

Chapter 5

Livestock

5.1 Overview of Arizona and Sonora's Livestock Industries

The livestock industries of Arizona and Sonora share similar roots, with Native Americans grazing small pastoral herds of sheep and goats. Origins of cattle ranching for both states can be traced back to 16th century Spanish explorations. The history of southern Arizona is very similar to that of Sonora. A few Spanish Land Grants were made in southern Arizona in the San Pedro, San Rafael, and Santa Cruz valleys before Mexico gained its independence in 1821. By the middle 1800s these Mexican ranchers were driven off by Apaches. Not until after the Civil War when the Apaches were forced onto reservations did large ranches return to the region. In the 1880s several large ranches were started with outside capital and they usually controlled their grazing territory with access to water (Sheridan).

Today the livestock industries of Sonora and Arizona share some similarities in breeding stock and range production practices, but overall the two industries are quite different. Most of the differences are due to "border factors." Feed grain prices are much cheaper in the US than Mexico. About 75 percent of the US corn utilized domestically is used for animal feed, whereas in Mexico 75 percent of its corn is utilized for human consumption. As a result, Sonora has been an important source of feeder cattle for Arizona feedlots. Results from our questionnaire suggest that roughly 25 percent originate from Sonora. Sonora's pork industry on the other hand is more developed than in Arizona. Pork production in Sonora has been developed around cheaper slaughter and processing costs for hogs. Labor is much cheaper in Sonora than Arizona with current agricultural wages around \$3/day in Sonora. The next section describes the importance of livestock for the two states.

Importance of Sector for Arizona and Sonora

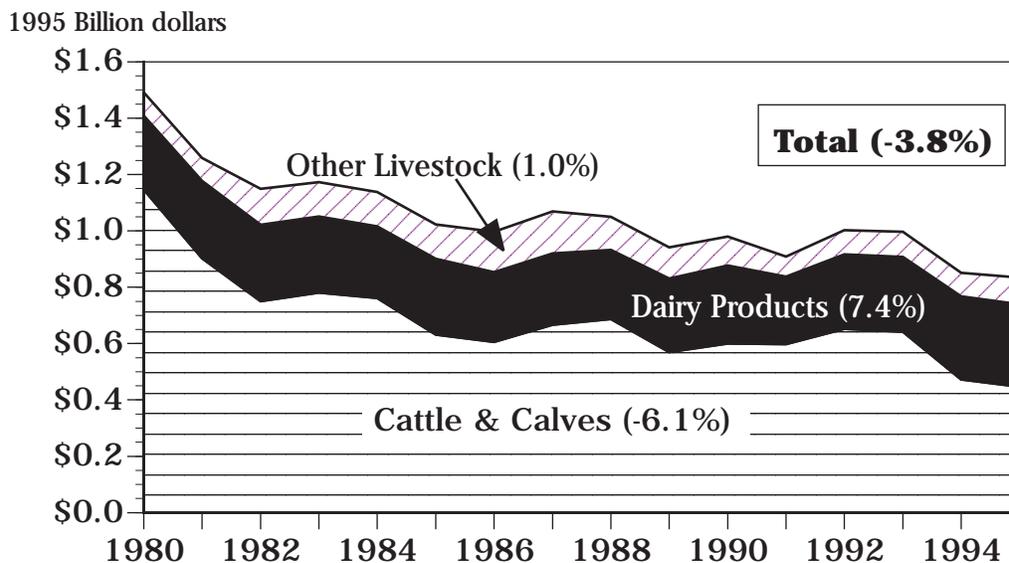
As described earlier, the livestock industry is somewhat less important in economic value relative to the crop sector for both Arizona and Sonora, but the livestock sector is arguably more important to the Region's resource base and the environment. The range livestock industry utilizes over 92 and 83 percent of the land base in Arizona and

Sonora, respectively. Thus, issues related to water quality, endangered species, environmental amenities, recreation, and other quality of life factors are closely tied to range livestock production. Furthermore, Federal and State grazing permits account for over 85 percent of Arizona's grazing land outside of Indian reservations (Mayes and Archer). Political pressures have played a role determining how this land base should be utilized and most anticipate that the public's role will increase more in the future.

Livestock revenues received for the Region and their average annual percentage change from 1980 to 1995 are described in figures 5.1a and 5.1b. On an annual average, Sonora's total revenues have increased slightly at 0.7 percent whereas they have declined by 3.4 percent for Arizona. Cattle and calf sales have declined by an annual average of 6.1 percent for Arizona whereas they have increased slightly for Sonora at 0.9 percent. Poultry production in Sonora experienced the largest decline for the region, decreasing by an average 6.6 percent every year. Dairy products from Arizona have shown the most growth (7.4%) followed by pork production in Sonora (5.5%).

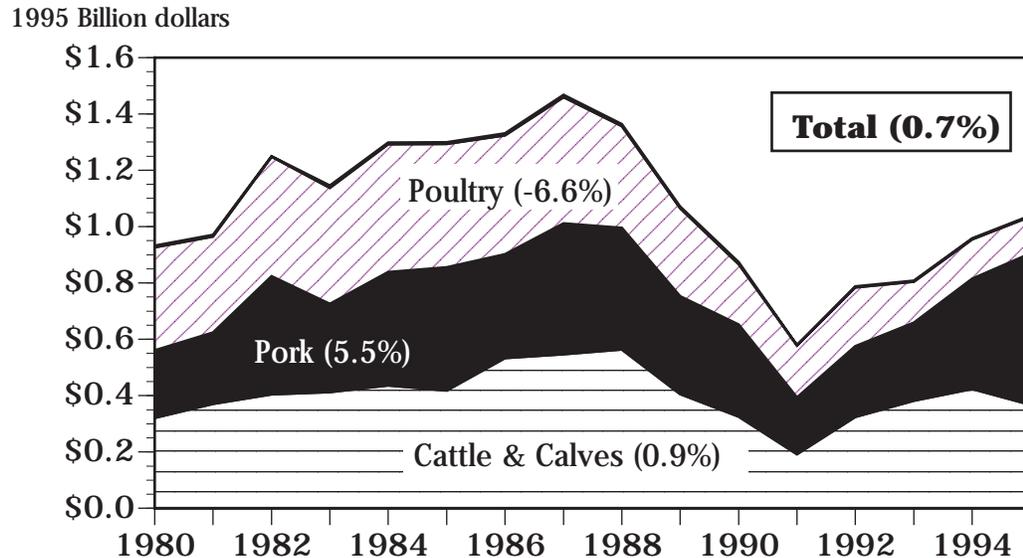
For the five years from 1991 to 1995, livestock accounted for 42.0 percent of the combined value of livestock and crop revenues in Sonora. Cash receipts for Arizona livestock exceeded crops until the late 1970s, when crop receipts began to consistently exceed the value of livestock sales. Cash receipts from livestock and livestock products averaged for 43.9 percent of Arizona's production agriculture sales from 1991 to 1995 (Arizona Agricultural Statistics).

Figure 5.1a. Real Cash Receipts for Arizona Livestock, 1980-1995.



Source: Arizona Ag Statistics.

Figure 5.1b. Real Cash Receipts for Sonora Livestock, 1980-1995.



Source: Euboracion Propia en base a datos de SAGAR.

National Perspective

The total cattle and calf inventory for Arizona in 1996 at 840,000 head is only 0.8 percent of the US inventory. The hog and poultry industries in Arizona are even smaller, accounting for 0.2 and less than 0.1 percent of total US numbers, respectively. Arizona's dairy numbers are growing, bucking the US inventory trend. The 120,000 milk cows in Arizona account for 1.3 and 1.6 percent of the milk cows and production for the US, respectively (Oct.-Dec. 1996 estimate). Although the sheep and goat sectors for Arizona outside the Navajo Reservation are relatively small, these sectors account for a larger percentage of US production than the other livestock sectors. The estimated 135,000 sheep in Arizona for 1996 by Arizona Agricultural Statistics account for 1.6 percent of US production. However, this number does not include sheep on Arizona's reservations. There are estimates of over 200,000 sheep on Arizona tribal lands (Ruyle). Arizona's estimated 80,000 angora goats make up 5.6 percent of US's inventory. This estimate also doesn't include goats on Arizona reservations. Poultry production for meat does not exist in Arizona and swine production is relatively small with a concentration of production in the Holbrook area accounting for most of the state's production.

Sonora has a relatively larger livestock sector in both absolute numbers and percent of national production than Arizona. Sonora's inventory of beef cattle in 1994 was 1.6 million head and accounts for about 5 percent of Mexico's estimated 27 to 31 million total cattle numbers. Pork production is also very important to Sonora. In 1995, Sonora

had 2.1 million hogs that produced 13.7 percent of their national production. Sonora's poultry industry produces 12.1 and 3 percent of Mexico's egg and poultry for meat, respectively. Sonora's dairy industry is quite small and produced 157 million lbs. of milk in 1993, 8 percent of Arizona's production level. Sonora's feedlot industry has declined from over 600,000 head in 1990 to around 300,000 in 1995.

Government Programs and Regulations

Other than livestock emergency assistance, and export market promotion programs dairy and sheep are the only livestock sectors in Arizona that have had explicit government farm programs. But indirectly, all livestock sectors have been affected by farm programs through crop subsidies, conservation programs, federal grazing permits, and other farm programs. Farm program payments are currently called "transition payments" since they are scheduled for complete elimination in 2002. Farm payments were partially decoupled from production in the 1990 Farm Bill with the introduction of flex acreage and entirely decoupled in the 1996 Farm Act.

The 1996 Farm Act brought about three major changes to the dairy program. First, the minimum support price for milk declines from \$10.35 in 1996 to \$9.90 per cwt. in 1999. Milk price supports during this period will rely on government purchases of nonfat dry milk, cheese, and butter. Second, production assessments ended in April 1996. Assessments provided refunds to qualified producers who did not increase milk marketings from the previous year. The third major change involved the restructuring of Federal milk marketing orders. The 32 milk marketing orders will be reduced to just 10-14 orders, with one reserved for California. Milk marketing orders specify minimum prices and conditions under which regulated milk handlers must operate within a specified geographic area. All producers receive a minimum price, with adjustments for butterfat and farm location if specified, that is a weighted average of all the milk sold for different "classes" or uses in the region.

Government payments for wool subsidies in Arizona averaged \$1.86 million from 1985-1989 and were \$1.79 million in 1995. The market value of all wool production was \$589,000 in 1995. Thus, "wool act" payments were worth 3 times more than the market value they received from wool sales. However, wool makes up less than 8 percent of the revenue received from sheep. Most comes from the sale of lambs and ewes.

Livestock programs for Sonora have been concentrated with export and import programs and regulations. These issues are discussed later in the trade patterns and NAFTA section.

5.2 Production and Market Structure

This section describes the production structure and market environment for the primary livestock sectors of Arizona and Sonora. Trends in livestock inventories, number of operations, size, and consumption patterns are discussed for the ranching, feedlot, dairy, pork, "other" industries.

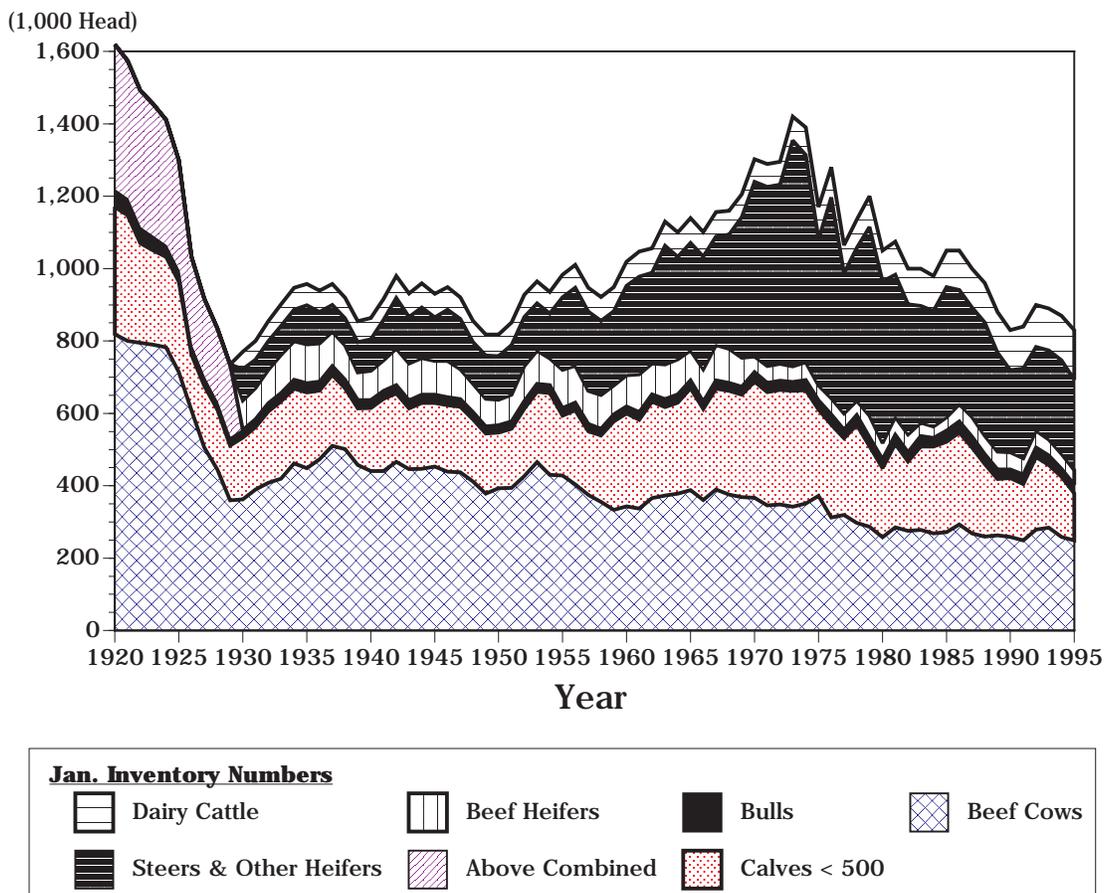
Structure of Production

Ranching Industry

Production resources for Arizona and Sonora’s ranching industry can be most easily compared and summarized by looking at their respective livestock inventories. Figure 5.2a graphically portrays cattle inventory numbers for Arizona from 1920 to 1995. The sheep industry in Arizona is relatively small, except on the Navajo Reservation. Arizona Agricultural Statistic numbers suggest that around 5 percent of the forage in Arizona is utilized by sheep.

The number of cattle on Arizona’s rangeland has declined since 1920 when an estimated 819,000 beef cows were on the range. After dropping from this peak in 1920 to only 360,000 beef cows in 1929, numbers increased sharply to 510,000 by 1937. Since then, numbers have steadily trended downward by about 4,500 head or 1 per-

Figure 5.2a. January Cattle Inventory Numbers for Arizona, 1920-95.



Source: Arizona Agricultural Statistics

cent annually, to the current beef cow herd of 249,000 reported for 1995. Whether good or bad, much of this decline can be attributed to fewer animal units allowed on grazing permits. From 1985 to 1991, Fowler et al. reports that the number of animal units permitted for grazing on all federal lands has declined about 3 percent annually. State, private, and federal lands make up 33.4, 9.5, and 57.1 percent respectively, of the grazing Animal Unit Months (AUMs) in Arizona (Mayes and Archer).

Fowler et al. estimates that slightly over 70 percent of the animal units on Arizona's ranches are made of cow-calf units with the balance from yearlings (generally > 550 lbs., weaned from the cow, and more than a year old). Thus, Arizona ranches are predominantly a cow-calf industry and receive the bulk of their ranch income from selling calves after they are weaned from the cow. But it is not uncommon to see some ranchers keeping their calves and selling them as yearlings weighing 550 to 750 lbs.

Reflecting a predominant desert climate and terrain, the overall productivity of Arizona's rangeland is relatively low. Mayes and Archer report that 45.6, 42.6, and 11.7 percent of Arizona's ranches have a carrying capacity of < 6, 7-12, and >13 Animal Unit Years (AUYS) per section (640 acres), respectively. About one half of Arizona's ranchers have less than 7 AUYS/section carrying capacity.

Krause reports that 52 percent of the beef cows in the US reside in herds with fewer than 100 head. He also notes that most studies suggest that at least 100 cows are needed to achieve most of the economies of size associated with beef production. The primary reason for so many small herds is tied to the fragmented nature of US pasture and hay acreage. Much land is not suitable for growing crops due to slope, brush, seepage, etc. and a portion of an operators cropland is often rotated to hay crops. However, this size structure is not the same for Arizona's beef production. In 1982, Mayes and Archer found that only 9.2 percent of Arizona's beef cow production occurs on ranches less than 100 animal units. Production on small ranches is probably less now than in 1982 by making inferences from the number of beef cow operations by size group as reported in the Arizona Agricultural Statistics. In general, the number of ranches in all size categories have declined, reflecting larger units within each size category and a decline in beef cow numbers for Arizona. The number of beef cow operations in Arizona totaled 2,500 in 1995 with 1,500 having less than 50 head.

The production structure of Sonora's livestock industry is quite diverse with numerous ranching establishments. For 1991, Sonora was estimated to have 28,983 ranches (Anuario Estadístico del Estado De Sonora, Ed. 1996), of which about 70 percent raise only beef. The "Sierra" region produces 59 percent of Sonora's beef cattle. Following in descending order are the regions of Cajeme (11.8%), Navojoa (8.6%), Caborca (8.2%), Hermosillo (7.2%), and Guaymas (5.2%). In contrast to Arizona, where virtually all grazing is on native rangelands, slightly over half of Sonora's ranches utilize only pastures that have been planted as crop forage for their livestock. Ranches in Sonora are relatively smaller with 35 percent less than 13 acres in size. Ejidos account for a relatively larger share (70%) of these small units.

Feedlot Industry

The feedlot industry of Sonora has a wide variety of size in production units. Some have a capacity to feed 40,000 head with 3 to 4 "cycles per year" and some smaller units can

only feed a few hundred head with 1 or 2 cycles during the year. The investment infrastructure in facilities and equipment varies a lot from one feedlot to the next. Some have the capacity to process hundreds of tons of feed every day and keep a strong flow of production while others have poor facilities and equipment. The facilities and equipment are dependent on the target product. Feedlots which are more organized and capital intensive are able to produce US type beef cuts for domestic shipment to restaurants and high end consumers.

Though usually no more than 30 percent of Sonora's feeding capacity is utilized, they are estimated at having a current feeding capacity of around 156,000 head, down from a capacity of 180,000 in 1990. Although feeding capacity and animals on feed have declined, the number of feedlots in Sonora has increased from 45 in 1982 to over 60 today. Arizona is reported as having 10 feedlots in 1995 (AZ Ag. Statistics) and feeding 380,000 head for the year.

In the early 1930s Arizona had about 80,000 head of cattle on feed during January. The feeding industry in Arizona continued to grow until it reached a peak of 624,000 in 1973. The industry averaged over half a million head in the early 1970s. Since this era, cattle on feed numbers have declined by about 15,000 head/year to the current inventory level of around 250,000 head. Reasons for the steady decline of cattle on feed numbers in Arizona vary from tax incentives and speculation to water costs and local feedgrain prices. Most of the US feedlot and packer industry is concentrated in the Texas and Oklahoma panhandle region. This area has a mild climate and is fairly close to the corn belt, giving this region a competitive edge on the "cost of gain." Also, fed prices are slightly higher there due to the close proximity of major packers in the area.

Sonoran feeder steers are an important link to Arizona's feedlot industry. Results of our questionnaire indicate that approximately 25 percent of Arizona's feeder cattle originate from the state of Sonora, as shown in figure 5.2b. Of the six feedlots described, all have

Figure 5.2b. Survey Results: Percent of Feeder Cattle in Arizona Feedlots that have Originated from Sonora 5 Years Ago and Last 2 Years.

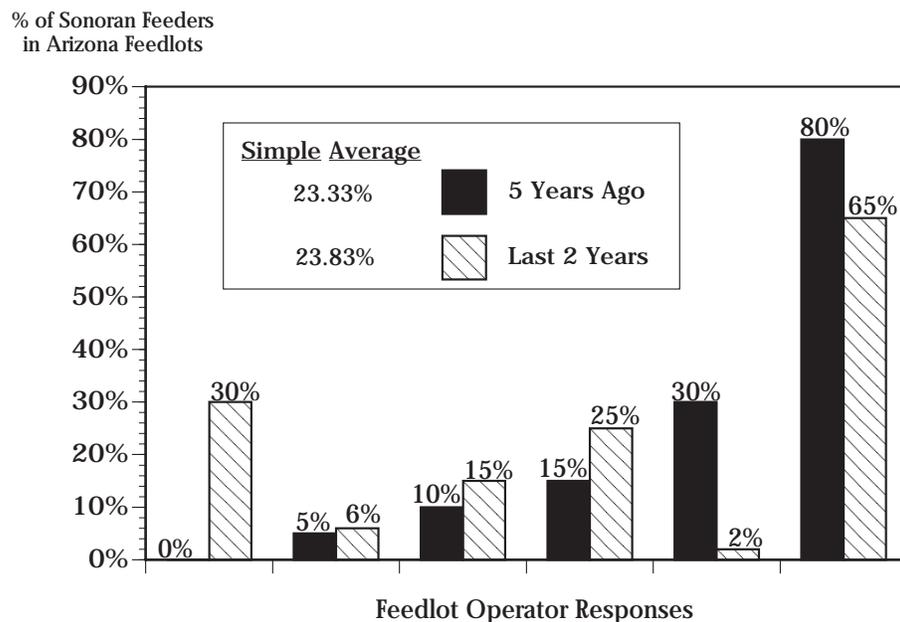
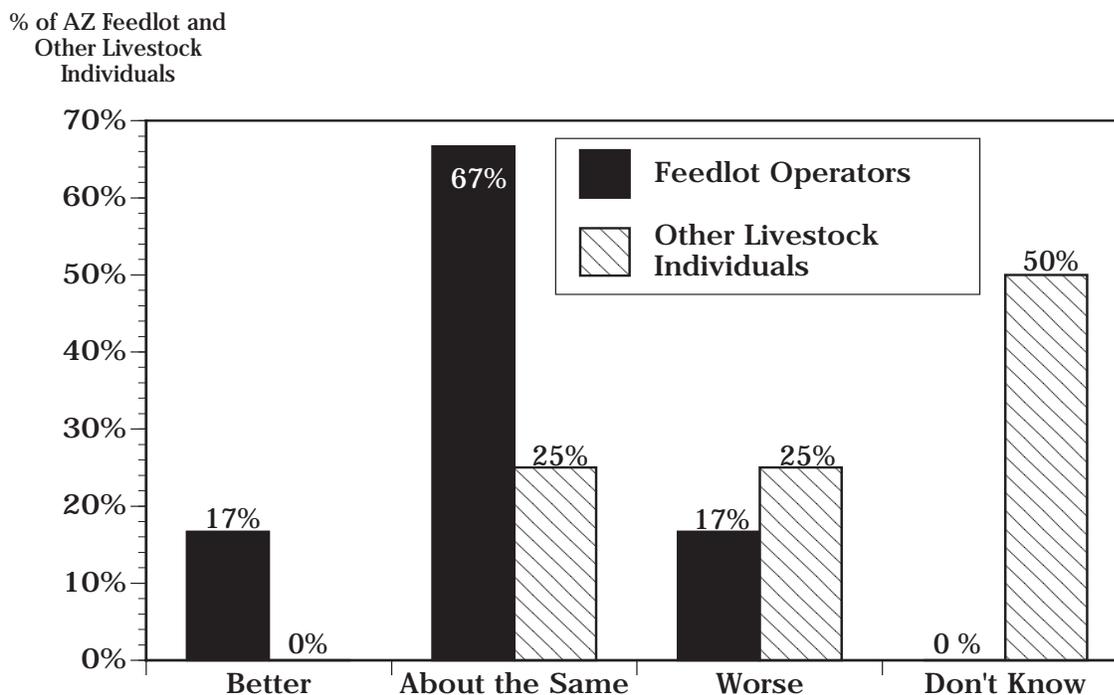


Figure 5.2c. Survey Results: Performance of Sonoran Feeders in Arizona Feedlots.



purchased Sonoran feeders in the last 2 years. Four of these feedlots note that they have utilized more Sonoran feeders in the last 2 years than they did 5 years ago. The percentage of feeders fed in Arizona feedlots for the last 2 years varies from 2 to 65 percent for these six feedlots.

As shown in figure 5.2c, the performance of Sonoran feeders relative to Arizona feeders is rated as essentially the same by Arizona feedlots and worse by other individuals involved with livestock production. Of these individuals that had an opinion, one-half felt that Sonora's feeders perform worse than feeders raised in Arizona while the other half felt that performance was about the same. Fifty percent of the "other livestock individuals" didn't know how feeders from Arizona perform relative to Sonora.

Dairy Industry

In contrast to livestock numbers for beef cattle, dairy numbers have been steadily increasing in Arizona. Since 1980, dairy cattle numbers have increased 3.1 percent annually or 3,250 head/year. The January 1995 inventory of total dairy animals was at 137,000 head with 113,000 milk cows. Average milk production per cow for Arizona of 19,561 lbs. is close to the highest production level in the country and far above the US average of 16,450 lbs. Arizona's increasing population and the ability to competitively produce cheese are the two largest factors for the increase in dairy numbers. Arizona's climate and large dairies are an advantage for keeping tabs on quality factors (e.g. somatic cell count) that help keep cheese production costs competitive. Given the solid demand for dairy products and the continued population growth, Arizona's

dairy industry will undoubtedly grow. A “propensity to produce milk index,” based on relative production and prices by state ranked Arizona second only to New Mexico (Blaney, Miller, and Stillman). The biggest adjustment for Arizona dairies will be in dealing with more deregulation of the milk industry and diminishing price supports.

Sonora’s dairy industry has been very irregular in production. Most of the ups and downs have been attributed to political forces that make incentives for importing milk from other countries.

Pork Industry

The pork industry in Sonora employs 3,804 workers and exports to the Western US, Japan, and Southeast Asia. Sonora’s pork industry has the capacity to slaughter about 148,000 pigs in a year. For 1996, the capacity utilized was 125,701, down from 139,000 in 1995. Given that the number of hogs in Sonora totaled 1.3 million in 1995 (Anuario Estadístico del Estado De Sonora), most of Sonora’s hogs are slaughtered outside their region even though they have slaughter capacity not utilized.

There are 160 hog operations in Sonora with the regions of Hermosillo, Navojoa, Cajeme and Huatabampo accounting for 35.8, 33.4, 21.7 and 3.1 percent of production in 1995, respectively. In 1992, Sonora exported 2,600 metric tons of pork with a total value of \$13 million (US) dollars. Four years later, 7,600 metric tons were exported for a total of \$25 million dollars. One very large company, Kowi, accounted for 55 percent of the total exports in 1995. Arizona’s pork production is concentrated with Navajo county producing over 85 percent of the state’s production.

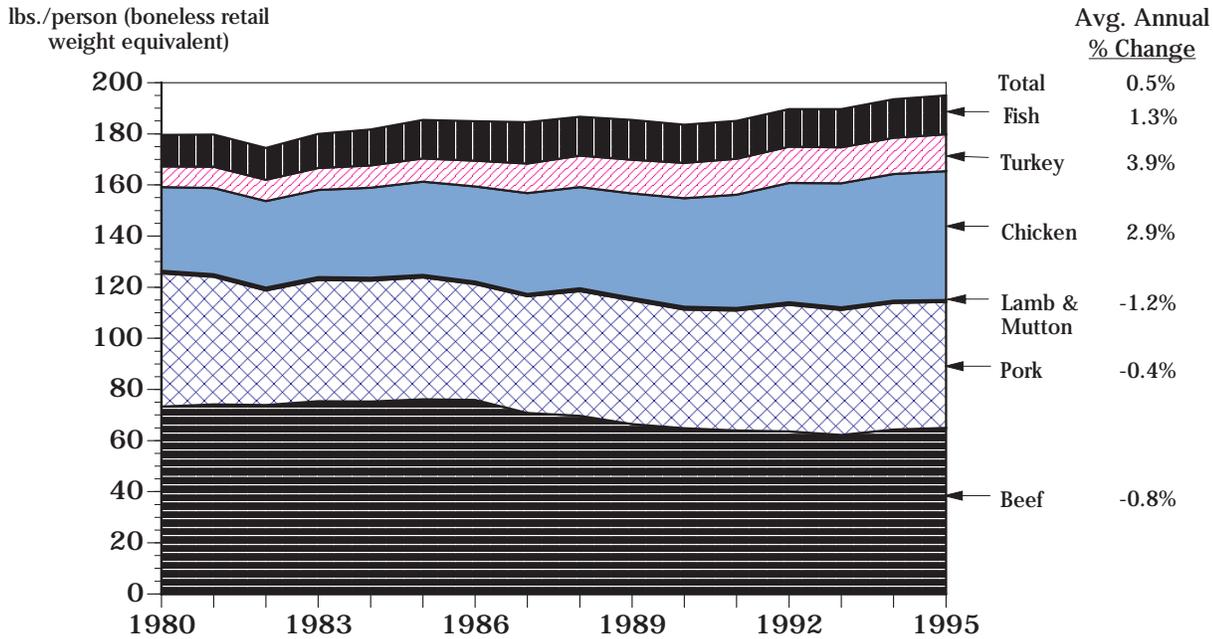
Other Industries

As mentioned earlier, Sonora’s poultry industry is significant, producing 12.1 and 3 percent of Mexico’s egg and poultry for meat, respectively. Although relatively small from a state perspective, goats and sheep are important to the livelihood of many ejido ranches in Sonora and Native American producers in Arizona. Another industry that has shown significant growth for both states in recent years is the ratite industry. Many are finding Mexico, including Sonora, to be an attractive location for processing ratite hides and other products while still having easy access to export their products abroad.

Market Environment

Total meat consumption per person on a retail weight basis has been increasing in the US at 0.5 percent annually as shown in figure 5.2d. In 1995 beef made up 36.8 percent of US consumer’s meat purchases totaling 98.2 lbs./person. Although beef’s share has been declining, it still comprises the largest share of meat in the US consumer’s diet. In contrast, poultry has seen significant consumption increases in recent years. These same trends are felt to be similar for Sonora except for pork.

Figure 5.2d. US Per Capita Meat Consumption, 1980-95.



Source: Food Consumption Prices and Expenditures.

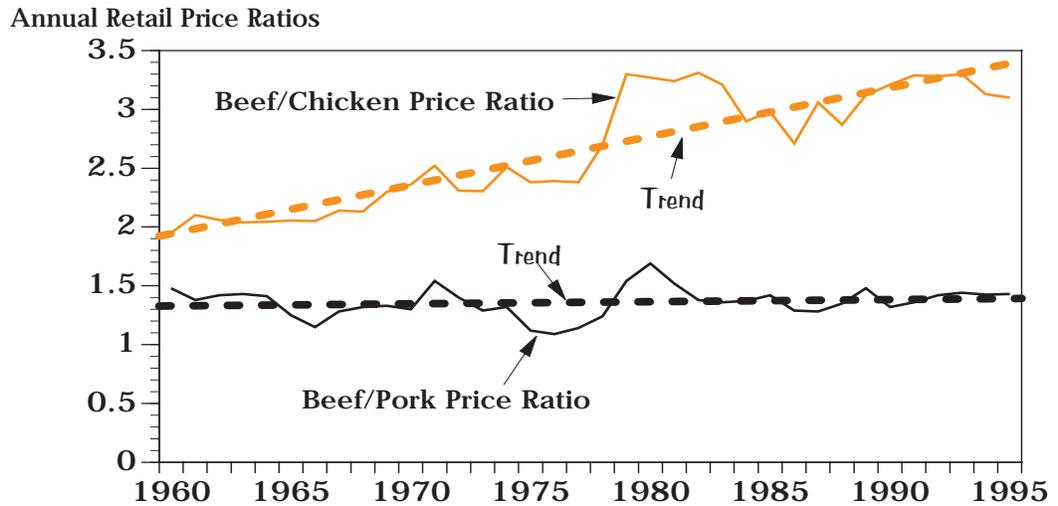
Pork consumption in Sonora increased from 21.3 lbs. in 1990 to 23.1 lbs. in 1991. However, consumption dipped down in 1993 to 22.4 lbs. per person. In the US, the retail weight of both chicken and turkey consumption surpassed beef for the first time ever in 1993. Several explanations have been offered as to why US consumers have been consuming more “white meat” and less beef. Real or perceived health factors related to saturated fats and the risk of heart disease have been blamed for the decline in US red meat consumption.

A factor that has received much less media attention but has been very real is the relative price of beef to chicken. As shown in figure 5.2e, the price of beef divided by the price of chicken has been steadily increasing while the relative price of beef to pork has been stable. Most poultry production comes from “factory farms” that produce a very similar product by using the same genetically selected chicks and feed rations. These inputs are supplied or specified by a handful of industry giants. Whether good or bad, “factory farms” have decreased the relative cost of producing poultry to other meats and they have provided the means for supplying a standardized product with relatively good quality control.

Another factor has been the number of “convenience” products available for poultry in the supermarket compared to beef. An increase in the number of single households and households with both couples working has increased the demand for easy to prepare and convenience oriented products in the US.

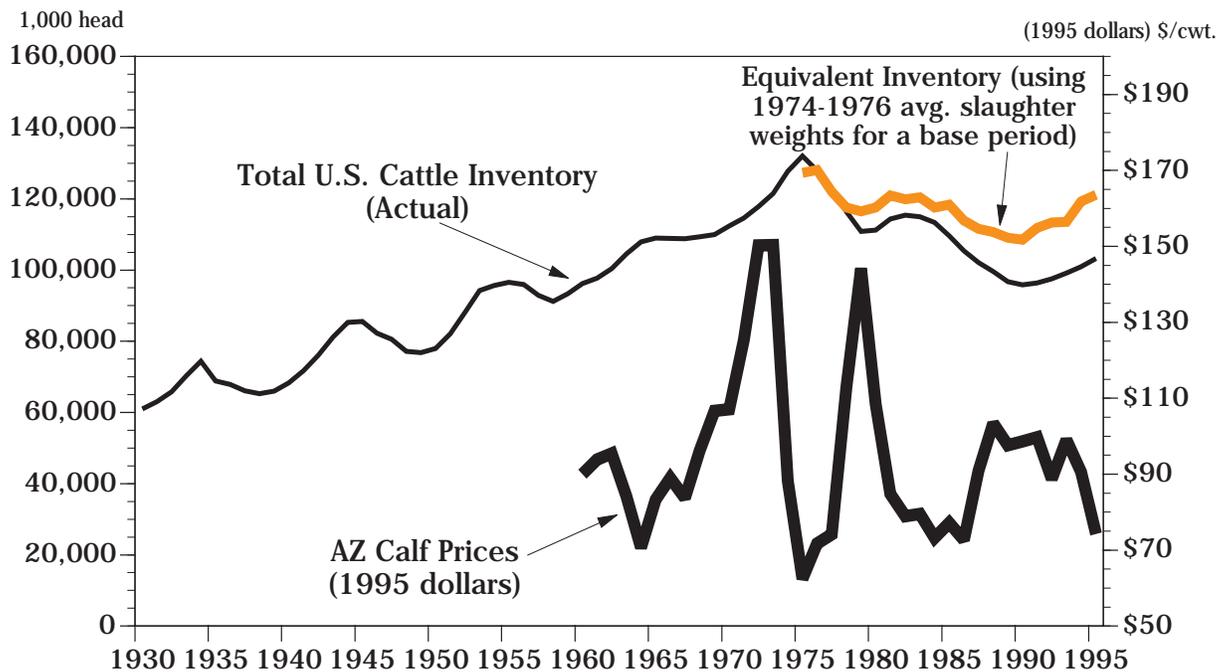
Livestock inventories in the US are notorious for having a cattle cycle that is generally 9 to 11 years long as shown in figure 5.2f. Mexico’s cattle inventories follow a pattern very similar to that of the US. Numbers typically peak near the middle of the decade around a trend line. From 1930 to 1975 total US cattle numbers more than doubled going from 61

Figure 5.2e. Selected US Retail Price Ratios, 1960-85.



Source: USDA / AMS.

Figure 5.2f. US Cattle Numbers and Arizona Calf Prices.



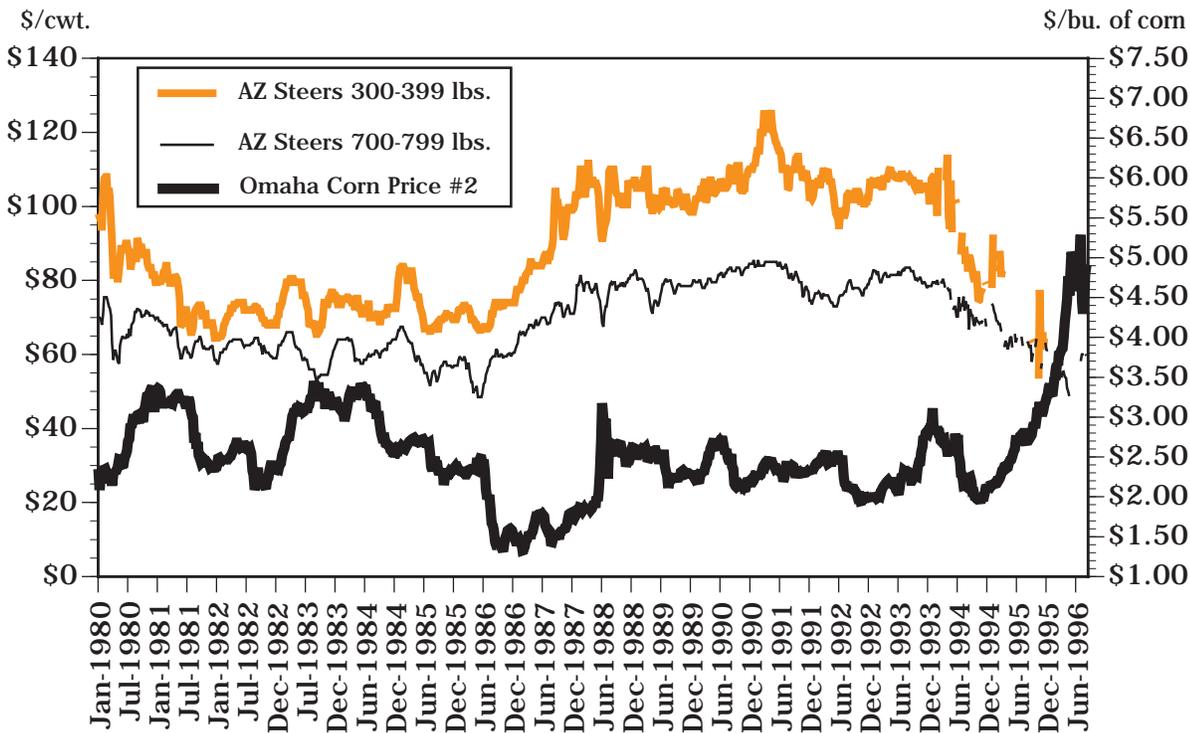
Source: USDA/NASS.

to 132 million head. Since 1975 livestock numbers have dropped to around 103 million head, but heavier slaughter weights make an equivalent inventory of 121 million head. In addition to heavier slaughter weights, beef production per cow has also increased with a 72 percent decrease in the slaughter of calves since 1970 and an increase in feeder imports. The influx of exotic crosses and hybrids (e.g., Charlois, Simmental, and Limousine) with traditional straight English breeds is the main reason for heavier slaughter weights.

Other than cull range livestock, virtually all beef in the US has been fattened on a grain ration. Whereas, many animals slaughtered in Mexico (particularly central and southern regions) have not been fed a concentrated grain ration and are slaughtered as “grass fat.” As a result, US consumers have acquired a taste for grain fed beef while Mexican consumers are most accustomed to grass fed beef. Although grass fed beef is generally leaner, differences in taste go far beyond fat content and tenderness. These differences are very important to recognize before trying to pursue a unified system of grades and standards. Currently, the market for “higher quality” grain fed cuts in Mexico is limited to tourist areas and affluent consumers. However, Mexican consumers will more than likely switch to purchasing higher quality grain fed beef cuts as incomes increase.

As shown in figure 5.2f, calf prices do indeed move in the opposite direction with cattle numbers. But calf prices are also sensitive to the price of corn, the primary feed grain. In particular, the price differential between light (300-399 lbs.) and heavy (700-799 lbs.) feeder calves is sensitive to the price of corn. Figure 5.2g illustrates how light calves

Figure 5.2g. Relationship Between Corn and Arizona Feeder Prices.



Source: Weekly Nominal Prices from Livestock Marketing Information Center and Cattle-Fax.

generally receive a higher price per cwt. than heavier calves because the “cost of gain” is less than the fed or finished price. But when the price of corn climbs like it did in 1995, the price premium for light calves declined to the point where light calves were actually cheaper than heavier calves in October 1995. Grass was very short supply during this period as well with drought conditions in northern Mexico, Arizona, and several other southern US states. Since Sonora primarily sells feeder cattle to Arizona, pasture availability and the cost of feedlot gain greatly influence the net price Sonoran ranchers receive for their feeders.

5.3 Trade Patterns and NAFTA

This section describes national and regional trade in the context of NAFTA. Regulations and legal considerations related to trade are discussed. Questionnaire results are relied on to describe regional trade and highlight legal issues and concerns surrounding livestock trade.

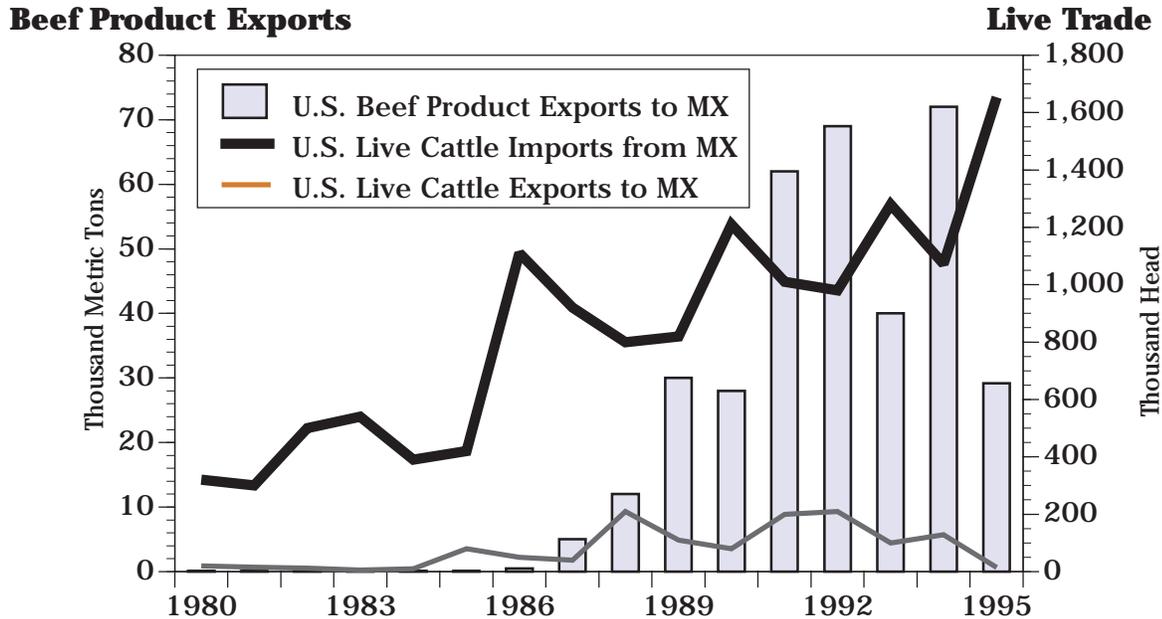
National Trade

NAFTA did not directly influence live cattle trade with Mexico since the only trade restrictions that applied prior to NAFTA and after 1988 are health requirements by APHIS that are still in place. Commercialization of beef and beef product trade reform was very important to Sonora under President Salinas. In October of 1988, export quotas were eliminated for Sonora with the liberalization of permits. Underlying objectives of this move were to increase government revenues by placing a tariff on cows and increase the supply of beef for domestic consumption. The tariff was 20 percent for cows weighing less than 280 kilos (617 lbs.) and 25 percent for cows more than 280 kilos. Also, the government set a minimum price of \$300 in order to export a cow.

Figure 5.3a shows US and Mexican trade flows for beef product exports to Mexico and live animals traded. Prior to 1988, the export quota had the effect of bunching feeder imports from Mexico during December and January. Trade restrictions on exporting beef products to Mexico were relaxed some in 1987 and continued to be reduced until 1991 when all tariffs on meat products were finally eliminated except for some variety meats. However, in November of 1992 Mexico reinstated tariffs on chilled and frozen beef exports going to Mexico. This dropped beef product exports from 69 to 40 thousand metric tons, almost cutting exports in half. Exports jumped back to 72 thousand metric tons in 1994 but then dropped to only 29 thousand metric tons with the December 1994 peso devaluation.

Live cattle trade with Mexico is dominated by feeder cattle exports to the US. During 1995, nearly 1.38 million feeder cattle were imported from Mexico. A combination of factors related to the 1994 peso devaluation, drought in Mexico, and capital flight resulted in a surge of feeder cattle imports in 1995. In 1996, about 40 percent of the feeder cattle imports from Mexico entered through Arizona with the remainder entering through Texas.

Figure 5.3a. US Livestock and Beef Product Trade with Mexico, 1980-95.



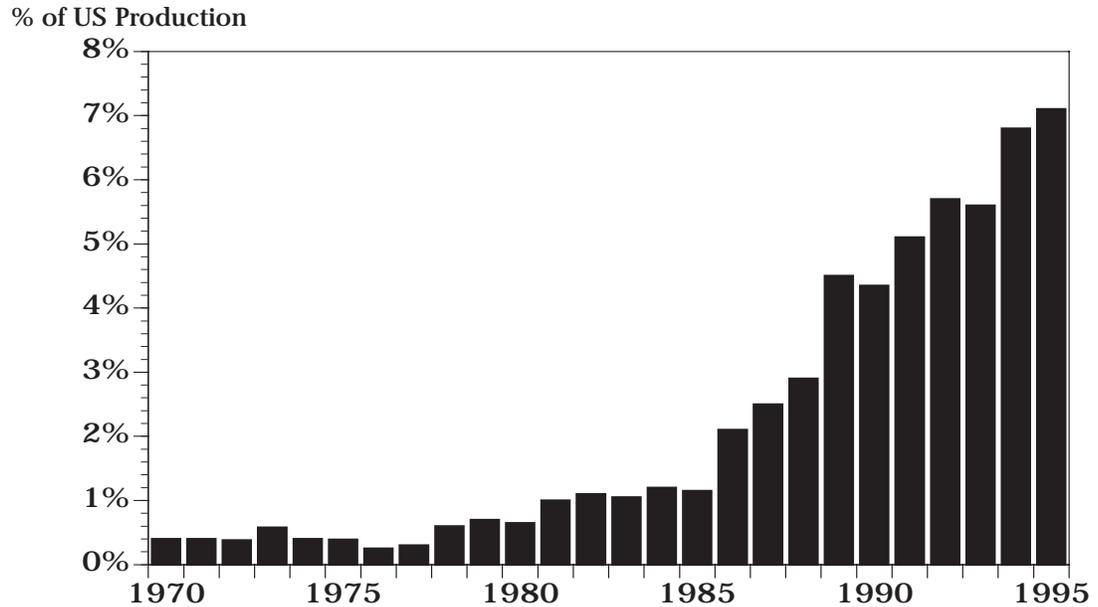
Source: USDA/FATUS.

The price impact of Mexican feeders coming into the US market is an issue that has been heatedly debated at times. Particularly when US cattle numbers are at the top of their cycle and feeder prices are depressed. Peel estimates that on average from 1988 through 1992, Mexican feeder imports had the greatest impact on 400 - 500 lb. steer prices. Their price was reduced by \$0.44/cwt. or \$1.98 / head. Average monthly imports were 87,624 during this period. The highest monthly import level recorded for this period was 336,228 head for December 1986. At this level, the price of 400 - 500 lb. feeder steers was reduced about \$2/cwt. or \$9/head. In general, Peel estimates that a 100,000 head increase in 400 - 500 lb. steers for a month will decrease the US price by \$.70/cwt.

Official statistics indicate that the number of live beef exported to the US from Sonora have increased from 83,350 in 1982 to 256,887 in 1988 and to 321,200 in 1994. Of the beef cattle imported to Sonora for slaughter, most of these animals grade "good" with very few "select." In 1994, 58,855 head were imported for slaughter.

The US is an exporter of "high quality" table cuts while an importer of lower quality cuts used for hamburger. Only recently has the US become a net exporter of beef by value. In 1995 the US exported beef and veal products worth \$2.65 billion while importing \$1.45 billion. As shown in figure 5.3b, the percentage of US beef production exported has increased from less than 1 percent in 1985 to over 7 percent in 1995. Beef exports dropped off in 1996 and many attribute the decline to food safety and health risk concerns surrounding BSE and e-coli from importing countries

Figure 5.3b. US Beef Carcass Exports, 1970-95.



Source: USDA/AMS.

of Japan and Western Europe. Although exports are a bright spot for US beef, they are not a guarantee and are subject to more fluctuations than domestic demand.

Regional Trade

Similarities in climate and range conditions with Arizona and Sonora suggest that livestock trade should be strong between the two states. Figure 5.3c shows the percentage of Arizona livestock operators that have sold live cattle to Sonora and the rest of Mexico. Over 83 percent of these individuals have sold cattle to Sonora and/or the rest of Mexico. To emphasize how important Sonora livestock is to Arizona, only 4 percent of Arizona's livestock operations have sold live cattle to just the rest of Mexico. Of the 26 livestock operators that completed this question, only 6 or 23 percent indicated that they have never sold live cattle to Mexico.

Although most Arizona livestock operators have sold live cattle to Sonora, virtually no animals have been shipped to Sonora for grazing with the intent to return to the US. As shown in figure 5.3d, only 1 out of 26 or 4 percent of livestock operators in Arizona have ever done this. Clearly, the border raises several issues regarding the property rights of foreign owners. The ability of Sonorans to ship cattle to Arizona for grazing is rather restricted due to public lands. By law, permittee owners must graze their own livestock on permits.

Figure 5.3c. Survey Results: Percent of Arizona Livestock Individuals that have Sold Live Cattle to Sonora and the Rest of Mexico.

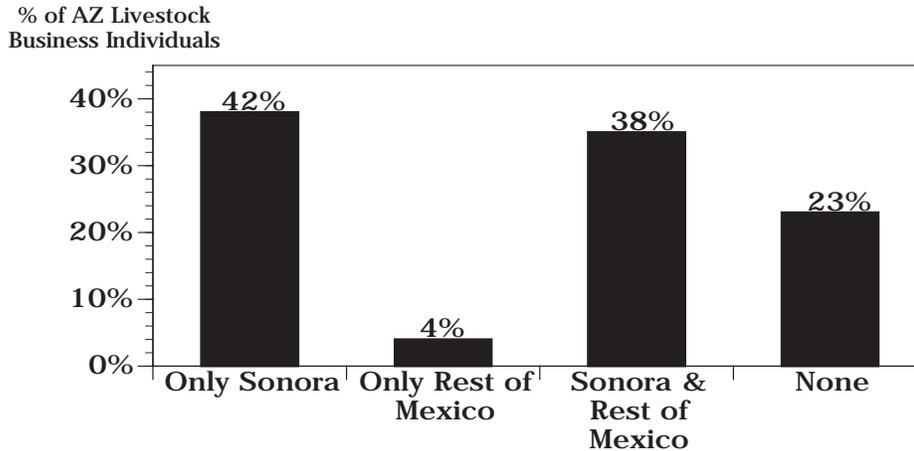
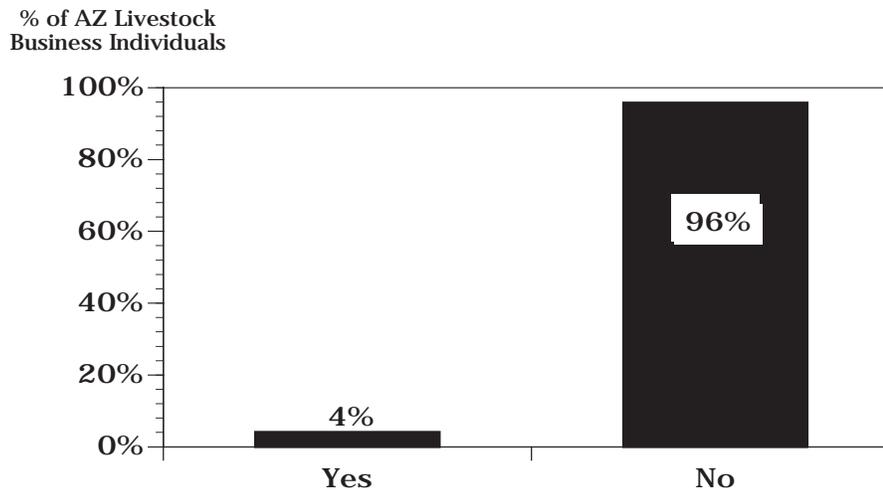


Figure 5.3d. Survey Results: Arizona Livestock Individuals that Have Shipped Live Cattle for Grazing to Sonora with the Intent to Return Them.



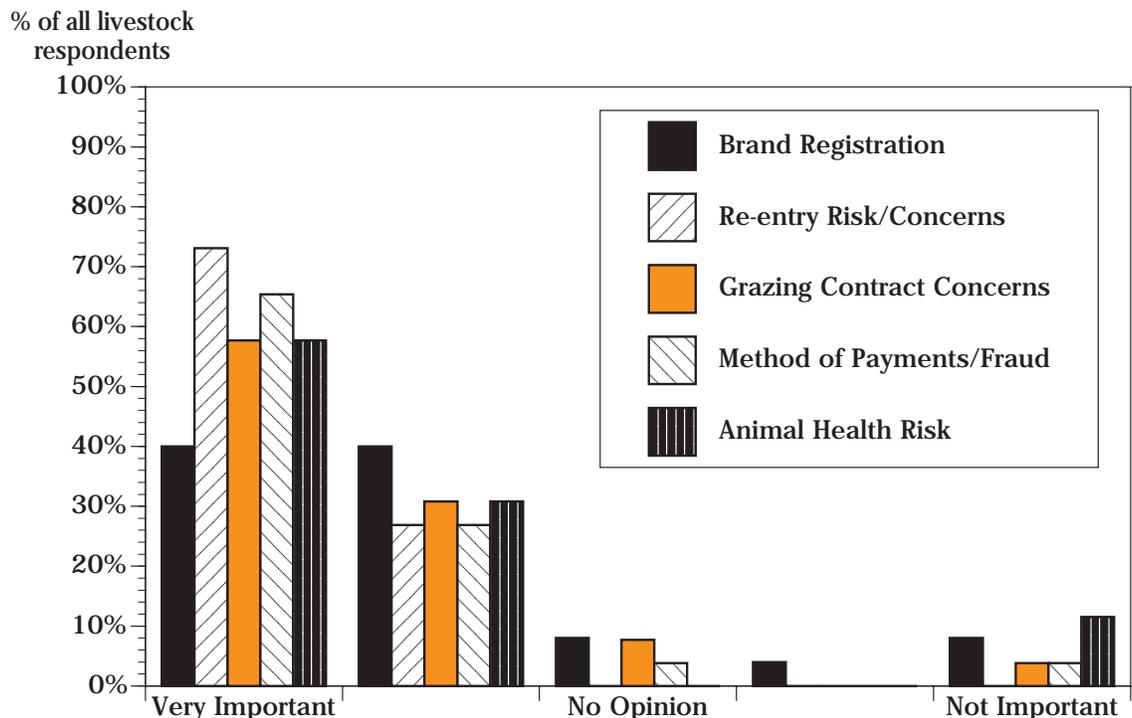
NAFTA Regulations and Legal Issues

As previously mentioned, NAFTA did not have a direct impact on livestock trade since only health regulations were in place when NAFTA was implemented. Sonora is a state that is free of hog cholera but not free of tuberculosis or brucellosis for beef. Sonora is the only state in Mexico that can export pork meat to the US, Japan, and other countries. Sonora is in the “eradication phase” for tuberculosis and brucellosis, similar to states like Texas in the US. Although Sonora is generally recognized as being far ahead

of other states in Mexico for their eradication program, it is probably another decade before Sonora can be declared free of these diseases. Arizona has been declared free of brucellosis and tuberculosis for almost two decades. Sonora's commercial poultry industry has had some health problems related to viruses, such as Newcastle. Currently, the Sonoran association of poultry growers argues that health rules imposed by USDA are just a ploy to avoid competition with the US poultry industry. A system of individual farm certification should give USDA reason to recognize Sonora farms free of Newcastle based on facts alone.

Legal issues are a concern for Arizona livestock individuals in leasing pasture to Sonorans or in sending live cattle to Sonora for grazing with the intent to return them. Figure 5.3e shows that an overwhelming majority of Arizona livestock individuals are concerned about brand registration, grazing contracts, method of payments, re-entry risks, and animal health issues. Although the same brand can be legally registered in both Sonora and Arizona, individuals in Arizona are still concerned about brand registration. Somewhat related, all Arizona individuals feel that re-entry risk is either a very important or somewhat important concern. Thus, even though brand registration is technically not a issue, it becomes a concern when property ownership rights through the court system are uncertain. Health issues are a concern for Arizona individuals. All herds in Sonora have been tested for tuberculosis and brucellosis at least once during their eradication program initiated in 1991 and animals that tested positive have been quarantined or culled.

Figure 5.3e. Survey Results: Primary Concerns of Arizona Livestock Individuals in Leasing Pasture to Sonorans or Sending Live Cattle to Sonora for Grazing.

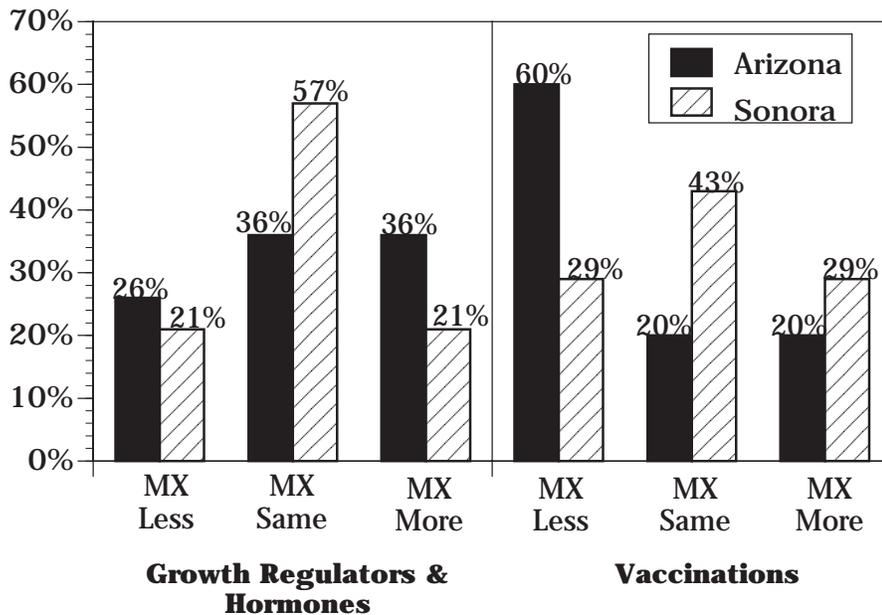


As described in *Agriculture in a North American Free Trade Agreement*, one of the general goals of NAFTA was to eliminate trade and investment barriers between the United States, Mexico, and Canada to the maximum extent possible. Progress on health issues appears to be moving forward with disease free status requirements attained and proposals like the pilot project for feeding intact heifers from Sonora in Arizona. However, uncertainties regarding legal issues like brand registration are not a problem with the way the law is written, but relate to either the legal system and property rights or incomplete information. Mexico has a strict set of sanitary standards for milk and dairy products at the farm and processing level, but has been slack in enforcing these standards (Foreign Ag. Econ. Report #246). Interestingly, when livestock individuals were asked how they thought the agribusiness industry of Arizona and Sonora could be enhanced the most, legal agreements ranked number 5 out of 15 different issues. Whereas, crop producers ranked the enforcement of legal agreements as most important.

Figure 5.3f displays differences in the perceived use of vaccinations and hormones in Mexico and the US by livestock survey participants with an opinion. Of these Arizona individuals, 60 percent feel that Mexico utilizes less vaccinations compared to 29 percent of the Sonora individuals. Fewer vaccinations in Mexico could be viewed as a threat to animal health. Arizonan's indicated that Mexico uses more growth hormones than in the US, while most Sonoran's feel that usage is about the same. Over 50 percent of the respondents from Arizona did not have an opinion on these two issues, while all Sonoran respondents did.

In moving products across the border, 57 percent of livestock individuals said that they occasionally experience a problem while 14 percent said that they either always or frequently have a problem. The range in crossing time was anywhere from 30 minutes to 14 days. Customs and APHIS were the two agencies that Arizona livestock individuals reported having the most problems with in crossing the border. Of the Arizona

Figure 5.3f. Survey Results: Differences in the Use of Growth Regulators/Hormones and Vaccinations in MX.



individuals surveyed that are doing business in Mexico, livestock individuals are much less likely to have an individual primarily devoted to border crossings than other sectors.

Livestock individuals ranked improvements in transportation and communication infrastructure in Sonora as the most needed item for enhancing agribusiness for the two states. Streamlining border crossings for products and unifying standards and grading were the next two highest ranked activities. A bilingual regional agency as a place to go for current regulations specific to agriculture ranked next, just ahead of legal agreements that offer enforcement of contracts. Chapter 7 on finance and marketing discusses these results in more detail.

5.4 Cluster Analysis

This section describes the strengths and weaknesses for the livestock sectors of Arizona and Sonora along with potential opportunities and threats to growth. Drawing from previous sections in this chapter, table 5.4a highlights the situation for Sonora. Sonora's strengths lie in their disease eradication programs, long tradition of livestock activities, inexpensive labor for production and processing, and their established market for feeder cattle in the southwestern US states. Challenges for Sonora include high feed grain costs, high levels of financial debt and loan default, inefficiencies in their marketing system, and frequent drought problems that induce grass and water shortages. Decreasing market share of beef for meat products in developed countries is another challenge for the Region's livestock sector. Opportunities for Sonora include the attraction of more private investment through amendments made on Article 27 to improve their financing and infrastructure. Exporting intact feeder heifers to Arizona under the pilot project proposed and expanding their export of pork products to southeast Asia are also good export opportunities for them.

Table 5.4b summarizes the opportunities, strengths, weaknesses, and threats for Arizona. The dairy industry has increased in Arizona during the last decade where most other sectors have decreased in size. This growth reflects an increasing population and the ability to competitively produce cheese and other dairy products. Arizona's large dairies have been able to attain and monitor quality control better than the numerous small dairies located in Wisconsin. Strengths of the beef industry are in feeding Sonoran steers and an upward trend in beef carcass exports. Meat product sales to restaurants and high-end Sonoran consumers is a potential growth market. In particular, solidifying a consistent free trade policy for boxed beef sales could help Arizona's meat product industry establish a stronger market presence in Sonora and the rest of Mexico. Streamlining border crossings for meat and dairy products would help facilitate increased sales to Mexico.

High feed costs in Arizona relative to the mid-west and TX-OK panhandle region are one of the biggest challenges for the livestock industry. Corn prices and the cattle cycle make feeder prices susceptible to wide price swings from year to year. A decline in the number of grazing permits along with added expenses to constrain livestock from environmental sensitive areas is placing additional pressure on declining ranch numbers. Not surprisingly, a higher percentage of livestock operators reported employing less employees compared to five years ago than the other sectors. Health concerns from

eating red meat, price competition from other meat groups, and the inability to produce a product of consistent quality that is convenient to consume are challenges that the fragmented beef industry is facing. In spite of all these issues, restaurant sales for high quality cuts of meat have been strong.

Food safety issues are at the forefront of the beef industry now with recent claims surrounding BSE and isolated e-coli scares. Other potential threats to the industry include everything from problems associated with urban encroachment to disease outbreaks and trade barriers for meat products or breeding livestock sales to Mexico.

The US's importation of feeder cattle from Mexico while exporting beef products to Mexico, as described earlier in figure 5.3a, is an example of how trade can flow both ways within a specific sector. Sonora and Arizona should be leaders in taking advantage of this complementary trade flow. Support for the pilot project of feeding intact heifers from Sonora in Arizona's feedlots and Sonora following a consistent free trade policy with Arizona's boxed beef products will give the Region a competitive edge to other states in this complementary trade flow.

Table 5.4a. Assessment of Livestock Sector for Sonora.**Strengths**

- Strong tradition of livestock activities.
- High availability of low-cost labor.
- Captive market for feeder cattle in Arizona and other southwestern states.
- Efficient egg production for domestic demand.
- Sonora is free of hog cholera and ahead of other Mexican states in working to eradicate tuberculosis and brucellosis.
- Low cost land-leasing in rain-fed areas.

Weaknesses

- Lack of developed stock water for drought periods.
- High feed grain costs.
- Decreasing per capita consumption of beef in developed countries.
- Lack of research on animal genetics.
- Lack of grazing land management training.
- High financial costs and indebtedness.
- Excessive middlemen activities in marketing livestock.
- Deficient cooling infrastructure for meat packing.

Opportunities

- Potential to increase milk production under joint-ventures.
- Pilot project to feed intact heifers from Sonora in Arizona.
- Grazing of cattle from Arizona.
- Export credit guarantees from USDA for importing Arizona breeding livestock.
- Introduction to Sonora of exotic species such as ostriches.
- Increasing demand for pork in Asia.
- Amendments to Article 27 (privatizing ejido lands) that will create incentives for attracting private investment.

Threats

- Increasing imports of beef products with an overvaluation of the Mexican peso.
- Tuberculosis and brucellosis not eradicated.
- Growth in indebtedness and loan defaults.
- Overgrazing problems heighten.
- Livestock imported from other Mexican states into Sonora with diseases eradicated in Sonora.
- High fluctuation in feeder calf prices.

Table 5.4b. Assessment of Livestock Sector for Arizona.**Strengths**

- Arizona feedlots have been successful at feeding Sonoran and other Mexican steers.
- No quarantines or health problems for Arizona animals.
- Dairy industry has positive economic indicators for increasing production.
- Upward trend in beef export sales.
- Traditional supplier of breeding livestock to Mexico.
- Dry climate helps reduce problems associated with animal waste.

Weaknesses

- Feed costs are relatively high compared to other US feeding regions.
- Fed beef prices are lower than the packer concentrated TX-OK pan-handle region.
- Decline in the number of grazing permits.
- Decreasing market share of total US meat consumption for beef.
- Strong price competition for beef from poultry.

Opportunities

- Packing industry to increase the export of high quality boxed beef and other meat products to Mexico.
- Dairy industry to export fluid milk and dairy products to Mexico.
- Advances in communication technology and streamlined border crossings to enhance trade with Sonora.
- Ranch recreation activities in rural areas.

Threats

- Non-tariff trade barriers for meat and dairy products to Mexico.
- Trade policy on boxed beef exports to Sonora that is uncertain and can go against free trade with quotas and other non-tariff trade barriers.
- New outbreak of a disease like tuberculosis in Sonora.
- Major financial crash like the 1994 devaluation of the peso.
- Urban encroachment and air pollution problems for feedlots, dairies, and ranches.
- Food safety risks or scares.

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