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# **CATTLE/BEEF SUBSECTOR'S STRUCTURE AND COMPETITION UNDER FREE TRADE**

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## **INTRODUCTION**

This paper discusses the cattle and beef industries of Canada, Mexico, and the United States in terms of their structure and competitiveness in a future free trade environment. Some might argue, with reason, that these industries already operate in just such a world. While that may be true, these industries are going through rapid structural change that makes a look at the next 20 years very interesting indeed.

The last five years provide an excellent blueprint for structural change as a source of trade disputes. The cyclical nature of the cattle industry led to a sharp decline in cattle prices in 1994 and culminated with extremely low prices in 1996. Drought in the Southwest and in Mexico exacerbated the low prices as more cows went to market. The low prices were accompanied by increased numbers of calves and fed cattle coming to the United States from Mexico and Canada. The number of cattle entering the United States expanded rapidly in the mid-1980s to more than one million head coming from Mexico and Canada each. The visible shipment of those cattle to the United States led to several ITC suits and other trade disputes. These trade disputes are a direct result of structural changes in the cattle/beef sector.

The paper is organized in four sections, one on each country followed by a section that synthesizes the material and draws conclusions for the future. Each author examines the beef/cattle sector in his country with an eye toward a full-free trade environment. The final section synthesizes the material and attempts to draw a few conclusions about structural change, trade disputes and the future of the industries.

## **CANADA**

On the Canada/U.S. international interface, the beef industry was considered one of the more open sectors even prior to the CUSTA and the NAFTA. In fact, prior to the CUSTA, the beef sector was often held up as a model of relatively unfettered trade and well advanced market integration (Kerr and Cullen, 1985). While tariff levels were low and international movements of cattle and beef relatively free, from the Canadian perspective a number of U.S. non-tariff barriers (e.g. border inspections, health regulations, non-reciprocal grading) and trade irritants (antidumping and countervail actions) remained and have proven difficult to remove (Hayes and Kerr, 1997). The NAFTA was originally touted as a mechanism for the further promotion of North American market integration. At least as far as the Canada/US interface is concerned, however, after in excess of a decade of trade agreements, it appears more and more as if it was a “one shot” deal with further liberalization within its structure problematic at best (Kerr, 2001). Some additional trade liberalization at the Canada/U.S. border has subsequently taken place (e.g. the limited import of feeder cattle into western Canada from specified U.S. states during months of low disease risk) but this was the result of World Trade Organization (WTO) initiatives to allow sub-national geographic areas to export even if an entire country could not meet an importer’s animal health requirements.

The failure of NAFTA as a mechanism for ongoing liberalization means that whatever effect the CUSTA/NAFTA has had on the industrial organization of the beef sector is a result of one-time liberalization in the wake of the agreement ratification. Further, given that the Canadian beef industry was already well on its way to being well integrated into the larger North American market prior to the CUSTA in 1989, one might expect that it had little effect on concentration and the industry’s conduct and performance. As in the United States, technological progress in feeding, disease control, storage, transportation and

information technology, as well as rising concerns relating to food safety, have been far more important in altering the industrial structure of the beef industry than the NAFTA. In addition, the changes brought by the Uruguay Round have also been more important to the industrial structure of the beef industry in Canada than the NAFTA. These forces will be explored in more detail later in this section.

While the Canadian beef sector is increasingly integrated into the North American market, important differences remain between the Canadian and U.S. sectors. The Canadian and U.S. beef sectors are organized in a similar fashion. Vertical segmentation exists between cow-calf producers, who utilize land resources largely unsuitable for cropping to provide grazing and forage for the breeding cow herd and young stock, and the cattle finishing industry that feeds grain in feedlots. Some animals go through an intermediate “backgrounding” stage between the cow-calf producer and the feedlot. The packing industry is dominated by a few large firms that co-exist with a relatively large number of small firms. The further processing industry is, to some degree, vertically integrated with the packing industry, but many independent processors exist and the industry is less concentrated than meat packing. Supermarkets and the hotel restaurant and institution (HRI) market represent the major outlets for sales to consumers. Specialty meat shops have only a small share of the retail market. The slaughter stage of the industry represents the most concentrated aspect of the beef supply chain, measured by volume, and it has been becoming increasingly concentrated since the CUSTA.

The most defining force in determining the industrial structure, and degree of concentration, in the Canadian beef industry, however, remains geography. As a result, drawing conclusions from simple measures such as four firm concentration ratios or Herfindal indexes may be misleading. Similar to the broader Canadian economy, much of the beef industry is strung out across the country in a narrow band that seldom exceeds 300 kilometres from the U.S. border.

In almost all parts of the country, on the fringes of cropland there is relatively marginal land which is suitable for grazing and forage production. This resource is used to feed either the cows that form the basis of cow-calf

operations or dairy cattle. Animals that can be used for beef production are bi-products of the dairy industry. Cull cows from dairy herds also contribute to manufacturing quality beef supplies. As fluid milk production remains based near final consumers (in part due to transportation costs as well as dairy regulations), there is a local supply of animals suitable for beef production in most parts of the country, also near the U.S. border. Small-scale local feeding industries exist to utilize this resource. As a result, a large number of small-scale abattoirs and slaughter plants exist to take advantage of available local cattle supplies. Hence, there is a low concentration, small-scale beef sector scattered across the country tied to the local resource base. This sector remains relatively static in total numbers and is going through slow consolidation as a result of scale economies.

In addition to this relatively static beef industry based on local resources, there is a large and growing industry in the grain surplus prairies. Alberta, in particular, is well positioned geographically to provide the base for this large-scale industry. It has abundant grazing lands, cropland well suited for barley production and a small transportation advantage over some major producing areas in the United States to supply the beef deficit west coast market (Gillis et al, 1985). In recent years, Alberta has seen considerable investment in both the cattle feeding industry and meat packing. It is increasingly characterized by large-scale feedlots and new and concentrated investment in meat packing. This expansion in meat packing has spurred investment in the cattle feeding industry which has, in turn, led to increasing demand for feeder cattle leading to both an increase in the number of cow-calf animals in the feedlots' catchment area and a geographic expansion of the catchment area.

Based on running two shifts, the IBP plant in Brooks, Alberta (the ex-Lakeside Feeders facility) has a slaughter capacity of 4200 per day while the Cargill plant in High River, Alberta has a double shift capacity of 3800 per day. These two facilities represent the majority of recent expansionary investment in the beef packing industry in Canada. This expansion represents part of the North American strategy of these two large U.S.- based agribusiness firms. The CUSTA/NAFTA helped create the conditions necessary for these investments to take place by removing some of the threats to cross border movements

of meat. This decreased the risks associated with making significant investment in beef packing in Canada.

The next largest plant is owned by Better Beef Ltd of Guelph, Ontario and serves the relatively large regional cattle catchment area in Ontario. Better Beef's capacity is approximately 1100 animals per day. The fourth largest plant, XL Foods, is located in Calgary, Alberta and has a capacity of 1000 animals per day. This plant changed hands in 1999 suggesting that they were unable to compete with IBP and Cargill in the Alberta market. With the assets written down, the new owners are able to keep this capacity on line. These plants represent Canada's "big four" comprising together approximately 85 percent of the country's slaughter capacity. The fifth largest slaughter facility (700 animals per day) is located in Moose Jaw, Saskatchewan. There are 14 small-scale plants in Quebec supplied largely from the province's dairy industry. In addition to the Better Beef Ltd plant in Guelph, there are approximately six more slaughter facilities in Ontario. There are three small plants in Canada's Atlantic provinces processing the small local supply of cattle. There are two small plants in Manitoba, one more in Saskatchewan, three smaller units in Alberta and two in British Columbia - one in the northern Peace River region and one in the heavy dairy production area of the Fraser Valley near Vancouver. This regional capacity represents, for the most part, long sunk capital.

In addition to the federally inspected slaughter facilities discussed above, there are a number of provincially inspected abattoirs. In Canada, meat exported internationally or moved inter-provincially must be slaughtered in a federally inspected plant. As a result, provincially licensed abattoirs tend to be small, specialized and of only limited consequence in the market.

The expansion of slaughter capacity in Alberta has contributed to an increase in feeding capacity in Alberta. Another major contributor to this change, however, was the ending of the subsidies for the transportation of grain out of the prairie region in the wake of the Uruguay Round (1995). The removal of the grain transportation subsidy altered the relative attractiveness of marketing grain through feeding cattle. The result was larger feedlots. In 1991 there were 229 feedlots with capacity in excess of 1000 head in Alberta marketing 927,000 head per year; in 2000 there were 212 feedlots in this category marketing

2,390,000 head (CANFAX, 2001). In 1991, there were 12 feedlots in Alberta with a one time bunk capacity of 10,000 head that accounted for 31 percent of fed cattle production in the province. In 2000, there were 32 feedlots with 10,000 plus capacity producing 56 percent of production. Alberta's 212 finishing feedlots (1000 plus capacity) have a total one time capacity of 1,578,200 head and there are 24 feedlots in Saskatchewan that have an additional 113,900 head of capacity. Alberta and Saskatchewan together account for approximately 80 percent of Canada's fed cattle production.

The packing industry in Alberta is relatively concentrated with the two large U.S.-owned facilities in operation. As yet, however, this concentration has not meant that these firms have been able to act as oligopsonists. This is because of the existence of the capacity provided by the XL plant in Calgary. This plant was in considerable financial difficulty prior to its sale and new infusion of capital, suggesting that there is excess capacity in Alberta. As a result, the three plants must compete for limited supplies of cattle making fed cattle to some extent a sellers' market. Until either the XL capacity is retired or the feeding industry expands to meet the total packing capacity, any oligopsonistic market power arising from the concentrated nature of the packing industry is likely to be minimal.

Rude and Fulton (2002) found a negative relationship between red meat concentration and market power, and that mark-ups in the red meat industry are low. These results are contrary to the findings of similar analysis of the U.S. beef sector. One possible reason for this difference is that the Canadian supermarket sector is much more concentrated than in the United States. Further, Canadian supermarket chains are, to a considerable degree, regionally segmented increasing the degree of concentration in any particular geographic area. As a result, it may not be possible for Canadian packers to exercise a significant degree of market power even with their considerable degree of concentration.

In Ontario, where there is one dominant plant, it faces competition from U.S. imports. Given the absence of a reciprocal beef grading arrangement or a harmonized grading system, beef retailers are able to import U.S. "no roll" beef in direct competition with Canadian beef which must be graded. As a result, the mark up on Canadian beef is restrained.

As suggested above, the post-slaughter processing of beef appears to exhibit a decrease in concentration with small processors entering to make niche market products that range from 'jerky' to airline meals. While beef has not been able to capitalize on new product development to the same degree as chicken and pork due to its stronger and more distinctive taste, it is progressing down the same path. Further, processors are not particularly hostage to the packing industry because they are often able to competitively source beef from offshore given the lower quality requirements when the product is processed. In the high quality segment of the further processed beef market, the niche market nature of the products allows processors to pass input cost increases on to their customers.

The Canadian beef supply chain is thus comprised of a widely dispersed cow-calf industry which depends on grazing/fodder inputs which have a low opportunity cost; a feeding industry which, while increasing in the scale of its operations, is still widely held exhibiting little concentration; and a packing industry which is highly concentrated but with the "tail" of its distribution comprised of a relatively large number of small firms. These aggregate pictures, however, mask a geographically influenced distribution of production and processing. Given the localized matching of production and processing that characterizes the industry, only in one area of the country does the beef industry exhibit dynamic growth and future potential. Southern Alberta and its immediate cattle catchment area has been allowed to expand primarily by investment in new and expanded processing facilities by major U.S. packers. This segment of the industry is integrated into the North American cattle industry. The industry in Alberta, however, is going through an industrial "shake out" whereby the combination of new and existing capacity in slaughtering outstrips cattle supplies. As a result, oligopsonistic behavior is not yet a major concern.

If supply and demand appear to be in balance in much of the country, the question for the future becomes how much additional growth can be expected in the Alberta-based segment of the industry? Given that considerable growth can probably be expected from the Asia-Pacific market in the future (Agriculture and Agrifood Canada, 1998), demand for beef manifest on the Pacific coast of North America can be expected to grow over the intermediate run. Given the integrated nature of the North American market, it does not

matter whether the industry in Alberta directly exports to the Asian market or increases exports to the U.S. west coast to replace U.S. beef exported offshore. If the demand constraint does not appear to be binding over the near term, constraints on the expansion of supply may be the important determinants of the industry's future.

There is some evidence that supplies of feeder cattle will not represent an important constraint on supply. While the rapid growth of the cattle feeding industry in Alberta has required an expansion in the feeder cattle catchment area, supplies of these animals are likely to be elastic. Saskatchewan exhibits considerable potential as a supplier of additional feeder cattle, particularly if international grain prices remain low. Expansion of the cow-calf industry can be easily accommodated by converting marginal crop land into grazing or forage production. Further, changes to the health regulations pertaining to the import of feeder cattle into Canada, the Restricted Feeder Import Program (RFIP), have allowed Alberta feedlots to source cattle in border states such as Montana and North Dakota. This program is likely to be expanded to allow year-round imports from selected states with equivalent animal health conditions (Kerr, 2001). This northward flow of feeder cattle further cements the integration of the North American beef market. It may also better protect Canada from anti-dumping and countervail actions by U.S. cattle producers in times of low prices. Given that selling below cost is a normal business practice in the beef industry at certain periods in the cattle cycle, the Canadian industry has been frustrated by U.S. anti-dumping actions, particularly given that the competitive nature of the cow-calf and cattle feeding industry does not allow for predatory pricing practices.

It seems clear that the anti-dumping and countervail actions brought by U.S. producers are pursued for their harassment value – U.S. producers have not won their cases in the domestic U.S. contingency protection forums but temporary duties provide protection and disrupt commercial relations between U.S. buyers and Canadian sellers as well as imposing significant costs in preparing and fighting the cases. Given the integrated nature of the North American market, when Canadian cow-calf producers are selling below cost it is equally likely that U.S. producers are selling below cost as well. If U.S. cow-calf producers were to find their markets in Canada threatened by Canadian

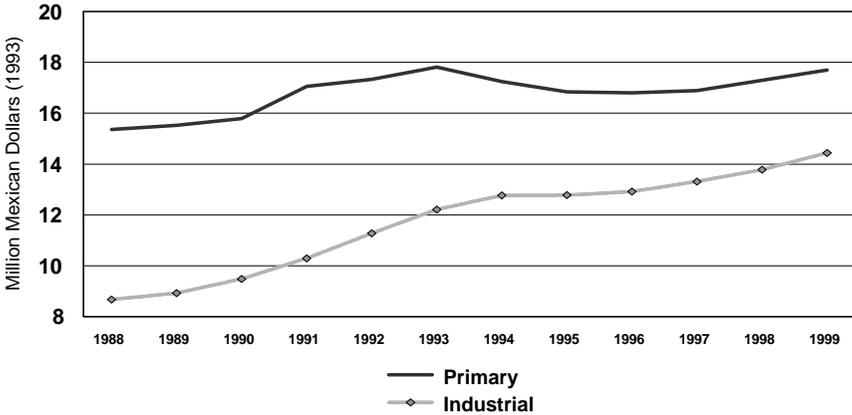
anti-dumping actions, then they may be more reticent to launch actions against Canadian imports.

The cattle feeding industry also exhibits a low level of concentration, even if the average size of units is increasing. The cattle feeding industry in Southern Alberta is, however, finding that it is facing constraints on expanding in the same way it has up until the present. New feedlot capacity has been concentrated near the city of Lethbridge in what is known as “feedlot ally”. It has been suggested that this localized concentration allowed the creation of certain agglomeration effects in the cattle feeding input and support industries. The heavy concentration of large-scale animal agriculture, however, has brought forth concerns relating to the effects on water quality, the negative externalities associated with odor pollution, etc. As a result, for environmental reasons, further expansion is likely to be less geographically concentrated, lessening the agglomeration economies to some extent. There is, however, no constraint on expansion of the cattle feeding industry at lower levels of geographic concentration. Feed, in particular, is widely available and its production could be expanded easily in both Alberta and Saskatchewan.

Concentration in the ownership of feedlots i.e., multiple feedlots under a single ownership structure has not been manifest in Canada. Presumably there are considerable monitoring costs (Hobbs and Kerr, 1999) associated with the management of feedlots. Thus, if expansion of the feeding industry is more geographically diverse in the future, this may lead to a reduction in the concentration of ownership.

The beef packing sector in Alberta is well integrated into the North American industry. Its major investors are U.S. multinational agribusiness concerns that will make their decisions on a continent-wide basis. It seems unlikely that domestic Canadian investment in beef packing in Alberta is likely in the future. If the industry continues to grow and the current excess capacity is resolved through the retirement of the capacity not owned by IBP and Cargill, or through growth in demand, investments may be required in the future. These investments are likely to be influenced by conditions in the wider North American market rather than specific Canadian conditions. The larger U.S. market will establish the trends for the North American beef packing industry.

**Figure 1: Growth of the GDP in the Mexican Beef Industry, 1988-1999.**



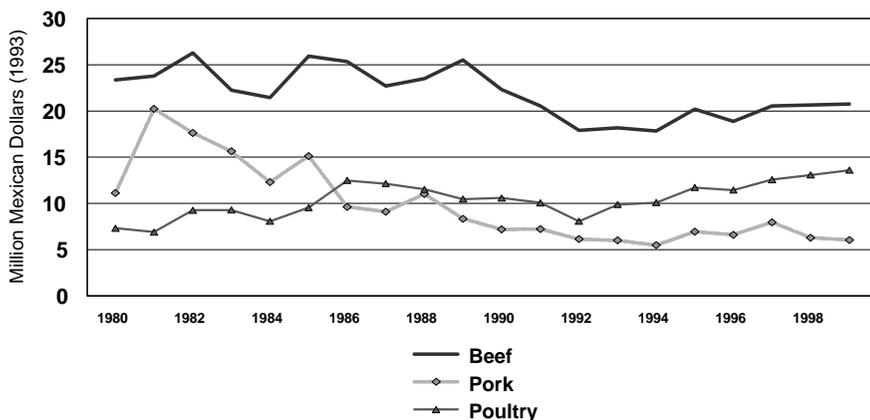
Source: INEGI

## MEXICO

The beef cattle sector plays an important role in the Mexican economy. The contribution of this activity is about 1.2 percent of Mexico’s GDP. It has been estimated that the beef cattle industry generates 4.7 million jobs in its primary industry of 1.4 million production units. The economic impact is generated along the production chain, from the beef cattle ranches to the meat packers, to the process and marketing of beef products. The beef industry also contributes to the crop industry with the purchases of approximately 1.5 million tons of grains, such as sorghum, corn, wheat and other feed grains when transferred to the feed industry. The livestock industry uses 150 thousands tons of soybean cakes and other meals from oilseed origin. In addition, beef cattle production is a significant user of sugar industry products using approximately 20 percent of the countries molasses production.

### The Beef Industry and the Mexican Economy

In the last twelve years the Mexican beef cattle sector has appeared to be in a growth phase. While a cycle has been clearly defined over this period, GDP in 1999 exceeded that in 1988. Shown in real terms and based on 1993

**Figure 2: Value of Mexican Livestock Production, 1982-1999.**

Source: SAGAR/ Banco de México

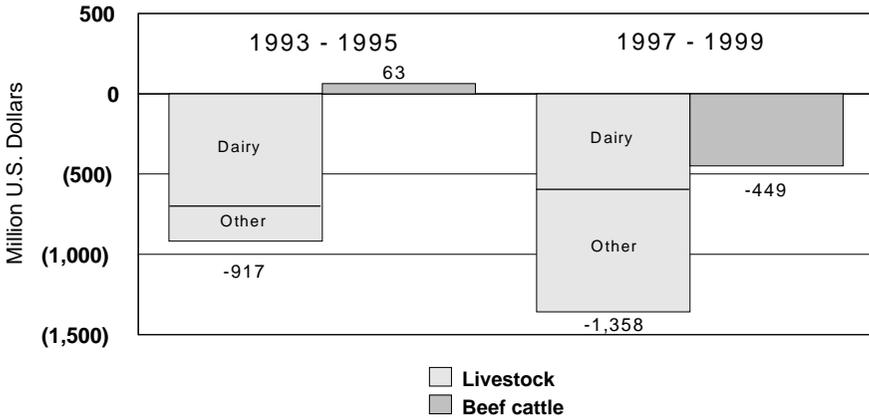
pesos, there are three clear segments in the GDP growth of the beef cattle industry ( Figure 1):

- From 1988 to 1993, an upward trend is shown by both the primary and the industrial sector. The primary sector grew from 15.4 to 17.8 million pesos in that period. The industrial sector showed an even steeper growth, ranging from 8.7 to 12.2 million pesos over the same period.
- During the 1994 to 1996 period, the primary sector showed a small downturn in GDP contributions. The industrial sector kept a slight growth for that period.
- A clear upsurge is noticed after 1997. The primary sector has shown in 1999 levels of GDP similar to those in 1993. The industrial sector continued a steeper growth, reaching 14.4 million pesos contributed to the national GDP in 1999.
- The gap between the two sectors tends to narrow due to the steady growth of the industrial sector.

### Value of Production

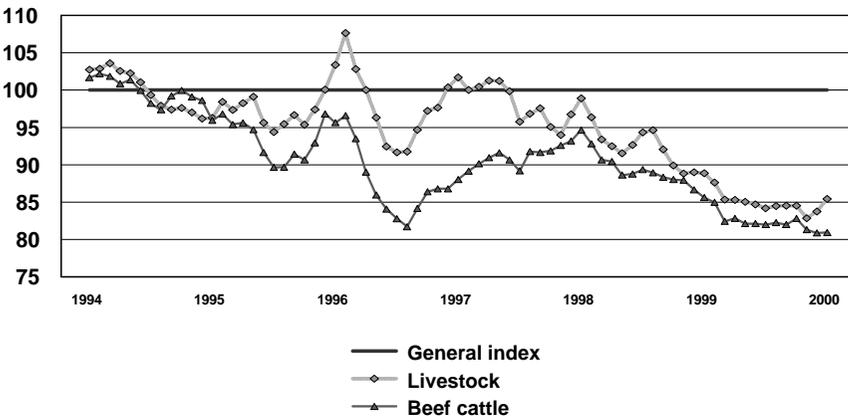
The value of production for meat products shows marked contrasts (Figure 2). The value of production, in real terms, has been decreasing for beef

**Figure 3: Livestock Trade Balance, Mexico.**



Source: SECOFI, SHCP, BANXICO, INEGI

**Figure 4: Profitability Index, Mexico (1994 = 100).**



Source: Banco de México

and pork during the last two decades. The value of beef production decreased from 26 to 21 million pesos from 1982 to 1999. Pork showed a more drastic decline, which values ranged from 20 to 6 million pesos, for the same period. For beef, although showing a decreasing trend over time, the value of produc-

tion has reflected the normal variation of business cycles. On the other hand, the value of production for pork showed a strong decline in the 1982-89 period. Since then, it has shown a slight decline up to 1994, when it almost dropped to 5 million pesos, approximately 25 percent of the value reached in 1982. In contrast, the popularity of poultry products shows in the steadily increasing value of production for this activity. The value of poultry production increased from 7.5 million pesos in 1980 to 14 million pesos in 1999.

### **Livestock Trade Balance**

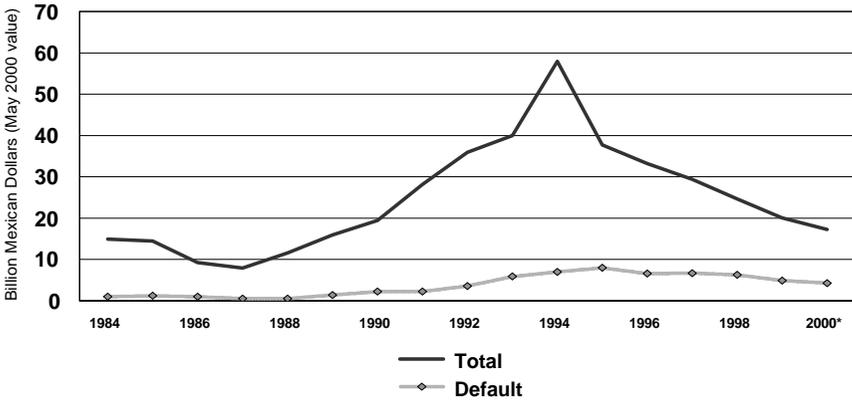
There has been a negative trade balance for the livestock sector in the last decade (Figure 3). There are two periods with major differences in trade balance. From 1993 to 1995, which represents the period of the Mexican economic crises, and the recovery period from 1997 to 1999. In the first period, the whole livestock sector reached a deficit of US\$917 million. The beef subsector achieved a positive balance of US\$63 million, probably fueled by a strong devaluation of the Mexican peso. During the recovery period, the livestock trade balance shows a deficit of US\$1.3 billion, of which US\$449 million corresponds only to the beef cattle subsector. As a result, it can be observed that the slow growth of the livestock industry is not necessarily due to the lack of consumer demand, but to the high rate of imports to fulfill the domestic markets needs.

### **Variations in the Profitability Index**

The economic downturn of the livestock production systems in Mexico can be observed in the level of profitability that these systems have achieved during the last decade (Figure 4). Using a profitability index to show the relation of product prices and cost of inputs at the farm level a steady decline of profitability can be observed over the 1994-2000 period. Beef cattle production units have shown more reduction in profitability than the rest of the livestock production systems in general. During this period, a 20 percent decline in profitability for beef ranches is observed. This reduction in profitability may help to explain the decrease in the value of production and the lower contribution to GDP from this activity.

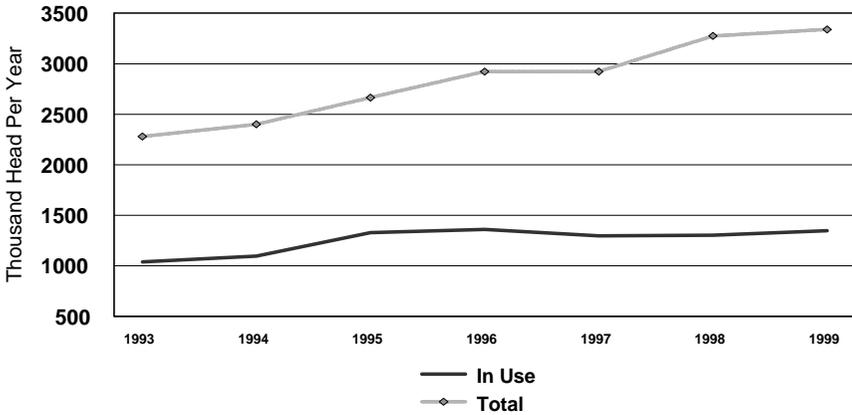
The severe reduction in the profitability index since 1994 caused a drastic reduction in the amount of livestock credit provided by the banking system.

**Figure 5: Total and Default Loan Amounts for Beef Cattle, 1984-2000.**



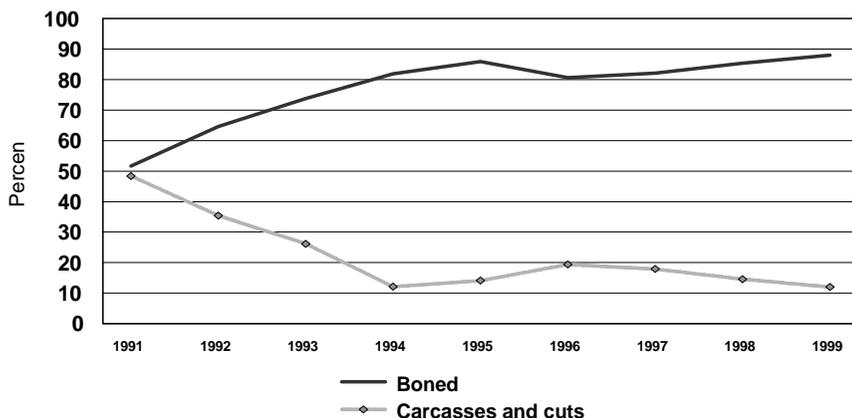
Source: Banco de México  
\* March 2000

**Figure 6: Mexican Beef Cattle Slaughter Capacity, TIF Plants, 1993-1999.**



Source: SAGAR/CNG/BANXICO/SECOFI/BANCOMEXT

In the last six years this amount dropped from MX\$60 billion to less than MX\$ 20 billion. At the same time the number of default loans grew significantly (Figure 5). This caused the banking system to consider financing the beef cattle sector, and agriculture in general, as a high-risk activity.

**Figure 7: Mexican Beef Imports, 1991-1999.**

Source: SAGAR/CNG/BANXICO/SECOFI/BANCOMEXT

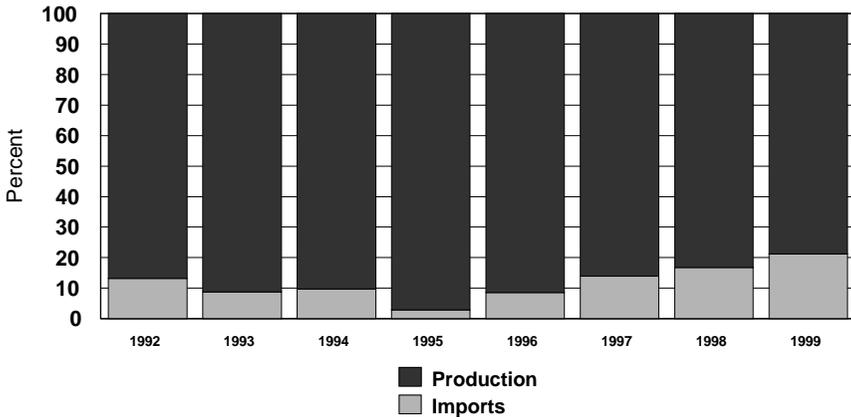
## Industrial Activity

Although Mexico shows some comparative advantages in the primary production sector, it seems that the Mexican livestock sector is less competitive due to problems in production. Observing the behavior of the slaughter capacity of federally inspected plants (TIF)<sup>1</sup> shows that these plants have been operating at about 40 percent of their existing capacity. The slaughter of animals has heavily shifted to municipal and local abattoirs (Figure 6).

Beef imports show a trend for specific products (Figure 7). In 1991 the imports of beef were equally divided between boned meat, as well as carcasses and cuts. Imports of carcasses and special cuts have decreased in importance over the last decade. On the other hand, a greater proportion of beef imports, 80 to 90 percent, has been in the form of boned meat since 1994.

The structure of beef imports reflects changes in the preferences of retailers, including supermarkets. Boned meat is easier to handle, requires less

<sup>1</sup> TIF slaughterhouses are facilities approved by the Federal Government. They are privately owned, but built and operated under specific federal regulations and recurrently inspected by federal authorities.

**Figure 8: Mexican Meat Market Demand, 1992-1999.**

Source: SAGAR/CNG/BANXICO/SECOFI/BANCOMEXT

refrigerated capacity, reduces waste, and it is handled with less specialized labor. A fact that strengthens this trend is the greater concentration in the retailing market. On the other hand, beef slaughter and processing require a great number of skilled labor. From the standpoint of beef processing, Mexico has a competitive advantage due to its lower labor costs.

### Beef Marketing

Although the beef sector in Mexico shows definite advantages, the industry has been unable to fulfill the increasing demand for this product. It has, in turn, lost market share for differentiated product. Mexico City and the surrounding areas represent up to 40 percent of the national demand for beef. Seventy percent of the beef trade takes place in this area, as well. For cultural reasons, there is a strong preference for fresh meat consumption. There has been a clear preference for fresh meat over frozen meat in the Mexican markets. As a result, a large number of slaughter facilities have settled in and around Mexico City to supply this large market with fresh meat.

Consumer preference has recently started to change (Figure 8). Fresh meat retailers have lost market share to supermarket chains. Supermarkets rep-

resent 57 percent of beef sales. The supermarket concept represents a major opportunity for value-added products with potential impact on the primary sector.

Major differences in beef marketing between the United States and Mexico is influenced by consumer preferences. The beef market in the United States is geared towards high value cuts. Only 20 percent of the carcass weight represent more than 60 percent of the total carcass value. The less preferred and lower priced parts of the carcass are dedicated either to the ground beef market or exported to the Mexican market. In the Mexican beef market, there is a minimal price differential among carcass parts in part due to the lack of a standard classification for quality beef cuts. Another important feature is the higher preference for beef offal. This clearly shows the differences between the two market preferences.

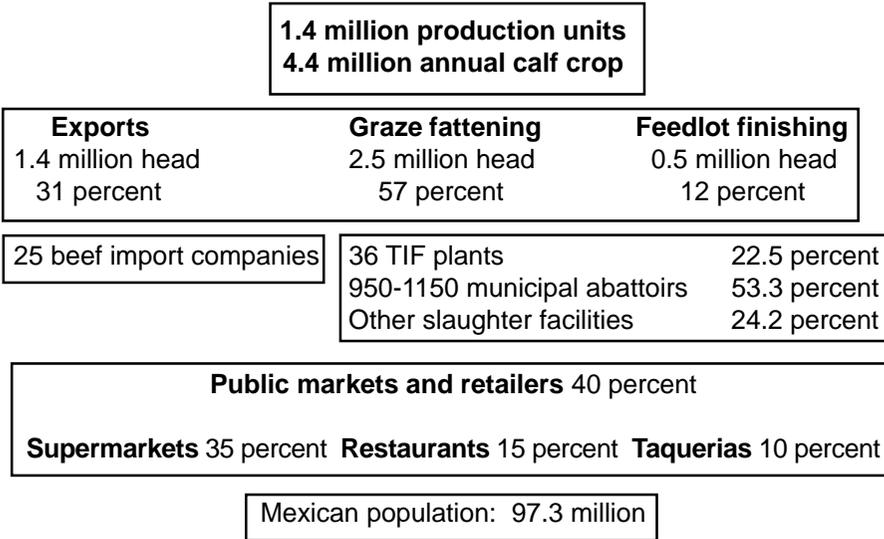
The U.S. meat packing industry is highly concentrated, as only four firms account for 80 percent of the industrial production. They operate on a efficient economy of scale basis. These four firms account for 80 percent of Mexican imports. The Mexican industry shows no sign of concentration because there are a large number of different size plants in the country. Moreover the products coming to the Mexican market are based on a market preference basis other than price, affecting the profitability of the whole industry. This situation should be seen as an opportunity to have complementary industries between Mexico and the United States, where both can benefit from the other market preferences.

### **The Beef Production Systems in Mexico**

In Mexico there are three main beef production systems, which are clearly defined by geographic and climatic conditions. In the arid and semiarid areas of Northern Mexico, specialized beef cattle breeds in cow-calf operations are strongly influenced by the U.S. market demand for stockers and feeders from the feedlot industry. The temperate climate of the Central Highlands makes this region popular for dairy, poultry and hog industries. Beef cattle production is based on cow-calf operations in marginal areas for crop production. Feedlots, growing and feeding dairy calves, are highly disseminated in this region, as well.

In the tropical and subtropical areas, beef production is mainly based on grazing (mainly Zebu cattle breeds). The dual-purpose production systems

**Figure 9: Mexican Beef Industry Structure.**



(dairy and beef) are very common in these regions. These systems present a high level of flexibility for the producer to emphasize on either beef or dairy and to shift production according to the variations in the local markets and to the cash flow needs of the production unit.

**Beef Industry Structure**

The primary beef production sector is made up of a large number of small cattle operations (Figure 9). The lack of productivity is a common factor among these operations. The feeder and stocker export market represents more than one third of the production in volume. Feedlots in Mexico represent a small part of the demand for this type of cattle. The rest of the calves coming from the cow-calf operations are grass-fed.

The industrial activity is based on the TIF plants. These plants represent the modern trend in beef processing that meet all the domestic and international industries’ sanitary regulations. On the other hand, the municipal abattoirs are exclusively dedicated to supply local markets. These facilities are still

**Figure 10: Mexican Beef Industry Outlook.**

<b><i>Higher Specialization and Productivity of Ranches</i></b>	
<b>North</b>	Cow-calf system, USA market-oriented
<b>Central Highlands</b>	Fattening of dairy calves Feedlot finishing
<b>Dry Tropics</b>	Cow-calf system
<b>Humid Tropics</b>	Specialized dual purpose Pasture grazing fattening

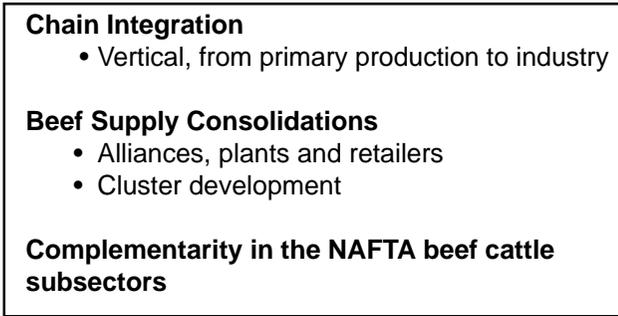
popular because they usually carry lower costs than the TIF plants. In addition, a significant number of cattle are slaughtered in non-regulated facilities in small villages and areas surrounding big cities because of the limited number of TIF plants available in the country.

Beef retailing is mainly carried on in public markets and small butcher shops in the most populated areas in Central and Southern Mexico. This system keeps the traditional marketing process in which most beef has been re-tailed for many years. One important outlet for beef consumption is represented by the traditional eateries called “taquerias” (from taco), small restaurants specialized in typical food, where beef and other meats are basic ingredients. The growing importance of beef retailing in supermarkets is a response to changes in income and consumer preference of middle class families in Mexico.

### **The Beef Industry Outlook**

***Primary Production.*** As previously shown, Mexico’s geographic and climatic diversity have led to the development of different production systems (Figure 10). In the North, the cow-calf operations will continue focusing

**Figure 11: Mexican Beef Industry Outlook (continued).**



on the U.S. market. These production units will have to satisfy the specific demands of the feedlots, such as breed of cattle, weight and origin of the herds because of heightened sanitary regulations included in the NAFTA agreement.

In the Central Highlands the dairy industry will continue to grow. The local feedlots will dedicate part of their capacity to an increased number of culled animals from the dairy industry. So, the dairy industry will continue to complement the beef market in Central Mexico. Because of their proximity to Mexico City and its surrounding urban area, these feedlots might dedicate part of their capacity to finishing cattle from the tropics, which have been developed under grazing.

Low productivity and low quality levels in beef production have characterized the dry tropical regions. Cow-calf operations will continue to operate under these tropical conditions. The humid tropical regions in Mexico are expected to continue basing their beef production on the dual-purpose production system. Climate and animal health conditions (parasites and diseases) have always been a deterrent for the broader use of more specialized European type of beef cattle. If future research produces better methods to mitigate the climate impact on European cattle, these regions should utilize the great potential for livestock production, with a clear increase in the profitability of these operations. In any case, crossbreeding will continue providing the genetic poten-

tial to improve animal production and the rusticity that the cattle need to produce milk and meat under these adverse conditions. Although adjustments for grain-finishing cattle might surge in the future, grass-feeding is expected to continue as a popular component of the production systems in these regions. This practice is economically viable while avoiding the expensive inputs that burden the small producers' economy.

Sanitary issues will continue to play an important role in livestock trade. In order to reach the United States and other potential markets, Mexico will need to continue to strengthen its eradication effort on those diseases that impede the flow of live animals and animal products across borders.

**Industrial Activity.** In the coming years, Mexico's beef industry will move to a more vertically integrated production chain, from primary production to the industrial and retail industry (Figure 11). At first this integration will work between the closest players. There are already starting alliances between farmers and feedlots, in which they both benefit. The next stage will begin when feedlots try to integrate with packing plants looking for a share of the added value generated in the industry, through the creation of trade brands and innovative marketing programs.

Another important feature for the next years will be the consolidation of beef supply. This will become more evident when strategic alliances develop between slaughterhouses and packers target the big retail companies. It is difficult to envision a single trading scheme in the country, but all this should start with regional alliances. The regional cluster system seems to fit well the outlook of the beef cattle sector in Mexico. This trend will be further supported as the strength of regional clusters promotes production efficiency and linkages among the participants of the production chain.

It is expected that the regional cluster system will influence the efficiency of the industrial processes. This should generate higher quality products that satisfy the needs of consumers willing to pay for such quality. Another important effect will be shown on the role the government and producer organizations will have on the strengthening of sanitary rules. All these efforts will

achieve the complementarity of beef cattle industries of NAFTA members, where each country can profit from its own consumer preferences.

## **UNITED STATES**

The United States is the world's largest beef producing country. While other countries have more cattle and buffalo, no other country produces as much beef. For example, and for obvious reasons, India has many more cattle and buffalo than the United States, but little beef consumption or production. In relation to the North American industry, the United States, with about 100 million head, has about three times as many cattle as Mexico and seven times as many as Canada. Cattle are produced in every state, but the major producing states are in the Plains and South. The three basic production phases are cow/calf operations, stocker or backgrounding operations, and feedlots. Calves are produced in cow/calf operations and after weaning move to stocker operation or to feedlots.

Cow/calf production is an extensive, grass based system. One production advantage of the United States is that the country covers a broad range of climate conditions. That is conducive to producing calves and feeders for feedlots year around. Cattle can be kept on pastures longer in times of high feed costs to lessen production costs. The average cow herd size in the United States is only about 40 head. The industry has many small producers where cattle are not their main occupation, but are more of a pastime. Many diversified farms have cattle that allow them to use land that would otherwise not produce income. This wide variety of producer with many small herds has implications for the future that will be detailed later.

Production costs vary widely but a strong element of economies of size are evident. Standardized performance analysis (SPA) data of cattle herds in the West and Plains report costs ranging from \$65 to \$100 per cow (McGrann, 2000). USDA cost of production data fall in this same general line with the lowest costs reflected in the Plains. Small herds generally have the highest production costs, but producers that are least reliant on cattle as a source of income. The cattle may be a small part of a diversified operation, they may be a pleasurable diversion, or the source of an agricultural-use property tax ex-

emption. As such these cattle are least likely to be affected by price downturns and by the changing structure of the industry. Cow/calf producers in the Western, public land states, have a host of other issues to contend with. The least of these may sometimes be the grazing fee. Changing notions of multiple use, new values placed on wildlife and recreational uses will probably push more cattle out of these public land areas. Although cow numbers in these states as a percent of total cow numbers have changed very little over the last twenty years.

Beef production per cow continues to increase due to more heifers fed, more dairy cattle fed in feedlots, rising slaughter weights, improved feed efficiencies, and higher calving rates. That means that fewer beef cows are needed to produce the same amount of beef. In fact there was record beef production in 2000 with almost 35 million fewer cattle than the old record in 1976. Over the last three years the United States has produced in excess of 26 billion pounds of beef per year with a declining cow herd, implying that, over time, fewer cows may be needed to supply domestic consumption and a growing export market.

**Feedlots.** Except for cull cows and veal calves, virtually all cattle are fed to slaughter weight in a feedlot. This sector is undergoing rapid consolidation as farmer-feeders exit the industry. Feedlot production has typically had 2 types of operations: farmer-feeders and “commercial” feeders. Farmer-feeders were located in farming areas of the country particularly the Midwest where crops were grown. Feeding cattle was one part of a diversified operation where corn was marketed through the cattle. In addition there were more packers available to which cattle could be easily shipped. Generally, cattle were fed only during the winter. Today less than 3 percent of cattle are in feedlots with 1,000 head or smaller capacity. Several factors have led to the demise of the farmer-feeder. One is economies of size. Larger feedlots enjoy sharply lower costs than do smaller lots (Richardson and Anderson, 1987), they purchase feed and produce cattle year around and they utilize capacity fully (referred to as turnover rate). Large commercial feedlots may have turnover rates of 2.5 while farmer-feeders often would have rates equal to one. On top of higher feeding costs, producers involved in crop agriculture have become more specialized, eliminating cattle feeding. As packing became more concentrated close markets often dried up.

Environmental regulations are an increasingly important factor in cattle feeding. While large feedlots have already dealt with the issue and have put in place technologies to deal with regulations (and are preparing for further regulations), smaller feedlots are increasingly burdened by regulation. Newly proposed EPA regulations on AFOs and CAFOs (confined animal feeding operations) will add to those burdens. Small feeders, including farmer-feeders, will be harder pressed to afford environmental compliance costs.

Large feedlots located in the relatively arid Plains continue to grow, achieving cost economies. Feedlots in the 32,000 head size and larger have grown in number. The major feeding area includes the Texas Panhandle, Oklahoma, Kansas, Colorado, and Nebraska. The arid area with little population puts the industry in the best position, environmentally speaking. There is less risk of water pollution and fewer people to be concerned over other environmental problems.

Economies of scale in cattle feeding imply that the ongoing consolidation will continue. Fewer, larger feedlots move the industry toward a more vertically integrated model. Large feeders can deliver cattle to large packers in a consistent, timely volume, reducing transaction costs, just as large ranches can ally themselves with feedlots and packers to deliver a particular type of cattle.

The United States feeds cattle because of the abundant feed base of the country. In addition, land expense and the beef demands of the population lead to more intensive beef production. While many in the beef industry argue that farm programs have injured livestock producers, to the extent that farm programs have expanded crop production and reduced feed prices the feedlot industry has greatly benefited. In fact the 1996 Farm Bill can be argued to have greatly benefited livestock producers. The elimination of set aside acres, expanded production, and very low feed prices have cheapened gains considerably. Lower prices have also led to increased cattle weights and beef production. Fed cattle production in a free trade environment that led to higher and more volatile prices could be expected to decrease fed cattle profitability.

**The Packing Sector.** The United States has a highly concentrated beef packing sector. The top four firms slaughter about 88 percent of the fed steer and heifers. In spite of many studies there has been little evidence of market power exertion by these firms. Some studies have shown slightly lower prices along with greater consolidation. Other studies have indicated that packing cost efficiencies actually have led to upward pressure on prices as increased profitability led to higher feeder cattle bids.

Research has shown cost economies in larger packers. Much of the packing sector consolidation has been driven by reducing production costs. Along with reducing production line costs comes an effort to reduce transaction costs. This is the argument for captive supplies. At times more than half of some states fed cattle are contracted to packers in advance. Captive supplies allow feeders and packers to reduce costs and risk further. The next twenty years will bring further integration between the packer and feeding sectors.

Packers perform much more of the “value adding” role than in the past. Continued work on case ready and branded products add value and are driven by what consumers want. Packers are also heavily involved in export markets. As exports have expanded this value added role has contributed heavily to widening farm to wholesale spreads in the industry. The packing industry leaders, IBP and Cargill, are multinational firms and control a large portion of North American fed cattle slaughter. Yet there is little evidence of conspiracy, collusion, or market power abuse. The similarity of fed cattle from Canada and the United States may mean that freer trade outside of NAFTA countries may matter less about which country it comes from as long as it gets to the export market.

Consolidation and concentration in the feeding and packing sectors is leading to a more integrated system. Fewer larger feedlots supply the fed cattle for fewer, larger packers. Packers align with feeders producing the cattle that fit their markets, both domestic and international.

**Retail and Consumers.** Consumer perception matters as the beef industry has been long in learning. As the industry becomes more integrated

the supply chain is identifying consumer desires and perceptions. A more concentrated industry also leaves more room for niches. If consumers want more lean beef, products like 'Laura's Lean Beef' emerge to serve consumers desires. Consumer friendly products like the "HEB brisket" that is pre-cooked and is "good" respond to consumer wants. Yet the retail market is also a more concentrated one. Fewer retail outlets desire fewer suppliers leading to a more integrated system. That consolidation is happening across the NAFTA countries (like Walmart). Demands for a more consistent, uniform product require a more integration production system.

This consumer/retail sector is also driving another type of structural change in the industry - food safety. Consumers want safe food and sue if they don't get it. Retailers demand a traceable beef supply chain that extends to the farm. Systems that do that very thing are being implemented. How they will extend through the extensive, small producers level is hard to fathom. One possible outcome may be that producers who ally themselves with a supply chain will adopt these technologies to ensure a market. Small producers who don't adopt will see sharp discounts in calf prices. Traceback systems will further move the industry toward a more integrated system. This also implications for trade as well.

**Trade.** The United States has an active trade in cattle and beef. Since the mid-1980s the United States has imported generally more than a million head of cattle annually from each of Mexico and Canada. Typically Mexican cattle exports have been calves that went to pastures then feedlots. Canadian cattle have been predominantly fed cattle going to U.S. packers. This change since the mid-80s represents a slight shift of the United States away from cow/calf production to feeder cattle production and to the United State's more efficient and larger packing industry. It also represents changes in Canada as their feeding industry expanded. These changes have also been a source of trade tension as more cattle came to the United States and as more beef went to Mexico.

The United States continues to be a net exporter of beef on a volume basis and exports have grown from about 1 percent of production in the 1980s to almost 9 percent of production today. Exports have become increasingly

important to the beef industry. While Japan is the largest U.S. beef export destination, Canada and Mexico are the number two and four destinations, respectively. While a source of recent disputes, increased beef trade with Mexico is likely, further integrating the North American market.

**Other Issues.** A couple of other factors may affect the future of the U.S. beef industry. One of those is BSE. The latest outbreak in Europe has led to estimates of a 30 percent decline in beef demand. It is difficult to overestimate the impact of a loss of consumer confidence of this magnitude in the United States. This supports further integration of the supply chain from a risk management perspective. It also leads to questions about the source of other cattle coming into the United States. Another issue of interest is U.S. farm policy. As marginal land leaves crop production cattle are an alternative. More beef production per cow mean continued increases in exports will have to materialize to expand cow numbers on more land area. There appears to be plenty of opportunity to increase supply.

## SUMMARY AND CONCLUSIONS

This discussion of the cattle/beef industries in each country highlights a number of issues relating to structural change and trade disputes.

- Structural changes are occurring in the industry as shown in the growth of the feedlot industry in Canada, consolidation in feeding in the United States, concentration of packing in a few multinational firms, and consolidation of retail outlets.
- Structural changes have been the source of trade disputes and will continue to be even though the countries cattle industries are becoming ever more integrated.
- There essentially is a North American cattle/beef industry led by the United States which has by far the largest production.
- There is a large amount of trade between these countries and they will become more integrated over time. Other than nuisance trade actions, there hasn't been much change in trading relations in the last few years.

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