



GEORGE MORRIS CENTRE

**Supply Management in Beef and Pork:
Understanding the Broader Context**

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Introduction

The Canadian beef and pork segments are experiencing a period of severe and prolonged difficulty, with exceptionally low margins, mounting financial liabilities and general economic stress. These issues relate to a range of factors, including softened demand for red meat, relatively strong Canadian currency, mandatory Country of Origin Labeling in the US, and higher feed costs, driven in part by demand from ethanol manufacturing.

In this environment of desperation, there appears to be a renewed interest in supply management and measures involving licensing of production capacity. For example, the hog industry in Ontario has witnessed recent proposals for supply management and a sow licensing scheme. The issue is being taken seriously enough that a study of the implications was commissioned and recently released.

However, as part of a much-needed evaluation of alternatives in beef and pork, the full implications of supply management schemes must be understood to allow the discussion to evolve. Thus, the intent of this paper is to consider supply management as an alternative to the existing mechanisms in beef and pork marketing. The objectives are as follows:

- To provide an overview of the initial conditions that led to the adoption of supply management
- To consider the marketing conditions favorable to a supply management scheme relative to those in beef and pork
- To consider the trade policy instruments necessary for a supply management scheme in beef and pork
- To assess the efficacy of a supply management scheme for beef and pork

A supply management scheme, such as the one in place for dairy and poultry, represents a significant departure from the current marketing system for beef and pork. For example, Figures 1 and 2 present a price comparison of hogs and milk in Canada and the US in Canadian dollars. Figure 1 presents milk prices in the P5 milk pool in Eastern Canada compared with the New York-New Jersey Federal Milk Marketing Order blend price. The figure clearly shows that Canadian milk prices are both significantly higher and much less volatile than US milk prices. Figure 2 presents a comparison of Ontario and Saskatchewan market hog prices adjusted to a 108 index hog vs. prices paid for Minnesota barrows and gilts, on a Canadian dollar basis. The figure shows generally that Canadian hog prices are lower than the Minnesota price, and that Canadian prices embody all of the volatility of the US reference price. Given this comparison, it would only seem natural, especially under current conditions, that Canadian hog and cattle producers would seek to emulate the pricing system used in Canadian dairy and poultry.

However, there are critical differences between the markets for beef and pork compared to those for dairy and poultry. These do not appear to be well understood, but must be before a full assessment of the merits of a supply management scheme for beef and pork can be made. This is important, as pork and beef must focus if they are to effectively adjust to the current situation.

Figure 1 Eastern Canadian and Selected US Federal Order Uniform Milk Prices, at Standard Test

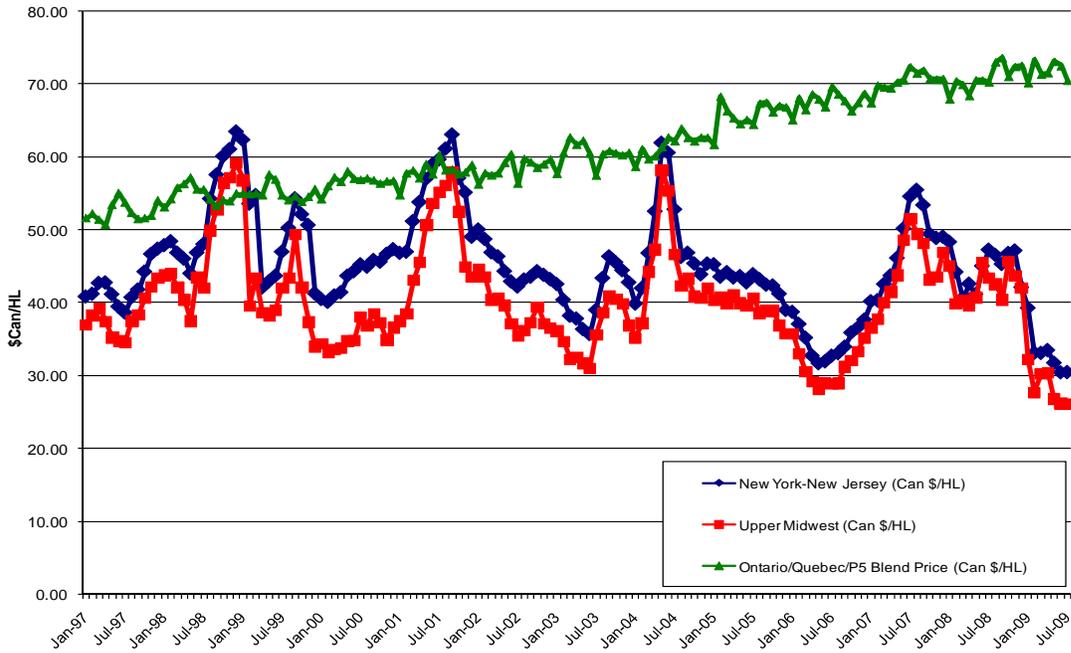
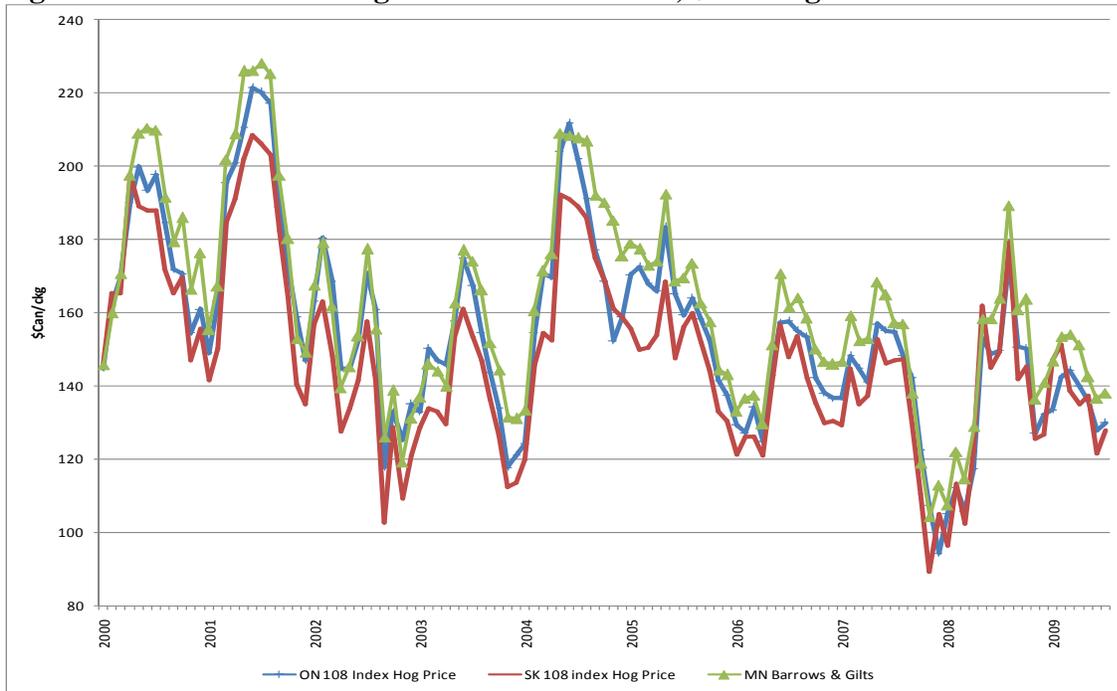


Figure 2 Canadian Hog Prices vs. Minnesota, \$Can/kg



Basis and Origins of Supply Management

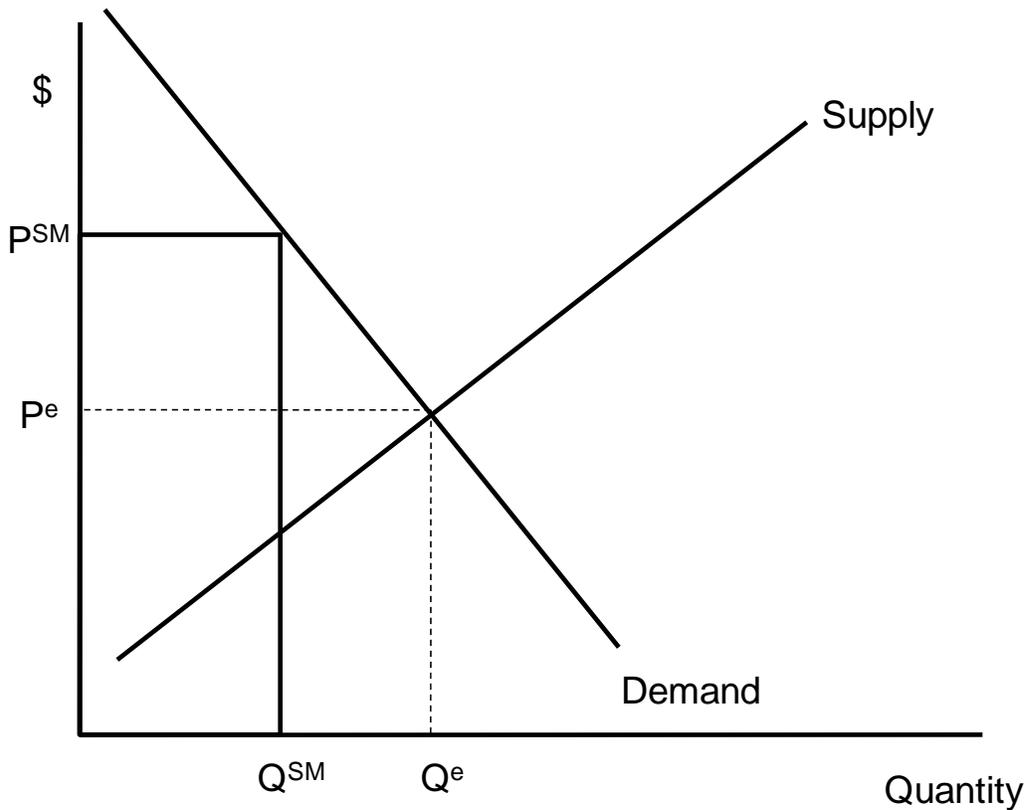
Supply management developed initially in the dairy industry in Ontario in the mid-1960's, and was adopted for dairy nationally in 1968. This was a period of economic hardship in the dairy industry, driven by a range of factors including industry fragmentation, chronic oversupply, and difficulties with processor market power. As described by Biggs (1990), dairy farmers were organized into many different organizations: some supplying fluid milk to cities like Toronto and Hamilton, others supplying local creameries, and others supplying cooperative cheese plants. In this fragmented environment, producers generally lacked a sense of the size of the market they were serving. Mestern (1972) noted that this fragmentation led to cyclical over-production and price instability. This, in turn, created difficulties in managing market access between farmers and processors. Supply management in poultry originated at the national level with legislation in 1971, and was implemented through the 1970's and early 1980's, motivated by similar dynamics and a growing trend toward integration of production with the feed and processing segments. Thus, supply management developed to provide transparency and discipline in markets where it was lacking.

Among the basic foundations of supply management is the ability to generate significant increases in price as supply is restricted so that the total revenue, which forms the budget for settlement with producers, increases as the supply decreases. This requires a robust demand for the product, which means that restricting the supply will be most effective in increasing the price when demand is growing (or at least stable), and when few good substitutes for the product exist.

A second fundamental aspect of supply management is the ability to discipline the supply. This requires two sets of instruments. First, quotas are used to limit domestic marketings. Second, a set of controls on imports using tariffs and tariff-rate quotas (TRQ's) is implemented. When supply management was introduced, access was allowed for imports at historical levels, with prohibitions on imports above this level. These have since been converted to TRQ's and very high tariffs.

This allows for a marketing scheme similar to that in Figure 3. In the absence of supply management, the interaction of supply and demand determines market clearing quantities and prices, Q^e and P^e , respectively. Under supply management, producer quotas and border controls are used to restrict marketings to Q^{SM} , which drives up the market clearing price to P^{SM} . Thus, by controlling producer marketings and imports, the price paid to producers can be increased significantly.

Figure 3 Supply Managed Marketing Scheme



The Nature of Marketing in Beef and Pork

It is important to consider the correspondence between the conditions that were conducive to a supply management marketing scheme and those in Canadian beef and pork.

Market Information and Organization in Beef and Pork

As mentioned, supply management developed in an environment in which markets were highly fragmented, market information was sparse, and processor market power influenced pricing and market access. With regard to pork and beef, it is hard to see how the market is fragmented. Rather, the market is North American, if not global, in scope. Since the Canada-US Free Trade Agreement in 1989 and the North American Free Trade Agreement in 1993, Canadian cattle, hog, beef, and pork markets have been directly linked to the US in terms of pricing and physical movement of product. The resulting arbitrage pressure makes regional market fragmentation unlikely, if not virtually impossible. Moreover, it is notable how fragmentation can occur when this arbitrage pressure is removed, as evidenced in the period following the BSE case in Canada in May, 2003. US Country of Origin labeling acts to hamper the arbitrage function, but it has not halted it as did the BSE border closures.

Secondly, market information in cattle, hog, beef, and pork markets is extensive. It is widely available both on a free basis from some producer associations (and from USDA and AAFC) and on a subscription basis (such as Canadian Cattle Buyer, Canfax, and Canadian Pork Market Review). Information is available daily, weekly, and monthly, and competing forecasts can be

accessed to help guide decision making. Given the extent of available market information, it is hard to argue that producers and processors cannot perceive the size or the nature of the market they are serving.

Finally, the nature of competition in livestock and meat markets has received extensive attention in agricultural economics literature, without consensus that a problem exists. For example, a review by Ward (2002) found that price effects of around 3% had been observed related to concentration in meat packing. This would appear to be a small proportion relative to variation and recent price declines observed by the Canadian cattle and hog segments. Moreover, Canadian regulatory scrutiny has resulted in approval of recent merger and acquisition activity in beef processing. In practice, competition for livestock between primary beef and pork processors appears to be competitive and aggressive, and spans wide geographies.

Nature of Demand in Beef and Pork

In order for a supply management scheme to increase total revenue in the settlement system with producers, an incremental decrease in supply must be accompanied by a price increase that is proportionally more than the supply decrease. A simple way to assess this is to look at the apparent historic demand relationship for products in price-quantity space. For example, Figure 4 considers Canadian per capita chicken consumption relative to the real price of chicken. The first thing to note is that the demand for chicken has consistently shifted outward. That is to say that, over time, greater volumes have been consumed at a given price level. Therefore, factors other than price, like income, convenience, and substitution away from other meats to chicken have influenced demand. The observation is that in chicken the demand relationship has demonstrated considerable strength and has shifted outward significantly.

Figure 5 presents similar real price-per-capita consumption for beef. Unlike chicken, in which it appeared the demand relationship had been shifting outward over time, it is very clear that the beef demand has been shifting inward, as less beef is consumed at a given price compared with the late 1980's. This has occurred for a range of reasons, due to factors like the health perception of beef vs. other meats, convenience in preparation, size of cuts/servings, etc.

Figure 6 considers the demand correspondence between real prices and quantity for pork. The situation for pork is similar to beef. At a given price level, Canadians have consumed less on a per capita basis, and this has been declining over time. The data suggest a significant decline in this decade as pork consumption has given way to substitution by competing meats, and other non-price considerations.

Thus, the observation can be made that, compared with the necessary strength in demand for supply management to increase total revenue, the nature of demand in beef and pork present weaknesses that are likely to undermine the efficacy of such a scheme. It appears clear that the domestic demand for beef and pork have weakened due to factors unrelated to price. Given this, a supply management scheme that attempted to markedly increase prices (by referencing a measure of production costs, for example) is likely to only accelerate and exacerbate this decline in demand.

Figure 4 Real Chicken Demand, Retail

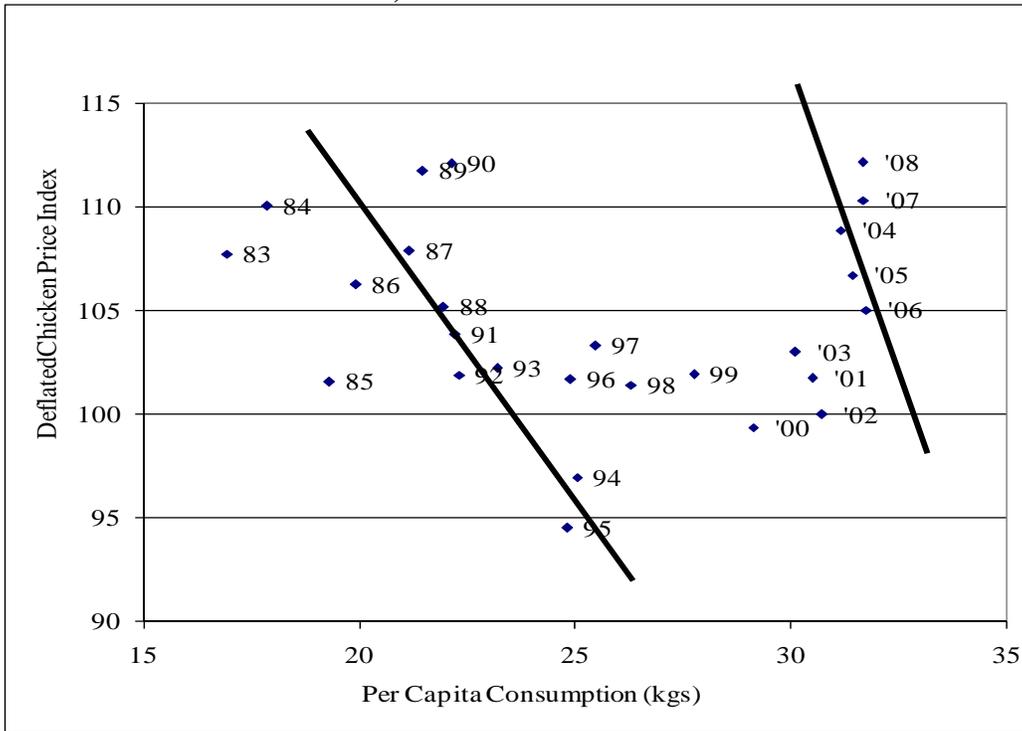


Figure 5 Real Beef Demand, Retail

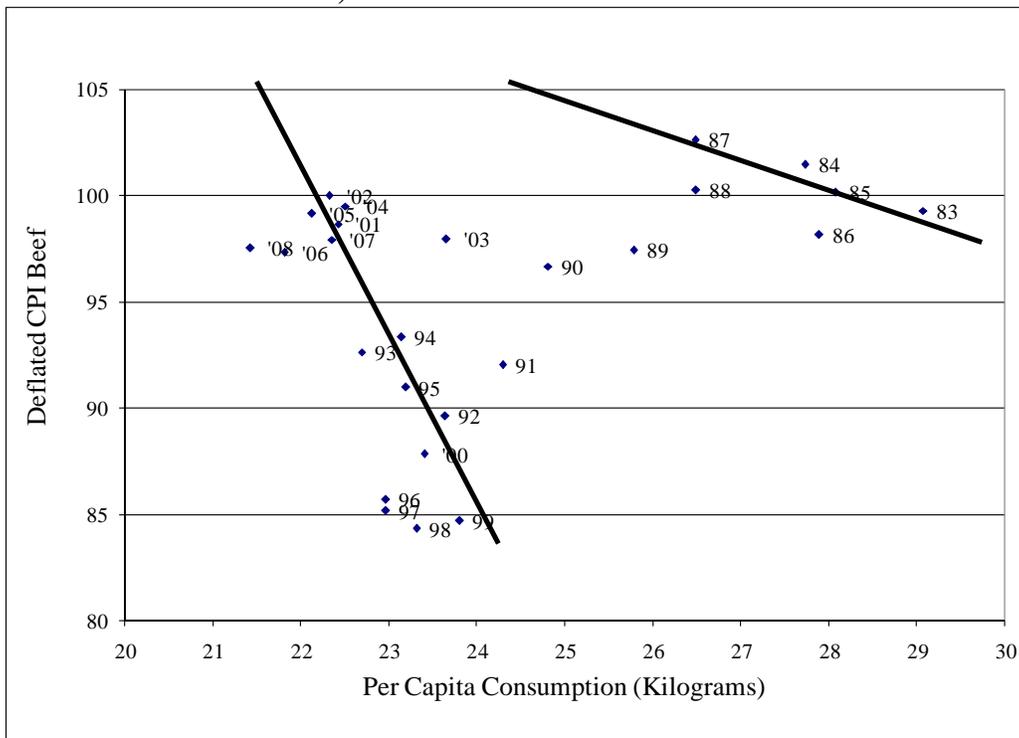
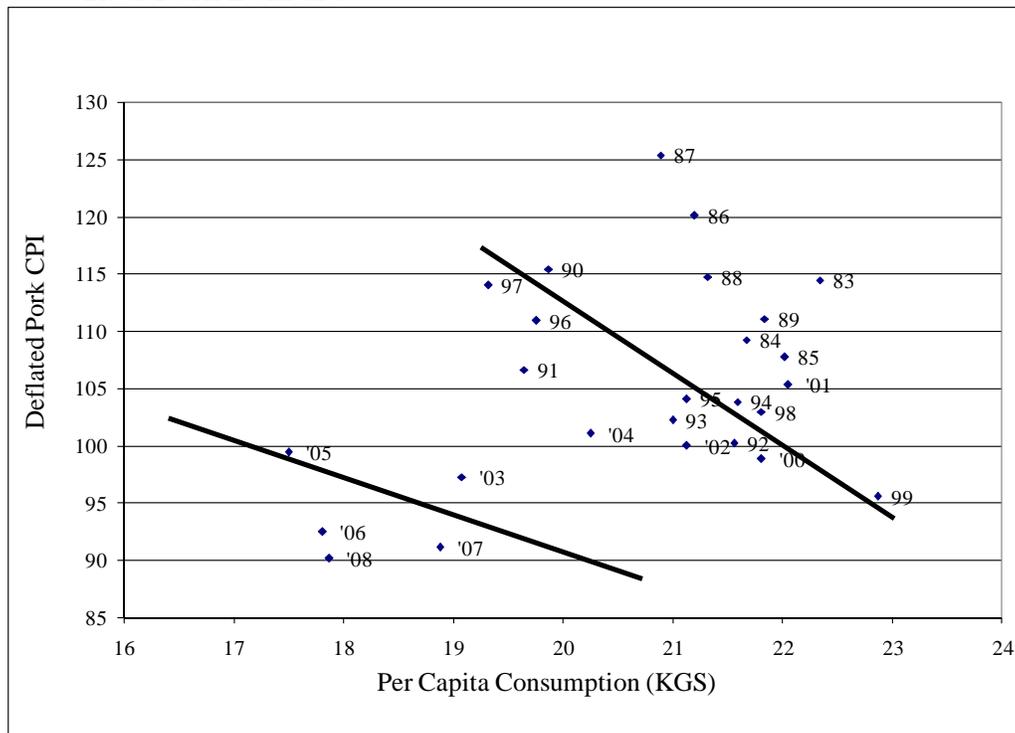


Figure 6 Real Pork Demand

Trade Conditions in Beef and Pork

Beef and pork in Canada are export-driven segments. Table 1 provides some indication of this. Last year, almost 500,000 tonnes of beef, and about 1.6 million head of live cattle were exported. This is in addition to pork exports of about 1.15 million tonnes, and live hog exports of almost 9.4 million head. Thus, exports are a critical aspect of the business and without exports, beef and pork would be much smaller scale industries.

Conversely, if beef and pork were restructured on a supply managed basis, the industries would be much smaller in scale. For example, when Canadian hog and pork production is converted to a carcass basis, McEwen (2009) observes that Canadian hog production would need to decrease by about 63% to match domestic consumption. This is based on domestic pork consumption of about 23.5 kg, carcass equivalent basis.

In fact, the role of exports goes further than either the data in Table 1 or McEwen would suggest, by the effect it has in sorting the domestic market. In pork and beef, most exports are in the form of cuts and primals, rather than whole carcasses. Exports of cuts are influenced by preferences in other countries relative to Canada. In pork for example, loin cuts tend to be in greater demand by Canadian consumers, while other components of the carcass like shoulders, pigs' feet, and pigs' tails have a heavier demand in export markets. A supply management scheme based on the domestic market would need to scale itself around the domestic demand for all cuts, not on a carcass basis. In effect, the carcass yield would need to define consumption shares by cut, rather than according to consumer preference.

For example, every pig has a tail. However, the domestic market for tails is small and the majority of tails are currently exported, so the data on the domestic per capita consumption of

pork on a carcass basis exhibit very little influence of tails as the domestic market is dominated by other cuts more preferred by Canadian consumers. A supply management scheme that required all cuts to clear in the domestic market would need to include tails, along with all other cuts, in the proportion given by the carcass yield. This would logically result in either a much smaller industry to balance the domestic demand for pig tails along with other residual cuts, or would result in some cuts being sold domestically at exceptionally low prices, or certain cuts being sent to rendering. In either case, structural revenue losses to the marketing system result.

Although pig tails as an example might be written off as a small issue, the concept applies more broadly. Pork shoulder cuts (picnics and butts) are structurally surplus in Canada and are thus heavily exported to other countries with tastes and preferences favouring shoulder cuts. At around 17-18% of the hog carcass, shoulders can hardly be ignored as a revenue component of hog and pork marketing, and the discounting required to sell them in the domestic market would weigh in heavily on the carcass cutout value. In other cases, export customers exist for organs and bones that contribute to the overall revenue from the carcass. Under a supply management scheme in which these would need to clear the domestic market, they would very likely end up in rendering and contribute no revenue.

Table 1 Exports of Beef, Pork, Live Cattle, and Live Hogs, 2000-2008

	Beef (thousand tonnes)	Pork (thousand tonnes)	Live Cattle (thousand head)	Live Hogs (thousand head)
2000	513.30	656.18	964.8	4,352.8
2001	568.77	732.57	1,307.2	5,344.5
2002	612.63	876.15	1,688.1	5,740.2
2003	396.42	988.59	505.6	7,442.6
2004	590.02	983.43	0	8,511.1
2005	580.49	1102.95	558.9	8,215
2006	456.86	1093.83	1,031.8	8,777
2007	437.81	1044.64	1,411.4	10,031.6
2008	477.61	1147.67	1,597.9	9,357.2

Source: Statistics Canada CANSIM

Trade Commitments

Canada faces important international trade constraints in considering supply management for beef and pork.

WTO Restraints

Under WTO rules, the constraints regarding supply management relate to (a) market access provisions that control imports, (b) exports deemed subsidized under a supply management scheme, and (c) deemed commodity-specific support.

As mentioned, any supply management scheme requires border measures, i.e. tariffs and TRQs, to control imports. These controls need to fully account for and create permanent access for historic import suppliers to Canada. Again, this was the case when previous supply management

schemes were introduced. The implication is that a supply management scheme for beef or pork would not supply all of domestic consumption because imports would be grandfathered historic access under TRQ. So, in beef for example, significant TRQ would be granted to the US and Australia as historical sources of Canadian beef imports.

Secondly, by raising or introducing new tariffs and TRQs, Canada would be bound by WTO Article 28 to provide compensation to countries that historically exported to Canada and are disadvantaged with regard to lost future growth in trade as a result. The compensation comes in terms of increased access for other products or as a monetary payment, based on a negotiated settlement between countries. If negotiation does not resolve the matter, the affected countries can retaliate. For example, in the protection Canada created against imports of milk protein isolate, the discussions under WTO Article 28 dealt with compensation to countries Canada had previously imported from at a level of 10% over maximum observed import levels. Thus, the full impact of new tariffs or TRQs to protect a supply management scheme is maintenance of import access at historic levels *plus* increased market access for other products and/or a monetary restitution payment.

With regard to subsidized exports, the dairy export case of 2002 established that exports from a supply managed system are deemed subsidized. Some products have subsidized export caps dating from the Uruguay Round, and it is important to note that a complete phase-out of export subsidies has been agreed to in the WTO Doha Round. Therefore, adoption of supply management in beef and pork could come with the condition of ruling out any beef and pork exports in the future.

Thirdly, since supply managed industries are deemed subsidized they must report product-specific subsidies, which also contributes to Canada's overall distorting support. Discussions in the Doha Round aim to reduce both product-specific and overall distorting support. A new supply management scheme is directly odds with this.

NAFTA Restraints

Canada also has trade obligations relative to NAFTA partners. These are broadly similar in structure to the WTO restraints. In particular, the introduction of new or increased tariffs to protect a new supply management scheme is in contravention to the spirit of the agreement, and could trigger the US and/or Mexico to request a reopening. Regardless, the imposition of new border measures to protect beef or pork supply management triggers the remedy scheme outlined in Section 28 of the agreement, which requires that compensation be provided to other members for lost market access or face trade retaliation. Clearly, compensation could only come from increased access in other products protected within the terms of the agreement, or through a monetary restitution payment.

Canada has very few tariff lines from which to offer compensation under NAFTA, but these include dairy, poultry, and eggs. So, in effect, a new supply management scheme for beef or pork would create the imminent risk of retaliation against or compensation from products that are currently supply managed, resulting in a decrease in domestic market share for dairy, poultry and eggs within the NAFTA agreement. Anticipating this, the dairy, poultry, and egg segments can rationally be expected to oppose new supply management schemes. This suggests that

implementation of supply management schemes for beef or pork would lead to very tense negotiations and difficult politics.

Interprovincial Trade

Another important consideration is interprovincial trade in livestock and products. Provincial livestock production is frequently out of balance relative to processing capacity. For example, in beef, Alberta has the majority of federally inspected primary processing. Cattle from elsewhere in the west are shipped to Alberta for slaughter. Ontario and Quebec both produce cattle. However, Quebec has very little processing capacity for fed cattle. As a result, fed cattle from Quebec are processed in Ontario. On the other hand, Ontario has almost no processing capacity for cows, whereas Quebec does, so cows from Ontario are processed in Quebec. At the same time, consumer demand for processed products in a given province, relative to processing capacity, can differ sharply.

Under a supply management scheme subject to provincial regulated marketing authority, access to and allocation of processing capacity would need to be rationalized at the national or interprovincial level. Without interprovincial agreements to rationalize livestock marketings and processing capacity, the differences in administered prices across provinces, rather than competition, could determine the access to processing.

Alternatively, provinces could be tempted to safeguard slaughter capacity for their own production using anything from technical standards to a provincially mandated plant supply quota scheme. Finally, “imports” of processed product into a given province from another would frustrate that province’s supply management scheme. In effect, an interprovincial market sharing arrangement would be required to prevent the latent conflict.

Allocating processing capacity tends to magnify the “local” nature of supply and demand balance in supply management. Therefore, negotiations over allocation of processing capacity relative to farm production between provinces can be expected to be especially difficult.

Conclusions

In times of protracted difficulty, it is natural that discussions turn to stark and seemingly simplistic solutions. Supply management in other industries has delivered relief from price volatility and low prices. At the same time, pursuit of these benefits in isolation of other market factors that frame beef and pork is apt to be dangerous and reckless.

These factors suggest the following:

- Supply management in dairy, poultry, and eggs was developed in an environment of poor market information and fragmented markets that gave way to purchaser market power. It is not apparent that these are the conditions driving the current beef and pork situation
- The nature of demand in pork and beef appears unsuited to a successful supply management scheme.
- The extent of exports in beef, cattle, pork, and hogs suggests that a move toward a domestic focus through adoption of supply management would cause a dramatic shift. Recent literature on the pork segment confirms this.

- The logical implication of supply management in pork or beef would force domestic consumption to mirror carcass yields, and a domestic pricing schedule to implement it. Alternatively, some cuts that are currently exported would need to be sent to rendering in order to balance the market. Either way, the net effect is to reduce revenue in the marketing system to fund processors and producers.
- Canada faces significant restraints under trade agreements that were not in place when previous supply management schemes were implemented. While these do not rule out a new supply management scheme for beef or pork, they would make it exceptionally costly, with prospect of generating costs outside of the agri-food sector. The NAFTA implications appear particularly onerous, as they can be expected to carry implications for the dairy, poultry, and egg segments.
- Wrangling with interprovincial movement of livestock and meat also poses a significant challenge, in effect requiring a national or interprovincial market sharing agreement.

At this very difficult point in time, the Canadian beef and pork segments would be better served by focusing on more tractable alternatives than supply management. For the reasons outlined above, supply management currently serves as a distraction to more realistic approaches for addressing challenges in beef and pork marketing. Proposals that involve licensing of producers or production capacity appear to stop short of a supply management scheme. However, there is no marketing-related reason to license if there is no intent to regulate production, and the apparent reason to regulate production is to influence prices¹. The same points that bring into question the efficacy and practicality of implementing a supply management scheme apply, in a more general sense, to licensing.

The beef and pork segments need to challenge themselves and pursue marketing alternatives that leverage Canada's natural advantages as exporters, and set aside apparently simple (but practically difficult) solutions like supply management. This will require focus, as alternatives will be more challenging to envision and develop than a mandated supply management scheme. This will likely involve different relationships between producers and processors; reckoning with a structurally stronger currency and lagging processing efficiency, and an assimilation of Canada's natural resource endowments, product information system, and regulatory inspection system advantages. As it stands, the supply management debate fragments the beef and pork segments and detracts from this focus.

¹ This is clearly the case in a market-based system where adjustment occurs due to market signals. It is less clear in a system protected by deficiency payments in which the same adjustment does not occur.

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