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The Importance of Market Access to the Canadian Beef and Cattle Industry

For the Canadian Cattlemen's Association
Trade Committee

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On May 20, 2003 Canadian authorities announced that a cow in Alberta had tested positive for bovine spongiform encephalopathy (BSE). Almost at once, the United States and many other countries banned all imports of Canadian beef and cattle. Beef and cattle exports accounted for over 50 per cent of Canadian beef production between 2000 and 2002. In 2002 Canada exported 521,500 tonnes of beef with 70 per cent of beef exports going to the United States, 15 per cent to Mexico, five per cent to Japan and three per cent to South Korea. Approximately 595,000 head of fed cattle and 430,000 head of non-fed (cows and bulls) cattle were exported to the U.S. as well as 575,000 head of feeder cattle. The loss of export markets for beef and cattle resulted in decreased demand for Canadian beef and fed cattle and consequently an oversupply of beef and fed cattle on the domestic market. As a result Canadian fed cattle prices declined 65 per cent from $108/cwt in April 2003 to $38/cwt in July 2003. Since 2003 markets have slowly reopened their borders to Canadian beef and cattle.

This paper examines the impact these various levels of market access have had on Canadian fed cattle prices. The importance of market access and export markets arises out of concern about a domestic captive market and lack of competition due to reduced demand from exports with continued limitations on market access. Only 65 per cent of Canadian beef is consumed domestically with 35 per cent being exported. With a relatively fixed level of domestic slaughter capacity, in situations like 2003 when many export markets for beef were closed, the retail market saw increased supplies but was not flooded with product, keeping retail beef prices relatively stable. At the same time cutout values struggled given the inability to export certain products that are undervalued in the domestic market to higher value markets. For example, although Asian markets account for a relatively small proportion of beef exports, they are important destination markets for certain cuts and offals that are not consumed in North America. The exporting of these products not only removes them from the domestic market but increases the cutout value and consequently the domestic price for fed cattle.

It is also important to note that due to the fixed nature of processing capacity and reliance on exports of live cattle to the U.S. for feeding and slaughter, the U.S. border closure to live cattle in 2003 resulted in an excess supply of fed cattle available to domestic packers and consequently fed cattle prices were significantly depressed. This demonstrates the importance of market access for live cattle as well as beef in supporting fed cattle prices.

Moving from virtually no market access in 2003, this paper examines the impact that various expansions in market access have had on Canadian fed cattle prices. Expansions in market access considered in this paper include access for boneless beef from cattle under-30-months of age (UTM) to the United States, Mexico, Macau, Hong Kong, Taiwan, access for live cattle that are UTM to the U.S. , access to Japan for boneless beef from cattle under-21-months of age, , expanded access to the U.S. for live cattle and beef from cattle over-30-months of age (OTM), and expanded access to Hong Kong for bone-in products. The implementation of the enhanced Canadian feed ban is also considered. There is not enough information available at this time to measure the impact of more recent expansions in market access to Jordan and Saudi Arabia and the implementation of mandatory country of origin labeling (COOL) in the U.S. However these are also expected to have significant impacts on fed cattle prices. The following discussion outlines the sequence of these market access events.

Background

On August 8, 2003 the United States (U.S.) partially re-opened their border to boneless boxed beef from UTM cattle. Exports were scheduled to resume on September 1st with the first shipment sent September 10th. Mexico quickly followed suit and on August 11, 2003 announced they would partially re-open their border with the same requirements as the U.S. This encouraged packers to increase fed cattle slaughter, with a large supply of fed cattle available due to backlogs created by limited slaughter and no exports. Also since 19 per

cent of fed cattle had historically been exported for slaughter and a captive market existed domestically due to border closures, fed cattle prices remained low and a large proportion of domestic slaughter capacity was utilized to kill fed cattle supplies. With focus placed on fed cattle kill and no market access outside of the domestic market for beef from animal's over-30-months of age or live cows and bulls, supplies of cows and bulls backed up increasing inventories and non-fed beef production in the following years.

Russia opened to boneless UTM beef on September 9, 2003. In early 2004 Macau announced they would accept boneless beef from UTM cattle. In December 2004 Hong Kong followed suit. Hong Kong and Macau were small markets prior to BSE, but have grown to be the third largest market for Canadian beef exports; representing 4.5 per cent of total beef exports in 2007.

Later in December 2004, the USDA proposed a Minimum Risk Rule (MRR), which would re-open the border between the United States and Canada to live cattle trade. Under the MRR, the Canadian cattle and beef industry could export specific ruminants (live), ruminant products (meat) and by-products (liver, tongue, etc.). The MRR required Canada to: (1) restrict imports from countries where BSE had been discovered; (2) have BSE surveillance that met or exceeded international guidelines; (3) a ruminant-to-ruminant feed ban; (4) a prohibition of specified risk materials (brains and spinal cord tissue) from entering food supplies; and (5) other monitoring and risk assessment procedures.

The final MRR was scheduled to be implemented on March 7, 2005. Exports of the following products were to be allowed into the United States: (1) cattle for feeding or immediate slaughter if animals were under-30-months of age; (2) bone-in and boneless beef from animals that are under-30-months of age; and (3) certain by-products such as livers, tongues, gelatin, and tallow.[1] However, the rule was delayed and the border did not reopen until July 2005 when the Ninth Circuit Court of Appeals reversed the preliminary injunction, which prevented live cattle imports into the US since March 2005. On July 18, 2005 the first shipment of UTM cattle entered the U.S. since May 2003.[2] As fed cattle were once again able to be exported for slaughter, the fed cattle basis narrowed and fed cattle prices moved more closely in line with U.S. prices. Although prices did not arbitrage with U.S. prices to the same extent as in the pre-BSE period and the basis remained wider, with increased competition for cattle profit margins in the domestic packing sector were reduced and consequently fed cattle slaughter decreased.

Prior to 2003, 33 per cent of non-fed cattle had been exported to the U.S. for slaughter. With more capacity available and a continued domestic captive market for cows and bulls that kept prices well below historical levels, non-fed (cow and bull) slaughter increased.

On December 11, 2005 Japan re-opened it border to Canadian and U.S. beef from animal's under-21-months of age. Beef production derived from animals that are under-21-months of age is seasonal in Canada, with production limited from January through March. Consequently this limits Canada's ability to provide consistent supplies to Japan and has limited the ability of exporters to establish significant contracts with large importers.

[1] The resumption of live animal trade requires Canadian exporters to have shipments certified by a CFIA-accredited veterinarian and endorsed by the CFIA. Certification includes an animal health inspection and specific identification requirements, and as well shipments need to bear specific Government of Canada seals.
http://www.inspection.gc.ca/english/anima/heasan/disemala/bseesb/americ/factfiche.shtml
All cattle for feeding must be permanently identified before entering the US with a distinct and legible "CAN" brand on the animal's right hip. Tattooing is not accepted.
http://www.lis-alberta.com/news_room/pdf/lis_280205.pdf

[2] Additional costs for exporting live cattle under thirty months of age included age verification by mouthing (by a certified veterinarian) or birth certificate (CCIA), branding, preg-checking of heifers (and abortions done if needed).

On February 1, 2006 Mexico expanded market access to the U.S. and Canada to include bone-in UTM beef. As boneless access had already been established this was expected to have a small effect on fed cattle prices.

Taiwan re-opened their border to boneless UTM beef in July 2007. This presented opportunities for the industry, providing significant access to a market that had in the past been a high value export market for Canadian beef. Exports to Taiwan in 2002 totaled 8,000 tonnes valued at $41.5 million.

As part of the measures taken to eradicate BSE in Canada, on July 12, 2007 Canadian officials implemented an enhanced feed ban that further restricted the use of specified risk materials (SRMs) in feed and other products and also implemented stricter restrictions on how it could be disposed of by Canadian packing plants and on-farm. This regulation was supported by industry, as it was an important measure to demonstrate the expedited eradication of BSE in Canada and provide assurances in ongoing negotiations for market access. However the requirements were stricter than the international standards and the U.S. requirements[3]. This had an immediate impact on the ability of Canadian packers to compete against their U.S. counterparts for fed cattle and eroded their profitability.

The U.S. expanded access to beef (from all ages) and live cattle for breeding and slaughter born before March 1, 1999 on November 20, 2007.[4] This provided an outlet for OTM beef exports and slaughter cattle. Despite large cow slaughter from mid-2005 through 2008 there continued to be significant numbers coming to market, as producers liquidated cow herds due to continuing poor profitability stemming from market access restrictions, a strong dollar, and increasing input costs. Renewed non-fed cattle exports supported domestic cow prices with increased competition between packers.

The U.S. implemented mandatory country of origin labeling (COOL) on September 30, 2008 with a grandfather date of July 15, 2008 for feeder cattle. All feeder cattle that had entered the U.S. before July 15th were assumed to be of U.S. origin. COOL provided five labels:
'A' – born and raised in the U.S.
'B' – Canadian born feeders, fed in the U.S.
'C' – Canadian fed cattle imported for immediate slaughter
'D' – foreign meat imported into the U.S. labeled 'Product of Canada'
'E' – ground beef must be labeled with all countries that may be reasonably contained; may be in any order.
Note: foodservice and processed foods are exempt.

Feeders going into the U.S. can be mixed in the feedlot as long as lots/pens/animals can be identified as "Canadian". U.S. feeders were required to have affidavits to verify they were product of the U.S. Packers can buy Country only and mixed loads of fed cattle. The week before the law went into effect packers were warned that use of the mixed 'B' label would be monitored and if it was deemed to be used in excess the flexibility currently in the law would be revised. A six month grace period was provided for education and outreach while packers reassessed there approach. While COOL is not a direct barrier to market access it has resulted in decreased demand for Canadian cattle by U.S. packers and therefore has influenced Canadian fed cattle prices. Significant uncertainty surrounding the implementation of the rule has been reflected in the fed cattle basis and fluctuations in prices. With the final rule coming into effect March 16, 2009 there is limited information to measure the impact of COOL available at this time.

Market access continues to be expanded with bone-in access to Hong Kong on January 19, 2009 with shipments starting the beginning of March. Market access to Jordan was resumed on February 3, 2009. The Jordanian agreement provided full market access based on World Animal Health Organization (OIE)

[3] http://www.inspection.gc.ca/english/anima/heasan/disemala/bseesb/enhren/enhrene.shtml
[4] All cattle continue to require the "CAN" brand for export. Age verification could be birth certificate or farm records (pure-bred breeders would have this). Preg-checking requirements removed for heifers UTM.

guidelines. Access to Saudi Arabia was announced on February 17, 2009. This is a noteworthy in-road to the Middle Eastern market - along with the Jordanian agreement. Developing Middle Eastern markets require a long-term investment. Despite the previous modest size of these markets, projections indicate that there is a potential to grow demand for Canadian beef in these markets. Due to the recent nature of these announcements and the fact that the impact they have on the fed cattle market depends more on movement of product and not the date of an agreement, these market access changes will be excluded from the following analysis.

Econometric Model

Canadian fed cattle demand by packers is determined by the price they receive for beef (AAA/AA cutout values) and therefore all the markets they are able to sell beef into. As market access increases cutout values, fed cattle prices should also increase. A correlation of 0.67 has been found between these two variables; meaning that for every $1 increase in the AAA cutout value, live Alberta fed cattle prices increased by $0.67 (for the period between 1999 and 2008). Canadian packer demand for domestic cattle, and the price they will pay for those cattle, is also determined by U.S. fed cattle prices when the border is open. If it is more profitable for a Canadian feedlot to sell to a U.S. packer, fed cattle will be exported and prices will arbitrage. Domestic prices are also constrained by domestic kill capacity. If there are more cattle available than packers can kill in a timely fashion live prices will decrease.

The following inverse fed cattle demand equation was used to estimate the impact of increasing market access on Canadian fed cattle prices:

$$ABFEDp = \acute{\alpha} + CDN\$ + USFEDp + Basis + AAAcutout + AAcutout + WSLAU\text{-}1$$

$$+ EXPORTS\text{-}1 + BPV + US/MEX\ UTM + RUSSIA + MACAU + HK + USLIVE + JAPAN +$$

$$TAIWAN + FEDBAN + US\ OTM + HK\ Bone\text{-}in + OTHER + \mu \qquad \text{(Eq.1)}$$

An appreciation in the Canadian dollar (CDN$) is expected to decrease Alberta fed cattle prices (ABFEDp) since live cattle prices are set in the larger U.S. market. These two variables are strongly correlated. Historically a one per cent increase in the Canadian dollar would decrease Canadian fed cattle prices by one per cent.

An increase in U.S. fed cattle prices (USFEDp) is expected to increase demand for Canadian fed cattle and consequently Canadian fed cattle prices, as U.S. packers become more aggressive bidders in the Canadian market.

The fed cattle Basis is the difference between the Alberta and Nebraska cash prices in Canadian dollars for any given week. This basis gives an indication of local supply and demand situations. A wider basis (more negative) implies prices are higher in Nebraska than Alberta due to tighter U.S. supplies or stronger U.S. demand encouraging exports of Canadian fed cattle. A wider basis is expected to decrease prices in Alberta as prices widen and therefore is expected to have a negative sign. The basis also reflects the transportation and transaction costs of exporting cattle. These costs increased after July 2005 due to additional regulations.[5]

[5] Age verification requirements and pregnancy testing on heifers are examples of additional export costs between July 2005 and November 2007

An increase in the AAA cutout value is expected in increase the price packers are willing to pay for fed cattle. By-product values (BPV) like the cutout contribute to the packer's revenue, which is directly correlated to what a packer is willing to pay for fed cattle.

Larger western slaughter (WSLAU) numbers are expected to decrease the price due to ample supplies available and limited slaughter capacity. Similarly total exports (EXPORTS) indicate ample or tight local supplies which will be reflected in the local price. These controlling variables would typically explain most of the variation in Canadian fed cattle prices. Western slaughter and total exports are lagged one week due to the delay in market information available.

Increases in trade access are expected to increase fed cattle prices, while the enhanced fed ban (FEDBAN) in Canada is expected to decrease fed cattle prices as domestic packers must cover the increase in operating costs. The market access changes considered in the form of dummy variables include: US and Mexico UTM access, Russia UTM access, Macau UTM access, Hong Kong (HK) UTM access, Japan U21M access, Taiwan UTM access, US OTM expanded access, Hong Kong Bone-in expanded access and OTHER markets which were open to Canadian beef prior to 2003 but have not yet reopened (specifically South Korea and mainland China).

Data

The model was estimated using weekly time-series data for the period January 1999 to February 2009. Data for the livestock sectors was obtained from CanFax, Cattle-Fax, USDA, Statistics Canada, Canadian Meat Council and the Bank of Canada. The following table provides a summary of the data used.

Table 1. Variable definitions for the BSE beef model

Symbol	Definition	Mean	St. Dev.
ABFEDp	Alberta fed cattle prices (CDN $/cwt)	89.85	12.76
CDN$	Canadian dollar, Thursdays close, Bank of Canada	0.7709	0.1182
USFEDp	Nebraska fed cattle price (CDN$/cwt)	80.31	10.96
Basis	Alberta/Nebraska Cash to Cash Basis (CDN$/cwt)	-14.71	13.93
AAAcutout	1998-2004 US Choice cutout value (CDN $/cwt) 2004-2008 AAA Cutout Value (CDN $/cwt)*	1.77	0.15
WSLAU	Western Canadian slaughter volume (1,000 head)	48.105	6.424
EXPORTS	Total Western Canadian exports (1,000 head)	13.050	8.280
Dummy Variables**			
US/MEX UTM	Market Access for UTM to the US and Mexico		
MACAU	Market Access to Macau for boneless UTM		
RUSSIA	Market Access to Russia for boneless UTM		
HK	Market Access to Hong Kong for boneless UTM		
US LIVE	Market Access to the US for live cattle UTM		
JAPAN	Market Access for U21M boneless beef		
TAIWAN	Market Access for UTM boneless beef		
FEDBAN	Enhanced fed ban in Canada		
US OTM	Market Access to the US for OTM beef and cattle		
HK Bone-in	Expanded access for bone-in product to Hong Kong		
OTHER	Market Access to countries still closed to Canadian beef & cattle		

* This assumes cut-out values were integrated between Canada and the United States from 1999-2003 with U.S. cutout values converted to Canadian dollars for domestic prices.

** Dummy variables were used for changes in Market Access

Estimation Issues and Results

The least squares (OLS) method was used to provide dollar changes to the Canadian fed cattle price. Quantity variables were lagged and fed cattle demand by packers is assumed constant week to week based on their slaughter capacity which is assumed constant over this time period due to labor constraints. The lack of historical Canadian packer capacity data prevented this variable or packer utilization from being included. The statistical properties of the OLS empirical model imply that the coefficient estimates are consistent and efficient, with a stable error term. Note some variables were removed due to insignificance, including the Alberta to Nebraska cash to cash basis, AA cutout values, live cattle exports, western by-product values, the enhanced fed ban and the Russia dummy variable for UTM market access.

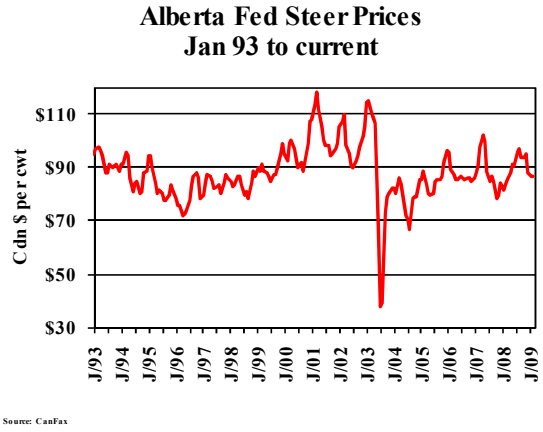
The regression results are as follows:

ABFEDp = -25.82 – 8.06 CDN$ + 0.50 USFEDp + 32.23 AAAcutout-1 - 0.32 WSLAU-1
(-3.50) (-1.03) (8.41) (12.58) (-7.61)

+ 18.07 US/MEX UTM + 9.62 MACAU + 5.65 HK + 5.91 USLIVE – 1.97 JAPAN
(8.83) (5.69) (4.36) (3.95) (-1.49)

-2.96 TAIWAN + 3.84 US OTM + 1.54 HK Bone-in + 10.02 OTHER + μ (Eq.2)
(-1.98) (2.79) (1.54) (2.57)

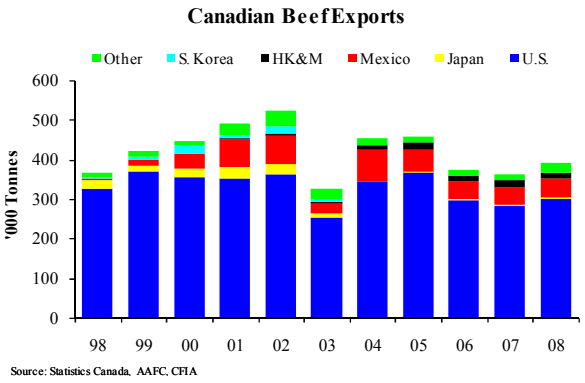
An adjusted R-square indicated the regression explained 83 per cent of the change in Canadian fed cattle prices. As expected the controlling variables explained a large portion of changes in fed cattle prices. All variables are signed as expected except Japan and Taiwan, but these variables were insignificant. This may have been due to the age requirement for Japan - only under-21-month beef which has limited Canada's ability to gain meaningful access and therefore the impact on fed cattle prices as a whole. The Taiwan variable may have been insignificant due to the small volume of exports shipped to this country and the delay between the announcement of market access and when product was actually shipped. Due to the closeness in timing between the Taiwan announcement and the Fed Ban coming into effect the Fed Ban variable was removed. This also partly explains the negative sign for Taiwan.



Due to the close timing of events (movement of UTM product into the U.S./Mexico and the Russian announcement) these three events have been considered as one in the analysis. The largest response in fed cattle prices came from regaining access to the U.S. and Mexico markets for UTM beef and Russia, with an estimated combined effect of $18/cwt. This is supported by the data which records a $34/cwt increase from August ($39) to September ($73) when shipments started. Access to Macau was the second largest impact with a $9.63/cwt increase in fed cattle prices. Access to Hong Kong increased fed cattle prices by $5.65/cwt. The most impact appears to be from the first markets that reopened, with access diminishing with each new market. This also points towards the importance of market access on fed cattle prices. The impact on fed cattle prices directly appears to be directly related to the volumes exported and hence dependence on that market. For example, regaining market access to the U.S. had the largest impact partly because it was the first to open and partly because of the large volumes quickly moved

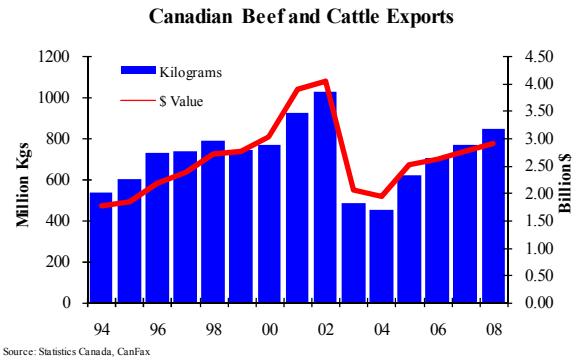
into that market. While the Macau and Hong Kong markets were small prior to BSE; they have grown to be Canada's third largest destination for beef exports since with approximately 4.5% of total exports.

Exports of live cattle to the U.S. increased fed cattle prices by $5.92/cwt. This indicates that the ability to export UTM beef was the more important influence on fed cattle prices than increased competition from U.S. packers for fed cattle. Expanded access to the U.S. for OTM beef and cattle increased fed cattle prices by an estimated $3.84/cwt. Expanded access to Hong Kong for bone-in product is estimated to increase fed cattle prices by $1.55/cwt. It is important to note that with limited data points after this recent event, this value is subject to revision. Other markets that Canada had market access to prior to 2003 and have yet to reopen to Canadian beef and cattle are estimated to represent $10/cwt in lost value to the current market place.



Conclusions

The impact of expanded market access on fed cattle prices is directly influenced by the volume of exports to each country and consequently how reliant Canada is on different export markets. The U.S. is Canada's largest beef export market and the only export destination for slaughter cattle exports. Consequently gains in market access to the U.S. had the largest increase on fed cattle prices. Although Hong Kong & Macau are smaller export markets, with viable market access for UTM boneless beef occurring regained market access resulted in significant increases in fed prices. Japan's impact on fed prices was limited by the under-21-month age restriction that has limited export volumes. The impact from the Taiwan is limited, which is most likely due to the delay in export volumes after the announcement and the closeness of the access to the implementation of the enhanced fed ban in Canada. The use of announcements for market access limited the results as the timing of product movement is what has direct market impact, not an announcement.



The above estimations are based on very basic modeling that is limited in dynamics. Further research is needed on the factors influencing retail beef demand in the domestic market, international demand for wholesale beef and packer demand for Canadian fed cattle. As seen above the volume of beef exports have a direct impact on the magnitude of the change in fed cattle prices. Since demand for beef, both domestically and internationally, have the greatest impact on the price received by producers, ensuring increased market access and a competitive domestic environment is of great importance to the industry.