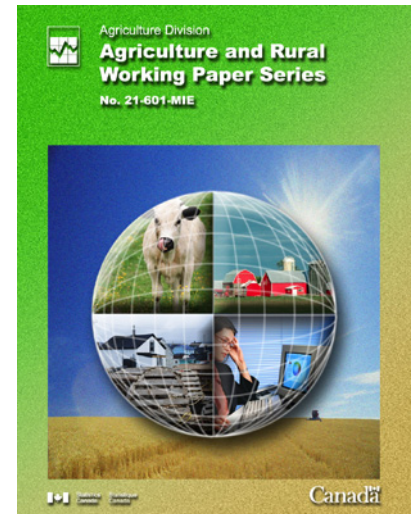Catalogue no. 21-601-MIE — No. 059

Research Paper

An Analysis of Profits within the Canadian Food Processing Sector

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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

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Executive Summary

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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. Section 2 gives some background on the Canadian food processing industry, followed by Section 3 with a review of the literature dealing with market concentration, profitability and RORs. Section 4 describes the data and its limitations. Section 5 provides the results of the study as regards profitability of the food processing industry. Section 6 presents the results for the manufacturing sector (without the food processing industry). Section 7 is a comparison of the results for the food processing industry and the manufacturing sector. Section 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.

2. Background

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

2.1 Characteristics of the Canadian food processing industry

The Canadian food processing industry (NAICS 311) 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 Establishments	Total Employment	Total Value-added ($millions)	Average Employment Size	Value-added per Worker ($1,000)
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 & Vegetables	216	19,788	2,461	92	124.4
Meat & 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 & Vegetables	4,221	941	1,760	22.3	34.9
Meat & 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

<u>Country</u>	Food Production ($ billions US)	Food Value-added ($ billions 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

*1995
Source: OECD online database 2001.

2.2 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-

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[3] Trant, 1996.

parent households also imply increased demand for prepared foods and food prepared outside the home[4].

2.3 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 US 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.

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[4] Ibid.

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.

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

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[5] Reed and Clark, 2000.
[6] Wilson, 2000.

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

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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.

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).

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.

4. Methodology and Data

4.1 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. The ROR to shareholders' equity is calculated using net after-tax income divided by shareholders' equity, as given in financial records,

$$\frac{\textit{net after tax income}}{\textit{shareholders' equity}}$$

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

$$\frac{\textit{net after tax income}}{\textit{total capital}}$$

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,

$$\frac{\textit{net after tax income}}{\textit{shareholders' equity + long-term liabilities}}$$

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,

$$\frac{\textit{net operating income}}{\textit{shareholders' equity + long-term liabilities}}$$

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 long-term capital. The net operating income is from financial records and the long-term capital was calculated in the same way as in the previous ratio (see page 8).

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[10]. 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[11] as a whole and for the rest of the manufacturing sector, that is to say, total manufacturing sector less the food processing industry. 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.

4.2 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 the more commonly used Standard Industrial Classification 1980 (SIC-E), an establishment level classification. Companies that operate more than one

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[10] 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.

[11] See appendix A for a list of industries included in the food processing industry.

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.

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.

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

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)[12]. 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.

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.

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

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 & Vegetables	16.0	12.0	11.4	10.1	16.2	17.6	13.4	12.0	11.6	13.4
Meat and 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

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

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[12] 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%.

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.

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

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.

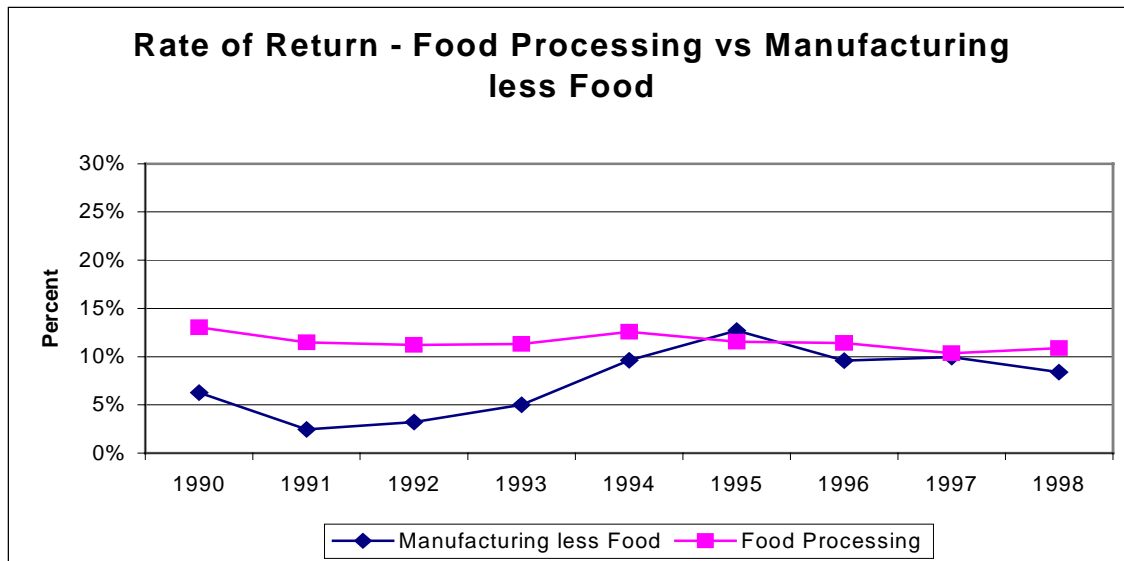*Source*: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

7. Profitability of the Food Processing Industry Compared to the Manufacturing Sector

7.1 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 foregoing 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.

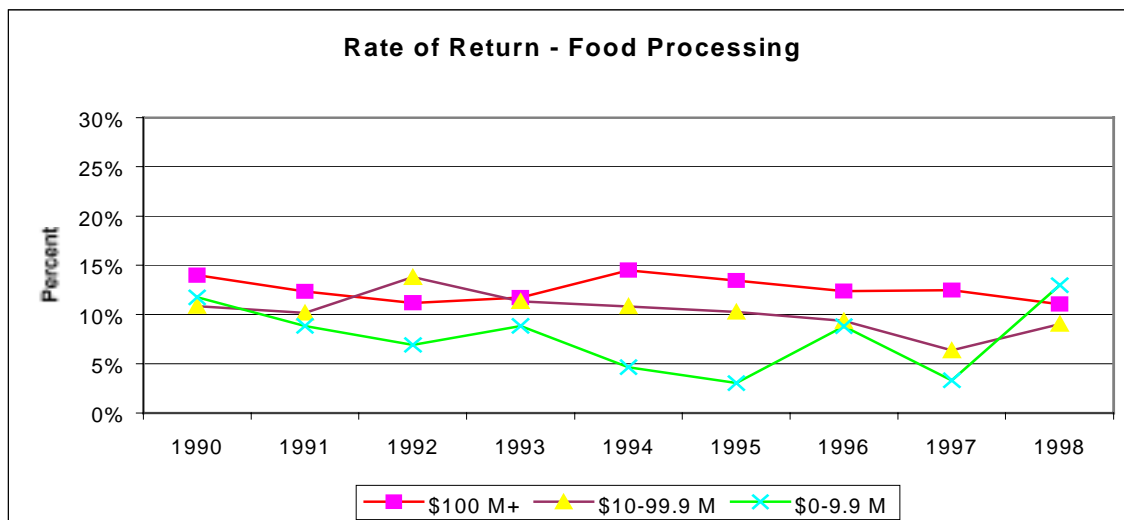**Figure 1. Rates of Return - Food Processing and Manufacturing less Food**

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

7.2 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. With increased concentration in industries, large enterprises are often assumed to be the most profitable and those that are the most likely to be taking advantage of their market position and their competitors (Schroeter and Azzam).

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 are 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.

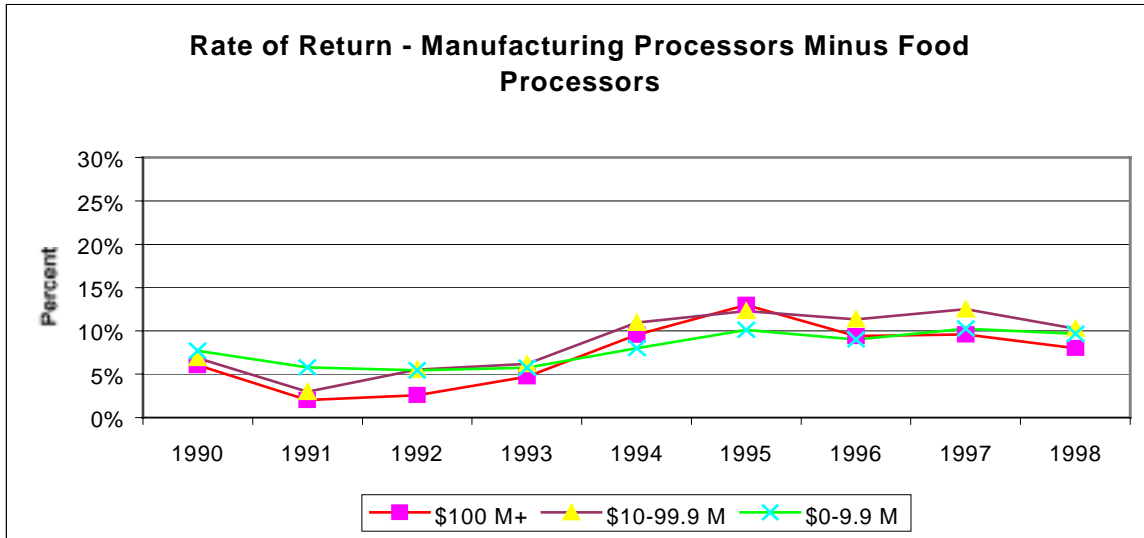**Figure 2. Rates of Return - Food Processing**

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

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 declining as those for others may be increasing. 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).
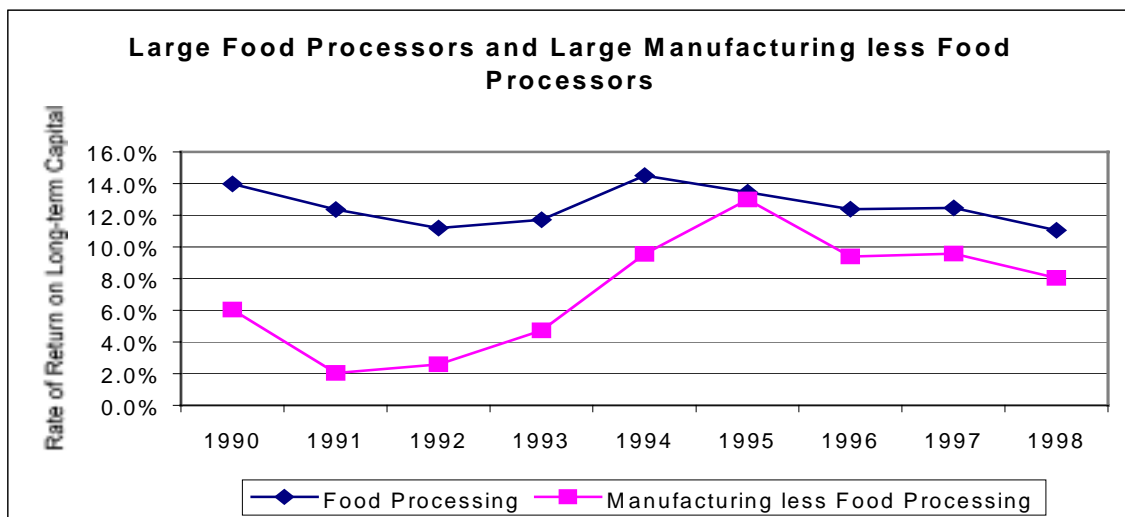
Figure 3. Rates of Return - Manufacturing Processors less Food by Size

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

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 4. Rates of Return - Large Food Processing and Manufacturing Processors less Food

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

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

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

8. Profitability by Sub-Industry

To truly understand the dynamics of the food processing industry, we must look at what is happening in the various sub-industries. For this purpose, we divided the food processing industry into seven sub-industries (Table 10). When analyzing the sample data, care must be given not to read too much in the difference in individual annual sample sizes and the change in the relative number of enterprises in each sub-industry. The sample is not a longitudinal sample and the parameters for drawing the sample in any given year may not be consistent with any of the other years.

Table 10: Number of Sub-Industry Enterprises in the Sample

Sub-Industry	1990	1991	1992	1993	1994	1995	1996	1997	1998	Avg.
Bakery	48	41	51	52	53	53	41	26	25	43
Cereals	53	56	55	54	73	71	80	60	53	61
Dairy	80	78	76	65	85	85	67	57	43	71
Fish	114	121	121	121	152	154	141	122	90	126
Fruit & Vegetables	33	34	29	30	33	34	31	26	28	31
Meat & Poultry	83	82	70	76	92	102	98	79	72	84
Other	85	77	77	80	80	87	91	75	68	80
Total	496	489	478	478	568	586	549	444	379	496

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

8.1 Profitability in the Bakery Industry

The bakery sample used in this study averaged 43 enterprises per year. (Table 11). The RORs for the bakery industry ranged from a high of 14.7% in 1990 to a low of 9.6% in 1995, with an average of 12.5% over the nine-year period (Table 12).

Table 11: Number of Bakery Industry Enterprises in the Sample

Enterprises	1990	1991	1992	1993	1994	1995	1996	1997	1998
Total	48	41	51	52	53	53	41	26	25
Large	7	7	7	7	7	8	7	7	7
Medium	7	8	6	5	8	7	7	7	6
Small	34	26	38	40	38	38	27	12	12

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

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

As expected the large enterprises are more profitable than medium and small enterprises in the bakery sector and the small enterprises are more profitable than the medium sized ones (Figure 5). The small enterprises are receiving considerably better rates of return than the medium sized enterprises except in 1994 and 1995. We assume that bakeries sell primarily to the domestic market. The large bakeries can supply a large region and may export some products such as cookies and frozen goods. Small bakeries tend to sell fresh products to a local niche market, which maybe as small as a single neighbourhood. We can speculate that the medium sized enterprises need enough capital to compete with the large enterprises on economies of scale. The medium sized enterprises in our sample average 62% of the large enterprises' long-term capital over the nine-year period but only average 25% of the large enterprises' net operating income.

Table 12: Rates of Return - Bakery Industry

	1990	1991	1992	1993	1994	1995	1996	1997	1998	Average
Total	14.7	13.6	12.7	12.1	11.1	9.6	11.7	13.6	13.9	12.5
Large	22.1	17.6	17.1	17.3	17.3	13.8	13.9	16.9	16.2	16.9
Medium	6.8	8.3	7.0	5.6	5.0	4.8	7.8	8.3	8.8	6.9
Small	8.8	15.5	9.8	8.7	2.1	1.0	12.3	9.1	15.7	9.2

Note: Large enterprises were defined as those with sales of $100 million or more, medium sized 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.

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

Figure 5. Rates of Return – Bakery Industry
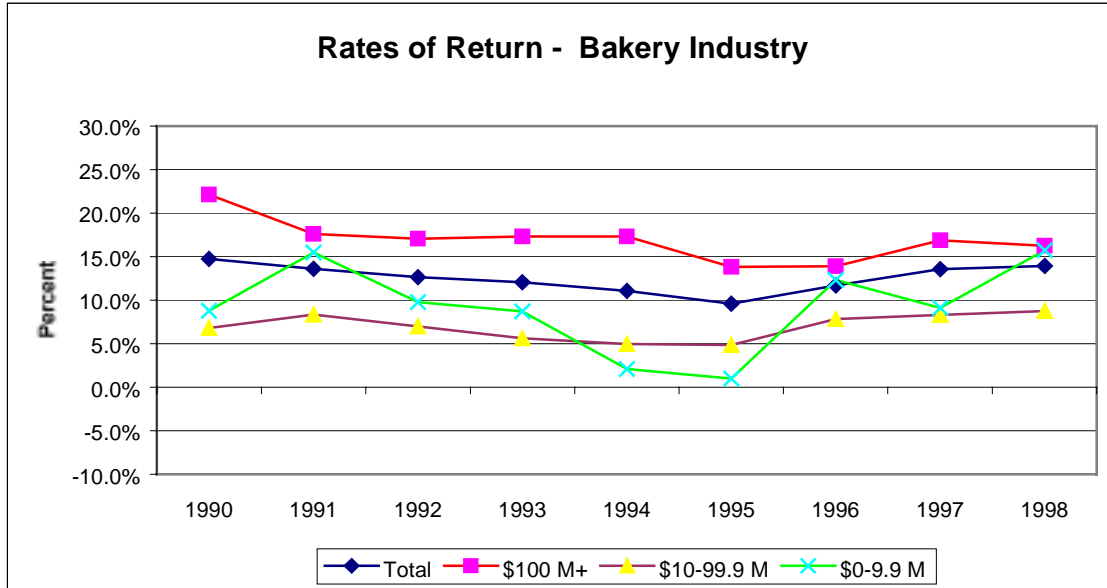
Rates of Return - Bakery Industry

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

The bakery industry has the most consistent number of enterprises in the large category. It has seven enterprises every year except for 1994 when it has eight.[13]

8.2 Profitability in the Cereal Industry

The cereal processing sample used in this study averaged 62 enterprises per year. (Table 13). The RORs for the cereal processing industry ranged from a high of 14.9% in 1995 to a low of 7.3% in 1992, with an average of 11.8% over the nine-year period (Table 14).

Table 13: Number of Cereal Industry Enterprises in the Sample

Enterprises	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**
Total	53	56	55	54	73	71	80	60	53
Large	5	6	5	5	5	5	8	8	9
Medium	22	23	24	25	27	27	34	28	28
Small	26	27	25	24	41	39	38	24	16

Note: Large enterprises were defined as those with sales of $100 million or more, medium sized 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.

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

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[13] The dairy processing industry is also fairly consistent, having 15 enterprises in the large category in six of the nine years, 16 in 1990 and 1996 and 17 in 1991.

As expected, over the time period, the large enterprises are more profitable than medium and small enterprises in the cereal industry, almost 50% more than the medium sized ones and 150% more than the small enterprises (Table 14). During the recession in 1991-1992, and in 1994, the medium sized enterprises reported higher rates of return than the large and small enterprises. Unlike some of the other samples, i.e. bakeries, this sample grew in size from 1994-1996 and was the same size in 1998 as 1990.

The increase in the number of large enterprises in the sample represents a movement of some enterprises that were formerly in the medium sized group up into the large group. These enterprises are primarily feed processors. Since the cereal industry is more capital intensive than some of the other sub-industries, economies of scale will play a greater part in the rate of return earned. If output is declining, as it was during the recession, plant capacity utilization will decline but enterprises cannot decrease expenses because they have the cost of capital to pay. This is unlike an industry that is more labour intensive that can decrease expenses by laying-off labour if sales start to drop. In 1991, average sales for the large cereal enterprises in our sample declined by 43% while their average long-term capital decreased by only 26%. In this same year, average sales for medium sized cereal enterprises declined by 2% and average long-term capital decreased by 1%. In 1992, average sales recovered by 13% for large enterprises but average long-term capital increased by 22%, accounting for a lower rate of return. At the same time, medium sized enterprises' average sales declined by 11% but their average long-term capital decreased by 13%. The year 1994 saw another substantial increase in average long-term capital for large (41%) with little increase in average sales (6%). Medium sized enterprises in this year had approximately the same average sales and same average long-term capital as the pervious year (Figure 6).

Table 14: Rates of Return – Cereal Processing Industry

	1990	1991	1992	1993	1994	1995	1996	1997	1998	Average
Total	9.9	10.0	7.3	13.0	10.3	14.9	14.8	14.1	11.8	11.8
Large	11.2	10.2	8.9	16.7	10.1	22.8	20.1	19.4	16.3	15.1
Medium	7.9	10.7	13.6	11.2	12.6	13.1	11.7	12.3	2.7	10.6
Small	7.7	7.6	-6.2	8.3	7.5	5.0	8.6	6.0	10.1	6.1

Note: Large enterprises were defined as those with sales of $100 million or more, medium sized 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.

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

Figure 6. Rates of Return – Cereal Industry
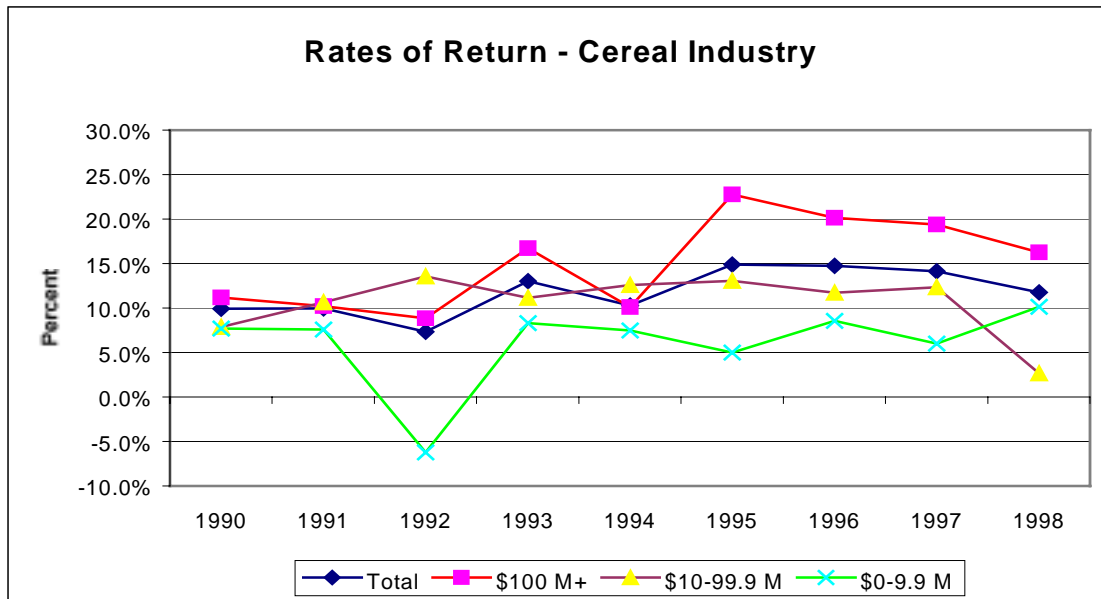
Rates of Return - Cereal Industry

8.3 Profitability in the Dairy Industry

The dairy industry sample used in this study averaged 71 enterprises per year. (Table 15). The RORs for the dairy processing industry ranged from a high of 13.2% in 1990 to a low of 6.1% in 1995, with an average of 9.7% over the nine-year period (Table 16).

Table 15: Number of Dairy Industry Enterprises in the Sample

Establishments	1990	1991	1992	1993	1994	1995	1996	1997	1998
Total	80	78	76	65	85	85	67	57	43
Large	16	17	15	15	15	15	16	15	15
Medium	20	18	16	10	16	16	14	12	14
Small	44	43	45	40	54	54	37	30	14

Note: Large enterprises were defined as those with sales of $100 million or more, medium sized 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 dairy industry in Canada is supply managed and primarily services the domestic market. Unlike the cereal processing industry, the rates of return are higher in the early

1990s and lower in the late 1990s. Also, unlike other industries, the small enterprises are more profitable than the larger enterprises over the nine-year period (Figure 7). Only in 1994-1995 and 1998 do the large enterprises earn a better rate of return (Table 16).

Table 16: Rates of Return – Dairy Industry

	1990	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**Average**
Total	13.2	9.1	11.1	11.9	11.4	6.1	9.4	8.2	7.2	9.7
Large	14.8	11.6	7.8	11.5	12.9	8.5	9.4	7.9	7.5	10.2
Medium	4.1	3.4	28.7	6.2	5.3	4.7	5.7	4.8	6.5	7.7
Small	17.3	12.1	15.5	19.8	3.7	-5.8	14.8	12.0	6.4	10.6

Note: Large enterprises were defined as those with sales of $100 million or more, medium sized 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.

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

Figure 7. Rates of Return – Dairy Industry
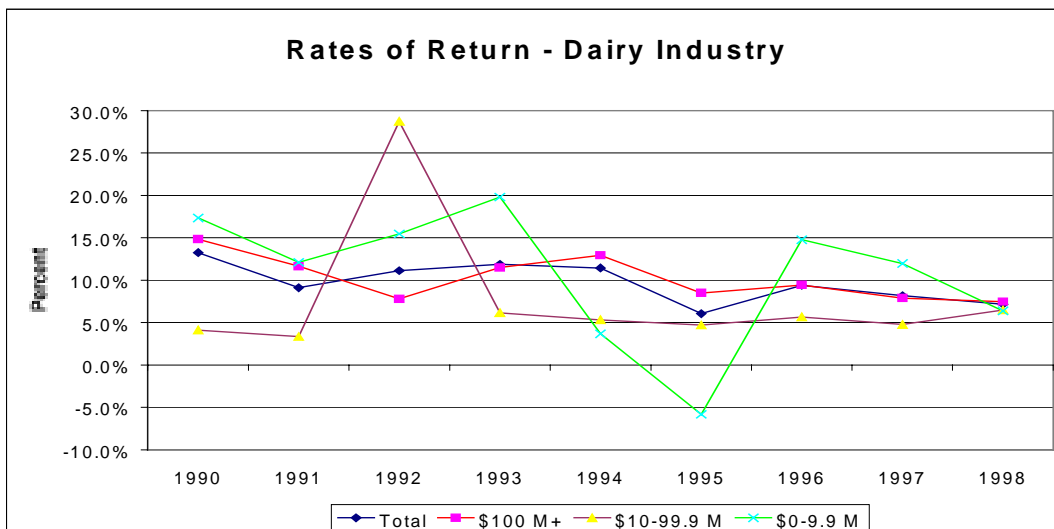
Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

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8.4 Profitability in the Fruit and Vegetable Processing Industry

The fruit and vegetable processing industry sample used in this study averaged 31 enterprises per year. (Table 17). The RORs for the fruit and vegetable processing industry ranged from a high of 17.6% in 1995 to a low of 10.1% in 1993, with an average of 13.4% over the nine-year period (Table 18).

Table 17: Number of Fruit and Vegetable Processing Industry Enterprises in the Sample

Establishments	1990	1991	1992	1993	1994	1995	1996	1997	1998
Total	33	34	29	30	33	34	31	26	28
Large	5	6	4	5	6	8	9	8	8
Medium	18	15	14	15	13	13	11	16	16
Small	10	13	11	10	14	13	11	2	4

Note: Large enterprises were defined as those with sales of $100 million or more, medium sized 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.

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

The sample for the fruit and vegetable processing industry in Canada is quite different from the other samples with the "small" group of enterprises having the fewest observations in 1997 and 1998. The rates of return for the small enterprises are also the greatest in the early 1990s until 1994 when the large enterprises show the largest rate of return (Figure 8). In 1995 the number of large enterprises in the sample also increases and remains relatively high for the rest of the period. In our sample, in 1994, one enterprise moved into the large group from medium. In 1995, one enterprise that was previously not in the sample at all was included when it began to report business activity, and one enterprise that had previously been classified to another industry switched to fruit and vegetables. Small fruit and vegetable processors had the best rates of return in the early 1990s but that changed dramatically in 1997 and 1998. There was also a dramatic reduction in the number of fruit and vegetable enterprises in the sample in those years.

Table 18: Rates of Return – Fruit and Vegetable Processing Industry

	1990	1991	1992	1993	1994	1995	1996	1997	1998	Average
Total	16.0	12.0	11.4	10.1	16.2	17.6	13.4	12.0	11.6	13.4
Large	14.0	11.4	12.2	9.8	17.5	17.2	15.2	14.5	12.5	13.8
Medium	19.7	10.6	7.4	9.1	13.0	21.8	3.8	2.2	9.1	10.7
Small	22.7	19.8	12.2	20.8	13.6	11.2	10.5	-14.4	-1.4	10.5

Note: Large enterprises were defined as those with sales of $100 million or more, medium sized 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.

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

Figure 8. Rates of Return – Fruit and Vegetable Processing Industry
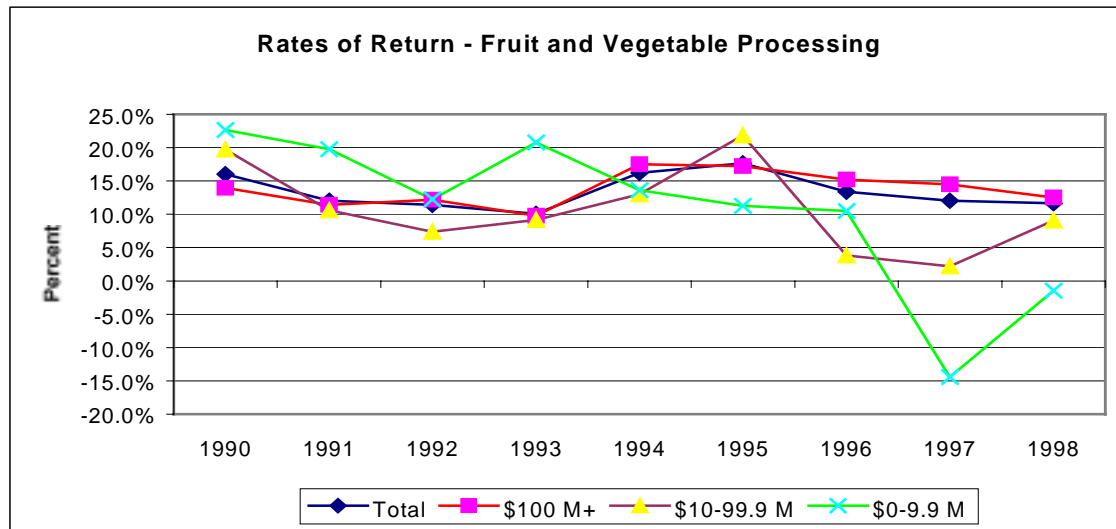
Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

8.5 Profitability in the Fish Processing Industry

The fish processing industry sample used in this study averaged 125 enterprises per year (Table 18). The RORs for the fish processing industry ranged from a high of 13.9% in 1998 to a low of -0.9% in 1997, with an average of 7.6% over the nine-year period (Table 19).

Table 19: Number of Fish Processing Industry Enterprises in the Sample

Establishments	1990	1991	1992	1993	1994	1995	1996	1997	1998
Total	114	121	121	121	152	154	141	122	90
Large	6	5	6	5	6	7	8	5	4
Medium	28	32	34	31	41	46	46	43	41
Small	80	84	81	85	105	101	87	74	45

Note: Large enterprises were defined as those with sales of $100 million or more, medium sized 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.

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

The sample for the fish processing industry in Canada has a very large proportion of its observations in the "small" sized category, which is quite different from most of the other industries. The rates of return are also very volatile (Figure 9). Over the nine-year period, the medium sized enterprises earned the best rate of return, followed by the small enterprises. 1997 was a particularly bad year for the fish processing industry, earning a negative rate of return but in 1998 the industry rebounded quite well, especially the small

enterprises, which earned a rate of return of almost 24%. The 1998 sample decreased by almost 30% from the average sample size over the other eight years.

Table 20: Rates of Return – Fish Processing Industry

	1990	1991	1992	1993	1994	1995	1996	1997	1998	Average
Total	9.5	5.6	7.4	8.6	9.8	8.3	6.3	-0.9	13.9	7.6
Large	5.6	0.3	2.4	7.7	16.1	12.1	8.4	2.6	4.6	6.6
Medium	22.6	17.0	10.8	10.9	6.4	7.8	8.0	-0.1	11.3	10.5
Small	12.2	7.2	11.3	7.3	4.2	3.2	3.1	-3.7	23.9	7.6

Note: Large enterprises were defined as those with sales of $100 million or more, medium sized 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.

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

Figure 9. Rates of Return – Fish Processing Industry
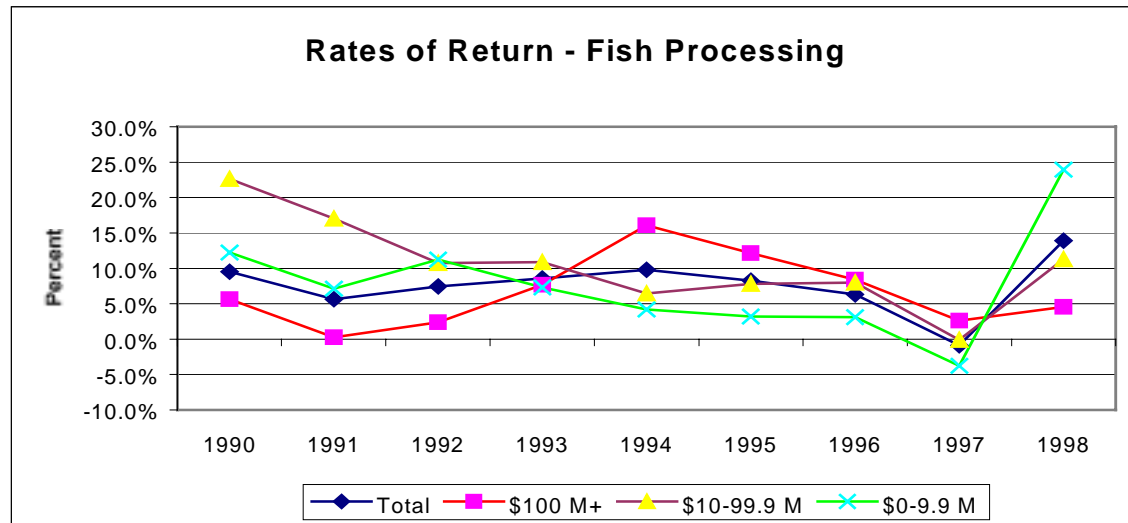
Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

8.6 Profitability in the Meat and Poultry Processing Industry

The meat and poultry processing industry sample used in this study totaled an average of 84 enterprises per year. (Table 20). The RORs for the meat and poultry processing industry ranged from a high of 13.7% in 1994 to a low of 6.8% in 1990, with an average of 10.5% over the nine-year period (Table 21).

Table 21: Number of Meat and Poultry Processing Industry Establishments in the Sample

Enterprises	1990	1991	1992	1993	1994	1995	1996	1997	1998
Total	83	82	70	76	92	102	98	79	72
Large	16	12	13	15	16	17	20	17	20
Medium	39	41	35	41	40	44	42	44	40
Small	28	29	22	20	36	41	36	18	12

Note: Large enterprises were defined as those with sales of $100 million or more, medium sized 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.

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

The sample for the meat and poultry processing industry in Canada has a number of observations in the large enterprise category in comparison to the other processing sector sub-industries with the exception of those classified as other food processors. The large enterprises earned more than a 10% rate of return for all the years except 1990. The medium sized enterprises' rates of returns fluctuated from a high of 13.1% to a low of 0.6% in 1996 and 1997 respectively (Figure 10). This large difference, however, may be the result of the specific samples drawn each year over the time period, as the survey is not based on a longitudinal sample. Each year has a separate sample and the survey is not designed to retain respondents from year to year to facilitate comparability from one year to the next. The rates of return for the small enterprises are also very volatile. Again this may be attributed to the changing sample.

Table 22: Rates of Return – Meat and Poultry Processing Industry

	1990	1991	1992	1993	1994	1995	1996	1997	1998	Average
Total	6.8	10.6	9.2	10.4	13.7	12.5	11.8	8.9	10.6	10.5
Large	7.1	12.7	10.6	10.6	16.8	13.9	11.3	10.8	10.2	11.6
Medium	7.4	4.7	8.2	11.4	6.9	9.2	13.1	0.6	10.6	8.0
Small	4.4	2.9	-0.9	6.0	-0.2	7.2	13.3	10.3	16.0	6.5

Note: Large enterprises were defined as those with sales of $100 million or more, medium sized 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.

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

Figure 10. Rates of Return – Meat and Poultry Processing Industry
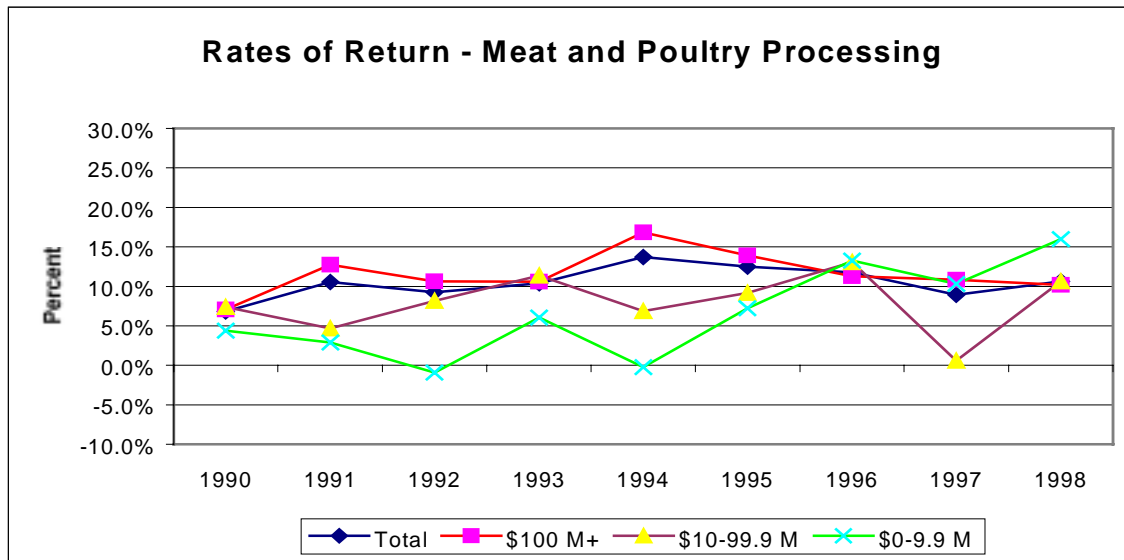
Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

8.7 Profitability in the "Other" Food Processing Industry

The "other" food processing industry sample used in this study averaged 80 enterprises per year. Enterprises classified as part of the "other" food processing industry are firms that are primarily, processors of confectionery products, sugar, tea and coffee, and oil seeds. (Table 22). The RORs for the "other" food processing industry ranged from a high of 16.9% in 1990 to a low of 10.4% in 1998, with an average of 13.3% over the nine-year period (Table 23) (Figure 11).

Table 23: Number of "Other" Food Processing Industry Enterprises in the Sample

Enterprises	1990	1991	1992	1993	1994	1995	1996	1997	1998
Total	85	77	77	80	80	87	91	75	68
Large	14	14	15	16	14	19	20	22	24
Medium	37	33	34	35	35	37	43	35	35
Small	34	30	28	29	31	31	28	18	9

Note: Large enterprises were defined as those with sales of $100 million or more, medium sized 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.

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

Table 23: Rates of Return – "Other" Food Processing Industry

	1990	1991	1992	1993	1994	1995	1996	1997	1998	Average
Total	16.9	15.4	14.2	12.2	13.8	12.1	11.7	13.4	10.4	13.3
Large	18.3	15.3	13.4	11.7	13.4	12.9	12.0	14.0	10.8	13.5
Medium	13.2	21.1	20.5	18.9	19.1	11.0	10.0	10.8	9.9	14.9
Small	14.2	3.5	9.0	4.2	6.2	4.3	11.9	6.6	-2.4	6.4

Note: Large enterprises were defined as those with sales of $100 million or more, medium sized 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.

Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

Figure 11. Rates of Return – "Other" Food Processing Industry
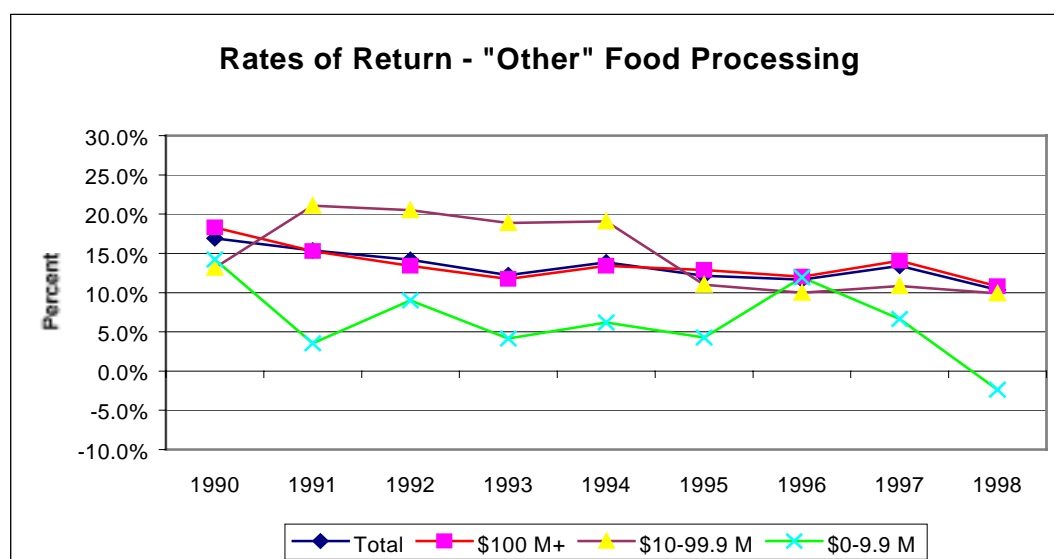
Source: Annual Survey of Financial Statements, Industrial Organization and Finance Division (IOFD), Statistics Canada.

8.8 Large Enterprise Comparison

The number of large enterprises in the sample increased in the years 1995-1998, in the "other" food processing industry, the meat and poultry processing industry, the fruit and vegetable processing industry and the cereal processing industry. The total sample size reached its maximum in 1995 and started to decrease after that reaching a low in 1998. Surprisingly, although the total sample size was decreasing, the number of enterprises in the sample in these industries increased over the study period.

In 1994, all the industries, except the cereal processing industry, had an increase in their rate of return or in the case of bakeries maintained its previous year's rate of return. Some industries had a substantial increase, such as fish processing which more than doubled its earnings from a 7.7% return in1993 to 16.1% in 1994. Fruit and vegetable processing also increased its return from 9.8% to 17.5% between the two years. The cereal processing industry showed a decrease in return from 16.7% to 10.1%.

8.9 Industry by Industry – Large

The rate of return for bakeries was at its peak in 1990 at 22.1% and slowly decreased to a low of 13.8% in 1995. For the next two years, the rate increased slightly to 16.9% before dipping again to 16.2% in 1998. The bakery industry, along with the other food processing industry, had one of the more constant rates of return over the time period after the initial drop in 1991.

Rates of return for the cereal industry had many ups and downs. Starting at 11.2% in 1990, the returns slowly declined to 8.9% in 1992 before increasing quickly to 16.7% in 1993. One of the enterprises with a significant amount of long-term capital in 1992 was not included in 1993. At the same time, two of the larger enterprises reduced their long-term capital and another enterprise more than doubled its operating income. Then there was a steep decline in 1994 to 10.1%. The enterprise that was excluded in 1993 returned to the sample in 1994 with slightly more long-term capital and the enterprise that had increased its operating income saw it return to its 1992 level. The ROR increased dramatically in 1995 to its high of 22.8%. Once more one of the enterprises with the largest long-term capital was not in the sample and two others reduced their long-term capital substantially. The cereal industry was the only industry to show a decline in rate of return in 1994. After that it continued a slow decline to 16.3% in 1998, which was still greater than its previous two high peaks. The cereal industry started the decade with the fifth bast rate of return and ended with the best, along with bakeries.

The dairy processing industry started the 1990s at its peak return of 14.8%, which declined to 7.8% by 1992. The largest enterprise by sales (representing 38% of large enterprise sales) had a sharp decrease in net operating income and increased its long-term capital. There was a bit of a recovery until 1994 when it peaked at 12.9% but that lasted only one year. In 1995 returns started to decrease and by 1998 had reached their lowest point of the series at 7.5%, about one-half of what they started the decade at.

The fruit and vegetable processing industry experienced modest declines in its rate of return from 1990 to 1993. There was a significant increase in the rate of return in 1994 when it reached its highest point for the time period at 17.5%. An enterprise that represented 52% of the total large enterprises' long-term capital and 39% of large enterprises' total operating income in 1993 was no longer in the sample. Another large enterprise decreased its long-term capital by more than 50% while its operating income increased. The total operating income increased by 14% while long-term capital decreased by 43% for the large. One of the larger enterprises was not included in the sample but two others were. It stayed close to that level for one more year before starting to slowly decrease again to 1998. The return in 1998 was slightly lower than that at the beginning of the decade.

The fish processing industry earned the lowest average rate of return of all industries over the time period, at less than one-half of the average rate of return of four other industries. Fish processors also had the greatest recovery and subsequent decline in percentage terms. The industry started the decade with the lowest rate of return for all industries at 5.6%. It dropped to its lowest point, less than one-half of one percent, in 1991 (the top

four increased their long-term capital by 53% in 1991). Also one large enterprise saw a large decrease in operating income. The ROR climbed to 16.1% in 1994 with one enterprise's operating income increasing significantly and another one's long-term capital decreasing by more than 60%. As a matter of fact, the net operating income for the four enterprises that were found in all four of the sample years doubled. The rate of return immediately started to decrease in 1995, reaching a low of 2.6% in 1997. Net operating incomes for five of the enterprises plummeted by over 60%, with operating income for one enterprise declining by 108%. There was small increase in the rate of return in 1998 to 4.6%, still lower than the beginning of the time period.

The meat and poultry processing industry was the only other industry besides cereal processing to end the time period with a higher rate of return than it had at the beginning of the period. Meat and poultry processors was one of two industries to increase its absolute number of large as well as percentage of enterprises classified as large in the sample in the late 1990s. It was also the only industry to see an increase in its rate of return in 1991. Nine enterprises were in the sample for both 1990 and 1998 and they increased their net operating income by 64% but their long-term capital by only 10%. The rate of return was fairly constant for 1991 to 1993 between 12.6% and 10.6%. Similar to the majority of the enterprises classified as "other", there was an increase in the rate of return in 1994 to peak at 16.8%. There were 13 enterprises that were in the sample for both 1990 and 1998 and they increased operating net income by 19% but only increased long-term capital by 2%. Subsequently the rates of return decreased all the way to 1998 where the time period ended. In 1995 an enterprise that had formerly been classified in another industry was included in the meat and poultry sample, bringing with it considerable long-term capital. At the same time another enterprise was out of the sample removing the second largest operating net income and the negative long-term capital. The last rate of return of 10.2% was still greater than the rate of return at the beginning of the period.

The "other" food processing industry is composed of a variety of related and unrelated smaller industries. Keeping this in mind, it is probably not unusual that this industry has the least fluctuation in rates of return. It followed the general processing industry trend of having its highest rate of return in 1990, declining through to 1993, and recovering slightly in 1994 before once more decreasing to its lowest point in 1998. The "other" food processing industry earned a slightly greater rate of return in 1997 than the previous five years before slipping downward again in 1998. This industry started the decade with the second highest rate of return and ended the period in fourth spot.

9. Conclusions

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. Unlike 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 and averaged higher profitability 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?

10. Appendices

Appendix A: Industries Included in the Food Processing Sector

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	Oil Seeds 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

Appendix B: 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

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

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