municipalities and Commercial Zones on the United States-Mexico Border (<http://www.fmcsa.dot.gov/rules-regulations/administration/nafta/Parts-368-and-387.htm>). The objective of these rules is to enhance the safety of Mexico-domiciled carriers operating in the United States. The rules describe what information Mexico-domiciled carriers will have to submit to assure that safety issues and financial liability are addressed.

Reform of Sanitary Regulations is Important. In October 1997, Canada and the United States initiated the Northwest Pilot Project, in which Canada eliminated its testing requirements concerning anaplasmosis, brucellosis, and tuberculosis for cattle produced in Montana and the State of Washington. Since then, this project has been expanded to include virtually all U.S. States along the Canadian border, as well as Hawaii. As part of the agreement underlying this program, now called the Restricted Feeder Cattle Project, the United States also eliminated its testing requirements for Canadian cattle with respect to brucellosis and tuberculosis. Trade of live bovine and ovine animals has been restricted across the borders of all three countries since the discovery of BSE, but resumption of trade among the North American countries and more broadly in the global market is being negotiated.

To help ensure that sanitary requirements are met, Mexican cattle rancher associations own and operate inspection facilities at each port of entry along the U.S. border. Each facility is staffed by inspectors employed by USDA's Animal and Plant Health Inspection Service (APHIS), which collects user fees for its inspections from cattle brokers—who in turn charge the fee to the Mexican cattle producers.

Restrictions at the Mexican border require that cattle must be certified free of brucellosis and tuberculosis. Most Mexican feeder cattle destined for the U.S. market are steers; the requirement that heifers be spayed keeps their numbers relatively low. Cattle must be free of ticks and are dipped in insecticide baths before they enter the United States. According to work done at New Mexico State University (Mitchell), the typical basis for refused entry is failure to comply with U.S. or Mexican paperwork or regulations, such as ear tags and records that are not consistent, dipping certificates that are not in order, improper branding, evidence of open wounds (such as from recent castration) or live ticks, or suspicions that the cattle in question may have been stolen in Mexico. Before entering the United States (APHIS inspections are on the Mexican side of the border), cattle are given a bill of health by the veterinarian-in-charge. They are then transported to their destination pasture or feedlot by truck.

Hogs and Pork

Hog and pork trade patterns are much simpler than those for pre-BSE cattle and beef. Hogs and pork go south: Canada exports to the United States and the United States exports to Mexico. By 2004, national borders between hog production industries in Canada and the United States had largely dissolved. Industries in both countries have restructured to allow for specialization in particular stages of hog production (see Haley for a full explanation of the factors contributing to the flow of hogs from Canada).

Mexico continues to investigate whether U.S. pork legs (hams) were being dumped in that country. NAFTA has eliminated the tariffs governing hog and pork trade between Mexico and the United States. Such reforms have been important in broadening U.S. access to the Mexican market. Until recently, SPS concerns have largely precluded U.S. hog and pork imports from Mexico.

Sanitary Concerns Restrict Potential Trade. One of the most important SPS issues concerning the North American pork sector is the presence of Classical Swine Fever (CSF) in some regions in Mexico. To protect national swine herds, both Canada and the United States require that hogs imported from CSF-endemic regions be quarantined for 90 days. In addition, CSF-endemic regions are not allowed to ship pork to the United States and Canada unless it is cooked to a temperature that kills the disease-causing organism and is then sealed in air-tight containers. These restrictions effectively prevent U.S. imports of live hogs and fresh, chilled, or frozen pork from most parts of Mexico.

Since 1995, the Mexican Government has worked to secure the regionalization of U.S. restrictions concerning CSF. APHIS has recognized the Mexican States of Baja California, Baja California Sur, Chihuahua, and Sinaloa as being free of CSF (<http://www.aphis.usda.gov/NCIE/country.html>). On March 25, 2005, APHIS extended similar recognition to Campeche, Quintana Roo, Sonora, and Yucatán (http://www.aphis.usda.gov/lpa/news/2005/03/csfsimpert_vs.html). The CSF-free States can export pork, pork products, live swine, and swine semen to the United States. Even so, Mexican pork exports to the United States remain negligible. Mexico is becoming a supplier of pork to Japan, competing with both the United States and Canada in that important export market.

Until recently, another disease—pseudorabies virus (PRV)—largely prevented the export of U.S. slaughter hogs to Canada. The United States began a program to eradicate PRV in 1989. The program is cooperative in nature and involves Federal, State, and industry participation, with APHIS acting as coordinator for the program. In October 1999, Canada simplified its import requirements for slaughter hogs from pseudorabies-free States in the United States, following earlier regulatory changes made in December 1998 as part of a U.S.-Canada Record of Understanding. Then, in late 2004, the U.S. National Pseudorabies Control Board declared commercial swine herds in all 50 States to be free of the PRV for the first time in history. If there are no further PRV outbreaks, the United States will officially be recognized as PRV-free in October 2006. Nevertheless, the new regulations have done little to induce U.S.

hog exports to Canada because U.S. packers typically have offered higher prices for hogs than Canadian slaughter operations have.

With both pseudorabies and CSF in North America, regionalization has done little to encourage the northward flow of hogs and pork. As discussed below, however, economic factors rather than sanitary barriers seem to be the most important factors influencing the patterns of hog trade.

Reshaping of U.S. Hog Imports From Canada.² Changes in Canadian agricultural policy and in the structure of the U.S. pork industry have resulted in expansion and re-composition of U.S. hog imports from Canada. Between 1994 and 2004, U.S. imports of Canadian hogs increased from 670,000 head to about 8.6 million (fig. 4). Feeder pigs now make up about 65 percent of U.S. hog imports from Canada, compared with 44 percent in 1994.³ Increased live hog trade is not a direct product of tariff elimination, since U.S.-Canada hog trade had been free of tariffs for quite some time. However, the United States maintained a countervailing duty (CVD) on Canadian hogs from 1984 to 1999. The level of the CVD varied over this period and was sometimes zero.

The CVD on Canadian hogs was triggered by Canada’s “tripartite” policies for livestock producers. The tripartite programs were designed to reduce fluctuations in livestock producer revenue. When prices were high, livestock producers, and their Provincial and (Canadian) Federal Governments, paid into a pool based on production. When livestock prices were low, the Governments distributed money back to the producers. As the tripartite agreements were phased out, the U.S. Government phased out the CVD. In 1995, the United States lowered its CVD on Canadian hogs to zero, and the CVD was eventually eliminated altogether.

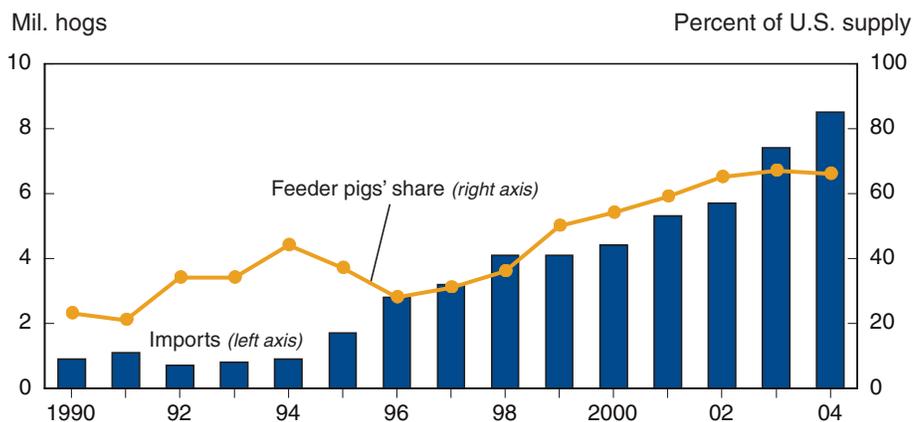
In 1995, Canada fulfilled a key obligation under the URAA by abolishing the Western Grain Transportation Act (WGTA). Under the WGTA, grain produced in western Canada was transported to export points at subsidized freight rates. With the WGTA’s elimination, the production of hogs and other livestock provided a profitable alternative use for grain produced in western Canada. Lower local grain prices and the elimination of the U.S. CVD provided

² This section is largely drawn from Haley, M. “Market Integration in the North American Hog Industries,” Washington: Economic Research Service, LDP 12501, November 2004. <http://www.ers.usda.gov/publications/ldp/NOV04/ldpm12501/>.

³ Feeder pigs weigh between 10 and 110 pounds. Most feeder pigs imported from Canada are destined for finishing barns in the U.S. Corn Belt. There, the pigs are fed a ration of corn and soy-bean meal for about 6 months, until they reach weights of about 250 pounds, at which time they are slaughtered at U.S. slaughter facilities.

Figure 4

Feeder pigs make up a much larger share of increasing U.S. hog imports from Canada



Source: USDA, Foreign Agricultural Trade of the United States (FATUS), database.

western Canadian producers a powerful incentive to increase their production and export of hogs.

The integration of the hog and pork industries in the United States and Canada did not come about solely in response to Canadian policy changes. Beginning in the 1980s, U.S. hog production underwent several important structural changes. Adoption of new swine genetics reduced the required number of breeding animals, and packers lowered their procurement costs by contracting with hog producers to secure a steady and uniform supply of high-quality hogs.

Access to this steady, uniform supply also gave the processing stage of the U.S. pork industry incentives to change practices. Updated facilities now utilize their slaughter capacity more intensively year around with second shifts and Saturday work. Given their cost advantages, U.S. packers can pay higher prices for hogs, effectively drawing Canadian slaughter hogs into the United States, making the market in the two countries more integrated.

As live hog import numbers continued to grow rapidly, a petition was filed by U.S. pork producers charging that Canadian hogs were dumped in U.S. markets in 2003, and that the Canadian Government illegally subsidized hog producers. This suit led to the introduction of an antidumping levy on live hog trade by the U.S. Department of Commerce. In March 2005, the International Trade Commission (ITC) determined that live swine imports from Canada have not injured the U.S. domestic market. The ITC vote means that duties assessed by the Commerce Department will not be imposed (see press release at: http://www.usitc.gov/trade_remedy/731_ad_701_cvd/investigations/2004/swine/final/HTML/newsrelease.htm).

Restructuring of Mexican Hog Industry. Both the hog and pork markets have become more open in Mexico as several trade restrictions on U.S. animals and meat exports to Mexico have ended. Although hog and pork production in Mexico has expanded significantly over the past 6 years, the country's imports of pork also have increased. Imports accounted for about 26 percent of Mexican pork consumption in 2004, compared with just 6 percent in 1996. At the same time, the industry has been undergoing further consolidation and concentration, due in part to the wide range of technological and commercial developments, as well as increased competition among producers. The onus of consolidation is falling primarily on Mexico's small commercial producers (200-500 sows). These producers account for about 20 percent of Mexican hog production, while larger, more technically advanced producers (500 sows or more) account for about 50 percent.⁴

"Backyard" or subsistence operations are responsible for the remaining 30 percent of hog production. Although most small commercial operations use breeding stock similar to that of the advanced producers, the SPS and marketing standards of small commercial producers often do not meet the standards of the larger firms. Moreover, the small operations have high fixed production costs. The larger firms can manufacture their own feed, while the small operations typically must purchase feed commercially. In 2003, total costs of production for the small operations were about 40 percent higher than for the advanced firms, with feed costs accounting for the bulk of the difference (table 1).

⁴ Secretaría de Agricultura, Ganadería, y Desarrollo Rural (SAGAR). Situación Actual y Perspectiva de la Producción de Carne de Porcino en México 1990-1998. 1999, available at <http://www.sagarpa.gob.mx/Dgg>

Table 1—Production costs of Mexican hog producers, 2003

Expense category	Technologically advanced producers		Small, commercial producers	
	<i>Pesos per kilogram</i>	<i>Percent of total</i>	<i>Pesos per kilogram</i>	<i>Percent of total</i>
Feed	6.65	55	10.47	62
Medication	1.20	10	1.18	7
Salaries	0.21	2	0.64	4
Financing	2.69	22	2.59	15
Other	1.37	11	2.00	12
Total	12.11	100	16.87	100

Source: Calculated by averaging monthly estimates of production costs from SAGARPA, Coordinacion General de Ganaderia, as cited in Gallardo Nieto, et al., p. 30.

Rising imports and structural change have provided the context for several allegations of dumping concerning U.S. exports to Mexico. From early 1999 to May 2003, Mexico imposed antidumping duties on U.S. hogs—an action that dramatically reduced U.S. hog exports to Mexico. Then, in May 2004, the Mexican Government initiated an antidumping investigation about U.S. pork leg exports to Mexico, after rejecting an earlier petition filed by a Mexican producer group concerning a broad range of pork products. The highly seasonal Mexican demand for U.S. hogs is expected to resume slowly, and remain sensitive to market prices on both sides of the border.

Hog and pork trade generally flows south in North America. Canada exports more hogs and pork to the United States than it imports, while the United States is an increasingly important supplier of pork to Mexico. Both the United States and Mexico have had and continue to have disease problems in certain areas that have prevented them from shipping hogs and/or fresh pork north. While some Mexican States are free to ship pork to the United States and Canada, they do not. Mexico's increasing hog production has not been able to keep pace with its own increasing demand for pork. Even if the United States and Mexico eliminate problem diseases from more of their States, it is expected that the southerly flow of pork and hogs in North America will continue to dominate.

Poultry

The poultry sector (chicken and turkey) in North America is less economically integrated than the red meat sectors. It is also the one case where U.S. and Mexican markets are more closely integrated than U.S. and Canadian markets. Changes in Mexican trade rules have greatly expanded U.S. poultry exports to Mexico. Canada has its own well-functioning poultry industry, and while that industry uses much the same technology as the United States, import controls prevent its integration with the rest of the North American market. Because the biological cycle for birds is so much shorter than for other meat animals, and they do not travel well, there is little trade in live birds. However, the poultry meat market is one where the United States has a clear competitive advantage. It is the world's leading exporter of poultry meat, while both Mexico and Canada are importers.

Structural Change in the Mexican Poultry Industry. Like the Mexican hog industry, the Mexican poultry industry is in the midst of structural change and consolidation. In 2004, three producers accounted for 60 percent of Mexican poultry production, according to the Unión Nacional de Avicultores (UNA) as cited by SAGARPA, 2002. The second and third largest poultry-production firms in Mexico are U.S.-based companies: Tysons and Pilgrims Pride. Of all the meat production sectors, broiler production is the one where foreign direct investment is the most important source of Mexican market integration with the United States. These large firms are capturing the lion's share of Mexico's rising poultry consumption, which climbed from 14.3 kilograms per capita in 1993 to 24.7 kilograms per capita in 2002 (FAO).

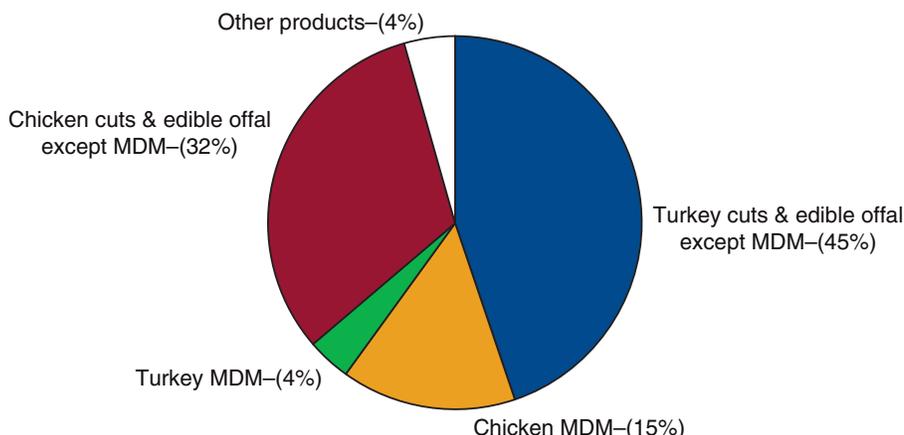
While the expansion of poultry consumption lessens the competitive pressures on Mexican producers, another development is challenging the industry, particularly its medium and smaller producers. The rapid growth of the Mexican supermarket sector is affecting not only where consumers buy their poultry meat but also the type of meat that they buy. Some Mexican consumers strongly prefer to purchase whole birds in public markets or specialty shops, believing that this product is fresher and tastier than the packaged cuts available in supermarkets. However, the dramatic inroads made by supermarkets during the 1990s suggest that many Mexicans are flexible in their preferences and that technology is available to address freshness and food safety concerns. Producers who are unable to supply the quantity and quality of product that supermarket chains desire at a competitive price may begin to feel pressure, and the market is likely to continue further consolidation.

Compared with the Mexican hog industry, the Mexican poultry industry has faced less direct competition from the United States, although this may change in the future, with the elimination of trade restrictions on U.S. poultry meat exports to Mexico (see discussion below). In 2003, about 64 percent of this trade (in terms of value) consisted of mechanically deboned meat (MDM)—a key ingredient in sausages and cold cuts—and turkey meat, products that are not produced in Mexico in large quantities (fig. 5). Continuing demand for these ingredients by Mexico's food and meat processors increased U.S. poultry meat exports by 44 percent (in value terms) during January-July 2004, compared with the same period of 2003.

Figure 5

U.S. poultry meat exports to Mexico, 2003

Mexico imports chiefly commodities that it does not produce in large quantities



MDM=Mechanically deboned meat. Percentages based on value of trade.
Source: Mexico, Secretariat of Economy, as reported by World Trade Atlas.

Between 1994 and 2002, U.S. MDM exports to Mexico were commonly allowed to exceed the transitional TRQ for this product without an over-quota tariff. This policy was strongly encouraged by Mexican sausage manufacturers, who argued that charging over-quota rates would put them at a competitive disadvantage. Imports of poultry parts—exclusively dark meat—also generally exceeded the transitional TRQs. Dark meat prices are very low in the United States—an attribute that makes the product relatively attractive to foreign buyers.

As the end of the transitional TRQs drew near, Mexican poultry producers requested that the Mexican Secretariat of Economy investigate the possibility of instituting a bilateral safeguard measure on U.S. chicken leg quarters. In response, the Secretariat of Economy announced the imposition of a 6-month provisional safeguard in January 2003 and a final safeguard in July 2003 (table 2). This safeguard TRQ will be in effect until January 1, 2008.

Sanitary Concerns Restrict U.S.-Mexico Poultry Trade. Although U.S. tariffs on Mexican poultry have been eliminated, disease issues such as Exotic Newcastle Disease (END) and Avian Influenza (AI) continue to interrupt trade among the North American countries and with their customers in other countries. Recent trade bans due to outbreaks of low-pathogenic strains of AI have been enacted by at least one country on poultry products from Delaware, New Jersey, Rhode Island, New York, New Hampshire, Maine, Pennsylvania, West Virginia, Michigan, Texas, California, and most recently in Maryland (see http://www.aphis.usda.gov/lpa/issues/ai_us/ai_trade_ban_status.html). Other States have had poultry trade bans in previous years.

The United States imports very little Mexican poultry, largely because some parts of Mexico’s flocks have END and are thus banned from trade. The disease is one of the most infectious and deadly poultry diseases. It is transmitted through the droppings and bodily secretions of infected birds—discharges that are easily picked up and carried by shoes and clothing from an infected flock to a healthy one. In unvaccinated flocks, END is associ-

Table 2—Mexico has established safeguards for U.S. chicken leg quarters

	Tariff-rate quota (TRQ)	
	Duty-free quota	Over-quota tariff
	<i>Metric tons</i>	<i>Percent</i>
Provisional safeguard		
January 22-July 21, 2003	50,000	98.8
Final Safeguard		
July 25-December 31, 2003	46,950	98.8
2004	101,000	79.0
2005	102,010	59.3
2006	103,030	39.5
2007	104,060	19.8

Note: The duty-free quota is allocated to Mexico's northern border line and border region. The northern border line lies between the U.S. border and a 20-kilometer parallel line from the border and also encompasses other parts of the State of Sonora, including the municipality of Cananea. The border region comprises the States of Baja California, Baja California Sur, and Quintana Roo, a portion of the State of Sonora, the southern border region neighboring Guatemala, and the municipalities of Comitan de Dominquez, Chiapas, and Salina Cruz, Oaxaca. Source: Secretariat of Economy, as cited by Flores.

ated with mortality rates of nearly 100 percent. In fact, END is so virulent that many birds die without showing any clinical signs.

The U.S. industry has to contend with its own END. An outbreak in 2002, which began in California and was later detected in Nevada, Arizona, and Texas, disrupted segments of U.S. poultry exports. The outbreak occurred first in the small flocks of backyard egg layer operations and later spread to commercial operations. To suppress the outbreak, over 3.9 million affected and exposed birds were euthanized, double-bagged, and buried in restricted landfills. The United States has completed the final phase of total eradication, and END has not been detected at any additional premises since May 31, 2003. That END outbreak temporarily disrupted U.S. poultry exports as bans were put into place by importing countries. Fortunately for the U.S. industry, the outbreak was confined to areas that are not important to broiler production, and the effects of the disease were regionalized.

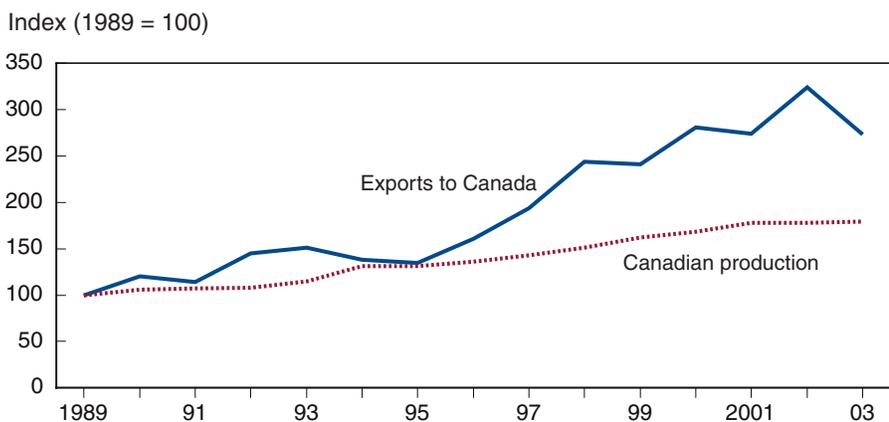
To prevent the introduction of END, the United States requires that all poultry products imported from Mexico be cooked and sealed. Cooking kills the END virus. Sealing the products prevents re-contamination. As is the case with other animal diseases, the United States allows regionalization for END. APHIS has determined that the Mexican States of Campeche, Quintana Roo, and Yucatán are considered END-free (<http://www.aphis.usda.gov/NCIE/country.html#FEND>). APHIS also considers Sinaloa and Sonora to be low-risk regions for transmitting END. Having disease-free status is the first step to allowing Mexico to ship fresh or frozen poultry to the United States. The next step in this process is to have plants certified by USDA's Food Safety and Inspection Service (FSIS). While FSIS has certified some Mexican chicken canning plants, it has yet to certify the Mexican inspection system for fresh/frozen poultry. Disease-free status with FSIS certification would allow Mexico to export some fresh and frozen poultry to the United States.

Could Mexican poultry compete in the U.S. market? Salin, Hahn, and Harvey (2002) found reasons to believe that it would be possible. They noted that the

U.S. only exports a limited number of poultry products—dark meat and mechanically-deboned meat—to Mexico, and that no policies prevent the shipment of other chicken parts or whole birds to Mexico. If trade is not present in the absence of trade barriers, sales of U.S. whole birds and white meat must not be competitive in Mexican markets. If U.S. whole birds and white meat are not competitive in Mexican markets, it could be the case that Mexican white meat or whole birds are competitive in U.S. markets. The current SPS barriers prevent these products from coming north.

Canada Maintains Supply Controls. Canada uses supply controls and TRQs to protect its domestic poultry industry. The supply controls limit the total amount of chicken and turkey marketed in Canada by restricting the amount that any individual producer may sell. Restricting supplies leads to higher domestic prices for chicken; however, if Canada allowed free imports of poultry meat from the United States, its supply restrictions would be less effective in protecting its industry. Prior to CFTA, Canada had standard import quotas rather than TRQs. Canada’s global import quota for broilers equaled 6.3 percent of the previous year’s broiler production, while the global import quota for turkeys was set at 2 percent of the current year’s expected production. CFTA increased these allocations to 7.5 percent for broilers and 3.5 percent for turkey. After ratification of the Uruguay Round, the quotas were replaced with a TRQ. The tariff-free part of the quota was the same as that set by CFTA, and Canada added a high, over-quota tariff. The over-quota rate is high enough to prevent over-quota imports. Canada has a long history of offering supplemental import permits, and this fact has helped U.S. chicken exports to Canada to grow much faster than Canadian production, particularly since 1995 (fig. 6). In 2003, U.S. chicken exports (broilers and other chicken) to Canada reached 84,243 metric tons, down slightly from its peak of 99,931 metric tons in 2002. Most of the decline was in the other chicken category. In contrast, turkey exports to Canada remain rather small, at 3,185 metric tons in 2003.

Figure 6
Since 1995, U.S. chicken exports to Canada have grown faster than Canadian chicken production



Sources: USDA, Foreign Agricultural Trade of the United States (FATUS), database (exports) and Chicken Farmers of Canada (production).

Dairy

Dairies in the United States and Canada depend on similar technology and, as a consequence, are generally structured similarly as well. As with the Mexican beef industry, Mexican dairy farms' technology depends on their location. Farms in northern Mexico raise Holsteins and other dairy breeds using technology similar to that in the United States and Canada. In the subtropical areas of Mexico, cattle are dual-purpose beef-dairy cattle with Zebu blood.

Trade in dairy cattle follows the same policies as for beef cattle. The United States remains closed to imports of breeding stock from Canada. Prior to the BSE outbreak, Canada supplied about 1 percent of U.S. replacement heifers. Elimination of Canadian heifer imports, good returns to milk production, and a 4-percent decline in domestic replacement heifer supply resulted in an annual average U.S. replacement heifer price of \$1,610 in 2004, slightly exceeding the previous 2002 peak, \$1,575. Prior to BSE, Mexico imported a small number of U.S. dairy heifers for its herds, and some Mexican dairies used a small (and declining) number of culled U.S. dairy cattle.

Trade agreements have done little to reform the dairy policies of Canada, Mexico, and the United States. Each country has various production, price, and import controls that prevent integration of North American dairy markets. Dairy is also unique in that SPS restrictions have little impact on trade.

The dairy policies of Canada and the United States have much in common, but key differences remain. Both countries protect prices via import quotas and export subsidies. But Canadian dairy prices have been much higher than corresponding U.S. prices. Canada has a set of milk marketing quotas which act as supply controls. Farmers own and can trade their marketing quota which makes them an important asset for dairy producers. Allowing totally free trade in dairy products between the United States and Canada would make these marketing quotas less valuable, leading to lower Canadian milk prices. Freer dairy trade with the United States could lead to severe financial distress for Canadian dairy farms.

Because the import quota systems remain, U.S. dairy exports to Canada have had to work their way around these restrictions in order to expand. Exports to Canada of relatively minor dairy-based products such as ready-to-eat puddings and food preparations for infant use, for instance, have recently risen, largely because these products face no import quotas and now enjoy duty-free status in Canada.

Exports to Mexico of nonfat dry milk are the most important component of U.S. dairy trade with Mexico and Canada. Mexico wanted relatively free access to the heavily distorted international dairy market, making it eligible to receive subsidized shipments from the United States and Canada. Indeed, Mexico has remained the largest customer for the U.S. Government's Dairy Export Incentive Program (DEIP) sales, largely because of proximity and the transportation flexibility advantages of the United States over competing exporters. As part of the URAA, the United States agreed to limits on subsidized exports of all agricultural products. DEIP nonfat dry

milk exports to Mexico have been fairly steady, but still lower than the URAA ceilings. Large exports to Mexico continued in 2004 but have been mostly unsubsidized, as increases in international prices made U.S. products more competitive.

Unsubsidized U.S. exports of cheese, fluid milk, whey products, and cultured dairy products to Mexico have grown steadily, although they remain small. Although U.S. products are relatively expensive, there is a slowly developing premium market. In addition, there are some border markets where U.S. products are reasonably price competitive. On January 1, 2003, U.S.-Mexico dairy trade became completely free of tariff restrictions, except for nonfat dry milk from the United States, which is subject to a TRQ until January 1, 2008. Mexican dairy products for export to the United States are considered to meet the international standards for sanitary conditions.

Periods with large commercial exports to Mexico, especially recently, have continued to occur. These exports have been significant but generally short-lived. Until substantial international reform of dairy export subsidies can be accomplished, commercial trade of dairy products within the North American region is likely to stay erratic, preventing much additional market integration.

Sanitary Issues Continue To Dominate Market Integration

Trade agreements have reduced the economic barriers to North American market integration and facilitated the flow of goods for most animal agriculture. North American cattle and beef sectors normally engage in substantial volumes of trade. The sector will almost certainly return to this state in the future, as terms for resumption of cattle and beef trade are negotiated. For pork, the flow of product from north to south is expected to continue, even as the United States and Mexico eliminate problem diseases from more of their States.

Economic barriers are still important in two markets: Canadian poultry markets and all three nations' dairy markets. The Canadian poultry market is one case where supply and import controls are more important barriers to market integration than SPS policies because the industries have essentially the same structure across borders. For dairy, each country has various production, price, and import controls that prevent integration of North American dairy markets.

Outside of these two special cases, SPS barriers designed to prevent the introduction of diseases and protect human health are the most significant actors preventing further integration of the North American meat industries. The four cases of BSE in North America—three Canadian and one in the United States—demonstrate the impact of sanitary controls. Before the BSE cases, the U.S. and Canadian cattle and beef industries were the most integrated of the animal product sectors. Post-BSE, trade in cattle and beef between the United States and Canada was initially completely eliminated and is now being gradually reinstated. Current regulations, while allowing trade, impose restrictions that did not exist prior to the outbreaks. Sanitary policies also limit Mexico's ability to ship poultry to the United States. As with the Mexican pork industry, population growth and increasing incomes have stimulated the Mexican poultry industry despite increased volumes of U.S. exports. However, U.S. exports to Mexico are almost exclusively mechanically deboned meat and leg quarters, suggesting that the Mexican industry may be competitive in other poultry products. When the Mexican inspection system meets FSIS standards, it will be possible for Mexican producers to export chicken products to the United States.

Canada, the United States, and Mexico have engaged in a concerted effort throughout the NAFTA period to fine-tune their SPS measures in ways that facilitate trade. Ongoing efforts to harmonize procedures that deal with animal disease problems and human health risks in the three countries will reduce the need for sanitary barriers to trade. As these issues are dealt with, it is expected that the North American meat industries will become increasingly integrated and the economic borders among countries blurred.

References

- Acuña, Rene. *Identification of Origins and Destinations of Imported Mexican Cattle*. Masters thesis, Department of Agricultural Economics and Agricultural Business, New Mexico State University, Las Cruces, New Mexico, May 2002.
- Chicken Farmers of Canada. *Chicken Data Guide 2004*. Ottawa, Ontario: 2004. Available at: <http://www.chicken.ca>.
- FAO database, United Nations Food and Agriculture Organization, Rome, Italy, October 2004. Available at: <http://faostat.fao.org/>.
- Flores, Dulce. "Mexico. Poultry and Products. Final Safeguard on Chicken Leg Quarters. 2003." U.S. Department of Agriculture, Foreign Agricultural Service, *Global Agriculture Information Network (GAIN) Report*, No. MX3099, July 25, 2003. Available at: <http://www.fas.usda.gov/gainfiles/200307/145985602.pdf>.
- Gallardo Nieto, José Luis, Juan Manuel Galarza Mercado, Luis Villamar Angulo, and Marco A. Barrera Wadgymar. *Situación actual y perspectiva de la producción de carne de porcino en México 2002*. Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca, y Alimentación (SAGARPA), Coordinación General de Ganadería, México, D.F., 2002. Available at: <http://www.sagarpa.gob.mx/Dgg/ganind5.htm>.
- Global Trade Information Services, Inc. *World Trade Atlas*. Internet Version 4.4e (Columbia, South Carolina: 2005).
- Haley, Mildred. "Imports of Feeder Pigs from Canada Achieve Record Levels in October." Leland Southard (coordinator), *Livestock, Dairy and Poultry Outlook*, U.S. Department of Agriculture, Economic Research Service, Electronic Outlook Report, LDP-M-103, January 28, 2003, pp. 5-6. Available at: <http://www.ers.usda.gov/publications/ldp/Jan03/LDPM103F.pdf>.
- Haley, Mildred. *Market Integration in the North American Hog Industries*. U.S. Department of Agriculture, Economic Research Service, Electronic Outlook Report, LDPM-12501, November 2004. Available at: <http://www.ers.usda.gov/publications/ldp/NOV04/ldpm12501>.
- Mitchell, Diana R. *Predicting Live Cattle Imports by Port of Entry from Mexico into the United States*. Masters thesis, Department of Agricultural Economics and Agricultural Business, New Mexico State University, Las Cruces, New Mexico, May 2000.
- Salin, Delmy L., William F. Hahn, and David J. Harvey. *U.S.-Mexico Broiler Trade: A Bird's Eye View*. U.S. Department of Agriculture, Economic Research Service, Electronic Outlook Report, LDP-M-102-01, December 2002. Available at: <http://www.ers.usda.gov/publications/ldp/dec02/ldpm10201/>.
- Secretaría de Agricultura, Ganadería, y Desarrollo Rural (SAGAR). "Situación Actual y Perspectiva de la Producción de Carne de Porcino en México 1990-1998." 1999. Available at: <http://www.sagarpa.gob.mx/Dgg/ganind5.htm>.

Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca, y Alimentación (SAGARPA), Agrifood Sector Research and International Trade Negotiations Support Unit. “*Estructura de las Industrias Porcícola y Avícola en México.*” Unpublished paper, August 2002.

Skaggs, Rhonda, René Acuña, L. Alan Torell, and Leland Southard, “Where Do the Cattle Come From and Where Do They Go?” *Choices*, 1st quarter (May) 2004. Available at:

<http://www.choicesmagazine.org/2004-1/2004-1-05.htm>.

U.S. Department of Agriculture, Economic Research Service. *Red Meat Yearbook*. Available at:

<http://usda.mannlib.cornell.edu/data-sets/livestock/94006/>.

U.S. Department of Agriculture, Foreign Agricultural Service. “Foreign Agricultural Trade of the United States,” various issues.

<http://www.fas.usda.gov>.

Zahniser, Steven, editor. *NAFTA at 11: The Growing Integration of North American Agriculture*. U.S. Department of Agriculture, Economic Research Service, Outlook Report No. WRS0502, February 2005.

Available at: <http://www.ers.usda.gov/publications/WRS0502/>.