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Title: Managing an Industry in Crisis: BSE in Canada

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Abstract: A BSE discovery in a downer cow in May 2003 in Alberta caused the closure of all international markets to live cattle exports. The Canadian cattle industry has lost \$5.5 billion as a result. This paper describes the BSE threat, the border closures, and policy responses & their efficacy.

Keywords: Bovine Spongiform Encephalopathy, beef trade, border closure, CAIS, set asides, slaughter capacity

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Introduction

On May 20, 2003, the Canadian government announced that a case of Bovine Spongiform Encephalopathy (BSE) had been confirmed in a black Angus cow from the province of Alberta—Canada’s largest cattle-producing region. Immediately, international borders—most importantly that of the United States—were closed to live cattle and beef products from Canada, throwing Canada’s beef industry into a crisis. Over a year and a half later, borders remain closed to exports of live cattle, though some (boneless) beef products are being shipped abroad. All told, the industry is estimated to have incurred over \$5.5 billion (approximately \$11 million per day) in direct financial losses; this does not account for multiplier effects in rural communities or the Canadian economy as a whole.

The purpose of this paper is to provide an overview of the events prior and subsequent to the 2003 discovery of BSE in Canada, addressing in particular the management of the industry in the post-BSE period. First, an overview of the disease, its history, and the reasons why fears of BSE have such dire economic consequences is discussed. The effects of border closures on trade flows in live cattle and beef products is then presented. Next, a synopsis of the pre-existing and new programs to deal with the crisis is given. After that, four potential courses of action for Canada’s cattle and beef industry are outlined. Finally, a summary and conclusions are presented.

BSE—commonly known as “mad cow disease” due to abnormal motor nerve control coupled with aggressiveness (Swanson)—is a member of the group of Transmissible Spongiform Encephalopathies (TSEs), which includes Chronic Wasting Disease (CWD) in deer & elk, scrapie in sheep and goats, transmissible mink

encephalopathy, feline spongiform encephalopathy in cats, and variant Creutzfeldt-Jakob disease (vCJD) in humans (Canadian Food Inspection Agency [CFIA]). This class of diseases, caused by abnormal proteins (prions), kills infected individuals' brain cells, creating gaps in the tissue and giving a sponge-like appearance. Though BSE is a naturally-occurring phenomenon in cattle, it is also transmissible from cow to calf and by feeding rendered ruminant protein to ruminants. A particularly dangerous characteristic of the disease is that the prions are resistant to heat, and thus can survive high-temperature rendering processes. If high-risk materials, such as that around the brain and spinal cord of infected ruminants, is consumed by humans, vCJD can result after an incubation period. All TSEs are fatal in all cases.

BSE is most notoriously associated with the outbreak in Great Britain that peaked with nearly 37,000 cases in 1992 (World Health Organization). It is believed that the British outbreak was caused by the feeding of rendered ruminant protein materials to cattle in the late 1970s through the early 1980s. Since the presence of BSE was confirmed in Great Britain in 1986, there have been over 180,000 confirmed cases of the disease in that country. A massive cull of the British cattle herd was undertaken in order to control spread of the disease. Not until 1990 did British scientists begin to link vCJD to exposure to meat from BSE-infected animals. To date, approximately 150 people have died as a result of vCJD in Great Britain (United Kingdom Department of Health). Because of the long incubation period for the disease, it is inevitable that more deaths will follow. It is believed, however, that new British cases of vCJD will continue to decline dramatically.

Canada's first case of BSE was discovered in 1993 in a cow that had been imported from Great Britain in 1987. Such importation had been allowed until 1989,

when authorities began to realize the serious risk of spread of the disease . The cow and the herd it came from were destroyed, but it was realized that other high-risk animals had been re-exported or introduced into the animal feed chain. Still, there were no serious trade consequences, and a decade of vigilant monitoring passed without incident.

On the 31st of January, 2003, a six year old “downer” cow (animal that could not rise to its feet) was loaded onto a truck near Wanham, in the Peace River region of Alberta, and transported to a provincially-inspected abattoir. The agricultural producer who owned the cow intended to use the meat for personal consumption. Upon inspection, the cow was condemned due to pneumonia, and its head was sent to provincial authorities for testing as part of the BSE surveillance program. Due to the ill condition of the cow, it was deemed unfit for human consumption and instead was rendered, entering the animal feed chain. Though Canada had introduced a ban in 1997 on feeding ruminant protein materials to ruminants, it could still be used in poultry, pet, and other types of feed. Three and a half months later, on the 16th of May, a tentative diagnosis of BSE was made provincially with immediate federal review. Within two days, a specialized laboratory in Great Britain confirmed the finding, leading to the announcement on the 20th of that month.

Canada’s Cattle/Beef Industry & Trade in Beef Products

Canada is home to a cattle herd that has grown slowly but steadily over time. Herd sized peaked around 1975 before experiencing a dozen years of more or less steady decline. Since then, the herd has been getting larger again, finally stabilizing around 15 million head per year in the late 1990s. (Figure 1). The border closure, which has removed the traditional U.S. market for Canadian cull cows as well as causing more

heifers to be retained due to low feeder cattle prices, has resulted in a record herd size of nearly 17 million head in 2004. Farm production of cattle has been expanding at the same time, reaching a peak of nearly five million head in 2002 before declining dramatically in 2003 as animals were kept on-farm due to low market prices (Figure 2).

The expansion of Canada's herd has only been possible because of the ability to export cattle and beef products; these exports accounted for approximately 1/2 of Canada's cattle production prior to the border closures. Pre-BSE, Canada was the world's third-largest beef exporter behind Australia and the U.S., with 15% of all exports, worth \$4.1 billion in 2002. Figure 3 shows total exports of live cattle and calves, and Figure 4 shows exports of beef products. Note that exports of both cattle and beef have skyrocketed since around 1990, due in large part to the Canada-U.S. Free Trade Agreement (CUSTA) and the North American Free Trade Agreement (NAFTA).

Imports of beef for consumption have also experienced robust growth over time (Figure 5), and before the 2003 BSE discovery, comprised around 30 percent of Canada's beef consumption. About half of these imports are from the U.S., with the remainder coming from Australia and New Zealand on an approximate 2/3, 1/3 basis. It is evident that imports of beef were growing even prior to the trade agreements, but have grown at an even faster pace after the agreements came into place. Most of these imports have been for beef cuts of boneless beef and products for the food service industry. Though Canada imports a substantial proportion of its beef, it still recorded a trade surplus of over \$3.2 billion in these products in 2002 (Poulin & Boame).

Clearly, Canada's cattle & beef industry is trade-dependent, and the U.S. is Canada's biggest market. Table 1 shows exports of Canadian beef and veal product

exports to its five most important customers in 2002. Nearly 72% of all beef exports from Canada go to U.S. markets, as do more than 99.5% of Canadian live cattle exports. The trade relationship is also important to the U.S.—Canada provided 55% of total U.S. beef & cattle imports in 2002. When the border closed, the U.S. curtailed its beef exports and used much of that supply to fill the deficit left by Canada’s forced exit from the market. Other exporting countries also helped fill the void. As well, though the U.S. market was closed to live cattle from Canada, by September boneless beef was being allowed into several of Canada’s most important markets, including the U.S. and Mexico. By November 2003, the monthly value of boneless beef exports had climbed to \$175 million. A year earlier, the total value of all bovine meat exports was \$173.8 million (Boame, Parsons, and Trant). The *volume* of meat exports was, however, down considerably. Canada was merely exporting more high-value products.

Policy Responses to BSE Impacts

Responsibility for agricultural policy in Canada is shared between the federal and provincial levels of government. Programs for which there is joint responsibility are, as a general rule, cost-shared on a 60-40 federal-provincial basis. Some programs, however, are solely federal while others are wholly provincial in nature. In general, Canada’s agricultural support programs have been ad-hoc and somewhat sporadic. A number of policy initiatives have lasted only a few years or at best a decade, before a new replacement is devised.

Both existing farm support programs and special disaster assistance programs were available to producers affected by the border closures. Into the former category fall the Canadian Agricultural Income Stabilization (CAIS) program, and one of its

predecessors, the Net Income Stabilization Account (NISA) program. Special programs devised to help deal with financial hardship resulting from border closures included the BSE Recovery Program, the Cull Animal Program, the Transitional Industry Support Program (TISP) and, most recently, feeder and fed-cattle set-aside programs. There were also provisions for advances and direct payments under the business risk management funding category of the Agricultural Policy Framework. Additionally, a few provinces initiated special programs available to their producers.

CAIS is Canada's newest primary agricultural support policy. It is designed to integrate stabilization and emergency assistance components into a single program, and is available to all agricultural producers. CAIS functions by establishing a reference margin for individual farmers based on their operation's historical financial data, and triggers a payout when actual margin in a program year falls beneath that reference margin. A protection level of anywhere from 70% to 92% of the reference margin can be selected, with costs being shared by federal and provincial governments, as well as producers themselves, who are required to make contributions into their individual accounts. These contributions then help fund payouts, when margins are sufficiently low (and sufficient funds exist in the producer's account) to trigger them.

NISA was the predecessor to CAIS, and was similar to the newer program in a number of ways. NISA, like CAIS, was funded by contributions from producers as well as both senior levels of government. NISA, however, was considered to be flawed by the federal government in that it created producer-controlled savings accounts that did not have mandatory withdrawals in times of financial need. That meant, for example, that farmers could own large NISA accounts, yet not have to draw down any of their NISA

savings as a part of disaster relief or stabilization payments. So the mandatory producer deposit/withdrawal component of CAIS was designed to address this. But producers were allowed to keep their NISA accounts when CAIS began, so NISA funds were available to many producers who suffered severe income decline as a result of the border closures.

In June 2003, on the heels of the BSE discovery and subsequent border closure, the joint federal-provincial BSE Recovery Program was unveiled. There were two key elements to this initial assistance package: first, it established a reference price for cattle owned at the time of the border closure and subsequently sold for slaughter in Canada. Government would pay the difference between the reference price and the actual sale price on a “sliding scale” that provided a greater top-up for higher slaughter prices, ensuring an incentive for producers to seek the best price possible when selling their animals. Second, incentives were offered to meat processors to move out of inventory surplus meat cuts produced after the border closures. This was intended to free up the maximum of processor storage. A funding extension in August bumped the total assistance provided under the BSE Recovery Program to \$520 million. Additionally, transitional funding under Canada’s overarching Agricultural Policy Framework (APF) was announced in August.

A partial reopening of the U.S. (and soon thereafter, Mexican) border to boneless beef from young (under 30 months of age) animals in September of 2003 alleviated some of the pressure on slaughter cattle prices in Canada. However, there was still the issue of older cull animals, which had traditionally been exported to the U.S. for slaughter and the meat sold into low-value markets. In recognition of this, the Cull Animal Program was announced on the 23rd of November, 2003. It provided for payments of up to \$320 per

cow (up to an 8% cull for beef cow operations, 16% for dairy) when cull animals were sold for slaughter, comprised of a flat-rate payment of \$159 per head to which one dollar per day could potentially be added through the following spring to compensate for winter feeding costs. The following February, revisions to the Cull Animal Program were announced—gone was the slaughter requirement, and producers were to be paid the maximum of \$320 per cow regardless of slaughter date. Producers were to simply be paid the maximum amount per cow on a fixed percentage (described above) of their herd as of September 1, 2003. Total cost of the program was estimated at \$200 million.

The third major policy initiative designed as a response to the BSE crisis was the Transitional Industry Support Program (TISP), announced on March 22, 2004. It included \$680 million of new direct payments to producers of ruminant animals, as well as \$250 million in transition payments to bridge the gap as producers moved to the new CAIS program. The direct payments took the form of a simple \$80/head payment to owners of cattle based on their herd size as of December 23, 2003. Payments to other ruminant types (except buffalo) were lower. The payments began flowing in April to eligible cow-calf producers, as well as to eligible backgrounding and feedlot operations.

The most recent policies devised to help deal with the effects of BSE are the feeder and fed cattle set-asides, jointly funded by the provincial and federal governments. These programs are designed to ease pressure on processing firms and provide time for new capacity to come online. Under the feeder cattle set-aside program, producers pledge to hold a given percentage of their 2004 calf crop from slaughter until January 1, 2006, in exchange for a cash payment of \$200 per head upon enrolment in the program. A few provinces allow the option to hold feeders until October 1, 2005, at a proportionally

reduced cash payment. In most cases, feeder cattle may be sold before the program end dates, but the sale agreement must stipulate that the animals are not to be slaughtered until the specified date. Partial enrolment in the program is not allowed; if the producers province of residence requires 40% enrolment in the program, then exactly 40% of 2004 calves must be set aside.

A fed cattle set-aside program has also been implemented to encourage cattle feeders to keep animals on feed for as long as possible. A weekly remote auction is held whereby feeders bid on a per-head basis to hold cattle back from slaughter for a period of 90 to 120 days (all auctions to date have had a 91 day set aside provision). The lowest bids are accepted up to the point where the desired weekly set-aside is reached, and winning bidders are notified. To date, 440 bidders have registered to take place in the auctions, though the actual number of bidders participating in any given week has fluctuated between 40 and 50. Producers from Alberta, Saskatchewan, Manitoba, Ontario and Quebec have had bids accepted. Packer-owned cattle are ineligible for the program.

Plans for the Future

Most of the measures implemented so far to deal with the BSE crisis—the BSE Recovery Program, TISP, and the set-asides—have now ended or are intended to be temporary in nature. Programs such as CAIS provide disaster assistance and some income stabilization but cannot provide a long-term solution to this problem. Canada's cattle and beef industries need a strategy for the future, and must plan carefully to ensure the correct long-term steps are taken. A number of suggestions have been put forth from various industry stakeholders, but four in particular have received the most consideration: a massive cull of Canada's cow herd, implementation of a system of supply management

for the beef industry, an increase of Canada's domestic slaughter capacity, and a "wait and hope" strategy.

The idea of a massive cull has been a topic of somewhat serious discussion since the collapse of the market for Canadian cull animals over the age of 30 months. Prior to the May 2003 BSE discovery, there was strong U.S. demand for these animals, with the beef derived from them sold into low-value retail markets. Since older animals are considered to be at the highest risk for BSE, trade in live cattle for those animals is unlikely to resume in the foreseeable future. Moreover, there will be no trade in beef from those animals. It is possible that this low-value beef can replace a certain quantity of beef previously imported for food service and industrial uses, but even so, the value of those older animals will likely not approach what it was before the 2003 BSE discovery.

Some have suggested that the way to most fairly and efficiently remove these animals from the Canadian herd, and perhaps to reduce the herd to a more manageable size in the intermediate term is to have a forced cull of a certain proportion of the breeding stock in excess of 30 months of age. Over 1.7 million of Canada's cow herd was born prior to the 1997 ruminant protein to ruminant feed ban, and it has been reasoned that culling these animals would alleviate some of the pressure on Canada's processing capacity and allay trading partners' concerns about the safety of its beef herd.

Canada currently has supply management for dairy products, most milling wheat and malting barley (through the Canadian Wheat Board), poultry products, and eggs. Under supply management, quota is allocated to producers, who are then obligated to market all of their commodity through a central agency, which then has a monopoly over supply of the product. It has been argued that such a system would be an effective way to

more closely match domestic beef supply to demand in the face of limited slaughter capacity. Because of the nature of beef production, such a system may be very difficult to implement, and may necessitate a partial cull such as that outlined above.

As mentioned earlier, Canada exports a majority of its live marketed cattle each year, and a considerable preponderance of these go to the U.S., where they are processed and sold as beef products. It is quite possible that should the border remain closed to live cattle, Canada can maintain its cattle herd at the current size. This would merely mean a change from an exporter of unprocessed beef to an exporter of processed beef. Of course, competition for the U.S. market would be stiff. On the other hand, beef products can be marketed to much more distant consumers than can live cattle.

Canada's domestic cattle kill (Figure 6) peaked at nearly 4.5 million head in 1976, before declining to just over 2.7 million head in 1991. Economies of scale in beef processing reduced the number of small and medium sized plants competing for cattle, with the Canadian packing industry becoming concentrated in Alberta, and many cattle from the eastern Prairies flowing to U.S. slaughter plants. Domestic capacity has climbed somewhat steadily to level off around 3.5 million head (just over 67,000 head per week) since the turn of the century. Given that live cattle exports were over 1.5 million head in 2002, an increase in slaughter capacity of nearly 29,000 head per week, or 42%, would be required in domestic slaughter capacity in order to process all cattle at home given the herd's current size. Though expansion of processing capacity is planned, it will take at least a few years for that capacity to be realized. There are also questions about the viability of any new plants that fail to achieve the economies of size that characterize most successful processing today, especially if trade in live cattle is restored.

The final option available to the industry is to take the “wait and hope” approach—that is, to simply do nothing and wait for international borders to re-open. Concerned industry stakeholders argue this approach has accomplished little while wasting 18 months, during which time the industry has suffered crippling losses. Many producers assert that support programs have been woefully inadequate, and governments fear their ability to provide current levels of disaster assistance is not sustainable. Others suggest that it is the producers who need to be culled and that a stronger, more resilient industry will result if more financially unsound producers are lost. This, however, is a strategy that would likely hit some of Canada’s youngest producers the hardest—those who do not have the financial reserves or farm equity of their more experienced colleagues.

Currently, it seems likely that some combination of the latter two strategies will be adopted. Indeed, the U.S. has pledged to re-open the border to live animals younger than 30 months by late spring of 2005, and many Canadian stakeholders are optimistic that by March, it will be “business as usual”. As well, new domestic slaughter capacity is under construction, and it is predicted that 2006 will see beef processing swell to nearly 4.2 million head per year (over 80,000 head/week). This would allow Canada to process all of its older animals, while still allowing for export of significant amounts of beef products from young cattle, even if trade in live cattle is resumed.

Summary & Conclusions

Canada’s cattle herd and production of cattle and beef have grown steadily over time. Trade liberalization, especially under the Canada-U.S. Trade Agreement (CUSTA) and the North American Free Trade Agreement (NAFTA), have increased Canada’s

cattle and beef industries' reliance on export markets. These industries were thrown into chaos by the discovery of Bovine Spongiform Encephalopathy in May of 2003.

International borders were immediately closed to Canadian cattle and beef products, and a lack of Canadian slaughter capacity caused cattle prices to collapse. By September of that year, exports of boneless beef and strong domestic consumer demand had somewhat buoyed prices for young animals (though prices remained only around half their previous levels), but older and cull animals, traditionally an important income source for Canadian producers, were virtually worthless.

A variety of government programs were in place to help producers weather the storm. The Canadian Agricultural Income Stabilization (CAIS) and Net Income Stabilization Account (NISA) programs were long-term initiatives in place to provide income support. As well, several new initiatives were put in place to mitigate the effects of the border closures, including the BSE Recovery Program, the Cull Cow Program, the Transitional Industry Support Program (TISP), and most recently, the feeder calf and fed-cattle set asides. These programs were in general cost-shared between the federal and provincial governments, with producer contributions also included in CAIS and NISA.

The U.S. has said that it will reopen its border to live cattle trade for animals 30 months of age and younger in late spring of 2005. Many Canadians are hoping that this will mean an immediate return to pre-BSE industry conditions and that the 22 months of closed borders should just be forgotten. This may be a dangerous course of action—further BSE discoveries or other food safety scares could result in borders being slammed shut all over again. Also, beef and cattle trade flows have been fundamentally altered

since May 2003, and it is highly unlikely that pre-BSE trade flows will be restored in their exact prior forms.

For these and other reasons, Canada's cattle-related industries must consider a strategic direction that reflects the evolving realities of the 21st century. A plan of action is required. Four major options are frequently discussed in that regard. The first is to hold a massive cull of at-risk animals from Canada's herd. Over 1.7 million Canadian animals were born prior to the 1997 ruminant protein to ruminant feed ban. It is reasoned that if all of these animals are removed from the herd, international confidence in Canada's beef supply can be restored. A second option is to introduce supply management to Canada's beef industry. This would entail producers receiving quota for production of beef animals, which would then be marketed through a central agency. Similar systems exist for Canadian dairy products, milling wheat and malting barley, poultry, and eggs.

A third option for the industries, and one which has already begun on a modest scale, is the expansion of slaughter capacity. More than 99.5% of Canada's live bovine exports are to the U.S., where they are processed into value-added beef products and then consumed domestically or exported. Some argue that there is little reason why Canada could not process its own cattle, then compete more intensively in the world market for beef products. If the industry chooses this course, it must proceed with determination—new slaughter capacity will be coming on-line just as the border re-opens to trade in live cattle, if current plans hold. The temptation will be to immediately resume previous habits of exporting live animals, and it may be difficult for new processors to compete with their much-larger U.S. counterparts—not to mention the U.S.-owned processors who control a majority of Canada's current slaughter capacity. The fourth option available to

the industries is to adopt a “wait-and-see” approach and hope for the best. This is risky, since not only may the previous trade patterns fail reappear given new circumstances, but also because valuable time has been and will be lost in the meantime.

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Table 1: Top Export Destinations for Canadian Beef, 2002

Export Market	Tonnes of Beef	% of Total
United States	373,432	71.8
Mexico	75,809	14.6
Japan	23,982	4.6
South Korea	17,254	3.3
Taiwan	4,026	0.7
China	2,494	0.04
ASEAN*	2,204	0.04
Hong Kong	570	0.09
Other Markets	20,372	3.9
Total	520,143	100.00

*the ASEAN free trade area includes Brunei, Indonesia, Malaysia, the Phillipines, Singapore, Thailand, and Vietnam

Source: Canada Beef Export Federation & Author's Calculations

Figure 1: Total Cattle & Calves on Farms, Canada, 1931-2004

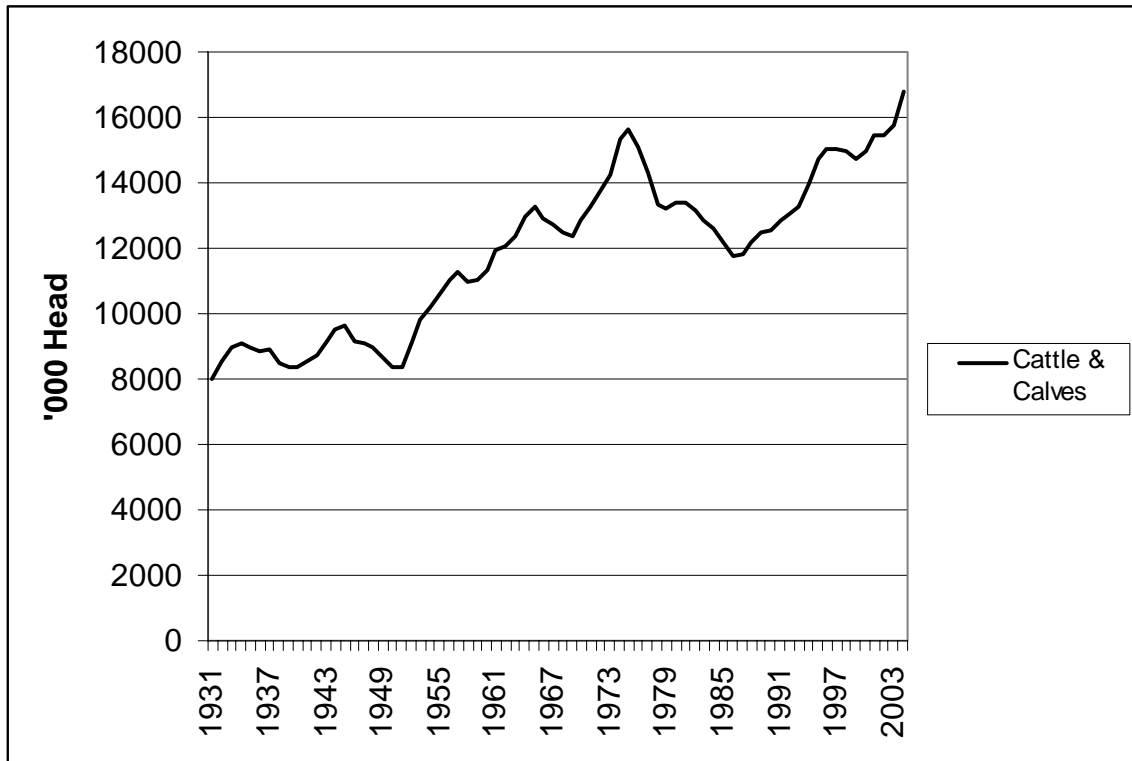


Figure 2: Estimated Farm Output, Cattle, Canada, 1920-2003

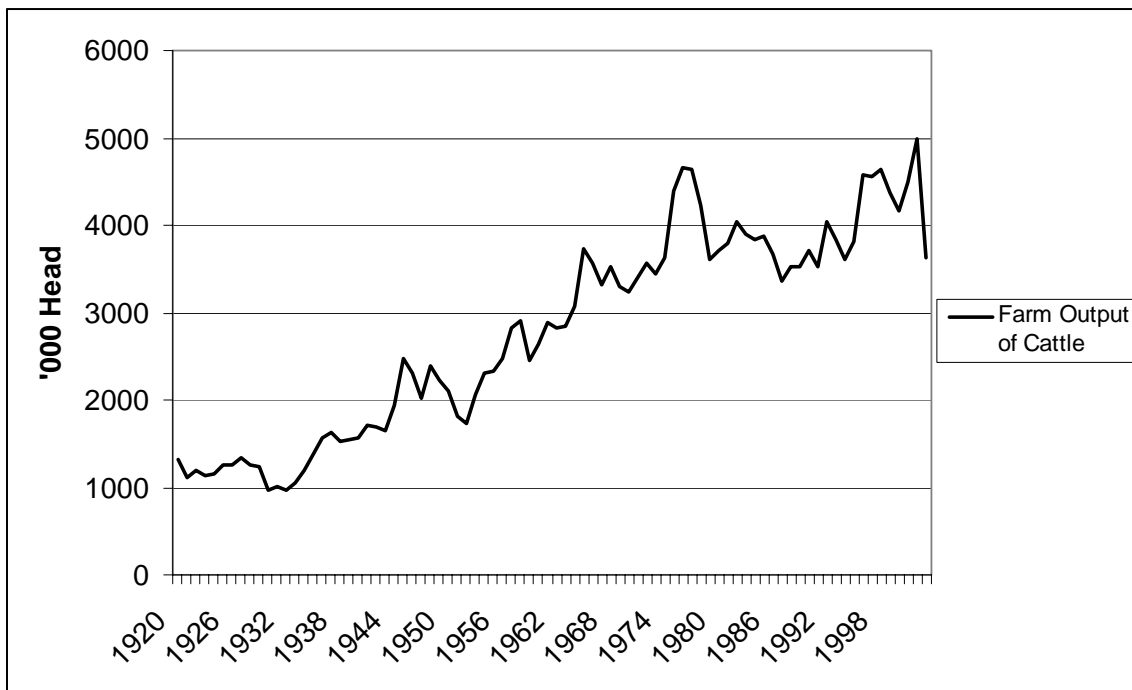


Figure 3: Total Exports of Live Cattle & Calves, Canada, 1920-2003

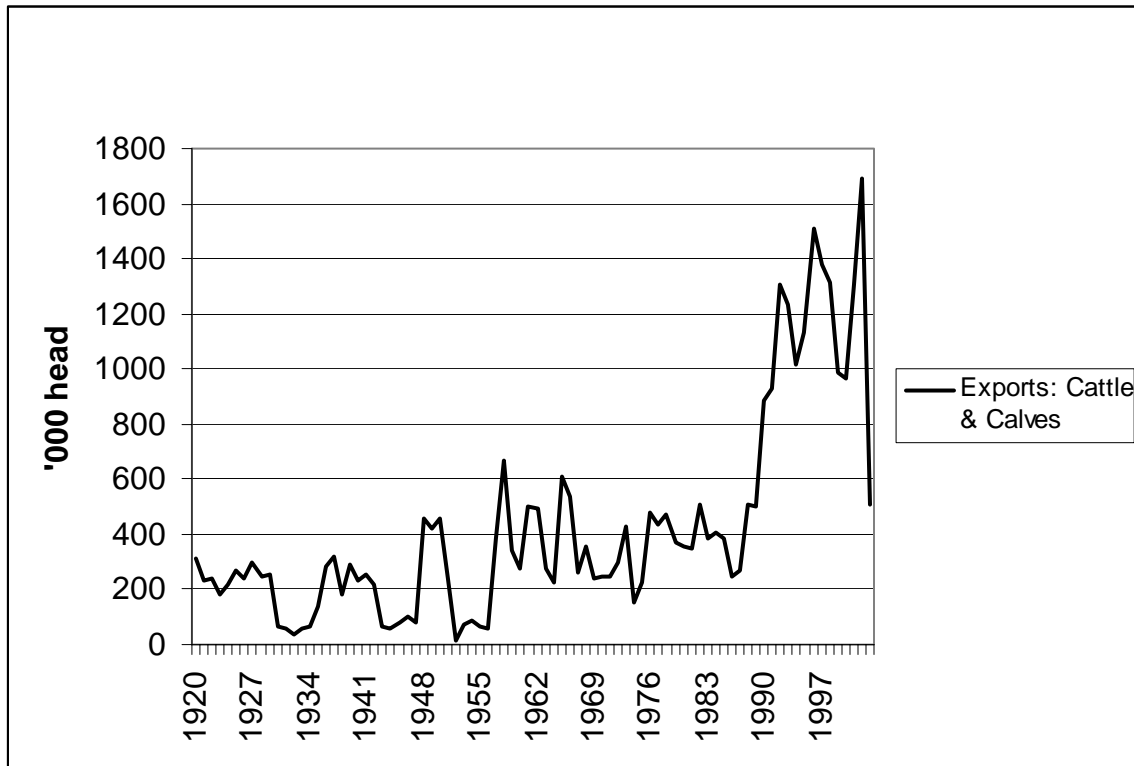


Figure 4: Exports of Beef, Canada, 1920-2003

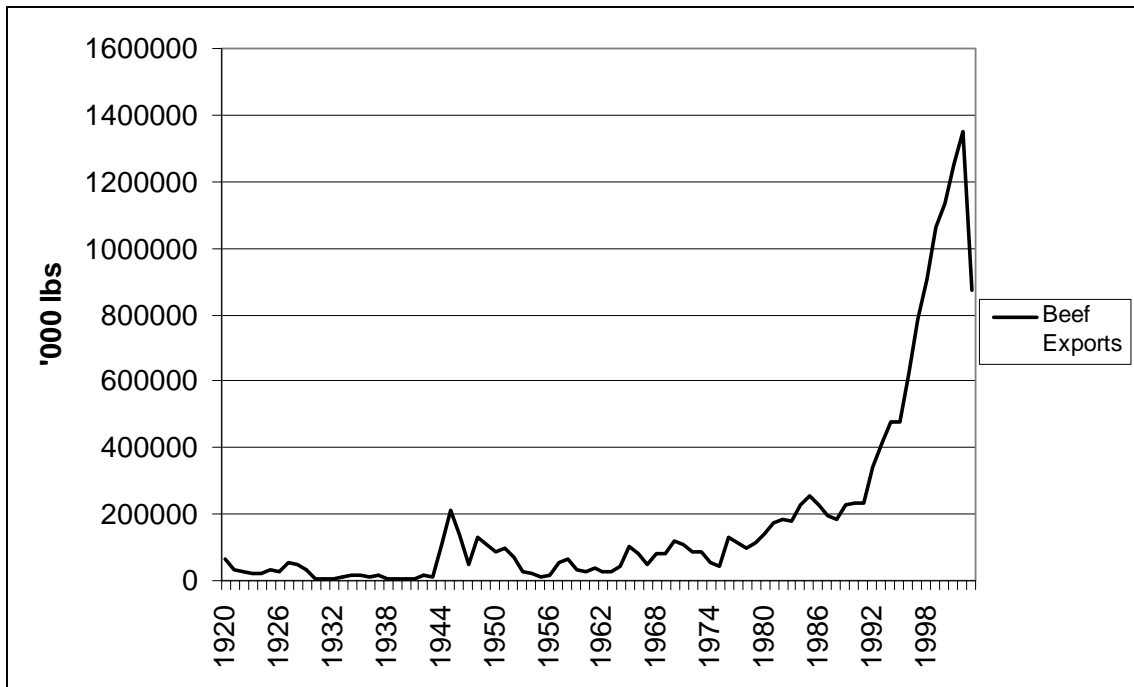


Figure 5: Imports of Beef for Consumption, Canada, 1920-2003

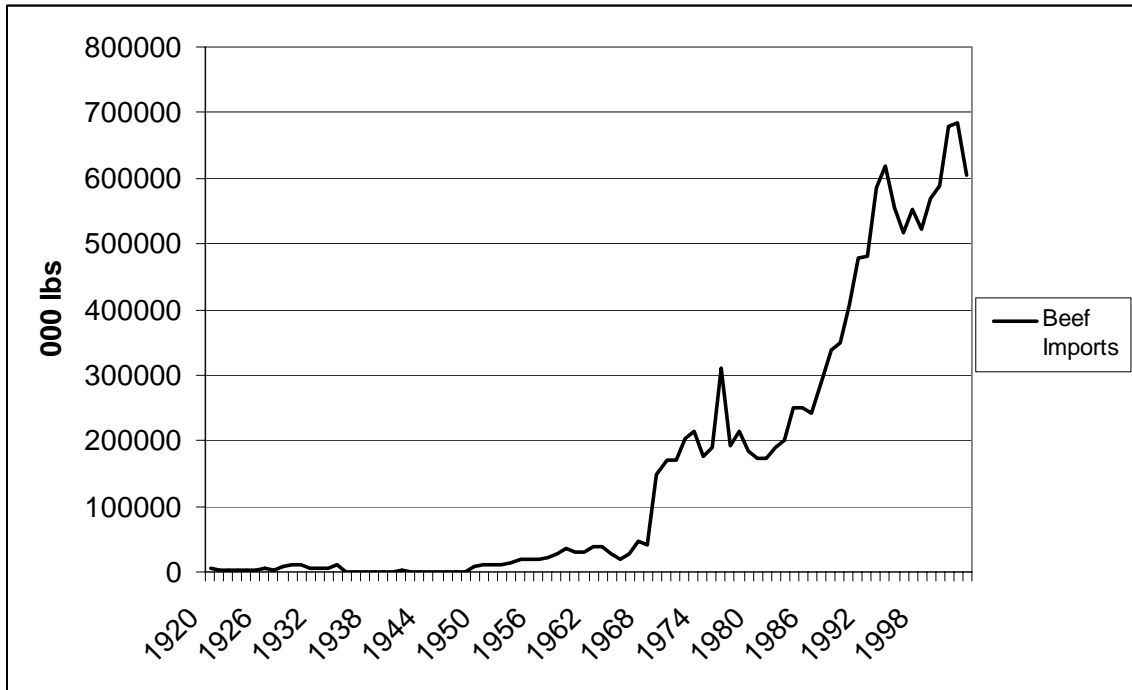


Figure 6: Total Cattle Slaughter, Canada, 1920-2003

