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**Canada's Post-War Manufacturing Performance:
A Comparison with the United States**

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Gjalt de Jong

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Canada's Post-War Manufacturing Performance: A Comparison with the United States

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1. Introduction

This paper addresses Canada's post-war manufacturing productivity performance as compared with the United States. It follows up on earlier studies, including Maddison (1952), West (1971), Frank (1977), and Roa and Lemprière (1992). Among others, productivity represents the key to international competitiveness and rising living standards (Baldwin, 1992; Dollar and Wolff, 1988). Labour productivity of a firm or a country can be defined as the quantity of output produced with a given level of labour input. Aggregate actual labour productivity is defined as the summation of the output of the various goods produced, with prices used to aggregate heterogeneous goods, divided by the summation of the labour input needed to produce each good. The concept of total factor productivity represents the ratio of output to an index of inputs, usually labour and capital. Like labour productivity, it relates output to an indicator of inputs (Sharpe, 1995).

International comparisons of productivity levels have gained the interest of researchers in the last couple of decades (Maddison, 1982; 1995). Comparisons of productivity levels are important for various reasons *e.g.* they can be applied to the study of structural change, technology progress, comparative advantage, and competitiveness, and in the analysis of catch-up and convergence (Van Ark and Pilat, 1993; Maddison and Van Ark, 1994). To date, a growing body of literature has addressed both the theoretical and empirical perspectives which has contributed to the understanding of international comparative labour productivity measurements (Van Ark, 1996). Most studies compare a specific sector of the country under consideration with a specific sector of the world productivity leader of today, *i.e.* the United States (Van Ark, 1993; forthcoming; Pilat, 1994; Mulder, 1994).

For an international comparison of labour productivity it is required that both output and inputs are measured in common units. Purchasing power parities are used to convert variables expressed in national currencies into the US dollars. A purchasing power parity is a ratio of prices for a particular commodity in two countries with the prices expressed in the two national currencies. This ratio is calculated by dividing the price of a specific quantity of an item of a specific quality in one country's currency by the price of the same item in the other country, in the currency of the other country. The purchasing power of the different currencies is thus equal (or has parity) in terms of the specific quantity of a particular good or service that can be purchased (Kemp, 1993). In most of the comparisons of labour productivity across countries a purchasing power parity, or unit value ratio, is used as the conversion factor instead of the exchange rate. The exchange rate as a conversion factor is rejected because it can be subject to major fluctuations and it primarily reflects the purchasing power of currencies in terms of goods and services which enter international trade. In other words, the exchange rate does not necessarily represent the actual price relationship between two countries for each product or industry. Purchasing power parities and comparative labour productivity levels can be estimated using different methods. This study uses the 'industry of origin' approach as developed in the International Comparison of Output and Productivity (ICOP) project at the University of Groningen.

The outline of this paper is as follows. The second section explains the ICOP methodology which is used for calculating the unit value ratios and the comparative labour productivity levels. The third section presents this study's empirical results of Canada's manufacturing productivity performance for the benchmark year 1987 as well as the period 1961-1990. These results are compared

with other ICOP studies in section four. The final section five summarises the main conclusions.

2. ICOP methodology and sources of data

This section briefly discusses the 'industry of origin' methodology as developed in the ICOP project at the University of Groningen (Maddison and Van Ark, 1988; Van Ark, 1993; forthcoming; Pilat, 1994). The basic procedure for deriving Canada's post-war comparative productivity levels consists of two parts. Firstly, the benchmark year comparisons are made and secondly the series of comparative productivity levels are calculated. The benchmark year chosen for this study is 1987 so that this study's results can be compared with other ICOP related studies presented in section four of this paper.

For the comparison of productivity in Canada and the United States the censuses of manufactures of both countries served as the basic statistical source. The general information for the United States was obtained from the 1987 US Census of Manufactures - General Summary (see: annex tables A.3 and B.2). For Canada no census data were available for 1987. The year closest to 1987 for which census data was available was 1988. Summary figures for 1987 and 1988 are obtained from Statistics Canada Manufacturing Commodity Publications Catalogue No. 32-203, 32-250, 32-251, and 32-352 (see: annex tables A.1, and B.1). To assess whether the Canadian census is similar to that of the US census the main definitions of output and employment were compared. For the United States, gross value of shipments are defined as the total sales of products. Employment is inclusive of working proprietors and head office employment. Product data is exclusive of indirect taxes and subsidies. One of the most important concepts used

in this study is that of value added. The US definition of value added is presented in table 1.

Table 1
US Census Definition of Value Added

	Total Sales of products, f.o.b. plants
plus	Industrial services rendered
=	Value of shipments (gross output)
minus	Purchases (raw materials, components, semi-manufactured goods, packaging materials, workshop materials, energy inputs)
minus	Purchases of industrial services (work done on materials supplied)
plus	Net change in stocks of finished goods, raw materials, packaging
plus	Margin of goods merchanted or factors
=	Value added by manufacture (value added)

The Canadian census of manufactures is similar to that of the US. It uses the US definition of value added, gross value of shipments, persons employed, and actual hours worked. Hence, the relative productivity comparisons are calculated on the basis of these census value added and employment figures. The US actual hours worked are not derived from the census, as the census figures only refer to hours of production workers. Our hours are hours actually worked adjusted downwards to exclude hours not worked due to public holidays, vacation, and sickness.

The next step in our approach was to calculate the unit value ratios which serve to convert output in both countries to the same currency. The necessary product information for the underlying matching procedure for the United States were derived from 1987 US Census of Manufactures - Industry Reports. For Canada, I used the available 1988 commodity data derived from the aforementioned serial publications. From these sources the necessary product

information for the matching between both countries was obtained.¹ For every binary comparison there are two UVRs, *i.e.* one at quantity weights of Canada and one at quantity weights of the US. The first is the Paasche price index, while the second is the Laspeyers price index. Producer price indices (Statistics Canada catalogue no. 62-558) were used to adjust the Canadian unit values from 1988 to 1987 so that it could be compared with the 1987 unit values from the US census. Formulas (1) and (2) represent the sample industry UVRs:

$$UVR_{j,1987}^{CU(C)} = \frac{\sum_{i=1}^n (P_{ij}^{C88} * Q_{ij}^{C88}) * P_j^C}{\sum_{i=1}^n (P_{ij}^{U87} * Q_{ij}^{U87})} \quad (1)$$

$$UVR_{j,1987}^{CU(U)} = \frac{\sum_{i=1}^n (P_{ij}^{C88} * Q_{ij}^{U87}) * P_j^C}{\sum_{i=1}^n (P_{ij}^{U87} * Q_{ij}^{U87})} \quad (2)$$

where

- $UVR_{j,1987}^{CU(C)}$ is the UVR of the Canadian dollar versus the US dollar in industry j at quantity weights of Canada for 1988 (Paasche price index);
- $UVR_{j,1987}^{CU(U)}$ is the UVR of the Canadian dollar versus the US dollar in industry j at quantity weights of the United States for 1987 (Laspeyres price index);
- $i=1\dots n$ is the sample of the matched items.
- P_j^C is the producer price index for industry j in Canada in 1987 (1988=100).

In most of the tables below, ratios based on both formulas are presented. For the final comparisons of gross value added and productivity only the geometric mean of the two indices, *i.e.* the Fisher price index, is used:

¹ A statistical appendix with product matches used to calculate the unit value ratios can be obtained from the author on request.

$$UVR^{Fisher} = \sqrt{UVR^{CU(C)} * UVR^{CU(U)}} \quad (3)$$

Beside the Fisher price index the empirical results also show the price levels. Price levels at different levels of aggregation, *i.e.* sample industry, branch, and sector level, are defined as the ratio of the Fisher price index to the official exchange rate.

The branch level ratios are obtained by a weighted average of the ratios of the sample industries that belong to a given branch. Hence, the branch level UVRs are defined using value added shares. The value added figures for different branches are used to obtain UVRs at sectoral level. Real GDP in Canadian manufacturing is obtained by deflating the value added in Canadian dollars into US dollars, using the unit value ratio computed at the output level. Finally, labour productivity is obtained as the real value added (or GDP) per person employed or per actual hour worked in the manufacturing sector and its branches.

3. Comparative labour productivity in manufacturing

1987 Benchmark year comparisons

The Canada - US manufacturing labour productivity comparison starts with the matching of the products in the sample industries to derive sample industry UVRs (see: appendix table B.3). Table 2 shows that a total number of 200 sample industry UVRs were calculated which accounted for an average of manufacturing output of 27.8 per cent in Canada and of 21.6 per cent in the USA. The Canadian coverage ratios refer to 1988 because the product matches are based on the 1988 commodity data.

Table 2
Coverage Percentages and Number of UVRs
by Major Manufacturing Branch

	Canada 1988	USA 1987	Number UVRs
Food Manufacturing	43.14	40.96	59
Beverages	54.91	34.99	8
Tobacco Products	58.61	77.36	2
Textile Mill Products	24.30	36.70	5
Wearing Apparel	43.98	46.85	32
Leather Products and Footwear	28.51	46.07	6
Wood Products, Furniture and Fixture	37.58	14.22	9
Paper Products, Printing and Publishing	39.23	12.62	11
Chemicals, Petroleum and Coal Products	39.94	34.30	36
Rubber and Plastic Products	12.40	9.87	1
Non-Metallic Mineral Products	31.23	28.31	9
Basic and fabricated Metal Products	16.78	13.10	9
Machinery and Transport Equipment	17.07	16.90	11
Electrical Machinery and equipment	2.32	3.23	2
Total Manufacturing	27.75	21.60	200

Source: Appendix table B.4.

Notes:

(a) Coverage ratios for Canada refer to 1988. The UVR for total manufacturing is the weighted average of the UVRs of all manufacturing branches.

The number of UVRs varies considerably between the branches. For some branches, *e.g.* food manufacturing, a fairly large number of UVRs could be calculated while for other, *e.g.* rubber and plastic products and electrical machinery and equipment, less UVRs could be calculated. The reason that not all products are matched to obtain UVRs ranges from insufficient product descriptions to incomparable specifications of physical output specifications or complete lack of information for a specific product in either of both national censuses. Furthermore, a specific problem when calculating UVRs is the difference in product mix and product quality between Canada and the United States. For some of the sample industries, the UVR is dominated by a few or even only one product UVR. However, other ICOP studies have shown, that the average UVR for total manufacturing is not very sensitive to outliers (Van Ark, 1993; forthcoming; Gersbach and Van Ark, 1994).

Table 3 presents the UVRs and relative price levels for 15 major manufacturing branches. These UVRs present the amount of Canadian dollar equivalent to each US dollar in purchasing power, using the United States as the base country. As mentioned before, the UVRs are based on the matching of the product items within each sample industry. The sample industry UVRs are adjusted with the Canadian producer price indices. The 1988/1987 results are not discussed here since the main interest is for the 1987 benchmark comparison.

Table 3
UVRs and Price Levels
by Major Manufacturing Branch, 1987

	UVR: CAN\$/US\$ 1987		Geometric Average	Relative Price Level (USA = 100)
	at US Quantity Weights	at Canadian Quantity Weights		
Food Manufacturing	1.519	1.473	1.496	112.83
Beverages	1.841	1.717	1.778	134.08
Tobacco Products	0.900	1.092	0.991	74.77
Textile Mill Products	1.564	1.275	1.412	106.47
Wearing Apparel	1.446	1.359	1.402	105.72
Leather Products and Footwear	1.252	1.186	1.219	91.91
Wood Products, Furniture and Fixture	1.710	1.155	1.405	105.97
Paper Products, Printing and Publishing	1.385	1.302	1.343	101.29
Chemicals, Petroleum and Coal Products	1.282	1.298	1.290	97.27
Rubber and Plastic Products	1.232	1.232	1.232	92.90
Non-Metallic Mineral Products	1.310	1.316	1.313	99.00
Basic and fabricated Metal Products	1.324	1.314	1.319	99.47
Machinery and Transport Equipment	1.215	1.234	1.224	92.33
Electrical Machinery and equipment	1.461	1.406	1.433	108.09
Other Manufacturing Industries	1.358	1.308	1.333	100.50
Total Manufacturing	1.358	1.308	1.333	100.50
Exchange Rate	1.326	1.326	1.326	100.00

Source: Appendix table B.6.

Subsequently, the branch level UVRs have been calculated. Overall, only minor differences between the UVR at Canadian quantity weights and the US quantity weights exist (see: table 3). On average, the relative price level in Canada is almost the same as in the United States *i.e.* it exceeds the US price level with only 0.5 per cent. Within the branches, however, the relative price levels vary. A relative price

level over 100 per cent indicates that prices in that particular branch in Canada are higher than those in the United States. In terms of relative prices, table 3 suggests that the Canadian manufacturing is most competitive in tobacco products and the least in beverages. Using the UVRs at major branch level, the gross value added figures from each national census can now be converted to either countries' currency. Table 4 presents the results.

Table 4
Gross Value Added (census concept)
by Major Manufacturing Branch, 1987

	Canada/USA % (geometric average)
Food Manufacturing	8.7
Beverages	7.9
Tobacco Products	7.0
Textile Mill Products	7.9
Wearing Apparel	7.4
Leather Products and Footwear	12.4
Wood Products, Furniture and Fixture	12.7
Paper Products, Printing and Publishing	9.6
Chemicals, Petroleum and Coal Products	6.8
Rubber and Plastic Products	6.9
Non-Metallic Mineral Products	9.5
Basic and fabricated Metal Products	10.4
Machinery and Transport Equipment	6.1
Electrical Machinery and equipment	6.3
Other Manufacturing Industries	2.7
Total Manufacturing	7.6

Source: Appendix table C.1.

In 1987, Canadian manufacturing value added was 7.6 per cent of the US level. With the exception of three branches, *i.e.* leather products and footwear, wood products, furniture and fixture, basic and fabricated metal products, all Canadian manufacturing branches had a gross value added below 10 per cent of the US level. The difference in either countries' quantity weights is very small (see: appendix table C.1).

The Canadian comparative 1987 manufacturing productivity level for each branch is obtained by dividing the gross value added figures per branch by either the number of persons employed or the actual hours worked for that specific branch. Table 5 provides an overview.

Table 5
Gross Value Added per Person Employed
and Hour Worked by
Major Manufacturing Branch, 1987

	GVA per Person Employed Canada/USA % (geometric average)	GVA per Hour Worked Canada/USA % (geometric average)
Food Manufacturing	60.7	62.8
Beverages	43.5	44.2
Tobacco Products	74.2	88.4
Textile Mill Products	91.2	100.3
Wearing Apparel	73.8	70.3
Leather Products and Footwear	77.1	80.5
Wood Products, Furniture and Fixture	85.9	88.6
Paper Products, Printing and Publishing	86.4	90.3
Chemicals, Petroleum and Coal Products	77.0	83.2
Rubber and Plastic Products	86.3	92.1
Non-Metallic Mineral Products	92.7	97.9
Basic and fabricated Metal Products	88.4	92.8
Machinery and Transport Equipment	80.5	77.5
Electrical Machinery and equipment	74.4	75.5
Other Manufacturing Industries	54.9	57.3
Total Manufacturing	77.4	79.4

Source: Appendix tables C.2 and C.3.

The number of employees used for obtaining these results originally referred to the persons on the payroll of the manufacturing units excluding working proprietors. Employees working in auxiliary units (e.g. head and sales offices and research laboratories) are added for both countries. The hours worked refer to actual hours worked for both countries. In 1987 approximately 1.8 million persons were employed in the Canadian manufacturing while approximately a tenfold was

employed in the US manufacturing. For total manufacturing, the average number of working hours per person was estimated at 1,866 hours in Canada and 1,909 in the United States respectively. For the benchmark year, the Canadian manufacturing gross value added per person employed was 77.4 per cent of the United States. The Canadian comparative productivity level varied between 43.5 per cent for the branch beverages and 92.7 per cent for the branch non-metallic mineral products. When using the comparative productivity levels per hour worked, all but two Canadian branches (*i.e.* wearing apparel and machinery and transport equipment) show a somewhat higher productivity level. Overall the Canadian comparative productivity level measured with actual hours worked is 2 percentage points higher than when expressed in persons employed.

Trends in comparative labour productivity

The 1987 benchmark comparative productivity results were extrapolated backwards to 1961 and forwards to 1990 using the national time series for real output and labour input (see: appendix tables D.1 to D.4). For the US, until 1987 the series are in 1982 fixed weights and after 1987 in 1987 fixed weights. For Canada shifting weights are used. No separate series were available for the branches food manufacturing and beverages. Hence, these two branches are taken together in the branch food and kindred products. These trends were calculated for gross value added per employee as well as per actual hour worked. Table 6 below presents the results for some key years.

Table 6
Gross Value Added per Person Employed and Hour Worked
by Major Manufacturing Branch, 1961-1990 (USA=100)

	Per Person				Per Hour Worked			
	1961	1973	1979	1990	1961	1973	1979	1990
Food and Kindred Products	72.2	70.2	66.6	57.8	75.5	73.4	68.9	62.3
Tobacco Products	42.3	49.8	46.6	97.9	43.1	55.4	51.9	116.0
Textile Mill Products	72.0	87.5	91.3	79.1	72.8	91.8	96.1	82.3
Wearing Apparel	78.8	68.4	81.8	66.8	76.3	67.6	78.5	63.6
Leather Products and Footwear	69.5	62.9	83.2	66.2	68.8	62.6	78.6	64.3
Wood Products, Furniture and Fixture	91.5	84.7	78.1	89.1	93.1	85.0	76.9	89.7
Paper Products, Printing and Publishing	99.3	86.3	90.0	82.3	91.0	80.7	86.1	84.9
Chemicals, Petroleum and Coal Products	87.3	97.5	95.9	86.0	83.6	101.3	101.0	95.2
Rubber and Plastic Products	66.4	94.0	111.8	74.5	69.2	97.8	112.3	78.1
Non-Metallic Mineral Products	76.4	98.3	106.5	78.6	74.4	101.3	109.7	82.5
Basic and fabricated Metal Products	76.9	86.6	86.2	88.1	70.1	82.9	82.4	92.2
Machinery and Transport Equipment	75.4	106.4	120.9	82.4	75.3	107.9	125.1	85.1
Electrical Machinery and Equipment	60.6	57.2	58.6	75.7	58.6	57.4	59.2	76.9
Other Manufacturing Industries	67.0	68.4	73.0	42.9	62.3	65.1	71.2	42.3
Total Manufacturing	76.1	84.7	88.9	75.4	76.2	86.7	90.5	77.9

Source: Appendix tables D.5 and D.6

Canada's post-war productivity level, expressed in persons employed, was 76.1 per cent in 1961, 84.7 per cent in 1973, 88.9 per cent in 1979, and 75.4 per cent in 1990 respectively. Expressed in hours worked, the relative productivity levels are somewhat higher.

In 1961, Canada's best performing branches relative to the USA were paper products, printing and publishing, wood products, furniture and fixture, and chemicals, petroleum, and coal products.² In 1973, this changed to the branches machinery and transport equipment and non-metallic mineral products. In 1979, machinery and transport equipment improved its productivity performance to 120.9 per cent of that of the United States. Furthermore, two other branches had a

² For Canada, computers are included in the branch Machinery and Equipment.

comparative productivity level over 100 per cent *i.e.* rubber and plastic products (111.8 %) and non-metallic mineral products (106.5 %). In 1990, the best performing branch was tobacco products (97.9 %), followed by wood products, furniture and fixture (89.1 %) and basic and fabricated metal products (88.1 %), respectively. Hence, Canada's productivity performance for these selected years was the highest in three classical branches (*i.e.* wood products, furniture and fixture, paper products, printing and publishing, chemicals, petroleum and coal products), the heavy industry (*i.e.* basic and fabricated metal products, and machinery and transport equipment), and the miscellaneous products industries of rubber and plastic products and non-metallic mineral products.

4. An international perspective

This section compares Canada's relative productivity performance over the past three decades with four other countries of the G-7 group.³ Table 7 presents the labour productivity results relative to the USA in terms of persons engaged for Canada, Japan, France, Germany, and the United Kingdom respectively.

Table 7.
Gross Value Added Per Person Engaged
Total Manufacturing

	1961	1973	1979	1987	1990
1. Canada	76.1	84.7	88.9	77.4	75.4
2. Japan	28.3	56.3	71.8	76.4	87.5
3. France	50.4	69.1	80.9	71.2	77.1
4. Germany	63.6	76.0	87.8	70.2	72.6
5. UK	46.5	50.8	49.9	53.6	58.0
6. USA	100.0	100.0	100.0	100.0	100.0

Source: Canada this study; other countries Van Ark, forthcoming.

³ No ICOP comparison for Italy is available.

For these selected years, none of these countries shows a comparative productivity level which is more than that of the United States. In 1961, Canada's comparative manufacturing productivity level was 76.1 per cent of that of the United States. This was the highest compared to the other four G-7 countries. Germany was second-best but had a comparative productivity level which was more than 10 per cent lower than Canada. Remarkably, Japan had the lowest productivity level (28.3 %) in 1961. In 1973, Canada's productivity performance was still the highest. Compared to 1961, Japan's comparative productivity level increased with almost one third. By 1979, the productivity performance of the UK was approximately the same as in 1961. The comparative productivity level of Germany was almost the same as Canada's productivity level. As compared with the previous years, France showed a rapid increase in its productivity performance. In 1979, productivity in Japan's manufacturing was approximately the same as Canada. In 1990, Canada's productivity level was no longer the highest of these G-7 countries. Its productivity level decreased to approximately 75 per cent in 1990. Japan's productivity level continued to improve up to 1990. By 1990, Japan's comparative productivity level was the highest in terms of output per person employed.

Table 8 shows the comparative productivity levels in terms of hours worked.

Table 8.
Gross Value Added Per Person Hour Worked

	1961	1973	1979	1987	1990
1. Canada	77.1	86.7	90.5	79.4	77.9
2. Japan	22.0	49.2	62.6	67.5	77.9
3. France	48.5	73.3	88.7	84.0	91.3
4. Germany	60.0	79.7	95.8	82.2	86.9
5. UK	43.7	52.4	53.5	58.6	66.0
6. USA	100.0	100.0	100.0	100.0	100.0

Source: Canada this study; other countries Van Ark, forthcoming.

In 1961, Canada had the highest productivity level and Japan the worst. From 1961 onwards, however, Japan's productivity performance relative to the USA continuously increased. In 1990, Canada's and Japan's productivity level in manufacturing were approximately the same. At the end of the 1970s, Germany's productivity performance was the highest (95.8 %), followed by Canada (90.5 %). In 1990, this situation was reversed. Of all countries and selected years under consideration here, France had the highest relative productivity level (91.3 %). The United Kingdom increased its productivity level from 43.7 per cent in 1961, to 66.0 per cent in 1990. Hence, it continuously increased. Despite this, since the end of the 1970s the United Kingdom has had the lowest comparative manufacturing productivity level of the countries under consideration.

5. Conclusions

This paper addressed Canada's post-war manufacturing performance as compared with the United States. For this international comparison of labour productivity it is required that both output and inputs are measured in common units. This study used the 'industry of origin' approach to calculate unit value ratios which are used to convert the output value in Canada and the USA into a common currency.

For the benchmark year 1987, a total number of 200 unit value ratios were calculated. The overall unit value ratio for manufacturing was 1.333 (Can \$/US \$, geometric average). For total manufacturing, the Canadian relative price level exceeded the US price level with 0.5 per cent. Within the branches, however, the relative price levels varied.

In 1987, Canada's comparative labour productivity was 77.4 per cent, measured in persons employed, and 79.4 per cent measured in persons hours worked respectively. In terms of persons employed, the relative productivity level varied between 43.5 per cent for beverages and 92.7 per cent for non-metallic mineral products. The 1987 results were extrapolated backwards to 1961 and forwards to 1990 using the national time series for real output and labour input. On average, Canada's productivity performance gradually decreased but showed short periods of recovery.

In an international comparative perspective with four other countries of the G-7 group, Canada had the highest productivity level when measured in terms of value added per person engaged for a long period. By 1990, however, Japan as well as France exceeded Canada's relative productivity performance. In terms of value added per hour worked, France and Germany exceeded Canada's productivity performance since the late 1970s.

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Table A.1
Basic Data Canada, 1987

	Gross Value of Shipments (mill. Can\$)	Gross Value Added (mill. Can\$)	Gross Value Added in Branch as % of Total (mill. Can\$)	Gross Value Added (mill. Can\$)	Employment in Branch as % of Total (persons)	Total Annual Hours Worked	Annual Hours Worked Per Person
1 Food Manufacturing	42,437.9	12,810.2	10.83	197,167	10.58	3,606	1,835
2 Beverages	6,159.9	3,167.5	2.68	31,361	1.68	575	1,835
3 Tobacco Products	2,567.3	983.5	0.83	5,948	0.32	93	1,573
4 Textile Mill Products	6,918.4	2,868.4	2.42	60,704	3.26	1,132	1,866
5 Wearing Apparel	6,960.8	3,380.6	2.86	112,002	6.01	2,107	1,878
6 Leather Products and Footwear	1,489.7	660.1	0.56	21,782	1.17	384	1,778
7 Wood Products, Furniture & Fixtures	19,543.3	8,766.9	7.41	183,239	9.83	3,487	1,904
8 Paper Products, Printing & Publishing	35,677.8	18,050.6	15.26	246,889	13.24	4,365	1,770
9 Chemicals, Petroleum & Coal Product	41,266.0	12,219.8	10.33	104,448	5.60	1,858	1,832
10 Rubber and Plastic Products	9,176.6	3,771.0	3.19	68,888	3.70	1,282	1,860
11 Non-metallic Mineral Products	8,375.4	4,163.0	3.52	56,822	3.05	1,077	1,902
12 Basic & Fabricated Metal Products	37,549.7	16,531.4	13.98	261,039	14.00	4,862	1,866
13 Machinery & Transport Equipment	71,120.6	19,079.5	16.13	300,790	16.13	5,955	1,982
14 Electrical Machinery & Equipment	18,221.4	8,701.4	7.36	143,837	7.72	2,660	1,851
15 Other Manufacturing Industries	6,584.7	3,135.8	2.65	69,372	3.72	1,253	1,801
Total Manufacturing	314,049.5	118,289.6	100.00	1,864,288	100.00	34,698	1,866

Source: Census of Manufactures, serial publications Catalogue No. 31-203, 32-250, 32-251, 32-252, Statistics Canada, Ottawa, 1991.

Table A.2
Basic Data United States, 1987

	Gross Value of Shipments (mill. US\$)	Gross Value Added (mill. US\$)	Gross Value Added in Branch as % of Total	Employment in Manufacturing Establishments (persons)	Employment in Head Offices (persons)	Total Employment (persons)	Total Employment in Branch as % of Total	Total Annual Hours Worked	Annual Hours Worked Per Person
1 Food Manufacturing	282,398.2	99,018.1	8.49	1,287,900	96,272	1,384,172	7.30	2,620	1,893
2 Beverages	47,327.2	22,584.8	1.94	160,900	12,028	172,928	0.91	323	1,866
3 Tobacco Products	20,757.1	14,263.8	1.22	44,700	18,800	63,500	0.34	118	1,853
4 Textile Mill Products	62,786.4	25,660.1	2.20	672,000	26,900	698,900	3.69	1,435	2,053
5 Wearing Apparel	64,242.6	32,515.6	2.79	1,080,600	33,200	1,113,800	5.88	1,998	1,794
6 Leather Products and Footwear	9,082.4	4,377.9	0.38	129,000	6,700	135,700	0.72	250	1,843
7 Wood Products, Furniture & Fixtures	107,208.6	48,975.0	4.20	1,209,200	25,900	1,235,100	6.52	2,426	1,964
8 Paper Products, Printing & Publishing	245,184.3	140,651.0	12.07	2,105,300	127,600	2,232,900	11.78	4,124	1,847
9 Chemicals, Petroleum & Coal Products	359,960.1	139,295.9	11.95	929,900	252,100	1,182,000	6.24	2,272	1,922
10 Rubber and Plastic Products	86,634.3	44,436.8	3.81	831,400	31,900	863,300	4.56	1,715	1,986
11 Non-metallic Mineral Products	61,476.6	33,383.1	2.86	523,700	30,500	554,200	2.92	1,110	2,003
12 Basic & Fabricated Metal Products	267,614.3	121,078.4	10.39	2,159,100	69,800	2,228,900	11.76	4,360	1,956
13 Machinery & Transport Equipment	550,605.6	255,263.6	21.90	3,661,800	304,000	3,965,800	20.93	7,555	1,905
14 Electrical Machinery & Equipment	171,286.4	95,815.3	8.22	1,564,700	124,700	1,689,400	8.91	3,171	1,877
15 Other Manufacturing Industries	139,336.8	88,427.5	7.59	1,356,700	73,200	1,429,900	7.55	2,695	1,885
Total Manufacturing	2,475,900.9	1,165,746.9	100.00	17,716,900	1,233,600	18,950,500	100.00	36,171	1,909

Source: U.S. Dept. of Commerce, U.S. 1987 Census of Manufactures, Washington DC, 1990.

TABLE B.1
Gross Value of Shipments, Gross Value Added and Employment
in Sample Industries, Canada 1988/1987

	Gross Value of Shipments	Gross Value of Shipments	Gross Value Added	Persons Employed
	1988 (mill. Can\$)	1987 (mill. Can\$)	1987 (mill. Can\$)	1987 (number)
FOOD MANUFACTURING				
1 Meat Products	11,500.9	11,743.4	2,525.3	43,459
2 Dairy Products	8,508.5	8,258.4	2,108.7	25,582
3 Fats and Oils	1,332.5	1,050.2	122.8	1,080
4 Grain Mill Products	1,716.5	1,745.4	580.5	6,137
5 Sugar & Sugar Factories	1,594.2	1,600.6	784.2	10,813
6 Roasted Coffee and Tea	916.2	931.9	392.2	3,430
7 Prepared Animal Feeds	3,248.1	2,794.7	560.5	8,790
8 Other food products (a)	15,100.9	14,313.2	5,736.0	97,876
BEVERAGES				
9 Malt and Malt Beverages	2,873.9	2,557.6	1,631.1	13,756
10 Other Beverages (a)	3,958.6	3,602.4	1,536.4	17,605
TOBACCO AND TOBACCO PRODUCTS				
11 Tobacco and Tobacco Products	2,654.9	2,567.3	983.5	5,948
TEXTILE MILL PRODUCTS				
12 Textile Yarn and Cloth	2,249.3	2,220.8	907.6	19,608
13 Carpets and Rugs	1,160.0	1,083.4	324.9	5,947
14 Other textile mill products (a)	3,713.5	3,614.2	1,635.9	35,149
WEARING APPAREL				
15 Men's Clothing	2,321.1	2,243.8	1,139.5	37,990
16 Women's Clothing	2,802.1	2,609.4	1,218.6	42,270
17 Other wearing apparel products (a)	2,150.0	2,107.6	1,022.6	31,742
LEATHER PRODUCTS AND FOOTWEAR				
18 Leather Footwear	939.5	1,002.2	477.1	15,750
19 Leather Tanning and Finishing	261.7	252.0	73.2	1,712
20 Other leather products (a)	261.2	235.5	109.7	4,320
WOOD PRODUCTS, FURNITURE AND FIXTURE				
21 Sawmills, Planing and Other Woodmills	10,733.3	10,236.3	4,469.6	73,370
PAPER PRODUCTS, PRINTING AND PUBLISHING				
22 Pulp and Paper	17,798.2	16,044.3	7,976.2	76,894
23 Sanitary Paper Products	2,657.9	2,230.2	816.7	13,228
24 Other paper products (a)	19,357.6	17,403.3	9,257.8	156,767
CHEMICALS, PETROLEUM AND COAL PRODUCTS				
25 Industrial Inorganic Chemicals	3,009.3	2,662.1	1,370.8	9,487
26 Agricultural Fertilizers	1,780.7	1,967.0	512.1	5,676
27 Manmade Fibres	1,167.9	1,199.3	543.6	6,327
28 Paints	1,877.2	1,488.7	703.0	6,763
29 Soap and Detergents	1,662.5	1,652.9	785.4	8,625
30 Printing Inks	343.1	302.6	130.1	1,787
31 Petroleum Refineries	14,462.2	16,958.5	1,860.1	13,252
32 Other Chemical Products (a)	17,335.6	15,034.8	6,314.7	54,318
RUBBER AND PLASTIC PRODUCTS				
33 Tires and Inner Tubes	1,342.8	1,250.6	648.4	11,314

TABLE B.1 (cont.)
Gross Value of Shipments, Gross Value Added and Employment
in Sample Industries, Canada 1988/1987

	Gross Value of Shipments	Gross Value of Shipments	Gross Value Added	Persons Employed
	1988 (mill. Can\$)	1987 (mill. Can\$)	1987 (mill. Can\$)	1987 (number)
NON-METALLIC MINERAL PRODUCTS				
34 Bricks	358.2	413.3	278.7	3,930
35 Cement	1,025.7	980.2	558.4	3,646
36 Concrete and Concrete Products	3,204.6	2,928.2	1,339.2	22,219
37 Lime	181.4	156.1	87.4	784
38 Other non-metallic mineral products (a)	4,010.4	3,897.6	1,899.3	26,243
BASIC AND FABRICATED METAL PRODUCTS				
39 Iron and Steel	10,936.3	9,649.2	3,810.0	51,457
40 Primary Non-Ferrous Metals	7,216.4	5,763.4	3,050.9	29,397
41 Ferrous and Non-Ferrous Foundries	913.7	871.5	479.7	7,860
42 Other basic and fabricated products (a)	23,417.9	21,265.6	9,190.8	172,325
ELECTRICAL MACHINERY AND EQUIPMENT				
43 Radio and TV Receivers	788.4	822.4	306.0	3,298
44 Lamps and Bulbs	1,355.0	1,170.9	510.3	8,148
45 Other electrical and machinery equipment (a)	18,670.2	16,228.1	7,885.1	132,391
MACHINERY AND TRANSPORT EQUIPMENT				
46 Motor Vehicles and Equipment	56,293.2	47,502.8	8,245.1	103,924
47 Other Machinery & Transport Equipment (a)	26,726.9	23,617.8	10,834.4	196,866
Total sample industries, excluding other	183,187.4	168,911.7	52,311.2	703,658
Total manufacturing	344,013.6	314,049.5	118,289.6	1,864,288
Sample as % of total	53.25	53.79	44.22	37.74
Total sample industries, including other	317,890.2	290,231.7	107,733.9	1,629,260
Sample as % of total	92.41	92.42	91.08	87.39

Source: Census of Manufactures, serial publications no. 32-250, 32-251, 32-252, Statistics Canada, Ottawa, 1991.

Notes:

(a) These industries cover the part of the branch which remains after real sample industries have been subtracted. In some branches it was possible to make additional matches, but the products did not cover a complete industry for which separate value added and employment figures were available.

TABLE B.2
Gross Value of Shipments, Gross Value Added and Employment
in Sample Industries, USA 1987

	Gross Value of Shipments	Gross Value Added	Persons Employed
	(mill. US\$)	(mill. US\$)	(number)
FOOD MANUFACTURING			
1 Meat Products	76,525.8	13,815.3	340,000
2 Dairy Products	44,729.6	11,843.6	141,500
3 Fats and Oils	15,890.8	3,214.1	30,100
4 Grain Mill Products	12,398.8	4,690.0	34,000
5 Sugar & Sugar Factories	9,802.8	3,835.5	35,800
6 Roasted Coffee and Tea	16,187.9	7,716.2	68,600
7 Prepared Animal Feeds	16,537.5	5,357.7	47,900
8 Other food products (a)	90,325.0	48,545.7	686,272
BEVERAGES			
9 Malt and Malt Beverages	14,149.5	7,438.4	33,300
10 Other Beverages (a)	33,177.7	15,146.4	139,628
TOBACCO AND TOBACCO PRODUCTS			
11 Tobacco and Tobacco Products	20,757.0	14,263.8	44,700
TEXTILE MILL PRODUCTS			
12 Textile Yarn and Cloth	26,853.5	11,101.1	294,200
13 Carpets and Rugs	9,795.0	3,059.9	53,300
14 Other textile mill products (a)	26,137.9	11,499.1	351,400
WEARING APPAREL			
15 Men's Clothing	18,435.1	10,345.1	329,600
16 Women's Clothing	25,445.1	12,752.3	464,300
17 Other wearing apparel products (a)	20,362.4	9,418.2	319,900
LEATHER PRODUCTS AND FOOTWEAR			
18 Leather Footwear	4,072.6	2,152.6	71,100
19 Leather Tanning and Finishing	2,218.6	747.4	14,600
20 Other leather products (a)	2,791.2	1,477.9	50,000
WOOD PRODUCTS, FURNITURE AND FIXTURE			
21 Sawmills, Planing and Other Woodmills	24,340.6	9,464.1	207,600
PAPER PRODUCTS, PRINTING AND PUBLISHING			
22 Pulp and Paper	63,065.6	28,695.2	272,800
23 Sanitary Paper Products	11,698.4	6,309.3	38,400
24 Other paper products (a)	170,420.3	105,646.5	1,921,700
CHEMICALS, PETROLEUM AND COAL PRODUCTS			
25 Industrial Inorganic Chemicals	14,759.5	8,261.6	77,200
26 Agricultural Fertilizers	7,969.1	2,506.2	24,200
27 Manmade Fibres	11,431.3	5,698.9	56,200
28 Paints	12,701.2	6,220.5	55,200
29 Soap and Detergents	11,558.5	5,892.1	31,700
30 Printing Inks	2,961.6	1,257.7	7,600
31 Petroleum Refineries	118,216.1	14,223.3	74,600
32 Other Chemical Products (a)	183,324.4	96,493.3	862,900
RUBBER AND PLASTIC PRODUCTS			
33 Tires and Inner Tubes	10,427.4	5,559.4	65,400

TABLE B.2 (cont.)
Gross Value of Shipments, Gross Value Added and Employment
in Sample Industries, USA 1987

	Gross Value of Shipments	Gross Value Added	Persons Employed
	(mill. US\$)	(mill. US\$)	(number)
NON-METALLIC MINERAL PRODUCTS			
34 Bricks	1,254.0	771.9	16,600
35 Cement	4,321.8	2,286.3	19,200
36 Concrete and Concrete Products	21,049.6	10,117.7	185,500
37 Lime	715.5	350.4	5,700
38 Other non-metallic mineral products (a)	34,135.7	19,856.8	327,200
BASIC AND FABRICATED METAL PRODUCTS			
39 Iron and Steel	47,735.6	18,782.6	224,900
40 Primary Non-Ferrous Metals	15,300.5	3,945.3	44,100
41 Ferrous and Non-Ferrous Foundries	16,942.9	9,614.2	209,300
42 Other basic and fabricated products (a)	187,635.3	88,736.3	1,750,600
ELECTRICAL MACHINERY AND EQUIPMENT			
43 Radio and TV Receivers	5,911.2	1,702.1	30,900
44 Lamps and Bulbs	3,096.7	2,125.5	22,200
45 Other electrical and machinery equipment (a)	162,278.5	91,987.7	1,636,300
MACHINERY AND TRANSPORT EQUIPMENT			
46 Motor Vehicles and Equipment	203,375.1	65,652.6	738,800
47 Other Machinery & Transport Equipment (a)	347,230.5	189,611.0	3,227,000
Total sample industries, excluding other	922,631.8	321,769.9	4,411,100
Total manufacturing	2,475,900.9	1,165,746.9	18,950,500
Sample as % of total	37.26	27.60	23.28
Total sample industries, including other	2,180,450.7	1,000,188.8	15,684,000
Sample as % of total	88.07	85.80	82.76

Source: U.S. Department of Commerce, Bureau Census of Manufactures, Washington DC, 1990.

Notes:

(a) These industries cover the part of the branch which remains after real sample industries have been subtracted. In some branches it was possible to make additional matches, but the products did not cover a complete industry for which separate value added and employment figures were available.

TABLE B.3
Gross Value of Matched Output in Sample Industries,
Canada (1988)/USA (1987)

	at Canadian "prices"		Quantity Relative Canada/ USA (%)	at US "prices"		Quantity Relative Canada/ USA (%)
	Canada	USA		Canada	USA	
	(1988 Can\$ million)	(1988 Can\$ million)		(1987 US\$ million)	(1987 US\$ million)	
FOOD MANUFACTURING						
1 Meat Products	8,958.0	82,242.2	10.89	6,439.8	57,463.5	11.21
2 Dairy Products	4,572.5	36,834.6	12.41	2,563.5	21,146.5	12.12
3 Fats and Oils	541.7	13,896.4	3.90	382.6	9,195.6	4.16
4 Grain Mill Products	1,160.6	9,820.9	11.82	545.2	4,320.9	12.62
5 Sugar & Sugar Factories	1,179.3	8,515.8	13.85	905.4	6,578.5	13.76
6 Roasted Coffee and Tea	495.8	7,222.0	6.87	360.8	5,236.7	6.89
7 Prepared Animal Feeds	2,039.5	20,154.9	10.12	1,409.6	11,740.5	12.01
8 Other food products (a)						
BEVERAGES						
9 Malt and Malt Beverages	2,854.4	24,259.8	11.77	1,587.8	13,032.8	12.18
10 Other Beverages (a)	897.6	8,157.0	11.00	482.9	3,525.5	13.70
TOBACCO AND TOBACCO PRODUCTS						
11 Tobacco and Tobacco Products	1,556.0	15,073.4	10.32	1,366.7	16,057.2	8.51
TEXTILE MILL PRODUCTS						
12 Textile Yarn and Cloth	684.7	26,757.1	2.56	509.3	15,362.9	3.32
13 Carpets and Rugs	1,045.8	9,964.0	10.50	806.3	7,681.7	10.50
14 Other textile mill products (a)						
WEARING APPAREL						
15 Men's Clothing	1,303.1	22,182.1	5.87	820.6	13,765.6	5.96
16 Women's Clothing	1,895.7	23,003.4	8.24	1,324.5	16,329.5	8.11
17 Other wearing apparel products (a)						
LEATHER PRODUCTS AND FOOTWEAR						
18 Leather Footwear	310.8	3,564.9	8.72	248.1	2,654.3	9.35
19 Leather Tanning and Finishing	106.2	2,007.2	5.29	80.9	1,529.8	5.29
20 Other leather products (a)						
WOOD PRODUCTS, FURNITURE AND FIXTURE						
21 Sawmills, Planing and Other Woodmills	7,821.5	26,513.9	29.50	6,655.4	15,242.7	43.66
PAPER PRODUCTS, PRINTING AND PUBLISHING						
22 Pulp and Paper	14,863.4	39,436.6	37.69	10,381.6	25,177.1	41.23
23 Sanitary Paper Products	754.2	7,600.5	9.92	519.0	5,768.7	9.00
24 Other paper products (a)						
CHEMICALS, PETROLEUM AND COAL PRODUCTS						
25 Industrial Inorganic Chemicals	906.7	5,465.8	16.59	558.3	3,122.8	17.88
26 Agricultural Fertilizers	437.7	3,723.8	11.75	362.3	3,304.9	10.96
27 Manmade Fibres	922.3	14,345.4	6.43	540.1	7,408.2	7.29
28 Paints	778.4	9,603.0	8.11	495.3	5,867.6	8.44
29 Soap and Detergents	821.4	6,005.0	13.68	604.7	4,206.2	14.38
30 Printing Inks	202.4	2,370.3	8.54	124.7	1,473.1	8.46
31 Petroleum Refineries	10,659.7	119,530.8	8.92	8,415.9	97,144.0	8.66
32 Other Chemical Products (a)	1,900.1	1,319.9	143.96	1,344.3	933.8	143.96
RUBBER AND PLASTIC PRODUCTS						
33 Tires and Inner Tubes	1,284.7	10,721.5	11.98	1,024.3	8,548.5	11.98

TABLE B.3 (cont.)
Gross Value of Matched Output in Sample Industries,
Canada (1988)/USA (1987)

	at Canadian "prices"		Quantity Relative Canada/ USA (%)	at US "prices"		Quantity Relative Canada/ USA (%)
	Canada (1988 Can\$ million)	USA		Canada (1987 US\$ million)	USA	
NON-METALLIC MINERAL PRODUCTS						
34 Bricks	175.5	1,852.2	9.48	100.6	1,061.7	9.48
35 Cement	696.5	3,878.8	17.96	479.0	2,684.1	17.85
36 Concrete and Concrete Products	1,714.4	17,259.5	9.93	1,314.2	13,020.3	10.09
37 Lime	155.5	872.1	17.83	112.8	639.1	17.64
38 Other non-metallic mineral products (a)						
BASIC AND FABRICATED METAL PRODUCTS						
39 Iron and Steel	4,890.7	31,227.3	15.66	3,623.2	22,795.7	15.89
40 Primary Non-Ferrous Metals	1,553.8	11,611.1	13.38	816.2	6,099.1	13.38
41 Ferrous and Non-Ferrous Foundries	684.2	8,544.1	8.01	522.8	6,168.4	8.48
42 Other basic and fabricated products (a)						
ELECTRICAL MACHINERY AND EQUIPMENT						
43 Radio and TV Receivers	247.9	5,988.5	4.14	154.4	3,729.3	4.14
44 Lamps and Bulbs	235.2	2,399.0	9.80	177.0	1,805.0	9.80
45 Other electrical and machinery equipment (a)						
MACHINERY AND TRANSPORT EQUIPMENT						
46 Motor Vehicles and Equipment	13,882.7	106,788.1	13.00	11,598.0	91,236.3	12.71
47 Other Machinery & Transport Equipment (a)	288.0	3,520.2	8.18	200.2	1,804.3	11.09
Total Matched Output including other cat. (b)	95,478.6	754,233.2	12.66	69,957.8	534,862.4	13.08
Total Manufacturing	344,013.6				2,475,900.9	
Matched as % of Total	27.75				21.60	
Total Matched Output excluding other cat. (c)	92,392.9	741,236.1	12.46	67,930.5	528,598.8	12.85
Total Manufacturing	344,013.6				2,475,900.9	
Matched as % of Total	26.86				21.35	

Source: author's calculations. A complete statistical appendix with product matches can be obtained from the author on request.

Notes:

- (a) Additional matchings could be made for: Other Beverages, Other Chemical Products, and Other Machinery and Transport Equipment.
(b) Matched output *including* the categories Other Beverages, Other Chemical Products, and Other Machinery and Transport Equipment.
(c) Matched output *excluding* the categories Other Beverages, Other Chemical Products, and Other Machinery and Transport Equipment.

TABLE B.4
Coverage Ratios and Number of UVRs

	Canada 1988	USA 1987	Number UVRs
1. FOOD MANUFACTURING	43.14	40.96	59
1 Meat Products	77.89	75.09	17
2 Dairy Products	53.74	47.28	10
3 Fats and Oils	40.65	57.87	4
4 Grain Mill Products	67.61	34.85	6
5 Sugar & Sugar Factories	73.97	67.11	5
6 Roasted Coffee and Tea	54.11	32.35	2
7 Prepared Animal Feeds	62.79	70.99	15
8 Other food products (a)			
2. BEVERAGES	54.91	34.99	8
8 Malt and Malt Beverages	99.32	92.11	4
10 Other Beverages (a)			4
3. TOBACCO AND TOBACCO PRODUCTS	58.61	77.36	2
10 Tobacco and Tobacco Products	58.61	77.36	2
4. TEXTILE MILL PRODUCTS	24.30	36.70	5
11 Textile Yarn and Cloth	30.44	57.21	4
12 Carpets and Rugs	90.16	78.42	1
14 Other textile mill products (a)			
5. WEARING APPAREL	43.98	46.85	32
13 Men's Clothing	56.14	74.67	14
14 Women's Clothing	67.65	64.18	18
17 Other wearing apparel products (a)			
6. LEATHER PRODUCTS AND FOOTWEAR	28.51	46.07	6
15 Leather Footwear	33.08	65.17	5
16 Leather Tanning and Finishing	40.58	68.95	1
20 Other leather products (a)			
7. WOOD PRODUCTS, FURNITURE AND FIXTURE	37.58	14.22	9
17 Sawmills, Planing & Other Woodmills	72.87	62.62	9
8. PAPER PRODUCTS, PRINTING & PUBLISHING	39.23	12.62	11
18 Pulp and Paper	83.51	39.92	5
19 Sanitary Paper Products	28.38	49.31	6
24 Other paper products (a)			
9. CHEMICALS, PETROLEUM & COAL PRODUCT	39.94	34.30	36
20 Industrial Inorganic Chemicals	30.13	21.16	8
21 Agricultural Fertilizers	24.58	41.47	6
22 Manmade Fibres	78.97	64.81	2
23 Paints	41.47	46.20	5
24 Soap and Detergents	49.41	36.39	4
25 Printing Inks	58.99	49.74	3
26 Petroleum Refineries	73.71	82.17	7
27 Other Chemicals (a)			1
10. RUBBER AND PLASTIC PRODUCTS	12.40	9.87	1
28 Tires and Inner Tubes	95.67	81.98	1
11. NON-METALLIC MINERAL PRODUCTS	31.23	28.31	9
29 Bricks	48.99	84.67	1
30 Cement	67.90	62.11	2
31 Concrete and Concrete Products	53.50	61.86	4
32 Lime	85.72	89.32	2
38 Other non-metallic mineral products (a)			
12. BASIC AND FABRICATED METAL PRODUCTS	16.78	13.10	9
33 Iron and Steel	44.72	47.75	5
34 Primary Non-Ferrous Metals	21.53	39.86	1
35 Ferrous and Non-Ferrous Foundries	74.88	36.41	3
42 Other basic and fabricated products (a)			
13. ELECTRICAL MACHINERY & EQUIPMENT	2.32	3.23	2
36 Radio and TV Receivers	31.44	63.09	1
37 Lamps and Bulbs	17.36	58.29	1
45 Other electrical and machinery equipment (a)			
14. MACHINERY & TRANSPORT EQUIPMENT	17.07	16.90	11
38 Motor Vehicles and Transport Equipment	24.66	44.86	7
39 Other Machinery and Transport Equipment (a)			4
Total manufacturing	27.75	21.60	200

Source: tables B.1, B.2, and B.3.

Notes:

(a) Additional matches could be made for: Other Beverages, Other Chemical Products, and Other Machinery and Transport Equipment. The products did not cover a complete industry.

TABLE B.5
Sample Industry UVRs, Canada/USA (Can\$ to the US\$) 1988/1987,
and Producer Price Indices (Canada 1987/1988)

	UVR: Can\$/US\$			Producer
	US Quantity Weights	Canadian Quantity Weights	Geometric Average	Price Index Canada 1987/1988
FOOD MANUFACTURING				
1 Meat Products	1.431	1.391	1.411	1.017
2 Dairy Products	1.742	1.784	1.763	0.967
3 Fats and Oils	1.511	1.416	1.463	0.808
4 Grain Mill Products	2.273	2.129	2.200	0.954
5 Sugar & Sugar Factories	1.294	1.303	1.299	0.959
6 Roasted Coffee and Tea	1.379	1.374	1.377	1.032
7 Prepared Animal Feeds	1.717	1.447	1.576	0.874
8 Other food products (a)	1.545	1.503	1.524	0.967
BEVERAGES				
9 Malt and Malt Beverages	1.861	1.798	1.829	0.940
10 Other Beverages (a)	1.958	1.812	1.883	0.963
TOBACCO AND TOBACCO PRODUCTS				
11 Tobacco and Tobacco Products	0.939	1.139	1.034	0.959
TEXTILE MILL PRODUCTS				
12 Textile Yarn and Cloth	1.742	1.344	1.530	0.963
13 Carpets and Rugs	1.297	1.297	1.297	0.968
14 Other textile mill products (a)	1.593	1.315	1.448	0.963
WEARING APPAREL				
15 Men's Clothing	1.611	1.588	1.600	0.958
16 Women's Clothing	1.409	1.431	1.420	0.976
17 Other wearing apparel products (a)	1.474	1.215	1.338	0.972
LEATHER PRODUCTS AND FOOTWEAR				
18 Leather Footwear	1.343	1.253	1.297	0.942
19 Leather Tanning and Finishing	1.312	1.312	1.312	0.925
20 Other leather products (a)	1.332	1.267	1.299	0.941
WOOD PRODUCTS, FURNITURE AND FIXTURE				
21 Sawmills, Planing and Other Woodmills	1.739	1.175	1.430	0.983
PAPER PRODUCTS, PRINTING AND PUBLISHING				
22 Pulp and Paper	1.566	1.432	1.498	0.903
23 Sanitary Paper Products	1.318	1.453	1.384	0.929
24 Other paper products (a)	1.520	1.433	1.476	0.912
CHEMICALS, PETROLEUM AND COAL PRODUCTS				
25 Industrial Inorganic Chemicals	1.750	1.624	1.686	0.957
26 Agricultural Fertilizers	1.127	1.208	1.167	0.960
27 Manmade Fibres	1.936	1.708	1.818	0.963
28 Paints	1.637	1.572	1.604	0.955
29 Soap and Detergents	1.428	1.358	1.393	0.958
30 Printing Inks	1.609	1.624	1.616	0.980
31 Petroleum Refineries	1.230	1.267	1.248	1.077
32 Other Chemical Products (a)	1.315	1.336	1.326	0.901
RUBBER AND PLASTIC PRODUCTS				
33 Tires and Inner Tubes	1.254	1.254	1.254	0.982

TABLE B.5 (cont.)
Sample Industry UVRs, Canada/USA (Can\$ to the US\$) 1988/1987,
and Producer Price Indices (Canada 1987/1988)

	UVR: Can\$/US\$			Producer Price Index Canada 1987/1988
	US Quantity Weights	Canadian Quantity Weights	Geometric Average	
NON-METALLIC MINERAL PRODUCTS				
34 Bricks	1.745	1.745	1.745	0.956
35 Cement	1.445	1.454	1.450	0.987
36 Concrete and Concrete Products	1.326	1.305	1.315	0.941
37 Lime	1.365	1.379	1.372	0.947
38 Other non-metallic mineral products (a)	1.371	1.367	1.369	0.959
BASIC AND FABRICATED METAL PRODUCTS				
39 Iron and Steel	1.370	1.350	1.360	0.947
40 Primary Non-Ferrous Metals	1.904	1.904	1.904	0.753
41 Ferrous and Non-Ferrous Foundries	1.385	1.309	1.346	0.977
42 Other basic and fabricated products (a)	1.465	1.437	1.451	0.902
ELECTRICAL MACHINERY AND EQUIPMENT				
43 Radio and TV Receivers	1.606	1.606	1.606	1.028
44 Lamps and Bulbs	1.329	1.329	1.329	0.977
45 Other electrical and machinery equipment (a)	1.516	1.458	1.487	0.964
MACHINERY AND TRANSPORT EQUIPMENT				
46 Motor Vehicles and Equipment	1.170	1.197	1.184	1.032
47 Other Machinery & Transport Equipment (a)	1.186	1.201	1.193	1.027
Total Manufacturing	1.410	1.365	1.387	0.959

Source: unit value ratios are derived from table B.3, price indices from Catalogue no. 62-558, Industrial Product Price Indices, Statistics Canada, Ottawa, 1991.

Notes:

(a) For the Other Industries the price indices on branchlevel have been used.

(b) The unit value ratio for the other categories is the quantity weighed unit value ratio from the matched gross value of output from table B.3. For three other categories, i.e. Other Beverages, Other Chemicals, and Other Machinery and Transport Equipment, additional matches were made. The value of this has been taken into account.

TABLE B.6
Sample Industry Unit Value Ratios
Canada/USA (Can\$ to the US\$), 1987

	UVR: Can\$/US\$			Relative Price Level Canada (USA = 100) (a)
	US Quantity Weights	Canadian Quantity Weights	Geometric Average	
FOOD MANUFACTURING				
1 Meat Products	1.455	1.414	1.434	108.17
2 Dairy Products	1.685	1.725	1.705	128.56
3 Fats and Oils	1.221	1.144	1.182	89.14
4 Grain Mill Products	2.168	2.030	2.098	158.20
5 Sugar & Sugar Factories	1.242	1.249	1.245	93.93
6 Roasted Coffee and Tea	1.423	1.418	1.420	107.11
7 Prepared Animal Feeds	1.500	1.264	1.377	103.85
8 Other food products	1.494	1.454	1.474	111.13
BEVERAGES				
9 Malt and Malt Beverages	1.750	1.690	1.720	129.69
10 Other Beverages	1.886	1.746	1.815	136.85
TOBACCO AND TOBACCO PRODUCTS				
11 Tobacco and Tobacco Products	0.900	1.092	0.991	74.77
TEXTILE MILL PRODUCTS				
12 Textile Yarn and Cloth	1.678	1.295	1.474	111.18
13 Carpets and Rugs	1.256	1.256	1.256	94.72
14 Other textile mill products	1.535	1.267	1.395	105.19
WEARING APPAREL				
15 Men's Clothing	1.544	1.522	1.533	115.62
16 Women's Clothing	1.375	1.397	1.386	104.52
17 Other wearing apparel products	1.433	1.181	1.301	98.09
LEATHER PRODUCTS AND FOOTWEAR				
18 Leather Footwear	1.265	1.180	1.222	92.14
19 Leather Tanning and Finishing	1.214	1.214	1.214	91.54
20 Other leather products	1.254	1.193	1.223	92.23
WOOD PRODUCTS, FURNITURE AND FIXTURE				
21 Sawmills, Planing and Other Woodmills	1.710	1.155	1.405	105.97
PAPER PRODUCTS, PRINTING AND PUBLISHING				
22 Pulp and Paper	1.414	1.292	1.352	101.95
23 Sanitary Paper Products	1.223	1.349	1.285	96.90
24 Other paper products	1.387	1.307	1.346	101.54
CHEMICALS, PETROLEUM AND COAL PRODUCTS				
25 Industrial Inorganic Chemicals	1.675	1.554	1.613	121.66
26 Agricultural Fertilizers	1.082	1.160	1.120	84.50
27 Manmade Fibres	1.866	1.645	1.752	132.12
28 Paints	1.562	1.500	1.531	115.45
29 Soap and Detergents	1.368	1.301	1.334	100.61
30 Printing Inks	1.577	1.592	1.584	119.48
31 Petroleum Refineries	1.325	1.364	1.345	101.41
32 Other Chemical Products	1.185	1.204	1.195	90.09
RUBBER AND PLASTIC PRODUCTS				
33 Tires and Inner Tubes	1.232	1.232	1.232	92.90

TABLE B.6 (cont.)
Sample Industry Unit Value Ratios
Canada/USA (Can\$ to the US\$), 1987

	UVR: Can\$/US\$			Relative Price Level Canada (USA = 100) (a)
	US Quantity Weights	Canadian Quantity Weights	Geometric Average	
NON-METALLIC MINERAL PRODUCTS				
34 Bricks	1.667	1.667	1.667	125.71
35 Cement	1.427	1.436	1.431	107.93
36 Concrete and Concrete Products	1.247	1.228	1.237	93.32
37 Lime	1.293	1.306	1.299	97.99
38 Other non-metallic mineral products	1.314	1.310	1.312	98.95
BASIC AND FABRICATED METAL PRODUCTS				
39 Iron and Steel	1.297	1.278	1.287	97.07
40 Primary Non-Ferrous Metals	1.434	1.434	1.434	108.11
41 Ferrous and Non-Ferrous Foundries	1.353	1.278	1.315	99.18
42 Other basic and fabricated products	1.322	1.296	1.309	98.68
ELECTRICAL MACHINERY AND EQUIPMENT				
43 Radio and TV Receivers	1.651	1.651	1.651	124.49
44 Lamps and Bulbs	1.298	1.298	1.298	97.92
45 Other electrical and machinery equipment	1.461	1.406	1.433	108.07
MACHINERY AND TRANSPORT EQUIPMENT				
46 Motor Vehicles and Equipment	1.207	1.235	1.221	92.08
47 Other Machinery & Transport Equipment	1.217	1.233	1.225	92.40
Total Manufacturing	1.352	1.309	1.330	100.33
Exchange Rate	1.326	1.326	1.326	

Source: derived from table B.5 by multiplying the unit value ratio with the price index.

Notes:

(a) The relative price level is the geometric average of the unit value ratio with the price index.

TABLE B.7
Gross Value Added (US Census Concept) in Sample Industries, Canada/USA, 1987

	at Canadian "prices"		Quantity relative Canada/ USA (%)	at US "prices"		Quantity relative Canada/ USA (%)
	Canada 1987 (1987 Can\$ million)	USA 1987 (1987 US\$ million)		Canada 1987 (1987 US\$ million)	USA 1987 (1987 US\$ million)	
FOOD MANUFACTURING						
1 Meat Products	2,525.3	20,099.1	12.56	1,785.9	13,815.3	12.93
2 Dairy Products	2,108.7	19,952.1	10.57	1,222.4	11,843.6	10.32
3 Fats and Oils	122.8	3,924.6	3.13	107.3	3,214.1	3.34
4 Grain Mill Products	580.5	10,165.6	5.71	285.9	4,690.0	6.10
5 Sugar & Sugar Factories	784.2	4,762.1	16.47	627.7	3,835.5	16.37
6 Roasted Coffee and Tea	392.2	10,978.8	3.57	276.6	7,716.2	3.59
7 Prepared Animal Feeds	560.5	8,036.6	6.97	443.3	5,357.7	8.27
8 Other food products	5,736.0	72,523.4	7.91	3,946.0	48,545.7	8.13
BEVERAGES						
9 Malt and Malt Beverages	1,631.1	13,016.2	12.53	965.1	7,438.4	12.98
10 Other Beverages	1,536.4	28,568.9	5.38	880.1	15,146.4	5.81
TOBACCO AND TOBACCO PRODUCTS						
11 Tobacco and Tobacco Products	983.5	12,841.6	7.66	900.7	14,263.8	6.31
TEXTILE MILL PRODUCTS						
12 Textile Yarn and Cloth	907.6	18,627.1	4.87	700.8	11,101.1	6.31
13 Carpets and Rugs	324.9	3,843.1	8.45	258.7	3,059.9	8.45
14 Other textile mill products	1,635.9	17,653.2	9.27	1,290.9	11,499.1	11.23
WEARING APPAREL						
15 Men's Clothing	1,139.5	15,976.3	7.13	748.7	10,345.1	7.24
16 Women's Clothing	1,218.6	17,534.9	6.95	872.3	12,752.3	6.84
17 Other wearing apparel products	1,022.6	13,492.9	7.58	866.0	9,418.2	9.20
LEATHER PRODUCTS AND FOOTWEAR						
18 Leather Footwear	477.1	2,723.3	17.52	404.3	2,152.6	18.78
19 Leather Tanning and Finishing	73.2	907.2	8.07	60.3	747.4	8.07
20 Other leather products	109.7	1,852.7	5.92	92.0	1,477.9	6.22
WOOD PRODUCTS, FURNITURE AND FIXTURE						
21 Sawmills, Planing and Other Woodmills	4,469.6	16,179.5	27.63	3,869.7	9,464.1	40.89
PAPER PRODUCTS, PRINTING AND PUBLISHING						
22 Pulp and Paper	7,976.2	40,576.2	19.66	6,171.2	28,695.2	21.51
23 Sanitary Paper Products	816.7	7,719.0	10.58	605.2	6,309.3	9.59
24 Other paper products	9,257.8	146,506.6	6.32	7,082.4	105,646.5	6.70
CHEMICALS, PETROLEUM AND COAL PRODUCTS						
25 Industrial Inorganic Chemicals	1,370.8	13,835.6	9.91	882.2	8,261.6	10.68
26 Agricultural Fertilizers	512.1	2,711.9	18.89	441.4	2,506.2	17.61
27 Manmade Fibres	543.6	10,631.7	5.11	330.4	5,698.9	5.80
28 Paints	703.0	9,717.4	7.23	468.6	6,220.5	7.53
29 Soap and Detergents	785.4	8,058.8	9.75	603.5	5,892.1	10.24
30 Printing Inks	130.1	1,983.7	6.56	81.8	1,257.7	6.50
31 Petroleum Refineries	1,860.1	18,850.4	9.87	1,363.4	14,223.3	9.59
32 Other Chemical Products	6,314.7	114,364.5	5.52	5,244.2	96,493.3	5.43
RUBBER AND PLASTIC PRODUCTS						
33 Tires and Inner Tubes	648.4	6,848.3	9.47	526.4	5,559.4	9.47

TABLE B.7 (cont.)
Gross Value Added (US Census Concept) in Sample Industries, Canada/USA, 1987

	at Canadian "prices"		Quantity relative Canada/ USA (%)	at US "prices"		Quantity relative Canada/ USA (%)
	Canada 1987 (1987 Can\$ million)	USA 1987		Canada 1987 (1987 US\$ million)	USA 1987	
NON-METALLIC MINERAL PRODUCTS						
34 Bricks	278.7	1,286.7	21.66	167.2	771.9	21.66
35 Cement	558.4	3,261.8	17.12	389.0	2,286.3	17.01
36 Concrete and Concrete Products	1,339.2	12,620.6	10.61	1,090.9	10,117.7	10.78
37 Lime	87.4	452.9	19.30	66.9	350.4	19.10
38 Other non-metallic mineral products	1,899.3	26,096.7	7.28	1,450.0	19,856.8	7.30
BASIC AND FABRICATED METAL PRODUCTS						
39 Iron and Steel	3,810.0	24,356.1	15.64	2,981.8	18,782.6	15.88
40 Primary Non-Ferrous Metals	3,050.9	5,655.9	53.94	2,128.2	3,945.3	53.94
41 Ferrous and Non-Ferrous Foundries	479.7	13,007.3	3.69	375.2	9,614.2	3.90
42 Other basic and fabricated products	9,190.8	117,274.1	7.84	7,093.8	88,736.3	7.99
ELECTRICAL MACHINERY AND EQUIPMENT						
43 Radio and TV Receivers	306.0	2,809.8	10.89	185.3	1,702.1	10.89
44 Lamps and Bulbs	510.3	2,759.7	18.49	393.0	2,125.5	18.49
45 Other electrical and machinery equipment	7,885.1	134,400.9	5.87	5,609.8	91,987.7	6.10
MACHINERY AND TRANSPORT EQUIPMENT						
46 Motor Vehicles and Equipment	8,245.1	79,270.2	10.40	6,677.4	65,652.6	10.17
47 Other Machinery & Transport Equipment	10,834.4	230,808.6	4.69	8,785.7	189,611.0	4.63
Total Manufacturing	52,311.2	435,118.3	12.02	39,969.3	321,769.9	12.42

Source: derived from tables B.1, B.2 and B.6. Unit value ratios from table B.6 are used to transform gross value added.

TABLE B.8
Gross Value Added per Employee in Sample Industries, Canada/USA 1987

	at Canadian "prices"			at US "prices"		
	Canada	USA	Canada/ USA	Canada	USA	Canada/ USA
	(1987 1000 Can\$)		(%)	(1987 US\$)		(%)
FOOD MANUFACTURING						
1 Meat Products	58.1	59.1	98.30	41,095	40,633	101.14
2 Dairy Products	82.4	141.0	58.46	47,782	83,700	57.09
3 Fats and Oils	113.7	130.4	87.17	99,339	106,781	93.03
4 Grain Mill Products	94.6	299.0	31.64	46,594	137,941	33.78
5 Sugar & Sugar Factories	72.5	133.0	54.52	58,051	107,137	54.18
6 Roasted Coffee and Tea	114.4	160.0	71.45	80,651	112,481	71.70
7 Prepared Animal Feeds	63.8	167.8	38.00	50,435	111,852	45.09
8 Other food products (a)	58.6	105.7	55.46	40,317	70,738	56.99
BEVERAGES						
9 Malt and Malt Beverages	118.6	390.9	30.34	70,162	223,375	31.41
10 Other Beverages (a)	87.3	204.6	42.65	49,989	108,477	46.08
TOBACCO AND TOBACCO PRODUCTS						
11 Tobacco and Tobacco Products	165.4	287.3	57.56	151,437	319,101	47.46
TEXTILE MILL PRODUCTS						
12 Textile Yarn and Cloth	46.3	63.3	73.11	35,738	37,733	94.71
13 Carpets and Rugs	54.6	72.1	75.76	43,494	57,409	75.76
14 Other textile mill products (a)	46.5	50.2	92.65	36,726	32,724	112.23
WEARING APPAREL						
15 Men's Clothing	30.0	48.5	61.88	19,708	31,387	62.79
16 Women's Clothing	28.8	37.8	76.33	20,636	27,466	75.13
17 Other wearing apparel products (a)	32.2	42.2	76.38	27,283	29,441	92.67
LEATHER PRODUCTS AND FOOTWEAR						
18 Leather Footwear	30.3	38.3	79.09	25,672	30,276	84.79
19 Leather Tanning and Finishing	42.8	62.1	68.81	35,227	51,192	68.81
20 Other leather products (a)	25.4	37.1	68.55	21,293	29,558	72.04
WOOD PRODUCTS, FURNITURE AND FIXTURE						
21 Sawmills, Planing and Other Woodmills	60.9	77.9	78.17	52,742	45,588	115.69
PAPER PRODUCTS, PRINTING AND PUBLISHING						
22 Pulp and Paper	103.7	148.7	69.74	80,256	105,188	76.30
23 Sanitary Paper Products	61.7	201.0	30.71	45,753	164,305	27.85
24 Other paper products (a)	59.1	76.2	77.46	45,178	54,976	82.18
CHEMICALS, PETROLEUM AND COAL PRODUCTS						
25 Industrial Inorganic Chemicals	144.5	179.2	80.62	92,989	107,016	86.89
26 Agricultural Fertilizers	90.2	112.1	80.52	77,767	103,562	75.09
27 Manmade Fibres	85.9	189.2	45.42	52,222	101,404	51.50
28 Paints	103.9	176.0	59.04	69,287	112,690	61.48
29 Soap and Detergents	91.1	254.2	35.82	69,968	185,871	37.64
30 Printing Inks	72.8	261.0	27.90	45,759	165,487	27.65
31 Petroleum Refineries	140.4	252.7	55.55	102,884	190,661	53.96
32 Other Chemical Products (a)	116.3	132.5	87.72	96,545	111,824	86.34
RUBBER AND PLASTIC PRODUCTS						
33 Tires and Inner Tubes	57.3	104.7	54.73	46,523	85,006	54.73

TABLE B.8 (cont.)
Gross Value Added per Employee in Sample Industries, Canada/USA 1987

	at Canadian "prices"			at US "prices"		
	Canada	USA	Canada/ USA	Canada	USA	Canada/ USA
	(1987 1000 Can\$)	(1987 1000 Can\$)	(%)	(1987 US\$)	(1987 US\$)	(%)
NON-METALLIC MINERAL PRODUCTS						
34 Bricks	70.9	77.5	91.48	42,537	46,500	91.48
35 Cement	153.2	169.9	90.16	106,691	119,078	89.60
36 Concrete and Concrete Products	60.3	68.0	88.59	49,097	54,543	90.02
37 Lime	111.5	79.5	140.33	85,370	61,474	138.87
38 Other non-metallic mineral products (a)	72.4	79.8	90.74	55,251	60,687	91.04
BASIC AND FABRICATED METAL PRODUCTS						
39 Iron and Steel	74.0	108.3	68.37	57,948	83,515	69.39
40 Primary Non-Ferrous Metals	103.8	128.3	80.92	72,394	89,463	80.92
41 Ferrous and Non-Ferrous Foundries	61.0	62.1	98.20	47,741	45,935	103.93
42 Other basic and fabricated products (a)	53.3	67.0	79.61	41,165	50,689	81.21
ELECTRICAL MACHINERY AND EQUIPMENT						
43 Radio and TV Receivers	92.8	90.9	102.03	56,201	55,084	102.03
44 Lamps and Bulbs	62.6	124.3	50.38	48,237	95,743	50.38
45 Other electrical and machinery equipment (a)	59.6	82.1	72.51	42,373	56,217	75.37
MACHINERY AND TRANSPORT EQUIPMENT						
46 Motor Vehicles and Equipment	79.3	107.3	73.94	64,252	88,864	72.30
47 Other Machinery & Transport Equipment (a)	55.0	71.5	76.95	44,628	58,758	75.95
Total Manufacturing	74.3	98.6	75.37	56,802	72,946	77.87

Source: value added figures from table B.7; divided by employment figures from tables B.1 and B.2.

Table C.1
Gross Value Added (Census Concept), by Major Manufacturing Branch
Canada and the USA, 1987

	at Canadian prices		at US prices		Geometric Average	
	Canada	USA	Canada/USA	USA		
	(in million Can\$)		(in million US\$)		(%)	
1 Food Manufacturing	12,810.2	150,442.3	8.51	8,695.2	99,018.1	8.78
2 Beverages	3,167.5	41,585.0	7.62	1,845.2	22,584.8	8.17
3 Tobacco Products	983.5	12,841.6	7.66	900.7	14,263.8	6.31
4 Textile Mill Products	2,868.4	40,123.4	7.15	2,250.3	25,660.1	8.77
5 Wearing Apparel	3,380.6	47,004.1	7.19	2,487.0	32,515.6	7.65
6 Leather Products and Footwear	660.1	5,483.1	12.04	556.6	4,377.9	12.71
7 Wood Products, Furniture & Fixtures	8,766.9	83,726.1	10.47	7,590.2	48,975.0	15.50
8 Paper Products, Printing & Publishing	18,050.6	194,801.8	9.27	13,858.8	140,651.0	9.85
9 Chemicals, Petroleum & Coal Products	12,219.8	178,541.9	6.84	9,415.4	139,295.9	6.76
10 Rubber & Plastic Products	3,771.0	54,739.0	6.89	3,061.2	44,436.8	6.89
11 Non-metallic Mineral Products	4,163.0	43,718.8	9.52	3,163.9	33,383.1	9.48
12 Basic & Fabricated Metal Products	16,531.4	160,293.5	10.31	12,579.0	121,078.4	10.39
13 Machinery & Transport Equipment	19,079.5	310,078.8	6.15	15,463.1	255,263.6	6.06
14 Electrical Machinery & Equipment	8,701.4	139,970.4	6.22	6,188.1	95,815.3	6.46
15 Other Manufacturing Industries	3,135.8	119,577.4	2.62	2,396.0	88,427.5	2.71
Total Manufacturing	118,289.6	1,582,927.2	7.47	90,450.9	1,165,746.9	7.76

Source: census value added in national currency from tables A.1 and A.2; converted with UVRs from table B.7.

Table C.2
Gross Value Added (Census Concept) per Person Employed
Canada and the USA, 1987

	at Canadian Prices		at US Prices		Geometric		
	Canada	USA	Canada/	USA	Canada/	Average	
	(in 1000 Can\$)	(in 1000 US\$)	USA (%)	(in US\$)	USA (%)	Canada/ USA (%)	
1 Food Manufacturing	65.0	108.7	59.8	44,101	71,536	61.6	60.7
2 Beverages	101.0	240.5	42.0	58,838	130,603	45.1	43.5
3 Tobacco Products	165.4	202.2	81.8	151,437	224,627	67.4	74.2
4 Textile Mill Products	47.3	57.4	82.3	37,070	36,715	101.0	91.2
5 Wearing Apparel	30.2	42.2	71.5	22,205	29,193	76.1	73.8
6 Leather Products and Footwear	30.3	40.4	75.0	25,554	32,262	79.2	77.1
7 Wood Products, Furniture & Fixtures	47.8	67.8	70.6	41,422	39,653	104.5	85.9
8 Paper Products, Printing & Publishing	73.1	87.2	83.8	56,134	62,990	89.1	86.4
9 Chemicals, Petroleum & Coal Products	117.0	151.1	77.5	90,144	117,848	76.5	77.0
10 Rubber & Plastic Products	54.7	63.4	86.3	44,438	51,473	86.3	86.3
11 Non-metallic Mineral Products	73.3	78.9	92.9	55,681	60,237	92.4	92.7
12 Basic & Fabricated Metal Products	63.3	71.9	88.1	48,188	54,322	88.7	88.4
13 Machinery & Transport Equipment	63.4	78.2	81.1	51,408	64,366	79.9	80.5
14 Electrical Machinery & Equipment	60.5	82.9	73.0	43,022	56,716	75.9	74.4
15 Other Manufacturing Industries	45.2	83.6	54.1	34,538	61,842	55.8	54.9
Total Manufacturing	63.5	83.5	76.0	48,518	61,515	78.9	77.4

Source: gross value added from table C.1; employment from tables A.1 and A2.

Table C.3
Gross Value Added (Census Concept) per Hour Worked
Canada and the USA, 1987

	at Canadian Prices		at US Prices		Geometric	
	Canada (in 1000 Can\$)	USA	Canada/ USA (%)	Canada (in US\$)	USA (%)	Average Canada/ USA (%)
1 Food Manufacturing	35,524.4	57,416.3	61.9	24,113,027	37,790,283	63.8
2 Beverages	55,040.2	128,865.9	42.7	32,063,752	69,986,985	45.8
3 Tobacco Products	106,236.0	109,104.7	97.4	97,294,200	121,187,766	80.3
4 Textile Mill Products	25,329.1	27,964.4	90.6	19,871,210	17,884,095	111.1
5 Wearing Apparel	16,043.9	23,523.2	68.2	11,803,005	16,272,445	72.5
6 Leather Products and Footwear	17,172.4	21,923.8	78.3	14,481,437	17,504,598	82.7
7 Wood Products, Furniture & Fixtures	25,143.2	34,516.2	72.8	21,768,496	20,190,048	107.8
8 Paper Products, Printing & Publishing	41,355.4	47,233.8	87.6	31,751,744	34,103,826	93.1
9 Chemicals, Petroleum & Coal Product	65,784.4	78,590.5	83.7	50,687,239	61,315,213	82.7
10 Rubber & Plastic Products	29,404.4	31,927.1	92.1	23,870,268	25,918,227	92.1
11 Non-metallic Mineral Products	38,652.1	39,382.7	98.1	29,375,916	30,072,156	97.7
12 Basic & Fabricated Metal Products	34,001.9	36,767.1	92.5	25,872,691	27,772,186	93.2
13 Machinery & Transport Equipment	32,040.4	41,043.9	78.1	25,967,242	33,788,267	76.9
14 Electrical Machinery & Equipment	32,707.3	44,140.8	74.1	23,260,345	30,216,115	77.0
15 Other Manufacturing Industries	25,022.8	44,363.5	56.4	19,119,089	32,806,819	58.3
Total Manufacturing	34,091.3	43,762.5	77.9	26,068,167	32,228,861	80.9

Source: gross value added from table C.1; hours worked from tables A.1 and A2.

Table D.1
Real GDP per Person Employed, USA, 1961-1990 (1982 US \$)

	Products										Products										Other Manufacturing Industries		Total Manufacturing
	Food & Kindred Products	Tobacco Products	Textile Mill Products	Wearing Apparel	Leather Products & Footwear	Wood Furniture & Fixture	Paper Products, Printing & Publishing	Chemicals, Petroleum & Coal Products	Rubber, Plastic Products	Non-Metallic Mineral Products	Basic & Fabricated Metal Products	Machinery Transport Equipment	Electrical Machinery Equipment	Other Manufacturing Industries	Total Manufacturing								
1961	18,606	83,671	7,610	9,742	11,777	12,960	22,622	32,795	17,661	24,637	29,024	26,248	12,414	18,499	20,930								
1962	19,517	86,742	7,999	9,918	12,736	13,067	23,166	35,080	18,207	25,541	30,140	28,292	13,073	19,536	21,974								
1963	21,077	88,398	10,285	10,238	13,231	15,152	24,378	37,536	19,443	27,311	31,656	30,093	14,584	20,017	23,564								
1964	21,257	83,123	10,920	10,419	13,668	17,054	26,163	39,496	20,375	28,418	33,572	31,688	15,606	20,432	24,826								
1965	22,060	85,132	11,553	11,027	14,231	18,532	26,482	41,359	20,602	28,762	34,658	32,825	17,400	21,457	25,865								
1966	23,114	89,529	12,061	11,502	14,581	18,022	27,015	41,182	20,570	28,247	35,244	32,760	17,463	22,131	26,168								
1967	22,605	91,574	11,733	11,324	13,505	18,305	26,201	40,659	20,415	27,943	34,292	32,082	17,579	22,180	25,777								
1968	23,073	95,009	11,898	11,747	13,914	18,762	27,292	43,307	21,536	28,788	34,410	33,545	18,219	23,493	26,656								
1969	23,935	100,370	12,042	11,672	13,872	18,447	28,342	42,607	22,141	29,392	34,294	32,967	18,999	24,946	26,860								
1970	24,447	106,482	13,069	11,281	13,589	18,346	26,882	45,449	20,244	28,917	33,007	32,070	18,592	23,693	26,419								
1971	25,834	114,661	13,878	11,611	14,445	18,809	28,540	49,861	22,038	29,902	34,032	35,204	20,143	25,596	28,100								
1972	27,855	117,734	14,272	13,300	14,999	20,816	30,392	52,882	23,281	31,801	36,234	37,131	21,748	27,353	29,899								
1973	30,165	119,762	13,595	13,961	16,286	20,742	32,487	56,625	24,868	33,366	38,839	38,356	22,569	27,121	31,370								
1974	27,316	121,084	12,741	13,744	16,666	20,811	31,100	51,381	23,192	31,557	37,360	36,381	20,838	26,256	29,879								
1975	28,770	135,748	13,586	14,750	17,903	22,112	30,239	50,695	24,555	31,191	33,753	36,509	22,288	28,820	30,184								
1976	30,105	137,247	15,712	14,849	18,535	22,830	32,145	56,138	23,583	33,779	35,690	39,467	23,534	29,657	31,937								
1977	29,713	135,714	19,214	15,442	17,910	22,563	32,948	59,626	24,861	33,236	35,691	40,863	26,621	30,748	33,058								
1978	32,123	143,478	18,043	15,739	18,015	22,287	33,113	59,480	25,000	32,542	36,470	39,640	27,726	28,437	33,081								
1979	33,673	143,478	18,973	16,003	16,216	23,675	32,414	61,538	24,874	32,104	36,330	37,460	28,276	28,835	33,075								
1980	34,328	141,176	19,092	16,256	17,623	24,708	30,754	55,060	25,375	31,095	36,563	35,695	29,943	26,894	32,404								
1981	34,344	143,478	18,945	15,897	17,460	21,377	31,086	56,992	27,882	30,699	37,769	35,361	30,657	30,092	32,794								
1982	36,635	130,882	19,499	15,882	17,672	22,546	31,710	61,783	27,730	30,847	34,271	34,970	30,383	29,152	32,872								
1983	38,162	123,077	21,457	16,877	17,593	24,293	32,870	71,830	30,168	33,333	34,937	41,839	31,760	28,722	35,624								
1984	38,005	123,810	21,025	16,639	18,090	25,213	32,381	79,887	31,187	34,355	37,310	46,808	32,989	33,767	37,837								
1985	39,803	100,000	21,849	17,463	18,182	24,806	32,896	80,277	33,586	36,453	39,249	51,349	33,650	32,461	39,553								
1986	39,709	120,690	23,743	18,502	17,089	25,517	33,333	88,452	33,459	37,914	39,438	54,684	34,756	35,009	41,269								
1987	39,988	94,545	23,577	19,435	19,608	27,856	34,326	95,896	35,628	36,304	43,180	57,955	39,722	36,185	43,683								
1988	41,787	88,727	23,166	20,371	20,728	26,625	34,085	99,133	35,175	37,198	42,537	61,479	41,572	42,108	45,242								
1989	40,220	80,000	24,473	21,430	21,429	26,379	34,118	100,141	36,829	38,860	41,310	62,436	45,125	42,123	45,860								
1990	40,670	78,431	25,522	21,342	23,377	25,722	34,152	91,140	37,172	39,602	41,895	62,575	45,490	44,691	45,728								

Source: ICOP database, Groningen Growth and Development Centre, University of Groningen, 1995.

Table D.2
Real GDP per Hour Worked, USA, 1961-1990 (1982 constant prices)

Year	Food & Kindred Products		Tobacco Products		Textile Mill Products		Wearing Apparel		Leather Products & Footwear		Wood Furniture & Fixture		Paper Products, Printing & Publishing		Chemicals, Petroleum & Coal Products		Rubber & Plastic Products		Metallic Mineral Products		Basic & Fabricated Metal Products		Machinery & Electrical Equipment		Other Manufacturing Industries		Total
1961	48.55	233.85	19.77	28.71	33.16	68.27	122.56	126.35	46.54	66.41	156.47	34.00	101.79	57.01													
1962	50.86	245.21	20.45	28.60	35.71	68.52	125.52	133.01	47.30	68.29	159.66	35.15	106.08	59.00													
1963	54.90	249.24	26.29	29.57	37.20	78.41	132.13	140.88	50.63	72.29	165.67	39.12	108.65	63.06													
1964	55.34	233.77	27.64	30.26	38.03	87.37	140.54	146.60	52.53	74.52	173.67	41.27	110.11	65.94													
1965	57.31	245.36	28.78	31.55	39.32	94.46	141.59	150.42	52.27	74.93	177.72	45.31	114.03	67.92													
1966	59.73	251.40	29.90	32.80	39.86	92.73	143.09	147.08	52.18	73.45	179.14	44.74	115.79	68.23													
1967	59.09	260.26	29.92	32.80	37.47	96.51	140.63	145.57	52.76	73.81	178.08	46.61	118.86	68.84													
1968	60.72	276.19	30.25	34.07	38.67	98.37	147.08	154.89	55.74	75.87	177.24	49.10	126.88	71.31													
1969	63.33	296.95	31.07	34.21	39.88	97.59	153.73	152.25	57.97	77.57	177.16	50.83	134.58	72.26													
1970	65.31	312.72	34.61	33.72	39.22	98.77	148.61	164.66	54.45	77.90	176.76	51.62	131.53	72.94													
1971	69.22	336.37	36.00	34.39	41.11	99.57	156.98	181.37	58.97	79.58	183.15	56.54	143.65	77.50													
1972	73.87	345.73	36.27	38.77	41.71	109.44	165.22	190.57	60.81	83.44	188.43	58.58	148.74	80.49													
1973	80.97	344.06	35.00	40.98	46.24	111.33	177.89	203.54	65.38	88.06	199.84	61.15	148.05	84.59													
1974	73.47	352.11	34.12	41.34	48.54	115.52	172.40	186.79	62.15	84.88	197.08	57.73	145.19	82.30													
1975	77.83	396.22	36.63	44.52	51.75	125.04	169.27	186.70	66.89	86.23	182.88	62.09	163.15	84.58													
1976	81.21	408.51	41.59	44.21	53.39	125.55	177.60	203.98	63.23	92.13	189.65	64.77	164.29	88.13													
1977	81.03	401.18	50.49	46.22	52.95	124.39	180.96	216.34	66.20	90.25	187.93	72.68	169.44	90.88													
1978	88.50	421.25	47.83	47.12	53.42	122.24	181.31	215.23	66.79	87.50	190.66	76.03	156.57	90.90													
1979	92.35	420.61	50.03	48.46	48.61	131.30	178.36	222.53	67.43	87.08	191.71	77.47	156.28	91.56													
1980	94.64	421.61	50.84	49.27	51.79	143.63	170.59	201.13	69.50	86.00	195.18	83.32	143.16	91.04													
1981	94.81	414.56	51.16	47.64	51.72	123.93	170.82	209.12	76.18	85.14	201.07	84.91	159.76	91.92													
1982	102.09	405.92	55.86	49.41	54.31	135.25	172.96	231.92	77.62	86.66	187.36	86.47	156.27	94.48													
1983	106.32	380.44	56.71	50.60	51.79	133.54	175.94	263.76	80.39	90.72	179.06	86.70	154.99	99.07													
1984	105.74	383.00	56.86	48.78	53.96	138.15	169.62	285.68	80.94	92.07	185.77	89.57	175.04	103.55													
1985	110.09	308.28	59.11	52.40	53.72	136.16	169.50	283.90	89.37	96.97	193.82	92.08	167.65	108.43													
1986	110.12	367.96	61.84	55.24	51.26	138.47	171.06	313.47	88.34	99.39	191.75	94.69	182.14	113.49													
1987	111.19	270.56	59.86	57.19	56.37	149.71	175.31	334.86	92.84	95.82	209.63	108.27	188.84	119.60													
1988	114.80	251.05	60.30	59.51	61.31	144.55	173.62	342.10	91.55	98.31	201.92	112.52	222.33	122.41													
1989	107.91	232.87	64.07	63.31	62.79	144.13	172.95	338.66	96.62	101.62	198.36	122.61	223.60	124.29													
1990	107.25	224.56	68.55	64.02	69.37	142.64	174.79	307.61	98.55	105.22	202.86	123.91	239.20	124.97													

Source: ICOP database, Groningen Growth and Development Centre, University of Groningen, 1996.

Table D.3
Real GDP per Person Employed, Canada, 1961-1990 (1985 constant prices)

	Food & Tobacco		Textile		Wearing Apparel		Leather Products		Wood		Paper		Chemicals, Rubber		Non-		Basic & Machinery & Electrical		Other		Total
	Kindred Products	Mill Products	Mill Products	Footwear	Furniture & Fixture	Products, Publishing	Petroleum & Coal	Plastic	Mineral Products	Metal Products	Transport Equipment	Machinery Equipment	Electrical	Manufacturing Industries	Manufacturing Industries	Manufacturing Industries	Manufacturing Industries	Manufacturing Industries	Manufacturing Industries	Manufacturing Industries	
1961	30,459	56,848	9,645	12,846	12,780	19,136	41,314	33,082	16,163	32,161	29,817	20,947	12,660	19,919	23,050						
1962	32,653	52,482	11,014	13,896	13,797	20,585	41,707	37,242	19,774	36,120	31,655	23,014	14,434	20,891	24,938						
1963	33,489	57,287	11,944	14,453	13,946	22,202	42,618	39,247	20,073	36,733	32,804	24,719	14,451	20,707	25,950						
1964	34,818	61,522	12,275	14,422	14,889	22,915	44,075	42,509	21,126	38,874	34,698	25,865	15,924	22,450	27,289						
1965	36,345	68,631	12,313	14,700	14,639	23,858	43,910	44,974	21,489	40,628	36,640	28,343	16,491	22,590	28,573						
1966	36,500	63,948	12,465	14,795	14,426	24,295	44,408	47,220	22,543	41,723	36,488	28,105	16,804	23,761	29,015						
1967	38,905	60,066	12,692	14,595	14,554	25,577	42,949	44,595	23,529	39,521	36,589	30,263	15,738	23,529	29,427						
1968	39,649	60,484	14,974	14,934	14,884	27,328	44,373	47,219	26,256	42,840	39,727	33,112	17,480	25,638	31,620						
1969	40,826	70,899	16,410	14,717	15,074	27,873	46,467	48,413	27,684	43,865	40,639	36,159	18,422	26,727	33,176						
1970	41,600	74,447	16,381	14,723	15,463	28,404	45,732	47,842	27,016	43,055	39,653	33,264	18,235	26,759	32,517						
1971	45,428	86,176	18,429	14,746	15,850	28,322	45,800	51,838	28,975	49,345	40,810	38,522	17,847	27,813	34,634						
1972	45,774	92,362	20,434	15,230	15,653	27,562	49,045	54,320	30,772	54,262	42,769	40,651	20,061	29,587	36,312						
1973	47,966	95,824	20,948	15,977	15,990	28,336	51,569	63,800	32,191	56,032	44,938	43,165	21,724	29,814	38,446						
1974	48,157	100,924	21,149	16,520	16,978	28,093	52,360	62,074	29,745	55,330	45,889	44,070	21,648	29,864	38,808						
1975	45,254	100,702	22,089	17,282	16,961	27,228	42,729	59,040	27,754	52,854	42,402	46,085	20,815	28,437	37,068						
1976	48,514	102,035	23,972	18,185	18,843	30,327	49,715	62,262	31,075	54,863	42,158	48,241	22,808	31,234	39,603						
1977	50,357	119,215	26,969	19,193	19,535	32,140	51,887	68,655	33,754	55,063	44,150	49,652	25,002	32,475	41,912						
1978	49,791	103,039	29,141	20,664	21,705	31,202	55,209	69,006	34,736	57,605	44,894	48,965	24,539	32,762	42,471						
1979	50,825	107,483	30,510	21,919	21,070	29,818	53,695	68,155	38,304	58,450	41,839	47,895	27,865	33,820	42,534						
1980	49,004	111,624	29,873	21,469	20,593	31,440	52,764	64,566	35,675	52,096	40,312	41,643	30,124	29,923	40,762						
1981	49,711	111,316	31,623	22,179	20,883	32,143	51,940	67,451	35,460	50,403	42,643	44,183	32,075	31,318	42,255						
1982	50,081	109,068	27,884	20,880	21,089	29,206	47,509	61,795	33,814	44,499	38,160	42,614	32,091	31,225	39,894						
1983	50,115	106,003	33,678	20,345	22,122	34,195	52,291	72,340	38,972	50,266	42,086	46,981	33,833	30,559	43,349						
1984	52,225	105,975	33,868	21,749	23,713	37,278	53,917	78,826	43,262	53,513	47,845	53,286	41,031	33,782	47,499						
1985	53,855	94,049	34,927	22,392	24,035	39,681	54,079	79,640	44,193	56,402	50,330	53,004	45,123	34,621	48,901						
1986	52,419	90,149	37,752	22,804	23,667	38,171	54,190	80,969	39,729	55,738	49,036	51,174	47,813	30,344	48,100						
1987	52,481	112,763	37,868	24,007	23,598	38,613	54,562	85,299	42,352	57,518	50,978	49,358	49,744	31,917	48,924						
1988	51,917	124,381	36,558	22,768	23,642	38,287	54,134	85,928	39,338	57,421	49,894	53,619	51,304	31,132	49,266						
1989	51,135	122,151	36,861	23,148	24,987	37,398	52,374	87,669	38,795	56,532	48,366	54,139	54,117	30,511	49,120						
1990	53,261	123,433	35,565	23,853	24,170	36,965	51,708	90,519	38,152	53,182	49,267	54,516	57,992	30,777	49,885						

Source: Statistics Canada database, Ottawa, 1995.

Table D.4
Real GDP per Hour Worked, Canada, 1961-1990 (1985 Can \$)

	Food & Tobacco		Textile Mill Products		Wearing Apparel		Leather Products & Footwear		Wood Furniture & Fixtures		Paper Products, Printing & Publishing		Chemicals, Petroleum & Coal Products		Rubber & Plastic Products		Non-Metallic Mineral Products		Basic & Fabricated Metal Products		Machinery & Transport Equipment		Electrical Machinery & Equipment		Other Manufacturing Industries		Total	
1961	15.77	30.23	4.87	6.97	6.67	9.72	21.71	17.66	8.58	15.94	15.40	10.90	6.55	10.38	11.99													
1962	16.81	28.52	5.56	7.35	7.08	10.21	21.77	19.92	10.21	17.78	16.24	11.68	7.48	10.70	12.82													
1963	17.32	31.93	5.91	7.59	7.19	10.97	22.31	20.88	10.42	18.24	16.64	12.37	7.50	10.60	13.29													
1964	17.89	34.89	6.02	7.59	7.70	11.27	22.98	22.55	10.70	19.05	17.55	13.03	8.18	11.37	13.92													
1965	18.66	37.63	6.08	7.80	7.65	11.73	23.03	23.35	11.08	19.66	18.58	14.18	8.52	11.48	14.58													
1966	18.88	34.51	6.20	7.92	7.57	12.06	23.38	25.09	11.54	20.56	18.65	14.21	8.58	12.15	14.91													
1967	20.07	32.77	6.36	7.72	7.65	12.56	22.74	23.86	11.97	19.53	18.76	15.62	8.24	12.12	15.19													
1968	20.22	33.81	7.53	7.88	7.70	13.62	23.53	25.06	13.39	21.34	20.39	16.81	9.20	13.37	16.30													
1969	21.13	40.56	8.29	7.77	7.89	14.00	24.48	25.60	14.23	21.82	20.94	18.51	9.71	13.84	17.17													
1970	21.60	42.30	8.37	7.77	8.11	14.38	24.29	25.48	14.04	21.80	20.48	17.32	9.67	13.88	16.95													
1971	23.74	50.02	9.45	7.97	8.28	14.29	24.62	27.82	15.18	24.98	21.17	20.00	9.53	14.48	18.15													
1972	24.24	54.07	10.52	8.25	8.17	14.04	26.30	29.28	16.15	27.56	22.10	20.84	10.67	15.51	19.03													
1973	25.55	57.09	10.85	8.80	8.47	14.46	27.94	34.44	17.03	28.76	23.26	22.15	11.53	15.77	20.25													
1974	25.65	61.05	11.06	9.05	8.84	14.43	28.56	33.76	16.06	28.66	23.93	23.00	11.55	15.72	20.57													
1975	24.02	60.27	11.61	9.44	9.09	14.05	24.63	32.15	15.06	27.40	22.52	24.02	11.16	15.07	19.86													
1976	25.78	60.91	12.67	9.98	10.02	15.54	27.93	35.41	16.72	28.75	22.42	25.33	12.33	16.80	21.25													
1977	27.01	73.01	14.37	10.60	10.36	16.58	28.70	37.47	18.26	28.82	23.43	25.84	13.55	17.51	22.43													
1978	26.76	62.86	15.50	11.42	11.60	16.21	29.58	37.59	18.75	30.22	23.69	25.85	13.20	17.71	22.67													
1979	27.37	65.35	16.25	12.10	11.18	15.43	29.89	37.55	20.16	30.79	22.17	25.74	15.08	18.22	22.89													
1980	26.70	69.32	16.10	12.06	11.09	16.44	28.39	35.72	19.30	28.09	21.36	22.52	16.42	16.24	22.01													
1981	27.39	68.22	16.91	12.60	11.26	17.43	29.15	37.44	19.01	27.31	22.79	23.83	17.50	17.00	23.09													
1982	27.78	68.51	14.81	12.07	11.26	16.32	26.75	34.75	18.23	24.41	20.67	23.27	17.55	17.18	22.04													
1983	27.23	66.38	18.05	11.34	12.13	18.56	29.52	39.36	20.85	27.10	22.91	24.99	18.41	16.67	23.64													
1984	28.41	66.74	18.29	12.03	12.89	19.86	30.32	42.74	23.29	28.63	25.43	27.57	22.56	18.25	25.64													
1985	29.54	58.03	19.10	12.46	13.08	21.01	30.49	43.26	23.62	30.25	27.07	27.31	24.29	18.52	26.39													
1986	28.88	58.94	20.31	12.60	13.06	20.15	30.61	44.08	21.51	29.75	26.38	26.14	26.07	16.61	25.98													
1987	28.60	71.67	20.29	12.79	13.27	20.28	30.83	46.56	22.77	30.24	27.32	24.91	26.87	17.72	26.22													
1988	28.03	78.72	19.50	12.38	13.17	19.88	30.32	46.60	21.01	29.96	26.46	27.35	27.99	17.30	26.34													
1989	27.99	78.27	19.40	12.68	13.32	19.86	29.20	47.31	20.57	29.39	26.03	28.40	29.29	16.43	26.45													
1990	28.76	78.03	19.06	12.94	13.04	19.57	28.91	48.92	20.50	27.98	26.28	29.06	31.30	16.57	26.89													

Source: Statistics Canada database, Ottawa, 1995.

Table D.6
Comparative Productivity Levels:
Gross Value Added per Actual Hour Worked,
Canada-United States 1961-1990 (USA = 100)

	Food & Tobacco Kindred Products		Textile Mill Products		Wearing Apparel		Leather Products & Footwear		Wood Furniture		Paper Products, Printing & Publishing		Chemicals, Petroleum & Coal Products		Rubber & Plastic Products		Non-Metallic Mineral Products		Basic & Fabricated Metal Products		Machinery Transport Equipment		Electrical Machinery & Equipment		Other Manufacturing Industries		Total Manufacturing
1961	75.53	43.13	72.84	76.33	68.77	93.10	90.97	83.64	69.22	74.44	70.09	75.27	58.61	62.27	76.15												
1962	76.86	38.82	80.50	80.78	67.82	97.44	89.08	89.59	81.04	80.76	72.41	77.09	64.71	61.62	78.72												
1963	73.35	42.75	66.54	80.71	66.10	91.52	86.69	88.66	77.32	78.28	71.53	76.94	58.30	59.57	76.36												
1964	75.17	49.81	64.45	78.87	69.23	84.35	83.97	92.03	76.49	79.31	71.94	77.38	60.29	63.04	76.45												
1965	75.71	51.18	62.48	77.78	66.52	81.23	83.52	92.88	79.63	81.38	74.45	82.67	57.23	61.46	77.75												
1966	73.49	45.81	61.39	75.92	64.95	85.08	83.92	102.05	83.05	86.84	74.13	83.49	58.33	64.07	79.13												
1967	78.97	42.02	62.90	74.01	69.83	85.15	83.02	98.06	85.20	82.10	75.00	90.59	53.79	62.28	79.94												
1968	77.41	40.85	73.62	72.76	68.05	90.57	82.16	96.82	90.23	87.24	81.93	93.40	56.98	64.35	82.78												
1969	77.59	45.58	78.94	71.45	67.64	93.83	81.76	100.61	92.18	87.25	84.16	103.70	58.13	62.81	86.06												
1970	76.89	45.13	71.57	72.47	70.71	95.24	83.92	92.60	96.85	86.82	82.50	96.47	56.99	64.45	84.17												
1971	79.75	49.62	77.67	72.86	68.84	93.87	80.55	91.77	96.68	97.35	82.31	101.22	51.30	61.55	84.84												
1972	76.29	52.19	85.84	66.92	66.98	83.92	81.73	91.92	99.74	102.47	83.52	103.63	55.40	63.66	85.65												
1973	73.36	55.38	91.75	67.55	62.60	84.95	80.66	101.25	97.84	101.30	82.88	107.88	57.35	65.05	86.69												
1974	81.16	57.86	95.88	68.86	62.30	81.74	85.06	108.16	97.07	104.76	86.46	115.47	60.85	66.12	90.53												
1975	71.74	50.76	93.79	66.70	60.09	73.50	74.73	103.03	84.54	98.56	87.70	117.72	54.69	56.40	85.06												
1976	73.82	49.76	90.16	70.95	64.19	80.96	80.77	103.87	99.34	96.79	84.18	116.55	57.94	62.43	87.35												
1977	77.48	60.73	84.23	72.10	66.88	87.22	81.46	103.64	103.62	99.06	88.77	116.22	56.73	63.12	89.39												
1978	70.31	49.80	95.91	76.24	74.23	86.74	83.77	104.51	105.43	107.15	88.48	120.29	52.82	69.10	90.34												
1979	68.90	51.85	96.12	78.52	78.64	76.87	86.07	100.96	112.30	109.69	82.35	125.06	59.23	71.21	90.54												
1980	65.59	54.87	93.70	76.99	73.21	74.89	85.47	106.27	104.31	101.32	77.94	113.75	59.95	69.29	87.59												
1981	67.17	54.91	97.77	83.19	74.42	92.02	87.62	107.12	93.73	99.51	80.71	121.88	62.71	64.98	90.97												
1982	63.26	56.32	78.46	76.79	70.88	78.94	79.42	89.66	88.19	87.40	78.56	117.90	61.74	67.14	84.50												
1983	59.55	58.23	94.19	70.47	80.11	90.91	86.17	89.28	97.41	92.65	91.11	108.15	64.59	65.69	86.43												
1984	62.47	58.15	95.19	77.51	81.69	94.03	91.78	89.52	108.07	96.47	97.47	109.32	76.62	63.68	89.68												
1985	62.39	62.81	95.60	74.80	83.24	100.96	92.38	91.17	99.28	96.78	99.46	98.47	80.26	67.45	88.17												
1986	60.96	53.46	97.18	71.75	87.09	95.20	91.88	84.14	91.46	92.85	97.96	86.43	83.75	55.71	82.92												
1987	59.80	88.40	100.30	70.30	80.50	88.60	90.30	83.20	92.10	97.90	92.80	77.50	75.50	57.30	79.40												
1988	56.76	104.64	95.68	65.45	73.47	89.96	89.67	81.51	86.19	94.53	93.32	83.34	75.67	47.51	77.93												
1989	60.30	112.16	89.61	63.01	72.53	90.14	86.69	83.58	79.96	89.73	93.43	84.55	72.69	44.86	77.07												
1990	62.34	115.96	82.25	63.55	64.28	89.73	84.93	95.15	78.11	82.49	92.24	85.08	76.86	42.31	77.93												

Source: productivity levels for 1987 from table C.6, series from tables D.2 and D.4.

Table D.5
Comparative Productivity Levels:
Gross Value Added per Person Employed,
Canada-United States 1961-1990 (USA = 100)

	Food & Tobacco		Textile		Wearing Apparel		Leather Products & Footwear		Wood Furniture		Paper Printing & Publishing		Chemicals, Petroleum & Coal		Rubber & Plastic Products		Metallic Mineral Products		Basic & Fabricated Metal Products		Machinery & Electrical Equipment		Other Manufacturing Industries		Total
	Kindred Products	Mill Products	Apparel	Footwear	Products & Furniture	Products & Printing	Products & Publishing	Products & Coal	Products	Products	Products	Products	Products	Products	Products	Products	Products	Products	Products	Products	Products	Products	Products	Products	
1961	72.22	42.27	71.97	78.78	69.52	91.50	99.27	87.32	66.44	76.38	76.92	75.43	60.59	67.02	76.11										
1962	73.81	37.64	78.19	83.70	69.40	97.62	97.86	91.90	78.85	82.74	78.64	76.89	65.60	66.56	78.43										
1963	70.10	40.32	65.94	84.34	67.52	90.81	95.02	90.51	74.95	78.70	77.59	77.64	58.87	64.39	76.11										
1964	72.26	46.05	63.82	82.70	69.78	83.27	91.57	93.17	75.28	80.04	77.39	77.15	60.62	68.39	75.96										
1965	72.69	50.15	60.52	79.64	65.90	79.78	90.13	94.13	75.72	82.65	79.16	81.61	56.31	65.53	76.34										
1966	69.67	44.44	58.68	76.85	63.38	83.54	89.35	99.26	79.56	86.42	77.52	81.09	57.17	66.83	76.63										
1967	75.93	40.81	61.43	77.00	69.04	86.58	89.10	94.95	83.67	82.75	79.89	89.16	53.19	66.03	78.89										
1968	75.81	39.61	71.46	75.95	68.53	90.26	88.37	94.39	88.51	87.07	86.45	93.30	57.00	67.93	81.98										
1969	75.25	43.95	77.38	75.33	69.61	93.63	89.12	98.36	90.77	87.32	88.73	103.67	57.61	66.68	85.36										
1970	75.07	43.50	71.17	77.97	72.90	95.94	92.47	91.12	96.88	87.11	89.95	98.04	58.27	70.30	85.06										
1971	77.58	46.76	75.40	75.87	70.30	93.31	87.23	90.00	95.45	96.56	89.79	103.43	52.64	67.63	85.18										
1972	72.50	48.81	81.30	68.41	66.85	82.05	87.71	88.92	95.96	99.83	88.38	103.48	54.80	67.32	83.93										
1973	70.15	49.78	87.49	68.37	62.90	84.66	86.28	97.53	93.98	98.26	86.64	106.37	57.18	68.42	84.70										
1974	77.78	51.85	94.25	71.81	65.26	83.65	91.51	104.58	93.11	102.59	91.97	114.50	61.72	70.79	89.76										
1975	69.40	46.15	92.32	70.00	60.69	76.31	76.81	100.82	82.06	99.15	94.06	119.31	55.48	61.41	84.87										
1976	71.09	46.25	86.63	73.17	65.12	82.32	84.06	96.01	95.66	95.03	88.45	115.53	57.58	65.55	85.70										
1977	74.77	54.65	79.70	74.26	69.87	88.27	85.60	99.67	98.57	96.93	92.62	114.85	55.80	65.74	87.62										
1978	68.38	44.68	91.71	78.44	77.19	86.76	90.63	100.43	100.87	103.57	92.17	116.75	52.58	71.71	88.73										
1979	66.59	46.60	91.31	81.83	83.24	78.05	90.04	95.87	111.80	106.53	86.23	120.85	58.55	73.00	88.87										
1980	62.98	49.19	88.85	78.90	74.86	78.85	93.26	101.51	102.07	98.03	82.56	110.27	59.77	69.25	86.93										
1981	63.86	48.27	94.78	83.35	76.62	93.18	90.82	102.45	92.33	96.06	84.54	118.10	62.16	64.78	89.05										
1982	60.31	51.84	81.20	78.54	76.45	80.27	81.44	86.58	88.53	84.40	83.37	115.18	62.75	66.67	83.87										
1983	57.94	53.58	89.12	72.02	80.55	87.23	86.47	87.18	93.79	88.23	90.20	106.14	63.29	66.22	84.09										
1984	60.62	53.25	91.47	78.09	83.97	91.62	90.50	85.42	100.71	91.14	96.02	107.60	73.89	62.27	86.76										
1985	59.69	58.51	90.77	76.61	84.69	99.13	89.36	85.88	95.53	90.53	96.02	97.57	79.67	66.38	85.44										
1986	58.24	46.47	90.28	73.64	88.72	92.70	88.36	79.24	86.20	86.02	93.10	88.45	81.73	53.95	80.55										
1987	57.90	74.20	91.20	73.80	77.10	85.90	86.40	77.00	86.30	92.70	88.40	80.50	74.40	54.90	77.40										
1988	54.81	87.21	89.61	66.78	73.07	89.11	86.33	75.04	81.19	90.32	87.83	82.44	73.32	46.02	75.26										
1989	56.09	94.99	85.52	64.53	74.70	87.85	83.44	75.78	76.47	85.12	87.67	81.96	71.25	45.08	74.02										
1990	57.78	97.91	79.13	66.77	66.24	89.06	82.30	85.98	74.51	78.57	88.05	82.35	75.74	42.86	75.39										

Source: productivity levels for 1987 from table C.5, series from tables D.1 and D.3.

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