

WORKING PAPER

A PRELIMINARY RANKING OF INDUSTRY
PERFORMANCE IN THE MANUFACTURING
SECTOR IN CANADA

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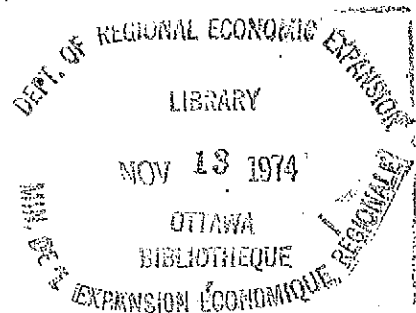
**ECONOMIC ANALYSIS BRANCH
PLANNING DIVISION**

 REGIONAL ECONOMIC EXPANSION CANADA
EXPANSION ÉCONOMIQUE RÉGIONALE CANADA

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PERFORMANCE IN THE MANUFACTURING
SECTOR IN CANADA



April 1972

Planning Division
Economic Analysis Branch

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OPENING SUMMARY

This study selects those industries in Canada that have exhibited relatively high growth in employment subject to a condition of economic viability. To meet the objectives of the study, a decision rule for industry selection is developed. Of the 139 industries at the 3-digit level in the manufacturing sector, 27 are able to satisfy the requirements of the decision rule and are as follows:

Overall

<u>Rank</u>	<u>Industry</u>	<u>SIC</u>
1	Plastic fabricators, n.e.s.	385
2	Office and store machinery mfrs.	318
3	Misc. vehicle mfrs.	329
4	Distilleries	143
5	Misc. textile industries	229
6	Aluminum rolling, casting & extruding, n.e.s.	296
7	Metal stamping, pressing & coating	304
8	Motor vehicle parts & accessories mfrs.	325
9	Carpet, mat and rug industry	216
10	Feed manufacturers	123
11	Metal rolling, casting & extruding, n.e.s.	298
12	Commercial refrigeration & air conditioning equipment	316
13	Boiler and plate works	301
14	Scientific & professional equipment mfrs.	381
15	Boatbuilding and repair	328
16	Mfrs. of household radio and television receivers	334
17	Explosives and ammunition mfrs.	371
18	Mfrs. of industrial chemicals	378
19	Misc. machinery and equipment mfrs.	315
20	Mfrs. of pharmaceuticals & medicines	374
21	Other paper converters	274
22	Truck body and trailer mfrs.	324
23	Communications equipment mfrs.	335
24	Machine shops	308
25	Mfrs. of electrical industrial equipment	336
26	Mfrs. of misc. electrical products	339
27	Signs and displays industry	397

INTRODUCTION

The purpose of this study is to identify those industries in the manufacturing sector in Canada that have exhibited relatively high growth in employment and output in the last decade and to develop an objective basis for evaluating industry performance, with a major concern for economic viability.

The identification of these industries will afford the Department the opportunity to examine the potential these industries have in contributing to the expansion of less developed regional economies. However, the industries selected at the national level are not necessarily deemed desirable or applicable to the regional level. Further examination of such criteria as location quotients, regional shares, regional trade, firm and plant concentration ratios and commodity performance may result in a number of these industries being rejected. Further studies are planned to examine the above factors in order to select those industries that are the most desirable to promote regional development. Industries whose national performance appears to be relatively low could, through expanded criteria for selection, be deemed appropriate for the development of regional economies.

The results of this report represent the study objectives of the Planning Division, Economic Analysis Branch of DREE. However, the data acquisition, development and analysis and problem analysis discussions were done on a co-operative basis with the Industry Development Branch of DREE and the Economic Development Division, Department of Finance.

Methodology

The procedure of industry selection is very much determined by both the objectives of the study and the choice of criteria designed to test the performance of different variables. In this study the choice of criteria was largely determined by an important Departmental objective of maximizing employment opportunities in the manufacturing industries for the less developed regional economies of Canada conditional to long term viability. The objectives suggest that the developed framework of analysis could be simply stated, and presumably solved, as a conventional mathematical optimization problem. There are a number of factors which mitigate against such an ideal as will become apparent later in the report.

There are 139 industries at the 3-digit level under the Standard Industrial Classification of Statistics Canada. The time period chosen was 1961-1969 which reflects both availability and consistency of data on the selected variables reported in various publications of Statistics Canada. For each variable over the time series, the best fitted curve was selected from seven available curve forms (these are described in Appendix C). In most instances, a second degree polynomial was selected to exhibit the trend of the values of each variable under study. Therefore, the interpretation of the performance of the manufacturing industries, and the national economy in general, is largely dependent on the activity of the time period 1961-69. Consequently there is the implicit assumption that those manufacturing industries which exhibited strong performance over the time period will continue to do so in the future.

In addition, the first and second derivatives of the best fitted curve for 1969 were determined. These give the rate of change and direction (increasing or decreasing) respectively of the value of each variable's best fitted curve. Further, the signs (+ or -) of the first and second derivative were noted and may be viewed as non-quantitative expressions to be utilized in the selection process.

There remained a problem with regard to expressing the value changes of the variables as absolute or relative, i.e., in terms of actual magnitude or in percentage change. The choice was entirely judgemental.

All variables were subsequently ranked in descending order by the magnitude of their 1969 values and are found in Appendix B.

Choice of Variables

The choice of variables was determined by the objectives, availability and reliability of data.

The utilization of the variables in the selection procedure was a reflection of their contribution to explaining industry performance and their data reliability.

Given the objective of maximizing employment opportunities, the problem was one of defining and evaluating viability. Viability implies some notion of profitability which is a

function of productivity and demand. The variables chosen may be viewed as proxies for these and are as follows:

- | <u>Variable</u> | <u>Expressed as</u> | <u>Time Period</u> |
|--|----------------------------|--------------------|
| 1. <u>Real Domestic Product</u> | Relative
(Index) | 1961-1969 |
| This is a measure of real output valued in 1961 dollars. It is expressed as an index with 1961 equal to 100.0. | | |
| 2. <u>Real Domestic Product per Worker</u> | Absolute
(1961 dollars) | 1961-1969 |
| This is a measure of real output per worker and is expressed in 1961 dollars per employee. Employees include both production and all other workers. | | |
| 3. <u>Surplus/Output</u> | Relative
(ratio) | 1961-1969 |
| Surplus is census value added minus wages and salaries on a total activity basis. Output refers to the value of production on the same basis. This variable is used as a proxy for profit which is only available on a corporate basis. Surplus is roughly equivalent to gross operating profit. | | |
| 4. <u>Total Value Added per Worker, Canada/United States</u> | Absolute
(ratio) | 1961-1968 |
| This variable is total value added per production worker by industry and is expressed as a ratio of Canada to the United States. It is a relative measure of competitive advantage. | | |

5. Domestic Disappearance Absolute 1964-1969
(current dollars)

This is simply shipments plus imports minus exports and may be viewed as a measure of domestic demand.

6. Exports Absolute 1964-1969
(current dollars)

Self-explanatory.

7. Domestic Share of Domestic Disappearance Absolute 1964-1969
(ratio)

This is a measure of that portion of domestic demand that is met by domestic supply. It is calculated by dividing shipments minus exports (domestic supply) by domestic disappearance.

Variables 1-4 may be viewed as proxies for productivity while variables 5-7 are proxies for demand. Detail on these variables, as well as the policy variable of employment, is found in Appendix B.

In addition to the quantitative expressions for these variables, a qualitative expression utilizing the first and second derivatives of the fitted time series curve was developed to indicate the rate of change and direction of each variable at 1969. The signs of the derivatives were combined to yield the following performance classes for each variable.

<u>Performance Class</u>	<u>First Derivative</u>	<u>Second Derivative</u>
1. Increasing at an increasing rate.	+	+
2. Increasing at a decreasing rate.	+	-
3. Decreasing at a decreasing rate.	-	+
4. Decreasing at an increasing rate.	-	-

For real domestic product per worker, domestic disappearance, and exports, this qualitative measure was the sole expression for these variables that was utilized in the selection procedure. Given the objectives of the study, there is little need to quantify these variables. Also, this qualitative measure supplemented the quantitative measure(s) on employment, surplus/output and domestic share of domestic disappearance. The rationale for choosing this measure is that the performance classes of rate of change and direction are sufficient for those variables that are proxies for demand. The magnitude of these variables in quantity terms was felt to be relatively unimportant. Further, exports and domestic share of domestic disappearance are, in effect, components of real domestic product.

Therefore, it only remained to arrange the chosen variables in such a manner to establish the criteria of industry selection.

The Decision Rule for Industry Selection

The essential feature of the decision rule is that only "Yes" or "No" alternatives are involved. All variables are ranked in numeric order and/or assigned to performance classes. This combination of ranking and sign tests to select industries is a non-parametric technique. A non-parametric is a parameter that is incapable of being quantified. While the variables used in the selection were quantified, the expression of these can be done by ranking and sign testing. These qualitative expressions were selected in lieu of a mathematical model as this was considered to be impracticable at this time. Further, no explicit weights were assigned to each variable.

The general rule of selection was "pass" all industries through a "barrier" which consisted of a number of variables which are found below. The first pass was through a barrier which consisted of all six variables and was the most difficult for an industry to clear. With each subsequent pass, the last variable was dropped, i.e., variables 6, 5, 4 and 3. Therefore, it became easier for those industries that were rejected by the previous barrier to be selected. Consequently, a ranking of the selected industries was achieved by the number of passes it took to be selected, i.e., the more passes the lower the ranking. In this manner, it was felt a systematic and consistent decision rule of industry selection might be established.

The complex of variables that make up the decision rule is as follows:

Policy Variable

1. Employment \geq mean first derivative, i.e., equal or greater than the average first derivative or "annual increment" in employment in 1969.

Viability Variables

2. Index of Real Domestic Product \geq mean value of the index - 1969, i.e., equal or greater than the average index value.
3. Real Domestic Product/Employee - Performance Classes 1 and 2 - 1969.
4. Surplus/Output - Performance Classes 1 and 2 - 1969.
5. Surplus/Output - Rank 1 - 50. - 1969.
6. Domestic Disappearance, Exports, Domestic Share - Performance Classes 1 and 2 - 1969.

It should be noted that the policy or objective variable of employment rejected 89 industries alone. The remaining 50 industries were, therefore, tested by those variables in the decision rule which have been described as proxies for viability. It took five passes through these variables to yield the final selection and ranking of 27 industries. It should also be noted that the ratio of total value added per employee in Canada and the United States was not used in the decision rule as that measure was somewhat inconsistent with the performance indicators on trade.

The Results

The 27 industries that were selected are shown below in five groups and represent the effect of dropping one variable after each pass.

<u>Overall Rank</u>	<u>Industry</u>	<u>SIC</u>
1	Plastic fabricators, n.e.s.	385
2	Office and store machinery mfrs.	318
3	Misc. vehicle mfrs.	329
4	Distilleries	143
5	Misc. textile industries	229
6	Aluminum rolling, casting & extruding, n.e.s.	296
7	Metal stamping, pressing & coating	304
8	Motor vehicle parts & accessories mfrs.	325
9	Carpet, mat and rug industry	216
10	Feed manufacturers	123
11	Metal rolling, casting & extruding, n.e.s.	298
12	Commercial refrigeration & air conditioning equipment	316
13	Boiler and plate works	301
14	Scientific & professional equipment mfrs.	381
15	Boatbuilding and repair	328
16	Mfrs. of household radio and television receivers	334
17	Explosives and ammunition mfrs.	371
18	Mfrs. of industrial chemicals	378
19	Misc. machinery and equipment mfrs.	315
20	Mfrs. of pharmaceuticals & medicines	374
21	Other paper converters	274

22	Truck body and trailer mfrs.	324
23	Communications equipment mfrs.	335
24	Machine shops	308
25	Mfrs. of electrical industrial equipment	336
26	Mfrs. of miscellaneous electrical products	339
27	Signs and displays industry	397

Note: For a summary of detail on all 139 industries, see Appendix A.

Conclusions

This study has attempted to select those industries in Canada that have exhibited relatively high growth in employment subject to a condition of economic viability. To meet the objectives of the study a decision rule of industry selection was developed. Of the 139 industries at the 3-digit level in the manufacturing sector, 27 were able to satisfy the requirements of the decision rule.

The selection of these 27 industries will afford the Department the opportunity to examine the potential these industries have in contributing to the expansion. Further studies are planned with a view to selecting those industries that appear desirable in promoting regional development.

A P P E N D I X A

See Table in Envelope - Inside
Rear Cover

SUMMARY OF DETAIL ON
ALL INDUSTRIES

EXPLANATION OF THE PERFORMANCE INDICATORS
FOR THE MANUFACTURING INDUSTRIES

The display of information on the performance of the manufacturing industries found on the following table has been arranged in the following manner:

1. The 139 industries at the 3-digit level in the manufacturing sector have been stratified into three major groups on the basis of the value of the annual increment of employment in 1969 being:
 - (a) equal or greater than the mean value of the manufacturing sector;
 - (b) less than the mean value but greater than zero;
 - (c) less than zero.

2. Within each of the three groups, the industries have been ordered in sequence of their S.I.C. numbers. This is done primarily to facilitate location of industries in the table.

It now remains only to identify the column headings under the three broad divisions of employment, productivity and trade.

Employment 1961-1969

- i) Annual increment - 1969 - This is the rate of change in total employment as measured by the first derivative

of the best fitted employment curve for each industry in 1969.

- (ii) Ranks - This is the ordering (by decreasing value) of the magnitude of the annual increment in employment in 1969.
- (iii) Class - This refers to the rate of change and direction of employment in 1969. For an explanation of the classes, see page 6.
- (iv) Size Rank - This is the ordering of the magnitude of employment by industry in 1969.
- (v) Growth Rank - This is the ordering of the index value of 1969 employment, with 1961 as the base year, as estimated by the fitted curve.

Productivity

- (i) Order of R.D.P. Rank - 1969 - This is the ordering of the index value of real domestic product in 1969.
- (ii) RDP/N Class - 1969 - The performance of real domestic product per employee (production and non-production workers) in 1969.
- (iii) Surplus/Output Ratio Rank and Class - 1969 - This is both an ordering of the ratio and its performance in 1969. For a complete definition, see page 5.
- (iv) TVA/N, Canada/U.S. Rank - 1968 - Total value added per production employee as a ratio of Canada to the United States. This ratio is ordered in descending values for 1968.

Trade

- (i) Domestic Disappearance Class - 1969 - The performance of shipments minus exports plus imports in 1969.
- (ii) Exports Class - 1969 - The performance of exports in 1969.
- (iii) Domestic Share of Domestic Disappearance Rank and Class - 1969 - The domestic share (shipments minus exports) of domestic disappearance is expressed as a ratio and is ordered in descending values for 1969.

A P P E N D I X B

DETAILS ON THE VARIABLES

1. Employment.
2. Real Domestic Product - 1969
3. Surplus/Output - 1969
4. Total Value Added/Production
Worker - 1968 Canada/United States
5. Domestic Share of Domestic
Disappearance.

There are a number of measures available on the time series (1961-69) data for each variable. They are found on a separate computer print-out and are as follows:

- (i) Absolute increase at last fitted point.
- (ii) Absolute increase at first projected value (1975)
- (iii) Absolute increase at second projected value (1980)
- (iv) Index value at last fitted point
- (v) Index value at first projected value (1975)
- (vi) Index value at second projected value (1980)
- (vii) Index value over last fitted interval
- (viii) First derivative at last fitted point
- (ix) Second derivative at last fitted point
- (x) Value of last fitted and projections to 1975 and 1980
- (xi) Curve form, a, b, c coefficients, and coefficient of determination.

EMPLOYMENT - 1969
First Derivative At Last Fitted Point

S.I.C.	INDUSTRY	RANK	FIRST DERIVATIVE
385	Plastics fabricators, n.e.s.	1	4696.3
335	Communications equipment manufacturers	2	4165.0
325	Motor vehicle parts & accessories manufacturers	3	2296.3
321	Aircraft and parts manufacturers	4	1818.6
324	Truck body and trailer manufacturers	5	1572.0
329	Miscellaneous vehicle manufacturers	6	1567.1
315	Miscellaneous machinery & equipment manufacturers	7	1502.3
318	Office and store machinery manufacturers	8	1315.5
271	Pulp and paper mills	9	1214.1
286	Commercial printing	10	1078.3
244	Women's clothing factories	11	1015.1
274	Other paper converters	12	996.9
111	Fish products industry	13	846.8
301	Boiler and plate works	14	765.2
295	Smelting and refining	15	759.6
381	Scientific & professional equipment manu- facturers	16	705.8
254	Sash, door & other millwork plants	17	685.1
229	Miscellaneous textiles industry, n.e.s.	18	674.7
273	Paper and plastic bag manufacturers	19	665.0
371	Explosives & ammunition manufacturers	20	656.0
139	Miscellaneous food manufacturers	21	626.1
231	Hosiery mills	22	617.3
308	Machine shops	23	595.3
216	Carpet, mat and rug industry	24	537.9
339	Manufacturers of miscellaneous electric products	25	534.8
336	Manufacturers of electrical industry equipment	26	522.1
374	Manufacturers of pharmaceuticals & medicines	27	510.2
378	Manufacturers of industrial chemicals	28	476.1
288	Publishing only	29	453.6

<u>S.I.C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>FIRST DERIVATIVE</u>
296	Aluminum rolling, casting & extruding	30	450.9
103	Poultry processors	31	401.2
356	Glass and glass products manufacturers	32	368.2
143	Distilleries	33	359.1
261	Household furniture industry	34	345.4
399	Miscellaneous manufacturing industries, n.e.s.	35	327.2
123	Feed manufacturers	36	321.2
141	Soft drink manufacturers	37	318.3
393	Sporting goods industry	38	316.2
298	Metal rolling, casting & extruding, n.e.s.	39	315.1
334	Manufacturers of household radio and television receivers	40	304.7
304	Metal stamping, pressing & coating industry	41	293.7
287	Plate making, typesetting & trade bindery plants	42	266.6
289	Publishing and printing	43	266.2
397	Signs and displays industry	44	253.4
379	Other chemical industries	45	250.2
328	Boatbuilding and repair	46	215.5
382	Jewellery and silverware manufacturers	47	194.9
316	Commercial refrigeration & air conditioning equipment manufacturers	48	178.7
377	Manufacturers of toilet preparations	49	177.0
128	Biscuit manufacturers	50	171.7
107	Process cheese manufacturers	51	152.9
256	Wooden box factories	52	145.9
239	Other knitting mills	53	144.6
264	Office furniture industry	54	134.7
246	Fur goods industry	55	128.0
331	Manufacturers of small electrical appliances	56	122.5
218	Textile dyeing and finishing plants	57	122.4
375	Paint and varnish manufacturers	58	114.2

<u>S.I.C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>FIRST DERIVATIVE</u>
337	Battery manufacturers	59	103.4
352	Refractories manufacturers	60	81.4
365	Petroleum refineries	61	79.4
292	Steel pipe and tube mills	62	72.2
345	Gypsum products manufacturers	63	69.9
266	Other furniture industries	64	69.7
125	Breakfast cereal manufacturers	65	49.6
163	Rubber tire and tube manufacturers	66	46.8
338	Manufacturers of electric wire & cable	67	46.5
147	Wineries	68	45.1
251	Sawmills and planing mills	69	43.0
326	Railroad rolling stock industry	70	23.1
348	Ready-mix concrete manufacturers	71	21.8
211	Fibre preparing mills	72	19.3
268	Electric lamp and shade industry	73	18.0
212	Thread mills	74	17.1
354	Mineral wool manufacturers	75	12.3
135	Vegetable oil mills	76	6.4
359	Other non-metallic mineral products industries	77	4.7
373	Manufacturers of plastics and synthetic resins	78	1.9
215	Pressed and punched felt mills	79	0.5
145	Breweries	80	-1.3
384	Venetian blind manufacturers	81	-5.2
376	Manufacturers of soap & cleaning compounds	82	-5.2
221	Canvas products industry	83	-10.7
131	Confectionery manufacturers	84	-12.3
305	Wire & wire products manufacturers	85	-22.3
343	Lime manufacturers	86	-22.3
214	Narrow fabric mills	87	-23.1
297	Copper and alloy rolling, casting and extruding	88	-26.9
355	Asbestos products manufacturers	89	-28.5

<u>S. I. C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>FIRST DERIVATIVE</u>
175	Leather glove factories	90	-34.2
341	Cement manufacturers	91	-38.3
369	Other petroleum & coal products industries	92	-41.7
223	Cotton and jute bag industry	93	-42.1
174	Shoe factories	94	-47.6
258	Coffin and casket industry	95	-53.9
395	Fur dressing and dyeing industry	96	-55.0
133	Sugar refineries	97	-56.1
201	Synthetic textile mills	98	-60.9
309	Miscellaneous metal fabricating industries	99	-69.2
357	Abrasives manufacturers	100	-73.0
272	Asphalt roofing manufacturers	101	-84.5
172	Leather tanneries	102	-86.3
151	Leaf tobacco processing	103	-93.9
248	Foundation garment industry	104	-98.0
219	Linoleum and coated fabrics industry	105	-98.2
153	Tobacco products manufacturers	106	-122.8
353	Stone products manufacturers	107	-133.1
213	Cordage and twine industry	108	-143.4
351	Clay products manufacturers	109	-147.4
101	Slaughtering and meat processors	110	-159.9
259	Miscellaneous wood industries	111	-161.7
179	Miscellaneous leather products manufacturers	112	-165.4
383	Broom, brush and mop industry	113	-188.9
249	Miscellaneous clothing industry, n.e.s.	114	-207.1
302	Fabricated structural metal industry	115	-210.8
372	Manufacturers of mixed fertilizers	116	-222.2
193	Wool yarn mills	117	-266.9
247	Hat and cap industry	118	-279.7

<u>S.I.C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>FIRST DERIVATIVE</u>
306	Hardware, tool and cutlery manufacturers	119	-280.7
245	Children's clothing factories	120	-301.8
243	Men's clothing factories	121	-318.1
307	Heating equipment manufacturers	122	-332.3
294	Iron foundries	123	-341.5
197	Wool cloth mills	124	-351.5
112	Fruit and vegetable canners & preservers	125	-356.8
124	Flour mills	126	-375.1
169	Other rubber industries	127	-480.0
347	Concrete products manufacturers	128	-541.4
129	Bakeries	129	-582.0
303	Ornamental and architectural metal industry	130	-616.5
252	Veneer and plywood mills	131	-657.0
332	Manufacturers of major appliances (electric and non-electric)	132	-740.6
161	Rubber footwear manufacturers	133	-751.5
105	Dairy factories	134	-828.5
311	Agricultural implement industry	135	-1039.0
291	Iron and steel mills	136	-1269.0
183	Cotton yarn and cloth mills	137	-1469.8
323	Motor vehicle manufacturers	138	-1527.2
327	Shipbuilding and repair	139	-1843.2

EMPLOYMENT SIZE - 1969

S.I.C.	INDUSTRY	RANK	EMPLOYMENT
271	Pulp and paper mills	1	75427
315	Miscellaneous machinery and equipment manufacturers	2	52585
251	Sawmills and planing mills	3	51526
335	Communications equipment manufacturers	4	48935
291	Iron and steel mills	5	42954
323	Motor vehicle manufacturers	6	41916
325	Motor vehicle parts and accessories manufacturers	7	41541
243	Men's clothing factories	8	40875
244	Women's clothing factories	9	38881
286	Commercial printing	10	38723
321	Aircraft and parts manufacturers	11	34174
289	Publishing and printing	12	33651
295	Smelting and refining	13	33376
129	Bakeries	14	31534
105	Dairy factories	15	31230
304	Metal stamping, pressing and coating industry	16	30463
101	Slaughtering and meat processors	17	29231
336	Manufacturers of electrical industrial equipment	18	25425
261	Household furniture industry	19	24711
273	Paper and plastic bag manufacturers	20	23452
201	Synthetic textile mills	21	21749
309	Miscellaneous metal fabricating industries	22	20895
378	Manufacturers of industrial chemicals	23	20744
381	Scientific and professional equipment manufacturers	24	20310
385	Plastics fabricators, n.e.s.	25	20089
174	Shoe factories	26	19825
112	Fruit and vegetable canners and preservers	27	19348
111	Fish products industry	28	19159
302	Fabricated structural metal industry	29	18203

Note: Employment is on a total activity basis.

S.I.C.	INDUSTRY	RANK	EMPLOYMENT
305	Wire and wire products manufacturers	30	17014
239	Other knitting mills	31	16518
254	Sash, door and other millwork plants	32	16371
139	Miscellaneous food manufacturers	33	16243
274	Other paper converters	34	15560
327	Shipbuilding and repair	35	15183
141	Soft drink manufacturers	36	14818
308	Machine shops	37	14517
339	Manufacturers of miscellaneous electrical products	38	14494
306	Hardware, tool and cutlery manufacturers	39	14401
183	Cotton yarn and cloth mills	40	14048
318	Office and store machinery manufacturers	41	14005
252	Veneer and plywood mills	42	13586
399	Miscellaneous manufacturing industries, n.e.s.	43	13338
266	Other furniture industries	44	13081
229	Miscellaneous textiles industry, n.e.s.	45	13030
303	Ornamental and architectural metal industry	46	12784
374	Manufacturers of pharmaceuticals and medicines	47	12645
311	Agricultural implement industry	48	12063
356	Glass and glass products manufacturers	49	12031
332	Manufacturers of major appliances (electric and non-electric)	50	11971
294	Iron foundries	51	11582
131	Confectionery manufacturers	52	10795
324	Truck body and trailer manufacturers	53	10129
169	Other rubber industries	54	10123
347	Concrete products manufacturers	55	10009
379	Other chemical industries	56	9714
123	Feed Manufacturers	57	9468
163	Rubber tire and tube manufacturers	58	9412
393	Sporting goods industry	59	9270

S.I.C.	INDUSTRY	RANK	EMPLOYMENT
145	Breweries	60	9255
365	Petroleum refineries	61	9203
338	Manufacturers of electric wire and cable	62	8572
153	Tobacco products manufacturers	63	8456
231	Hosiery mills	64	8186
375	Paint and varnish manufacturers	65	8170
334	Manufacturers of household radio and television receivers	66	8087
245	Children's clothing factories	67	7681
348	Ready-mix concrete manufacturers	68	7509
301	Boiler and plate works	69	7494
103	Poultry processors	70	7225
128	Biscuit manufacturers	71	6929
179	Miscellaneous leather products manufacturers	72	6749
287	Plate making, typesetting and trade bindery plants	73	6624
197	Wool cloth mills	74	6221
326	Railroad rolling stock industry	75	6128
296	Aluminum rolling, casting and extruding	76	6028
331	Manufacturers of small electrical appliances	77	5997
329	Miscellaneous vehicle manufacturers	78	5988
143	Distilleries	79	5901
376	Manufacturers of soap and cleaning compounds	80	5827
382	Jewellery and silverware manufacturers	81	5725
288	Publishing only	82	5656
371	Explosives and ammunition manufacturers	83	5593
397	Signs and displays industry	84	5515
259	Miscellaneous wood industries	85	5491
351	Clay products manufacturers	86	5383
248	Foundation garment industry	87	5228
377	Manufacturers of toilet preparations	88	5222
292	Steel pipe and tube mills	89	5146

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S.I.C.	INDUSTRY	RANK	EMPLOYMENT
307	Heating equipment manufacturers	90	5059
264	Office furniture industry	91	5022
216	Carpet, mat and rug industry	92	4938
298	Metal rolling, casting and extruding, n.e.s.	93	4856
373	Manufacturers of plastics and synthetic resins	94	4052
297	Copper and alloy rolling, casting and extruding	95	3922
341	Cement manufacturers	96	3778
124	Flour mills	97	3510
256	Wooden box factories	98	3426
161	Rubber footwear manufacturers	99	3292
172	Leather tanneries	100	3037
218	Textile dyeing and finishing plants	101	2993
133	Sugar refineries	102	2978
316	Commercial refrigeration and air conditioning equipment manufacturers	103	2864
246	Fur goods industry	104	2831
337	Battery manufacturers	105	2716
357	Abrasives manufacturers	106	2697
328	Boatbuilding and repair	107	2696
214	Narrow fabric mills	108	2600
355	Asbestos products manufacturers	109	2596
383	Broom, brush and mop industry	110	2341
247	Hat and cap industry	111	2151
221	Canvas products industry	112	2058
219	Linoleum and coated fabrics industry	113	1956
272	Asphalt roofing manufacturers	114	1754
151	Leaf tobacco processing	115	1593
175	Leather glove factories	116	1581
345	Gypsum products manufacturers	117	1555
372	Manufacturers of mixed fertilizers	118	1506
125	Breakfast cereal manufacturers	119	1450

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S.I.C.	INDUSTRY	RANK	EMPLOYMENT
249	Miscellaneous clothing industry,n.e.s.	120	1444
268	Electric lamp and shade industry	121	1434
193	Wool yarn mills	122	1432
258	Coffin and casket industry	123	1298
352	Refractories manufacturers	124	1132
354	Mineral wool manufacturers	125	1074
212	Thread mills	126	1020
223	Cotton and jute bag industry	127	972
213	Cordage and twine industry	128	932
211	Fibre preparing mills	129	924
147	Wineries	130	892
359	Other non-metallic mineral products industries	131	744
343	Lime manufacturers	132	707
395	Fur dressing and dyeing industry	133	704
353	Stone products manufacturers	134	673
135	Vegetable oil mills	135	662
369	Other petroleum and coal products industries	136	532
215	Pressed and punched felt mills	137	478
384	Venetian blind manufacturers	138	163
107	Process cheese manufacturers	139	0

SOURCE: Statistics Canada Cat. 31-203 annual.
Manufacturing Industries of Canada - Various Issues.

EMPLOYMENT - 1961-1969
Index Value At Last Fitted Point

S.I.C.	INDUSTRY	RANK	INDEX (1961= 100.0)
329	Miscellaneous vehicle manufacturers	1	687.9
216	Carpet, mat and rug industry	2	314.2
385	Plastic fabricators	3	273.1
324	Truck body and trailer manufacturers	4	270.0
325	Motor vehicle parts	5	206.1
308	Machine shops	6	197.2
316	Commercial refrigeration and air conditioning equipment manufacturers	7	195.8
335	Communication equipment manufacturers	8	195.8
328	Boatbuilding and repair	9	193.7
298	Metal rolling, casting and extruding, n.e.s.	10	187.6
348	Read-mix concrete manufacturers	11	181.8
318	Office and store machinery manufacturers	12	177.8
301	Boiler and plate works	13	173.9
315	Miscellaneous machinery & equipment manufacturers	14	173.6
323	Motor vehicle manufacturers	15	172.6
229	Miscellaneous textile industry, n.e.s.	16	171.6
274	Other paper converters	17	164.2
264	Office furniture industry	18	161.8
326	Railroad rolling stock industry	19	161.7
352	Refractories manufacturers	20	160.7
292	Steel pipe and tube mills	21	160.3
306	Hardware, tool and cutlery manufacturers	22	159.8
331	Manufacturers of small electrical appliances	23	157.4
377	Manufacturers of toilet preparations	24	156.9
294	Iron foundries	25	153.5
336	Manufacturers of electrical industrial equipment	26	152.0
266	Other furniture industries	27	150.4
218	Textile dyeing and finishing plants	28	150.3
339	Manufacturers of miscellaneous electrical products	29	150.3
381	Scientific and professional equipment manufacturers	30	149.0

<u>S.I.C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>FIRST DERIVATIVE</u>
296	Aluminum rolling, casting & extruding	30	450.9
103	Poultry processors	31	401.2
356	Glass and glass products manufacturers	32	368.2
143	Distilleries	33	359.1
261	Household furniture industry	34	345.4
399	Miscellaneous manufacturing industries, n.e.s.	35	327.2
123	Feed manufacturers	36	321.2
141	Soft drink manufacturers	37	318.3
393	Sporting goods industry	38	316.2
298	Metal rolling, casting & extruding, n.e.s.	39	315.1
334	Manufacturers of household radio and tele- vision receivers	40	304.7
304	Metal stamping, pressing & coating industry	41	293.7
287	Plate making, typesetting & trade bindery plants	42	266.6
289	Publishing and printing	43	266.2
397	Signs and displays industry	44	253.4
379	Other chemical industries	45	250.2
328	Boatbuilding and repair	46	215.5
382	Jewellery and silverware manufacturers	47	194.9
316	Commercial refrigeration & air conditioning equipment manufacturers	48	178.7
377	Manufacturers of toilet preparations	49	177.0
128	Biscuit manufacturers	50	171.7
107	Process cheese manufacturers	51	152.9
256	Wooden box factories	52	145.9
239	Other knitting mills	53	144.6
264	Office furniture industry	54	134.7
246	Fur goods industry	55	128.0
331	Manufacturers of small electrical appliances	56	122.5
218	Textile dyeing and finishing plants	57	122.4
375	Paint and varnish manufacturers	58	114.2

<u>S.I.C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>INDEX (1961= 100.0)</u>
286	Commercial printing	64	122.3
259	Miscellaneous wood industries	65	121.8
295	Smelting and refining	66	121.5
163	Rubber tire and tube manufacturers	67	121.1
252	Veneer and plywood mills	68	121.1
135	Vegetable oil mills	69	120.6
271	Pulp and paper mills	70	120.5
221	Canvas products industry	71	120.4
399	Miscellaneous manufacturing industries, n.e.s.	72	120.1
239	Other knitting mills	73	119.1
347	Concrete products manufacturers	74	119.1
244	Women's clothing factories	75	119.1
287	Plate making, typesetting and trade bindery plants	76	118.9
382	Jewellery and silverware manufacturers	77	117.8
303	Ornamental and architectural metal industry	78	117.7
141	Soft drink manufacturers	79	116.8
123	Feed manufacturers	80	116.6
297	Copper and alloy rolling, casting & extruding, n.e.s.	81	116.5
214	Narrow fabric mills	82	116.2
373	Manufacturers of plastics & synthetic resins	83	116.1
296	Aluminum rolling, casting & extruding	84	114.1
112	Fruit & vegetable canners & preservers	85	113.3
268	Electric lamp and shade industry	86	113.2
179	Miscellaneous leather products manufacturers	87	112.8
243	Men's clothing factories	88	112.7
375	Paint and varnish manufacturers	89	111.0
357	Abrasives manufacturers	90	110.9
211	Fibre preparing mills	91	110.7
131	Confectionery manufacturers	92	109.8
332	Manufacturers of major appliances (electric and non-electric)	93	109.4
215	Pressed and punched felt mills	94	108.6

S.I.C.	INDUSTRY	RANK	INDEX (1961= 100.0)
341	Cement manufacturers	95	108.4
289	Publishing and printing	96	107.8
272	Asphalt roofing manufacturers	97	107.6
101	Slaughtering and meat processors	98	106.9
355	Asbestos products manufacturers	99	106.4
251	Sawmills and planing mills	100	106.0
128	Biscuit manufacturers	101	104.3
212	Thread mills	102	103.7
351	Clay products manufacturers	103	102.5
334	Manufacturers of household radio and television receivers	104	102.1
345	Gypsum products manufacturers	105	101.8
129	Bakeries	106	101.8
383	Broom, brush and mop industry	107	101.5
327	Shipbuilding and repair	108	099.0
145	Breweries	109	098.9
376	Manufacturers of soap and cleaning compounds	110	098.7
223	Cotton and jute bag industry	111	096.6
133	Sugar refineries	112	096.2
125	Breakfast cereal manufacturers	113	095.9
153	Tobacco products manufacturers	114	095.4
105	Dairy factories	115	094.7
307	Heating equipment manufacturers	116	094.7
231	Hosiery mills	117	093.2
175	Leather glove factories	118	092.4
258	Coffin and casket industry	119	092.1
213	Cordage and twine industry	120	091.8
197	Wool cloth mills	121	091.2
174	Shoe factories	122	091.1
245	Children's clothing factories	123	090.6
365	Petroleum refineries	124	085.5
172	Leather tanneries	125	084.4
369	Other petroleum & coal products industries	126	082.6

<u>S.I.C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>INDEX (1961= 100.0)</u>
219	Linoleum and coated fabrics industry	127	081.6
124	Flour mills	128	081.0
151	Leaf tobacco processing	129	080.0
183	Cotton yarn and cloth mills	130	079.9
246	Fur goods industry	131	076.4
343	Lime manufacturers	132	073.8
161	Rubber footwear manufacturers	133	072.4
249	Foundation garment industry	134	070.5
193	Wool yarn mills	135	066.5
395	Fur dressing and dyeing industry	136	062.9
353	Stone products manufacturers	137	053.8
384	Venetian blind manufacturers	138	051.8
247	Hat and cap industry	139	050.3

INDEX OF REAL DOMESTIC PRODUCT - 1969

<u>S.I.C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>R.D.P. (1961 - 100.0)</u>
329	Miscellaneous vehicles manufacturers	1	1603.6
216	Carpet, mat and rug industry	2	516.1
323	Motor vehicle manufacturers	3	385.6
385	Plastics fabricators, n.e.s.	4	351.0
324	Truck body and trailer manufacturers	5	338.9
328	Boatbuilding and repair	6	293.8
325	Motor vehicle parts and accessories manu- facturers	7	289.3
354	Mineral wool manufacturers	8	268.5
316	Commercial refrigeration and air conditioning equipment manufacturers	9	267.0
215	Pressed and punched felt mills	10	264.3
335	Communications equipment manufacturers	11	252.8
229	Miscellaneous textiles industry, n.e.s.	12	250.6
318	Office and store machinery manufacturers	13	224.3
308	Machine shops	14	223.4
331	Manufacturers of small electrical appliances	15	220.3
297	Copper and alloy rolling, casting and extruding	16	218.5
296	Aluminum rolling, casting and extruding	17	216.9
334	Manufacturers of household radio and tele- vision receivers	18	215.8
336	Manufacturers of electrical industrial equipment	19	212.8
373	Manufacturers of plastics and synthetic resins	20	212.1
163	Rubber tire and tube manufacturers	21	211.9
371	Explosives and ammunition manufacturers	22	211.5
378	Manufacturers of industrial chemicals	23	207.9
301	Boiler and plate works	24	206.9
348	Ready-mix concrete manufacturers	25	200.4
311	Agricultural implement industry	26	200.0
315	Miscellaneous machinery and equipment manufacturers	27	199.9
143	Distilleries	28	198.2
374	Manufacturers of pharmaceuticals and medicines	29	196.1
107	Process cheese manufacturers	30	195.5

Note: Mean Index in 1969 = 168.4

<u>S.I.C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>R.D.P.</u>
266	Other furniture industries	31	191.3
201	Synthetic textile mills	32	190.2
302	Fabricated structural metal industry	33	188.6
123	Feed manufacturers	34	187.3
298	Metal rolling, casting and extruding, n.e.s.	35	187.3
326	Railroad rolling stock industry	36	187.0
381	Scientific and professional equipment manufacturers	37	185.6
147	Wineries	38	185.4
274	Other paper converters	39	185.0
169	Other rubber industries	40	184.8
304	Metal stamping, pressing and coating industry	41	184.7
339	Manufacturers of miscellaneous electrical products	42	184.6
306	Hardware, tool and cutlery manufacturers	43	183.5
264	Office furniture industry	44	182.5
214	Narrow fabric mills	45	180.7
292	Steel pipe and tube mills	46	179.6
397	Signs and displays industry	47	178.4
305	Wire and wire products manufacturers	48	175.4
303	Ornamental and architectural metal industry	49	175.2
239	Other knitting mills	50	173.2
256	Wooden box factories	51	171.8
332	Manufacturers of major appliances (electric and non-electric)	52	170.8
103	Poultry processors	53	168.1
379	Other chemical industries	54	168.1
359	Other non-metallic mineral products industries	55	167.3
261	Household furniture industry	56	166.8
338	Manufacturers of electric wire and cable	57	166.5
356	Glass and glass products manufacturers	58	166.4
211	Fibre preparing mills	59	164.7
352	Refractories manufacturers	60	164.1

<u>S.I.C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>R.D.P.</u>
294	Iron foundries	61	162.5
309	Miscellaneous metal fabricating industries	62	162.3
139	Miscellaneous food manufacturers	63	161.7
377	Manufacturers of toilet preparations	64	161.7
272	Asphalt roofing manufacturers	65	159.2
291	Iron and steel mills	66	156.9
286	Commercial printing	67	154.6
347	Concrete products manufacturers	68	153.4
399	Miscellaneous manufacturing industries, n.e.s.	69	151.1
345	Gypsum products manufacturers	70	150.8
112	Fruit and vegetable canners and preservers	71	148.7
251	Sawmills and planing mills	72	147.5
135	Vegetable oil mills	73	146.8
252	Veneer and plywood mills	74	146.4
295	Smelting and refining	75	146.2
327	Shipbuilding and repair	76	144.5
337	Battery manufacturers	77	144.4
101	Slaughtering and meat processors	78	144.2
248	Foundation garment industry	79	142.5
382	Jewellery and silverware manufacturers	80	142.2
244	Women's clothing factories	81	142.1
131	Confectionery manufacturers	82	141.4
288	Publishing only	83	141.4
268	Electric lamp and shade industry	84	141.2
375	Paint and varnish manufacturers	85	140.9
321	Aircraft and parts manufacturers	86	140.1
365	Petroleum refineries	87	139.9
179	Miscellaneous leather products manufacturers	88	138.4
383	Broom, brush and mop industry	89	137.8
376	Manufacturers of soap and cleaning compounds	90	137.2

<u>S.I.C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>R.D.P.</u>
218	Textile dyeing and finishing plants	91	137.0
145	Breweries	92	136.5
243	Men's clothing factories	93	136.3
351	Clay products manufacturers	94	133.9
197	Wool cloth mills	95	133.4
307	Heating equipment manufacturers	96	132.0
259	Miscellaneous wood industries	97	130.9
105	Dairy factories	98	130.8
271	Pulp and paper mills	99	129.9
393	Sporting goods industry	100	129.6
355	Asbestos products manufacturers	101	128.8
357	Abrasives manufacturers	102	126.7
273	Paper and plastic bag manufacturers	103	126.6
141	Soft drink manufacturers	104	126.5
133	Sugar refineries	105	125.0
153	Tobacco products manufacturers	106	124.2
258	Coffin and casket industry	107	124.1
111	Fish products industry	108	122.8
287	Plate making, typesetting and trade bindery plants	109	121.4
223	Cotton and jute bag industry	110	121.1
128	Biscuit manufacturers	111	120.8
129	Bakeries	112	120.7
231	Hosiery mills	113	120.3
341	Cement manufacturers	114	115.7
254	Sash, door and other millwork plants	115	112.4
183	Cotton yarn and cloth mills	116	112.0
175	Leather glove factories	117	111.1
289	Publishing and printing	118	109.7
213	Cordage and twine industry	119	109.4
221	Canvas products industry	120	108.9

<u>S.I.C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>R.D.P.</u>
245	Children's clothing factories	121	106.9
369	Other petroleum and coal products industries	122	104.9
193	Wool yarn mills	123	102.8
343	Lime manufacturers	124	102.0
125	Breakfast cereal manufacturers	125	101.7
212	Thread mills	126	101.5
249	Miscellaneous clothing industry, n.e.s.	127	97.9
161	Rubber footwear manufacturers	128	97.8
372	Manufacturers of mixed fertilizers	129	90.9
174	Shoe factories	130	86.9
246	Fur goods industry	131	76.0
353	Stone products manufacturers	132	73.8
124	Flour mills	133	73.6
219	Linoleum and coated fabrics industry	134	72.3
395	Fur dressing and dyeing industry	135	69.7
151	Leaf tobacco processing	136	69.3
172	Leather tanneries	137	66.2
247	Hat and cap industry	138	64.6
384	Venetian blind manufacturers	139	60.0

Source: Statistics Canada, Cat. 61-510 Occasional
Indexes of Real Domestic Product by Industry.

% SURPLUS/OUTPUT - 1969

<u>S.I.C.</u>	<u>INDUSTRIES</u>	<u>RANK</u>	<u>S/O</u>
143	Distilleries	1	55.22
341	Cement manufacturers	2	51.67
145	Breweries	3	48.67
318	Office and store machinery manufacturers	4	43.32
354	Mineral wool manufacturers	5	41.87
377	Manufacturers of toilet preparations	6	41.83
125	Breakfast cereal manufacturers	7	41.32
345	Gypsum products manufacturers	8	40.00
374	Manufacturers of pharmaceuticals and medicines	9	39.60
376	Manufacturers of soap and cleaning compounds	10	35.15
289	Publishing and printing	11	33.75
147	Wineries	12	33.59
153	Tobacco products manufacturers	13	32.70
343	Lime Manufacturers	14	32.65
288	Publishing only	15	32.10
174	Shoe factories	16	31.28
397	Signs and displays industry	17	31.06
351	Clay products manufacturers	18	30.59
352	Refractories manufacturers	19	30.34
329	Miscellaneous vehicle manufacturers	20	29.98
378	Manufacturers of industrial chemicals	21	29.71
371	Explosives and ammunition manufacturers	22	29.57
359	Other non-metallic mineral products industries	23	29.10
347	Concrete products manufacturers	24	28.85
369	Other petroleum and coal products industries	25	28.66
353	Stone products manufacturers	26	28.48
141	Soft drink manufacturers	27	28.43
139	Miscellaneous food manufacturers	28	28.09
169	Other rubber industries	29	28.00

Note: Surplus/Out is calculated by the following formula:

$$\frac{T.V.A. - W \& S}{S + \Delta I}$$

Surplus
Output

Where - T.V.A. = Total Value Added
W + S = Wages & Salaries - Total Activity
S = Shipment
ΔI = Net Annual Change in Inventory

<u>S.I.C.</u>	<u>INDUSTRIES</u>	<u>RANK</u>	<u>S/O</u>
399	Miscellaneous manufacturing industries, n.e.s.	30	27.58
163	Rubber tire and tube manufacturers	31	27.34
306	Hardware, tool and cutlery manufacturers	32	27.20
385	Plastics fabricators, n.e.s.	33	26.94
356	Glass and glass products manufacturers	34	26.52
291	Iron and steel mills	35	26.37
383	Broom, brush and mop industry	36	26.12
131	Confectionery manufacturers	37	26.03
375	Paint and varnish manufacturers	38	26.01
128	Biscuit manufacturers	39	25.74
331	Manufacturers of small electrical appliances	40	25.22
272	Asphalt roofing manufacturers	41	25.06
179	Miscellaneous leather products manufacturers	42	24.61
264	Office furniture industry	43	24.29
393	Sporting goods industry	44	24.28
373	Manufacturers of plastics and synthetic resins	45	24.20
339	Manufacturers of miscellaneous electrical products	46	24.15
337	Battery manufacturers	47	24.10
287	Plate making, typesetting and trade bindery plants	48	23.82
384	Venetian blind manufacturers	49	23.77
379	Other chemical industries	50	23.70
308	Machine shops	51	23.58
355	Asbestos products manufacturers	52	23.52
133	Sugar refineries	53	23.16
271	Pulp and paper mills	54	23.14
197	Wool cloth mills	55	23.12
216	Carpet, mat and rug industry	56	22.99
259	Miscellaneous wood industries	57	22.59
381	Scientific and professional equipment manufacturers	58	22.59

<u>S.I.C.</u>	<u>INDUSTRIES</u>	<u>RANK</u>	<u>S/O</u>
286	Commercial printing	59	22.53
315	Miscellaneous machinery and equipment manufacturers	60	22.11
268	Electric lamp and shade industry	61	21.99
302	Fabricated structural metal industry	62	21.77
348	Ready-mix concrete manufacturers	63	21.74
325	Motor vehicle parts and accessories manufacturers	64	21.55
215	Pressed and punched felt mills	65	21.44
274	Other paper converters	66	21.42
112	Fruit and vegetable canners and preservers	67	21.41
307	Heating equipment manufacturers	68	21.37
309	Miscellaneous metal fabricating industries	69	21.13
261	Household furniture industry	70	21.09
201	Synthetic textile mills	71	21.02
273	Paper and plastic bag manufacturers	72	20.89
294	Iron foundries	73	20.88
229	Miscellaneous textiles industry, n.e.s.	74	20.87
256	Wooden box factories	75	20.70
304	Metal stamping, pressing and coating industry	76	20.70
305	Wire and wire products manufacturers	77	20.43
214	Narrow fabric mills	78	20.26
161	Rubber footwear manufacturers	79	20.25
212	Thread mills	80	20.10
295	Smelting and refining	81	19.96
218	Textile dyeing and finishing plants	82	19.95
248	Foundation garment industry	83	19.90
301	Boiler and plate works	84	19.85
211	Fibre preparing mills	85	19.81
193	Wool yarn mills	86	19.76
251	Sawmills and planing mills	87	19.48
129	Bakeries	88	19.47
303	Ornamental and architectural metal industry	89	19.36

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<u>S.I.C.</u>	<u>INDUSTRIES</u>	<u>RANK</u>	<u>S/O</u>
266	Other furniture industries	90	19.29
357	Abrasives manufacturers	91	19.24
334	Manufacturers of household radio and television receivers	92	18.73
372	Manufacturers of mixed fertilizers	93	18.70
336	Manufacturers of electrical industrial equipment	94	18.57
382	Jewellery and silverware manufacturers	95	18.52
395	Fur dressing and dyeing industry	96	18.47
239	Other knitting mills	97	18.28
328	Boatbuilding and repair	98	18.27
221	Canvas products industry	99	18.26
332	Manufacturers of major appliances (electric and non-electric)	100	18.17
338	Manufacturers of electric wire and cable	101	18.06
231	Hosiery mills	102	17.97
246	Fur goods industry	103	17.76
244	Women's clothing factories	104	17.54
252	Veneer and plywood mills	105	17.41
219	Linoleum and coated fabrics industry	106	17.40
247	Hat and cap industry	107	17.40
249	Miscellaneous clothing industry, n.e.s.	108	17.29
111	Fish products industry	109	17.00
326	Railroad rolling stock industry	110	17.00
324	Truck body and trailer manufacturers	111	16.92
254	Sash, door and other millwork plants	112	16.68
296	Aluminum rolling, casting and extruding	113	16.58
316	Commercial refrigeration and air conditioning equipment manufacturers	114	16.51
335	Communications equipment manufacturers	115	16.50
258	Coffin and casket industry	116	16.36
323	Motor vehicle manufacturers	117	15.95

<u>S.I.C.</u>	<u>INDUSTRIES</u>	<u>RANK</u>	<u>S/O</u>
243	Men's clothing factories	118	15.43
245	Children's clothing factories	119	15.16
298	Metal rolling, casting and extruding, n.e.s.	120	15.07
183	Cotton yarn and cloth mills	121	14.98
292	Steel pipe and tube mills	122	14.08
311	Agricultural implement industry	123	13.83
327	Shipbuilding and repair	124	13.54
213	Cordage and twine industry	125	13.17
321	Aircraft and parts manufacturers	126	12.92
365	Petroleum refineries	127	12.77
123	Feed manufacturers	128	12.58
105	Dairy factories	129	12.37
124	Flour mills	130	11.96
172	Leather tanneries	131	11.41
151	Leaf tobacco processing	132	10.81
223	Cotton and jute bag industry	133	10.61
297	Copper and alloy rolling, casting and extruding	134	10.42
135	Vegetable oil mills	135	9.82
103	Poultry processors	136	8.67
101	Salughtering and meat processors	137	7.57
175	Leather glove factories	138	2.35
107	Process cheese manufacturers	139	0.0

Note: Surplus/Out is calculated by the following formula:

$$\frac{T.V.A. - W \& S}{S + \Delta I} = \frac{\text{Surplus}}{\text{Output}}$$

Where - T.V.A. = Total Value Added
W + S = Wages & Salaries - Total ACTivity
S = Shipment
 ΔI = Net Annual Change in Inventory.

RATIO OF TOTAL VALUE ADDED/PRODUCTION WORKER
FOR CANADA/UNITED STATES - 1968

<u>S.I.C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>RATIO</u>
318	Office and store machinery manufacturers	1	2.8688
352	Refractories manufacturers	2	1.3559
143	Distilleries	3	1.3350
145	Breweries	4	1.2849
341	Cement manufacturers	5	1.2079
212	Thread mills	6	1.2024
334	Manufacturers of household radio and tele- vision receivers	7	1.1951
329	Miscellaneous vehicle manufacturers	8	1.1754
354	Mineral wool manufacturers	9	1.1639
353	Stone products manufacturers	10	1.1474
223	Cotton and jute bag industry	11	1.1276
169	Other rubber industries	12	1.1096
251	Sawmills and planing mills	13	1.0839
327	Shipbuilding and repair	14	1.0834
302	Fabricated structural metal industry	15	1.0777
151	Leaf tobacco processing	16	1.0694
359	Other non-metallic mineral products industries	17	1.0628
103	Poultry processors	18	1.0518
183	Cotton yarn and cloth mills	19	1.0491
272	Asphalt roofing manufacturers	20	1.0458

<u>S.I.C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>RATIO</u>
397	Signs and displays industry	21	1.0428
175	Leather glove factories	22	1.0337
268	Electric lamp and shade industry	23	1.0115
372	Manufacturers of mixed fertilizers	24	1.0113
355	Asbestos products manufacturers	25	1.0083
351	Clay products manufacturers	26	0.9940
256	Wooden box factories	27	0.9888
323	Motor vehicle manufacturers	28	0.9843
231	Hosiery mills	29	0.9736
337	Battery manufacturers	30	0.9661
287	Plate making, typesetting and trade bindery plants	31	0.9585
161	Rubber footwear manufacturers	32	0.9472
383	Broom, brush and mop industry	33	0.9449
214	Narrow fabric mills	34	0.9439
259	Miscellaneous wood industries	35	0.9207
291	Iron and steel mills	36	0.9206
296	Aluminum rolling, casting and extruding	37	0.9198
249	Miscellaneous clothing industry, n.e.s.	38	0.9153
375	Paint and varnish manufacturers	39	0.9104
297	Copper and alloy rolling, casting and extruding	40	0.9052
304	Metal stamping, pressing and coating industry	41	0.9018

<u>S.I.C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>RATIO</u>
369	Other petroleum and coal products industries	42	0.8967
331	Manufacturers of small electrical appliances	43	0.8909
303	Ornamental and architectural metal industry	44	0.8893
247	Hat and cap industry	45	0.8851
348	Ready-mix concrete manufacturers	46	0.8799
315	Miscellaneous machinery and equipment manufacturers	47	0.8789
328	Boatbuilding and repair	48	0.8757
133	Sugar refineries	49	0.8754
292	Steel pipe and tube mills	50	0.8728
373	Manufacturers of plastics and synthetic resins	51	0.8715
305	Wire and wire products manufacturers	52	0.8681
343	Lime manufacturers	53	0.8642
301	Boiler and plate works	54	0.8641
112	Fruit and vegetable canners and preservers	55	0.8639
345	Gypsum products manufacturers	56	0.8609
211	Fibre preparing mills	57	0.8576
326	Railroad rolling stock industry	58	0.8519
261	Household furniture industry	59	0.8513
347	Concrete products manufacturers	60	0.8472
307	Heating equipment manufacturers	61	0.8468
336	Manufacturers of electrical industrial equipment	62	0.8437
163	Rubber tire and tube manufacturers	63	0.8416
338	Manufacturers of electric wire and cable	64	0.8367
221	Canvas products industry	65	0.8339
286	Commercial printing	66	0.8250
254	Sash, door and other millwork plants	67	0.8248
213	Cordage and twine industry	68	0.8202
385	Plastics fabricators, n.e.s.	69	0.8184
393	Sporting goods industry	70	0.8173

<u>S.I.C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>RATIO</u>
218	Textile dyeing and finishing plants	71	0.8147
273	Paper and plastic bag manufacturers	72	0.8140
382	Jewellery and silverware manufacturers	73	0.8132
141	Soft drink manufacturers	74	0.8105
245	Children's clothing factories	75	0.8061
316	Commercial refrigeration and air conditioning equipment manufacturers	76	0.8023
274	Other paper converters	77	0.8020
179	Miscellaneous leather products manufacturers	78	0.7981
135	Vegetable oil mills	79	0.7949
239	Other knitting mills	80	0.7916
197	Wool cloth mills	81	0.7900
147	Wineries	82	0.7888
306	Hardware, tool and cutlery manufacturers	83	0.7879
365	Petroleum refineries	84	0.7875
324	Truck body and trailer manufacturers	85	0.7829
243	Men's clothing factories	86	0.7818
376	Manufacturers of soap and cleaning compounds	87	0.7778
332	Manufacturers of major appliances (electric and non-electric)	88	0.7766
308	Machine shops	89	0.7724
101	Slaughtering and meat processors	90	0.7712
379	Other chemical industries	91	0.7709
174	Shoe factories	92	0.7680
381	Scientific and professional equipment manufac- turers	93	0.7644
193	Wool yarn mills	94	0.7613
216	Carpet, mat and rug industry	95	0.7589
309	Miscellaneous metal fabricating industries	96	0.7572
356	Glass and glass products manufacturers	97	0.7571
384	Venetian blind manufacturers	98	0.7569
271	Pulp and paper mills	99	0.7476
294	Iron foundries	100	0.7449

<u>S.I.C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>RATIO</u>
201	Synthetic textile mills	101	0.7426
252	Veneer and plywood mills	102	0.7418
244	Women's clothing factories	103	0.7370
266	Other furniture industries	104	0.7329
288	Publishing only	105	0.7256
131	Confectionery manufacturers	106	0.7137
298	Metal rolling, casting and extruding, n.e.s.	107	0.7057
105	Dairy factories	108	0.7048
246	Fur goods industry	109	0.6975
378	Manufacturers of industrial chemicals	110	0.6955
339	Manufacturers of miscellaneous electrical products	111	0.6940
335	Communications equipment manufacturers	112	0.6929
311	Agricultural implement industry	113	0.6926
172	Leather tanneries	114	0.6849
264	Office furniture industry	115	0.6813
153	Tobacco products manufacturers	116	0.6697
123	Feed manufacturers	117	0.6590
248	Foundation garment industry	118	0.6560
129	Bakeries	119	0.6534
258	Coffin and casket industry	120	0.6483
219	Linoleum and coated fabrics industry	121	0.6462
374	Manufacturers of pharmaceuticals and medicines	122	0.6419
321	Aircraft and parts manufacturers	123	0.6360
357	Abrasives manufacturers	124	0.6201
229	Miscellaneous textiles industry, n.e.s.	125	0.5943
111	Fish products industry	126	0.5791
125	Breakfast cereal manufacturers	127	0.5741
124	Flour mills	128	0.5674
295	Smelting and refining	129	0.5536

<u>S.I.C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>RATIO</u>
128	Biscuit manufacturers	130	0.5528
395	Fur dressing and dyeing industry	131	0.5194
377	Manufacturers of toilet preparations	132	0.4557
215	Pressed and punched felt mills	133	0.4107
107	Process cheese manufacturers	134	0.0
139	Miscellaneous food manufacturers	135	0.0
289	Publishing and printing	136	0.0
325	Motor vehicle parts and accessories manufacturers	137	0.0
371	Explosives and ammunition manufacturers	138	0.0
399	Miscellaneous manufacturing industries, n.e.s.	139	0.0

Source: Financial Post, Survey of Markets, Various issues.

RATIO OF DOMESTIC SHARE TO
DOMESTIC DISAPPEARANCE - 1969

<u>S. I. C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>RATIO</u>
347	Concrete products manufacturers	1	0.9992
145	Breweries	2	0.9957
223	Cotton and jute bag industry	3	0.9947
141	Soft drink manufacturers	4	0.9936
129	Bakeries	5	0.9924
125	Breakfast cereal manufacturers	6	0.9922
354	Mineral wool manufacturers	7	0.9921
103	Poultry processors	8	0.9904
123	Feed manufacturers	9	0.9891
345	Gypsum products manufacturers	10	0.9884
105	Dairy factories	11	0.9868
371	Explosives and ammunition manufacturers	12	0.9857
303	Ornamental and architectural metal industry	13	0.9843
153	Tobacco products manufacturers	14	0.9841
124	Flour mills	15	0.9834
341	Cement manufacturers	16	0.9832
359	Other non-metallic mineral products industries	17	0.9831
258	Coffin and casket industry	18	0.9820
254	Sash, door and other millwork plants	19	0.9783
248	Foundation garment industry	20	0.9746
376	Manufacturers of soap and cleaning compounds	21	0.9739
133	Sugar refineries	22	0.9731
273	Paper and plastic bag manufacturers	23	0.9696
221	Canvas products industry	24	0.9692
	Fur goods industry	25	0.9664
304	Metal stamping, pressing and coating industry	26	0.9595
266	Other furniture industries	27	0.9592
128	Biscuit manufacturers	28	0.9538

Note: Domestic Share of Domestic Disappearance = $\frac{S + X}{S - X - M}$

Where S = Shipments
X = Exports
M = Imports

<u>S.I.C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>RATIO</u>
343	Lime manufacturers	29	0.9508
338	Manufacturers of electric wire and cable	30	0.9483
377	Manufacturers of toilet preparations	31	0.9447
375	Paint and varnish manufacturers	32	0.9446
151	Leaf tobacco processing	33	0.9439
271	Pulp and paper mills	34	0.9410
307	Heating equipment manufacturers	35	0.9405
329	Miscellaneous vehicle manufacturers	36	0.9399
264	Office furniture industry	37	0.9396
231	Hosiery mills	38	0.9358
261	Houshold furniture industry	39	0.9357
327	Shipbuilding and repair	40	0.9325
301	Boiler and plate works	41	0.9295
272	Asphalt roofing manufacturers	42	0.9292
101	Slaughtering and meat processing	43	0.9258
383	Broom, brush and mop industry	44	0.9170
251	Sawmills and planing mills	45	0.9168
243	Men's clothing factories	46	0.9138
139	Miscellaneous food manufacturers	47	0.9081
212	Thread mills	48	0.9053
274	Other paper converters	49	0.9030
365	Petroleum refineries	50	0.8995
256	Wooden box factories	51	0.8975
111	Fish products industry	52	0.8970
384	Venetian blind manufacturers	53	0.8881
131	Confectionery manufacturers	54	0.8855
372	Manufacturers of mixed fertilizers	55	0.8848
215	Pressed and punched felt mills	56	0.8837
326	Railroad rolling stock industry	57	0.8813
259	Miscellaneous wood industries	58	0.8773

<u>S.I.C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>RATIO</u>
163	Rubber tire and tube manufacturers	59	0.8762
324	Truck body and trailer manufacturers	60	0.8754
297	Copper and alloy rolling, casting & extruding	61	0.8725
247	Hat and cap industry	62	0.8629
286	Commercial printing	63	0.8613
216	Carpet, mat and rug industry	64	0.8595
374	Manufacturers of pharmaceuticals & medicines	65	0.8510
395	Fur dressing and dyeing industry	66	0.8490
298	Metal rolling, casting and extruding, n.e.s.	67	0.8449
174	Shoe factories	68	0.8438
239	Other knitting mills	69	0.8418
328	Boatbuilding and repair	70	0.8348
252	Veneer and plywood mills	71	0.8321
332	Manufacturers of major appliances (electric and non-electric)	72	0.8317
355	Asbestos products manufacturers	73	0.8229
143	Distilleries	74	0.8176
337	Battery manufacturers	75	0.8153
309	Miscellaneous metal fabricating industries	76	0.8146
179	Miscellaneous leather products manufacturers	77	0.8123
175	Leather glove factories	78	0.8022
193	Wool yarn mills	79	0.7960
112	Fruit and vegetable canners and preservers	80	0.7906
292	Steel pipe and tube mills	81	0.7883
229	Miscellaneous textiles industry, n.e.s.	82	0.7850
183	Cotton yarn and cloth mills	83	0.7846
305	Wire and wire products manufacturers	84	0.7818
318	Office and store machinery manufacturers	85	0.7811
353	Stone products manufacturers	86	0.7716
335	Communications equipment manufacturers	87	0.7713
201	Synthetic textile mills	88	0.7709

<u>S. I. C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>RATIO</u>
291	Iron and steel mills	89	0.7684
169	Other rubber industries	90	0.7598
249	Miscellaneous clothing industry, n.e.s.	91	0.7482
294	Iron foundries	92	0.7455
197	Wool cloth mills	93	0.7370
379	Other chemical industries	94	0.7350
331	Manufacturers of small electrical appliances	95	0.7193
334	Manufacturers of household radio and television receivers	96	0.7192
356	Glass and glass products manufacturers	97	0.7179
161	Rubber footwear manufacturers	98	0.7119
378	Manufacturers of industrial chemicals	99	0.7097
214	Narrow fabric mills	100	0.7070
336	Manufacturers of electrical industrial equipment	101	0.6856
295	Smelting and refining	102	0.6719
351	Clay products manufacturers	103	0.6668
382	Jewellery and silverware manufacturers	104	0.6636
172	Leather tanneries	105	0.6626
385	Plastic fabricators, n.e.s.	106	0.6560
323	Motor vehicle manufacturers	107	0.6287
316	Commercial refrigeration and air conditioning equipment manufacturers	108	0.6186
135	Vegetable oil mills	109	0.6162
357	Abrasives manufacturers	110	0.5866
219	Linoleum and coated fabrics industries	111	0.5813
147	Wineries	112	0.5797
306	Hardware, tool and cutlery manufacturers	113	0.5744

<u>S.I.C.</u>	<u>INDUSTRY</u>	<u>RANK</u>	<u>RATIO</u>
213	Cordage and twine industry	114	0.5717
296	Aluminum rolling, casting and extruding	115	0.5663
352	Refractories manufacturers	116	0.5372
339	Manufacturers of miscellaneous electrical products	117	0.5062
268	Electric lamp and shade industry	118	0.4914
373	Manufacturers of plastics and synthetic resins	119	0.4795
381	Scientific and professional equipment manufacturers	120	0.4768
321	Aircraft and parts manufacturers	121	0.4696
315	Miscellaneous machinery & equipment manufacturers	122	0.4084
211	Fibre preparing mills	123	0.3910
311	Agricultural implement industry	124	0.3836
393	Sporting goods industry	125	0.3811
369	Other petroleum & coal products industries	126	0.3502
399	Miscellaneous manufacturing industries, n.e.s.	127	0.3496
325	Motor vehicle parts and accessories manufacturers	128	0.1344
107	Process cheese manufacturers	129	0.0
218	Textile dyeing and finishing plants	130	0.0
244	Women's clothing factories	131	0.0
245	Children's clothing factories	132	0.0
287	Plate making, typesetting and trade bindery plants	133	0.0
288	Publishing only	134	0.0
289	Publishing and printing	135	0.0
302	Fabricated structural metal industry	136	0.0
308	Machine shops	137	0.0
348	Ready-mix concrete manufacturers	138	0.0
397	Signs and displays industry	139	0.0

Source: Department of Industry, Trade and Commerce.

A P P E N D I X C

CURVE FORMS FOR
TIME SERIES DATA

CURVE FORMS FOR
TIME SERIES DATA

1. $y = A + BX$ - linear
2. $y = A^{BX}$ - exponential - increasing exponent
3. $y = AX^B$ - exponential
4. $y = A + \frac{B}{X}$ - hyperbola
5. $y = \frac{1}{A + BX}$ - hyperbola
6. $y = \frac{X}{A + BX}$ - hyperbola
7. $y = a + bx + cx^2$ - polynomial

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