Ontario Processing Vegetables: An Economic Analysis

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EXECUTIVE SUMMARY

Ontario is considering changes to Regulation 440, the regulation within which the Ontario Processing Vegetable Growers operates. The Ontario Farm Products Marketing Commission (OFPMC) requires a complete understanding of the economic state of vegetable processing in Ontario, the competitiveness of Ontario vegetable processing, and the prospects for growth and innovation in vegetable processing. The purpose of this study was to provide an economic analysis of the processing vegetable industry in Ontario that can assist the OFPMC in making decisions regarding Regulation 440.

Findings

The Ontario vegetable processing is struggling. Literally none of the conventional metrics—sales/revenue, production, value-added/earnings, income, market share, trade balance—show a positive or growth trend. Taken together, the trade patterns, market share and financial performance lead to the reasonable assertion that the industry is not currently competitive.

With regard to cost factors, Ontario manufacturing wages appear broadly comparable with key regions in the US, but are set to climb significantly with the announced increase in minimum wage in 2018-19. Ontario’s energy costs are high relative to most US states (but not California), but are set to increase markedly on a relative basis. Raw product pricing is mostly comparable with other regions, with the critical caveat that in some cases even though it is the prices of vegetables used in processing that are being compared, the end use and associated standards can vary, significantly impacting the interpretation. Ontario has relatively high fixed costs in processing due small plant scale and a relatively short pack season.

The Canadian market in processing vegetables is mature. Per capital consumption has declined, consistent with increases in price. Substitution of fresh vegetables for processed has had little if any effect on this trend. While the market is mature, it is also price sensitive. The aggregate market in processed tomato products has been steady, with declines in per capita consumption essentially offset by population increases; the market for peas, beans, and sweet corn is in decline in aggregate. Meanwhile, the global market for processed fruits and vegetables is growing at a rate of about 2% per year, notably in Asia.

The structure of food companies has evolved with less of a direct connection between primary processing and further processing of consumer product brands. Food companies are increasingly marketing and brand focused, rather than having marketing as an outgrowth of a primary manufacturing-focus. Retailer private labels have also grown at the expense of processor brands. The implication is that, increasingly, purchasers of farm products for processing are not the end users and lack the past earnings connection to brands. The retail environment has become increasingly concentrated and consolidated, and price competition among retailers is rife. It is in the context of these challenges that market regulation in processing vegetables must be assessed.

The concentrated structure of vegetable processors in Ontario is such that there is likely to be processor market power in Ontario processing vegetables; collective negotiation by the OPVG has attempted to mitigate the negative effects of market power on producer prices. However, the context of processor procurement is richer than this, as captured in the recent literature on
modern agricultural markets. Rather than structuring producer bargaining organizations to offset market power, an alternative view treats market power as a fixture of markets that farmers sell into, and asks how farmers can best obtain positive terms of trade supplying processors with specific product attributes they demand. It observes that open contracting can align the incentives of producers and processors in more interdependent business relationships, and addresses issues that extend beyond the price level. However, this can result in more limited market access for growers.

<table>
<thead>
<tr>
<th>Offsetting Market Power</th>
<th>Modern Agricultural Markets</th>
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</thead>
<tbody>
<tr>
<td>When processors are concentrated, use market power to ↓ price</td>
<td>Buyers in most ag markets are concentrated</td>
</tr>
<tr>
<td>Collective marketing to offset market power, restore competitive price</td>
<td>Processor preferences for farm product attributes, require investment from grower</td>
</tr>
<tr>
<td>But limited in effect; outside supply mgmt. hard to exert mkt power</td>
<td>Coordinated markets reward attributes, make contracted producers better off; but can limit market access</td>
</tr>
<tr>
<td>Price- single dimension of procurement</td>
<td>Can address multiple dimensions of procurement</td>
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There are differences among regulated crops and growers that relate to marketing approaches. A more interdependent relationship and co-dependence exists between growers and processors in tomatoes, and both parties have the motivation to invest in their relationship. This is less the case in peas, beans, and sweet corn. However, improved working relations between growers are an important issue in all crops, and regulations are not a substitute for more flexible and accommodating relationships.

With regard to tomatoes/cucumbers this situation is most consistent with open contracting between growers and processors. This stems from the need to cultivate and maintain interdependent relationships. Processors are looking to the grower to provide product with attributes that will support the processor’s margin. Processors each want their own grade of product that fits with their product mix, brands, and plant equipment. This entails specialized investment and effort on behalf of the grower specific to the processor. The grower is very motivated to address the relationship with the processor due to the extent of investment made specific to tomatoes and the level/share of farm sales related to tomatoes. There is some evidence that grower management can affect the value derived by the processor, in a verifiable manner. These conditions are less consistent with collective marketing.

With regard to peas, beans, and sweet corn, there is less relationship specificity between the grower and the processor. There aren’t specific investments for the grower to make. The grower has limited motivation because these crops are enterprises on the farm and not a dominant economic activity, and many growers acting independently would not be motivated to negotiate effectively. The incentive could exist, perhaps benignly, for the processor to appropriate increasing portions of the margin over field crops that have been left with the grower; if this
were to occur it would reduce growers’ incentives to allocate land to peas/beans/sweet corn. Processors interests are to have flexible relations with growers, and to limit their costs associated with contracting. This situation is more amenable to some forms of collective marketing, involving growers that actually produce the crop and have economic interest in it, that will maintain the margin over grain corn/soybeans in pricing, and allow for greater flexibility in terms than exists today. This does not necessarily mean mandatory collective bargaining under regulation and some growers would not want or need collective negotiation.

Mediation/arbitration is a common feature of collective marketing systems, but the form of arbitration used in Ontario has differential effects on the two parties, with processors more bound by the terms of final-offer arbitration than the growers, and thus more risk averse to it. The prospect of losing is generally more damaging to the processors, because they lack outside options where growers can opt to produce other crops if they don’t like the arbitration settlement. It is unclear that the experience in working with negotiation/final-offer arbitration on an annual basis for some time has fostered improved relations between growers and processors; rather, the arbitration process has led in many cases to strained and eroding working relationships. The implication, observable to potential investors, is that processing investments could effectively be stranded by arbitration settlements with terms processors would never voluntarily agree to, but are legally bound by if they are to continue operating. Any consideration of future collective marketing should consider alternatives to the current mechanism.

Conclusion

The nature of regulated marketing is not the source of all that ills vegetable processing in Ontario, but it is an important element, and improvements in the processing vegetable marketing/procurement environment could significantly improve the outlook for the industry. With past developments in marketing acknowledged such as productivity pricing, end use adjustments, and solids adjustments in tomatoes, it remains the case that marketing activity conducted on behalf of growers by the OPVG has focused on establishing a favorable price for growers, rather than on a broader range of factors that can better coordinate processor demands with grower supplies. This by itself creates inefficiencies and a basis for conflict between processors and growers. The nature of arbitration in the price mechanism adds a significant element of uncertainty in marketing/procurement, especially for processors. The difficulties effectively coordinating processors with growers and the risks associated with arbitration contribute to an environment in which Ontario’s costs are increasing on a relative basis versus competitors. This is occurring in a context in which Ontario’s cost structure, and the structure of food processing and retailing was already threatening to Ontario vegetable processing.

Liberalizing processing vegetable marketing will allow for more interdependent relationships between processors and growers, and re-orient vegetable marketing/procurement in the evolving processing and food retailing environment. If successful, it should serve to retain existing processing investments in Ontario and provide the prospect for growth and investment- through improved certainty in procurement, leading to improved prospects for import replacement and export. It stands to put the Ontario processing vegetable industry on the best possible footing to proactively engage other elements of industry competitiveness. The corollary is that if the system stays under the current system, the industry can be expected to continue to decline.
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1.0 Introduction

Ontario’s vegetable processing industry has been a critical component of the provincial economy in terms of value added activity and jobs. It is also the fundamental link in the supply chain for Ontario’s processed vegetable products valued at about $700 million. Within that context, the industry in Ontario has undergone significant change in recent years. This change has involved plant closures, plant openings and challenges within the supply chain between growers and processors.

In this environment, Ontario is considering changes to Regulation 440, the regulation within which the Ontario Processing Vegetable Growers operates. In considering alternatives, the Ontario Farm Products Marketing Commission requires a complete understanding of the economic state of vegetable processing in Ontario, the competitiveness of Ontario vegetable processing, and the prospects for growth and innovation in vegetable processing.

1.1 Purpose and Objectives

The purpose of this study is to provide an economic analysis of the processing vegetable industry in Ontario. The objectives are:

- To provide the economic background to the current situation to identify perspectives on processing vegetable marketing and economics
- To provide an economic analysis of key factors in processing vegetables, with a focus on prospects for growth and innovation
- To provide economic input into consultations on the future of processing vegetable marketing in Ontario. To develop themes and approaches that the OFPMC can consider in making its decisions with regard to processing vegetable marketing

1.2 Organization of the Report

Section 2 below provides an overview of the outcomes of Ontario as a competitor in processing vegetables. Section 3 considers the various factors in relation to Ontario’s competitiveness in vegetable processing. Section 4 provides an analysis of the context for vegetable marketing regulation in Ontario. Section 5 concludes the report.
2.0 Processing Vegetable Markets in the Ontario Context

2.1 Sales and Production Trends
Statistics Canada data on the fruit and vegetable processing manufacturing industry can provide some context for the status of the Ontario processing vegetable industry. Statistics Canada does not breakout vegetables from fruit and will not provide relative sizes of the two in the data set. As such the official data is not ideal, but again it is a starting point and it provides context. Furthermore, in terms of sales and market dynamics, it is likely that both fruits and vegetables face similar opportunities and challenges.

With those caveats noted, the Ontario fruit and vegetable processing industry has had total revenue of $2.5-3 billion dollars the last three years through 2016 (Figure 2.1). It represents about 7-8% of the Ontario food manufacturing industry which in turn represents about 12% of the total Ontario manufacturing industry. Of the three billion in sales for fruit and vegetable processing, the vegetable raw product component is likely about $1.8 billion using farm values as a guide.

In the ten years from 2007 through 2016 the industry’s sales have declined from about $3.4 billion to $2.7 billion in 2016. The industry has seen a compound annual growth rate of about-2% over that period.

![Figure 2.1](image)

Source: Statistics Canada Cansim 3010006

As noted, the challenge with the official Statistics Canada data is that it does not isolate the processing vegetable sales. With that said, given that vegetables are the majority of the industry and given the discussion of production below, it is likely that the processing vegetable sales performance is in line with the total.
Further to that point, the processing farm production pattern is very similar to the revenues (Figure 2.2). The sharp decline in 2013-2015 was due to drought and plant closures but the overall pattern is consistent.

**Figure 2.2**

![Processing Vegetable Farm Production](image)

Source: Ontario Processing Vegetable Growers Marketing Board (OPVG)

Within the overall vegetable production, tomato tonnage comprises about 65-70% of the total (Figure 2.3). That provides perspective on the significance of tomatoes in the overall processed market sales performance over time.

**Figure 2.3**

![Processing Tomato Farm Production](image)

Source: OPVG
2.2 Global and U.S. Production Comparisons

Global tomato production amounted to about 171 million tonnes in 2014 (latest) according to FAOSTAT of the Food and Agriculture Organization of the United Nations (Figure 2.4). It is estimated that of that total, about one third are processed.

![Figure 2.4](image)

The tomato category is the world’s largest vegetable category, representing 16%. It is also a very fast growing category with an increase in production of 32% between 2005 and 2014. The top 5 largest tomato producers are: China, EU, India, US and Turkey. They account for 70% of global production.

The production and consumption of processed tomato products in the world has been increasing on average by 3% annually over the last two decades, from about 25 million tonnes in 1995, to 32 million tonnes in 2005 and 41 million tonnes in 2015. At the same time the global trade in tomato products has also increased, doubling in value between 2005 and 2013 and reaching 6.9 billion US dollars in 2014. Italy is the largest exporter of tomato products in the world with more than 1.2 million tonnes of canned tomatoes exported in 2015 (the second largest Spain only exporting 145 000 tonnes) and 656 000 tonnes of tomato paste. China is the largest exporter of tomato paste with 990 000 tonnes, before the USA with 459 000 tonnes. (Agrotypos.com, April 2016).

Although tomatoes are processed in a large number of countries around the world, the ten largest countries represent 87% of the total volume of 41.3 million tonnes processed in 2015. With 13 million tonnes processed in 2015, California is by far the biggest producer, with China (5.6 million tonnes) and Italy (5.4 million tonnes) jostling for the second position. These are followed by Spain which has indeed seen it production increase rapidly over the last few years to 3 million tonnes, as have Turkey (2.7 million tonnes) and Portugal (1.6 million tonnes) (Agrotypos.com, April 2016).
The U.S. processing tomato production has been generally trending higher, albeit in an erratic manner (Figure 2.5). The stark decline in 2016 is attributed to the drought in California.

**Figure 2.5**

![U.S. Processing Tomato Production Graph](image)

Source: USDA Economic Research Service U.S. Tomatoes for processing S&D

The main point of the discussion above is the contrast between the United States, the world and Ontario. Generally there has been growth in the overall market while Ontario’s production has trended lower.

### 2.3 Trade

Canada has a large and mostly growing trade deficit with the United States in processing vegetables and certain tomato-based products such as sauces and ketchup according to data from USDA Foreign Agricultural Service (Figure 2.6). Canadian exports to the United States have been mostly steady or in the case of the tomato products, declining while imports have been increasing rapidly. This has occurred despite a declining value of Canadian currency vs. the US which makes imports effectively more expensive.

With regard to Ontario, as shown in Figure 2.7, Statistics Canada data show that the province’s trade deficit with the world has been growing dramatically during the past six years. From a comparatively modest deficit of about $75-100 million in 2008-2010, the 2016 deficit has grown to over $300 million in 2016. The deficit occurred not only due to stark increases in imports but also to steady decreases in exports. With regard to peas, beans and corn, Ontario has a trade surplus in the processed product (Figure 2.8). With that noted, the surplus has declined dramatically during the 2009 to 2016 period compared with 2005-2008.

Another point of consideration is the overall trend in Ontario imports and exports of all processed vegetables (Figure 2.9). From 2008 through 2016 the trade deficit in total processed vegetables more than doubled from $367 million to $759 million.
Figure 2.6

Canada-U.S. Tomato Sauces and Ketchup Trade

Canada-U.S. Canned and Frozen Vegetable Trade

Source: USDA Foreign Agricultural Service (Processed Food)
Figure 2.7

**Ontario Processed Tomato Trade**

Source: Statistics Canada, CATSNET Analytics

Figure 2.8

**Ontario Peas, Beans and Corn Trade**

Source: Statistics Canada, CATSNET Analytics
An important point of note is not that there are trade deficits but the overall trend in trade. The overall trend indicates erosion in the overall performance of the industry.

### 2.4 Market Share

For the purposes of this section, the Ontario market size will be defined as the value of Ontario processed fruit and vegetable production less total processed vegetable exports from Ontario plus total processed vegetable imports. The Ontario share of that market will be that total divided by Ontario production value less the exports. This definition is not ideal as it includes processed fruits but as described above, that is a data limitation. Furthermore what matters most is the overall trend and the message that might be derived.

With that definition in mind, as a starting point regarding market share it is noted that in 2008 Ontario had a 52% share of the processed fruit and vegetable sales in Canada. By 2016 that Ontario share of the Canadian market had declined to 44%.

Source: Statistics Canada, CATSNET Analytics
As noted in section 2.1, the sales of the fruit and vegetable processing industry have been in decline generally since 2009. When the sales performance is combined with the trade performance there can be an indication of the overall market share status of the Ontario industry. Again the challenge of using sales data from StatsCan is of course the inclusion of the fruit data in the total. With that noted, there are still signals to be gleaned from the data. When the sales and trade data are combined it leads to the conclusion that Ontario processors are losing share of their own market. In 2008 of the total fruit and vegetables produced and the vegetables imported into Canada, Ontario processors supplied just under 86%. By 2016 that share had declined to just under 76%.

2.5 Financial Performance

The Ontario processing vegetable processing companies are mostly privately held firms that do not publish financial data. There are larger multinational firms that are important participants in the industry that do publish financial results, but the Ontario specific data are not isolated. The point is that an assessment of the financial state of the industry is important, but that performance must be gleaned from secondary sources or estimates based on other data.

Statistics Canada does publish annual data on “value added,” by industry. The components of value added according the U.S. Bureau of Economic Analysis consist of compensation of employees, taxes on production and imports less subsidies, and gross operating surplus. From a practical perspective value added could be considered a gross margin after raw materials and supplies. It can serve as a proxy for financial performance.

As noted previously Statistics Canada does not publish data on the vegetable processing industry alone. The department combines fruit and vegetable processing into one industry series. Based on production and cash value at the farm level however, it is expected that the vegetable processing component will comprise the vast majority of the totals in the combined sectors.
The Statistics Canada data for the Ontario Fruit & Vegetable industry shows an eroding performance in value added or gross margins (Figure 2.12). The value added for the industry has declined from 1.1 billion in 2007 to $858 million in 2016. The annual compound growth rate of the value added over those ten years was -3%. That compares to +1% for the food industry as a whole over the ten years from 2007-2016.
As noted, the performance of the entire fruit & vegetable industry in the province does not necessarily reflect exactly on the processing vegetable industry but it does provide an indication or guidance.

Statistics Canada’s Industrial Organization and Finance Division generate “Annual Financial and Taxation Statistics for Enterprises.” As with most or all of the Statistics Canada industry datasets, there is no breakdown for processing vegetables only, but instead the fruit and vegetable industries are combined. With that noted, the data set provides data series on taxable income and return on equity. The data from Statistics Canada (Figure 2.13) shows a notable decline in taxable income for Ontario processors of fruits and vegetables over the ten years from 2007-2016. In addition the sector saw a general decline in return on equity over those ten years.

![Figure 2.13](image.png)

Source: Statistics Canada “Annual Financial and Taxation Statistics for Enterprises
The increase in ROE in the past three years has more to do with a sharp decline in equity over that time, according to the Statistics Canada data series.

Another source of information that provides guidance on the financial performance of the processing vegetable sector in the province is that Municipal Property Assessment Corporation (MPAC) “Market Valuation Report, Assessing Fruit and Vegetable Processing Plants in Ontario,” January 2016. Vegetable processing plants such as the Highbury Canco, Bonduelle, Conagra and Campbell Soup were included in this research.

The report contains a number of indicators to assess value and performance. One of those indicators is an adjustment made to estimate a loss in value resulting from inefficiencies or inadequacies that impair utility or cause excess costs. In 2012 this loss in value was rated by the owners as 5%. By 2016 the owners indicated this 5% loss was too low and therefore MPAC revised its position to 15% loss in value due to inefficiencies.

Another interesting indicator in the report was economic obsolescence which is depreciation in value due to unfavorable economics in the industry. In 2012 the economic obsolescence rating by the owners or principals was 0%. In other words, the economics of the industry did not rank high as a source of lost value to their business. By 2016 a decline in economic conditions resulted in perceived erosion in value ranked at 19%.

As with the StatsCan data, the MPAC assessment is not definitive but it does provide insight.

Finally other research into the industry can also provide indication of how the industry is performing financially. The Canadian Agri-Food Policy Institute and the Ivey Business school conducted research into the state of the Canadian food industry in 2012. One paper in the series which was entitled “The Performance of Canada’s Food Manufacturing Industry,” assessed the industry from a number of perspectives. The following are some of the insights into fruit and vegetable manufacturing in Canada from 2004-2011:

- Employment in all of food manufacturing increased by 1.5% while F&V employment dropped 9%.
- Food revenues gained 19% while F&V lost 0.2%
- Gross margins for food gained 21% while F&V slid 1%.
- Net income increased 21% for food but dropped 27% for F&V.

The above data clearly shows that the F&V industry has been performing sub-par, if not very poorly over the past several years. With that said, it is not clear evidence that the Ontario vegetable processors are struggling specifically. Nevertheless, the above does provide enough information to emphasize that the Ontario fruit and vegetable industry is under-achieving significantly in recent year relative to its past performance.

Furthermore based on discussions with Ontario processors the assertion here is that it is highly likely that the financial performance of the Ontario vegetable processing sector mirrors that of the overall Ontario fruit and vegetable processing sector.
2.6 Investment

Further to those discussions and surveys of Ontario processors, it is very important to note that this is an industry that is not investing in growth or innovation. Based on surveys of the processors representing about 90% of the tomato processing and the vast majority of the remaining processing, there has been little or no investment in capacity expansion, innovation of product or technology or new research and development. What little investment has occurred in Ontario has been in maintenance and repair. As noted, this is based on discussions with the processors only and has not been verified through audit. With that noted, such investment or lack thereof is consistent with an industry that has seen declining sales, share and margins. It is also an important point to note as an industry without investment will stagnate at best and more likely show ongoing erosion.

2.7 Observations

The essential findings of this section are that Ontario vegetable processing is an industry that is struggling. Literally none of the conventional metrics- sales/revenue, production, value-added/earnings, income, market share, trade balance- show a positive trend. The George Morris Centre adopted and utilized a definition of competitiveness developed by the Canadian Agri-Food Competitiveness Council in 1990. The definition was the following:

*Competitiveness is the sustained ability to profitably gain or maintain market share.*

The above information on domestic production shows that the industry is losing share of the domestic and export markets. At the same time there are clear reasons to question the profitability of the industry. In fact the evidence indicates that there is erosion in whatever profits do exist in the industry. The lack of investment in the industry points to more of the same in the future, which is a very important consideration. The trade patterns, market share and financial performance lead to a reasonable assertion that the industry is not competitive. The following section examines that assertion and reasoning in greater detail.
3.0 Competitiveness of Ontario Processing Vegetables: An Overview

The factors impacting Ontario’s position in processing vegetables relate to products, brands, key operating costs, and efficiencies. This section provides an overview of several of these factors. Where specific regional comparisons are made, Ontario is measured against California and Wisconsin. The rationale for this is that California has been used as the starting point in tomato pricing, as identified in the Ontario Processing Vegetable Growers Marketing Board study by JRG Consulting entitled, “Establishing Grower Prices for Processing Vegetables Using Collective Price Bargaining,” February 2017. More generally California is a known competitive region in producing horticultural crops and vegetable products. Wisconsin is used as a regional reference because it is a leading state in processing vegetables, and produces largely the same processing vegetable crops as Ontario (with the exception of tomatoes). In addition, the largest purchaser of Ontario cucumbers is located there. Furthermore, Ontario’s principal diversified vegetable processor also has operations in Wisconsin, and Wisconsin provides a general barometer of economic and competitive conditions in the Midwest US.

3.1 Comparative Input Prices Influencing Competitiveness

Relative costs of processing vegetables are an important element in competitiveness. Some of these can be identified, prioritized and compared across regions. Table 3.1 below provides some guidance in this regard, based on tomato processing in California. The largest single cost item is raw product, at fully 50% of operating cost. The next largest expense items are overhead, capital, containers, and trucking; these are fixed costs and/or are not readily comparable across regions. After these, energy (heating and electricity) and labour are among the most significant. It can be expected that in older processing facilities, labour and energy are likely to carry a larger share, with facility capital having a lower share. Thus, comparisons of raw product cost, energy, and labour should inform the cost aspects of processing competitiveness.

3.1.1 Processing Plant Wage Rates

To assess the relative costs of plant personnel in Ontario vegetable processing plants versus those in competing regions, reference data/indicators on wages paid to workers in a manufacturing environment was drawn upon from Statistics Canada and the US Bureau of Labor Statistics and compared on a common currency basis. For Ontario, Statistics Canada data collected in the Labour Force Survey “Processing and manufacturing machine operators and related production workers” was obtained. Data on wages paid to “Food Cooking Machine Operators and Tenders” was collected for California, Wisconsin, and the US as a whole. These are presented in Figure 3.1 below.
### Table 3.1 Shares of Total Processing Costs, California Tomato Processing

<table>
<thead>
<tr>
<th>Cost Component</th>
<th>Proportion of Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw Product and Associated Fees</td>
<td>50.0%</td>
</tr>
<tr>
<td>Trucking</td>
<td>7.4%</td>
</tr>
<tr>
<td>Labour</td>
<td>3.0%</td>
</tr>
<tr>
<td>Boiler Energy</td>
<td>4.7%</td>
</tr>
<tr>
<td>Electricity</td>
<td>1.2%</td>
</tr>
<tr>
<td>Sewage</td>
<td>0.3%</td>
</tr>
<tr>
<td>Supplies and Miscellaneous</td>
<td>1.4%</td>
</tr>
<tr>
<td>Containers</td>
<td>8.2%</td>
</tr>
<tr>
<td>Operating Interest</td>
<td>3.8%</td>
</tr>
<tr>
<td>Selling Costs</td>
<td>1.4%</td>
</tr>
<tr>
<td>Facility Capital Expenses</td>
<td>7.6%</td>
</tr>
<tr>
<td>Insurance and Taxes</td>
<td>0.6%</td>
</tr>
<tr>
<td>Operating Overhead</td>
<td>10.5%</td>
</tr>
</tbody>
</table>

The figure shows that Ontario wage rates for processing plant workers have increased, but not markedly, since 2013. US wage rates appear to have increased relative to Ontario, an effect that can be largely attributed to a weakening Canadian dollar, as well as to increasing wages in the US. The effect is such that Ontario now appears very close in manufacturing wage rates to the US average, still somewhat above California, and below wage rates in the US Midwest. In May, 2017, Ontario committed to increase minimum wages from the current $11.40/hour to $14/hour on January 1, 2018 and $15/hour on January 1, 2019. Existing wage rates for Ontario presented in Figure 3.1 exceed these levels; however, it is likely that the increase in the minimum wage will force up all wage rates, due to the magnitude of increase and the need to maintain seniority relationships throughout the pay scale.

### 3.1.2 Energy Costs

Energy costs are significant in relation to operating cooking and evaporating equipment in the plant and in material processing/conversion/movement operations. Both natural gas and electricity costs are relevant to plants. Figure 3.2 presents comparative natural gas prices in Ontario, California, Wisconsin, and the US average. For Ontario, the data were obtained from the Ontario Energy Board for Enbridge, adjusted for delivery assuming a central transportation charge of 5.4 ¢/m³ and a customer distribution charge of 6 ¢/m³. The data for the US states were obtained from the US Energy Information Administration for industrial users and include all charges associated with delivery. The figure shows that Ontario has generally had natural gas prices that have been high relative to the US average. Recently Ontario prices have converged toward prices in Wisconsin and are below that in California. Beginning in 2017, natural gas prices in Ontario increased by 3.3 ¢/m³ for carbon cap and trade fees; these are not reflected in the figure.
To assess comparative electricity costs, data were obtained from the Ontario Independent Systems Operator and the US Energy Information Administration. For Ontario, the Hourly Ontario Energy Price (HOEP) was added to the average Global Adjustment to obtain a user reference price. For the US and states, the average retail price of electricity for industrial users, including taxes, tariffs, etc. was obtained as a reference price from US Energy Information Administration. These are illustrated in Figure 3.3. The figure shows that electricity prices have broadly increased across jurisdictions. However, since 2008, Ontario electricity prices have gone from being relatively low to relatively high, versus the other jurisdictions compared. The exception is California, which has higher electricity prices than Ontario, and much higher prices than Wisconsin or the US more generally.

3.1.3 Basic Raw Product Costs

Raw product costs are typically the single largest cost item in the agri-food processing, as illustrated above for processing tomatoes. The figures below provide some reference on pricing of raw product in Ontario versus US regions. They should be interpreted as comparable references, with the caveat that may be differences in grade, basis, or end products produced that differ from Ontario and are not evident in the format of the data. In all cases the unit of measurement in $/ton refer to short tons, not metric tons.
Figure 3.3 Electricity Rates, Ontario, US, Selected States

Source: Ontario Independent System Operator, Average HOEP plus Global Adjustment; US Energy Information Administration- Average Retail Price of Electricity, Industrial Users

Figure 3.4 presents estimated raw product pricing for Ontario product versus Wisconsin in sweet corn. The data were obtained from the USDA-NASS for processing sweet corn, and from the Ontario Processing Vegetable Growers by dividing the total value of production by the tonnage delivered. The figure shows that Ontario has generally ranged just below Wisconsin in sweet corn pricing, and was just above Wisconsin for 2016.

Figure 3.5 presents pricing of cucumbers for processing in Ontario and Wisconsin. The data were obtained from the USDA-NASS for processing cucumbers (pickles), and from the Ontario Processing Vegetable Growers by dividing the total value of cucumber production by the tonnage delivered. The figure shows that Ontario cucumber prices have been somewhat higher than Wisconsin, but in recent years Ontario prices have been in the immediate range of those in Wisconsin.

Figure 3.6 presents comparative pricing for Ontario and Wisconsin processing carrots. The data were obtained from the USDA-NASS for processing carrots, and from the Ontario Processing Vegetable Growers by dividing the total value of processing carrot production by the tonnage delivered. The figure shows that Ontario carrots have ranged just over $20/ton higher than Wisconsin.
Figure 3.4 Sweet Corn Raw Product Pricing, Ontario vs. Wisconsin

Source: USDA- NASS and Ontario Processing Vegetable Growers

Figure 3.5 Cucumber Raw Product Pricing, Ontario vs. Wisconsin

Source: USDA- NASS and Ontario Processing Vegetable Growers
Figure 3.7 presents a comparison between processing tomato pricing among Ontario, California, Indiana, Ohio, and Michigan. The data were obtained from the Ontario Processing Vegetable Growers by dividing the total value of tomato production by the tonnage delivered, the California Tomato Growers Association (CTGA), and OMAFRA as well as the 2016 Red Gold contract in Indiana and USDA-NASS. For the purposes of comparison, the California prices were adjusted by adding $US 11/ton so that they are formatted basis the processing plant. For 2016, the Indiana price is 70-74% Category A/B, and 93-94% useable.

The figure shows the following. Ontario has generally had lower raw tomato prices than the US Midwest. However, caution should be exercised in interpreting these relatively high prices in the Midwest, as industry sources confirm the tomatoes in the Midwest are produced under different standard specifications versus Ontario and California. In 2012 and 2013, Ontario prices were higher than those in California, consistent with a relatively strong Canadian dollar and with the transcontinental freight charge. Since 2014, Ontario pricing has been relatively similar to California.
It should be emphasized again that great caution should be taken when comparing pricing between regions given the wide number of factors and terms that go into pricing in different regions. For example, Midwest processors are often focusing on high-quality peel with minimal concentrated production. As such, they have an entirely different grading and tare system than Ontario, thus inflating the reported ‘paid-for’ price. This also contributes to the Midwest average yields being in the 30 to 34 ton/acre range (versus Ontario’s 40 to 42 ton/acre). This grade standard is somewhat similar to Ontario’s formerly used Option 5, which was approximately 20% higher than the current Option 7. There are a number of other relevant differences that makes price comparisons difficult for example processor controlled grading versus Ontario’s third-party system, late payment terms, and others.

Another example of the difficulty in comparing prices is that the paste yield per ton of Ontario tomatoes would be only 284 lb (not 303 lb) at 31% concentration, compared to California’s 340 lbs. (using 4.3% refract for ON vs. 5.3% for CA). This “solids” issue is an example of the challenge of making regional pricing comparisons and drawing conclusions.

Even the very important ‘productivity discount’ on increased tomato tonnage yields in Ontario can be parsed and debated as a as a competitive benchmark. This can often be cancelled out by California’s practice of selling above-contract tomatoes at free-market prices – typically under 50% of CTGA levels at season end.

Processors can range in their needs for raw product. This is pronounced in tomatoes, where there are processors focusing on concentrated tomato paste products, and others producing primarily whole peel products with off-sort and by-products concentrated into paste. Processor costs are influenced by product attributes, and these in turn are determined by a range of factors including
crop genetics (supplied by the processor), weather, pests, and a range of conditions potentially impacted by the grower- such as soil organic matter, or the use of irrigation. Figures 3.8 and 3.9 provide an illustration.

Figure 3.8 presents the average level of tomato soluble solids in tomatoes purchased by processor for 2003-2015. In general, the processors focused on concentrated products (Heinz/HCC and (previously) JEMA) have the strongest demand for tomato solids, and to some extent this is evident in deliveries. However, this has not been consistent, and in some years the processors more closely associated with whole peel processing had among the highest tomato solids content.

Figure 3.9 presents data on combinations of average yield and tomato solids content in purchases from individual growers experienced by an Ontario processor. The growers are sorted in such a way that yields decrease moving from left to right, for 2016. At lower yield levels in group B, the tomato solids content has exhibits an inverse relationship with yield. However, in Group A, this appears not to hold and some of the highest yield growers are also the highest solids content growers. According to the processor, its processing costs based on tomatoes purchased from growers in Group A is 25% lower than in Group B. The processor has also observed that and that a similar pattern across growers is discernable over time (although this data was not provided). This underscores the significance of grower performance for the processor and suggests that growers can influence both yield and product quality.

Figure 3.8 Average Tomato Solids Level by Processor
An important point of the raw product price comparison discussion between regions is the very difficult challenge of making direct comparisons based solely on a price point. The specific attributes, terms and conditions as well as end uses make this direct comparison often misleading. Furthermore, price levels and terms can change regionally from year to year. The point is that raw product pricing is typically the most significant costing component of the processing business. With that acknowledged, definitive assertions about “the price” in one region versus another over time being an advantage or disadvantage to competitiveness are exceptionally difficult to be made conclusively, and informal generalizations are dangerous. Price is critical but the factors that generate the price and the impacts are even more important when discussing competitiveness. That is, the structure that generates prices is as important or more than the price itself.
3.2 Comparative Returns in Processing Vegetable and Field Crops

Processing vegetable crops are highly valued in comparison with field crops. This is an important recognition, because field crops and processing vegetable crops compete for acreage, and field crops are commonly grown in rotation with processing vegetable crops. Field crops represent the cropping alternative to processing vegetable crops for growers, and the opportunity cost of growing processing vegetables.

Table 3.2 presents an estimated comparison of processing tomato costs and returns versus grain corn and soybeans in Essex county from 2011-2017. The information in the table is very similar to what is contained in the most recent processing tomato MOU. The table shows that tomato revenues expenses, and margins are much higher than either corn or soybeans. Margins for processing tomatoes are generally 4-5 times the returns observed for corn and soybeans. By design, the table omits fixed costs associated with land and capital, and retains these in the margin; however, the margins for processing tomatoes over field crops allow for the coverage of materially higher fixed costs compared with corn and soybeans.

Table 3.3 compares revenues for processing sweet corn, green peas, and green beans with grain corn and soybeans. An important aspect of producing these processing crops is that the machinery used in tillage, planting, fertility, and crop protection is in common with soybeans and corn. Table 3.3 shows that revenues for the processing vegetable crops are broadly comparable with grain corn and soybeans. However, as per the producer processor agreement, the processor provides the seed, harvesting, and transportation, and in the case of grain corn, drying costs apply that do not apply to other crops. When this is accounted for, the processing vegetable crops compare positively with corn and soybeans. According to the costs and returns in the table, for 2016, the processing crops would have had a positive return of $90-$190/acre compared with corn and soybeans. The table does not allow for any additional costs in the production of processing vegetable crops versus field crops; this may be overly optimistic with regard to certain aspects such as pest management, and there is a general awareness that the processing vegetable crops require extra attention. These associated extra production costs fall within the margin of processing vegetable crops relative to corn and soybeans.

An important point to note with regard to comparative returns is that across the vegetable and tomato spectrum growers value their contracts. There is little or no turnover in contracting given the relative value of the returns. Furthermore processors report longstanding waiting lists of growers that want these contracts.
Table 3.2 Comparative Returns- Processing Tomatoes vs. Corn and Soybeans

Estimated Per Acre Return to Processing Tomatoes in Ontario (most production in Essex Area)

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<tbody>
<tr>
<td>Average Price Per Ton - as per OPVG final data</td>
<td>95.45</td>
<td>94.87</td>
<td>96.80</td>
<td>111.51</td>
<td>116.99</td>
<td>112.02</td>
<td>110.70</td>
</tr>
<tr>
<td>Average Yield Per Acre</td>
<td>36.26</td>
<td>44.51</td>
<td>30.61</td>
<td>39.78</td>
<td>40.62</td>
<td>40.39</td>
<td>40.26</td>
</tr>
<tr>
<td>Average Revenue Per Acre</td>
<td>3,461.19</td>
<td>4,223.26</td>
<td>2,962.73</td>
<td>4,436.02</td>
<td>4,752.23</td>
<td>4,524.26</td>
<td>4,457.07</td>
</tr>
<tr>
<td>Estimated Per Acre Direct Costs</td>
<td>2,167.77</td>
<td>2,215.89</td>
<td>1,332.18</td>
<td>2,351.25</td>
<td>2,537.67</td>
<td>2,601.12</td>
<td>2,666.14</td>
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<tr>
<td>Return to Land, Capital and Overhead</td>
<td>1,293.42</td>
<td>2,007.37</td>
<td>1,630.56</td>
<td>2,084.77</td>
<td>2,214.56</td>
<td>1,923.14</td>
<td>1,790.92</td>
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Estimated Per Acre Return to Corn in Essex County

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</thead>
<tbody>
<tr>
<td>Average Essex County Yield - Bu Per Acre</td>
<td>163.00</td>
<td>165.00</td>
<td>163.00</td>
<td>185.00</td>
<td>188.00</td>
<td>167.00</td>
<td>180.00</td>
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<tr>
<td>Average Ontario Price - $ Per Bu</td>
<td>6.16</td>
<td>6.61</td>
<td>5.90</td>
<td>4.67</td>
<td>4.55</td>
<td>4.50</td>
<td>4.67</td>
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<tr>
<td>Average Essex County Revenue Per Acre</td>
<td>1,004.08</td>
<td>1,090.65</td>
<td>961.70</td>
<td>863.95</td>
<td>855.40</td>
<td>751.50</td>
<td>840.60</td>
</tr>
<tr>
<td>Estimated Per Acre Direct Costs</td>
<td>458.65</td>
<td>496.10</td>
<td>506.45</td>
<td>485.45</td>
<td>504.70</td>
<td>520.75</td>
<td>513.85</td>
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<td>Return to Land, Capital and Overhead</td>
<td>545.43</td>
<td>594.55</td>
<td>455.25</td>
<td>378.50</td>
<td>350.70</td>
<td>230.75</td>
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Estimated Per Acre Return to Soybeans in Essex County

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<tbody>
<tr>
<td>Average Essex County Yield - Bu Per Acre</td>
<td>47.00</td>
<td>52.00</td>
<td>48.00</td>
<td>51.00</td>
<td>46.00</td>
<td>52.00</td>
<td>49.67</td>
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<tr>
<td>Average Ontario Price - $ Per Bu</td>
<td>12.21</td>
<td>14.07</td>
<td>13.71</td>
<td>13.92</td>
<td>11.91</td>
<td>11.13</td>
<td>10.98</td>
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<tr>
<td>Average Essex County Revenue Per Acre</td>
<td>573.87</td>
<td>731.64</td>
<td>658.08</td>
<td>709.92</td>
<td>547.86</td>
<td>578.76</td>
<td>545.34</td>
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<tr>
<td>Estimated Per Acre Direct Costs</td>
<td>289.70</td>
<td>309.65</td>
<td>313.50</td>
<td>312.65</td>
<td>339.90</td>
<td>333.85</td>
<td>339.95</td>
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<tr>
<td>Return to Land, Capital and Overhead</td>
<td>284.17</td>
<td>421.99</td>
<td>344.58</td>
<td>397.27</td>
<td>207.96</td>
<td>244.91</td>
<td>205.39</td>
</tr>
</tbody>
</table>

Source: OMAFRA
Table 3.3 Comparative Returns- Processing Sweet Corn, Green Peas, and Green Beans vs. Corn and Soybeans- 2016

<table>
<thead>
<tr>
<th></th>
<th>Grain Corn</th>
<th>Soybeans</th>
<th>Sweet Corn</th>
<th>Green Peas</th>
<th>Green Beans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>4.92\text{a}</td>
<td>12.62\text{a}</td>
<td>99.15\text{b}</td>
<td>309.26\text{b}</td>
<td>183.79\text{b}</td>
</tr>
<tr>
<td>Average Yield per acre</td>
<td>158.5\text{c}</td>
<td>45.9\text{c}</td>
<td>7.41\text{d}</td>
<td>2.16\text{d}</td>
<td>3.82\text{d}</td>
</tr>
<tr>
<td>Average Revenue $ per acre</td>
<td>780.12</td>
<td>579.13</td>
<td>734.40</td>
<td>668.88</td>
<td>701.29</td>
</tr>
<tr>
<td>Seed Expense $ per acre</td>
<td>106</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harvesting and Transport Cost $ per acre</td>
<td>80.65</td>
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<td></td>
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<tr>
<td>Drying Costs $ per acre</td>
<td>80.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net $ per acre</td>
<td>513.02</td>
<td>579.13</td>
<td>734.40</td>
<td>668.88</td>
<td>701.29</td>
</tr>
</tbody>
</table>

\text{\textdialed{a}$/\text{bushel, Ontario average-Statistics Canada \textdialed{b}$/\text{ton- OPVG \textdialed{c}}bushels/acre, Ontario average-OMAFRA \textdialed{d}tons/acre-OPVG}}

3.3 Apparent Operating Efficiencies

Ontario’s vegetable processing industry operates in a northern climate with a relatively short season, and at relatively small scale. These have implications in terms of certain cost inefficiencies in processing. The pack season in which Ontario plants operate is limited by the growing season. For tomatoes the season runs approximately 40 days; in contrast, the California tomato pack season is much longer. Figure 3.10 provides some context, based on 2016 estimates of weekly processing tomato tonnage estimated by the California Processing Tomato Advisory Board. In 2016, by mid-July tomato processing was well underway, and this extended through early October. This appears to be a typical pattern in recent years.

The 2016 Ontario tonnage was just under 500,000 tons. Based on the data in Figure 3.10, given peak season tonnage in excess of 1 million tons, the total Ontario tomato tonnage could be processed under California scale conditions in less than a week. Alternatively, the Williams, California plant operated by Morning Star has the capacity to process just over 1350 tons of tomatoes per hour. On this basis, if it operated on a 16 hour processing day in-season, the plant could process 21,600 tons/day. At this rate, the Williams plant alone could process the entire Ontario crop in about 23 days. In Ontario, there are 7 different processors that process this crop volume. In addition to relatively small plant capacities, limited scale extends into other aspects of the industry that impact efficiency- such as availability of specialized input suppliers and expertise.

The implication is that a relatively short pack season limits the volume that can run through the plant; this, in turn, reduces the volume against which to fixed costs can be allocated. In effect, for a given plant design and facilities, a shorter pack season increases fixed costs per ton versus competing jurisdictions with a longer pack season. Moreover, compared with competing regions, Ontario plant design and capacity is at a smaller scale.
Another point that is related to this topic is cropping consistency. Ontario is generally successful in the ability to deliver the crop in most years. Nevertheless the ‘targets versus actuals’ do not compare to the consistently achieved in California. The most recent failure for the Ontario sector was 2013, preceded by 2011, 2001, 2000 & 1999. Late May frost, early October frost, excessive rainfall, plant disease (esp. bacterial spot & late blight) and prolonged drought have all significantly impacted annual delivery goals, with excess rainfall being the major factor. These cropping issues are significantly minimized in California due to their semi-arid conditions, and predictable climate. The point is that this all contributes to a competitive challenge for Ontario processors.

![Weekly California Processing Tomato Tonnage, 2016](image)

Source: California Processing Tomato Advisory Board. Week of Oct. 8 and 15 are estimates

### 3.4 Demand

#### 3.4.1 Canadian Market Demand

Canadian consumption of processed vegetables and tomato products has been slowly declining on a per capita basis. This is illustrated in Figure 3.11. In 2000 Canadians consumed about 8 kilograms of processed tomato-based products per person. That is according to Statistics Canada “Food Availability” surveys. By 2016 the consumption had fallen to about 7 kilograms per person. Over that same period of time consumption of processed peas, beans and corn was about 5.5 kilograms compared to just over 4 kilograms in 2016. For context it is noted that the overall consumption trend has been similar in the United States.
The decline in per capita consumption of processed vegetables has been noted over a long period of time. An examination of the reasons behind the decline is beyond the scope of this paper. With that noted, the usual rationale cited for the decline over the years has been a consumer preference for fresh produce over processed, and the resulting substitution effect. Figure 3.12 plots per capita consumption of tomatoes and peas/beans/sweet corn in fresh vs. processed form. The figure shows that, while substitution of fresh for processed assertion might be true to a limited extent, the fresh consumption of the peas, beans and corn as well as tomatoes has generally been trending sideways or steady. While that performance is somewhat stronger than the processed, it has not been particularly robust or notable as a source of competitive challenge.

Generally it is difficult to assert that the decline in processed consumption is due to fresh consumption of the same vegetables, given the trend lines. In addition, it is also not possible to argue that Canadians simply prefer other fresh vegetable products as opposed to the main processed lines in Ontario. Since 2000 the consumption of fresh vegetables grown in Ontario other than peas, beans, sweet corn and tomatoes has also been trending in a stable or sideways pattern. This is illustrated in Figure 3.13 below.

Essentially the data do not support the argument that processed consumption is down because fresh consumption is higher. There is however a plausible case to be made that there is a price sensitivity issue involved in the lower consumption.
While processed consumption has generally trended downward, the prices of processed products have been generally trending higher. As illustrated in Figure 3.14, according to Statistics Canada’s Consumer Price Index data, the price of processed vegetables has been increasing at an average rate of 2% from 2001 to 2016. That rate of increase is the same as the overall inflation rate for all items. The average inflation rate for all food was 3% from 2001 to 2016. The rate of processed vegetable inflation was 2% which is in line with the total inflation rate but less than food.
The combination of price and quantity consumed provides an indication of the level of demand for a product. That is, demand is more than simple consumption. Demand is the amount consumed at given price levels. With that defined it is noted that Canadian demand for processed vegetables has been very stable and predictable over the years from 2000-2016. Figure 3.15 presents per capita consumption of processed vegetables versus prices over the period 2000-2016. That is the higher the price of the product, the less Canadians consume and vice versa.

Figure 3.14

Consumer Price Changes

Source: Statistics Canada Cansim 3260020
As such from a Canadian market perspective the processed vegetable sector is seeing two basic occurrences. The first is that overall consumption per person has been declining, slowly over a long period of time. The second, somewhat conflicting happening is that demand for the product has been stable. Consumers have consumed less as the price of the product has increased over the years. The data suggest that if prices were to decline, consumers would increase consumption once again.

At the very least the price and consumption data indicate that consumer demand for processed vegetables is very stable or mature. This is consistent with the assessment of the industry as outlined in the above noted February 2017 Ontario Processing Vegetable Growers report entitled, *Establishing Grower Prices for Processing Vegetables Using Collective Price Bargaining*. As noted in that report, “…processing vegetables can be viewed as a mature business…Over the last 10 years, per capita consumption has not grown for beans, peas, carrots and tomatoes, which is indicative of a mature industry. Furthermore, in the case of sweet corn per capita consumption has declined, suggesting an industry in decline.”

The above discussion is based on per capita consumption and price effects, which is the standard approach to understanding consumer demand. A related but different issue is whether aggregate consumption and demand are growing, when per capita trends are combined with population growth. Aggregate consumption, estimated by multiplying the per capita data by changes in population, is presented in Figure 3.16. It shows that, in aggregate, the volume of processed tomatoes consumed in the Canadian market is essentially flat, and that the volume of processed peas, beans, and corn is flat to declining. In other words, population growth dampens the trends observed on a per capita basis, but it does not fundamentally change the trends.
3.4.2 Global Market Conditions

The global fruit and vegetable processing industry has experienced consistent demand over the five years to 2016. Over that time, the industry likely has grown at an annualized rate of about 2% to 2016. Growth in global demand has been fueled by both growth in population and incomes. Demand for fruits and vegetables has also increased over the past five years. Improvements in logistics have enabled large multinationals to increase production and distribution over a wider geographic area. While production of processed product is concentrated in North America and Europe, the industry has been expanding to the developing world to meet demand.

Processed fruit and vegetable consumption is much higher in the developed world than the developing world. Demand for industry products in the developed world has been consistent over the past five years. In the developing world, as populations urbanize and as incomes increase, consumers are increasingly demanding processed fruits and vegetables. In fact the majority of demand growth for industry products has come from the developing world over the five years to 2016.

Looking ahead, the industry is expected to grow at an accelerated pace through 2021. Demand is expected to grow rapidly in developing economies such as China and India. Conversely demand in developed countries is expected to decline slowly as consumers continue to purchase fresh product over processed. Decreasing consumption of canned and frozen product is expected to lower industry revenues in North America. Demand in Europe should hold steady through 2021.
All in all the global fruit and vegetable processing industry is in the mature stage of its life cycle. The industry should continue to grow across the globe at similar rates as in the past but much of that growth will come from the developing world.

3.5 Market Structure

3.5.1 Food Processing

The nature of food processors, particularly consumer packaged goods (CPG) firms in food, has been changing markedly. Over time, as food processing has become more concentrated in North America as well as globally, the nature of food companies has changed from product marketing and brands as an outgrowth of processing/manufacturing operations, to companies primarily concerned with marketing and acquiring/managing product brand portfolios. Consistent with this, food processors across North America are often companies in which primary processing is de-emphasized or outsourced to co-packing firms.

Ontario has experience with this trend— at the time that Heinz shuttered its Leamington plant, Heinz had already closed or sold primary processing plants in different areas of the US. After purchasing Bick’s, J.M. Smucker shuttered the former Bick’s facilities in Ontario, servicing the brand from product outsourced from elsewhere— as it has done with a number of other acquisitions of brands. These examples are not unique. For example, ConAgra has reorganized itself over time from primarily a grain and meat processing company, with extensive assets in grain handling and primary beef and pork processing, to a company focused on consumer brands and relatively fewer assets deployed in processing. In other cases, food companies have engaged in structural cost-cutting initiatives that result in divestitures of primary processing assets, and increased focus on marketing and brands as a means of supporting shareholder value. This is especially the case in newly merged food companies.

As a result, primary processors (the customers of farmers) are increasingly firms engaged in primary processing on behalf of others, and not the product end-users themselves. In this situation, they do not transfer intermediate products internally to manufacture consumer products under their company’s brands and retain the earnings from doing so (as was once the case with Heinz and Bick’s). Rather, primary processors sell intermediate product to others that use it to make their own branded products. Previously, a portion of the earnings retained by processors integrated from primary processing through consumer products and marketing could be shared with producers in raw product pricing. It is increasingly common that the primary processor now sells an intermediate product to a further processor located elsewhere, without the earnings of an integrated operation, and with associated freight costs. This represents an important, ongoing structural change.

Another aspect of this is the growth of private labels of retailers, an aspect of the increasingly competitive retail environment described below. Private labels are produced under co-packing arrangements that retailers make with processors. By nature, brand premiums that accrue from private labels go to retailers, not the processors.
3.5.2 Canadian Grocery Retail Environment

Approximately 60% of the Canadian food expenditures are for food consumed at home while the remainder is food consumed at foodservice. This breakdown is applicable for most food products in Canada including processed vegetables. As such it is important to understand the market conditions at grocery retail in Canada as the primary market for processed vegetables. A consideration of the market conditions at retail can help to explain the market dynamics and opportunities and challenges faced by processors of vegetables in Ontario. This is important not only for those processors that sell consumer products directly to the retailers. It is also important for those processors that sell raw materials for further processing to other firms. The conditions at retail are reflected through the chain.

As a starting point, the Canadian grocery retail market is divided up between traditional grocers such as Loblaw and Sobey as well as general merchandise firms such as Walmart and Costco. Of course, many other channels such as convenience stores, drug stores and even hardware are also involved in food sales, including processed vegetables. In any event with regard to food sales, the researchers at CIBC Institutional Equity Research breakdown the shares as shown in Figure 3.17 below.

The companies that sell the groceries are mostly larger firms such as Loblaw with total sales of about $46 billion and Sobeys with sales of $24 billion. Walmart is of course the largest company in the world with global sales of nearly US$500 billion of which C$7.5 billion is Canadian food sales. Costco has total U.S. sales of $119 billion and about C$11 billion in Canadian food.

The firms are engaged in a very competitive industry. The four firms with the leading market shares have a combined market share, or four firm concentration ratio of 69%. The general merchandise retailers, particularly Walmart and Costco have been continually gaining share at the expense of the traditional grocers such as Loblaw and Sobey. In fact, as shown in Figure
from 2004 through 2016, the general merchandise channels have doubled their share of food sales at the expense of the traditional grocers.

**Figure 3.18**

<table>
<thead>
<tr>
<th>04</th>
<th>10</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>10%</td>
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<tr>
<td>30%</td>
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<td>80%</td>
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<tr>
<td>90%</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Statistics Canada Cansim table 08-0022

Not only is the industry very competitive but the cost of goods sold, or the food purchased from processor suppliers is a very large share of total sales. That is the cost of goods is the single largest factor in determining profitability on the cost side of the income statement.

**Figure 3.19**

**Source:** Statistics Canada Cansim Table 0800030

The competitive nature of the business in combination with the importance of the purchased food costs leads to pressure on industry suppliers. The most widely cited example of this pressure is
the July 2016 letter from Loblaw to its suppliers that it would be applying an automatic 1.45 per cent price deduction on all shipments it received beginning Sept. 4, 2016. Prior to that Sobey’s sent a similar letter demanding a 1% price cut from suppliers in 2014.

The point is that this is the retail environment in which the vegetable processors of Ontario are operating in now and for the foreseeable future. The ability to pass along cost increases, whether for labor costs or raw agricultural product, is going to be very difficult. This concept was also addressed in the Ontario Processing Vegetable Grower report entitled “Establishing Grower Prices for Processing Vegetables Using Collective Price Bargaining.” That report said that traditional food retailers are in turn requiring suppliers (e.g., vegetable processors) to cut the price paid by retailers, which places pressure on the operating margins of vegetable processing plants. As a consequence, vegetable processors are looking at how their operating costs and per unit fixed costs can be reduced to maintain respectable operating margins and return on investment.

3.6 Observations

The above sections note the following trends important in understanding the Ontario situation:

- Ontario manufacturing wages are comparable with key regions in the US, but are set to climb significantly with the announced increase in minimum wage in 2018-19
- Ontario’s energy costs are high relative to most US states (but not California) and are set to increase markedly on a relative basis
- Raw product pricing is mostly comparable with other regions, with the caveat that in some cases even though it is the prices of vegetables used in processing that are being compared, the end use and associated standards can vary.
- There is evidence of differences among processors and growers with regard to product quality in tomatoes that suggest that producers have been able to influence solids yields through management.
- Returns for processing vegetables have been higher than field crop alternatives. In the case of processing tomatoes, returns are much higher compared with field crops.
- Ontario has relatively high fixed costs in processing due small plant scale and a relatively short pack season.
- The Canadian market in processing vegetables is mature. Per capital consumption has declined, consistent with increases in price. Substitution of fresh vegetables for processed has had little if any effect. The implication is that while the market is mature, is also price sensitive.
- The global market is growing at a rate of about 2% per year, notably in Asia.
- The structure of food companies has evolved with less of a direct connection between primary processing and further processing of consumer product brands. Food companies are increasingly marketing and brand focused, rather than marketing as an outgrowth a manufacturing-focus. Retailer private labels have also grown at the expense of processor brands. The implication is that, increasingly, purchasers of farm products for processing are not the end users and lack the past connection to brands.
The retail environment has become increasingly concentrated and consolidated. The market share of the top four firms is 69%, and price competition among retailers is rife. It is in the context of these challenges that market regulation in processing vegetables must be assessed.
4.0 The Context for Market Regulation in Ontario Processing Vegetables

Processing vegetables are an intermediate product, fundamental to the production of processed vegetable products. Because they are produced specifically for processing, the value of a raw processing vegetable crop is embodied in the downstream value of processed vegetable products, not derived in and of itself. The essential setting is illustrated in Figure 4.1 below. Revenue from processed product sales is illustrated in the top bar as the basis from which to compensate production system costs and generate surpluses. The bar below revenue represents total costs of supplying a processed product. The economic surplus is the difference between revenue and total costs. Total costs can be decomposed into costs of supplying the farm product, and processing costs.

If the market for the end product is a pure commodity, revenue is essentially fixed. In this context, the surplus is driven solely by costs- the prices of inputs, and the efficiency with which inputs are used and converted into output. More often product revenue can be influenced through product quality, brands, or other forms of differentiation in which additional costs incurred increase revenue. In this situation, surplus is thus determined by both costs and revenue, as (in effect) costs have a secondary, positive influence on revenue.

The value transferred to the producer in procurement of the farm product allocates the shares of surplus between the producer and the processor. If the farm product is a pure commodity and has no influence processing costs or downstream processed product value, then farm product pricing simply splits a fixed surplus between processor and producer. More commonly, if the farm product can influence costs in processing and/or end product revenue, the farm product pricing both allocates the economic surplus between producer and processor, and influence the size of the surplus itself.

The structures through which price the farm product is established can thus influence both the level of economic returns generated from processing, and the split of returns among producers and processors. This forms the basis for the link between raw product pricing and competitiveness, growth, and investment.

4.1 Farm Products Marketing Research Background

The interaction of concentrated processors with many, individually small producers in the marketing of farm products, and the prospect of distortionary market power, is a central topic in agricultural marketing research. Multiple aspects have been identified in which market
power is manifest by processors, to the detriment of producers. One is tacit collusion, in which pricing established by a dominant processor remains unchallenged by its rivals, who implicitly coordinate with its pricing behaviour out of fear of retaliation from competition (Myers et al., 2010). Another is segmentation and rationing of market access to growers, in which some are offered a market for their products based on specified product attributes, minimum volumes, or past relationships, and others are denied market access and left with few remaining alternatives. Still another aspect is what is called the “hold-up” problem; this occurs when a processor can take advantage in pricing the farm product due to sunk investments made by its grower-suppliers that are not readily redeployed elsewhere. A number of these aspects of agricultural marketing, are discussed in Section 4 of the JRG report prepared for the OPVG, emphasizing the role of marketing boards negotiating on behalf of producers to offset processor market power.

However, Myers et al caution that attempts by producer agencies to exert market power of their own is seldom successful. This due to the eventual need to control the farm product supply in response to higher prices, the need to enforce free-riding on collective marketing efforts, and the dampening of consumer demand for the end product that can result from upward pressure on the price of the farm product. Helmberger (1965) argued that gains from collective bargaining among farmers with processors, in terms of obtaining higher prices, depend upon excess profits existing in processing that can be reallocated to growers- either due to processor market power in procurement, processor market power in the finished good market, or both. In the absence of
these surplus profits in processing, a producer marketing board may be successful in restoring
the price level to that in a more competitive situation, but it will have difficulty pushing prices
higher than this.

Markets with concentrated processors and many producers can be vertically coordinated through
direct contracts between growers and processors. This mechanism protects addresses the holdup
problem, and has been shown to reduce risk to producers- through the establishment of pre-
determined product price and/or provision of inputs. Myers et al observed that vertical
coordination can generate important efficiency benefits in coordinating the value chain, as the
processor works with the producer to provide attributes in the farm product that enhance
processing value.

More generally, Sexton (2012) introduced the paradigm of Modern Agricultural Markets in
which concentrated processors with market power and demands for specific attributes in farm
products are viewed as the norm rather than an isolated departure from a competitive market
structure. Processors seek out farm products with attributes that support distinct products, brand,
or work better with the equipment in its plants. These are facilitated with direct contracts that
coordinate processor with producers. In his analysis, Sexton notes that a direct contracting
model can benefit producers capable of supplying desired attributes and making investments
specific to the relationship with the processor through higher returns, in excess of what could
occur under other types of marketing mechanisms. These relationships can cause processors to
take into account the impact of pricing on grower economics, with processors having an
incentive to provide their grower-suppliers with a profitable environment.

However, under this model, the transactions cost of concluding contracts and maintaining
relationships with individual growers give processors to contract with the largest producers, and
can end up restricting access to markets for others. Helmberger observed the potential for
sporadic discrimination among growers under direct contracting in processing vegetables,
through processors bypassing acreage, and through differential terms such as grading standards,
bundling of inputs such as seed that make alternative contract offers difficult to analyze and
compare, and scheduling of planting/harvest which impact grower returns. Negotiation of
contracts through a growers’ association was seen as a means of addressing these issues.

Marketing collectively has economic effects in terms of efficiency in exchange; however, its
actual efficacy relates to the willingness of producers to support it. Stated differently, by
producers restraining specific individual actions and marketing collectively, what can be
achieved, and will this be popularly supported and feasible? In this regard, Libecap (1994)
developed fundamental considerations fundamental for successful collective action. These
relate to:

- The size of expected gains from collective action
- The number and degree of heterogeneity of the bargaining parties
- The extent and accuracy of information available to parties in assessing gains under
  alternative forms of collective action

The greater the expected gains from collective action, the more easily groups will come to
agreement on a collective solution. For example, if low product quality is perceived by all as
being very costly, the parties may readily come to an agreement to adopt mandatory minimum product quality standards.

The greater the number of stakeholders involved, and the diversity within groups of stakeholders, the more difficult it will be to reach a collective solution. The interests of each of the parties are likely to vary, and some may perceive risks to an alternative of collective action versus the status quo.

The perceptions regarding the magnitude of potential gains from specific forms of collective action, as well as the potential share of the ultimate proceeds among the groups involved will depend on the extent and accuracy of information. In general, the greater the volume of information viewed as credible, the greater the prospect that agreement on a collective solution can occur, and that it will be sustainable. Some of the information relevant to assessing gains and shares are private and subject to withholding; in other cases, information is shared but may be discounted by some parties due to its source.

4.2 Negotiation Structure and Good Faith Bargaining

A significant proportion of the text of Regulation 440 that governs the negotiations in processing vegetable pricing deals with how negotiations are conducted, and enforcement of good faith bargaining. The latter point is common in regulated marketing in agriculture. For example, Hueth and Marcoul (2002) examined agricultural bargaining legislation in eight US states, and found that all but two of the cases they examined contained provisions for good faith bargaining, with most requiring mediation or arbitration if the parties fail to reach agreement.

There is a vast literature on bargaining, negotiation, and structures to bring about settlement (arbitration) between parties in negotiation. Much of it derives from game theory and is highly technical, and outside the scope of this paper. However, an understanding of incentives in alternative bargaining structures and what impacts them is important in understanding the implications of Regulation 440. This section develops an overview through which the existing system of negotiation and final offer arbitration can be interpreted.

The essentials of negotiation with mandated arbitration in the event that an agreement cannot be reached are the following. It is recognized that time is of the essence, and that an agreement must be reached by a point in time, otherwise a settlement will be imposed upon the negotiating parties by an arbitrator. Thus, the process of reaching a settlement proceeds in two phases- first the parties attempt to negotiate an agreement among themselves; if an agreement cannot be reached through negotiation, a second stage is initiated in which an arbitrator requests final offers from the parties and renders a binding settlement based upon the final offers. Under conventional arbitration the arbitrator has the liberty to choose any settlement given the final offers; under final-offer arbitration the arbitrator can only choose between the competing final offers.

The introduction into the process of the arbitrator as a third party who will make a binding settlement creates additional uncertainty- in terms of the knowledge base and understanding of the situation on behalf of the arbitrator, the arbitrator’s approach, and whatever perceptions, experiences, or personal biases the arbitrator may have. This uncertainty carries with it the
prospect of a negative outcome to each of the parties, and this threat forms the basis for a “contract zone” in negotiations. In labour negotiations, the threat of strike, which creates costs to both the union and the employer, defines a range of potential settlements preferred to a strike (the contract zone); binding arbitration has a similar effect in creating this contract zone (Farber and Katz, 1979). Moreover, the parties typically bear out of pocket costs in entering arbitration that also contributes to the creation of a contract zone. The facilitation/creation of a contract zone by the threat of arbitration increases the prospect that a settlement can be negotiated between the parties without moving into the actual arbitration phase. Thus, Brams (2003) notes that “arbitration always forces a settlement, even when the arbitrator’s choice is more than the buyer is willing to pay and less than the seller is willing to accept, causing both to suffer a loss” (page 63). It is this prospect of an imposed settlement that presents the incentive to come to voluntary agreement and avoid settlement through arbitration.

The literature on arbitration emphasizes that the presence of arbitration as a dispute settlement mechanism alters the nature of negotiation, even if the process does not actually lead to arbitration. The general concept is that the threat and uncertainty described above creates a contract zone and as such agreements occur more frequently. The nature of the process also matters. A criticism of conventional arbitration is that it can have the effect of chilling bargaining, as the parties have little uncertainty regarding the arbitrator’s behaviour and thus less threat if negotiations fail (Farber and Katz, 1979, Deck and Farmer, 2007). If the parties expect that the arbitrator will simply split their differences it can reduce their incentive to make concessions, and arbitration becomes a substitute for bargaining (Lok, 2008).

Final offer arbitration was conceived to overcome the limitations of conventional arbitration, essentially by creating relatively more uncertainty in the process and increasing threat if the process proceeds unresolved beyond negotiation and into the arbitration phase. As such, by increasing the threat of arbitration, it provides improved incentives for the parties to converge in their bids and offers in the negotiation phase and reach agreement. Tijmes (2007) notes that final offer arbitration leads to a reduction in the number of chilled first offers and to lower dispute rates- and thus more negotiated settlements. However, in the arbitration phase in which the parties submit final offers, Brams (2003) shows that the parties have an incentive to diverge in their final offers, subject to their expectations of arbitrator preferences. As a result, Brams (2003) notes that “In practice, it turns out, final offer arbitration tends to lead to more negotiated settlements than conventional arbitration in public-employee disputes as well as baseball. But if two sides end up in impasse and final offer arbitration is then used, settlements by their very nature will tend to be one-sided”.

Another aspect of negotiation under final offer arbitration is risk aversion of negotiating parties. Farber and Katz found that risk aversion and the relative bargaining power of negotiating parties impacts the negotiated outcomes with an arbitration instrument in place; in general, with arbitration in place, negotiated settlements will tend to be less favorable for the party that is the more risk averse. It has been observed that the more risk averse among the negotiating parties can be expected to make the greatest concessions in order to avoid the risk of the arbitration phase (Farber, 1980, Hanany et al, 2007). The degree of uncertainty in conditions bracketing negotiations and the distribution of uncertainties impacting negotiating parties also influences negotiating strategies and anticipated outcomes in a final-offer arbitration environment (Deck
and Farmer, 2007). As the parties develop more experience with final-offer arbitration and specific arbitrators, the effective uncertainty in the process decreases.

Thus, the following can be observed on arbitration. The presence of final-offer arbitration facilitates parties coming convergence in offers leading to negotiated agreements, due to the threat of arbitration. However, in the arbitration phase the parties’ final offers will diverge leading to one-sided and possibly extreme settlements; it is this threat that motivates the parties to come to agreement voluntarily. Within these general observations, there are many details that influence how final-offer arbitration actually works, such as the extent of uncertainty within the negotiations and the environment external to negotiations. An important aspect is risk aversion—the more risk averse a party is, the more the final-offer arbitration will induce them to make concessions to avoid the arbitration phase. Over time, the extent of risk in the process of final-offer arbitration should be decreasing, as the process is repeated annually and the parties become more experienced with it. The fact that it is a repeated process should also restrain parties against transgressions.

4.3 Past History

The exercise of authority in collective marketing of processing vegetables has been a subject of debate in Ontario’s regulated marketing system for at least 40 years. For example, in 1980 Everett Biggs, former Deputy Minister of Agriculture in Ontario was commissioned to address the methods and procedures of price determination for processing vegetables in the province. Biggs discussed the tension and dissension in the industry during the 1970’s pertaining to negotiations and price determination. He questioned whether the adversarial situation between the Vegetable Growers Marketing Board and the processors of vegetables had become chronic.

In 1989 John Curtis and Russell Duckworth were asked to prepare a report for the minister on the “Deliberations of the Processing Vegetable Industry Advisory Committee.” This report was motivated by the fact that the Committee was unable to reach consensus because differences between the board and the processors were too great.

In 1998, the Ontario Farm Products Marketing Commission contracted a report by lawyer Frank Handy which was entitled “Perceptions on the Sources and Resolution of Conflict in Raw Product Cost Negotiations. Handy talked of “crisis…damaging the industry in the longer term.” Handy noted mistrust and antagonism.

The long history of crisis and conflict between the board and the processors continued through the March, 2017 decision by the Minister to vacate the entire Ontario Processing Vegetable Growers (OPVG) board, and appoint Elmer Buchanan, a farmer and former OMAFRA minister as trustee of OPVG. Buchanan has temporarily assumed the powers of the board to negotiate 2017 contracts, until elections for the OPVG board are held (prior to December 31, 2017). According to the Ministry, 2017 contract negotiations between Ontario’s tomato growers and processors had reached an impasse, “jeopardizing this year’s crop season.”

Thus, disagreements and frictions between the parties have remained a feature over the past 40-50 years. The consistent historical focus remains on whether the industry interest is best served
by OPVG negotiating prices on behalf of vegetable growers and if so to what extent should that power be exercised. History would suggest that subtle changes are unlikely to sort out long established difficulties in processing vegetable marketing. This history also strongly suggests that the challenges are institutional or structural as opposed to individuals or groups of persons involved.

4.4 Applying the Agricultural Marketing Context to Ontario

Previous sections indicate that processing vegetables in Ontario operates in a context in which it is reasonable to expect extensive processor market power. There are three dominant purchasers of tomatoes, one dominant purchaser of cucumbers, and one dominant purchaser of peas, beans, and sweet corn. The remaining regulated crops are in a similar situation.

However, the level and extent of producer involvement in these products differ. This can be illustrated through the contrast between tomatoes versus peas/beans/corn. In processing tomatoes, the tomato crop is likely to be the dominant enterprise on the farm, with significant investments made by growers in equipment and employees specific to tomatoes and somewhat specific to a processor, and the relationship between the grower and processor regarding harvest timing and logistics (and perhaps other aspects) is critical. Conversely, in peas/beans/sweet corn, the vegetable enterprise is a farm enterprise among others; it is much less likely to be the dominant enterprise on the farm. These crops are produced using essentially the same equipment as field crops, and the processor arranges for harvesting. The processor also handles the harvest logistics. In general, no specialized investments are required by the grower in producing peas, beans and corn as equipment for producing field crops can be used.

Figures 4.2 and 4.3 provide an illustration the contrast across crops based on contracts. Figure 4.2 shows that measured acreage under the average tomato contract appears significantly larger than the contracted acreage for peas, beans, and sweet corn. For example, the average tomato contract has recently for volume associated with an area of well over 100 acres; peas/beans/corn have generally ranged between 65 and 85 acres/contract. The trend is also toward increasing acreage for tomatoes, versus little apparent trend in acreage/contract for peas/beans/sweet corn.

Differences in contracted value/contract provide more distinct evidence. This is shown in Figure 4.3. Tomato contracts are much higher in value compared with peas/beans/corn, recently valued at well over $500,000 per contract, and increasing in value over time. This compares with a value for contracts in peas/beans/corn mostly ranging around $45,000-$70,000 per contract.
Based on information collected from OPVG newsletters, the experience with arbitration under Regulation 440 appears mixed. This is summarized in Table 4.1 below. The table shows that...
since 2005 there have been 12 cases in which crops have gone to arbitration- tomatoes (5), cucumbers (3), sweet corn (3), and green/wax beans (1). Of the 12 arbitration hearings since 2005, 7 have decided in favour of the processor’s offer, and 5 in favour of the growers. Overall, the table is consistent with a generally reduced frequency of negotiation disputes leading to arbitration over time.

It is unclear whether the costs/risks of negotiating disputes settled by arbitration have decreased, or whether the deterrent effect of final offer arbitration has actually improved incentives for growers and processors to work better together. An aspect of this is that growers and processors are bound by different considerations through the negotiation/arbitration process, and that the differences in aversion to risk from the process are likely to exist. The processors have an incentive to negotiate as low a price as possible at which they can obtain desired quality and volume. Processors are bound by the terms ultimately negotiated with the growers or imposed in arbitration, as it is unlikely that shipping the raw farm product to Ontario plants for processing from elsewhere is economically feasible. Thus, if the processors have no realistic alternative to purchasing Ontario product, their operations are effectively bound by the terms of negotiation/arbitration. Choosing not to purchase from Ontario growers at the price imposed by arbitration effectively means not operating for processors.

Growers have an incentive to negotiate as high a price as possible. However, actual tonnage/acreage contracts are made between individual growers and processors, within the context of collectively established pricing and marketing terms. In other words, growers can collectively agree with processors on pricing and related marketing terms, but there is no collective obligation to an aggregate supply on behalf of growers. Growers have the alternative of growing field crops, or other crops not under OPVG regulated marketing authority. As such, growers can end up agreeing upon processing vegetable terms at price levels that some growers are not prepared to supply at. When these terms are imposed by arbitration, individual growers retain the right to avoid the imposed settlement and grow other crops.

Thus, the operations of the two parties are actually bound differently by the process of negotiation and final-offer arbitration. Under the assumption that bulk importing of raw product for processing in Ontario is not feasible, in order for processors to operate, they are bound by the terms of settlement- either negotiated with growers or imposed by arbitration. If an impasse is reached, arbitration is a risk that could carry a high penalty for processors as they will be bound by it. It is reasonable to expect that this makes processors highly risk averse and generally more inclined to settle in negotiations. The growers have alternatives under the negotiated or imposed settlement, and are not bound in the same way as processors. It is reasonable to expect that they are thus less risk averse with regard to negotiation and arbitration compared with processors.
Table 4.1 Processing Vegetable Negotiations Proceeding to Arbitration

<table>
<thead>
<tr>
<th>Year</th>
<th>Crop</th>
<th>Accepted offer</th>
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<tbody>
<tr>
<td>2005</td>
<td>Tomatoes</td>
<td>Processor</td>
</tr>
<tr>
<td>2006</td>
<td>Sweet Corn, Tomatoes, Green + Wax Beans</td>
<td>Processor (tomatoes) Growers (corn and beans)</td>
</tr>
<tr>
<td>2007</td>
<td>Sweet Corn</td>
<td>Processor</td>
</tr>
<tr>
<td>2008</td>
<td>Sweet Corn, Cucumbers</td>
<td>Processor (cucumbers) Growers (corn)</td>
</tr>
<tr>
<td>2009</td>
<td>Tomatoes</td>
<td>Growers</td>
</tr>
<tr>
<td>2010</td>
<td>Tomatoes</td>
<td>Processor</td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>Cucumbers</td>
<td>Processor</td>
</tr>
<tr>
<td>2013</td>
<td>Tomatoes</td>
<td>Processor</td>
</tr>
<tr>
<td>2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>Cucumbers</td>
<td>Growers</td>
</tr>
<tr>
<td>2016</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017</td>
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</table>

In tomatoes, there appears to be a co-dependence and intimacy of relationship between grower and processor that exists intrinsically, however well developed. Tomatoes are a very material economic aspect of farm/sales and income, and tomato procurement a very significant consideration for the processor. Processors have a significant dependence upon the facilities and expertise of the grower, and harvest logistics require interdependent coordination. Growers can use this to influence yield and quality. There is a very wide spread between returns in tomatoes versus field crop alternatives for growers. Price settlement based on final offer arbitration presents serious risks to both growers and processors. In an arbitrated settlement, the processor will be bound by settlement by virtue of operating in Ontario. Growers can choose to grow field crops or other crops instead of tomatoes if they do not like the results of arbitration, but the implied grower returns are likely to be much lower, so the opportunity cost is high. With a high degree of dependence on relations with specific processors, it is unclear that collective marketing can act to effectively coordinate interests.

The situation is somewhat different in peas/beans/sweet corn. The processor is dependent upon growers for supply, but specific investments in equipment, facilities, or labour by growers are not required. Compared with tomatoes, growers typically will have significantly less income stake in production of peas/beans/sweet corn. Expertise of growers may result in improved yields, but this benefit largely accrues back to the grower rather than in increased value to the processor. Processors harvest logistics do not require coordination between the grower and processor. The spread in returns between peas/beans/sweet corn in and field crops is positive but much narrower compared with tomatoes-field crops. In the event of arbitration, the processor will be bound by the decision by virtue of operating in Ontario. Growers that do not like the settlement from arbitration can choose to grow field crops instead, and the opportunity cost of doing so is much lower compared with tomatoes. With that said, given that processors report that growers have not dropped off supplier lists and that large numbers of other growers wish to contract, this is unlikely.
With this acknowledged, both parties could benefit from more flexible and accommodating relationships to work together, rather than some producers limiting their flexibility to regulatory obligations. This context, with less dependence and stake compared with tomatoes, and with growers unlikely to have the economic motivation to negotiate effectively for themselves, appears more amenable to some form of collective marketing. This is not to assert that this collective marketing should be mandatory under regulation. The point is that given the relatively lower grower commitment it is more amenable to some form of collective bargaining.

Conversely with regard to the market power, given the relative commitments and investment of grower and processor, the producer stands with enhanced leverage in dealings with the processor, even noting the fact of a single buyer. That is in any given year, the processor has the most to lose and the grower the least to lose. This in turn could point to the enhanced opportunities for cooperation and collaboration in an open market setting.

4.5 Observations

This section observes the likelihood of market power in Ontario processing vegetables, and the function of marketing through collective negotiation by the OPVG as a means of mitigating the negative effects of market power on producer prices. This concept was explored and argued in depth in *Establishing Grower Prices for Processing Vegetables Using Collective Price Bargaining* report completed for the OPVG. However, this section goes further into the agricultural marketing literature to explore the handling of processor market power. From this, the discussion of modern agricultural markets positions the issues somewhat differently. Rather than structuring producer bargaining organizations to offset market power, it treats market power as a fixture of markets that farmers sell into, and asks how farmers can best obtain positive terms of trade supplying processors. It observes that open contracting can align the incentives of producers and processors, and addresses issues that extend beyond the price level.

The essentials are summarized in Table 4.2. The market power view of agricultural marketing views instances in which markets in which processors are concentrated as a departure from a competitive norm in need of correction; modern ag markets views markets concentrated into few processors as a common aspect of agri-food marketing. The market power view focuses on offsetting the processor position by strengthening the producer bargaining position; it can be strengthened to correct for inequity in market power, but will have difficulty asserting market power of its own. The modern ag markets view focuses on accommodating processor preferences with incentives for producers, acknowledging that in the process producer market access may become more limited. The market power view is highly focused on relative bargaining power and resulting price level. The modern ag markets approach is to view pricing and incentives as distributed over multiple attributes in procurement.
Table 4.2

<table>
<thead>
<tr>
<th>Offset Market Power</th>
<th>Modern Agricultural Markets</th>
</tr>
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<tbody>
<tr>
<td>When processors are concentrated, use market power to ↓ price</td>
<td>Buyers in most ag markets are concentrated</td>
</tr>
<tr>
<td>Collective marketing to offset market power, restore competitive price</td>
<td>Processor preferences for farm product attributes, require investment from grower</td>
</tr>
<tr>
<td>But limited in effect; outside supply mgmt. hard to exert mkt power</td>
<td>Coordinated markets reward attributes, make contracted producers better off; but can limit market access</td>
</tr>
<tr>
<td>Price- single dimension of procurement</td>
<td>Can address multiple dimensions of procurement</td>
</tr>
</tbody>
</table>

In other words, the traditional argument is that the strong buyer will push prices down by pitting producers against each other. Another argument is that producers would seek added acreage and benefits by offering lower price levels resulting in ongoing erosion. The literature on modern agricultural markets not only points out the shortfalls of the older conclusions but that improved results can derive to both processors and growers by working together. In addition, beyond the literature, from a practical perspective given the rationalized structure of both processing and production sectors in Ontario, there is a clear mutual dependence. Processors need well invested, committed growers in order to secure their own investments. In addition in this new environment processors have far less leverage and are more dependent on growers than in the past. This is not an environment where processors can prosper at the expense of growers.

The section also considers the problems of open contracting versus marketing through collective bargaining. It can be expected that, compared with the existing system of collective marketing, under an open contracting system processors may narrow their base of producer suppliers, and have larger grower suppliers. The logic for this is economies of scale in producer investments made to supply the processor, and the costs of establishing contracts- essentially indifferent to size- which give processors the incentive to contract with relatively large growers. It also highlights potential problems, such as how to deal with potential reductions in market access facing incumbent producers, and how to ensure transparency and integrity of contracts, and equity of treatment among producers.

Mediation/arbitration is a common feature of collective marketing systems, but the form of arbitration used in Ontario has differential effects on the two parties, with processors more bound by the terms of final-offer arbitration than the growers, and thus more risk averse to it. The prospect of losing is generally more damaging to the processors, because they lack outside options where growers can opt to produce other crops if they don’t like the arbitration settlement. It is unclear that the experience in working with negotiation/final-offer arbitration on an annual basis for some time has fostered improved relations between growers and processors. In fact it is obvious that the arbitration process has led in many cases to eroding working relationships.
There are differences among regulated crops and growers that relate to marketing approaches. A more interdependent relationship and co-dependence exists between growers and processors in tomatoes, and both parties have the motivation to invest in their relationship. This is less the case in peas, beans, and corn. However, improved working relations between growers are an important issue in all crops, and regulations are not a substitute for more flexible and accommodating relationships.

A final observation relates to investment. As noted in section 2.6, this industry has not been investing in growth and innovation. There are many reasons for this and certainly the pending carbon taxes and minimum wages will contribute. With this acknowledged, a barrier to investment is the uncertain raw material procurement climate. The regulatory structure has facilitated an adversarial relationship between growers and processors. This is often the outcome of a regulated market system and history suggests that it has been the case over the last 40 years in this industry. This uncertainty not only relates to the unknowns of potential arbitration and procurement, as well as terms and conditions in general. The uncertainty also relates to the ability to work closely with and to have a mature buyer-seller relationship without a third party intermediary. Unless there is significant change pertaining to the procurement system, uncertainty prevails and no material new investment can be foreseen.
5.0 Conclusions

The Ontario processing vegetable industry is struggling and is in trouble. None of the economic measures available suggest that it is growing; taken together the overwhelming evidence is that it has been retrenching. Furthermore, this paper has posited a definition of competitiveness as the ability to profitably maintain or enhance market share. Based on that definition the processing industry is not competitive. It is not a context in which extensive new investment and innovation would be expected. The immediate challenge will be economic retention of its processing infrastructure to support farm production. There are a number of factors that are likely to have contributed to this situation. Prospective changes to Regulation 440 and the OPVG need to fit with this environment.

Ontario has some cost disadvantages derived from a relatively short pack season and small scale, and others still developing related to costs of carbon cap and trade policy, electricity pricing, and the minimum wage. Another factor is that food processors have changed over time from manufacturers for whom products marketing and brands were an outgrowth of processing, to companies that are primarily marketers. That is, processors across North America are often companies in which primary processing is de-emphasized or outsourced to co-packers. As a result, primary processors (customers of farmers) do not transfer intermediate products internally and retain the earnings from doing so, as was once common. Previously, these retained earnings existed that could be shared with producers. To a much larger degree, primary processors sell an intermediate product to a further processor located elsewhere, with associated freight costs. Evidence of this exists in Ontario tomatoes and cucumbers, and it is a more general trend.

Another important trend is that retailers have become more competitive and concentrated, and more assertive with their suppliers as a means of supporting operating earnings. As a result, some of the economic returns that were previously retained by processors has been appropriated by retailers.

In this context, growth and innovation will occur by improved marketing of Ontario/Canadian processed vegetable products to recover domestic market share, and/or through improved competitiveness in accessing markets outside of Ontario. This will require a working relationship in which processors can generate greater value from Ontario raw product supplies, and in which growers take the opportunity to facilitate this.

Processors are more concentrated than ever. This environment presents the prospect of market power being exercised over growers. By itself, this suggests a benefit to marketing through collective bargaining to protect growers, and perhaps a defense of the status quo. But this ignores the context; if growers are protected excessively at the expense of the processors, the effect is to further erode advantages of operating in Ontario. Past history of ongoing conflict and processing plant closures suggests that material changes, rather than just tweaks or surgical shifts will be required. Changes in personnel or directors is also not the answer. There are structural issues at work that need to be addressed. So, change is warranted- but what should change?

The OPVG has viewed their role as a focus on negotiating and supporting grower raw product prices. Other aspects of marketing, such as market expansion and the building of relationships with processors appear to have been less of a consideration for OPVG. This has reduced the
flexibility of growers in dealing with processors. Growers present a unified front to processors, with relatively little pressure placed on themselves to improve performance or penalize poor grower performance. At times, conflicts between processors and individual growers have resulted in growers using OPVG regulations as a defense against processors, in lieu of a more accommodating or facilitating approach.

The fundamental aspects of the processor-grower relationship are the following. The grower is expected to make an investment specific to a relationship with a processor. In all cases, the producer dedicates land to cultivation of processing vegetables. In some crops, notably tomatoes, the specific investments go well beyond this, and include specialized equipment, a workforce, grower expertise, and harvest logistics. In order to secure these investments, growers need marketing arrangements in place well in advance of spring planting, as they have alternatives in producing field crops and other non-regulated horticultural crops.

There are clear differences among crops. In the case of peas/beans/sweet corn, apart from committing land, there is little additional investment for growers to make. Yield/quality is generally similar across growers. For most growers, peas/beans/sweet corn is an enterprise on the farm, and not a business focus of the farm. So growers need to have credible pricing established prior to planting that gives the producer incentive to commit acreage. This incentive relates to opportunity costs of land in alternative crops, acknowledging the benefits of seed provided, harvesting, and trucking. Processors’ interest is in having flexible and open access to growers.

In the case of tomatoes and cucumbers, the grower commits land, so the above considerations apply. Margins for tomatoes are much higher than grain corn/soybeans, but tomatoes also entail much more effort. In addition to this, the grower invests in specialized harvesting equipment, a workforce for planting and harvesting, perhaps some additional infrastructure such as irrigation, and an acknowledgement that grower expertise/effort is required. The value of a tomato contract is relatively large and growers will tend to self-identify as “tomato growers”, as it is the key component of their farm, even though they are likely to have other farm enterprises. There can be a marked difference in value for the processor across growers/regions- based on data relating to NTSS across processors, and NTSS and yield for a given processor. Thus, there is a very high value to an interdependent relationship between producer and processor in tomatoes, and a need to leverage these relationships to improve joint processor-grower returns.

5.1 Differential Considerations
With regard to tomatoes/cucumbers this situation is most consistent with open contracting between growers and processors. This stems from the need to cultivate and maintain interdependent relationships. Processors are looking to the grower to provide product with attributes that will support the processor’s margin. Processors each want their own grade of product that fits with their product mix, brands, and plant equipment. This entails investment and effort on behalf of the grower specific to the processor. The grower is very motivated to address the relationship with the processor due to the extent of investment made specific to tomatoes and the level/share of farm sales related to tomatoes. There is some evidence that grower management can affect the value derived by the processor, in a verifiable manner.
These conditions are inconsistent with collective marketing. With this acknowledged, it should be recognized that collective marketing by the OPVG has evolved over time in an attempt to engage many of these issues. For example, in tomatoes, provisions for productivity pricing, and pricing adjustments for tomato solids and differential end-uses have been made. Within somewhat of an adversarial relationship with processors, through the development of mechanisms such as these the OPVG has attempted to facilitate improved coordination between growers and processors. However, these developments appear not to have been successful in fostering more interdependent procurement/marketing relationships and in drawing together growers and processors.

With regard to peas, beans, and sweet corn, there is less relationship specificity between the grower and the processor. There aren’t specific investments for the grower to make. The grower has limited motivation because these crops are enterprises on the farm and not a dominant economic activity. Growers probably would not be motivated individually to dedicate significant time to negotiate. The incentive could exist, perhaps benignly, for the processor to appropriate increasing portions of the margin over field crops that have been left with the grower; if this were to occur it would reduce growers’ incentives to allocate land to peas/beans/sweet corn. This of course is also the incentive for processors to ensure the contract is sufficiently profitable to generate the necessary acreage for the plant needs. Processors interests are to have flexible relations with growers, and to limit their costs associated with contracting. This situation is more amenable to some forms of collective marketing, involving growers that actually produce the crop and have economic interest in it, that will maintain the margin over grain corn/soybeans in pricing, and allow for greater flexibility in terms than exists today. This does not necessarily mean mandatory collective bargaining under regulation and some growers would not want or need collective negotiation.

An important consideration to future collective marketing is good faith bargaining. The final offer arbitration in use today appears fundamentally flawed, as it obligates processors to a greater degree than growers, and as a result the processors have greater risk- and likely more aversion to risk- than the growers. The implication, observable to potential investors, is that processing investments could effectively be stranded by arbitration settlements with terms processors would never voluntarily agree to, but are legally bound by if they are to continue operating. Any consideration of future collective marketing should consider alternatives to the current mechanism.

One alternative is to reconsider whether a trigger to force timely settlement is actually necessary. Growers and processors are already well aware of the time constraints relating to cropping decisions. The ready alternative to processing vegetables for growers is field crops; processor supply and coordinate distribution of seed and transplants to growers. It is thus well recognized by both parties that crops will be planted in the spring and time is of the essence, and that delays in establishing marketing arrangements will cause some growers to allocate land to other crops and reduce the acreage available for processing crops. Thus, the interests of the growers and processors are consistent with obtaining a timely agreement, well in advance of planting. Perhaps this could be sufficient motivation to establish arrangements on a timely basis, without the need for arbitration. At a minimum, an alternative for dispute resolution that does not bind growers and processors differently should be explored.
5.2 How is the Suggested Direction Beneficial?

The findings of this study are that processing vegetable marketing/procurement could generally be improved with greater openness in marketing. Improved openness in marketing/procurement could allow the industry to more effectively engage its challenges that are unrelated to marketing/procurement. For this to be meaningful, material changes are required. This includes open contracting for tomatoes and cucumbers, an overhaul of arbitration procedures, and the allowance for collective marketing in peas, beans, and sweet corn on a voluntary basis. These recommended changes could be disruptive, and are likely to raise the concerns of some. So how will this be beneficial to the vegetable processing industry?

As noted above, based on a very general definition of competitiveness, Ontario is currently not competitive in vegetable processing. It has neither grown or maintained market share, nor exhibited profitability; rather, both have declined over time, and both are necessary elements of competitiveness. Other, related trends in trade and financial returns lead to the same conclusion. Industries that are not competitive will not attract new investment and growth, and indeed will struggle to retain existing levels of investment.

The nature of regulated marketing is not the source of all that ills vegetable processing in Ontario, but it is an important element. With past developments in marketing acknowledged such as productivity pricing, end use adjustments, and solids adjustments in tomatoes, it remains the case that the approach to marketing conducted on behalf of growers by the OPVG has focused on establishing a favorable price for growers, rather than on a broader range of factors that can better coordinate processor demands with grower supplies. This by itself creates inefficiencies and a basis for conflict between processors and growers. The nature of arbitration in the price mechanism adds a significant element of risk in processor procurement. The difficulties effectively coordinating processors with growers and the risks associated with arbitration contribute to an environment in which Ontario’s costs are increasing on a relative basis versus competitors. This is occurring in a context in which Ontario’s cost structure, and the structure of food processing and retailing was already threatening to Ontario vegetable processing.

Liberalizing processing vegetable marketing will allow for more interdependent relationships between processors and growers, and re-orient vegetable marketing/procurement in the evolving processing and food retailing environment. If successful, it should serve to retain existing processing investments in Ontario and provide the prospect for growth and investment- through improved certainty in procurement, leading to improved prospects for import replacement and exports. Improvements and marketing/procurement in processing vegetables can put the industry on the best possible footing to proactively engage other elements of industry competitiveness.

5.3 Future Roles for OPVG

The above suggests changes in activities that could be conducted by the OPVG. A past and future need on behalf of growers is to negotiate with processors effectively. With regard to peas, beans, and sweet corn, OPVG should be prepared to negotiate on behalf of growers that request them to do so. This will require that OPVG collect and analyze market information. More generally, OPVG can provide market information and data that can be used in grower-processor negotiations. Another aspect of efficient negotiation is contracting. OPVG could assist growers
in contracting by providing a standard form contract containing the essential elements, to be edited in negotiations.

Data presented in section 3 for tomatoes suggested that growers appeared to have been successful at influencing product quality (based on tomato solids). The information was limited; however, since product quality and volume is of very significant value, efforts coordinated by OPVG to better understand this is warranted. One way to do so is for growers and processors to work together on benchmarking product quality and yields, to better understand the effects of genetics, agronomics, pest management, irrigation, etc. This could build upon existing systems used by individual processors, but with more of an educational focus.

There will also be an ongoing role for OPVG in monitoring and enforcement of agreements, regardless of the mechanism through which the agreements occurred. Growers will require the certainty that processors will comply with their obligations; this need is reciprocal for processors. Processors also have a need for assurance that their competitors are held to compliance with terms, as they are.

Finally, the recommended direction presents the prospect of reductions in market access facing some growers; this warrants consideration. It is acknowledged that transition out of processing vegetables could be difficult for some, and that there is an obligation that people are treated respectfully. The OPVG has a role in ensuring appropriate treatment of growers facing this prospect and protecting their interests, understanding that some transition is likely to occur.
References


