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An
Analysis of Profits
within the Canadian
Food Processing Sector

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An
ANALYSIS OF PROFITS
within the
CANADIAN
FOOD PROCESSING
SECTOR

by

Deborah Harper
Economic and Industry Analysis Division
Agriculture and Agri-Food Canada

and

Rick Burroughs
Agriculture Division
Statistics Canada

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Research and Analysis Directorate
Strategic Policy Branch
Agriculture and Agri-Food Canada

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FOREWORD

The agri-food chain today is significantly different from that of twenty years ago. Changing consumer demands, knowledge intensive technology, North American integration and globalization have all contributed to the evolution of the different segments of the chain, which include input suppliers, agricultural producers, food processors, and food distributors.

This report is part of Agriculture and Agri-Food Canada (AAFC)'s new Performance Report Series. The purpose of this Series is to create a picture of the competitiveness and profitability of the entire agri-food value chain to support a more informal discussion on changes in the agri-food value chain, and the challenges and opportunities it faces in the future. This information will provide a reference point for determining the preparedness of the agri-food value chain to take maximum advantage of the new Agricultural Policy Framework to build a more profitable future.

To get a full picture of the economic health of the various segments of the agri-food value chain, their economic performance needs to be measured from many different perspectives, including profitability, cost-competitiveness, productivity and innovation. This particular report is one of two that AAFC has undertaken in conjunction with Statistics Canada to assess profitability of Canadian food processing and retailing enterprises relative to non-food processing and retailing enterprises. This study examines the profitability of food processors. Profitability is measured in terms of the rate of return on long term capital. On average, food processors are shown to have higher rates of return than their non-food counterparts. This gives evidence that food processing is a healthy and profitable industry in the Canadian economy.

Executive summary

This paper examines profitability trends in the Canadian food processing industry during the period 1990-1998 and compares these trends with those in the manufacturing sector as a whole. Following the lead of the authors of the last study on food company profits (Food Prices Review Board, 1975), profitability was measured as rates of return (ROR) to long term capital.

The results from this study are consistent with the findings of other studies which report that large enterprises in the food processing sector are more profitable than medium and small enterprises. Large enterprises earned an average ROR on long–term capital of 12.6% compared to that of medium enterprises that earned an average ROR of 10.2% and small enterprises averaging ROR of 7.7%. Contrary to some other studies, our results also show that the food processing sector is more profitable than the manufacturing sector taken as a whole earning an average ROR of 11.6% compared with a 7.5% average ROR for the manufacturing sector.

CHAPTER 1
INTRODUCTION

The purpose of this paper is to examine profitability trends in the Canadian food processing industry compared to other manufacturing industries during the period 1990-1998.

During the 1990s, the Canadian food processing industry experienced growth resulting from technological change and globalization. Efforts by the industry to protect its domestic market share while taking advantage of new export opportunities led to restructuring, resulting in fewer but larger firms. This raises the question of what effect this reorganization of the industry has had on profitability and competition.

The paper will use the rate of return (ROR) on long-term capital as the measure of profitability in the food processing industry and the manufacturing sector (without food processing). This will enable the profitability of the food processing industry to be compared to that of the manufacturing sector. Enterprises within the food processing industry and the rest of the manufacturing sector are grouped according to their annual sales and the RORs for the different groups are calculated and compared.

The rest of the paper is organized in the following manner. Chapter 2 gives some background on the Canadian food processing industry, followed by Chapter 3 with a review of the literature dealing with market concentration, profitability and RORs. Chapter 4 describes the data and its limitations. Chapter 5 provides the results of the study as regards profitability of the food processing industry. Chapter 6 presents the results for the manufacturing sector (without the food processing industry). Chapter 7 is a comparison of the results for the food processing industry and the manufacturing sector. Chapter 8 offers concluding remarks and some ideas for further research. The paper ends with a bibliography and two appendices: a list of subgroups in the food processing industry and a list of industries included in the manufacturing sector.

ECONOMIC PERFORMANCE

The background section has three parts: characteristics in the Canadian food processing industry, structural shifts in the demand for food, and trade agreements.

Characteristics of the Canadian food processing industry

The Canadian food processing industry (NAICS 31-33) is large by any standard.[1] It consists of over 3000 establishments, employing approximately 200,000 people and accounting for 10% of total manufacturing sector employment and value-added. It is Canada's third largest manufacturing industry, based on value-added, following only the transportation, and machinery and equipment industries. While one of the larger industries, food processing is clearly not the most dynamic. As of 1998, the last year of our sample, real output per production worker for the food industry had, on average, increased by 1.0% annually from 1990 level. By comparison the increase averaged 2.3% in the overall manufacturing sector from 1990 to 1998. The cumulative increase in real GDP per worker in the food processing industry was 5.7% compared with 16.4% in the manufacturing sector. Multifactor productivity in 1997[2] increased by less than 2% in the food sector compared with 5.5% in the manufacturing sector as a whole. In 1998, exports in the food processing industry were valued at $11.7 billion and imports at $10.4 billion generating a trade surplus of $1.3 billion.

Looking at the structure of seven of the major industries within the food processing industry, we see that there are appreciable differences (Table 1). The differences arise because of the type of product produced, market structure and market conditions faced, including exposure to international markets. The bakery industry has more than twice as many establishments as the meat and poultry industry but considerably fewer employees. The bakery industry has the fewest average employees per establishment (26) while the meat and poultry industry has the largest number of employees per establishment (103). The cereal industry has the lowest total employment but the third largest total value-added, which leads to the largest value-added per worker. The "other" category, comprises a number of industries, including oil seeds processing and sugar and chocolate confectionery manufacturing. With the largest total value-added and the third largest total employment, the "other" category has in the third largest value-added per worker.

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1. *These data are compiled using the North American Industry Classification System (NAICS). Care should be taken when comparing these data with earlier publications.*

2. *1997 data was the most recent available for multifactor productivity.*

Table 1: Structural variation within the food processing industry (1998)[*]

Industry	Number of establish-ments	Total employment	Total value-added (millions $)	Average employment size	Value-added per worker (thousands $)
Bakery	1,355	35,221	2,582	26	73.3
Cereal	514	15,765	3,070	31	194.7
Dairy	261	20,803	3,221	80	154.8
Fish	429	22,717	1,016	53	44.5
Fruit and vegetables	216	19,788	2,461	92	124.4
Meat and poultry	522	53,823	3,782	103	70.3
Other	367	32,088	4,235	87	132.0
Total	3,664	200,205	20,367	55	101.7

Source: Statistics Canada, Cansim II Table 301-0003.

* These data are reported according to the NAICS therefore comparison with previously published tables should be done carefully.

The trading characteristics of the industries also vary. The bakery and dairy industries both have relatively low exports and low imports. The bakery industry products are, for the most part, perishable and therefore sold primarily in the domestic market. This coincides with the fact that the bakery industry has the most establishments. The dairy industry is a supply-managed industry and exports and imports of dairy products are limited, resulting in the lowest export intensity and import penetration. By way of contrast, the fish industry has the largest export intensity and import penetration.

Table 2: Value of shipments and trade (1998)

Industry	Value of shipments (millions $)	Total exports* (millions $)	Total imports* (millions $)	Export intensity** (%)	Import penetration*** (%)
Bakery	3,250	651	468	20.0	15.3
Cereal	6,792	794	781	11.8	11.5
Dairy	8,308	452	305	5.4	3.7
Fish	2,897	2,142	1,311	73.9	63.5
Fruit and vegetables	4,221	941	1,760	22.3	34.9
Meat and poultry	14,651	3,097	1,491	21.1	11.4
Other	12,255	3,636	4,289	29.7	33.2
Total	52,373	11,713	10,405	22.4	20.4

Source: Industry Canada – Strategis (SIC80)

*   *Excluding re-exports.*
**   *Export Intensity is equal to total food exports, less food re-exports, divided by total food shipments.*
*** *Import Penetration is equal to total food imports, less food re-exports, divided by total food shipments plus total food imports less total food exports.*

The food processing industry represented 2.4% of Canadian gross domestic product (GDP) in 1996 (Table 3). By way of comparison, the food industry represented 1.3% of GDP in the United States, 2.0% in Germany and 1.3% in the United Kingdom (Table 3). In absolute terms, the Canadian food processing industry is the smallest of any G-7 country. If one were to convert all currencies to U.S. dollars, value-added per worker in Canada compared favourably with other G-7 countries in 1996, outperforming Germany, the United Kingdom and the United States.

Table 3: Value-added by country (1996)

Country	Food production (billion US $)	Food value-added (billion US $)	Food value-added/GDP (%)	Food value-added/worker (US $)
Canada	50.7	14.7	2.4	75,303
Germany*	194.0	47.7	2.0	68,813
United Kingdom	49.0	14.8	1.3	31,452
United States	392.2	98.5	1.3	64,506

Source: OECD online database 2001.

* 1995.

Structural shifts in the demand for food

The Canadian food processing industry is considered mature and has registered slow but steady growth for many years. Domestic population growth, demographic shifts and household composition influence food consumption and demand. Canada's population grew about 1.3% per year between 1988 and 1998, marginally higher than the United States, where the population has been growing at an annual rate of about 1% (OECD Economic Statistics Online).

Demographic shifts are also having an impact on the food processing sector. The Canadian population is aging, with demographic projections for the next five years indicating the greatest expansion - nearly 28% - in the 45-54 age group. By 2006, the 40-54 year old age group is expected to number almost eight million people, or 23% of the total population. Seniors, 65 and over, are expected to increase 20% to 4.4 million people by 2006, representing over 13% of the total population. Immigration is averaging close to 250,000 per year, mainly from Asia, Europe and South and Central America. An expanding immigrant population affects the food processing industry, which must serve a wider variety of tastes and preferences[3].

The changing composition of households is having and impact, with the observed trend toward more single-person and single-parent households expected to continue. The average Canadian household is becoming smaller. The average household in 2000 had 3.1 persons (Table 4.7, Statistics Canada, 2000a).

The combination of an aging population and a more culturally diverse population and more single-person and one-parent households suggests continued adjustments in the food processing industry. More women in the workforce and more single-person and one-parent households also imply increased demand for prepared foods and food prepared outside the home[4].

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3. *Trant, 1996.*

4. *Ibid.*

Trade Agreements

Given the modest expansion of domestic markets, many Canadian food processors are looking for new export opportunities as a result of the liberalization of trade following the Canada – United States Trade Agreement (CUSTA), the North American Free Trade Agreement (NAFTA), and the advent of the World Trade Organization (WTO). Realizing these new export opportunities requires a focus on innovation and technological change, along with substantial new capital spending.

Just as the CUSTA (1989), the NAFTA (1994) and tariff reductions as a result of the Uruguay Round have improved export opportunities, they have also opened domestic markets to increased competition from imports. This has encouraged firms to extend their efforts to be competitive. Output levels that enable Canadian plants to capture scale economies have become more important in order to compete successfully with the United States and other foreign-based multinationals.

There is a great deal of interest in the impact of these changes on the industry, particularly as it relates to corporate concentration and vertical integration. Of special interest is the impact on the ability of the Canadian based enterprises to maintain their presence in the market, to remain profitable, and to compete successfully with their foreign counterparts.

CHAPTER 3
LITERATURE REVIEW

Although this paper does not deal with the issue of sector concentration and market power, we thought it would be useful to include a discussion of some of the literature on the subject. This could be useful for further work looking at profitability in the agri-food sector.

Excessive profitability in a sector often leads people to think that there is concentration in that sector. A concentration of large firms in a sector gives the perception of these firms being in a position to exercise market power. Market power in the agri-food chain can be exercised in two ways: farmers may receive lower than competitive prices for their products or consumers may pay higher than competitive retail prices[5]. " . . . there is the reality that while farmers tend to be relatively powerless sellers of commodities, other links in the marketing chain are more concentrated and powerful."[6] Where there is both high concentration and the exercise of market power, one would expect the dominant firms to have higher than normal profits.

In 1957, the Subcommittee on Antitrust and Monopoly in the United States issued a report on "Concentration in American Industry". The report provided concentration data for 1935, 1947 and 1954. Since that time, several studies on concentration in the food processing industry have been published. Some recent studies in the United States include those by Schroeter and Azzam (1990), Kinsey (1998), Sexton and Zhang (2000), and Reed and Clark (2000).

Most of the studies are consistent in their findings. They find that links in the food chain are becoming more concentrated especially in the processing and retailing industries. However, the debate continues as to whether this concentration is leading to an actual exercise of market power.

Kinsey (1998), studying concentration in food retailing, got mixed results. With increased concentration, prices of dry grocery goods were observed to increase but prices for fresh and chilled groceries decreased. Turning to profits, there was no evidence that individual retailer profits were greater than those of food processors. The debate is whether an observed increase in profits results from higher prices or lower costs.

In a review of structural change in the American food manufacturing industry from 1958 to 1997, Rogers (2000) found that large firms are getting larger and the number of small firms is increasing. The firms in the middle are in the most danger from the consolidation movement. The small firms fill the gaps left by the larger firms and if they become successful the larger firms typically acquired them.

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5.   *Reed and Clark, 2000.*

6.   *Wilson, 2000.*

There were similar studies in Canada. One early study by the Food Prices Review Board (1975) examined financial profitability in the Canadian food processing industry and analysed the relationship between profits and firm size. The study reported that profits for food companies exhibited more pronounced cyclical variation than other forms of national income and that in real terms the return on equity for food processing companies was lower in the 1970s than the 1960s. It was also found that, on average over the 1964-1974 period, profitability in the food processing industry was slightly below that in the manufacturing sector. Canadian studies of corporate concentration have also been conducted, but most of this work was undertaken in the mid-1970s and early 1980s[7].

Recent studies of concentration in the agri-food chain focus on the increase in concentration and deterioration in competition (MacDonald 2001; Rude and Fulton 2001; Calvin et al. 2001). Focusing on the U.S. red meat industry, MacDonald observed that although there was increased concentration, the farm to wholesale price spread did not increase in the long term. He hypothesized that the "hard competition" from increased concentration may have forced out the high cost packers, allowing prices to remain low. Rude and Fulton concluded that concentration is increasing in some parts of the agribusiness sector. They found a positive correlation between increased concentration and the exercise of market power[8] in a few food processing industries, although they do caution that more research must be carried out to confirm their results.

A number of researchers try to quantify the influence of firms in the industry chain. Schroeter and Azzam (1990) developed an economic model to measure market power. They studied the United States meat industry and rejected the hypothesis that the industry is a price taker, concluding that half of the farm-to-retail price spread for beef and pork appeared to be attributable to market power. Azzam and Pagoulatos (1990) found that the industry exercises market power in both the output market and the factor input market, with the degree of market power being significantly greater in the input market than in the output market.

Sexton and Zhang (2000) examined specific industry evidence for two different approaches to the problem: structure-conduct-performance (SCP) and new empirical industrial organization (NEIO). They found that market power in food industries varied depending on the specific industry. The SCP studies found that in highly concentrated industries, there is a positive correlation between concentration and selling price and a negative correlation between concentration and purchasing price. The NEIO studies found some evidence of processor market power. Sexton and Zhang found flaws with the studies, specifically that relevant markets and geographic areas were not defined and taken into account. They also reiterated the two opposing sides of the market power debate. The view that market power "breeds inefficiency and waste" versus "it is mostly efficiency driven and therefore those benefits must be weighed against the costs of supracompetitive pricing". Paul (2000) discussed the need for understanding how cost economies (efficiency) drive market structure (concentration).

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7. *"Concentration and Integration in the B.C. Food Industry", Select Standing Committee on Agriculture (March 1979); "Concentration in the Canadian Manufacturing and Mining Industries, Background Study to the Interim Report on Competition Policy", Economic Council of Canada (August 1970); "A Preliminary Paper on the Levels, Causes and Effects of Economic Concentration in the Canadian Retail Food Trade: A Study of the Supermarket Market Power", Bruce Mallen (commissioned by the Food Prices Review Board) Concordia University, Montreal, (February 1976).*

8. *Rude and Fulton used price-average variable cost margins for selected food sub-sectors regressed on structural variables over time to provide information about the relationship between concentration and market power.*

Reed and Clark (2000) took quite a different approach. Their study accounts for three features of the food market; 1) consumers prefer a variety of food items, 2) firms produce a variety of products using different technologies, and 3) structural changes in the food markets are unpredictable. They found that for the most part there was competitive conduct in the market, both buying and selling. They suggested that the unpredictability of consumer demand is responsible for concentration in the food processing sector. Industries reorganize to spread the risk of uncertain downward trends in consumer demand.

Financial textbooks list several measures of financial performance. The list includes measures such as: gross margin, inventory turnover, profits, return on shareholders' equity and return on assets[9]. Absolute profits are a poor measure of financial performance because profits vary directly with the size of the firm and its assets. RORs on capital are preferable because they allow for a more meaningful comparison between firms. It was decided for this study to use the ROR on long-term capital to determine profitability in the Canadian food processing industry.

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9.   *Brigham, Kahl and Rentz, 1983.*

CHAPTER 4
METHODOLOGY AND DATA

Methodology

The profitability of an enterprise should provide a summary measure of the impact of recent changes in the industry and also serve as a possible indicator of the exercise of market power. Following the lead of the authors of the last study on food company profits (Food Prices Review Board, 1975), we considered rates of return (ROR) to shareholders' equity and to total capital as measures of profitability[10]. The ROR to shareholders' equity is calculated using net after-tax income divided by shareholders' equity, as given in financial records,

$$(1) \qquad \frac{net\ after\ tax\ income}{shareholders\ \ equity}$$

The ROR to total capital is calculated using net after-tax income divided by total capital,

$$(2) \qquad \frac{net\ after\ tax\ income}{total\ capital}$$

To calculate the ROR to long-term capital, net after-tax income is divided by shareholders' equity plus long-term liabilities. The denominator is representative of long-term capital,

$$(3) \qquad \frac{net\ after\ tax\ income}{shareholders\ \ equity + long\text{-}term\ liabilities}$$

These financial measures of net after-tax income to shareholders' equity, total capital and long-term capital would not always accurately reflect profitability from food processing operations, as some enterprises have revenues from other sources such as extraordinary items and investments. After looking at several alternatives, it appeared that a better measure for this paper would be a ROR based on operating income divided by long-term capital,

$$(4) \qquad \frac{net\ operating\ income}{shareholders\ \ equity + long\text{-}term\ liabilities}$$

This approach allows comparison of the profitability of enterprises based on their manufacturing activities i.e. net income from operations. Neither tax payments nor interest are deducted to arrive at net operating income so it provides a better measure of the overall economic return to

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10. *We did not consider other measures of profitability because we were trying to replicate the study done by the Food Prices Review Board.*

long-term capital. This is similar to the EBIT (earnings before interest and taxes) that is used in the standard measure of profitability. The net operating income is from financial records and the long-term capital was calculated in the same way as in equation 3.

The decision to use shareholders' equity plus long-term liabilities as the base for calculating the ROR was based on the probability that, like shareholders' equity, long-term debt would be used to finance long-term capital assets. This would not necessarily be true for the other component of total capital, short-term debt.

Prior to calculating the RORs, the data set was checked and verified. All the enterprises with zero sales were removed from the sample. This decision was justified on the basis that the objective of the paper was to determine the profitability of the food processing industry from its sales of goods and services, rather than on its ability to acquire income from other sources[11]. As well, enterprises with current liabilities greater than total liabilities were eliminated on the basis that such a situation is impossible and suggests a flaw in the data.

RORs were calculated for the food processing industry[12] as a whole and for the rest of the manufacturing sector, that is to say, total manufacturing sector less the food processing industry. The net operating income, long-term liabilities and shareholders' equity for each enterprise in the sample was multiplied by its sample weight. To arrive at average RORs, the sum of the net operating income for all firms involved was divided by the sum of the value of long-term capital for those same firms.

Data source

The data used in this paper are from the Annual Survey of Financial Statements, a sample survey of T2 corporate tax records, produced by the Industrial Organization and Finance Division (IOFD) of Statistics Canada from 1990 through 1998. Under the Income Tax Act, each corporation, resident or carrying on business in Canada, must file an income tax return and a set of financial statements. The unit of collection is therefore corporations and other legal entities. The majority of businesses operating in Canada are single company enterprises; i.e. one enterprise equals one corporation. However some enterprises are composed of more than one corporation in a family. Statistics Canada collects information under the Corporations and Labour Unions Returns Act, which allows the agency to identify the various corporations that make up a family and the corporation that serves as the head. Statistics for this type of enterprise are recorded for the consolidated entity. The simple definition of the enterprise is a family of businesses under common ownership and control for which a set of consolidated financial statements is produced on an annual basis.

The concepts and definitions of the terms used for the financial data are based on the guidelines of the Canadian Institute of Chartered Accountants. Explanations of the derivation and use of individual variables in the paper will be presented as they appear in the analysis.

The various types of food manufacturing enterprises are identified using the Standard Industrial Classification for Companies and Enterprises 1980 (SIC-C). This classification is different from

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11. *Some enterprises are assigned to SIC-C food processing categories because they are holding or investment companies that have acquired a number of establishments that are involved in food processing. These enterprises do not process any food but acquire their profits through investments.*

12. *See Appendix A for a list of industries included in the food processing industry.*

the more commonly used Standard Industrial Classification 1980 (SIC-E), an establishment level classification. Companies that operate more than one establishment (plant) do not necessarily keep full financial books for each plant. The SIC-C, being at the level of the legal entity, is associated with the existence of full financial records.

In the SIC-C classification, enterprises are classified according to their major industry of activity and all their data are coded to that industry. Consequently, the financial statements of enterprises in the food manufacturing industry may include information for activities which are not food processing. By the same token, the statements of enterprises classified to other industries in SIC-C may include activities normally associated with food manufacturing.

Not all enterprises are included in the data. The file is generated from a stratified random sample. Units are stratified by size according to assets and revenue by industry for each of 153 SIC-C classes. Stratum boundaries vary by industry: large units in each industry are selected with certainty and a sample is selected from other strata at a sampling rate that decreases as enterprise size decreases.

CHAPTER 5
PROFITABILITY IN THE FOOD PROCESSING INDUSTRY

The following analysis uses the modified ROR based on the ratio operating income to long-term capital invested. The data were analyzed for the nine years from 1990 to 1998. The samples were not identical from one year to the next (Table 4) but the distributions by value of sales were similar and the data appeared to include all the large operations. The food processing sample used in this paper averaged 496 enterprises per year. The enterprises measured by value of sales are distributed into three categories as follows: about 15% of the enterprises were in the category $100 million in sales and over, 36% between $10.0 and 99.9 million in sales, and 49% less than $10 million in sales.

Table 4: Food processing data sample

Establishments	1990	1991	1992	1993	1994	1995	1996	1997	1998
Total	496	489	478	478	568	586	549	444	379
Large	69	67	65	68	69	79	88	81	87
Medium	171	170	163	162	180	190	197	185	180
Small	256	252	250	248	319	317	264	178	112

Note: Large enterprises were defined as those with sales of $100 million or more, medium sizes enterprises were defined as those with sales between $10.0 million and $99.9 million, and small sized enterprises were defined as those with less than $10 million in sales.

The RORs for the food processing industry ranged from a high of 13.1% in 1990 to a low of 10.4% in 1997, with an average of 11.6% over the nine-year period.

The results from this paper for the different size categories in food processing compare with those of other studies (Schroeter and Azzam 1990; Sexton and Zhang 2000) which show that large enterprises are more profitable than medium and small enterprises in the food processing sector. Except for the year 1992, the RORs for large enterprises are greater than those of the medium sized enterprises (Table 5)[13]. The small enterprises received the lowest RORs except in 1998. It should be noted that the total sample size for 1998 is 25% smaller than the average sample size for the time series, and the number of small enterprises in the sample declined by almost 55%. One could speculate that there may have been a rationalization in the industry, with the smaller firms either being absorbed by other enterprises or going out of business.

13. *In the sample for 1992, total net operating income for the large enterprises dropped 7% while total long-term capital increased 3%. For the medium sized enterprises, total operating income increased 23% and total long-term capital decreased 9%.*

Table 5: Rates of return for the food processing industry

	1990	1991	1992	1993	1994	1995	1996	1997	1998	Average
Total	13.1	11.5	11.2	11.3	12.6	11.6	11.4	10.4	10.9	11.6
Large	14.0	12.4	11.2	11.7	14.5	13.5	12.4	12.5	11.1	12.6
Medium	10.9	10.2	13.8	11.3	10.8	10.3	9.4	6.4	9.0	10.2
Small	11.8	8.8	6.9	8.8	4.6	3.0	8.8	3.3	13.0	7.7

Note: Large enterprises were defined as those with sales of $100 million or more, medium sizes enterprises were defined as those with sales between $10.0 million and $99.9 million, and small sized enterprises were defined as those with less than $10 million in sales.

Looking at the sub-industry detail reveals other possible explanations (Table 6). Within the food processing industry, the average RORs for the nine-year period vary from a low of 7.6% in fish processing to a high of 13.4% in the fruit and vegetable processing. More in-depth analysis is needed to determine the importance of each of the sub-industries and therefore the impact that developments in them have had on the total sample.

Table 6: Rates of return for the sub-industries

Sub-industry	1990	1991	1992	1993	1994	1995	1996	1997	1998	Average
Bakery	14.7	13.6	12.7	12.1	11.1	9.6	11.7	13.6	13.9	12.5
Cereals	9.9	10.0	7.3	13.0	10.3	14.9	14.8	14.1	11.8	11.8
Dairy	13.2	9.1	11.1	11.9	11.4	6.1	9.4	8.2	7.2	9.7
Fish	9.5	5.6	7.4	8.6	9.8	8.3	6.3	-0.9	13.9	7.6
Fruit & veg.	16.0	12.0	11.4	10.1	16.2	17.6	13.4	12.0	11.6	13.4
Meat & poultry	6.8	10.6	9.2	10.4	13.7	12.5	11.8	8.9	10.6	10.5
Other	16.9	15.4	14.2	12.2	13.8	12.1	11.7	13.4	10.4	13.3

CHAPTER 6
PROFITABILITY IN THE MANUFACTURING SECTOR

The data set for the manufacturing sector, which excludes the food industry, averaged 4,333 observations over the nine-year period (1990 to 1998) (Table 7). The sector is large and diverse including manufacturers of automobiles, clothing, wood products, metal products, etc. (see Appendix B for a list). The distribution of firms into the three size categories varied slightly from the food processing industry: 10% - large, $100 million and over (versus 15%), 32% - medium, $10.0-99.9 million (versus 36%) and 58% - small, less than $10 million (versus 49%).

Table 7: Data sample for the manufacturing sector, excluding the food processing industry

Establishments	1990	1991	1992	1993	1994	1995	1996	1997	1998
Total	4,145	4,211	4,271	4,152	5,049	5,176	4,638	4,009	3,345
Large	347	347	341	352	412	443	454	498	502
Medium	1,399	1,262	1,201	1,243	1,415	1,523	1,437	1,437	1,436
Small	2,399	2,602	2,729	2,557	3,222	3,210	2,747	2,074	1,407

Note: Large enterprises were defined as those with sales of $100 million or more, medium sizes enterprises were defined as those with sales between $10.0 million and $99.9 million, and small sized enterprises were defined as those with less than $10 million in sales.

The RORs for the manufacturing sector excluding the food processing industry range from a high of 12.7% in 1995 to a low of 2.5% in 1991, with an average of 7.5% over the time period (Table 8). The RORs for the large enterprises are generally around the total industry ROR, while the medium and small enterprises often have RORs greater than the total industry in individual years. Table 8 shows that the RORs were lower in the 1990-1993 period compared with the 1994-1998 period. The early 1990s was a period of slow growth in the economy with high unemployment and low commodity prices which made large profits difficult to achieve. During this period, Canada went through a recession and the general world economy slowed down. In 1994, prices began to recover; the economy started to grow and profits began to increase.

Table 8: **Rates of return for the manufacturing sector excluding the food processing industry**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	Average
Total	6.3	2.5	3.2	5.0	9.6	12.7	9.6	10.0	8.4	7.5
Large	6.0	2.0	2.6	4.7	9.6	13.0	9.4	9.6	8.0	7.2
Medium	6.9	3.0	5.5	6.2	11.0	12.3	11.4	12.5	10.3	8.8
Small	7.7	5.8	5.5	5.8	8.0	10.1	9.0	10.3	9.7	8.0

Note: Large enterprises were defined as those with sales of $100 million or more, medium sizes enterprises were defined as those with sales between $10.0 million and $99.9 million, and small sized enterprises were defined as those with less than $10 million in sales.
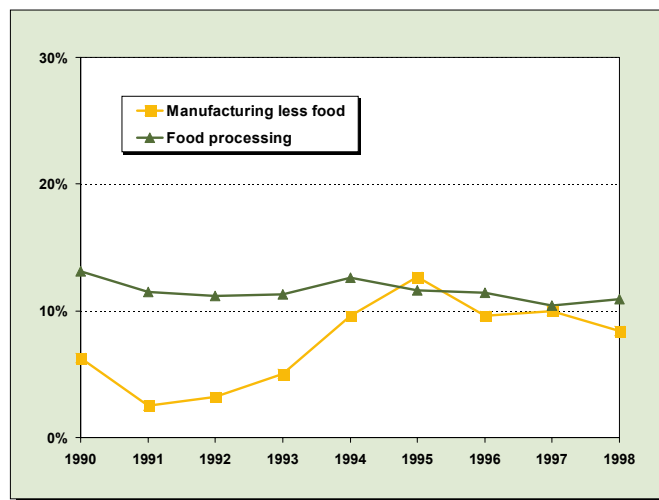
PROFITABILITY OF THE FOOD PROCESSING INDUSTRY COMPARED TO THE MANUFACTURING SECTOR

Food processing versus total manufacturing exclusive of food

Comparing the food processing industry to the rest of the manufacturing sector, the RORs are consistently higher for the food processing industry except in 1995, which is quite different from the findings of earlier Food Prices Review Board study. In the early 1990s, the rates differ by as much as nine percentage points (in 1991) but as the decade closes the rates begin to converge (the rest of manufacturing is one percentage point higher in 1995 and only 0.4 of a percentage point lower in 1997) (Figure 1). This is not unexpected since the food industry is fairly stable and, during the recession period in the early 1990s, consumers continued to spend income on basic commodities like food while fore-

Figure 1: Rates of return – Food processing and manufacturing less food

going purchases of what might be considered to be luxury items such as cars. The rest of the manufacturing sector felt the effects of the recession more deeply. This is reflected in the more stable RORs in the food processing industry over the period studied compared to that of the rest of the manufacturing industry, which again is the opposite of the findings in the Food Prices Review Board study. As the economy picked up again in the mid-1990s, consumers once more began to spend disposable income on other goods and the RORs began to converge.

Food processing versus total manufacturing, by size of sales

Having compared the RORs for the food processing industry to the rest of the manufacturing sector, we now turn our attention to the differences between the larger enterprises in the food processing industry and the medium and smaller enterprises. Recall that we define as large those enterprises with sales $100 million and over, medium sized enterprises as those with sales between $10.0 million and $99.9 million, and small enterprises as those with less than $10 million in sales. The ROR is an indication of profitability.

Observing the RORs over time for the three groups in the food processing industry indicates that the large enterprises consistently have RORs greater than or equal to the ROR for the industry. The large group's overall average for the time period is 12.6% compared to 11.6% for the industry. The medium sized enterprises generally have RORs less than that of the industry, averaging 10.2% over the time period. The group of small enterprises' RORs is always below the industry ROR, in some cases by as much as 8 percentage points. The average ROR for the group of small enterprises over the time period is 7.7%, which includes a better than average year of 13% in 1998 (Figure 2). This shows that the large firms in this study are clearly more profitable than the small enterprises. There is great year-to-year fluctuation in the RORs for the group of small enterprises. This may reflect the restructuring taking place in that group as some enterprises succeed in finding small niche markets while others fail.

When doing similar analysis for the manufacturing sector we must keep in mind the make-up of the sector. The RORs for some industries may be decli-ning as those for others may be increa-sing. Observing the trends over time, we see that the RORs for the three size groups show little dispersion, with the medium sized group averaging 8.8% over the time period which is slightly better than the other two (Figure 3).

The large food processing enterprises had considerably higher RORs in the early 1990s than other manufacturers (Figure 4). Whether this means that large food processors are generally more profitable than other large enterprises is not easily answered from the data. As mentioned earlier, each industry must be examined in isolation. There could be several explanations for this result. With such a large non-food sample, covering so many industries, it would be difficult to generalize.
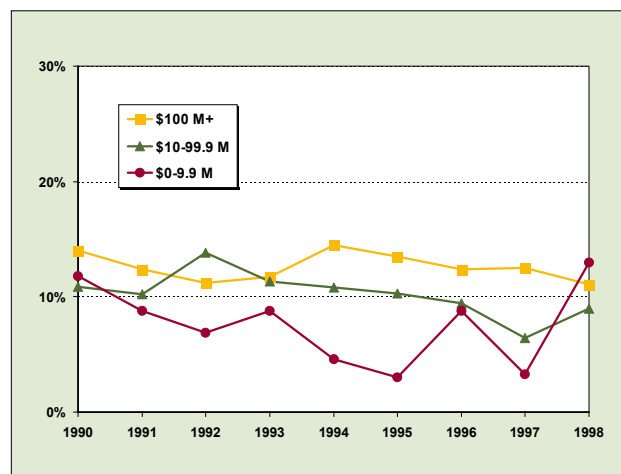
Figure 2: Rates of return – Food processing by size

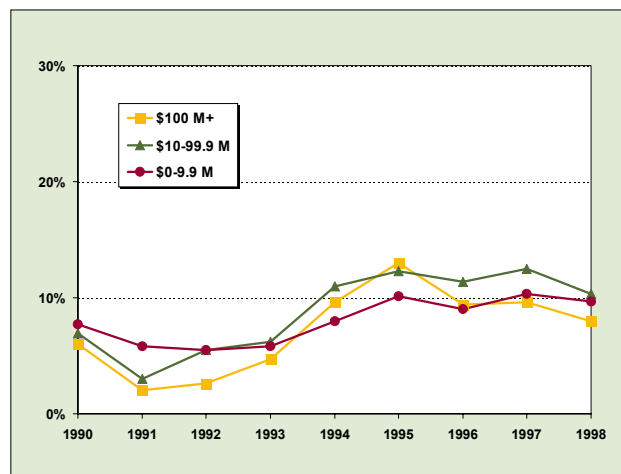*Figure 3: Rates of return – Manufacturing processors less food by size*
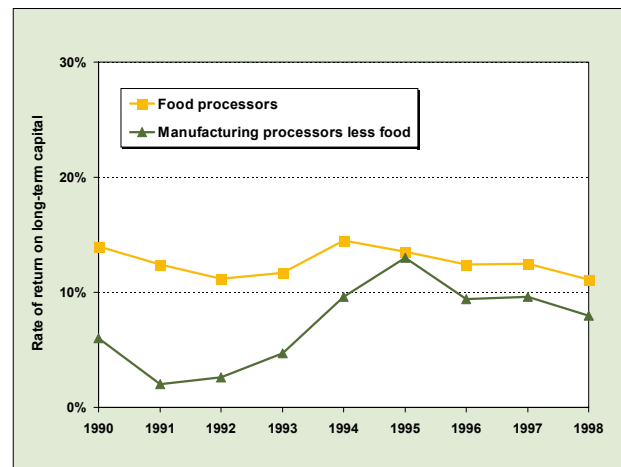

Figure 4: Rates of return – Large food processing and manufacturing processors less food

When we compare the impact of large enterprises in the two sectors, we see that the large enterprises in manufacturing less food processing consistently claim a larger percentage of total industry sales than the food processors (Table 9). It is interesting that while the large food processing industries have a smaller percentage of total food processing industry sales they have greater RORs than their manufacturing counterparts.

Table 9: Large enterprise sales as a percentage of total industry sales

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Food processing	62.9	63.2	63.0	63.3	65.0	65.7	65.1	65.0	66.7
Manufacturing less food processing	67.4	67.6	69.6	70.2	72.2	72.5	72.2	74.2	73.0

CHAPTER 8
CONCLUSION

The time period for the study was limited to the 1990 to 1998 period. In 1990 and 1991 the Canadian economy was experiencing an economic recession and it was beginning to adjust to the changes resulting from the Canada-United States Trade Agreement signed in 1988. Just as the economy began to recover from the recession, NAFTA was signed and Canadian industry, including the Food Processing industry, began to undertake further adjustments.

The results from this study are consistent with the findings of other studies that report that large enterprises in the food processing sector are more profitable. Our results also show that the food processing sector is more profitable than the manufacturing sector taken as a whole. Like the findings in the 1975 Food Prices Review Board Report, the food processing sector appeared to be more stable than the rest of the manufacturing sector in general but it averaged higher profitability than the manufacturing sector during the study period. This study does not draw any conclusions about market power as that is beyond the scope of the data.

While trying to analyze the results from this study, more questions were raised. Most of the questions revolve around trying to explain why certain enterprises were more profitable than others. To answer these questions further research is required. One approach might be to draw a sample so that there is a consistent representation of enterprises across the years. This would allow tracking of the movement of enterprises and their profitability relative to others in the sample. While tracking the enterprises, one could also look at mergers and acquisitions to see what effects these might have on an enterprise's profitability. Comparison of foreign controlled versus domestically- controlled enterprises could also be illuminating.

Similarly, analysis of individual sub-industries is necessary to understand what is happening behind the scenes in the food processing industry. Comparing RORs for the three size groups within a sub-sector and also among sub-sectors will give a better understanding of the dynamics of the industry. For example, some sub-sectors may be out performing others depending on the type of market they are involved in, domestic or export. Other questions crop up concerning competitiveness. Are enterprises forced to become more efficient and profitable to survive in the face of more foreign competition or does foreign competition reduce RORs? Does profitability lead to the ability to compete or the ability to compete lead to profitability?

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SIC-C	Class title
0112	Fish and other seafood processing
0119	Fish and other seafood, integrated operations (including wholesalers)
0131	Flour, prepared flour mixes and cereal foods processing
0132	Bakery products processing and wholesaling
0133	Oilseeds processing
0134	Feed processing and wholesaling
0143	Fruit and vegetable processing
0144	Fruit and vegetables, integrated operations
0153	Meat and poultry processing
0155	Meat and poultry products, integrated operations
0163	Milk products, integrated operations (including wholesalers)
0172	Cane and beet sugar processing
0173	Sugar and chocolate confectionery manufacturing
0174	Tea and coffee processing
0179	Other food products processing

INDUSTRIES INCLUDED IN THE MANUFACTURING SECTOR
(WITHOUT THE FOOD PROCESSING INDUSTRY)[14]

SIC-C	Class title
B	Wood and paper
C	Energy
D	Chemicals, chemical products and textiles
E	Metallic minerals and metal products
F	Machinery and equipment (except electrical)
G	Transportation equipment
H	Electrical and electronic products
I	Construction and related activities
R	Consumer goods and services

14. *Only those industries that were designated as manufacturers or integrated operations were included.*