

October 2021

Managing Surge Capacity and Boosting Resilience in Meat Supply Chains

Quick Think Report Prepared for CAPI by Al Mussell and Darryl Robinson



Quick Think
Report



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In the summer of 2020, CAPI commissioned a feasibility study on small scale meat processing plants as a means of mitigating risks to meat supplies in Canada in light of Covid-19 disruptions. The study was prepared by University of Alberta Professor James Rude.¹ The study found that simply building more, smaller/regional meat processing plants; engineering mandatory excess capacity into meat plants to provide additional space for workers; and increased use of automation in processing plants- would not independently secure meat supply chain resilience.

Smaller meat plants require a higher value stream to overcome cost disadvantages versus large plants with scale economies. The report recommends that public funds not be used to finance smaller plants, but rather to create an enhanced investment environment- such as through more competitive tax rates, and improved market intelligence that can support the development of niches. Mandating excess capacity as a solution might allow for greater dispersion of plant workers on the plant floor in an emergency situation, but the increased costs will lead to higher meat prices and/or lower livestock prices, and a negative consumer demand response to higher prices. Rather, the report recommends that the costs and adjustments of mitigating this effect be transparently shared across market levels in an overall supply chain strategy for disease shocks and other disruptions (e.g. strikes, fire). Robotics and automation as a solution have high up-front investment costs and present complexities that favour large processors- exacerbating existing concerns of market concentration in meat processing- even as they would improve productivity of both small and large processors.

Ultimately there is a trade-off between more, smaller plants with more redundancies, flexibility to adapt and pivot to market opportunities, greater automation, and surge capacity versus economic efficiency, scale, and the benefits of competition. The CAPI report cites Temple Grandin in remarking that "Big suppliers are low cost, efficient and fragile. More numerous local producers are more high cost and expensive, but the entire supply is more robust."²

The purpose of this note is to revisit the findings of the 2020 CAPI report by Rude in the current context, and broaden its context in some key aspects.

¹https://capi-icpa.ca/explore/resources/the-feasibility-of-small-local-meatpacking-plants-in-canada/?_keyword=&_after=&_before=&_orderby=post_date&_order=desc&_page=2

²Grandin T. 2020. "Temple Grandin: Big Meat Supply Chains Are Fragile" Forbes <https://www.forbes.com/sites/templegrandin/2020/05/03/temple-grandin-big-meat-supplychains-are-fragile/#e861c06650c3>.

Current Context

Some of the factors that spawned concerns about capacity in Canadian meat processing capacity during the Covid-19 pandemic are sustained or have re-emerged.³ A labour disruption in a Quebec poultry plant resulted in the need to euthanize a reported one million birds,⁴ and a labour dispute in a Quebec pork processing plant threatened the need to euthanize market hogs.

In the US, an initiative was recently announced to expand the number of small and medium-sized meat processing plants, in part intended to mitigate meat supply chain risks observed in the Covid-19 pandemic.⁵ In many parts of the world the Covid-19 pandemic is ongoing, including parts of the US, and a fourth wave has arrived. African Swine Fever (ASF) continues to menace several parts of the world outside of Canada- most recently notified in the Dominican Republic, which plans to euthanize hogs to stamp out the disease. With ASF recurring in the Caribbean it only intensifies the risk of infection in Canada.

The Role of Trade and Open Borders for Enhanced Resilience

Meat processing plants are generally located where livestock supplies are abundant, according to the CAPI report. Therefore, if processing facilities must temporarily idle or reduce processing volumes due to worker sickness or strikes, alternative markets for livestock must be found in order for local livestock producers to remain viable. This requires open borders both provincially and internationally to allow for the free flow of livestock to alternate processing plants. Alternatively, lack of local processing capacity can lead to a back-up, excess supplies of market livestock and lower prices and returns to producers. Some mitigation can occur through changes in livestock diets that slow down daily gains and growth- but this does not apply equally across livestock species, and serves to smooth out rather than eliminate the effects of reduced processing capacity.

The situation with Canadian hogs is instructive in showing how important open borders and the free flow of livestock has been for Canadian producers. Figure 1 shows that after February 2020's decline, exports of market hogs increased in March through July as several Canadian processing plants were forced to close or experienced slowdowns due to Covid-19 and US markets provided an alternative market for Canadian product, despite the fact that many U.S. plants also experienced Covid-19 shut-downs. Then in September, 2020, interruptions in Chinese pork exports by Canadian processors (but not US processors) through delisting of Canadian plants for Chinese export and strong demand for Canadian hogs by US pork processors led to a dramatic increase in exports to the U.S. to backfill supplies, illustrating how integrated the Canada-U.S. markets are. Hence, having access to alternative markets for processing in the event of disruptions helps improve sector resilience. This is the case across both provincial and national borders, given interprovincial trade barriers and restrictions to moving meat across provincial borders.

³<https://www.cbc.ca/news/canada/montreal/labour-strikes-quebec-meat-industry-1.6102422>

⁴<https://globalnews.ca/news/8079526/quebec-pork-olympel-strike/>

⁵<https://www.usda.gov/media/press-releases/2021/07/09/usda-announces-500-million-expanded-meat-poultry-processing>



Transparency and Flexibility in Contracts

Marketing of slaughter livestock is dominated by marketing contracts and supply agreements that commit sellers and buyers to specific volumes, timing of delivery, pricing, and other aspects. However, on a standard basis, contracts carry force majeure clauses, which release the parties from their obligations in the case of contingencies outside of their control, with the requirement that contracted parties can take action for mitigation. In the case of meat processing plants

confronted by a sudden shock that prevents them from accepting livestock deliveries, contracted livestock can be released and redirected to other plants, with efforts made to facilitate doing so by both parties. Redirecting livestock allows the risk of sudden shocks to be spread across the broader supply chain and helps to shields individual parties.⁶ Much of this redirecting of animals is based on firm-to-firm relationships and the need for industry continuation.

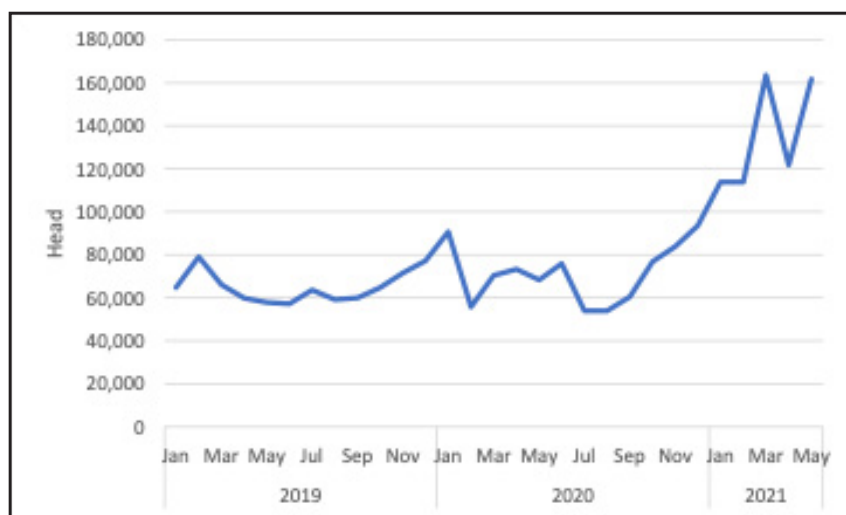


Figure 1 Monthly Exports of Canadian Live Hogs other than Purebred Breeding, > 50 kg

Source: Statistics Canada International Merchandise Trade Database, HS 010392

⁶An excellent discussion of both open trade and contract transparency, using hogs as an illustration, is presented by Ken McEwan, Lynn Marchand, and Max Zongyuan Shang. "The Canadian pork industry and COVID-19: A year of resilience", Canadian Journal of Agricultural Economics 69 (2) 225-232. 2021.

Regulation Requires Public-Private Partnerships

Regulation, and more specifically regulatory burden, is an element of economies of scale. Larger firms are better positioned to manage regulatory compliance, as they are better equipped with the necessary overhead in place and the ability to spread administration costs over a larger volume of sales. One way in which this balance can be shifted to facilitate smaller or medium-sized plants is to reduce the compliance burden through the manner in which regulation is administered. Alternatives to prescriptive regulation, such as more outcome-based regulation, generally lessens the regulatory burden for small or medium-sized plants, without sacrificing any of the intents of regulation, such as food safety, product quality, and export-ability.

A greater willingness to work with industry on behalf of regulators, and vice-versa, that is committed to establishing and maintaining standards but is flexible with regard to implementation, with resources provided for implementation, is a form of public-private partnership that can benefit small and medium-sized plants. This can support the viability of smaller plants. Some evidence of this flexibility and willingness to collaborate occurred to address shocks during the Covid-19 pandemic- such as introducing digital forms, and the provision of ministerial exemptions so provincial inspectors could apply federal standards for interprovincial movement when there were inspector shortages- and can be built upon going forward.



Greater Supply-Chain Collaboration and Strategy

Similarly, greater collaboration and relationships across supply chain players in the meat processing industry can help improve adaptability and flexibility, leading to resilience in the sector. According to Hobbs (2020), "collaborative supply chain relationships are long-term partnerships with suppliers that help reduce transaction costs, share risks, provide access to complementary resources and expertise and enhance productivity".⁷ In fact, McEwan (2021) argued that "the Canadian swine sector displayed flexibility, resiliency and adjusted to the critical challenges posed by Covid-19 when the supply chain shared information between stakeholders to adjust to provincial, national and international marketing challenges caused by the pandemic".⁸ Nonetheless, the sector is very competitive at the firm level and there can be a lack of alignment between the various players- so collaboration requires effort and commitment.



Human Resources and Management

The CAPI report cites the extensive literature establishing scale economies in meat processing; however, management, and the attraction of talent are often overlooked aspects. Management and scale efficiency can serve as substitutes, with some very well managed companies that lack scale advantages performing as well or better than others with scale advantages. For example, this has been observed in primary agriculture in Canada, with some small farms outperforming much larger farms based on conventional economic and financial performance metrics.⁹

High quality management and human resources result from employee development, and from the attraction of talent. Small and medium-sized meat plants need high quality human resources as a means to offset disadvantages in scale; provision of technical and management training resources to support this from governments could foster improved performance and viability of smaller plants.

Attraction of talent to employment in meat plants relates to a range of factors- working conditions, use of expertise, competitive compensation rates, upward mobility, etc. Ultimately it forces processing plants to devise ways in which the value of job positions can be increased, consistent with an increasingly qualified Canadian workforce with increased expectations from employment. Increased automation and complexity require higher level technical proficiency, and automation/complexity drive a demand for talent. However, reducing the perception of employment in meat plants as consisting of cold, physical, repetitive work with seasonal and off-hours elements is perhaps more challenging in attracting talent. Supports that can help to reframe aspects of meat plant employment can support the attraction of talent.

⁷Hobbs, J. "Food Supply Chains during the COVID-19 Pandemic", Canadian Journal of Agricultural Economics, 68:171-176. April 2020.

⁸McEwan, K. et al. "The Canadian Pork Industry and COVID-19: A Year of Resilience", Canadian Journal of Agricultural Economics, 69:225-232. March 2021.

⁹Mussell, Al, Terri-lyn Moore, Ken McEwan, and Randy Duffy. "Understanding the Structure of Canadian Farm Incomes in the Design of Safety Net Programs", Canadian Journal of Agricultural Economics 55(4) 565-586. December, 2007.



Conclusions

Retrospectives on the performance of the Canadian food system during the pandemic are proliferating,¹⁰ and some of the perceived gaps are influencing policy—notably in the US. The important insights provided in the CAPI report are that there are no easy solutions for improved meat supply chain resilience. Moreover, Canada is a beef and pork exporting country and international competitiveness is vital. Canada must choose its strategy for boosting the resilience of meat processing carefully.

Investments in physical infrastructure, innovation and new technologies, including robotics, could improve the robustness of the meat supply chain, but they cannot address all of the risks. Others, such as the establishment of small plants, will not improve robustness unless they have an extended value proposition, and the report warns against public investment to establish new, small plants—although this is precisely what the US appears intent on doing.

For Canada, doubling down on the institutions that support the functioning of markets can help safeguard meat supply chain resilience. International agreements that promote trade relationships and support open borders mitigate the effects of shocks as do interprovincial agreements that reduce barriers to interprovincial trade. Contracts in marketing/procurement are enabling, and not encumbering but better supply chain collaboration, relationships and strategies can also help. Regulation that is both targeted but flexible to regulatory burden helps offset cost disadvantages from scale and can support the viability of small plants, hence the importance of industry and governments working together through public private partnerships for their development. Immersing itself in the talent pool of the Canadian workforce and increasing its attraction of talent can support management as a substitute for scale in processing plants, and improve international competitiveness. Finally, policy should focus on longer-run forces that improve the well-being of producers and consumers in this industry in order to improve its resilience, adaptability and flexibility.

¹⁰See for example the special issue of the Canadian Journal of Agricultural Economics, June 2021
<https://onlinelibrary.wiley.com/toc/17447976/2021/69/2>