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Technical Report No. E/I 5
**The Role of Marketing Boards in the
Processed Tomato and Asparagus Industries**

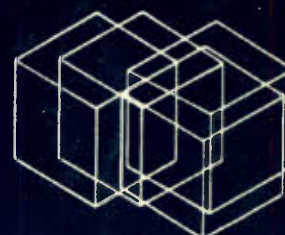
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TECHNICAL REPORT NO. E/I 5

THE ROLE OF MARKETING BOARDS IN THE
PROCESSED TOMATO AND ASPARAGUS INDUSTRIES

by

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The findings of this Technical Report are the personal responsibility of the author, and, as such, have not been endorsed by members of the Economic Council of Canada.

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Preface

This Working Paper was jointly sponsored by the Economic Council of Canada and The Institute for Research on Public Policy. It is one of a number of studies on regulation and government intervention in Canadian agriculture prepared for the Economic Council's Regulation Reference and the Institute for Research on Public Policy's Regulation and Government Intervention Program.

Analysis of public policy issues are inevitably coloured by the discussant's own beliefs and values. This is all the more likely in a highly controversial area such as agricultural policy, where quantitative information is incomplete and an important element of judgement is required to come to terms with many of the basic issues. This need not detract from the usefulness of the analysis, but it does require the reader to exercise particular caution in assessing the assumptions and the argumentation of those advocating a particular policy perspective. It also adds to the importance of the Council's usual disclaimer that "the findings ... are the personal responsibility of the author and, as such, have not been endorsed by members of the Economic Council of Canada." Similarly, "Conclusions or recommendations in The Institute's publications are solely those of the author, and should not be attributed to the Board of Directors, Council of Trustees, or contributors to The Institute."

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FOREWORD

This study is one of a series commissioned jointly by the Economic Council's Regulation Reference and the Institute for Research on Public Policy which deals with various aspects of agricultural regulation. These studies do not profess to cover the whole field of agricultural regulation but they do focus on several important areas of concern.

The following is a list (alphabetically by author) of agricultural studies to be published in this series:

- *Arcus, Peter L., Broilers and Eggs
- *Barichello, Richard R., The Economics of Canadian Dairy Industry Regulation
- Brinkman, George L., Farm Incomes in Canada
- Forbes, J.D., D.R. Hughes and T.K. Warley, Institutions and Influence Groups in the Canadian Food Policy Process
- Gilson, J.C., Evolution of the Hog Marketing System in Canada
- Harvey, D.R., Government Intervention and Regulation in the Canadian Grains Industry
- *Josling, Tim, Intervention and Regulation in Canadian Agriculture: A Comparison of Costs and Benefits among Sectors
- *Martin, Larry, Economic Intervention and Regulation in the Beef and Pork Sectors
- *Prescott, D.M., The Role of Marketing Boards in the Processed Tomato and Asparagus Industries

* Already published

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T A B L E O F C O N T E N T S

	<u>Page</u>
I. Introduction	1
II. An Overview of the Fruit and Vegetable Processing Industry	3
2.1 The Producer Sector	4
2.2 Fruit and Vegetable Marketing Boards	8
2.3 The Processing Sector	12
III. The Processing Tomato Industry	18
3.1 The Producer Subsystem	18
3.2 The Processing Sector	22
3.3 The Role of the O.V.G.M.B.	31
3.4 An Evaluation of the Processing Tomato Industry	41
3.5 Summary and Conclusions	69
IV. The Asparagus Industry	71
4.1 The Ontario Asparagus Growers' Marketing Board	72
4.2 The Producer Sector	75
4.3 The Processing Sector	98
4.4 Summary and Conclusions	104
V. Final Comments	107

Résumé

Dans le présent rapport, l'auteur étudie les répercussions économiques de la réglementation des industries du conditionnement de la tomate et de l'asperge en Ontario. Il s'agit donc principalement des activités de la commission de commercialisation des légumes de l'Ontario (Ontario Vegetable Growers Marketing Board), qui négocie le prix du conditionnement de la tomate au nom des producteurs, et de la commission de commercialisation de l'asperge de l'Ontario (Ontario Asparagus Growers Marketing Board), autorisée à établir les prix du conditionnement de l'asperge en cette province.

La commission de commercialisation des légumes de l'Ontario a récemment tenté en vain d'obtenir le pouvoir de fixer les prix du conditionnement de la tomate. L'auteur conclut que le pouvoir d'établir les prix n'est pas nécessaire pour que les producteurs de tomates de l'Ontario réalisent des gains raisonnables. Il constate que le rendement net par acre est plus élevé en Ontario qu'en Californie, et qu'il existe une demande excédentaire pour les contrats de conditionnement de tomates. Les rendements élevés ont encouragé même les producteurs les moins efficaces à demeurer en affaires. Il en est cependant résulté un ralentissement de la mécanisation, plus rentable sur le plan économique, des méthodes de culture.

Selon l'auteur, pour qu'une industrie des concentrés de tomates puisse naître en Ontario, il faudra d'abord que les prix du conditionnement de la tomate diminuent et que des modifications soient apportées au système de classification.

D'autre part, les récentes difficultés de l'industrie du conditionnement de l'asperge sont attribuables à la performance décevante des nouvelles variétés et au faible rendement résultant de la mauvaise température. Les solutions à long terme résident dans la mise au point de nouvelles variétés adaptées au climat canadien et dans la recherche de meilleures méthodes de culture. Cependant, la solution à court terme a été de remettre entre les mains des producteurs, par l'entremise de la commission commercialisation de l'asperge de l'Ontario, le pouvoir d'établir les prix du conditionnement de la récolte. Et cela, malgré le fait que le prix moyen de l'asperge (moyenne des prix payés pour l'asperge frais et par l'industrie du conditionnement) a monté généralement à un rythme plus rapide que celui de l'inflation au cours des années 70. La commission de commercialisation de l'asperge a réussi également à faire approuver, pour le compte des producteurs, des prix plus élevés tant pour l'asperge frais que pour celui qui est destiné aux usines de conditionnement.

L'auteur conclut que le pouvoir réclamé par les producteurs d'établir les prix ne sera pas essentiel à la viabilité à long terme de la culture de l'asperge; cette situation est due en partie à la vigoureuse croissance du marché de l'asperge frais. Par contre, le fait de remettre entre les mains des producteurs autant de pouvoirs sur le marché n'est pas de nature à encourager les entreprises de conditionnement à investir dans de nouvelles immobilisations qui assureraient le développement à long terme de l'industrie.

Summary

This report examines the economic impact of regulation in the processing tomatoes and processing asparagus industries in Ontario. As such, it focuses upon the activities of the Ontario Vegetable Growers Marketing Board (OVGMB) - which negotiates processing tomato prices on behalf of growers - and the Ontario Asparagus Growers Marketing Board (OAGMB) - which has the power to set prices for processing asparagus in Ontario.

The OVGMB recently applied unsuccessfully for price-setting powers for processing tomatoes. The author concludes that price-setting powers are not necessary to enable Ontario tomato growers to earn a reasonable rate of return. He determines that net returns per acre are higher in Ontario than in California and that there exists an excess demand for processing tomato contracts. The high returns have encouraged even the least efficient to remain in production. This in turn has meant that the rate at which the economically more efficient mechanical harvesting methods have been introduced has been slow.

The author reasons that if a tomato solids industry is to be established in Ontario, then processing tomato prices must be lowered and changes must be made in the grading procedure.

The problems of the grower level of the processing asparagus industry in the recent past have primarily been those of low yields due to poor weather and the disappointing performance of new varieties. The long-term solution is the development of new vigorous varieties suitable to Canadian conditions and research into cultural practices. However, the short-term remedy has been to give growers, through the OAGMB, the ability to set the processing asparagus price. This has been done despite the fact that the price of asparagus

(averaged over both fresh and processing markets) has risen faster than inflation generally during the 1970s. The OAGMB has also been successful in lobbying, on behalf of growers, for higher tariffs on fresh and processing asparagus.

The author concludes that having price-setting powers will be of minor importance to the long-term viability of the asparagus grower sector, partly because the fresh asparagus market has shown such strong growth. Giving growers this degree of market control, however, offers a marked disincentive for processors to invest capital equipment for the long term development of the industry.

Introduction

This report is part of a larger study into economic intervention and regulation in Canadian agriculture which is being undertaken for the Regulation Reference at the Economic Council of Canada. While the food processing industry considers itself to be one of the most highly regulated industries in the country, the terms of reference of this report limit the investigation to the role of marketing boards in this important sector of the economy. The industry itself undoubtedly considers this to be an important area of concern. This is evidenced, for example, by the Ontario Food Processor's Association's (O.F.P.A.) standing committee on Marketing Board Legislation (one of four standing committees of the O.F.P.A.). The powers and practices of marketing boards were also the subject of examination by the Task Force on the Canadian Processed Fruit and Vegetable Industry. In its final report the Task Force expressed concern over the emergence of marketing boards with supply management controls and strongly recommended against such moves for any processing crops. However, the industry accepts that marketing boards have a legitimate right to act as agencies of collective bargaining but does not accept that this right extends to price-setting and supply management powers. The industry also feels that marketing boards should be subject to surveillance and regulation by agencies that more adequately represent the processing sector while at the same time being subject to the Competition Act.

On their part, producers feel that they have legitimate concerns that can best be articulated and addressed through producer organizations. These concerns include the issue of a fair and stable return to investment

in markets that are often characterized by price and income inelastic demand. This, coupled with rapid technological advance in the agricultural sector, has put chronic pressure on resources to reallocate into other activities. In this context producers have felt it necessary to create a balance of market power between the large number of producers and the relatively small number of processors and to protect themselves from the vagaries of the international market.

These concerns of producers and processors are of course partial and the object of this report is to examine the role of marketing boards in the wider perspective of public policy which must account for the interests of consumers as well as processors and producers. To this end we will attempt to measure the success that two marketing boards have had in pursuing the legitimate interests of their members and the impact that these two boards have had on the industry as a whole and on consumers. We will be particularly interested in determining what power marketing boards need in order to satisfy their legitimate aims and what powers may be excessive in that they have deleterious consequences for other sectors of the economy.

Tomatoes and asparagus have been selected as the processing vegetables to be investigated for two reasons. Firstly, these vegetables are two of the key commodities which are needed to sustain a viable processing industry. Tomatoes, for example, are second only to potatoes in total farm value and accounted for forty-five per cent of the total value of processing vegetables grown in 1978 (exclusive of potatoes). While Ontario provides essentially all of the processing industry's requirements of processing tomatoes the situation is quite different for processing asparagus. Indeed,

amongst all processing vegetables, the processing asparagus market is the most dependent on imports. Secondly the marketing arrangements for the two crops are different. Processing tomatoes is one of twelve crops which fall under the jurisdiction of the Ontario Vegetable Growers' Marketing Board which is a price-negotiating board. On the other hand asparagus is marketed through the Ontario Asparagus Growers' Marketing Board which has an agency-type plan, that is, the Board currently sets the price of processing asparagus in consultation with the processors and is sole agent for selling processing asparagus in Ontario. All revenue is first collected by the Board which then disperses it amongst the growers. Finally, it should be pointed out that over ninety-nine per cent of Canada's processing tomatoes are grown in Ontario and approximately seventy-one per cent of Canada's commercial asparagus is grown in the same province, so that attention can reasonably be focused on these particular provincial boards. The paper has four parts. The first (Section 2) presents an overview of the fruit and vegetable processing industry in Canada. The second focuses on the tomato processing industry and the third on the processing asparagus industry. The second and third parts are to a large extent distinct. The paper concludes with a summary.

2. An Overview of the Fruit and Vegetable Processing Industry

This overview has three parts. First we look at the product sector, emphasizing the role of key crops and their geographical distribution. The second part gives a brief review of the development of marketing boards, emphasizing the horticultural sector. The third part presents a profile of the processing sector.

2.1 The Producer Sector

Fresh and processed fruits and vegetables are a very important component of the Canadian diet, accounting for 40 per cent by weight of all food consumed in the country. Meat, fish, dairy and cereal products are the other major components. Over thirty fruits and vegetables are grown commercially in Canada, with a total farm value of about \$600 million. In 1977 the total value of the commercial fruit crop was about \$170 million, while the farm values of vegetables and potatoes were about \$240 million and \$170 million respectively.

As Table 2.1.1 shows, the most important fruit is the apple, which is grown in Nova Scotia, New Brunswick, Quebec, Ontario and British Columbia. In 1977 apples accounted for over 40 per cent of the total value of all fruits and 80 per cent of the value of these apples was earned in Ontario and British Columbia. These two provinces have the most favourable climate for fruits and this is reflected in their large shares of the value of production (40 per cent and 39 per cent respectively). A significant proportion of Canada's fruit production is sold to processing firms. Twenty-two per cent of the farm value of apples was earned in this market in 1977. In the same year in Ontario the processing market accounted for 29 per cent of the farm value of apples and 45 per cent of farm value for other fruits (grapes being particularly important). The relevant figures for British Columbia were 10 per cent (apples) and 54 per cent for other fruits (grapes and raspberries are primarily sold for processing).

The single most important vegetable grown in Canada is the potato. The Atlantic region is recognized as an important producing area with a 43 per cent share of the 1977 crop. Ontario and Quebec are also important producing provinces with shares of 20 per cent and 15 per cent respectively.

TABLE 2.1.1

Total Commercial Production of Fruits by Region - 1977

('000 tons)

	<u>Atlantic Region</u>	<u>Quebec</u>	<u>Ontario</u>	<u>British Columbia</u>	<u>Canada</u>
Apples	51.5	103.8	140.9	157.3	453.5
Peaches	-	-	32.2	15.0	47.2
Strawberries	2.4	5.5	8.8	5.6	22.3
Grapes	-	-	58.6	11.7	70.3
Blueberries	8.1	5.3	-	4.1	17.5
<u>Other</u>	<u>2.1</u>	<u>0.4</u>	<u>31.2</u>	<u>51.6</u>	<u>85.3</u>
Total	64.1	115.0	271.7	245.3	696.1

Total Value of Commercial Fruit by Region - 1977

(\$ Millions)

	<u>Atlantic Region</u>	<u>Quebec</u>	<u>Ontario</u>	<u>British Columbia</u>	<u>Canada</u>
Apples	5.8	8.2	27.4	28.0	69.5
Peaches	-	-	9.7	4.3	14.0
Strawberries	2.2	5.2	7.2	4.2	18.8
Grapes	-	-	13.1	3.9	16.9
Blueberries	8.6	4.9	-	5.5	19.0
<u>Other</u>	<u>1.1</u>	<u>0.7</u>	<u>9.8</u>	<u>19.5</u>	<u>31.1</u>
Total	17.7	19.0	67.2	65.4	169.3

Source: Statistics Canada Cat. 22-003.

Almost one-third of the potato crop is processed by Canadian processors.

In addition both fresh and seed potatoes are exported in large quantities.

Next to potatoes, the most valuable vegetable crop grown in Canada is the tomato. In 1977 the farm value of field and greenhouse tomatoes was \$56 m. (see Table 2.1.2), \$54 m. of which was earned in Ontario. Processing tomatoes accounted for \$37 m. of the total and Ontario accounted for over 99 per cent of this amount. Almost all of the processing tomato acreage is under contract to processing firms. These firms generally purchase all their fresh tomatoes from Ontario growers although a small quantity was imported in 1977.

Other commercially important vegetables include mushrooms, corn, peas, carrots and cucumbers. While domestic supplies of mushrooms for the fresh market have been increasing, the quantity for processing has been dropping due to a rising level of imports. Large quantities of the other vegetables, however, are processed in Canada. Table 2.1.3 shows the total acquisitions for 1977 and indicates that in most cases domestic supplies almost fully satisfy the processing industry's requirements. The exception is asparagus. Only 27 per cent of processed asparagus is supplied domestically. The remainder is imported from the U.S.A. and processed in British Columbia and Ontario.

In the production of processing vegetables, Ontario is the most important province. As we have seen, Ontario produces almost all of Canada's processing tomatoes and is a major producer of the other important processing vegetables having the following shares of Canada's total farm value: corn, 75 per cent, peas, 46 per cent, cucumbers,¹ 75 per cent, beans, 25 per cent. As a result Ontario has the largest fruit and vegetable processing industry. A more complete discussion of the processing sector is given in Section 2.3, but now we turn to the role

¹ Ontario's share of Canada's field-grown commercial cucumbers.

TABLE 2.1.2

Total Acreage of Selected Commercial Vegetables by Region - 1977

('000 Acres)

	<u>Atlantic Region</u>	<u>Quebec</u>	<u>Ontario</u>	<u>Prairies</u>	<u>British Columbia</u>	<u>Canada</u>
Asparagus	-	0.4	2.5	0.1	0.5	3.5
Carrots	1.1	7.9	3.3	0.7	0.6	13.6
Corn	1.0	17.8	38.6	3.7	2.9	64.0
Cucumbers	0.2	3.0	6.2	0.2	0.2	9.8
Peas	7.8	12.9	21.4	x	x	50.4
Tomatoes	<u>x</u>	<u>2.7</u>	<u>25.5</u>	<u>..</u>	<u>x</u>	<u>28.7</u>
Total		44.7	97.5			170.0
All Vegetables						231.8

Total Value of Selected Commercial Vegetables by Region - 1977

(\$ Millions)

	<u>Atlantic Region</u>	<u>Quebec</u>	<u>Ontario</u>	<u>Prairies</u>	<u>British Columbia</u>	<u>Canada</u>
Asparagus	-	0.3	2.1	0.1	0.4	2.9
Carrots	1.1	5.2	6.5	1.8	1.1	15.7
Corn	0.5	4.4	12.8	1.3	1.2	20.2
Cucumbers	0.1	2.3	8.6	0.2	0.3	11.5
Peas	1.7	3.4	7.3	x	x	16.0
Tomatoes-Field	x	2.1	46.8	..	x	49.9
- Greenhouse	<u>0.7</u>	<u>0.5</u>	<u>13.2</u>	<u>0.2</u>	<u>1.6</u>	<u>16.1</u>
Total		18.2	97.3			132.3
Mushrooms	x	x	x	x	8.5	38.1
All Vegetables						237.4

Source: Statistics Canada Cat. 22-003.

TABLE 2.1.3

Total Acquirements of Fresh Vegetables by Processors - 1977

	<u>Domestic</u>		<u>Imports</u>	
	<u>Pounds</u> (mills.)	<u>Value</u> (\$M)	<u>Pounds</u> (Mills.)	<u>Value</u> (\$M.)
Asparagus	2.0	1.0	5.7	2.6
Beans (green and waxed)	88.3	6.2	x	x
Broccoli	7.4	1.3	-	-
Brussels Sprouts	6.8	1.4	-	-
Carrots	67.4	1.7	x	x
Corn	465.9	12.4	-	-
Cucumbers	110.2	8.8	1.4	0.6
Peas	149.7	16.0	x	x
Tomatoes	930.0	37.8	x	x

Source: Statistics Canada Cat. 22-003

of marketing boards in the fruit and vegetable industry.

2.2 Fruit and Vegetable Marketing Boards

Farm product marketing boards have their origins in the 1920's and 1930's. The early attempts to organize producers took the form of marketing co-operatives but these were not successful in achieving the aims of the producers principally because there was no power to force all producers to join the co-operative. The aims of the producers were primarily i) to raise the prices of farm products ii) stabilize these prices and iii) improve the bargaining position of farmers, especially in their dealings with the relatively more concentrated processing and retail sectors. This latter objective is of particular importance to the fruit and vegetables growers because of the contractual relationship between the grower and the processor. Contracts stipulated acreage to be planted, type of seed, maximum quantities of produce per acre, penalties for lack of quality or delivery, limitations of deliveries, price of product and terms of payment. Individual growers

had little to do with the drawing up of the contract. A particularly contentious issue was the practice of "dockage" whereby the processor would reduce the effective weight of a delivery depending on the extent to which the processor judged the delivery to be below the required standard.

From the beginning fruit and vegetable growers were in the vanguard of farmers who were attempting to create marketing arrangements for their crops. It was during the early 1930's when farm prices and incomes were severely depressed that farmers were successful in getting more powerful legislation passed, such as the Natural Products Marketing Act of 1934. This federal legislation created the Dominion Marketing Board which had power to regulate the marketing of natural products (time, place and quantity to be marketed) and to delegate its powers to local boards. These boards had control over interprovincial and international trade. However, in 1937 the Act was repealed on constitutional grounds, but by 1940 all provinces except Quebec had passed legislation allowing the creation of boards to control intraprovincial trade in agricultural commodities. Regulation of interprovincial trade remained a federal responsibility, as laid out in the Dominion Marketing Act of 1949.

In Ontario, provincial marketing boards operate under the Ontario Farm Products Marketing Act which created the Farm Products Marketing Board to oversee the individual product boards. Three kinds of marketing arrangement or plan have evolved. The first is the promotional-type plan. These have few powers which are limited to the collection of fees from producers for promotional and research purposes. The Ontario Egg and Fowl marketing plan was originally of this type but there are none presently in this category.

The second arrangement is the negotiating-type plan which provides for the annual negotiation of minimum prices between producers and purchasers

as well as terms and conditions of sales. The Ontario Vegetable Growers' Marketing Board, which negotiates on behalf of processing tomato growers, falls into this category. More will be said about the details of this plan later. In 1960 all but two marketing boards were in this group. It is an indication of the increasing role of regulation in agriculture that more than half of the twenty-one boards in Ontario now fall into the third category of agency-type plans. Under this arrangement, the board may set price and/or act as an agent through which all sales and payments are made. The asparagus board currently falls into this category although it does not control supply through a quota system as is the case for broiler chickens, turkeys and eggs. The marketing plan of the asparagus growers will be discussed more fully below.

The Ontario Ministry of Agriculture and Food has estimated that in 1976, 60 per cent of farm cash income in Ontario was obtained from products for which a marketing plan was in effect. For field crops the proportion (62 per cent) is high because only grain corn and fresh market potatoes are not covered by a marketing plan. For fruits and vegetables the shares are 81 per cent and 43 per cent respectively. The difference is explained by the fact that the major proportion of fruits are sold to processors whereas a large share of the vegetable crop is sold on the fresh market. Marketing arrangements for processing fruits and vegetables have been more successful than for fresh market crops, and at the ~~same~~ time more eagerly sought by growers because of the necessary contractual relationship between growers and processors. Similar figures to the above for other provinces do not seem to be readily available. However, Table 2.2.1 shows the current list of fruit and vegetable marketing boards for each of the provinces. We turn now to an overview of the processing sector of the fruit and vegetable industry.

Table 2.2.1

Horticultural Marketing Boards in Canada, 1980

<u>Province</u>	<u>Marketing Boards</u>
British Columbia	<ol style="list-style-type: none">1. Coast Vegetable Marketing Board2. Cranberry Marketing Board3. Grape Marketing Board4. Interior Vegetable Marketing Board5. Mushroom Marketing Board6. Tree Fruit Marketing Board
Alberta	<ol style="list-style-type: none">1. Fresh Vegetable Marketing Board2. Potato Commission3. Vegetable Growers' Marketing Board
Saskatchewan	<ol style="list-style-type: none">1. Vegetable Marketing Commission
Manitoba	<ol style="list-style-type: none">1. Root Crop Producers' Marketing Board2. Vegetable Producers' Marketing Board
Ontario	<ol style="list-style-type: none">1. Apple Marketing Commission2. Asparagus Growers' Marketing Board3. Bean Producers' Marketing Board4. Berry Growers' Marketing Board5. Fresh Grape Growers' Marketing Board6. Fresh Potato Growers' Marketing Board7. Grape Growers' Marketing Board8. Greenhouse Vegetable Producers' Marketing Board9. Potato Growers' Marketing Board10. Processing Tomato Seedling Plant Growers' Marketing Board11. Rutabaga Producers' Marketing Board12. Tender Fruit Producers' Marketing Board13. Vegetable Growers' Marketing Board
Quebec	<ol style="list-style-type: none">1. Federation of Apple Producers2. Federation of Potato Producers3. Federation of Fruit and Vegetable Producers4. Saguenay-Lake St. John Blueberry Producers' Board
New Brunswick	<ol style="list-style-type: none">1. Apple Marketing Board2. Greenhouse Products Marketing Board3. Potato Agency
Prince Edward Island	<ol style="list-style-type: none">1. Potato Marketing Board
Nova Scotia	<ol style="list-style-type: none">1. Processing Pea Marketing Board

2.3 The Processing Sector

Statistics Canada's Standard Industrial Classification categories distinguish two sub-sectors within the processed fruit and vegetable industry. These are the canners and preservers (S.I.C. 1031) and the processors which produce formulated and other products (S.I.C. 1032) Table 2.3.1 shows the value of shipments in 1977 for some of the major commodities that these industries produce. In recent years processed products have become increasingly important to the horticultural industry. Although per capita consumption of fruits and vegetables remained almost constant from 1961-65 to 1971-75, consumption of processed products has increased from 144 to 195 pounds per capita while consumption of fresh products has decreased from 328 to 255 pounds per capita.¹ Put somewhat differently, the share (by weight) of fresh market sales has declined over this period from 70 per cent to 56 per cent.

Domestically produced processed fruit and vegetables compete for the domestic market along with imported products. Of course, imported products include many items which cannot be produced in Canada. However, in the market as a whole domestic shipments have maintained a fairly stable share of apparent domestic demand as Table 2.3.2 shows. The growth of real domestic output, therefore, has come from the growth of population and per capita consumption. Over the period 1960-79 the index of real domestic product for this industry has increased by an annual average compound rate of 4.2 per cent compared to 4.9 per cent for total Canadian real domestic product. This increase in real output has been accompanied by a slightly reduced labour force working

¹ Source: Tariff Board Report (Ref. 152) Vol. 1.

TABLE 2.3.1

Value of Shipments of Fruit and Vegetable Processing Industry - 1977

<u>Basic Fruit and Vegetable Products</u>	<u>Value of Shipments (\$ million)</u>	<u>Percent of Total</u>
Canned vegetables	145.3	13.2
Frozen french fried potatoes	106.7	9.7
Tomato and apple juice	91.5	8.3
Frozen vegetables	61.2	5.6
Canned fruit	39.8	3.6
Frozen Fruit	<u>17.3</u>	<u>1.6</u>
TOTAL	<u>461.7</u>	<u>41.9</u>
<u>Formulated and Other Products</u>		
Canned soup	124.5	11.3
Pickles, relishes, sauces	93.3	8.5
Canned citrus juices, drinks	66.2	6.0
Baked beans	35.4	3.2
Jams, jellies and marmalades	25.1	2.3
Pie filling	16.7	1.5
Spaghetti, macaroni products	17.0	1.5
Other products	<u>261.0</u>	<u>23.7</u>
TOTAL	<u>639.1</u>	<u>58.1</u>
Total shipments of own manufacture	1,100.8	100.0

Source: Statistics Canada 32-218

TABLE 2.3.2

Processed Fruits and Vegetables - Sources of Supply and Demand

	<u>Value (\$ millions)</u>		<u>Share of Apparent Demand</u>	
	<u>1961</u>	<u>1975</u>	<u>1961</u>	<u>1975</u>
Shipments	\$319.9	\$981.9	79.8%	81.6%
Exports	7.8	43.1	1.9	3.6
Imports	89.0	264.1	22.0	22.0
Trade balance	-81.2	-221.0		
Apparent demand	401.1	1,202.9	100.0	100.0

Source: Statistics Canada Cat. 65-007, 65-004, 32-218

TABLE 2.3.3

Fruit and Vegetable Processing Industry - Principal Statistics

<u>Year</u>	<u>Establish- ments</u>	<u>Workers</u>	<u>Wages</u>	<u>Energy</u>	<u>Material + Supplies</u>	<u>Shipments</u>
	<u>No.</u>	<u>('000)</u>	<u>(\$millions)</u>	<u>(\$millions)</u>	<u>(\$millions)</u>	<u>(\$millions)</u>
1966	314	15.7	52.7	6.0	283.5	470.3
1967	311	15.2	55.4	6.2	294.2	499.3
1968	295	14.7	57.9	6.3	302.0	510.0
1969	284	14.7	61.4	6.6	316.4	536.4
1970	272	14.4	64.0	6.3	330.3	544.3
1971	262	13.7	68.2	6.7	348.6	567.7
1972	247	13.8	75.1	7.7	371.2	631.3
1973	241	14.5	85.4	8.6	434.8	716.3
1974	245	14.8	99.0	11.4	550.0	865.3
1975	246	15.0	115.5	14.4	613.0	981.9
1976	241	14.3	122.7	16.8	626.1	1,055.0
1977	223	13.0	124.1	19.4	650.0	1,100.8

Source: Statistics Canada Cat. 32-218

in fewer establishments, as Table 2.3.3 indicates. The decline in the number of establishments has been far more dramatic than the decline in the labour force which indicates that a process of rationalization has been taking place. Most of the plant closings have been in Quebec and British Columbia although the employment effects have not been substantial because the plants were small.

As we saw in the previous section the most important province in terms of horticultural production is Ontario and hence it is no surprise that Ontario has the largest share of the industry's employment and shipments. This is illustrated by the data in Table 2.3.4 which was compiled by the federal Department of Industry, Trade and Commerce for the Task Force on the Canadian Fruit and Vegetable Industry and reported in a Sector Profile of this industry.

TABLE 2.3.4

Regional Industry Shares - 1975

	<u>Population</u>	<u>Employment</u>	<u>Shipments</u>
Canada	100.0%	100.0%	100.0%
Atlantic	9.5	12.5	10.2
Quebec	27.1	15.8	15.7
Ontario	36.1	58.0	60.4
Prairie	16.3	4.7	5.0
B.C.	10.8	9.0	8.7

Source: Task Force on Canadian Fruit and Vegetable Industry

The data in Table 2.3.3 also show the importance of materials and supplies as a cost of production in the industry. In 1975, for example, these inputs accounted for 62 per cent of the value of shipments. The largest single component of cost is food materials (over 40 per cent) although not all of this represents purchases of fresh fruits and vegetables. This latter component amounted to about 15 percent of the value of shipments, certainly a significant component of total costs and more important than wage costs (11.8 per cent of the value of shipments).

The financial performance of firms in this industry during the 1970's has varied by product and size of firm. The results of an industry survey taken in May 1978 were reported in the Sector Profile report referred to above. Two tables are reproduced here. Table 2.3.5 shows various profitability measures for the two sub-sectors of the industry over the period 1973 to 1977. The most significant point that emerges from this table is that firms producing basic products such as canned and frozen fruit and vegetables have substantially lower profit rates than firms which produce formulated products, such as soup, catsup, pickles, etc. 1977 proved to be a particularly poor year for the former group of firms.

TABLE 2.3.5

Profitability of Firms by Type of Product

	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
<u>Formulated Products:</u>					
Profit after tax: Equity	11.2%	13.5%	12.5%	11.9%	13.1%
Profit before tax: Capital employed	17.9%	20.0%	20.1%	18.5%	19.8%
Profit before tax: Sales	8.5%	8.8%	8.3%	8.1%	8.3%
<u>Basic Products:</u>					
Profits after tax: Equity	8.6%	10.8%	9.3%	8.3%	3.0%
Profit before tax: Capital employed	13.6%	14.5%	15.2%	11.4%	4.2%
Profit before tax: Sales	6.1%	7.1%	6.5%	4.1%	1.6%

Source: Task Force on Canadian Fruit and Vegetable Industry

Table 2.3.6

Financial Performance by Asset Size - 1974

	<u>Value of Assets</u>		
	<u>Less than \$1m.</u>	<u>\$1m. - 10m.</u>	<u>\$10m. or more</u>
% of no. of firms	68%	26%	6%
% of total sales	7%	27%	66%
Profit after tax: Shareholders' Equity	13.4%	7.0%	17.6%
Profit before tax: Capital Employed	16.1%	9.1%	24.3%
Profit before tax: Sales	4.3%	2.5%	9.7%

Source: Task force on Fruit and Vegetable Industry

Table 2.3.6 shows how financial performance has varied by asset size. The striking point that emerges from this table is that the smaller and the larger firms performed considerably better than the medium-size firms in 1974. The Task Force report argues that the smaller firms are able to specialize in small market segments thereby avoiding competition from the larger firms which tend to concentrate on products for which there are economies of scale. The medium size firms on the other hand compete directly with the larger firms but do not enjoy comparable economies of scale.

3. The Processing Tomato Industry

This section of the paper has four parts. The first discusses the producer subsystem and focuses on production and productivity trends over the past thirty years. The second part is a discussion of the role of the Ontario Vegetable Growers' Marketing Board in the tomato industry and the third looks at the processor subsystem including the market for tomato products. Finally an attempt is made in the last section to evaluate the performance of the industry as a whole during the past two decades.

3.1 The Producer Subsystem

In this section we review the recent trends that have taken place in the production of processing tomatoes. As we pointed out in section 2.1, the vast majority of Canada's processing tomatoes are grown in Ontario, where yields are much higher than in the other producing provinces. For example, over the period 1975-78 Canada's total production averaged 431.5 thousand tons per year while during the same period Ontario's average annual production was 428.7 thousand tons, giving Ontario a 99.4 per cent share of Canada's total production. Again over the same period, 1975-78 yields in Ontario averaged 18.7 tons per acre compared to 4.1 tons per acre in Quebec, the only province where comparable figures are available.

Table 3.1.1 and Chart 3.1 show the substantial increase in production that has taken place in Ontario over the period since 1950. The **five-year** averages for 1950-54 and 1975-79 are, for example, 207,000 tons and 432,000 tons respectively. This represents an average annual compound growth rate of 3.0 per cent. This steady increase in production has been achieved by a dwindling number of producers. In 1950 there were 5,605 producers in Ontario but the number had fallen to 1,384 by 1979. Over the same period the

TABLE 3.1.1

Production of Processing Tomatoes in Ontario, 1950-1979

<u>Year</u>	<u>No. of Growers</u>	<u>Total Acreage</u>	<u>Acres per Grower</u>	<u>Production (tons)</u>	<u>Yield (tons/acre)</u>
1950	5,605	24,380	4.3	142,350	5.84
1951	7,344	31,080	4.2	237,370	7.64
1952	7,856	34,560	4.4	279,650	8.09
1953	5,256	23,950	4.6	184,900	7.72
1954	4,995	21,460	4.3	190,960	8.90
1955	6,244	27,650	4.4	233,870	8.46
1956	5,972	29,618	5.0	194,258	6.56
1957	6,155	33,822	5.5	194,209	5.74
1958	5,208	32,203	6.2	310,196	9.63
1959	4,407	25,528	5.8	276,423	10.83
1960	4,066	24,658	6.1	326,714	13.25
1961	3,187	19,757	6.2	288,357	14.60
1962	2,847	19,826	7.0	332,221	16.76
1963	2,843	19,299	6.8	273,365	14.16
1964	2,991	22,574	7.5	312,495	13.84
1965	3,129	24,242	7.8	378,843	15.62
1966	2,762	22,325	8.1	281,438	12.61
1967	2,576	23,579	9.2	335,768	14.24
1968	2,399	21,437	8.9	319,681	14.91
1969	2,350	19,900	8.5	259,404	12.98
1970	2,015	19,332	9.6	355,451	18.39
1971	1,834	19,541	10.7	357,102	18.27
1972	1,701	19,369	11.4	323,585	19.02
1973	1,675	20,754	12.4	395,114	19.04
1974	1,589	21,384	13.5	343,634	16.07
1975	1,612	22,253	13.8	378,098	16.99
1976	1,532	22,142	14.5	410,489	18.54
1977	1,374	22,351	16.3	453,932	20.31
1978	1,615	24,498	15.2	465,014	18.98
1979	1,384	22,611	16.3	451,568	19.97
1950-59	5,904	28,425	4.8	224,419	7.90
1960-69	2,915	21,760	7.5	310,829	14.28
1970-79	1,633	21,424	13.1	393,399	18.36

Source: Ontario Vegetable Growers' Marketing Board.

CHART 3.1

PROCESSING TOMATO ACREAGE AND PRODUCTION, ONTARIO

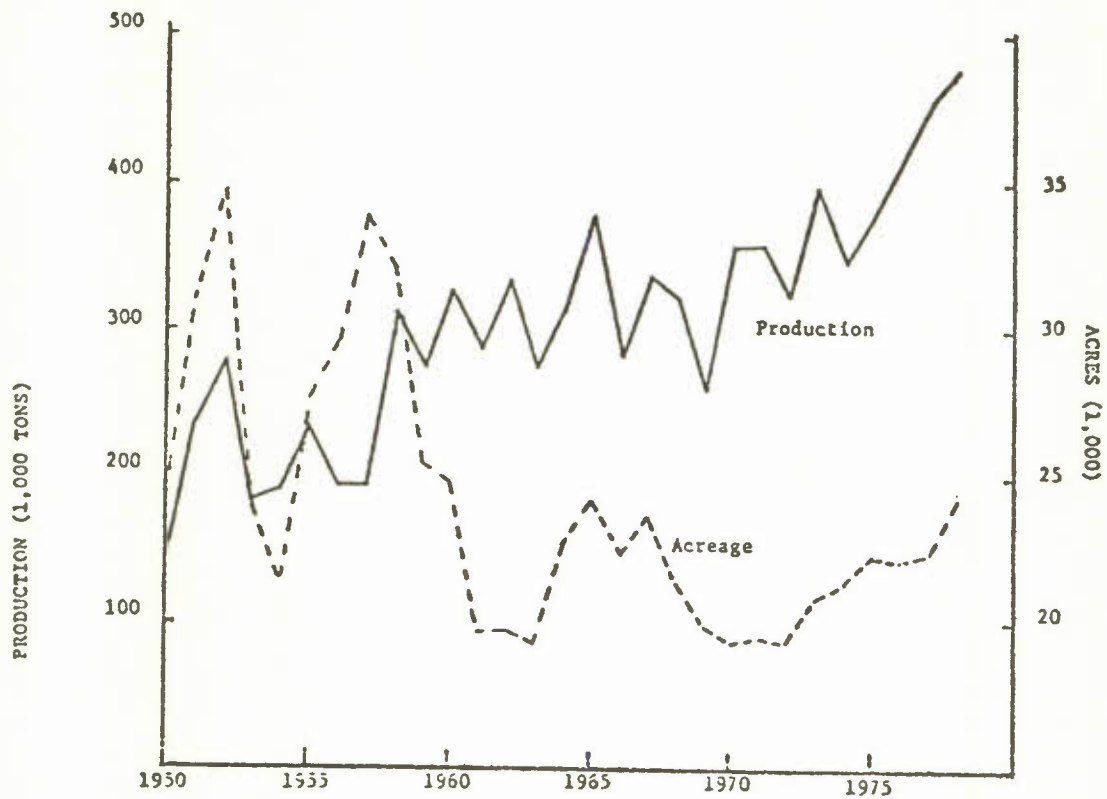
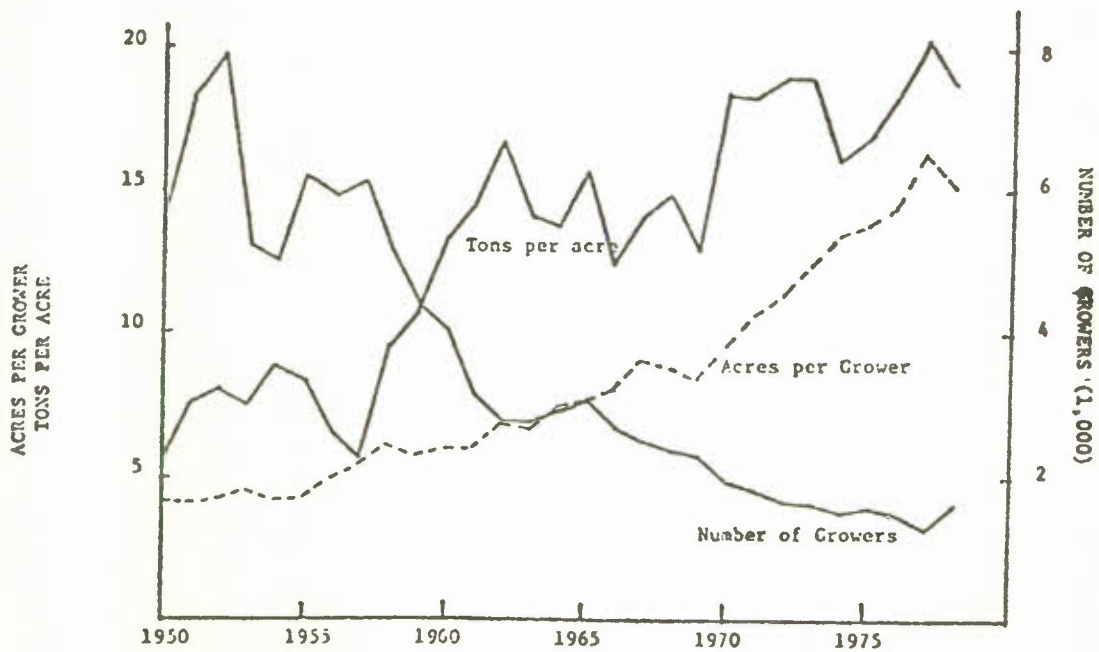


CHART 3.2

NUMBER OF TOMATO GROWERS, ACRES PER GROWER AND
TONS PER ACRE, ONTARIO



total acreage has fluctuated between a high of over 34 thousand acres in 1952 and a low of just over 19 thousand in 1970. Since 1960 the harvested acreage has shown much less variability than in the ten years prior to that date with neither an increasing nor decreasing trend emerging. This implies of course that the growth of output has been achieved by substantial improvements in yield. During the five-year period 1950-54 yields averaged 7.6 tons per acre. By 1975-79 yields had risen to 19.0 tons per acre.

These figures are illustrated in Chart 3.2 which also indicates that the number of acres per grower has shown a fairly steady rise from just over four acres per grower in the early 1950's to about 16 acres per grower presently. At the same time the number of enterprises with fairly large acreages has increased. A study by the Ontario Ministry of Agriculture and Food¹ estimated that in the period 1966-68 less than 10 per cent of enterprises harvested 21 acres or more. Moreover, the average acreage for this group was close to 30 acres. Since that time a number of individual growers have increased their acreage to over 50 and even 100 acres. It is not likely that this would have happened had it not been for the adoption of the mechanical harvester. This machine has not only made it possible, from a management point of view, to increase individual enterprise acreages but the economics of the mechanical harvester demands that the grower plant in the region of 75 acres. From 1978 to 1979 the number of machines in the province doubled to 60. These machines harvested about 20 per cent of the crop in 1979.

One of the major advantages of the mechanical harvester is that it eases the management burden by reducing the risk of labour difficulties. In addition, mechanical harvest has been shown to be cost-effective.

1. Economics of Processing Tomato Production in Ontario, 1966-1970, O.M.A.F., 1971.

TABLE 3.1.2

Processing Tomato Production Costs, Ontario, 1979

<u>Method of Harvest</u>	<u>Cost per Acre</u>			<u>Cost * per Ton</u>	<u>Price per Ton</u>
	<u>Pre-Harvest</u>	<u>Harvest</u>	<u>Total</u>		
Hand	\$650	\$535	\$1,185	\$59	\$85.10
Mechanical	\$650	\$313	\$ 963	\$48	\$85.10

* Assuming 20 tons per acre

Source: "Canada's Role in Producing Tomato Solids", O.M.A.F., 1979.

in Ontario. The data shown in Table 2.3.2 are taken from a report on "Canada's Role in Producing Tomato Solids" prepared for the Ontario Ministry of Agriculture and Food, the Ontario Food Processors' Association and the Ontario Vegetable Growers' Marketing Board.

With this rather dramatic cost advantage (almost 20 per cent) one immediately wonders why the mechanical harvester has not been adopted at a more rapid rate. Discussion of this important question is deferred, however, until we have described more fully the complete processing tomato system. To that end we now turn to the role of the processing subsystem.

3.2 The Processing Sector

In this section the demand and supply, both domestic and foreign, of tomato products is described. In addition the structure of the tomato processing industry in Ontario is outlined.

The domestic demand for tomato products has three components. The first is the demand for those products which are consumed at home and purchased from retail outlets. These products include whole canned tomatoes, juice,

purée, paste, sauce and ketchup. The second derives from an increasing demand for convenience foods, many kinds of which use tomatoes as a basic ingredient; examples are frozen pizza and canned spaghetti. The third, and most rapidly growing source of demand, comes from the market for away-from-home meals which requires tomato ketchup and other tomato concentrate products. Table 3.2.1 shows trends in per capita consumption of tomato products since 1960. Tomato ketchup has shown the strongest upward trend, followed by whole canned tomatoes and pulp, purée and paste. Tomato juice has shown a slight downward trend, but taken together the total per capita consumption of tomato products has increased over the past twenty years.

The supply of tomato products comes from two sources, domestic production and imports. The majority of the companies which manufacture tomato products are located in Ontario where there are approximately thirty firms. Their range of products includes whole canned tomatoes, juice, ketchup, crushed tomatoes and purée, sauce, soup and tomato concentrate. The latter is produced by one of the larger firms and is used subsequently for producing other products. At the present time Canada imports all its requirements for concentrated (30 per cent) tomato paste which is used by such food companies as Lancia, Bravo, Kraft, Catelli and Unico Foods Limited amongst others. These are not the companies which purchase raw processing tomatoes. The latter include H.J. Heinz and Co., Campbell Soup Co. and Canadian Cannery Limited. Table 3.2.2 shows the distribution of processing firms in Ontario by the volume of 1979 deliveries. The four leading firms took over 70 per cent of the deliveries, while the top nine firms accounted for approximately 90 per cent.

Tables 3.2.3 through 3.2.5 show the sources of supply and demand for three major tomato products, namely whole canned, juice and ketchup. As we

Table 3.2.1

Annual Per Capita Consumption of Tomato Products, Canada

Year	Canned Tomatoes	Tomato Ketchup	Pulp, Paste & Puree	Tomato Juice	Total
(lbs. per capita per annum retail weight)					
1960	5.6	3.0	1.4	9.9	19.9
1961	6.6	3.0	0.9	10.0	20.5
1962	5.8	2.8	1.5	11.4	21.5
1963	5.8	3.3	2.0	12.0	23.1
1964	5.8	3.0	1.0	9.8	19.6
1965	5.7	4.0	1.8	9.4	20.9
1966	5.3	3.7	1.7	9.7	20.4
1967	5.3	3.9	2.9	8.4	20.5
1968	5.7	3.9	2.6	8.8	21.0
1969	5.8	4.2	2.4	8.2	20.6
1970	6.1	4.1	1.7	8.0	19.9
1971	6.0	4.1	2.2	8.4	20.7
1972	6.1	4.4	2.2	7.8	20.5
1973	7.1	4.4	3.8	8.5	23.8
1974	7.4	5.1	3.1	8.9	24.5
1975	5.5	5.2	1.8	8.9	21.7
1976	7.0	x	x	8.2	..
1977	6.4	x	x	10.5	..
1978	6.9	x	2.9	9.9	..

Change:

1960-64 to 1970-1974	10.5%	46.4%	91.2%	-21.7%	4.6%
1965-69 to 1975-1978	16.0%	21.2%*	19.5%*	5.3%	9.4%*

*Change from 1965-69 to 1972-75

Source: Statistics Canada Catalogue No. 32-226

TABLE 3.2.2

Distribution of Tomato Processing Firms by Tonnage of Deliveries - 1979

<u>No. Firms</u>	<u>Deliveries</u> (<u>'000 tons</u>)	<u>Average</u> (<u>'000 tons</u>)	<u>Share of Total</u> <u>Deliveries</u>
4	30.0 +	79.9	70.6%
5	10.0 to 29.9	16.6	18.3%
15	1.0 to 9.9	3.1	10.1%
6	0.0 to 0.9	0.7	1.0%
30		15.1	100.0%

Source: Compiled from data supplied by the O.V.G.M.B.

mentioned above, the market for whole canned tomatoes has been growing since 1960. Domestic production has also increased but at a much slower pace. Imports have filled the gap, increasing their market share from about 20 per cent in the 1960's to a peak of 61 per cent in 1975. Since then the share of imports has dropped to below 40 per cent. Exports, however, have declined to zero.

The domestic disappearance of juice has expanded at a somewhat slower pace. Imports were always a small proportion of total supply, 3.6 per cent in the 1960's, but even this small share has been reduced to less than half that figure. Exports, however, have faltered ever since the ill-fated export drive of 1974. Exports are currently an insignificant proportion of total production.

TABLE 3.2.3

TOMATOES, CANNED: PRODUCTION, IMPORTS AND DOMESTIC DISAPPEARANCE, CANADA, 1961-1978

	Annual Percentage Change										
	Average 1961-1970	Average 1971-1978		1971	1972	1973	1974	1975	1976	1977	1978
	- '000 lb. -										
Opening Inventory ^(a)	53,936	52,645	+ 1.0	52,743	62,997	57,702	42,757	22,548	48,004	62,853	71,553
Production	90,021	84,825	- .4	99,313	81,393	85,902	72,374	76,674	79,488	90,011	93,444
Imports	22,958	64,890	+ 11.0	41,384	48,250	55,548	74,652	81,161	95,912	60,040	62,169
Total Supply	166,915	202,359	+ 2.3	193,440	192,640	199,152	189,783	180,383	223,404	212,904	227,166
Exports ^(b)	212	73	- 100.0	40	495	3	-	47	-	-	-
Closing inventory ^(a)	51,896	54,319	+ 2.7	62,997	57,702	42,757	22,548	48,004	62,853	71,553	66,140
Apparent domestic disappearance	114,807	147,967	+ 2.1	130,403	134,443	156,392	167,235	132,333	160,551	141,351	161,026

(a) Opening inventory as of January 1st and closing inventory as of December 31st.

(b) U. S. imports from Canada

Source: Statistics Canada and the U.S. Department of Commerce.

TABLE 3.2.4

TOMATO JUICE, CANNED: PRODUCTION, IMPORTS, EXPORTS AND DOMESTIC DISAPPEARANCE, CANADA, 1961-1978

	Average 1961-1970	Average 1971-1978	Annual Percentage Change 1961-65 to 1976-78	1971	1972	1973	1974	1975	1976	1977	1978
				- '000 lb. -							
Opening Inventory (a)	145,305	125,685	- .5	105,060	104,649	122,656	152,397	121,955	102,861	136,217	159,686
Production	189,197	208,937	+ 1.3	181,545	186,079	212,049	169,882	182,682	217,905	266,972	254,379
Imports	6,800	3,060	- 7.5	1,192	2,502	6,510	2,193	2,071	4,046	3,820	2,146
Total Supply	341,302	337,682	+ .5	287,797	293,230	341,215	324,472	306,708	324,812	407,009	416,211
Exports (b)	11,776	777	-24.5	654	761	624	2,882	494	235	444	123
Closing Inventory (a)	142,045	135,556	+ .5	104,649	122,656	152,397	121,955	102,861	136,217	159,686	184,030
Apparent Domestic Disappearance	187,481	201,348	+ .9	182,494	169,813	188,194	199,635	203,353	188,360	246,879	232,058

Exports as a Percent-
age of Production

6.2

.4

.4

.4

.3

1.7

.3

.1

.2

- -

Imports as a Percent-
age of Domestic
Disappearance

3.6

1.5

- 8.2

.7

1.5

3.5

1.1

1.0

2.1

1.5

.9

(a) Opening inventory as of January 1st and closing inventory as of December 31st.

(b) Includes re-exports.

Source: Statistics Canada.

TABLE 3.2.5

KETCHUP: PRODUCTION, IMPORTS AND APPARENT DOMESTIC DISAPPEARANCE, CANADA, 1961-1978

	Average 1961-1970	Average 1971-1978	Annual Percentage Change 1961-65 to 1971-75	1971	1972	1973	1974	1975	1976	1977	1978
Opening Inventory (a)	33,295 (b)	39,650 (c)	2.0	34,704	34,256	32,032	42,051	38,773	56,086	..	..
Production	69,918	106,409 (d)	6.3	87,121	93,960	106,211	110,752	133,999	(e) x	x	x
Imports	1,705	1,269	-10.6	819	482	583	754	1,355	2,611	2,293	1,251
Total Supply	104,917	147,327	4.8	122,644	128,698	138,826	153,557	174,127	..	..	..
Closing Inventory (a)	32,996 (f)	40,640 (g)	3.9	34,256	32,032	42,051	38,773	56,086	..	..	..
Apparent Domestic Disappearance (h) (plus Exports)	71,921	106,688	5.2	88,388	96,666	96,775	114,784	118,041	..	..	..
Imports as a Percent- age of Domestic Disappearance	2.4	1.2	-14.7	.9	.5	.6	.7	1.1	..	..	..

(a) Opening Inventory as of January 1st and closing inventory as of December 31st.

(b) Nine-year average, omitting 1966. Inventories of 1961-1965 includes inventory of wholesalers and chain store warehouses.

(c) Six-year average, omitting 1977-1978.

(d) Five-year average, omitting 1976-1978.

(e) Not available because of confidentiality requirements of the Statistics Act.

(f) Nine-year average, omitting 1965.

(g) Five-year average, omitting 1976-1978.

(h) Export data are not available.

Source: Statistics Canada.

Details of the ketchup market have been incomplete since 1975 due to confidentiality requirements. However, up to that time the market for ketchup grew rapidly. Domestic production grew more rapidly than apparent consumption so that the share of the market supplied by imports fell. Over the period 1971-75 imports held an average market share of only 0.78 per cent.

While Canada is largely self-sufficient in ketchup and juice, considerable quantities of canned whole tomatoes, purée and paste are imported. Table 3.2.6 shows the volume of imports for these tomato products and the number of acres that would be required to produce the tomatoes domestically if these imports were to be replaced. Over the five-year period 1974-78 this amounted to an average of just over 11 thousand acres. This represents one-half of the average annual acreage actually harvested over that period. The largest component of tomato product imports is purée and paste, which alone represent an equivalent of almost 8 thousand acres of processing tomatoes.

At the present time there is no usable excess capacity in the tomato processing industry. Additional capital investments will have to be made if Canada is to replace imported products with domestic supplies. While this would be costly it would provide an opportunity to replace the current aged equipment with more modern technology of the type that is currently being used in California. California processors not only have the advantage of a longer harvest season but aseptic bulk storage is more widely used¹ which allows a more effective use of plant capacity. At the present time the industry is reviewing the possibility of expanding into tomato solids production. To

¹. The H.J. Heinz Co. at its Leamington plant has used aseptic storage since the 1960's, which greatly reduced the seasonality of labour requirements.

Table 3.2.6

Canadian Imports of Tomato Products: Pounds and Equivalent Acres, 1960-79

<u>Year</u>	<u>Canned</u>		<u>Paste and Puree</u>		<u>Juice</u>		<u>Total</u>	
	<u>Quantity</u> ¹	<u>Acres</u> ²	<u>Quantity</u> ¹	<u>Acres</u> ³	<u>Quantity</u> ¹	<u>Acres</u> ⁴	<u>Quantity</u> ¹	<u>Acres</u>
1960	22.8	1,421	21.0	4,117	14.5	889	58.3	6,427
1961	18.9	1,078	20.6	3,698	12.3	690	51.8	5,466
1962	10.0	463	23.3	3,396	7.1	323	40.4	4,182
1963	13.1	718	34.9	6,021	12.0	647	60.0	7,386
1964	24.6	1,380	20.3	3,583	18.1	999	63.0	5,962
1965	33.3	1,655	40.0	6,256	9.8	479	83.1	8,390
1966	27.1	1,669	47.6	9,221	8.0	484	82.7	11,374
1967	29.1	1,587	52.7	9,041	6.0	322	87.8	10,950
1968	23.5	1,224	53.1	8,700	5.4	277	82.0	10,201
1969	39.3	2,351	58.4	10,991	1.1	65	98.8	13,407
1970	48.9	2,065	43.4	5,765	1.0	42	93.3	7,872
1971	41.4	1,760	42.5	5,683	1.2	50	85.1	7,493
1972	47.4	1,935	45.5	5,844	2.5	100	95.4	7,879
1973	55.5	2,263	61.6	7,904	6.5	261	123.6	10,428
1974	74.7	3,609	68.4	10,398	2.2	105	145.3	14,112
1975	81.2	3,711	42.1	6,053	2.1	94	125.4	9,858
1976	95.9	4,017	51.2	6,746	4.5	185	151.6	10,948
1977	66.7	2,550	55.1	6,687	4.2	158	126.0	9,395
1978	69.1	2,827	66.4	8,546	2.4	97	137.9	11,470
1979	71.7	3,268	76.2	10,927	2.6	117	150.5	14,312
Averages								
1960-64	17.9	1,012	24.0	4,163	12.8	710	54.7	5,885
1965-69	30.5	1,697	50.4	8,842	6.1	325	86.9	10,864
1970-74	53.6	2,326	52.3	7,119	2.7	112	108.5	9,557
1975-79	76.9	3,275	58.2	7,792	3.2	130	138.3	11,197

¹Retail weight in millions of pounds

²Based on farm weight of 1.553 pounds per pound of imported tomatoes and Canadian average yield

³Based on farm weight of 4.8858 pounds per pound of imported paste and puree (assumes 75% paste and 25% puree at 5.432 and 3.247 pounds farm weight per pound imported, respectively) and Canadian average yield.

⁴Based on farm weight of 1.527 pounds per pound of imported juice and Canadian average yield.

Source: Statistics Canada Catalogue Nos. 22-003 and 65-007 and Tomato Solids Report.

date only one small operation has made a commitment, aided by a provincial grant of \$250,000 for the purchase of an evaporator. It remains to be seen whether the new higher tariff on tomato paste and the depreciated value of the Canadian dollar will be sufficient inducements for other firms to accept government capital grants for this purpose.

3.3 The Role of the O.V.G.M.B.

As we mentioned earlier, effective marketing boards in Ontario first emerged in the 1930's. The contractual relationship between growers of processing fruits and vegetables and the processing companies was a strong incentive for growers to pool their resources in order to have some influence on the terms of contracts. The negotiating agencies, such as the asparagus growers' St. Catharines Growers' Co-operative Company (1932) and the Tomato Scheme (1940), were primarily concerned with price and conditions of sale. Thus, minimum prices were established as well as the cost of items or services supplied to growers by processing companies. These might include plants, spray programmes, containers and transportation. In addition, boards and processors established grades of quality which are necessarily part of any pricing system. Agreements negotiated by local boards then became part of all individual contracts signed between growers and processors.

The O.V.G.M.B. has its origins in the Tomato Scheme of 1940. By 1945 green pea, sweet corn and green and wax beans were added and the name was changed to the Vegetable Scheme. At the present time the O.V.G.M.B. (referred to in the remainder of this section as the Board) regulates and controls within Ontario the marketing of twelve processing vegetables.¹ References to vegetables in this section will mean these twelve vegetables.

¹ Green and Wax beans, lima beans, red beets, cabbage, carrots, cauliflower, sweet corn, cucumbers, green peas, peppers, pumpkin and squash, and tomatoes.

The Board is made up of twelve annually elected producer-members. The expenses of the Board are met by the fees paid by the producers, which currently amount to five-tenths of one per cent of the value of the crop. A further one-tenth of one per cent is collected and placed in a research fund. The Ontario Farm Products Marketing Board has delegated to the local Board several powers. Thus, all growers of processing vegetables in Ontario must register with the Board and supply to the Board any relevant information concerning the production of processing vegetables. Indeed, the Board has the right to inspect the books of producers. The Board also requires that all processors purchase their vegetables through the Board. In order to have the right to process vegetables, a firm must obtain an annual licence from the F.P.M.B. and this requires that the firm satisfy certain criteria established by the F.P.M.B.

3.3.1 The Negotiating Function

While the O.V.G.M.B. does not have the right to restrict supply through such means as quotas, the Board does negotiate with the processing companies on behalf of the growers. This is done through twelve negotiating committees that meet annually in the early part of the year. The result of these negotiations is an agreement (one for each vegetable) which becomes part of any agreement signed between individual growers and processing firms.

There are three major issues that have to be settled during the negotiations. The first concerns minimum prices for class, variety, grade

TABLE 3.3.1

Processing Tomato Prices in Ontario and Proportion of
Number 1 Grade Tomatoes, 1950-79

Year	<u>Tomato Price (\$ per ton)</u>				Proportion of #1
	#1 Grade	#2 Grade	Average	Relative ¹	
1950	26.85	16.85	22.35 ²	37.44	0.55 ²
1951	32.00	22.00	27.50 ²	41.69	0.55 ²
1952	40.00	30.00	33.50 ²	52.52	0.55 ²
1953	38.00	28.00	33.54	50.05	0.55
1954	36.50	23.50	30.60	45.39	0.55
1955	37.00	24.00	31.18	46.17	0.55
1956	37.00	25.50	32.94	48.07	0.65
1957	41.50	25.50	34.98	49.46	0.59
1958	41.50	25.50	35.30	48.63	0.61
1959	41.50	25.50	34.65	47.21	0.57
1960	41.50	25.50	36.15	48.68	0.67
1961	41.50	25.50	36.19	48.28	0.67
1962	41.50	25.50	36.28	47.82	0.67
1963	41.50	25.50	36.45	47.21	0.68
1964	41.50	25.50	36.75	46.78	0.70
1965	45.00	29.00	40.40	50.18	0.71
1966	48.95	32.95	44.37	53.13	0.71
1967	50.00	38.00	46.51	53.76	0.71
1968	50.50	38.50	46.76	51.93	0.69
1969	50.50	38.50	47.17	50.14	0.72
1970	51.00	39.00	47.56	48.92	0.71
1971	49.50	37.50	46.50	46.50	0.75
1972	49.75	37.75	46.40	44.27	0.72
1973	51.00	39.00	47.45	42.10	0.70
1974	74.00	62.00	70.88	56.70	0.74
1975	85.00	73.00	80.57	58.17	0.63
1976	83.00	71.00	79.65	53.49	0.72
1977	85.50	71.00	81.44	50.65	0.72
1978	85.50	71.00	82.43	47.06	0.79
1979	90.25	75.75	85.10	44.51	0.64

¹Deflated by CPI (1971 = 100)

²Estimate

Source: Ontario Vegetable Growers' Marketing Board

or size of vegetable. In the case of tomatoes, a minimum price per ton is established for each of two grades. Table 3.3.1 shows how these minimum prices have changed during the past thirty years. The second area concerns the terms and conditions of the agreements signed by individual growers and processors. These include such things as the timing of payments to growers and of deliveries of tomatoes to processors. Finally, the negotiations determine the level of any charges or expenses relating to the production and marketing of the crop. In the case of tomatoes, these terms include the price of plants supplied by processing companies and the liability of growers who lose or damage containers (bulk bins for example) owned by the processing firms.

In the event that the negotiating committee fails to establish an agreement, the outstanding issues are submitted to a three-man Arbitration Board which consists of an appointee of the Board, an appointee of the processors and a mutually agreed upon third person. In recent years the Board has become dissatisfied with the negotiating procedures, charging that too often issues have been submitted to arbitration. According to the Board this is due to the fact that "In some cases there is an obvious lack of frankness in the negotiating room and instead of progressing, negotiation becomes a poker game and unrealistic posturing further deteriorates the situation."¹ As a result, in 1979, the Board appealed to the Ontario Farm Products Marketing Board for price-setting powers. The Board also requested that a system of final offer selection be adopted by the Arbitration Board. This system forces the arbitrator to select one of the two final offers rather than develop a compromise settlement. The Board felt that this would improve the atmosphere of negotiations and encourage both sides to make realistic offers.

¹From a brief submitted by the Board to the Federation of Agriculture.

Vegetable processors were opposed to both amendments, particularly the move to price-setting powers. The Farm Products Marketing Board announced in late 1979 that the O.V.G.M.B. would not be given price-setting powers, but that beginning in 1980 the final offer selection method would be used.

Other recent developments include contract guarantees and increased flexibility within individual contracts allowing for quantities to be expressed in either acreage (the only type of contract originally) or tonnage terms. The first change requires processors to give notice that contracts with a particular grower are to be discontinued. The grower then has the option of claiming the right to a contract for two further years. In addition, processing firms have to pro-rate their total tomato requirements amongst current growers in the event that these requirements fall. Both of these devices are designed to protect the contracts of the growers and to slow down the rate at which the producing sector rationalizes along the lines that the current technology demands. While the processors themselves have not actively encouraged the shift to more capital intensive methods of production, they did not welcome these contract guarantees since it reduces their freedom to seek out the most reliable growers. The second change, from acreage to tonnage contract was also not welcomed by many processors although others are perfectly willing to sign tonnage contracts. In the short term this change will not increase the value of any individual grower's contract but it passes to the grower the decision of how much acreage to plant. To the extent that growers are the best judges of their own productivity this should improve efficiency, particularly as acreage contracts give processors the right to suspend deliveries once twenty tons per acre has been delivered.¹ Since many growers consistently achieve

¹ In practice, processors often accept more than 20 tons per acre. The clause is present to avoid difficulties during bumper crops.

around twenty-five tons per acre the tonnage contracts should ultimately reduce the cost of the raw product to the processors. However, some processors are reluctant to give up control of the total acreage planted. They contend growers have an incentive to overplant since failure to meet the required quantity of tomatoes will endanger the grower's contract. This overplanting will then drive up grower costs which will be passed on to the processors. This argument rests on the assumption that growers are poor judges of their own tomato yields and that a fixed-ton-per-acre rule is more efficient. Perhaps a second reason why both some growers and some processors see disadvantages in tonnage contracts is that total supply would be less well controlled since acreage decision-making is decentralized. Excess supplies are not necessarily ploughed under, but may be sold at below-negotiated prices to processors who are willing to break the rules. Such a situation would obviously undermine the position of the Board.

3.3.2 Trade Policy

A second major responsibility of the Board, and of marketing boards in general, is that of promoting the products under the Board's jurisdiction. Because processing vegetables ultimately enter the market place in processed form, the Board is obviously interested in the domestic and foreign markets for these processed products. For this reason, horticultural marketing boards in general take a protectionist stance when it comes to trade policy. This is illustrated by the recommendations made by the Canadian Horticultural Council (C.H.C.), on behalf of the growers, to the Tariff Board during that Board's deliberations on the subject of tariffs as they relate to fresh and processing fruit and vegetables. The Council noted: "Raw produce prices are directly related to the returns received by

processors and it is, therefore, of direct concern to members of the Council that the processing section of our economy be adequately protected from competition from countries abroad." Indeed, duties recommended by the C.H.C. were generally higher than those proposed by the C.F.P.A. For example, the C.F.P.A. recommended a zero tariff on pineapples, whereas the C.H.C. recommended a tariff of twenty per cent. Table 3.3.2 shows the tariff recommendations for three tomato products and, for comparison purposes, the then existing Canadian and U.S.A. tariffs.

At the time of the Tariff Board inquiries most imported processed fruit and vegetable products were subject to a specific duty that had been in effect several years. Consequently, the ad valorem equivalent tariffs had been falling as unit prices climbed. The result of the Tariff Board investigation was to recommend revisions to the tariff structure one of which was to impose ad valorem rather than specific tariffs.

An example of effective lobbying by producer groups is the change in the tariff on tomato paste. As we pointed out earlier Canada does not produce any highly concentrated paste. Processing firms suggested no change in the existing specific tariff of 1.5 cents per pound except that paste for manufacturing should enter duty free. The Canadian Horticultural Council argued for a minimum 20 per cent ad valorem tariff. The reasoning behind this proposal was that Canada and Ontario in particular should develop a tomato solids industry to replace imports of paste. This proposal has the backing of the Ontario Ministry of Agriculture and Food. Ultimately when the new tariff structure was negotiated Canada emerged with a 13.6 per cent duty on tomato paste. Table 3.3.3 shows that in 1976 the ad valorem equivalent tariff on Canada's 45 million pounds of imported tomato paste had fallen to 5.1 per

TABLE 3.3.2

Tariff^{*} Proposals of the Canadian Horticultural Council and the
Canadian Food Processors Association and Comparable U.S.A. Tariffs
(Tomato Products)

<u>Commodity</u>	<u>Existing Duty</u>	<u>Proposed Tariff</u>		<u>Comparable U.S.A. Tariff</u>
		<u>C.H.C.</u>	<u>C.F.P.A.</u>	
Canned Tomatoes	2¢/lb.	3¢/lb. ⁽¹⁾	15 p.c.	14.7 p.c.
Canned Tomato Paste	1-1/2¢/lb.	3¢/lb. ⁽¹⁾	1-1/2¢/lb. ⁽²⁾	13.6 p.c.
Tomato Juice	20 p.c.	20 p.c.	20 p.c.	11¢/gall.

(1) But not less than 20 p.c.

(2) Free for manufacture.

* Most Favoured Nation duties are reported here.

Source: Tariff Board Report, vol. 2

TABLE 3.3.3

Tomato Paste, Canned: M.F.N. Dutiable Imports and the Ad Valorem Equivalent of the M.F.N. Specific Duty, 1966-1976^(a)

		M.F.N.		Ad Valorem		U.S.
	Dutiable	Price	Specific	Equivalent	U.S.	U.S.
	Imports	f.o.b.	Duty	of M.F.N.	Price	Ad Valorem
	'000 lb.	¢/lb.	¢/lb.	Specific Duty	f.o.b.	Equivalent
				%	¢/lb.	of M.F.N.
						Specific Duty
						%
1966	47,374	15.8	1.5	9.5	24.2	6.2
1967	55,717	16.6	1.5	9.0	25.1	1.0
1968	53,065	16.6	1.5	9.0	24.2	1.2
1969	58,391	15.9	1.5	9.4	19.4	7.7
1970	43,387	14.9	1.5	10.1	20.9	7.2
Average						
1966-70	51,587	16.0	1.5	9.4	22.1	6.8
1971	50,608	14.1	1.5	10.6	21.8	6.9
1972	54,119	14.9	1.5	10.1	26.1	5.7
1973	73,225	18.5	1.5	8.1	22.4	6.7
1974	68,511	35.3	1.5	4.2	32.3	4.6
1975	45,302	38.1	1.5	3.9	37.8	4.0
Average						
1971-75	58,353	24.0	1.5	6.3	29.1	5.2
1976	45,588	29.7	1.5	5.1	35.0	4.3

(a) Converted to gross weight (to include weight of container) by a factor of 1.19 for the years 1971 to 1975.

Source: Tariff Board Report, Vol. 2.

cent. Both the growers and the Ministry are confident that the new tariff will make a solids industry viable. Other important factors in favour of this development are: a lower-valued Canadian dollar, rising transportation costs and the fact that domestically produced solids would not be as concentrated as current imports. This product therefore requires less energy to produce and is quite suitable to meet the requirements of food companies who dilute the more concentrated paste they currently import.

In the meantime however, consumers are paying the additional duty and we do not have a domestic paste industry. In the next part of the report we present a welfare analysis of the tariff on paste. In particular, estimates are made of the income transfers and employment effects that the tariff will have if domestic production reaches the scale anticipated by the Nelson report "Canada's Role in Producing Tomato Solids".

3.4 An Evaluation of the Processing Tomato Industry

In order to assess the performance of an industry it is necessary to define the generally accepted social purposes of production and then to establish wherever possible quantitative performance measures of the extent to which the industry satisfied these social goals. It is widely accepted, for instance, that industries should be efficient, provide adequate employment and incomes and supply consumers with stable quantities of quality product at reasonable prices. The processing tomato industry has two levels of production, the grower sector and processing sector. To evaluate the efficiency of the former, comparisons will be made with the grower sector in the United States. Such comparisons are warranted given that the United States is Canada's single most important foreign source of tomato products, supplying essentially all of Canada's imports of ketchup and juice and approximately 40 per cent of Canada's total imports of paste and canned tomatoes. Imports of the first two items averaged 6 million pounds over the period 1976-78, while imports of the second pair averaged 135 million pounds over the same three-year interval.

3.4.1 The Grower Sector

The most significant change in the grower sector of the United States tomato industry that has taken place over the last twenty years is the shift in geographical location. California has emerged as the dominant producing region. During the years 1950-52 California produced 1.7 million tons per year which amounted to a 36 per cent share of total U.S. production. By 1973-75 annual production had risen to 6.0 million tons, giving California an 85 per cent share of national production. The reasons for this shift have

TABLE 3.4.1

Processing Tomato Harvest Season* 1969-79

<u>Year</u>	<u>Opening Date</u>	<u>Closing Date</u>	<u>Number of Days</u>
1969	Aug. 14	Oct. 29	77
1970	July 31	Oct. 15	77
1971	Aug. 5	Oct. 20	77
1972	Aug. 8	Oct. 17	71
1973	Aug. 3	Oct. 16	75
1974	Aug. 8	Oct. 16	70
1975	July 31	Oct. 22	84
1976	July 26	Oct. 14	81
1977	July 28	Oct. 12	77
1978	Aug. 3	Oct. 13	72
1979	Aug. 8	Oct. 19	73

*First and last days of tomato grading.

Source: Ontario Vegetable Growers' Marketing Board

been identified as: favourable weather, adequate water, available fertile land, good transportation systems, a high level of technology and management skills and a strong research backup.¹ Given that California has emerged as North America's most efficient growing region it provides a benchmark by which we can assess the efficiency of Canadian growers.

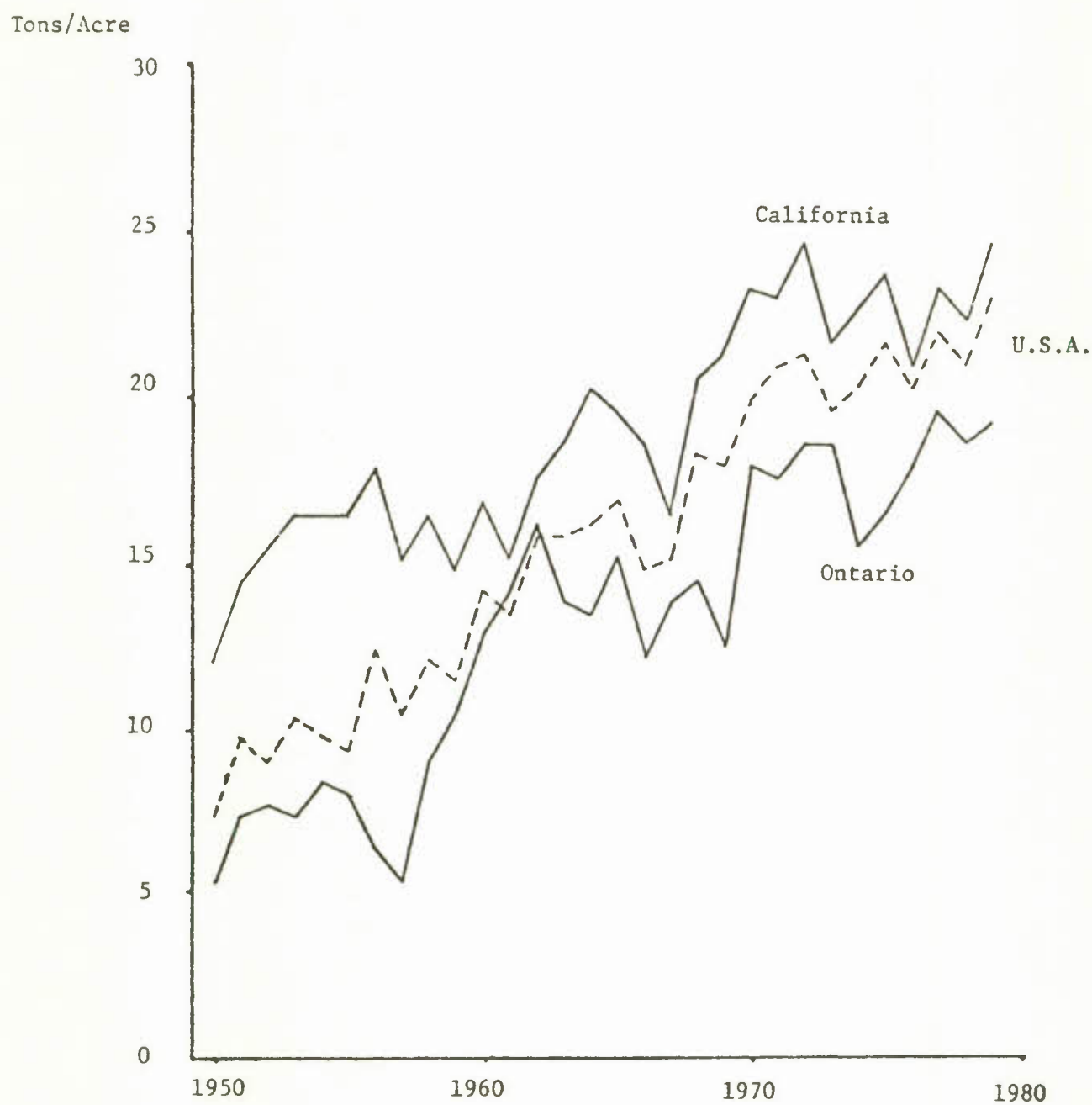
A measure of comparative advantage in tomato production is the length of the harvest season and the distribution of the volume of production throughout the harvest. A long harvest with an even flow of production allows for an efficient use of processors' plants. It has been estimated that production in California is such that plants operate at above 80 per cent of capacity for six weeks and above 50 per cent for 10 weeks. Unfortunately, weekly delivery data for Ontario were not available but Table 3.4.1 does show the length of the harvest season in Ontario which has averaged about eleven weeks during the past ten years. This is marginally above one-half the California season of about 21 weeks.

Two indicators of efficiency are the level of technology and productivity. The latter can be measured by yield (tons/acre). Chart 3 shows trends in yields for Ontario, California and the U.S.A. as a whole over the period 1950-79. Yields in California have consistently been above those in Ontario and the Eastern and Mid-Western U.S.A. Ontario, however, has yields comparable to those in the Mid-West (e.g., Ohio, Indiana) and above those of the Eastern U.S. (e.g., New Jersey, Pennsylvania). Table 3.4.1 shows

¹ "Economic Performance of the Processing Tomato Industry" J.A. Brandt et. al. Giannini Foundation, 1978. Referred to below as Brandt et. al.

CHART 3.3

Processing Tomato Yields, Ontario, California, U.S.A. - 1950-1979



correlation matrices of regional yields. The upper panel demonstrates that Ontario yields have been most highly correlated with those of the Mid-West over the period 1950-79. This is a reflection of the similarity of cultural practices and of geographical proximity. This panel also shows that Ontario yields have been more highly correlated with those of the Eastern U.S. than with California. Again, this would seem to be a reflection of geographical proximity. The high correlation coefficients reflect in part the upward trend in yields that has taken place in all regions. In order to remove this influence, trend lines were fitted to each region's yield series and the simple correlation coefficients have been computed for the deviations of yield about trend. The results are reported in the lower panel of Table 3.4.1. The effects of geographical isolation and the different cultural practices of California are now clearly evident. Movements of yield about trend in California are quite unrelated to such movements in the other regions. However, the correlation coefficients between Ontario, Mid-West and Eastern U.S. yield deviations all fall within the range of 0.5 to 0.6.

The trend regressions themselves are reported in Table 3.4.3. The first four regressions indicate that yields in Ontario have risen faster than in any other region but that they started from the lowest base. California yields have not risen as fast as Ontario and Mid-West yields, but initially California yields were about double those of the other regions. The last regression shows that yields in the U.S. as a whole have risen faster than Ontario yields. This reflects the shifting of production to California since, as we have seen, a region by region comparison shows yields in Ontario have climbed most quickly.

TABLE 3.4.1

Correlation Matrix of Regional Tomato Yields

1950-1979

	<u>Ontario</u>	<u>California</u>	<u>Mid-West</u>	<u>Eastern U.S.</u>	<u>U.S.A.</u>
Ontario	1.000	0.846	0.896	0.865	0.940
California	0.846	1.000	0.769	0.694	0.950
Mid-West	0.896	0.769	1.000	0.869	0.879
Eastern U.S.	0.865	0.694	0.869	1.000	0.850
U.S.A.	0.940	0.950	0.879	0.850	1.000

Correlation Matrix of Detrended Regional Tomato Yields

1950-1979

	<u>Ontario</u>	<u>California</u>	<u>Mid-West</u>	<u>Eastern U.S.</u>	<u>U.S.A.</u>
Ontario	1.000	0.085	0.591	0.518	0.500
California	0.085	1.000	0.059	-0.157	0.707
Mid-West	0.591	0.059	1.000	0.595	0.515
Eastern U.S.	0.518	-0.157	0.595	1.000	0.447
U.S.A.	0.500	0.707	0.515	0.447	1.000

The level of technology used in the grower sector can best be captured by the extent to which mechanical harvesters with or without electronic sorting capabilities have been adopted. As we saw earlier, studies have shown that mechanical harvesting is cost-effective in Ontario yet to date at most 20 per cent of the acreage is harvested mechanically. In California the situation is quite different. The importance of this has been noted by Brandt et. al. "California's dominance in processing tomato production can, in part, be attributed to its adoption of the mechanical harvester and new tomato varieties. Similarly, part of the decline in production in the Mid-West and East can be traced to their failure to adopt this cost-saving technique to their particular conditions." Significant adoption of the harvester in California began in 1965 and by 1970 adoption was complete. Full benefit of the mechanical harvester can be achieved only if it operates on large acreages. Even as early as 1956 the average size of farms in California was 91 acres. In 1975 a sample of 825 growers had an average acreage of 362 acres. As we have seen, in Ontario as late as 1979 the average acreage per grower was 16 acres. Clearly, if the optimal acreage for use of the mechanical harvester is 100 acres or more then the number of growers required to satisfy the current needs of Ontario's processors would be no more than 220, less than one-fifth the present number of growers. We noted above that the growers as a group have resisted this process of rationalization, although there are individuals who in their own interest would like to expand production to derive the full benefits of the new technology.

The processing firms play a far from passive role in this issue as it is the processing firms who control, through the contractual arrangements, both the size of the individual contracts and the varieties which the

growers plant. Since the hand-picked and mechanical harvest varieties are mutually exclusive the processing firms have considerable control over the rate of adoption of the new technology. The processing companies have not actively encouraged the shift to the new technology. The specific reasons are far from clear. The quality of tomatoes harvested mechanically is in no way inferior to the hand-picked varieties. From conversations with the processing companies it would seem that they are reluctant to abandon small growers with whom they have built a degree of cooperation and trust. Moreover, processing companies are anxious that their annual supply be reliable. The Southern Ontario climate is such that a period of heavy rain at harvest time could leave the crop in the fields if the machines could not operate. In such circumstances growers would likely be less severely hit financially than the processing companies who have neither crop insurance nor alternative supplies of raw product. Experience to date does not suggest that this risk is all that great. Meanwhile the cost savings are substantial and to the extent that these savings are passed on to the retail level domestic processors would be able to hold a larger share of the domestic market for tomato products if mechanical harvesters were more widely used.

An important indicator of performance is the price of the product and the extent to which the price reflects market conditions. Processors in Ontario have alleged that raw product prices do not reflect market conditions. Specifically, they charge that raw product prices were raised substantially in Ontario when world prices were rising during the early 1970's but Ontario prices did not follow the downward adjustment that occurred internationally. We will now turn to an examination of the behaviour of processing tomato prices in Ontario and their relation to comparable U.S. prices, paying attention to two measures of performance. First there is

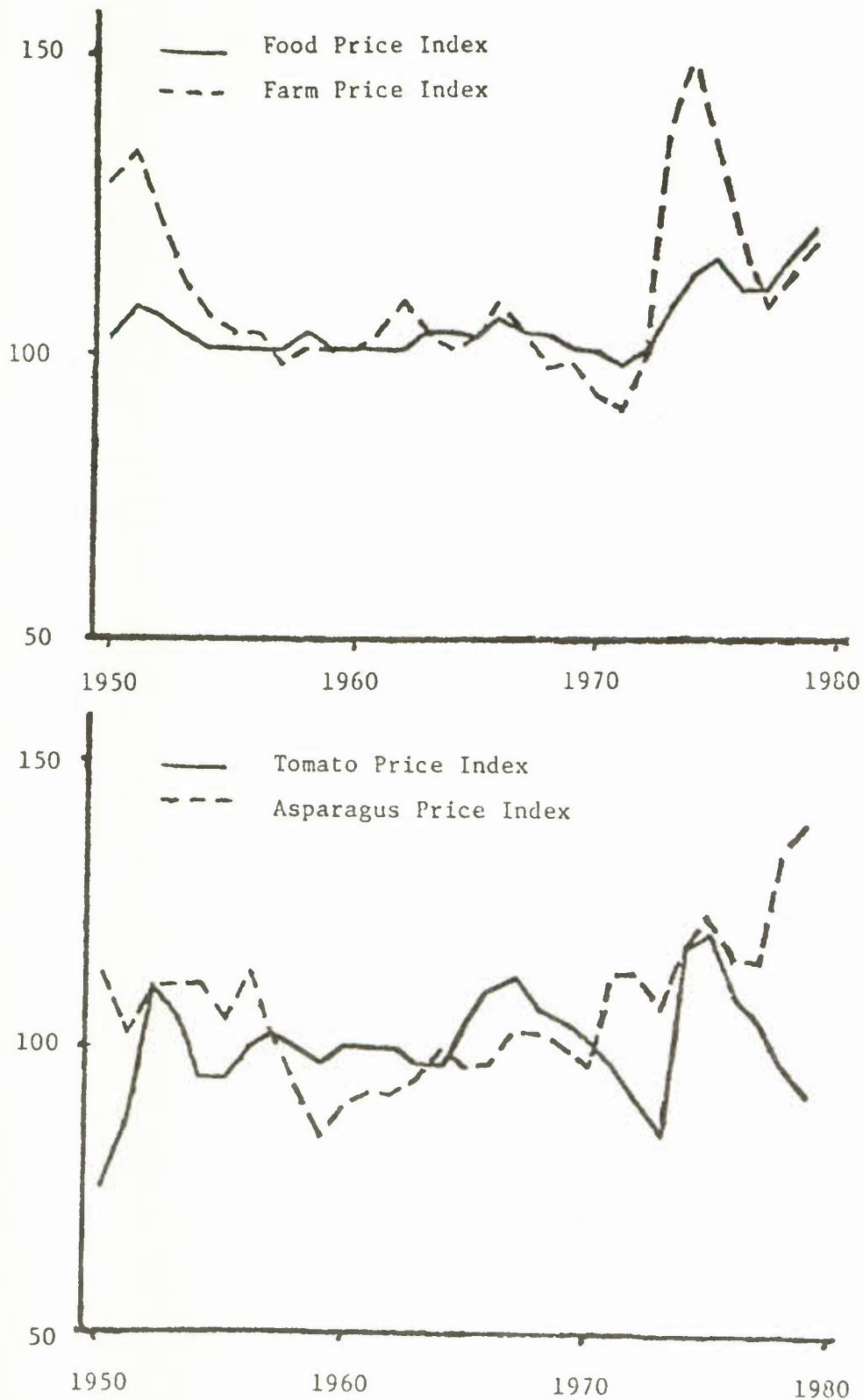
the issue of the level of Ontario prices and especially in comparison to U.S. prices. However, there is potentially a problem of accounting for different qualities that the Ontario and U.S. product may have. A second indicator which suffers less from this difficulty is a measure of the degree of association of price movements in different geographical markets. Such an indicator attempts to measure the degree of sensitivity of one market to disturbances in another.

First let's consider the question of price levels. Chart 3.4 shows four price indices. In all cases the indices are scaled so that they average 100 over the five-year period 1955-59 and all are relative to the Consumer Price Index (CPI). The top panel shows the food price index of the CPI and the farm price index (both deflated by the CPI). As one would expect the second series is more volatile. The chart also shows that food and farm prices began to rise faster than the overall CPI index in 1970. The lower panel shows similar graphs for processing tomato and asparagus prices. Both series show a high degree of variability. However, unlike asparagus prices, tomato prices at the end of the period have risen less than the CPI since the 1955-59 period.

Now let us turn to the relationship between Ontario and U.S. processing tomato prices. The left-hand panel of Chart 3.5 shows the time-series of Ontario and U.S. prices; both expressed in Canadian dollars. The right-hand panel shows similar information with the U.S. series being expressed in U.S. prices. Both panels tell much the same story. While U.S. prices do show a saw-tooth pattern about a rising trend the Ontario series has few absolute declines. In addition, the Ontario series proceeds in a

CHART 3.4

REAL INDICES OF FOOD, FARM, TOMATO AND ASPARAGUS PRICES



Sources: Statistics Canada Cat. 62-001, 62-010, 62-003
Ontario Vegetable Growers' Marketing Board
Agricultural Statistics for Ontario

step-like manner, making three marked upward shifts followed by periods of fairly stable prices. When Ontario has relatively high prices compared to the U.S. this is typically the result of stable Ontario prices coupled with declining U.S. prices.

Chart 3.6 shows the ratio of processing tomato prices in the Mid-West and U.S.A. as a whole to Ontario prices. Since 1952 these ratios have been between 0.6 and 1.0. There seems to be no noticeable upward or downward trend in the U.S.A./Ontario ratio since 1952, although the Mid-West/Ontario ratio, when exchange rate adjustments are made (left-hand panel), does seem to be moving towards unity since 1962. The right-hand panel suggests that this reflects in large part the recent decline in the value of the Canadian dollar. Two conclusions emerge from these charts. First, over the period as a whole Ontario prices have been about 20 per cent higher than U.S. prices. Second, price ratios for Ontario and the Mid-West are less variable than Ontario/U.S.A. ratios. These points can be interpreted to mean that while Ontario prices on average have been relatively high the Ontario market seems to be more sensitive to Mid-West market conditions than to market conditions in the U.S.A. as a whole.

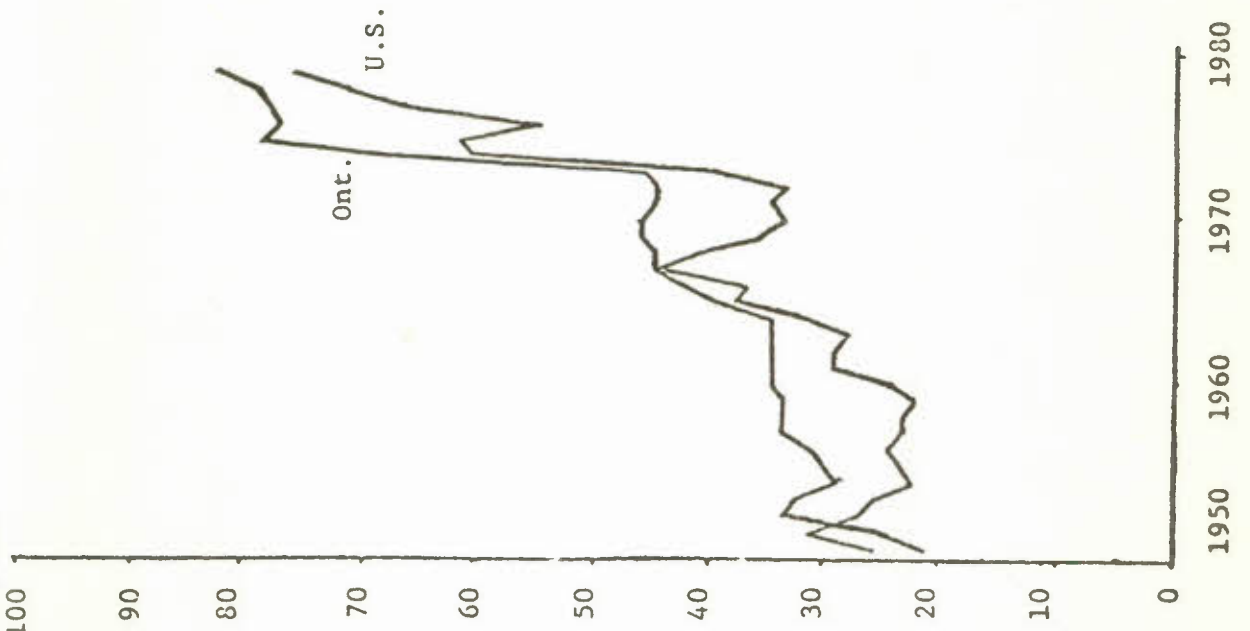
Grower representatives have suggested that price level comparisons are very difficult to make because of quality differences. In particular, the use of colorimeter grading allows growers in the U.S. to include some green tomatoes in a load subject to the load meeting an overall colour requirement. In Ontario loads are judged by eye and green tomatoes are not allowed. It is argued therefore that substantial productivity gains could be achieved if Ontario adopted the mechanized colour grading scheme. It

CHART 3.5

PROCESSING TOMATO PRICES IN CANADIAN FUNDS

1950-1979

Dollars/Ton



PROCESSING TOMATO PRICES 1950-1979

Dollars/Ton

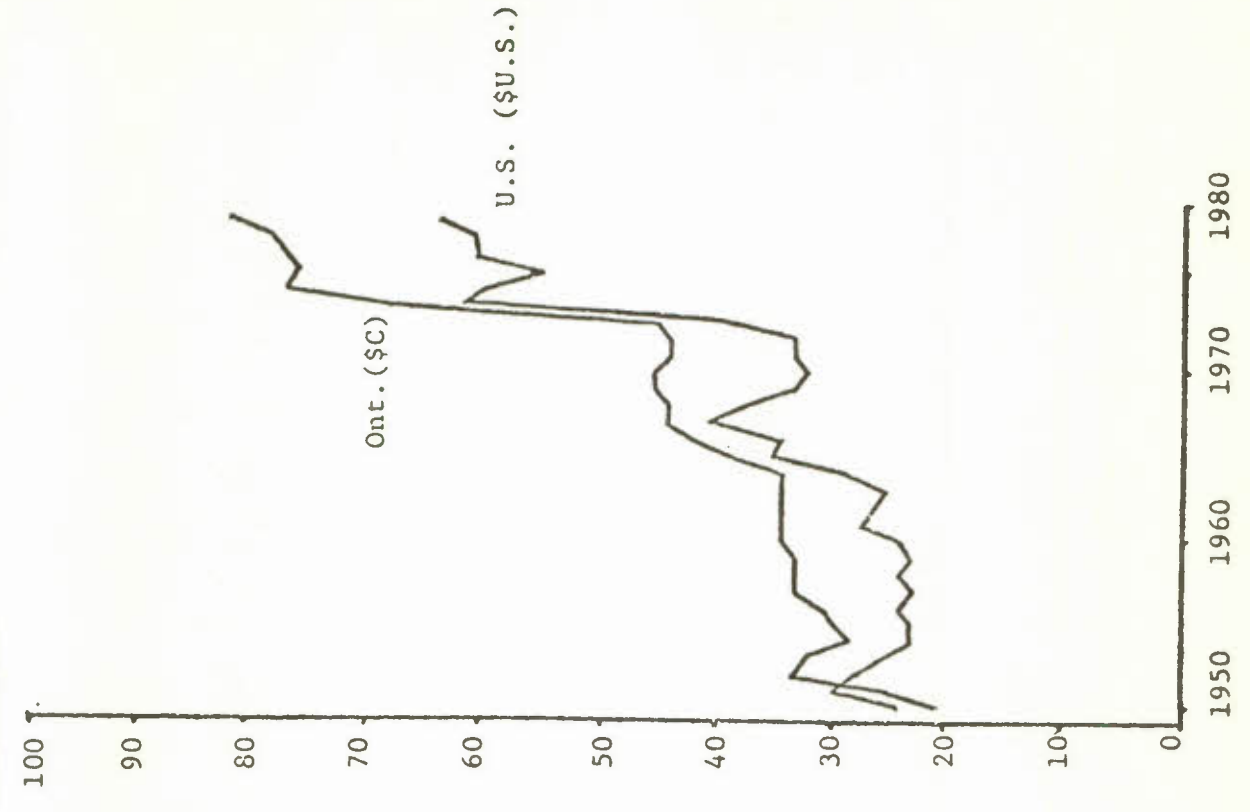
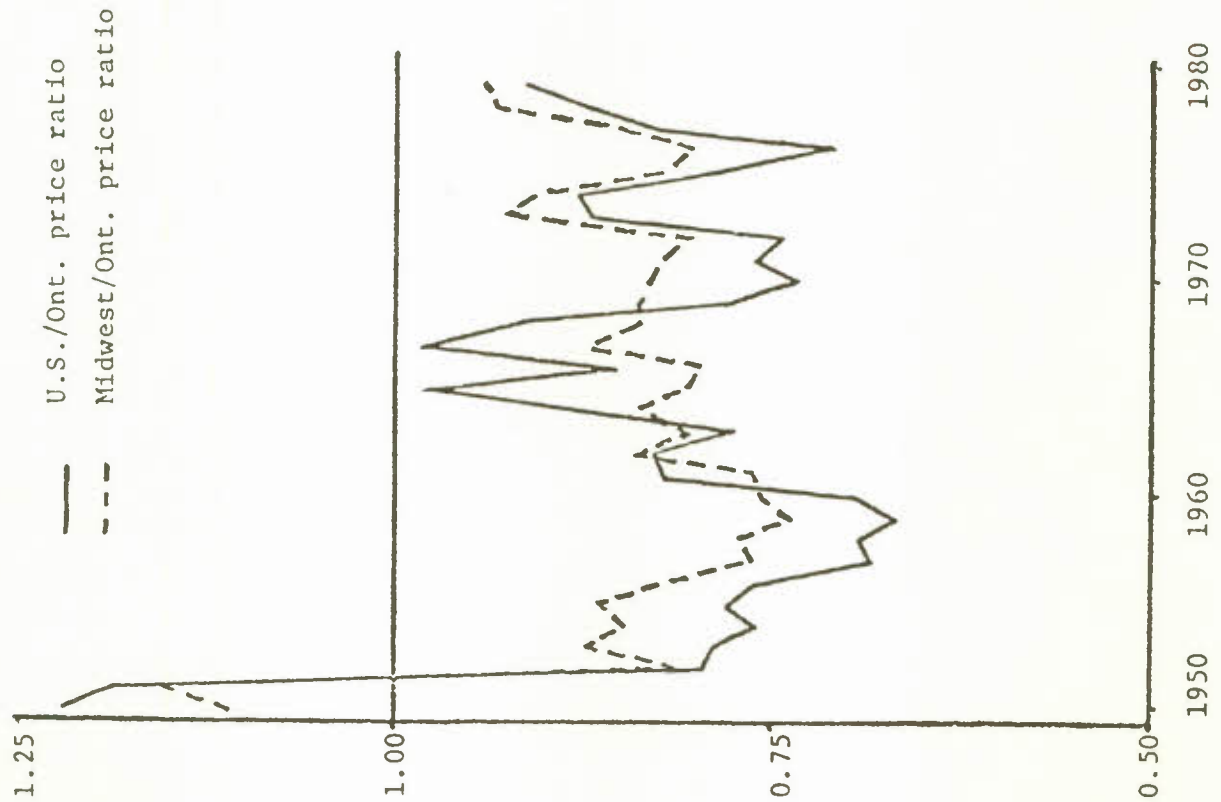
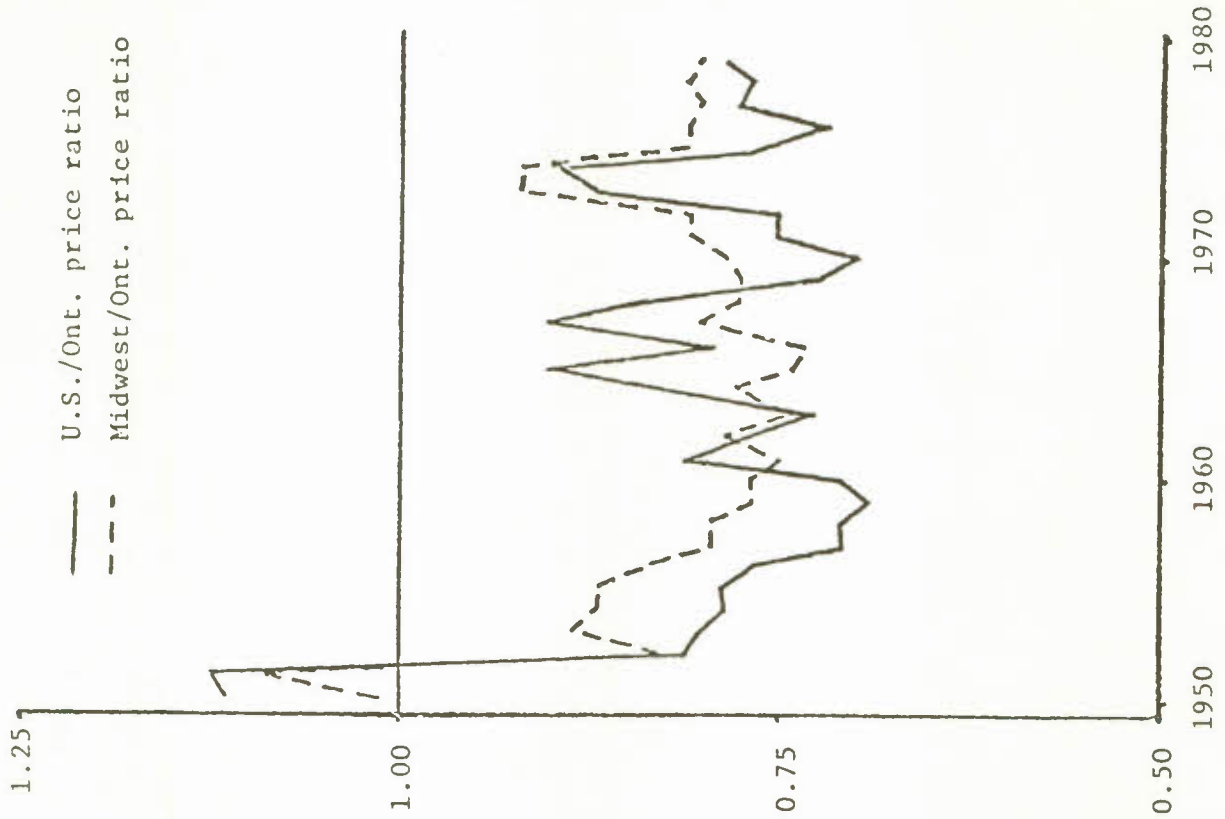


CHART 3.6

Ratio of U.S. and Midwest to Ontario
Tomato Prices in Canadian Funds, 1950 - 1979



Ratio of U.S. and Midwest to Ontario
Tomato Prices*, 1950-1979



* No exchange rate adjustment.

would seem, however, that such gains are greatest for growers who use mechanical harvesters since they make just one pass through the field and these growers are responsible for a small proportion of the total crop. In any event, it is not reasonable to argue that the differences in the grading systems alone can account for an average price differential of 20 per cent.

To explore further the sensitivity of the Ontario market to market conditions in the U.S. simple correlation coefficients were computed for regional processing tomato prices. The results are reported in Table 3.4.2. The top panel shows the correlation coefficients for regional price levels. From this we can conclude that Ontario price movements are most closely tied to price movements in the Mid-West. The weakest relationship is between Ontario and California price movements. Within the U.S. the Mid-West and Eastern markets are shown to be very closely tied. Price movements in these two regions are also more closely tied to price movements in Ontario than with those in California. Exactly the same relationships hold when prices are detrended as the lower panel of 3.4.2 shows. Indeed the same conclusions hold even when U.S. prices are expressed in U.S. dollars but details are not presented.

From all of this it would seem safe to conclude that North American regional tomato price movements are related to one another to the extent of geographical proximity and that Ontario price movements in particular do follow price movements elsewhere and more closely the more proximate is the market. It is also safe to conclude, however, that Ontario prices are significantly higher than U.S. prices.

The next question to ask is whether Ontario's high tomato prices are to be explained in terms of higher costs of production (and to what extent if any this is due to inefficiencies) or higher returns.

That the producer sector should earn adequate returns is clearly in keeping with our social objectives. How profitable this enterprise actually is can be estimated from the data in Table 2.3.2. According to the Nelson study on "Canada's Role in Producing Tomato Solids" the average cost per ton (fixed plus variable) in 1979 was \$59 for hand-pick growers and \$48 per acre for efficient machine harvest. Given that the average price per ton in 1979 was \$85.10 this implies that for the majority of growers, net return per acre was about \$500 (assuming a yield of 19 tons per acre). For the mechanically harvested acreages net returns per acre was approximately \$700 per acre. The Brandt et.al. study estimated similar profit rates for California growers although they stress that their estimates should not be interpreted as actual profits but are an indicator of changes in net returns to tomato growers. In twelve of the twenty years (1956-75) "profits" were \$100 per acre or less but in 1974 and 1975 "profits" were much higher, being at levels of about \$560 and \$450 per acre respectively. During these high profit years the number of growers increased, reversing the downtrend. This is exactly the kind of response one would expect in a competitive industry. These measures of net returns suggest that grower returns in Ontario are probably higher than in California. Certainly, both growers and processors agreed that there are many potential growers of processing tomatoes in Ontario who would like to enter into contracts with processors. There are no hard figures on this but the casual evidence suggests processing tomato returns are sufficiently attractive that there is an excess demand for processing tomato contracts. At the same time, grower costs could be substantially reduced in Ontario if mechanical harvesting were adopted on a wider scale. This implies that rationalization

TABLE 3.4.2

Correlation Matrix of Regional Tomato Prices*

1950-1979

	<u>Ontario</u>	<u>California</u>	<u>Mid-West</u>	<u>Eastern U.S.</u>	<u>U.S.A.</u>
Ontario	1.000	0.935	0.980	0.970	0.955
California	0.935	1.000	0.962	0.958	0.995
Mid-West	0.980	0.962	1.000	0.992	0.983
Eastern U.S.	0.970	0.958	0.992	1.000	0.979
U.S.A.	0.955	0.995	0.983	0.979	1.000

*All prices in Canadian funds

Correlation Matrix of Detrended Regional Tomato Prices* by Region

1950-1979

	<u>Ontario</u>	<u>California</u>	<u>Mid-West</u>	<u>Eastern U.S.</u>	<u>U.S.A.</u>
Ontario	1.000	0.751	0.931	0.899	0.837
California	0.751	1.000	0.867	0.858	0.982
Mid-West	0.931	0.867	1.000	0.974	0.942
Eastern U.S.	0.899	0.858	0.974	1.000	0.930
U.S.A.	0.837	0.982	0.942	0.930	1.000

*All prices in Canadian funds

TABLE 3.4.3

Trend Regressions for Tomato Price and Yield by Region

	<u>Price[*] Regressions</u>			<u>Yield Regressions</u>		
	<u>Const.</u>	<u>Trend</u>	<u>R²</u>	<u>Const.</u>	<u>Trend</u>	<u>R²</u>
Ontario	17.92 (3.25)	1.84 (0.18)	0.783	6.10 (0.70)	0.48 (0.04)	0.845
California	12.53 (3.46)	1.63 (0.19)	0.714	14.02 (0.57)	0.36 (0.03)	0.818
Mid-West	14.93 (3.40)	1.62 (0.19)	0.719	7.97 (0.91)	0.41 (0.05)	0.698
Eastern U.S.	21.09 (3.15)	1.43 (0.18)	0.700	7.22 (0.69)	0.28 (0.04)	0.658
U.S.A.	15.16 (3.34)	1.53 (0.19)	0.704	8.15 (0.43)	0.52 (0.02)	0.944

* All prices in Canadian funds

of the grower sector coupled with levels of returns consistent with no excess demand for tomato contracts would result in substantially lower raw product prices.

3.4.2 The Processing Sector

In this section performance measures for the processor sector are presented and wherever possible comparisons are made with U.S. industry performance measures. The quantifiable and available indicators include the seasonality of employment, the proportion of domestic demand satisfied by domestic supplies, the variability of prices and output over time¹, the size of carryover stocks in relation to demand and industry profitability.

According to the Nelson report the majority of Ontario's canning plants were built decades ago. Apart from the large Heinz plant at Leamington the domestic industry does not use the bulk aseptic storage methods that are currently widely used in California. This means that employment is seasonal and the plant is inefficiently used in that operation at capacity is limited to just a few weeks in the year. Unfortunately information on the seasonality of employment in the processing tomato industry alone in Canada or the U.S.A. is not readily available. However, the data of Table 3.4.1 provide an indication of seasonal employment fluctuations for the processed fruit and vegetable industry as a whole. Evidently, these fluctuations are considerable.

¹ It is often suggested that large fluctuations in prices or quantities are indicators of poor performance. See Turnovsky, S.J., 1974, "Price Expectations and The Welfare Gains from Price Stabilization", American Journal of Agricultural Economics.

TABLE 3.4.1

Processed Fruit and Vegetable Industry Employment-

Seasonal Variation, 1975

<u>Months</u>	<u>Total Employment ('000)</u>	<u>Permanent Employees ('000)</u>	<u>Seasonal Employees ('000)</u>
February, March	15.0	15.0	--
April, May	16.7	15.0	1.7
June, July	21.1	15.0	5.1
August, September	30.0	15.0	15.0
October, November	19.5	15.0	4.5
December, January	15.7	15.0	0.7

Source: Task Force on Processed Fruit and Vegetable Industry

An important performance measure of the processing sector is the extent to which the domestic demand is being met. As we saw in section 3.2, Canada is essentially self-sufficient in tomato juice and ketchup. However, there are substantial imports of canned whole tomatoes. A large market that is not supplied at all by domestic sources is the demand for tomato solids. The Nelson study which examined the potential of this market for domestic processors claimed that with improvements in efficiency Canada could replace almost all of the imports from countries other than the U.S. The U.S.A. is Canada's major source of paste "not in cans" and these shipments largely involve intrafirm movements. These imports will be much more difficult to replace.

Table 3.4.2 shows measures of the variability of tomato product prices. For purposes of comparison the Canadian data period has been restricted to that of available U.S. figures. Note that all price series have been deflated by the relevant consumer price index to remove the effect of general inflation. At the raw product level the U.S. data show considerably more variability¹, especially in the later period of 1964-75, than do the Canadian data. Surprisingly this is not reflected in the canned tomato price series. Canadian final product prices have shown considerably more variability than U.S. final produce prices and approximately the same variability as Canadian raw product prices. In neither country is there much change in final product price variability from the earlier period (1950-63) to the later period (1964-75). The prices of processed vegetables as a whole in Canada have shown approximately the same variability as retail processed fruit and vegetable prices in the U.S. However, whereas in the U.S. canned tomato prices vary about as much as processed fruit and vegetables as a group, in Canada canned tomato prices have shown more variability than processing vegetables as a group.

Table 3.4.3 shows measures of variability for quantity series of canned tomatoes and tomato juice--the only consistently available tomato product series. The table shows that over the period 1950-75 the Canadian pack of canned tomatoes showed

¹Variability is measured by the coefficient of variation which is defined as the ratio of the standard deviation of a series to the mean of the series.

Table 3.4.2

Price Variability for Tomato Products -- Canada and U.S.A.

	<u>Coefficients of Variation</u>		
	<u>1950-75</u>	<u>1950-63</u>	<u>1964-75</u>
<u>Canadian Data</u> ¹			
Raw Tomato Prices	0.092	0.079	0.096
Canned Tomatoes (CPI)	0.095	0.094	0.096
Processed Vegetables (CPI)	0.048	0.038	0.059
<u>U.S.A. Data</u> ²			
Raw Tomato Prices	0.174	0.134	0.217
Canned Tomato Retail Price Index	0.046	0.049	0.043
Processed Fruit and Vegetable Retail Price Index	0.050	0.021	0.066

¹All Canadian prices deflated by Canadian CPI

²All U.S. prices deflated by U.S. CPI

Source: U.S. statistics reported in Brandt et al., "Economic Performance of the Processing Tomato Industry", Univ. of California, 1978.

considerably more variability than the American pack of canned tomatoes. The comparable figures for the supply of juice do not appear to be significantly different. Perhaps the most significant observation is that the variability of Canadian supply is considerably greater than the variability of Canadian domestic disappearance for both canned tomatoes and for juice. This implies of course a high degree of variability in stocks. This is verified by the information contained in Table 3.4.4. Over the period 1950-78 the ratio of carryover stocks of canned tomatoes to total domestic

Table 3.4.3

Quantity¹ Variability for Tomato Products -- Canada and U.S.A.

	<u>Coefficients of Variation</u>		
	<u>1950-75</u>	<u>1950-63</u>	<u>1964-75</u>
<u>Canadian Data</u>			
Canned Tomatoes - Pack	0.219	0.273	0.149
Canned Tomatoes - Domestic Disappearance	0.099	0.086	0.110
Tomato Juice - Pack	0.195	0.213	0.185
- Domestic Disappearance	0.113	0.138	0.081
<u>U.S.A. Data²</u>			
Canned Tomatoes - Pack	0.143	0.169	0.132
Tomato Juice - Pack	0.155	0.210	0.099

¹All quantities have been detrended

²Figures reported in Brandt et al., "Economic Performance of the Processing Tomato Industry", Univ. of California, 1978.

Table 3.4.4

Canadian Carryover Stocks as a Proportion of Domestic Disappearance

(1950-78)

	<u>Mean</u>	<u>Standard Deviation</u>	<u>Minimum</u>	<u>Maximum</u>
Canned Tomatoes	0.510	0.198	0.135	0.964
Tomato Juice	0.729	0.173	0.477	1.190

disappearance was 0.51. The comparable figure for juice was 0.73. These are very high ratios indeed and imply a considerable wastage of resources in terms of excess inventories. The Brandt et al. study found that in the U.S. for all processed tomato products (whole canned, juice, puree, catsup and paste forms) the average ratio of carryover stocks to the preceding market seasons' disappearance was 21 per cent. They argued that a proportion of 12 per cent would have been more reasonable. Canadian stocks of canned tomatoes and tomato juice (and by implication the associated inventory costs) seem inexplicably high.

Our final measure of performance is that of profits. Unfortunately figures for firms primarily in the processing tomato business are not readily available. We have already commented on the data in Table 2.3.5 which showed that the profit performance of fruit and vegetable processors manufacture basic products such as canned whole tomatoes was poor and deteriorating up until 1977. Since then the Canadian dollar has firmly established itself at a value below \$0.90 U.S. and the structure of tariffs has recently been made more favourable to this industry. This will no doubt result in improved profit performance.

3.4.3 Distribution and Employment Effects of Tomato Solids Production

The purpose of this section is to offer estimates of the income distribution and employment effects of establishing a tomato solids industry in Ontario. A key element of the analysis is an estimated demand function for tomato paste.¹

¹The econometric results reported in this section were computed by Ali Manouchehri and reported in his term paper, "The Demand for Tomato Paste in Canada".

The arguments of per capita demand functions are relative prices and per capita income. In the present case the dependent variable is the per capita consumption of tomato paste, all of which is imported (apart from the solids produced and used internally by H.J. Heinz Co. in Leamington). Three explanatory variables are included in the regression analysis, namely the price of tomato paste, the price of food (the food component of the CPI) and per capita income (GNP). All explanatory variables are deflated by the GNP deflator. Annual data for the period 1954-78 were used to estimate the model.

Since Canada is one of many countries importing tomato paste it can be reasonably assumed that the price is exogenous to Canada so that simultaneous equation bias is not a problem in estimating the demand function. A generalized functional form of the Box-Cox type has been estimated.¹ However, the chi-square test statistic for the null hypothesis of a double-logarithmic form and no first order serial autocorrelation is 5.02. The critical value for the 5 per cent level of significance is 5.99. Consequently the null-hypothesis is not rejected at this level of significance and we report here the results of the double-logarithmic specification. Table 3.4.1 shows details of the regressions. Since all variables are measured in logarithmic form the coefficients can be interpreted as elasticities.

The first line of results was obtained by fitting the model to all 25 annual observations. All coefficients have the expected

¹ Savin, N., and K. White, "Estimating and Testing for Functional Form and Autocorrelation", Journal of Econometrics, 1978.

sign although only the income elasticity is significantly different from zero in a statistical sense. The point estimate for the own price elasticity is -0.4. The strong growth of per capita consumption over time is reflected in the high income elasticity of 1.3. The food price elasticity of 1.5 indicates that a 1 percentage point increase in the relative price of food is associated with a 1.5 percentage points increase in per capita consumption of paste.

Table 3.4.1

Estimated Demand Function for Tomato Paste^{*} 1954-78

<u>Time Period</u>	<u>Constant</u>	<u>Own Price</u>	<u>Income</u>	<u>Food Price</u>	<u>R²</u>	<u>D.W.</u>
1954-78	-0.889 (0.38)	-0.434 (0.42)	1.29 (0.23)	1.53 (2.54)	0.636	1.18
1954-73, 1976-78	-0.442 (0.85)	-0.972 (0.96)	1.17 (0.31)	2.91 (2.92)	0.654	1.19

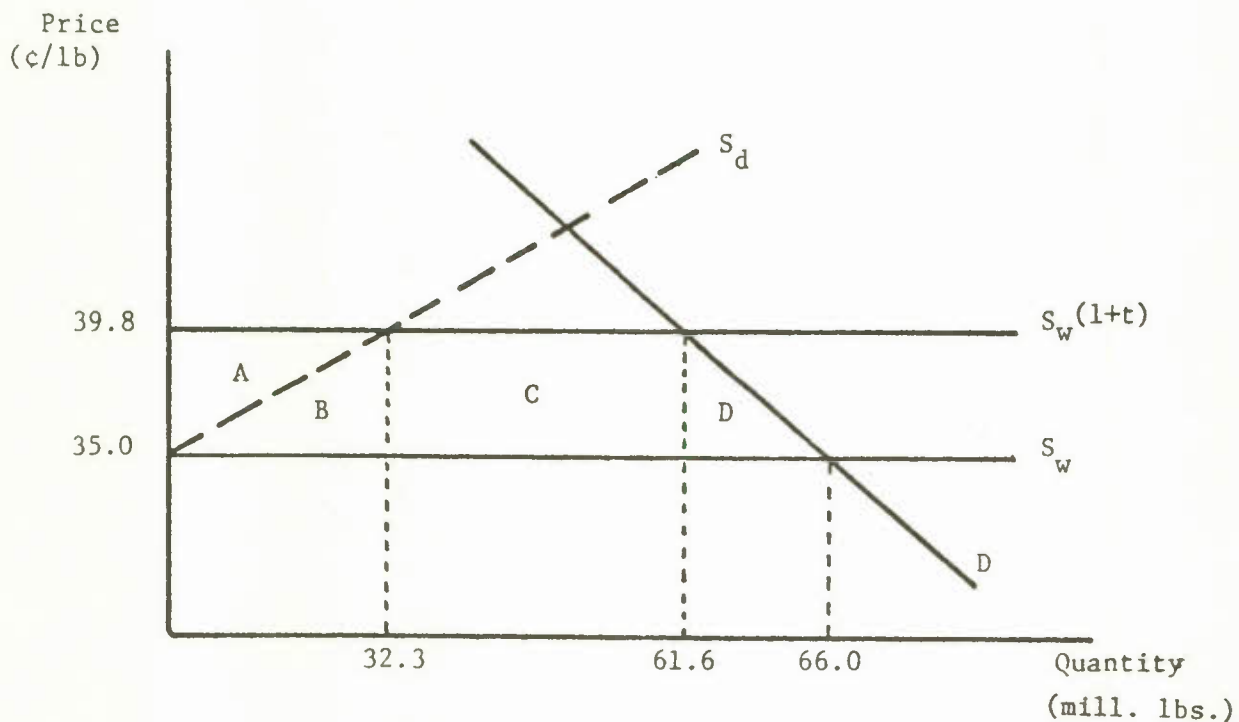
^{*} All variables in logarithmic form.

A glance at the residuals showed two outlying observations: 1974 and 1975. These two years were associated with very high prices for tomato paste. Although imports of paste in cans fell successively in these two years, imports of paste "not in cans" more than tripled from 1973 to 1974. This surge was presumably in part the result of expectations of continued rapid price increase. Rather than model price expectations, these two observations were deleted; the results are also reported in Table 3.4.1. The income elasticity estimate is essentially unchanged while both the own price and the food price

elasticities increased in absolute value (to -1.0 and 2.9, respectively). The overall fit of the model improved somewhat, as one would expect.

The major purpose of the econometric exercise was to obtain an estimate of the price elasticity of demand for tomato paste. The results suggest a value lying between -0.4 and -1.0. Since the latter was obtained by arbitrarily removing two (admittedly outlying) observations it was decided to take as our estimate a figure lying closer to the former; -0.5 was chosen. Figure 4.1 illustrates the domestic market for paste in 1978.

Figure 4.1



Imports of paste amounted to just over 66 million pounds in 1978 at an average price of 36.8 cents per pound. The duty amounted to 1.5 cents per pound so for present purposes we have taken the 1978 world price to be 35 cents per pound. Figure 1 shows an infinitely elastic world supply curve at 35¢/lb. This curve intersects the Canadian domestic demand curve at 66 million pounds. The elasticity of demand at this point is taken to be -0.5. Had the 13.6 per cent tariff been in effect in 1978 the supply curve facing Canadians would have been infinitely elastic at a price of 39.8¢/lb. Since there was no domestic supply at 36.8¢/lb. we may assume that the domestic supply curve is certainly no lower than S_d in Figure 1. This domestic supply curve is based in part on the calculations presented in the Nelson study: "Canada's Role in Producing Tomato Solids". It was estimated there that under appropriate conditions Canadian production could replace 95 percent of the paste currently supplied by Europe (principally Portugal) and Mexico, which amounted to 34 million pounds in 1978. The supply curve, S_d , therefore has been drawn so that domestic production is zero at 35¢/lb. and 32.3 million pounds at 39.8¢/lb.

The loss in consumer surplus due to the tariff of 13.6 per cent is represented by the sum of the areas A, B, C and D in Figure 1. Based on the assumptions made above, this loss would amount to about \$3.1 million in 1978 dollars. The producer surplus generated by domestic production is represented by area A, or approximately \$0.8 million. Tariff revenue raised on imports of 29.3 million pounds would be approximately \$1.4 million (area C). The deadweight

loss of the tariff can be estimated by subtracting these offsetting gains from the loss in consumer surplus. This is represented by areas B and D and amounts to \$0.9 million.

If it is assumed that all of the value added would be generated domestically, domestic production would rise by about \$12.9 million (1978 dollars) per annum¹. In order to calculate the number of jobs this represents value added per employee figures have been calculated for both the fruit and vegetable processing industry and total manufacturing. The resulting new employment estimates are 433 and 442 jobs, respectively.

Table 4.1

Effect of Canadian Tomato Solids Production under Protective Tariff

(1978 quantities and prices)

GAINS			LOSSES		NET LOSS TO INCOME	
New Employment	Domestic Income	Producer Surplus	Tariff Revenue	Consumer Surplus		Deadweight Loss
430-450	\$12.9 m	\$0.8 m	\$1.4 m	\$3.1 m	\$0.9 m	7%

Table 4.1 gives a summary of the analysis. The last column shows the ratio of the deadweight loss to the increase in domestic income. This works out to about 7 per cent which indicates that the overall costs are relatively small. As is often the case, the major impact is on the distribution of income between consumers and producers.

¹Undoubtedly some of the value added would be generated in foreign countries but on the other hand there would be a multiplier effect on domestic income. These effects work in opposite directions and have not been quantified.

3.5 Summary and Conclusions

At the present time there are 34 fruit and vegetable marketing boards in Canada, 13 of which are in Ontario. The earliest of these boards have their beginnings in the 1920's and 1930's. The aims of producers were and still are to i) raise the prices of farm products ii) stabilize these prices and iii) improve the bargaining position of farmers. In the case of processed fruit and vegetable growers the third point is particularly important because of the contractual relationship between growers and processors. One of the primary concerns of fruit and vegetable marketing boards is to negotiate contract terms. The imbalance between the number of growers and the number of processing firms provides sufficient rationale for the existence of negotiating agencies. We have noted, for example, that currently there are over 1,000 growers of processing tomatoes in Ontario, but the four largest firms account for over 70 per cent of raw tomato purchases. However in recent years there has been a drift in the direction of giving marketing boards more market power. The number of marketing plans in Ontario which have price-setting powers has increased from two in 1960 to over half the present number of 21 boards.

At the present time the Ontario Vegetable Growers' Marketing Board does not fall into this category but it has recently applied for price-setting powers. This request was rejected. The analysis presented in this paper suggests that price-setting powers are not necessary to enable tomato growers to earn a reasonable rate of return. Indeed it appears that net returns per acre are higher in Ontario than in California and that there exists an excess demand for processing tomato contracts. It would seem that the flexibility that growers have in deciding which crops to produce, in

contrast to the processors' large fixed investment, gives producers considerable negotiating leverage.

Processers have argued that domestic raw product prices are not sensitive to market conditions, or more specifically do not adjust fully in the downward direction when world prices fall. In the case of tomatoes, Canadian prices are certainly higher priced than the U.S. product but while the ratio of prices has shown considerable variance over time no trend has emerged. We did establish that Canadian price movements about trend are highly correlated with regional U.S. (detrended) price movements and that the degree of market interdependence is related to distance. That is, Ontario price movements are most closely related to Mid-West and Eastern prices and less so with California prices.

The high returns in tomato production have encouraged even the least efficient to remain in production. This in turn has meant that the rate at which the economically more efficient mechanical harvesting methods have been introduced has been slow. While several individual growers would like to move in that direction the growers as a whole have naturally resisted rationalization by, for example, obtaining three-year contract guarantees. While processing companies do not welcome this rigidity they themselves have not actively encouraged the use of mechanical harvesters. Processers have considerable control over this because they can specify the types of plants to be used.

At the present time there is an opportunity for Canada to move into tomato solids production. This will require changes. One important area where efficiency gains are possible is the tomato grading scheme. Currently tomatoes are graded by eye and classified into just two categories. The colorimeter method currently in use in the U.S.A. and elsewhere would allow

a more flexible end-use pricing scheme. It becomes increasingly important to change to this grading method as mechanical harvesters play a larger role. Negotiations have so far failed to produce an agreement on this question. Even under the current grading scheme if grower returns were lowered to levels which would reduce the excess demand for processing tomato contracts and if cost-efficient methods were more widely used, raw product prices could be reduced. Further, the establishment of a tomato solids industry will require capital investment. An added factor in the investment decision is the question of whether or not the Vegetable Board will seek and be given price-setting powers after the capital equipment is put in place. If this uncertainty were dispelled the market for processing tomatoes and the associated products would be more likely to expand.

4. The Asparagus Industry

This part of the paper comprises three sections. The first is a discussion of the producer sector of the Canadian asparagus industry. As explained before, Ontario is by far and away the largest producing province and so attention is focused on the Ontario Asparagus Growers Marketing Board (OAGMB). Indeed, in the other producing provinces asparagus production is not controlled to the same degree as it is in Ontario. The first section therefore begins with a brief history of the OAGMB as well as a description of the Board's current powers. We then turn to a discussion of the level and geographical distribution of production and make a number of Canada/U.S. comparisons. The level of fresh and processing asparagus prices are discussed in the following section. The relationship between price movements within geographically separate markets is used as a measure of market integration. The last

part of the first section deals with the issue of grower returns.

The second section is concerned with the processing sector. The geographical distribution of production and market performance indicators are presented. The third and final section draws the main points of the discussion together and attempts an overall evaluation.

4.1 The Ontario Asparagus Growers' Marketing Board

In his book, "Marketing Milestones in Ontario, 1935-60", G.F. Perkin describes the organizing of the St. Catharines Growers' Co-operative in 1932 by thirty-two asparagus growers as the first producer organization to centralize the sale of a processing fruit or vegetable. By 1935 processing asparagus was being sold through the Co-operative on a province-wide basis. Six collecting points were established to which growers delivered their asparagus for weighing. Terms of sale were negotiated by the Co-operative on behalf of member growers. Then in 1937 the Co-operative became the first marketing agency to be authorized under the Farm Products Control Act of 1937. Under the Asparagus Growers' Marketing Scheme the Board was empowered to control and direct the asparagus crop to the processing market and to distribute the proceeds of the sales to the growers.

At the present time asparagus production and sale falls under the Ontario Asparagus Growers' Marketing Plan. In the words of the Plan: "This Regulation provides for the control and regulation in any or all respects of the producing and marketing within Ontario of asparagus, including the prohibition of such producing and marketing in whole or in part". Under this Plan the Farm Products Marketing Board of Ontario vests in the "local board", the Ontario Asparagus Growers' Marketing Board, considerable powers.¹ While the Regulations distinguish between

¹The Board is an eleven-member group of elected producers. The elections are held annually.

asparagus sold to the fresh market and processing asparagus many of the regulations apply equally to producers of either kind. These are described first.

The Board requires that each producer obtain a licence at a fee set by the Board. Currently this fee is \$25 per acre although fees are not levied on plantings of less than one-half acre or on plantings less than two years old. Processors too have to obtain licenses but no fee is charged. Producers are required to submit annually forms which describe their operation. The information required includes the name, address and occupation of the producer and details of his acreage by variety and age. The Board can in fact enter land for the purposes of measuring the acreage of asparagus and is empowered to inspect the books of producers. These regulations are essentially concerned with the power of the Board to collect information on the production of asparagus. No attempt is made to restrict the supply of asparagus to the fresh market.

With respect to processing asparagus the Board has additional powers. Licenses to produce asparagus can be suspended or revoked by the Board for "any reason that the local board considers proper". In addition, all processing asparagus must be offered for sale to the Board. The Board then sells the asparagus to the processors at a price set by the Board. These fixed prices may vary by variety, class or grade. The Board deducts service charges for the marketing of asparagus before distributing to the growers their share of the proceeds. Processing companies that grow their own asparagus also are required to supply production details to the Board and in effect to sell their asparagus through the Board. Indeed when the Board fails to supply sufficient quantities to meet the terms of contracts a given processor's own production is included in the total available quantity that is to be

allocated to the processing firms in accordance with their particular contracted volume. In the recent past the Board has repeatedly failed to meet the contracted quantities as producers have preferred to sell in the strong fresh market. It is the Board that signs contracts with the processors so that there is no direct link between grower and processor. The Board has not required its members to supply sufficient quantities to meet its obligations. As we shall see below, larger volumes of processing asparagus are imported than supplied domestically. For their part, the processors seem reluctant to take action against the Board for reneging on contracts.

The relationship between the Asparagus Board and the processors seemed to be at a low ebb in the later 1970's. At that time the Board did not have the power to set price, rather the price schedule was negotiated. Impasse resulted in arbitration in each of the three years, 1975, 1976 and 1977. Not satisfied with the arbitration process, the Board petitioned for price-setting powers. A plebiscite was conducted by the Farm Products Marketing Board following which the Asparagus Board gained the power to set price as well as control the production of fresh-market asparagus through licenses.

Having dismantled the negotiating framework it was necessary to establish an alternative channel through which processors and producers could communicate. Consequently the Asparagus Industry Advisory Committee (AIAC) was created and met for the first time in early 1979. It is composed of seven members. One member is appointed by the Farm Products Marketing Board, three members by the Asparagus Board and three by the Ontario Food Processors Association. The AIAC is intended to provide a framework for promoting harmonious relationships between growers and processors and to promote efficiency throughout the production process.

Information and positions presented at meetings of the AIAC are taken into account when the Board sets prices for the current year's processing asparagus crop. It is the Board alone, however, that has the power to determine price.

One further change has come about recently and this is the opportunity for individual growers and processors to sign contracts between themselves. Two versions exist: one for current acreage and the other, new plantings. In the latter case the term of the contract would be fifteen years. In both cases the grower would be allowed to sell up to 1 per cent of his production on the fresh market but the processor would have to consent before seed could be released by the grower. The advantages of this direct relationship would seem to be significant. Processors have an incentive to assist in cultivation and maintenance of the plants because they are assured that they can purchase the product. Quality control and productivity would therefore be improved. The grower would of course benefit from the assistance and would still be protected by the Board's ability to set price. To date no such contracts have been signed. In part this reflects the strengths of the fresh market (more on this below) and perhaps the fact that the industry is in a state of uncertainty. It will be a few years before the results of the Guelph research into variety development and cultural practices are complete. Given the experience of Ontario growers that planted the ultimately unsuccessful California varieties the air of caution is understandable.

4.2 The Producer Sector

The production of asparagus differs from that of most other vegetable crops in that the plant is a perennial and requires at least three years of growth before commercial harvesting can begin. A positive cash flow

will probably not materialize until the fifth year. Further, the life of an asparagus patch is often twenty years or more, so that prospective growers are faced with a long-term decision when contemplating asparagus production.

The crop itself appears in the spring when the roots produce spears that emerge from the soil to grow to a length of 9" before opening into a fern. It is the spears themselves that are marketable and so they must be cut before the fern opens. The cutting season in Ontario lasts anywhere from two to twelve weeks (May to early July). The plant performs best in areas where the spring weather is mild and the soils are deep, well-drained, sandy and of low acidity. As we shall see in the next section the producing provinces are Ontario, British Columbia, Quebec and Manitoba.

4.2.1 Production, Acreage and Yields

Table 4.2.1 shows the production of asparagus by province over the period 1960 to 1979. Ontario is the major producing province with a share that has fluctuated between 65 per cent and 85 per cent of the total Canadian crop. Over the five-year period 1975-79 Ontario's share of production averaged 70 per cent of Canada's total production. The three other producing provinces are British Columbia, Quebec and Manitoba. Of these three provinces British Columbia is the largest producer, providing 15.7 per cent of Canadian production between 1975 and 1979. Table 4.2.2 presents data on acreage, yields and farm value for Canada and Ontario. The figures for Canada are plotted in Chart 4.1 for ease of interpretation. These data show that for Canada as a whole total production has declined slightly since the early 1960's. Average annual production over the period 1960-64 was 7.6 million pounds compared to 5.7 million pounds over the period 1975-79. Total acreage has not changed much over this twenty-year period

TABLE 4.2.1.

ASPARAGUS PRODUCTION BY PROVINCE, 1960-1979
(^{'000} lbs)

<u>Year</u>	<u>Quebec</u>	<u>Ontario</u>	<u>Manitoba</u>	<u>British Columbia</u>	<u>Canada</u>	<u>Ontario's Share</u>
1960	175	5,962	50	780	6,967	85.6%
1961	374	5,524	112	982	6,992	79.0
1962	600	5,529	160	902	7,191	76.9
1963	630	4,977	80	853	6,540	76.1
1964	551	4,218	144	862	5,775	73.0
1965	638	4,166	140	922	5,866	71.0
1966	570	3,675	175	1,072	5,492	66.9
1967	630	3,391	182	878	5,081	66.7
1968	405	3,819	210	529	4,963	76.9
1969	504	4,081	112	542	5,239	77.9
1970	560	4,599	190	541	5,890	78.1
1971	506	4,132	200	356	5,694	72.6
1972	440	4,520	138	802	5,900	76.6
1973	525	5,396	188	872	6,981	77.3
1974	512	4,728	188	814	6,242	75.7
1975	594	4,432	188	960	6,174	71.8
1976	732	3,824	172	1,084	5,812	65.8
1977	804	3,886	150	826	5,666	68.6
1978	594	3,756	150	712	5,212	72.1
1979	615	3,983	180	884	5,662	70.3

Source: Statistics Canada Cat. 22-003.

although there have been year-to-year fluctuations. Between 1960 and 1964 average acreage was 3,928 acres. The five-year average for 1975-79 is 3,782 acres. These figures imply of course that yields have trended downwards somewhat over the interval, declining from 1,707 lbs/acre (1960-64) to 1,511 lbs/acre (1975-79).

The decline in Canadian yields is in part a reflection of Ontario's declining yields. The graph of Ontario yields is shown in Chart 4.2 along with similar graphs for Michigan and the U.S.A. as a whole. The major producing states are California, Washington, Michigan and New Jersey. California and Washington produced 50 per cent and 30.4 per cent respectively of total U.S. production over the period 1975-79. The regression results presented in Table 4.3.5 show clearly that Ontario, Michigan and New Jersey yields have shown a quantitatively and statistically significant declining trend over the period 1950-79. Yields in Washington have remained essentially unchanged (being high initially) but in California yields have trended upwards. The bottom panel of Table 4.3.6 shows the correlation coefficients of detrended regional asparagus yields. The generally small numbers demonstrate that movements of yield about trend are determined by local factors.

Returning to Chart 4.2 it can be seen that yields in the U.S.A. as a whole have not shown any significant trend over the period; regional disparities have roughly cancelled out. The high yields of California and Washington can in part be explained by the suitable soils and climate but also reflects the development of asparagus varieties suitable to that region. These varieties were adopted in Michigan, Ontario and New Jersey but after initial success the plants have performed poorly, falling victim in many cases to Fusarium and rust.¹ In New Jersey in particular, yields

¹Tiessen, H. "Canadian Asparagus Crop Survey, 1978", Dept. of Horticultural Science, University of Guelph.

TABLE 4.2.2.

Asparagus Acreage, Yields and Farm Values,
Ontario and Canada, 1960-1979

<u>Year</u>	<u>Acreage</u>		<u>Yield</u>		<u>Farm Value</u>	
	<u>Ontario</u>	<u>Canada</u>	<u>Ontario</u>	<u>Canada</u>	<u>Ontario</u>	<u>Canada</u>
			(lbs/acre)		(\$'000)	
1960	2,930	3,730	2,000	1,868	1,139	1,297
1961	3,020	3,750	1,829	1,865	1,079	1,321
1962	3,170	3,950	1,700	1,800	1,094	1,389
1963	3,360	4,180	1,500	1,600	1,020	1,307
1964	3,210	4,030	1,300	1,400	930	1,221
1965	3,040	3,820	1,400	1,500	936	1,251
1966	3,017	3,821	1,218	1,437	850	1,236
1967	2,654	3,466	1,278	1,466	848	1,223
1968	2,310	3,030	1,700	1,600	1,007	1,272
1969	2,150	2,960	1,900	1,800	1,139	1,423
1970	2,300	3,160	2,000	1,900	1,237	1,572
1971	2,280	3,140	1,800	1,800	1,313	1,721
1972	2,670	3,590	1,700	1,600	1,515	1,897
1973	2,710	3,690	2,000	1,900	1,862	2,322
1974	2,801	3,789	1,688	1,647	1,980	2,502
1975	2,789	3,860	1,589	1,599	2,161	2,810
1976	2,933	4,096	1,304	1,419	1,867	2,684
1977	2,489	3,605	1,561	1,572	2,053	2,902
1978	2,400	3,445	1,565	1,513	2,503	3,293
1979	2,763	3,902	1,462	1,451	..	..

Source: Statistics Canada Cat. 22-003.

Chart 4.1

Asparagus Acreage, Yield, Production and Farm Value, Canada - 1960-1979

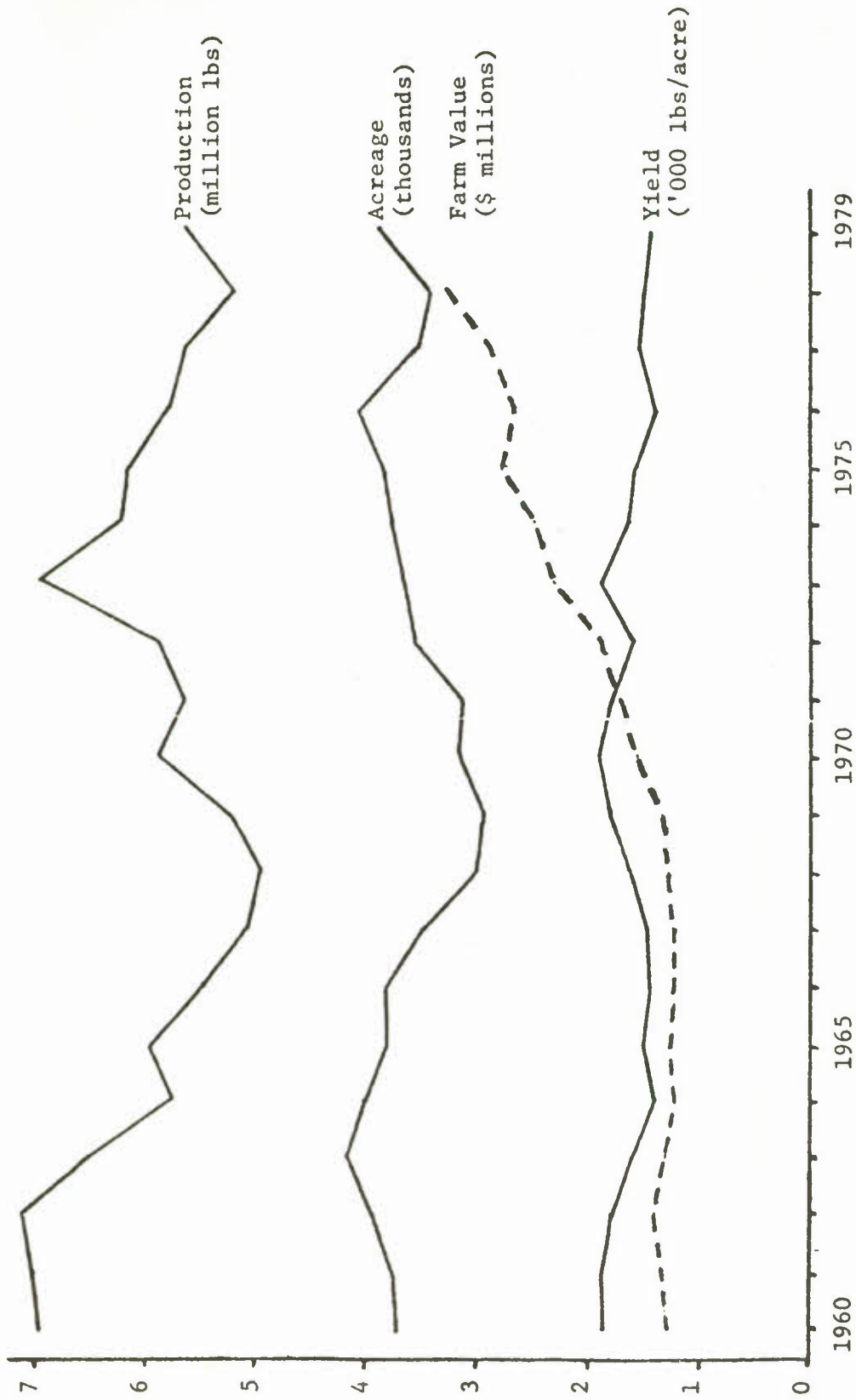
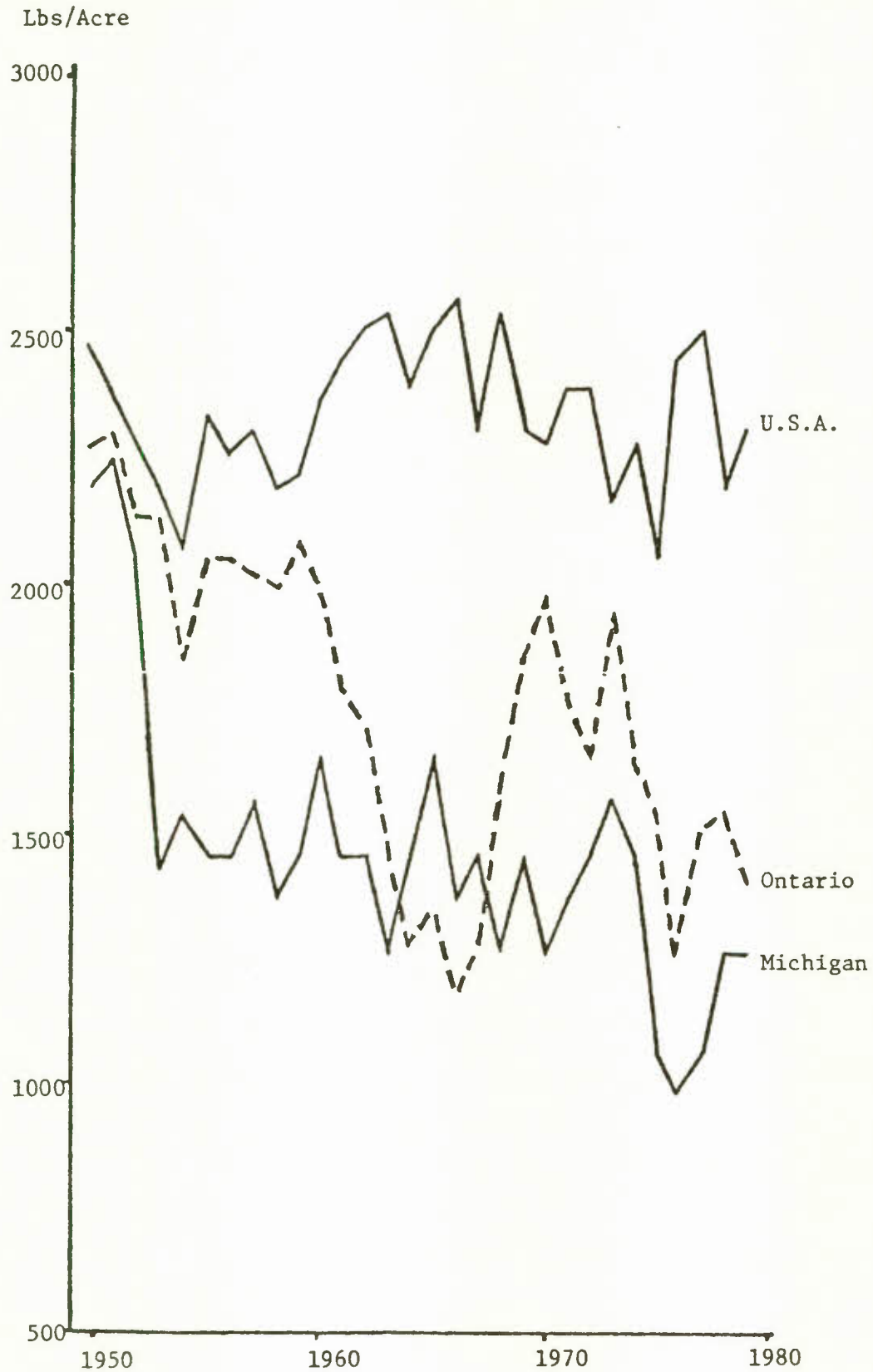


Chart 4.2

Asparagus Yields, Ontario, Michigan, U.S.A. - 1950-1979



have fallen dramatically averaging 1,439 lbs/acre over the period 1975-79 compared to 3,300 lbs/acre over the same period in California. This disappointing performance in conjunction with rising land values has reduced acreage in New Jersey from 32,800 acres in 1957 to 1,600 acres in 1979. As a response to this, a research effort has been mounted at Rutgers University in New Jersey to develop varieties suitable to that state. In Canada, at the University of Guelph, there is a large program underway, the objective of which is to (i) procure high-yielding varieties that are currently in use, (ii) develop crosses from outstanding parent plants and establish seed beds. Tissue culture is being used to increase rapidly the stock of these parent plants, (iii) investigate appropriate cultural practices for asparagus production. The overall objective of this research is of course to increase the efficiency of domestic production so that a higher proportion of domestic demand can be supplied locally. Table 4.2.3 shows the extent to which imports have penetrated the domestic raw asparagus market. Over the three years 1976-78 imports accounted for 67 per cent of total ~~domestic supply~~ and 75 per cent of processors requirements of raw asparagus. The vast majority of imports come from the U.S.A.

Table 4.2.3

Supply of Fresh and Processing Asparagus

<u>Year</u>	<u>Total Supply of Raw Asparagus</u>			<u>Acquirements by Processors</u>		
	<u>Domestic</u>	<u>Imports</u>	<u>Total</u>	<u>Domestic</u>	<u>Imports</u>	<u>Total</u>
	(million lbs)					
1976	5.8	11.3	17.1	2.3	6.7	9.0
1977	5.7	10.5	16.2	2.0	5.7	7.7
1978	5.2	12.2	17.4	2.1	7.2	9.3

Source: Statistics Canada Cats. 22-003, 65-007.

4.2.2 Raw Asparagus Prices

In this sub-section the prices of processing and fresh asparagus are compared within Ontario and then Ontario/U.S.A. comparisons are made. The basic Ontario data is presented in Table 4.2.1. The first three columns have been obtained from the OAGMB Annual Reports. Since 1965 the price of #1 grade has risen faster than #2 grade asparagus (the ratio has risen from 1.4 to 1.6). At the same time the proportion of #1 grade asparagus reaching market has increased. Both factors have contributed to the rapid growth of farm value. The fourth and fifth columns show the processing and fresh market prices respectively. In the early 1950's these prices were much the same. Over the six years 1950-55 the average prices were 20.3¢/lb and 20.0¢/lb respectively; i.e., the processing price was on average higher. This situation repeated itself just once more in 1970. Since that time the fresh market price has risen most rapidly. Over the five year period 1975-79 fresh prices were on average 21 per cent higher than processing prices. In 1979 when processing prices were set by the Board for the first time the fresh market price was 34 per cent above the processing price. However, the proportion of the crop sold to processors in 1979 was only 43 per cent, the lowest share since 1950.

The last column shows the weighted average of fresh and processing prices. In order to gain an additional perspective the last column but one shows the ratio of this average price to the consumer price index (1971 is set to 1.0). In 1971 the average price of asparagus was 31.8¢/lb, and almost exactly the same price relative to the CPI as in 1950. In the intervening years the relative price of asparagus was generally below the 1971 and 1950 levels. However, since 1971 the relative price of asparagus has risen sharply especially in 1978 and 1979 when fresh market demand was very strong.

Table 4.2.1

Asparagus Prices¹ in Ontario and Proportion of Number 1 Grade and
Processing Asparagus, 1950-79

Year	#1 Grade Price	#2 Grade Price	Proportion #1	Processing Price	Fresh Market Price	Proportion Processing	Relative Price ²	Average Price
1950	..	..	..	19.00	19.00	0.42	31.82	19.00
1951	..	..	..	20.05	18.04	0.48	28.80	19.00
1952	..	..	..	20.43	21.47	0.45	31.07	21.00
1953	..	..	..	20.50	21.44	0.47	31.34	21.00
1954	..	..	..	21.15	20.84	0.52	31.15	21.00
1955	..	..	..	20.75	18.98	0.58	29.61	20.00
1956	..	..	..	21.78	22.26	0.54	32.11	22.00
1957	..	..	..	20.07 ³	21.48	0.63	29.13	20.60
1958	..	..	..	15.40 ³	25.06	0.64	26.04	18.90
1959	..	..	..	16.50	21.28	0.73	24.25	17.80
1960	..	..	..	17.90	21.32	0.65	25.72	19.10
1961	..	..	..	18.30	21.75	0.65	26.01	19.50
1962	..	..	..	18.10	23.74	0.70	26.10	19.80
1963	..	..	..	18.70	24.30	0.68	26.55	20.50
1964	..	..	..	20.90	28.34	0.85	28.00	22.00
1965	22.50	16.00	0.83	21.41	32.43	0.90	27.95	22.50
1966	24.00	17.00	0.82	22.74	24.27	0.76	27.66	23.10
1967	26.00	18.25	0.87	24.96	25.30	0.88	28.90	25.00
1968	27.25	19.00	0.88	26.27	26.85	0.78	29.32	26.40
1969	28.00	19.50	0.90	27.16	29.66	0.70	29.66	27.90
1970	29.25	20.00	0.88	28.16	24.80	0.62	27.67	26.90
1971	30.50	20.25	0.90	29.47	37.66	0.72	31.80	31.80
1972	31.75	21.00	0.93	31.03	39.81	0.72	31.97	33.50
1973	33.00	22.00	0.92	32.16	37.35	0.55	30.61	34.50
1974	42.00	28.00	0.91	40.76	43.62	0.60	33.52	41.90
1975	48.50	32.50	0.92	47.18	52.41	0.71	35.16	48.70
1976	47.50	31.75	0.92	46.19	52.49	0.59	32.77	48.80
1977	52.00	34.75	0.95	51.11	54.27	0.47	32.84	52.80
1978	56.75	37.75	0.94	55.60	75.38 ⁴	0.44	38.01 ⁴	66.60 ⁴
1979	65.00	41.50	0.93	63.35	84.82 ⁴	0.43	39.54 ⁴	75.60 ⁴

¹Prices in cents per pound

²Average price deflated by CPI (1971 = 100)

³Includes a 3 cent per pound subsidy

⁴Estimate

Sources: Agricultural Statistics for Ontario
OAGMB Annual Reports

Table 4.2.2 shows regional data on asparagus production and prices. As we mentioned before production in New Jersey has declined substantially in the recent past; details have been omitted from this table. California is clearly the largest producing state but over the past thirty years its dominance has declined along with its level of production because in both Michigan and Washington production levels have almost doubled over this period. A second distinguishing feature is that the share of California's production going to the processing market has declined, as it has in Ontario since the mid-1960's. This may be in part explained by the behaviour of the ratio of processing to fresh asparagus prices which has shown a downward trend in California. In Michigan and Washington, on the other hand, the share of processing asparagus has shown a rising trend. This has not been associated with a similar trend in the processing/fresh price ratio and overall this price ratio does not seem to come close to fully explaining the allocation of asparagus to the fresh and processing markets.

Chart 4.3 shows that asparagus prices in the U.S.A. have followed a very similar path to those in Canada, although the 1974 surge in Canadian prices seems to pre-date the U.S. price surge by two years. The ratio of Canada/U.S. fresh and processing prices are presented in Chart 4.4. United States prices are heavily influenced by California and Washington prices and so it is not surprising that for both fresh and processing asparagus Ontario prices are closer to (but higher than) Michigan prices than U.S. prices averaged over all regions. In the fresh market, Ontario prices have been on average 34.2 percent above U.S. prices. The corresponding figure for processing prices is 51.3 percent above U.S. prices. In Chart 4.5, however, there is a suggestion of an upward trend in the price ratio towards unity implying that Canadian processing prices have moved somewhat closer to U.S. processing prices over the period 1950-79.

Table 4.2.2
Asparagus Production and Prices by Region, 1950-1979

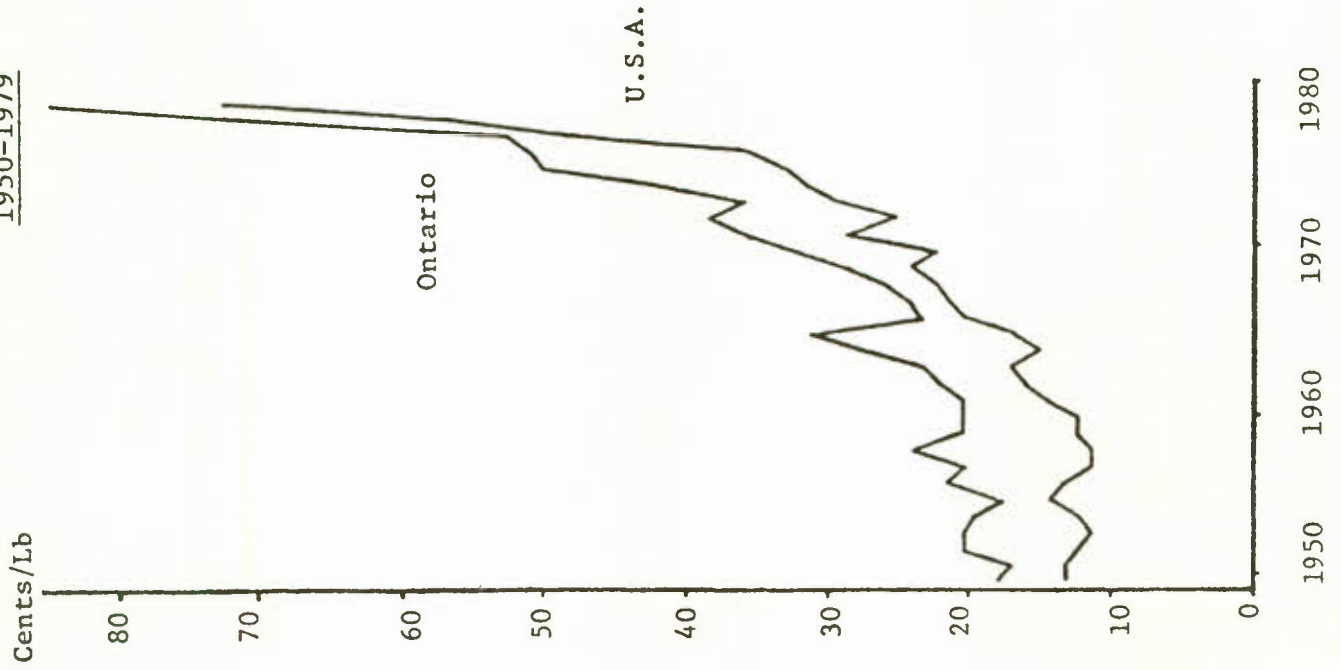
Year	Ontario			Michigan			Washington			California		
	Total Production in '000 lbs	Processing Asparagus Share of Production	Relative Price ¹	Total Production in '000 lbs	Processing Asparagus Share of Production	Relative Price ¹	Total Production in '000 lbs	Processing Asparagus Share of Production	Relative Price ¹	Total Production in '000 lbs	Processing Asparagus Share of Production	Relative Price ¹
1950	4,912	0.42	1.00	14,540	0.86	0.83	32,620	0.65	0.97	180,500	0.54	0.81
1951	5,454	0.48	1.11	15,400	0.86	0.74	32,000	0.64	0.97	157,060	0.70	0.84
1952	4,857	0.45	0.95	15,900	0.88	0.71	35,720	0.64	0.96	153,980	0.63	0.73
1953	5,543	0.47	0.96	11,600	0.82	0.85	36,140	0.64	0.96	149,540	0.61	0.70
1954	4,997	0.52	1.02	13,540	0.87	1.01	36,200	0.64	1.13	152,020	0.68	0.79
1955	5,787	0.57	1.09	14,700	0.86	0.92	35,580	0.72	1.03	191,800	0.78	0.73
1956	6,032	0.54	0.98	15,400	0.86	1.05	40,000	0.75	0.96	182,900	0.66	0.71
1957	5,840	0.63	0.93	17,000	0.86	0.84	40,600	0.74	0.89	189,500	0.60	0.62
1958	5,613	0.64	0.61	15,300	0.86	0.70	39,500	0.57	0.99	183,100	0.65	0.66
1959	6,071	0.73	0.78	16,800	0.88	0.83	36,300	0.72	0.96	186,700	0.64	0.66
1960	5,962	0.65	0.84	18,700	0.91	0.86	41,900	0.76	1.00	191,100	0.67	0.76
1961	5,524	0.65	0.84	16,200	0.93	0.81	43,100	0.75	0.94	198,000	0.69	0.77
1962	5,529	0.70	0.76	16,200	0.91	0.86	47,400	0.78	0.96	199,800	0.71	0.75
1963	4,977	0.68	0.77	14,300	0.92	0.90	41,700	0.84	0.96	204,300	0.70	0.80
1964	4,218	0.85	0.74	16,500	0.92	0.88	44,100	0.82	0.78	183,100	0.68	0.79
1965	4,167	0.90	0.66	19,000	0.93	0.89	48,600	0.80	0.78	164,700	0.62	0.92
1966	3,675	0.76	0.94	16,700	0.93	0.76	49,500	0.77	0.78	171,300	0.72	0.88
1967	3,391	0.88	0.99	19,000	0.95	0.93	45,100	0.85	0.77	140,600	0.63	0.78
1968	3,819	0.78	0.98	17,200	0.93	1.00	53,000	0.84	0.76	149,400	0.60	0.82
1969	4,081	0.70	0.92	20,900	0.93	1.00	50,500	0.86	0.77	129,600	0.59	0.75
1970	4,599	0.62	1.14	19,200	0.93	0.83	51,900	0.83	0.74	131,000	0.49	0.86
1971	4,132	0.72	0.78	18,900	0.94	0.89	62,700	0.86	0.75	137,600	0.57	0.66
1972	4,520	0.72	0.78	21,800	0.93	0.94	58,600	0.88	0.75	155,400	0.55	0.81
1973	5,396	0.55	0.86	24,600	0.93	0.86	61,600	0.88	0.71	126,000	0.48	0.72
1974	4,729	0.60	0.93	25,500	0.95	0.82	67,900	0.84	1.15	127,900	0.52	0.68
1975	4,433	0.71	0.90	19,600	0.89	0.82	56,700	0.80	1.01	107,000	0.39	0.68
1976	3,824	0.59	0.88	18,000	0.89	0.83	65,300	0.82	0.70	125,400	0.42	0.66
1977	3,886	0.47	0.94	19,000	0.93	0.85	66,700	0.87	0.68	112,100	0.50	0.64
1978	3,756	0.44	0.74	22,500	0.93	0.93	67,200	0.88	0.61	78,400	0.33	0.68
1979	3,983	0.43	0.75	22,060	0.91	0.73	57,200	0.89	0.70	92,400	0.48	0.67

¹ Ratio of price of processing asparagus to price of fresh market asparagus.

Sources:
Agricultural Statistics
Agricultural Statistics for Ontario
Ontario Asparagus Growers' Marketing Board

Chart 4.3

Fresh Asparagus Prices in Canadian Funds
1950-1979



Processing Asparagus Price in Canadian Funds
1950-1979

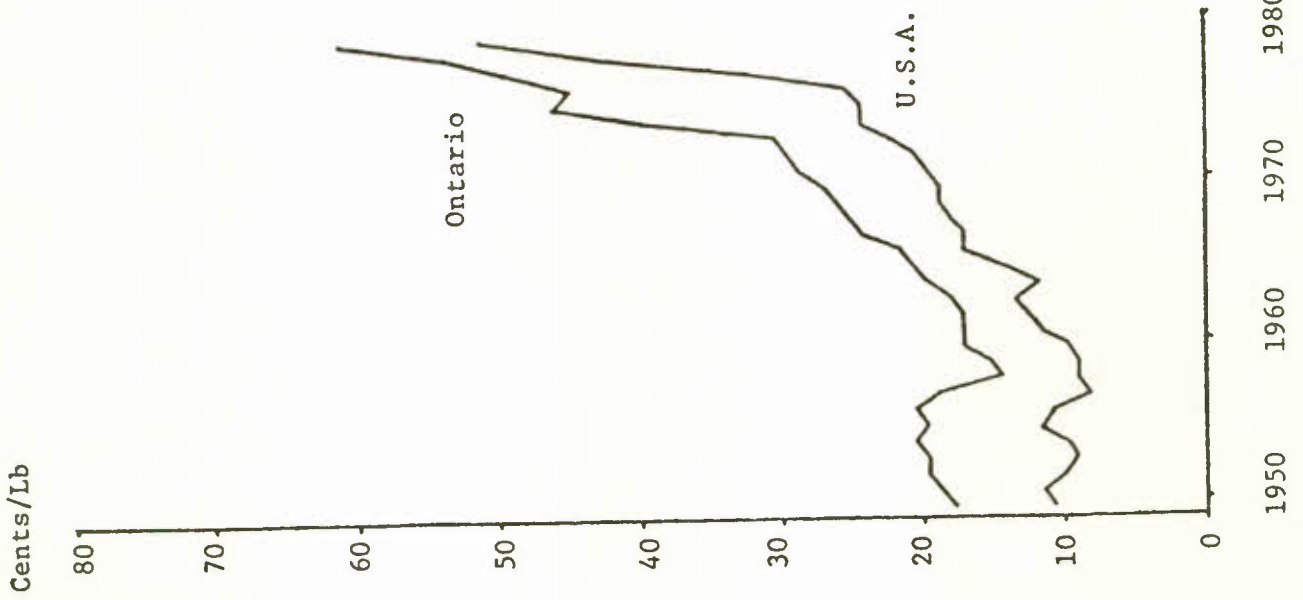
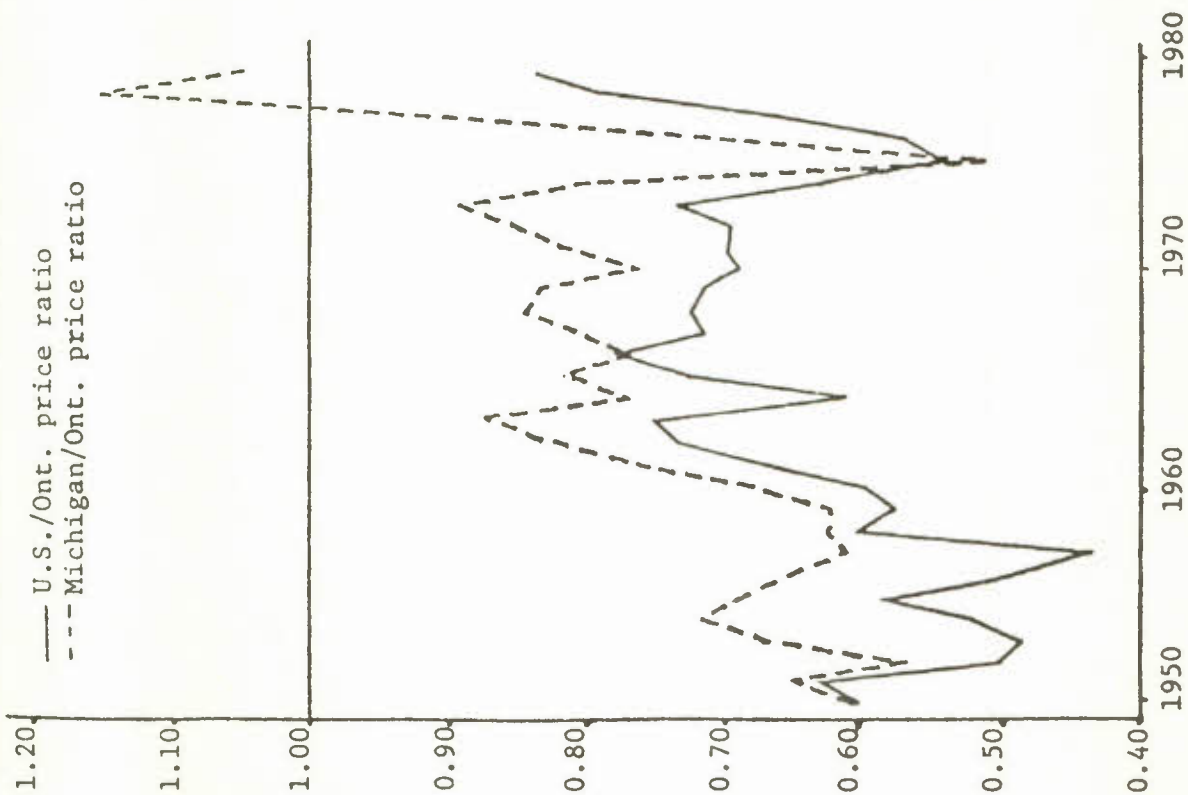


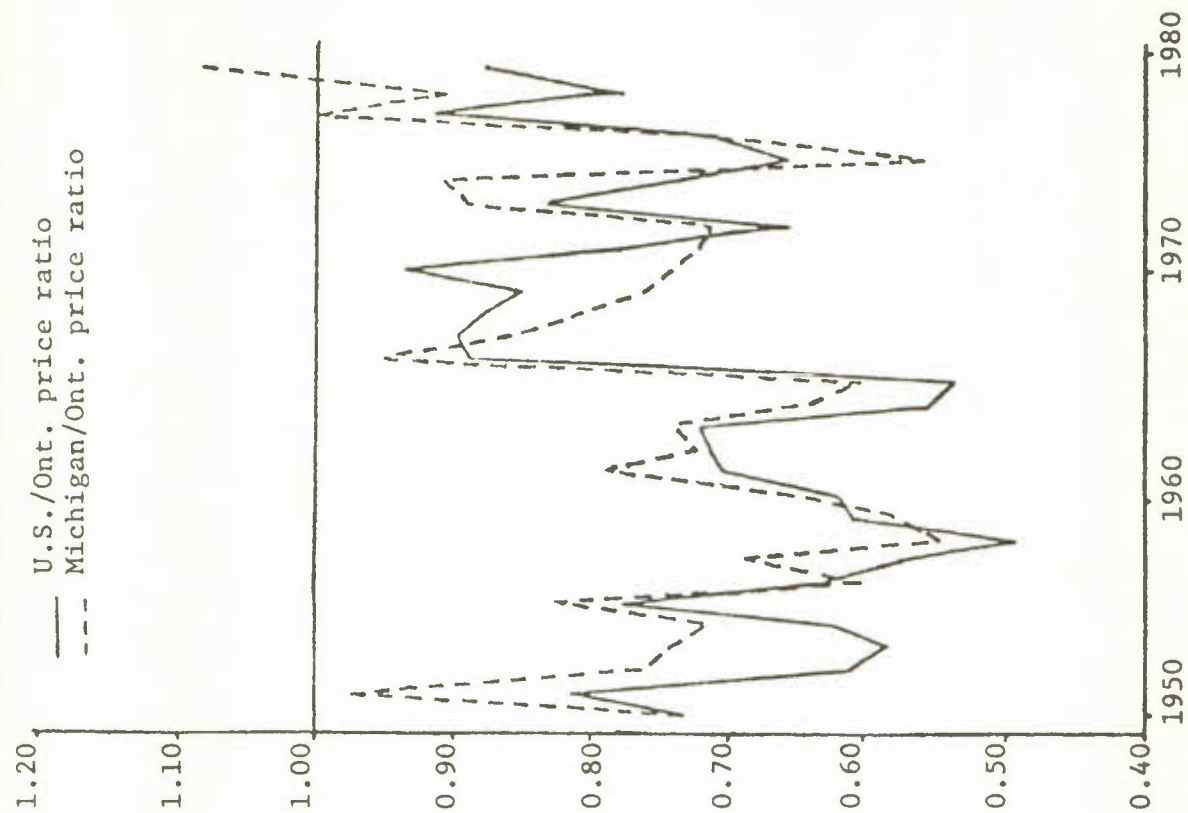
Chart 4.4

Ratio of U.S. and Michigan to
Ontario Processing Asparagus Prices, * 1950-1979



*All prices in Canadian funds.

Ratio of U.S. and Michigan to
Ontario Fresh-Market Asparagus Prices, * 1950-1979



Price movements in geographically different markets for the same good can be used as an indicator of market integration; i.e., as a measure of the extent to which disturbances in one market affect the equilibrium price in a second market. Transportation costs have an insulating influence but geographically distinct markets for raw product can be linked either directly through trade in raw product or indirectly through trade in the processed product. Table 4.2.3 shows the correlation coefficients between prices in five regional fresh asparagus markets for three sub-periods within the interval 1950-59. Since there are only ten observations within each sub-period the numbers should be treated with caution. However, the data seem to suggest that between 1950 and 1959 the fresh markets were not highly integrated. For the period 1960-69 the correlation coefficients are all positive and all intra-U.S. price correlations are above 0.91. During this ten-year interval the Ontario fresh market was somewhat less integrated into the North American market than the other regions but by the 1970's all regional markets appear to be highly integrated.¹

Table 4.2.4 shows similar correlation matrices for the processing market. Even in the 1950's it appears that there was some degree of market integration. Ontario price movements were highly correlated with those in Michigan (0.894) and with those in New Jersey to a somewhat lesser degree (0.591). By the 1960's it appears, processing asparagus markets were well-integrated.

More stringent tests of market integration can be obtained by first detrending the regional price series to remove the effects of general

¹New Jersey data available for this period does not distinguish the fresh and processing markets.

Table 4.2.3

Correlation Matrices for Raw Regional Fresh Asparagus Prices*

1950-59

	<u>Ontario</u>	<u>California</u>	<u>Washington</u>	<u>Michigan</u>	<u>New Jersey</u>
Ontario	1.000	-0.441	-0.617	-0.487	-0.722
California	-0.441	1.000	0.517	0.090	0.436
Washington	-0.617	0.517	1.000	0.155	0.673
Michigan	-0.487	0.090	0.155	1.000	0.389
New Jersey	-0.722	0.436	0.673	0.389	1.000

1960-69

Ontario	1.000	0.369	0.587	0.500	0.385
California	0.369	1.000	0.934	0.913	0.964
Washington	0.587	0.934	1.000	0.946	0.962
Michigan	0.500	0.913	0.946	1.000	0.925
New Jersey	0.385	0.964	0.962	0.925	1.000

1970-79

Ontario	1.000	0.960	0.906	0.921
California	0.960	1.000	0.950	0.979
Washington	0.906	0.950	1.000	0.954
Michigan	0.921	0.979	0.954	1.000

*All prices in Canadian funds.

Table 4.2.4

Correlation Matrices for Raw Regional Processing Asparagus Prices*

	<u>1950-59</u>				
	<u>Ontario</u>	<u>California</u>	<u>Washington</u>	<u>Michigan</u>	<u>New Jersey</u>
Ontario	1.000	0.282	0.233	0.894	0.591
California	0.282	1.000	0.886	0.387	0.841
Washington	0.233	0.886	1.000	0.319	0.859
Michigan	0.894	0.387	0.319	1.000	0.542
New Jersey	0.591	0.841	0.859	0.542	1.000
	<u>1960-69</u>				
Ontario	1.000	0.875	0.936	0.959	0.950
California	0.875	1.000	0.953	0.898	0.977
Washington	0.936	0.953	1.000	0.967	0.977
Michigan	0.959	0.898	0.967	1.000	0.954
New Jersey	0.950	0.977	0.977	0.954	1.000
	<u>1970-79</u>				
Ontario	1.000	0.902	0.931	0.865	
California	0.902	1.000	0.994	0.965	
Washington	0.931	0.994	1.000	0.948	
Michigan	0.865	0.965	0.948	1.000	

*All prices in Canadian funds.

Table 4.2.5

Log-Linear Trend Regressions for Asparagus Prices¹ and Yields by Region,

1950-79

	<u>Price Regressions²</u>			<u>Yield Regressions</u>		
	<u>Const.</u>	<u>Trend</u>	<u>R²</u>	<u>Const.</u>	<u>Trend</u>	<u>R²</u>
Ontario	2.669 (0.075)	0.040 (0.004)	0.763	0.784 (0.056)	-0.013 (0.003)	0.412
California	2.089 (0.072)	0.052 (0.004)	0.856	0.806 (0.035)	0.014 (0.002)	0.657
Washington	1.992 (0.065)	0.051 (0.004)	0.874	1.107 (0.036)	-0.002 (0.002)	0.021
Michigan	2.204 (0.087)	0.050 (0.005)	0.789	0.622 (0.049)	-0.015 (0.003)	0.511
New Jersey	2.046 (0.108)	0.060 (0.006)	0.776	1.092 (0.055)	-0.026 (0.003)	0.711

	<u>Processing Price Regressions</u>			<u>Fresh Price Regressions</u>		
	<u>Const.</u>	<u>Trend</u>	<u>R²</u>	<u>Const.</u>	<u>Trend</u>	<u>R²</u>
Ontario	2.663 (0.077)	0.038 (0.004)	0.733	2.722 (0.071)	0.042 (0.004)	0.803
California	2.023 (0.072)	0.048 (0.004)	0.833	2.281 (0.071)	0.050 (0.004)	0.850
Washington	1.995 (0.064)	0.049 (0.004)	0.867	1.947 (0.083)	0.062 (0.005)	0.863
Michigan	2.178 (0.087)	0.050 (0.005)	0.793	2.343 (0.092)	0.050 (0.005)	0.767
New Jersey ³	2.222 (0.073)	0.037 (0.005)	0.718	2.274 (0.070)	0.044 (0.005)	0.799

¹All prices in Canadian funds

²Average of fresh and processing prices

³Data available for 1950-75 only

Table 4.2.6

Correlation Matrix of Detrended Regional Asparagus Prices*

1950-79

	<u>Ontario</u>	<u>California</u>	<u>Washington</u>	<u>Michigan</u>	<u>New Jersey</u>
Ontario	1.000	0.900	0.873	0.869	0.936
California	0.900	1.000	0.984	0.943	0.978
Washington	0.873	0.984	1.000	0.931	0.972
Michigan	0.869	0.943	0.931	1.000	0.951
New Jersey	0.936	0.978	0.972	0.951	1.000

Correlation Matrix of Detrended Regional Asparagus Yields

	<u>Ontario</u>	<u>California</u>	<u>Washington</u>	<u>Michigan</u>	<u>New Jersey</u>
Ontario	1.000	-0.395	-0.119	0.221	-0.463
California	-0.395	1.000	0.130	-0.118	0.360
Washington	-0.119	0.130	1.000	0.028	-0.263
Michigan	0.221	-0.118	0.028	1.000	0.000
New Jersey	-0.463	0.360	-0.263	0.000	1.000

* All prices in Canadian funds

Table 4.2.7

Correlation Matrix of Detrended Regional Processing Asparagus Prices*

	<u>Ontario</u>	<u>California</u>	<u>Washington</u>	<u>Michigan</u>	<u>New Jersey**</u>
Ontario	1.000	0.707	0.810	0.764	0.749
California	0.707	1.000	0.963	0.889	0.778
Washington	0.810	0.963	1.000	0.901	0.867
Michigan	0.764	0.889	0.901	1.000	0.588
New Jersey**	0.749	0.778	0.867	0.588	1.000

Correlation Matrix of Detrended Regional Fresh-Market Asparagus Prices*

	<u>Ontario</u>	<u>California</u>	<u>Washington</u>	<u>Michigan</u>	<u>New Jersey**</u>
Ontario	1.000	0.862	0.758	0.855	0.490
California	0.862	1.000	0.888	0.960	0.874
Washington	0.758	0.888	1.000	0.898	0.748
Michigan	0.855	0.960	0.898	1.000	0.726
New Jersey**	0.490	0.874	0.148	0.726	1.000

 * All prices in Canadian funds

** Data available for 1950-1975 only

inflation which itself contributes to the high correlations observed in the raw price series. Table 4.2.5 presents the log-linear trend regressions for fresh and processing prices and their average (yield trend regressions are also shown). The results in the lower half of the table show that in all regions except Michigan fresh market prices have risen most quickly over the period 1950-79. In Michigan prices have risen at the same rate in both markets.

Tables 4.2.6 and 4.2.7 show the correlation matrices of detrended regional asparagus prices over the whole sample period of 1950-79. The correlation coefficients are generally high (all above 0.72). However, comparisons with the processing tomato region price correlations suggest that the latter North American market is more integrated than is the processing asparagus market.

4.2.3 Grower Returns

Periodically the Ontario Ministry of Agriculture and Food undertakes studies into the production costs and returns of Ontario's asparagus growers. A study released in 1972¹ was based on 23 growers, each of whom had participated in a somewhat larger study (66 participants) during the period 1962-64. Because of poor spring weather, yields in 1969 were 18 per cent below 1962-64 levels for the sample group (1,777 lbs/acre, down from 2,177 lbs/acre). Nevertheless, gross returns were up 16 per cent to \$482/acre while costs increased 8 per cent to \$356/acre. Consequently, net returns to risk and management increased 43 per cent from \$88 to \$126 per acre.

¹"Asparagus Production in Ontario: Production Costs, Returns and Management Practices, 1969", O.M.A.F., 1972.

This study also looked into the relationships between (i) total acreage and (ii) yields on costs and returns. Significant relationships were found. Costs, gross returns and net returns all fell as acreage increased. Costs, for example, averaged \$656/acre for enterprises of less than five acres, but averaged \$280/acre for enterprises of over twenty acres. It was found that costs, returns and net returns all increase with yields as Table 4.2.8 shows. Obviously, costs and returns varied markedly within the sample. Indeed the top third growers earned net returns to management and risk of \$315 per acre compared to \$126/acre for the average.

TABLE 4.2.8

Effect of Yields on Asparagus Production Costs and Returns, Ontario, 1969

	Average, all Farms	Yield Range in Pounds			
		Under 1,500	1,501- 2,500	2,501- 3,500	Over 3,500
Number of records	23	7	6	6	4
Acres/record	19.8	29.1	24.4	12.6	7.4
Yield, lbs/acre	1,777	992	1,944	2,773	3,804
Total costs	\$356.	\$195.	\$368.	\$561.	\$ 881.
Gross returns	\$482.	\$273.	\$522.	\$748.	\$1,038.
Net returns to risk and management	\$126.	\$ 78.	\$154.	\$187.	\$ 157.

Source: O.M.A.F.

A more recent study for the year 1977¹ was based on details supplied by ten growers. For Ontario as a whole between 1969 and 1977 yields, acreage and production all dropped. Unfortunately, the sample group was

¹"Asparagus Production in Ontario, 1977", O.M.A.F.

not well-chosen since their average yield was 723 lbs/acre compared to the provincial average of \$1,561 lbs/acre. Consequently, the study revealed little. What it did show was that for these below-average enterprises gross returns covered variable costs but were insufficient to cover both variable and fixed costs. Net returns per acre were minus \$104 for the sample group. To provide a better picture of asparagus production in Ontario, costs and returns were budgeted for three different yield levels. Some results of the exercise have been reproduced in Table 4.2.9.

An important conclusion that emerges from this is there is a large variation in yields between producers and this is primarily the reason why net returns are so variable from grower to grower. Given the behaviour of Canadian yields in the recent past and their rather unfavourable comparison with California and Washington yields it is clear that the research currently being undertaken at the University of Guelph into varieties and cultural practices is very important for the future of Canadian asparagus production.

Table 4.2.9

Budgeted Costs and Returns for Processing Asparagus, Ontario, 1977

<u>Per Acre, \$</u>	<u>Yield (lbs/acre)</u>		
	<u>1,500</u>	<u>2,000</u>	<u>2,500</u>
Gross returns	765	1,020	1,275
Variable costs	351	438	520
Gross margin	414	582	755
Fixed costs	338	404	472
Total costs	689	842	992
Net returns	76	178	283

Source: O.M.A.F.

4.3 The Processing Sector

Processing asparagus is used primarily in the production of canned and frozen asparagus and for soup. In terms of value, canned asparagus is by far the most important of these processed products. Consequently the available data are richest for the canned asparagus market and essentially non-existent for the soup market.

Tables 4.3.1 and 4.3.2 show details of the markets for canned and frozen asparagus respectively. With respect to canned asparagus, domestic disappearance grew substantially during the 1960's. During the 1970's the growth of the market slowed considerably. Domestic production followed this pattern although Canadian processors have been able to establish a rapidly growing export market. Exports represented just 5.9 per cent of production during the 1960's but by 1977-78 exports accounted for 32.3 per cent of production. At the same time the share of imports in domestic disappearance has remained fairly stable over the past twenty years, holding an average somewhere just below 10 per cent of the domestic market. Imports and domestic product are in fact different commodities. Most imports are from Taiwan and are of the white-stemmed type. The Canadian product on the other hand is entirely of the green spear variety. Given this distinction it seems reasonable to conclude that the Canadian product has dominated its market during the past twenty years and has in fact established a fast-growing export market.

The market for frozen asparagus is considerably smaller and has shown slower growth than the market for canned asparagus. Canada apparently does not export frozen asparagus and the share of imports in domestic disappearance has fluctuated considerably around a rising trend. However, domestic supplies still satisfy the bulk of domestic demand. Because of confidentiality requirements, data for the most recent years are incomplete.

TABLE 4.3.1

ASPARAGUS, CANNED: PRODUCTION, IMPORTS, EXPORTS AND DOMESTIC DISAPPEARANCE, CANADA, 1961-1978

	Average 1961-1970	Average 1971-1978	Annual Percentage Change 1961-65 to 1976-78	1971-1978								
				1971 -'000 lb.	1972	1973	1974	1975	1976	1977	1978	
				-								
Opening Inventory (a)	2,486	5,325	+ 8.3	2,781	3,195	5,987	5,221	5,652	7,932	7,842	3,992	
Production	7,507	12,410	+ 4.5	11,239	13,877	12,016	12,961	13,736	12,288	10,598	12,568	
Imports	637	914	+ 1.7	698	834	795	851	1,098	1,119	749	1,168	
Total Supply	10,630	18,650	+ 5.3	14,718	17,906	18,798	19,033	20,486	21,339	19,189	17,728	
Exports (b)	1,473 (c)	2,253	..	1,394	1,255	1,740	2,263	2,518	1,404	3,577	3,870	
Closing Inventory (a)	2,556	5,307	+ 5.5	3,195	5,987	5,221	5,652	7,932	7,842	3,992	2,637	
Apparent Domestic Disappearance	6,601	11,090	+ 5.3	10,129	10,664	11,837	11,118	10,036	12,093	11,620	11,221	

- per cent -

Exports as a Percent-
age of Production

5.9 18.2 .. 12.4 9.0 14.5 17.5 18.3 11.4 33.8 30.8

Imports as a Percent-
age of Domestic
Disappearance

9.7 8.2 - 3.4 6.9 7.8 6.7 7.7 10.9 9.3 6.4 10.4

(a) Opening Inventory as of January 1st and closing inventory as of December 31st.

(b) Includes re-exports.

(c) Three year average, omitting 1961-67.

Source: Statistics Canada

TABLE 4.3.2

ASPARAGUS, FROZEN: PRODUCTION IMPORTS AND APPARENT DOMESTIC DISAPPEARANCE, CANADA, 1961-1978

	Average 1961-1970	Average 1971-1978	Annual Percentage 1961-65 to 1971-75	1971	1972	1973	1974	1975	1976	1977	1978
				-'000 lb. -							
Opening Inventory (a)	363	392	+2.9	286	442	492	444	476	518	330	150
Production	608 (b)	810 (c)	+4.5	971	830	694	812	779 (d)	x	762	827
Imports	93 (e)	157 (f)	+9.6	108	124	204	191	163	254	53	x
Total Supply	1064	1359	+4.4	1,365	1,396	1,390	1,447	1,418	..	1,145	..
Closing Inventory (a)	366	397	+3.1	442	492	444	476	518	330	150	325
Apparent Domestic Disappearance (g)	698	962	+5.2	923	904	946	971	900	..	995	..
Imports as a Percent- age of Domestic Disappearance	13.3	16.3	+4.3	11.7	13.7	21.6	19.7	18.1	..	5.3	..

(a) Opening inventory as of January 1st and closing inventory as of December 31st.

(b) Seven-year average, omitting 1968-1970.

(c) Seven-year average, omitting 1976.

(d) Tariff Board estimate

(e) Eight-year average, omitting 1961 and 1962

(f) Seven-year average, omitting 1978.

(g) Export data are not available, but is likely to be small.

Sources: Statistics Canada
The Tariff Board

4.3.1 Sources of Raw Product and Location of Production

As we have seen in Table 4.2.3, acquisitions by processors accounted for 51 per cent of the quantity of raw asparagus available in Canada over the period 1976-78. Domestic production accounted for 33 per cent of this total supply. However, domestic production is channelled primarily into the fresh market. Over the same time interval, domestic production accounted for just 25 per cent of acquisitions of domestic processors. The major reason for this would seem to be the geographical separation of the chief producing (Ontario) and processing (B.C.) regions. Table 4.3.1 gives information on the Canadian pack of canned asparagus from 1974 to 1978 and shows the importance of British Columbia as a producing province. Indeed, the proportion produced in British Columbia has shown a steady increase during this period. Ontario is the other important producing province with Quebec accounting for the remainder.

Table 4.3.1

Pack of Canned Asparagus - Canada and British Columbia

	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>
	(Cases, 000's)				
Canada	659	726	545	540	635
British Columbia	356	404	350	340	421
British Columbia (share)	54.0%	55.6%	64.2%	63.0%	66.3%

Source: Statistics Canada, Cat. 32-011.

The greater part of the raw product used in the B.C. pack is imported. Even in Ontario in recent years processors have been purchasing an increasing proportion of their requirements from the United States. The reason for this is the unavailability of sufficient domestic raw product. Throughout

the 1970's the O.A.G.M.B. has failed to supply to the processors the quantities agreed to following negotiations. Contracts have been signed between processors and the Board rather than between processors and the growers individually. The Board has not required its members to honour the Board's commitments. As a result asparagus has been diverted to the fresh market where prices have been more favourable and the share allocated to the processors has been falling. Consequently, Ontario processors have also had to rely on imported raw product.

4.3.2 The Tariff on Raw Asparagus¹

Prior to the changes in Canada's tariff structure which were put into effect in 1979 there was no distinction made between imports of raw asparagus for processing and asparagus for the fresh market. Both products were subject to a Most-Favoured-Nation (M.F.N.) tariff of $3\frac{1}{2}\text{¢}/\text{lb}$ and a minimum rate of 10 per cent for a maximum of fourteen weeks per year. In central and western Canada this tariff was imposed for the full fourteen weeks in all years from 1966 to 1975 except for imports into western Canada in 1975 which entered duty free. The duty was not imposed at all in the Maritimes over this period. In 1966 the ad valorem equivalent of the tariff was 14.5 per cent but by 1974 the rising price of imported asparagus reduced the ad valorem equivalent of the specific duty to 10.0 per cent.

In its submission to the Tariff Board the Canadian Horticultural Council proposed an increase in the seasonal specific duty to $5\frac{1}{2}\text{¢}/\text{lb}$ with a minimum rate of 20 per cent. In addition the C.H.C. proposed that the maximum period of application be raised to twenty weeks. The Canadian Food Processors Association proposed that asparagus for processing be made a separate item and suggested a tariff rate of 10 per cent for fourteen weeks (free for the

¹The material contained in the early part of this sub-section leans heavily on the Tariff Board Report.

rest of the year). This proposal, in other words, meant no change in the tariffs applicable to processing asparagus.

The Tariff Board adopted the view of the C.F.P.A. that the end use of imported asparagus is an important distinction. When the negotiations were complete the tariff on fresh-market asparagus was raised to 5½¢/lb and a minimum of 15 per cent. However, in recognition of Canada's short harvest season the maximum applicable period was reduced from fourteen to eight weeks. The duty on asparagus for processing was raised to 5¢/lb (up 1½¢/lb) and a minimum rate of 15 per cent (up 5 percentage points).

With respect to processing asparagus the C.H.C. was successful in obtaining an increase in the ad valorem rate applicable to imports of this product. The C.F.P.A. was unsuccessful in maintaining the status quo. The regional imbalance in the location of the production of the domestic raw product and the location of the processing industry adds an interesting dimension to the distributional impacts of the tariff. Essentially an Ontario producing industry is protected at the expense of a successful processing industry which is primarily located in British Columbia. Of course there is an asparagus producing industry in Ontario too, but at the time of harvest Ontario producers have not been willing to supply the industry the quantities that were agreed to immediately following the price negotiations. Ontario producers have clearly identified the fresh market as their primary target.

One recourse open to food processors is to appeal to the Tariff Programmes Relief Directorate for remission of duty on imported processing asparagus when domestic supplies are unavailable. The Interdepartmental Review Committee¹ examines such cases and makes recommendations to the

¹Members include representatives from the Department of Finance and Industry Trade and Commerce as well as Agriculture Canada.

Governor-in-Council who may then issue an Order-in-Council to allow duty to be refunded to the importer. In the case of agricultural products the IRC will not consider a proposal that has not already been supported by the relevant marketing board. It is often in the producers' interests to allow processors to obtain raw product duty-free since this ensures an uninterrupted supply of the processed product to retail outlets at a competitive price. In addition, however, processors may be willing to share the remitted duty in exchange for support from the marketing board. In the case of asparagus for example part of the remitted duty is returned to the processors and part is deposited in a trust fund to be used for research purposes. Indeed monies from this source are an important component of the funds which are financing the research programme that is currently underway at the University of Guelph.

4.4 Summary and Conclusions

The production of processing asparagus products is primarily located in British Columbia; Ontario and Quebec are the other producing provinces. Over the past twenty years these products have performed well in the market place. The domestic market for canned asparagus is dominated by domestic production and imports (primarily from Taiwan) are of the white asparagus type rather than the green spear variety which is canned in Canada. A growing export market for this product has emerged with about one-third of domestic production currently being exported. Similarly the smaller domestic demand for frozen asparagus is also largely satisfied by domestic supplies although, apparently, none is exported.

The grower sector has not experienced such success. Production and yields have been lower in the late 1970's than in the early 1960's. This is partly due to the combination of poor spring weather and the disappointing performance of varieties that were developed and used successfully in California but proved to be inappropriate for Ontario conditions. Total

acreage, most of which is in Ontario, has remained essentially unchanged over the past twenty years. However, one favourable feature of the 1970's from the point of view of growers has been the rapid rise in asparagus prices, which have outstripped increased in the general level of prices (as measured by the Consumer Price Index, for example). The proportion of the Ontario asparagus crop which is sold to processors has fluctuated from 0.42 and 0.9 over the period 1950 to 1979. Since the mid-1960's this proportion has trended downwards and was 0.43 in 1979. As a result imported asparagus for processing has become increasingly important and accounted for 75 per cent of processors' requirements between 1976 and 1978. Most of these imports come from the United States where the major producing states are California, Washington (which supplies processors in B.C.), Michigan (which supplies part of the needs of Ontario processors) and New Jersey. The latter has become a minor producing area in recent years.

Since Ontario is the major producing province the Ontario Asparagus Growers Marketing Board plays an important role in the processing asparagus industry. Up until 1979 the major function of the O.A.G.M.B. was to negotiate the price of processing asparagus and the terms of contracts signed with processors. The Board also had and has the exclusive right to market processing asparagus in Ontario. This has meant that the processors have not signed contracts with individual growers but rather with the Board. This has led to some problems, including the fact that the Board has failed to meet its obligations in terms of the contracted quantities. Growers have preferred to take advantage of strong fresh markets. As a result growers have had the advantages of a minimum price prior to harvesting but processors have not been able to rely on supplies despite written contracts.

Growers have not been satisfied with the negotiated price for processing asparagus, particularly when this price has been settled by arbitration.

As a result the Board petitioned for price-setting powers in 1978.

Following its usual practice, the Farm Products Marketing Board conducted a plebiscite amongst the growers in 1978 to determine their wishes. Despite protestations of the processing industry the Board was granted this additional power in 1979. The problems of the grower sector in the recent past have primarily been those of low yields due to poor weather and the disappointing performance of new varieties. The long-term solution is the development of new vigorous varieties suitable to Canadian conditions and research into cultural practices. All this is currently being done at the University of Guelph, but the short-term remedy has been to give growers the ability to set the processing asparagus price. This has been done despite the fact that the price of asparagus (averaged over both fresh and processing markets) has risen faster than inflation generally during the 1970's.

A second area where the O.A.G.M.B. has been successful in its lobbying efforts is that of tariff protection. In 1979 the minimum ad valorem rate to be applied to imports of fresh asparagus for processing was raised to 15 per cent from 10 per cent. The application of the tariff applies equally to all regions of the country and to all times of the year (up from a maximum period of fourteen weeks prior to 1979). It could be argued that this tariff is in effect protecting an Ontario producing sector at the expense of an industry that is primarily located in British Columbia where supplies of raw product are obtained from sources other than Ontario. It is true that in the past few years processors have applied for remission of duty which can be obtained when domestic supplies of raw product are unavailable. However, in all cases involving agricultural imports applications for remission of duty are screened first by the relevant producer organization. Without the support of the growers' organization a

recommendation of refund of tariff will not be made. In exchange for its support the O.A.G.M.B. obtained agreements with the processors which ensure that part of the remitted duty is allocated to a research fund that is to be used to underwrite research into asparagus production. This fund is currently providing part of the financial requirements of the research programme which is underway at Guelph.

At the present time growers are very optimistic about the future of asparagus production in Canada. Growers have been successful in obtaining price-setting powers, in raising the tariff on imports of fresh-market and processing asparagus and in extending the period of applicability to twelve months per year in the case of processing asparagus. All of these changes have been effected in 1979. In addition, lessons have been learned concerning the dangers of adopted varieties that have been developed for other regions. Over the next few years improvements can be expected in plants available for use in Canada. Indeed it seems that the key to profitable asparagus production depends more on obtaining high yields (which vary widely from grower to grower) than in having the power to control the processing asparagus price. To this writer it seems that having this power will be of minor importance to the long-term viability of the grower sector, partly because the fresh market has shown strong growth. Processors, on the other hand, face additional uncertainties when confronted by a price-setting marketing board, particularly when their own production comes under the Marketing Board's jurisdiction.

IV. Final Comments

This paper has been concerned with the role of marketing boards in two processing vegetable industries: processing tomatoes and processing asparagus. The vast majority of the raw product is produced in Ontario and so attention has been focused on the Ontario Vegetable Growers' Marketing Board and the Ontario Asparagus Growers' Marketing Board. The traditional role of fruit

and vegetable marketing boards has been to negotiate price and the contract terms with processors on behalf of member growers. This had been a legitimate aim given the degree of concentration on the processor side of the market. In the recent past the number of marketing agencies has increased and so have the powers to certain boards. Indeed, both the O.V.G.M.B. and the O.A.G.M.B. have recently applied for price-setting powers. Both boards have been dissatisfied with the outcome of negotiations that have finally been settled by arbitration. The Farm Products Marketing Board typically undertakes a plebiscite amongst the growers to determine the majority opinion. In the case of the asparagus growers the application was accepted and since 1979 the O.A.G.M.B. has been a price-setting board.

In neither case, however, was the low level of the product's selling price the major frustration. But the ability to set price is a very tangible and powerful bargaining tool which both groups felt was within their grasp. In the processing tomato industry grower returns have been high, but the present is one of adjustment and rationalization. The modern low-cost harvesting techniques are not compatible with the present number of growers. Market expansion would certainly ease the tensions and the establishment of a tomato solids industry is the prime candidate. A key issue is the grading scheme which must be overhauled if the full efficiency of mechanical harvesting and end-use pricing are to be achieved. While price-setting power would certainly give the O.V.G.M.B. a tough bargaining weapon it introduces additional uncertainty into the market as far as processors are concerned and possibly enough to make tomato solids too risky a project.

For asparagus growers the past twenty years has not been a period of great advances. Production, yields and acreage have all been either flat or falling. The problems are essentially in the production sector itself rather than the product market. Indeed the price of asparagus has risen

faster than the general price level since the early 1970's. Nevertheless, growers requested and received price-setting powers as a way of solving unrelated problems.

The conclusion that is being drawn here is that price-setting powers have been sought and granted in situations where the growers' problems do not essentially involve the issue of produce price. Price-setting power is, however, a powerful bargaining tool and may be sought for that purpose.

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Prescott, David Martin, 19

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