

# Impact of Packer Consolidation on Future Structure & Profit in the Pork Industry

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## ▪ Introduction

The Canadian pork industry, particularly in western Canada, has experienced rapid growth as evidenced by the expansion of larger scale processing and production units. There are a number of reasons for this expansion and they have been well documented Martin et al., 1997), including:

- ▶ Regulatory changes in Canada, falling transportation costs and the removal of the Western Grain Transportation (WGTA) subsidy allowing cheaper barley in western Canada have provided the region with a competitive cost advantage in hog production.
- ▶ Falling trade barriers and, until recently, rising incomes in Asia created a strong demand-pull effect, boosting opportunities for Canadian pork exports. When the current Asian economic crisis is over, expectations are that those markets will regain their importance for Canadian pork. The considerable long-term potential of the massive Chinese market (with the emphasis on “long-term”) should not be overlooked.
- ▶ Due to environmental and resource constraints, several major competitors (Taiwan, the Netherlands and Denmark) may be nearing their production potential. Although these nations remain formidable competitors in existing markets, if they truly are reaching their production potential then they will find it difficult to compete for shares of any growing export markets.

## ▪ Consolidation in the Packing Sector

In response to the above factors both hog production and processing have expanded in western Canada. Processing has consolidated with fewer, larger players expanding at the expense of smaller-scale plants. This is similar to the

trend observed in the beef industry in western Canada, with large-scale packing plants moving, in whilst small to medium-sized plants found it increasingly difficult to compete for supplies and for markets. The expansion in hog production is documented in Figure 1. Total Canadian hog production has risen from just over 15 million in 1987 to over around 18.5 million in 1997 (Statistics Canada). We will return to discuss the proportion of slaughter vs export of live hogs later. The bulk of this growth has been in western Canada, where hog production increased by 44% to 7.5 million head in 1997. This compares with an increase of 25% in Quebec over the same time period, small increases in New Brunswick and Ontario and declines in production in the remaining Atlantic provinces. We expect the trend of an increasing relative share of production in western Canada to continue.

**Figure1. Total Canadian hog production, 1987-1997.**

In the Canadian processing sector in 1996, total weekly slaughter capacity was estimated at 334,800 head in 1996<sup>1</sup>. Of this total, 41% was accounted for by the 3 largest firms (Olymel, Maple Leaf and JM Schneider).

Figure 2 shows the shares of estimated weekly slaughter capacity in the four western provinces in 1996 compared with our estimates of potential slaughter capacity, based on announced expansion plans, for 1999-2000<sup>2</sup>. In 1996, the

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<sup>1</sup> This number is an estimate and does not include some plants, particularly, provincially registered plants, whose capacities are not known.

**Figure 2. Estimated western Canadian slaughter capacities in 1996 and 1999/2000.**

four largest firms had an estimated 67% share of total capacity in western Canada. Total capacity was estimated at 123,500 head per week. By 1999-2000, the share of the four largest firms could rise to 87%, based on currently available information. The rapid recent growth of processing in western Canada means that the packing sector in the west is more concentrated than

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<sup>2</sup> The 1999-2000 pie-chart is based on the following estimated capacities: Maple Leaf = 65,000 (consisting of Brandon, MB – 40,000; Winnipeg – 20,000; Lethbridge – 5,000); Smithfield (MB) = 40,000; Springhill Farms (MB) = 12,500; Intercontinental (SK) = 20,000; Fletchers (Red Deer, AB) = 42,000; Others = 14,000.

elsewhere in the country. Quebec, for example, has a larger number of small plants than in other provinces.

Compared to the US hog processing sector, Canadian plants are relatively small. A comparison of the estimated weekly slaughter capacities of Canadian plants and capacities of the plants owned by the 16 largest US packers in 1996 reveals that only three of the 37 US plants had smaller capacities than Canada's largest plant. Thirteen US plants were at least twice the capacity of Canada's largest plant (Martin et al., 1997).

Given the announced investment plans of the major packing firms, consolidation is continuing to take place in the Canadian packing sector. What does this mean for the future structure of the sector and for the profitability of the pork industry? To answer that question, we must first examine the factors affecting profitability – and in particular – the cost competitiveness of the packing sector.

### ■ Cost Competitiveness

Returning to Figure 1, we see that the percentage of domestic hog production slaughtered in Canada has been declining steadily in recent years, as evidenced by the widening share of live hog exports to total production. Just over three million of the 18.5 million hogs (i.e. 17%) produced in Canada in 1997 were exported to the US instead of being processed in Canada. In western Canada last year, of the 7.4 million hogs produced, approximately 1.8 million (or 25%) were exported to the US. This tells us that Canadian packers have been finding it increasingly difficult to compete with their US counterparts for hog supplies. If Canadian packers were more competitive, fewer live hogs and more pork would be exported. Why would this be beneficial for Canada? The pork industry in Canada would have a larger slice of the "value-added pie" – this means a potential for higher returns to the entire pork supply chain, more employment in Canada and higher foreign exchange earnings.

A recent George Morris Centre study compared the cost competitiveness of the Canadian and US pork processing sectors (Martin et al, 1997). The study used value-added as a measure of productivity because it is the best indicator of the contribution made by the processing industry and its resources. Value-added is the difference between the value of the industry's sales and its costs of raw materials, including live animals, packaging and fuel. The performance of the US and Canadian industries were compared on a number of bases. These included profitability measures: value-added relative to (i) total sales, (ii) total wages and (iii) total salaries and; a productivity measure (iv) valued added per production worker. Due to limitations in the available data sources, these

comparisons were made for the whole red meat industry (i.e. pork and beef). Table 1 displays these performance indicators.

**Table 1. Performance indicators for the Canadian and US red meat industries**

	<u>Canada</u>			<u>USA</u>		
	Ave. 1980-90	1995	% change	Ave. 1980-90	1995	% change
<b>Profitability Ratios</b>						
Value added per dollar of sales (Cdn\$)	0.17	0.22	+29%	0.13	0.16	+23%
Value added per dollar of wages (Cdn\$)	2.48	2.61	+5%	3.10	3.55	+15%
Value added per dollar of salaries (Cdn \$)	6.84	8.26	+21%	10.36	14.63	+41%
<b>Productivity Ratios</b>						
Value added per production worker (Cdn \$000)	67.5	77.1	+14%	80.36	105.2	+31%

Source: Martin, et al. (1997), p.8

A value-added ratio of 0.22 means that \$0.22 of every dollar of sales from the Canadian red meat industry in 1995 was value-added. Whilst both Canada and the US have seen an increase in their value-added to sales ratios since the 1980s, clearly the Canadian industry has been more successful at generating value-added than its US counterpart. This is probably because Canada has a higher proportion of pork in its red meat sales mix and the Canadian industry has been more export oriented. Both of these factors tend to increase the intensity of processing and add more value. The increased proportion of value-added to sales for both countries reflects new product developments, in particular the growth of “case-ready” meats by processors.

The other measures in Table 1 evaluate the relative performance of the red meat industries in terms of labour productivity. For example, in 1995, each dollar spent on wages generated \$2.61 in value-added in Canada compared with \$3.55 in the US. Measuring performance in terms of value-added per production worker shows that for each production worker in the Canadian red meat industry, \$80,360 of value-added was generated compared with \$105,190

in the US. These measures suggest that labour productivity has been lower in Canada than in the US. Although labour productivity has improved in Canada relative to the 1980s, these improvements have been dwarfed by those in the US. Further analysis of the data revealed that labour productivity in Canada was about 30% lower than the US and has declined since the 1980s. The relative decline in Canada's productivity ratios is correlated with the decline in domestic hog slaughter as a share of Canadian production, as illustrated in Figure 1.

What are the reasons for the lower labour productivity in Canadian packing plants? The answers lie in the nature of the plants – in 1995 Canadian plants tended to be older, more technologically outdated and smaller than their US counterparts. What we are probably seeing, therefore, are the effects of relative differences in capital productivity manifesting itself through lower labour productivity figures. Data limitations make it difficult to separate the two. Capital productivity is affected by technology and by economies of size. The study found that US red meat plants tended to have about 30% more workers but about 60% more value-added per plant – suggesting that capital productivity was higher in US plants.

The study focused on a number of factors that could potentially affect processing costs per unit of product to determine the relative cost competitiveness of Canadian vs. US pork packing plants. When considering the effects of packer consolidation, the factors that are particularly relevant are:

- ▶ Economies of size. As plants get larger, throughput increases faster than inputs, so fixed costs can be spread over a larger output. This lowers per unit costs.
- ▶ The number of shifts. Adding a second shift means that the fixed (overhead) costs can be spread over more units of output, therefore also lowering per unit costs.
- ▶ Technology and plant design. This influences line-speeds and the efficiency with which product can be moved through the plant.

Other factors that are important in determining relative cost competitiveness include: wage rates (given that meat processing can be very labour intensive); also carcass size (the heavier the carcass, the more kilograms of pork it generates and the lower the associated fixed or overhead costs per kg of pork). Differences in the regulatory environment may also be important.

When we compared Canadian packing plants and their US counterparts on the basis of the above three factors, a number of notable differences emerged. In terms of scale, US plants are far larger than Canadian ones. Remember the point made earlier – which bears repeating - that in 1996, only 37 of the US plants in a list of the top 16 US pork processing companies had capacities

smaller than Canada's largest plant and 13 US plants had at least twice the capacity of Canada's largest. An additional observation is that the majority of US plants ran two shifts whereas none of the Canadian plants did. The economies of scale achieved by these large-scale, double-shifted US plants gave them a considerable cost advantage over Canadian packing plants in 1996. The larger capacities of US plants are, in part, enabled by faster line speeds achieved through recent technological advances in plant design. For example, current technology allows plants to process up to 1,300 carcasses an hour. The new Canadian plants under construction - or those being refurbished - will be in a position to take advantage of faster line-speed technology.

Comparative labour costs and carcass sizes also confer a relative cost advantage on US plants, however, these factors are less likely to be affected by packer consolidation and will not be discussed here. Interested readers are referred to Martin et al. (1997) for a more complete discussion.

### ▪ **Effects of Consolidation on Costs and Profitability**

It should be clear that more technologically advanced plants, larger capacities and double-shifting are three of the major differences between US and Canadian packing plants. They are also three of the key reasons for the relative productivity advantages and lower per unit costs of US over Canadian packing plants discussed earlier. Through a detailed analysis of these factors, the George Morris Centre estimated the effects on processing costs of these (and other) factors. Some pertinent results are reported in Table 2.

These results suggest that increasing plant size from a capacity of 20,000 head per week to 30,000 head would reduce manufacturing costs by Cdn\$7.50 per 100 Kg. Increasing capacity to 45,000 head per week would reduce costs by \$8.74 per 100Kg relative to the "base case" of 20,000 head.

**Table 2. Effects on total manufacturing costs of differences plant size and shifts.**

Factor	Cost savings (increases) from Base per 100Kg		
	20,000 hd/wk	30,000 hd/wk	45,000 hd/wk
<b>Plant Size</b>	(base)	\$7.50	\$8.74
<b>Two Shifts</b>	\$6.14	\$4.55	\$3.57

Source: Martin, et al. (1997)

Adding a second shift also reduces costs. The effects of adding a second shift, whilst at the same time increasing capacity, are additive. This means that the total cost savings from increasing plant capacity to 30,000 head per week plus adding a second shift are estimated at \$12.05/100Kg, whilst the savings from increasing to 45,000 head and double shifting are \$12.31/100Kg.

From the recent round of expansion and consolidation in the packing sector, a number of higher capacity plants are, or will soon be, on line. The refurbished Fletchers plant in Red Deer is expected to have a 42,000 head per week capacity in 1999 (single shift) with possibly an additional 10,000 of capacity in 2000. Smithfield recently won a year-long battle with Maple Leaf for the control of the former J M Schneider plant in Manitoba. The company is reportedly considering putting in a kill line to go with the existing fabrication plant. It is speculated that the plant could have a single-shift capacity of 40,000 head per week. Maple Leaf's Brandon Manitoba plant should have a weekly capacity of at least 40,000 head. As recently as 1996, the largest Canadian hog packing plant had a capacity of around 32,000 head (Maple Leaf, Ontario), whilst the capacity of the largest packing plant in western Canada sat at around 25,000 head (Fletchers, Alberta). The expanded capacities, plus the potential cost savings from double shifting, give the Canadian packing sector a considerable cost advantage relative to its recent past. This can only bode well for the pork industry.

Market watchers will have noted a differential between prices paid by US packing plants versus the lower prices paid for hogs by Canadian plants in the past. The increasing share of Canadian production exported south of the border as live hogs is evidence enough of this. A major reason for the price differential appears to be the lower per unit costs of the large US plants which enable them to compete aggressively for Canadian hogs, particularly in times of tight supplies. If Canadian processing firms can reap the economies of scale benefits from higher capacity plants and from double shifting, then one might expect to see higher prices paid for Canadian hogs as these plants begin to compete with US plants for hog supplies.

The other major effect of consolidation and expansion, particularly in western Canada, will be the increased demand for hogs to provide the necessary throughput for these plants. From the ongoing and planned expansions in western Canada, a weekly slaughter capacity (single shift) of just under 200,000 head seems likely. If these (or at least the four major plants) went to two shifts, annual hog capacities for the four western provinces could be around 14-15 million head<sup>3</sup>. Contrast this with the 5.5 million slaughtered in those provinces in 1997 and the magnitude of the opportunities for hog producers in western Canada become evident. A major constraint to this

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<sup>3</sup> Assuming that double-shifting increases production by a further 75% and a 50 week production year.

expansion, however, will be labour availability. The packing industry in the West currently is suffering a chronic labour shortage coupled with extremely high labour turnover rates.

To sum up, consolidation in the packing sector has produced considerably larger and potentially more efficient processing plants. This will have two very important effects in the medium to long-term:

- ▶ Demand for hogs will increase. These high capacity plants will require a consistent supply of large quantities of hogs relative to hog demand in recent years, and;
- ▶ Prices for hogs may be higher. Higher capacity plants, and those that are double shifted, generate significant economies of scale advantages to the packers which could be passed along to producers in the form of higher hog prices (particularly because of point 1 - packers will need a consistent, large volume supply to maintain throughputs).

The opportunity therefore exists for the pork industry as a whole to benefit from technological advances in processing, globalization of markets and consolidation in the processing sector. Whether these benefits are indeed captured may depend on the extent to which they are shared along the supply chain. Maximizing the long-term opportunities available will depend on the level of cooperation and trust between producer and packer. This issue will be dealt with below.

### ▪ **Effects of Consolidation on Supply Chain Relationships**

One of the fears that producers often raise when faced with fewer and larger packers is that competition will be reduced, along with prices to producers. Whether this is a valid concern depends, to a large extent, on the long-term strategy and visioning of firms within the packing sector. Packers with a short-term focus, fixated on immediate market returns, may use their superior relative bargaining power to push producer prices down, particularly towards the low point of the hog cycle when supplies are up and prices depressed. We are seeing some of that now at time of writing (Fall 1998). Positive packer margins of \$20 per head are being reported. This compares with estimated negative producer margins currently of anywhere between -\$30 and -\$50 per head. Although some packers had signed risk-sharing contracts with producers that spread the risk of price fluctuations between packer and producer, few packers are now signing such contracts once market prices hit the contract price floor. A short-term view for the packing sector would be that this is a good strategy, that these are healthy margins and that all bodes well for the future of the sector.

A longer-term view would recognize the dangers inherent in maintaining low hog prices, high margins and walking away from future risk-sharing contracts. The expanded capacities alluded to above are not yet fully on line. When they do come on line, packers in western Canada alone could need upwards of 14 million hogs annually if the major plants add a second shift. If large numbers of producers go out of business during the current downturn of the hog cycle, that production may not be available when packers need it to capture the economies of scale advantages from larger plants. Of course, a counter-argument to this would be that any relatively new capital investments taken out of hog production in the downturn will simply be bought up by existing producers able to weather the current price trough - at prices significantly below capital values - so that the production capacity will not be lost in the long-run. Also it is likely to be the older, smaller units which would go out of production permanently. Certainly the situation brings home the need for a risk management strategy on the part of hog producers, using the revenue gains during upswings in the cycle to prepare for the eventual downswings. However, those are issues for another paper and will not be delved into here.

The second danger of a short-term focus by the large packers at the low point in the cycle is that squeezing producer margins does nothing to engender trust and cooperative supply chain relationships. This is becoming increasingly important as packers seek to provide their customers with a consistently high quality product and as they respond to the demands of diverse market places.

To take an illustrative example, the Japanese market, has very exacting standards. Japanese consumers prefer pork with a fairly dark red colour, the meat must be firm, the fat firm and very white. The Japanese meat trade prefers loins of a specific (relatively long) length, etc. Packers can select for the Japanese market among carcasses that pass through their plant. However, this gives no guarantee that hogs of the right specifications will be available in the right quantities on the right days to meet the needs of their Japanese buyers. A more successful long-term export strategy will be to encourage hog producers to supply "Japanese quality" hogs to the packing plant on a regular basis. This entails production and management changes on the part of the producer and means that the producer has made an *asset-specific investment*. In other words, the producer is locked into supplying a specific buyer with a specific type of hog which may be heavily discounted in other markets.

For packers to induce producers to take on the risk of an asset-specific investment requires elements:

- ▶ Higher expected returns for the producers than supplying a "regular" carcass and, importantly;
- ▶ The establishment of trust on both sides of the transaction. That trust will not easily be created if packers use the increased relative

bargaining power vis-à-vis producers that consolidation brings - particularly at the low point in the hog cycle - to squeeze producer margins.

A similar argument applies to other markets as packers seek to differentiate their products on the basis of quality differences. Closer supply chain relationships between packers and producers will be a pre-requisite for success. These closer relationships could take many forms, including risk-sharing contracts and strategic alliances.

A final point - when considering the extent to which a more consolidated Canadian packing sector is “competitive” with respect to producer marketing options, the question of perspective arises. In an increasingly globalized market place, and with the North American Free Trade Agreement bringing down continental barriers to cross-border investments, should the perspective instead be on the structure of the *North American* rather than Canadian packing industry? This suggests a relatively more competitive packing sector than a strictly Canadian perspective would indicate.

## ▪ **Summary and Conclusions**

The current downswing in the hog cycle notwithstanding – which unfortunately coincided with a downturn in export demand in Asia – the long-term prospects for future profitability and expansion in the Canadian pork industry look bright.

The benefits from consolidation in the packing sector are the cost savings which higher capacity (and potentially double shifted) plants can achieve. This will improve Canada’s productivity and competitiveness relative to US plants and should enable Canadian packers to narrow the producer price difference between US and Canadian plants. Secondly, the investments in increased capacity in western Canada will substantially increase the demand for hogs in that region over the next few years. For producers who can practice effective risk management to see themselves through the fluctuations of the hog cycle, long-term prospects are promising.

Whether the potential costs of consolidation from the producers’ perspective (i.e. reduced competition in the packing sector) manifest themselves depends on the extent to which packers (and producers) recognize the importance of nurturing healthy supply chain relationships. The traditional adversarial producer-packer relationships must give way to trust and cooperation if the pork industry is to reap the benefits of a globalized marketplace and the competitive cost advantages of locating in western Canada.

## ▪ References

**Martin, L., R. Ball and J. Alexiou** (1997) Cost Competitiveness of the Canadian Pork Processing Industry. George Morris Centre, December.

