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Updating of a Study on the Regional Economic Potential for the Mechanical Power Transmission Equipment Industry in Canada

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Prepared for

The Department of Regional Economic Expansion

sorēs inc.

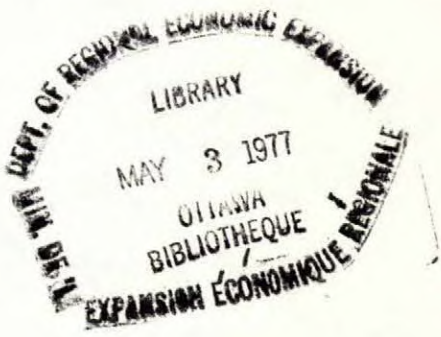
UPDATING OF A STUDY ON THE REGIONAL ECONOMIC POTENTIAL FOR THE MECHANICAL POWER TRANSMISSION EQUIPMENT INDUSTRY IN CANADA

Submitted to

THE DEPARTMENT OF REGIONAL ECONOMIC EXPANSION

By

SORÈS INC.



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1. INTRODUCTION

1.1 The Mandate

Resources Management Consultants Ltd, of Toronto, submitted in 1973 a report to the Department of Regional Economic Expansion. This report was titled "A Preliminary Investigation of the Regional Economic Potential for the Mechanical Power Transmission Equipment and Parts Industry in Canada". This study concluded that the Canadian market offered a good opportunity for a producer to increase or establish new manufacturing facilities in the mechanical power transmission equipment (M.P.T.E.) industry.

SORES INC. was asked to update this study which seemed of good quality and well documented. The mandate contained the following terms of reference:

- to update the original study statistics and to analyse these data
- to meet the major manufacturers and distributors, and some relevant experts or organizations
- to reevaluate the conclusions and recommendations of the original study
- to update the list of the Canadian producers of mechanical power transmission equipment.

1.2 The General Approach

Our study is thus based on the report of Resources Management Consultants Ltd, and we mainly verified how the basic conditions of the mechanical power transmission equipment market changed since 1972 and to what extent.

We thus visited the major Canadian producers to get specific information on the past and projected evolution of the market. The list of the major Canadian producers and distributors as well as their products, is given in Appendix 1. For our discussions with the major producers, we used a standardized questionnaire (cf Appendix 2), including questions on the company profile, the number of employees, the sale volume and distribution, the nature of market competition the market trends, the technological characteristics, the plant locational factors, etc. We updated the original data through Canadian official statistics or through estimates, depending on the availability of these statistics. We finally contacted some experts to get their understanding of the market circumstances surrounding the M.P.T.E. industry. The list of the persons contacted is given in Appendix 3.

Chapter 2 summarizes the product characteristics and gives a list of the major Canadian producers and distributors of M.P.T.E. and parts, as well as their own manufactured product lines. Chapter 3 consists in a discussion on the evolution and the trends of the Canadian production, imports, exports and market for M.P.T.E. Chapter 4 presents the characteristics of the industry, including the nature of market competition, the major applications of the product, the distribution profile, the regional distribution of sales, the production cost breakdown, the skill requirements, the technological characteristics, and the locational factors of the industry. Chapter 5 presents our conclusions and recommendations.

1.3 Summary

The major characteristics of the Canadian M.P.T.E. industry are summarized below.

Although there are many small Canadian producers of M.P.T.E. products, more than 60% of the Canadian production excluding bearings is accounted for by 5 manufacturers who tend to specialize their output, and 2 of these 5 companies are Canadian owned. Four of these 5 producers present wide ranges of products while one exclusively specializes in M.P.T.E. products.

From 1970 to 1975, the Canadian market increased by 13.2% a year, and Canadian apparent consumption increased by 14.2% a year. Imports grew by 14.0% while exports increased by 6.2% a year. The market share of Canadian producers fell from 44% to 37%.

Foreign competition is thus increasing, and four major factors explain that fact: Canadian tariffs fell from 22.5% to 15%; Canadian market is not large enough to permit economies of scales and lower prices for Canadian products; foreign companies could keep their price low enough to catch an important share of market; there is not much R & D done in Canada to improve products.

Labor and raw materials are the major factor costs and the elements taken into consideration for the location of new manufacturing facilities are the existence of a pool of skilled labor, the access to technological services, and the proximity to the OEM (Original Equipment Manufacturers) market.

2. PRODUCTS AND PRODUCERS

2.1 Characteristics of the product

The products usually included in the classification of Mechanical Power Transmission Equipment (M.P.T.E.) can be summarized as follows:

- Bearings
- Gears and gearboxes, gearmotors
- Flexible couplings
- Chains
- Pulleys
- Shafts
- Sprockets
- Belts
- Speed reducers and increasers
- Variable speed drives
- Other components such as brakes, clutches, facings and gaskets

Bearings are exclusively produced by four Canadian manufacturers (listed below). Bearings manufacturing constitutes a highly specialized business and is generally the only output of those involved in that production.

The most common components of M.P.T.E. produced by Canadian manufacturers are gears and gearboxes, flexible couplings and speed reducers, and all of them cut different types of gears.

The breadth of MPTE product line varies from one manufacturer to another as well as the number of product lines. Bearings are bought from other companies (Canadian or foreign) and assembled with own manufactured parts. Some processing (like casting) is also frequently done by other manufacturers.

2.2 Major Canadian Manufacturers and Distributors

Although there is a large number of Canadian producers, in the industry, the big ones tend to develop special lines of MPTE products and more specifically, their output is differentiated through size and power applications.

The major manufacturers were originally involved in machinery production, mainly pulp and paper and mining equipment (conveyors, sawmill equipment, feeders, handling equipment). They initially engaged in MPTE line to supply their own needs when it was economically profitable, and then went to the open market.

With two exceptions, Canadian major manufacturers are subsidiaries of foreign companies, mainly American. The major ones are concentrated in Ontario and Quebec, where they also sell the biggest proportion of their products. An important segment of foreign subsidiaries output in MPTE consists in assemblies of components bought from parent companies.

Appendix 1 summarizes the major Canadian manufacturers in addition to their products and size in terms of employees. It also gives the list of the major distributors of foreign products.

With the exception of one producer, all important manufacturing companies of M.P.T.E. are involved in many product lines of industrial machinery.

According to our interviews with knowledgeable managers of manufacturing companies, there are no significant projects for expanding present capacity. Because of increasing foreign competition, one company is considering closing its M.P.T.E. product lines. However, some distributors of foreign products indicated some interest in starting production in Canada.

3. CANADIAN MARKET AND ECONOMIC FACTORS

3.1 Canadian Production

Table 1 gives a ten years picture of Canadian production for the different products included in the M.P.T.E. industry. The value of that production in current dollars nearly doubled during the last decade, attaining an approximate value of $100 million. Bearings accounted for 60% of the M.P.T.E. production value in 1975. If we exclude this product, production falls to around $40 million. As discussed before, bearings constitute a special category: bearing producers are not involved in other M.P.T.E. products, while manufacturers of other products do not produce bearings. Our description of the M.P.T.E. industry will thus exclude bearing producers, who are partly suppliers of mechanical power transmission manufacturers.

Table 2 relates production of M.P.T.E. to the industrial price index for the last five years. In real terms, production increased by 13.4% (or 2.6% a year) for this period, while the Canadian Gross National Product increased by 18% for the same period (3.5% a year). The five major Canadian producers of M.P.T.E. account for 60% of the Canadian production of M.P.T.E. (excluding bearings).

Table 3 relates Canadian production of M.P.T.E. to Canadian production of machinery and equipment. It reveals that the ratio of M.P.T.E. production to machinery and equipment production slighly decreased over time. This can be explained by the fact that some Canadian producers of OEM switched from Canadian to foreign products to supply their needs for transmission equipment, the major reason being that foreign products are less expensive.

3.2 Imports and Exports

Tables 4 and 5 summarize Canadian imports of M.P.T.E. These are increasing from year to year. The percentage of imports from the U.S. is declining over time; from 78% in 1970, it was only 66% in 1975. More than 90% of pulley imports come from U.S. The total value of imports in M.P.T.E. more than doubled from 1970 to 1975.

Tables 6 and 7 show Canadian exports to all countries and to U.S. From 1970 to 1975, export values increased from $19 million to $26 million, representing an increase of 35%. For the same period, the percentage of exports to U.S.A. dropped from 93% to 61%. Given the dependency of Canadian manufacturers which are mainly subsidiaries of U.S. companies, in addition to the increasing competition of European countries and Japan, it is getting harder and harder for Canadian manufacturers to export to the U.S. market. The proportion of exports to the U.S. to total

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(1) According to Canadian manufacturers, M.P.T.E. prices follow general industrial price index.

TABLE 1

Canadian Production
($ million)

M.P.T.E. Products	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975 (1)
Bearings, ball, rollers & parts	29.9	28.3	30.9	36.3	34.2	35.2	39.5	45.1	50.2	57.7
Cut tooth and cast tooth cears	3.5	3.4	6.2	5.0	6.8	3.5	4.4	5.4	7.2	8.3
Flexible couplings	0.6	0.4	1.7	2.2	2.3	2.3	2.4	2.4	3.1	3.6
Pulleys	1.7	2.1	1.4	1.4	1.7	1.6	1.4	1.9	2.0	2.3
Sprocket chain and drive chain	3.7	5.6	3.6	5.4	4.3	4.3	3.3	3.9	9.1	10.5
Speed reducer units	5.3	4.8	4.5	5.2	6.2	7.3	7.9	4.1	5.9	6.7
V-Belt drives	(2)	0.3	0.3	0.5	0.6	0.6	0.6	0.5	0.1	0.1
Other transmission Machinery and parts	5.7	5.5	7.5	5.0	4.5	3.5	3.2	2.9	7.1	8.2
T o t a l	50.4	50.4	56.1	61.0	60.6	58.3	62.7	66.2	84.7	97.4
Total excluding bearings and parts	20.5	22.1	25.2	24.7	26.4	23.1	23.2	21.1	34.5	39.7

(1) Data for 1975 are I.T.C. estimates
(2) Included in other transmission machinery and parts

Source: Statistics Canada Catalogue, 42 214.

TABLE 2

Mechanical Power Transmission Equipment
Canadian Production

Year	Industrial Price Index(1)	M.P.T.E. Production (current Value) ($ 000 000)	M.P.T.E. Production (real value) ($ 000 000)
1971	100.0	58.3	58.3
1972	104.5	62.7	60.1
1973	116.2	66.2	56.6
1974	138.3	84.7	62.4
1975	153.7	97.4	66.1

Total increase in production at current price: 67.1% (or 10.7% per year)

Total increase in production at constant price: 13.4% (or 2.6% per year)

Source: Bank of Canada Review, 1976.

TABLE 3

Canadian Production of Machinery and Equipment and of Mechanical Power Transmission Equipment

	(1) Machinery & Equipment Shipments ($ 000)	(2) M.P.T.E. Shipments ($ 000)	3 Ratio 1/2
1967	943,475	50,024	0.05
1968	1,008,012	56,147	0.05
1969	1,216,164	61,020	0.05
1970	1,277,801	60,661	0.05
1971	1,344,704	58,357	0.04
1972	1,454,351	62,786	0.04
1973	1,602,915	66,237	0.04
1974	2,065,405	84,639	0.04

Source: Statistics Canada, Catalogue 42 214.

TABLE 4

M.P.T.E.
Canadian Imports

Product	Code		1970	1971	1972	1973	1974	1975	1976 (1)
Ball Bearings, unmounted, NES	50405	Total	11,411	13,460	17,197	21,429	30,287	34,682	21,312
		U.S.	8,583	8,359	9,283	13,210	17,483	20,352	14,091
Parts of ball bearings NES	50409	Total	3,332	2,792	3,775	4,183	8,163	8,308	4,725
		U.S.	1,026	828	1,883	2,561	4,194	2,936	2,332
Roller bearings, unmounted, NES	50415	Total	22,261	24,122	25,781	27,296	34,252	39,704	27,507
		U.S.	16,972	18,457	17,728	19,957	24,782	26,465	20,845
Parts of roller bearings, NES	50419	Total	2,849	5,016	7,425	6,833	11,697	12,853	7,758
		U.S.	2,255	4,212	5,680	5,248	7,414	8,588	6,328
Bearings & parts unmounted, WES	50433	Total	3,916	4,207	4,846	5,529	7,085	5,765	4,348
		U.S.	3,346	3,591	3,985	4,608	4,987	3,427	2,747
Bearings, mounted	50437	Total	3,545	2,941	4,341	3,542	3,546	4,350	2,111
		U.S.	2,612	2,104	3,274	2,392	2,025	2,887	1,154
Speed changers, reducer units & parts	50440	Total	6,732	7,968	8,902	11,587	14,330	18,747	11,333
		U.S.	5,159	5,636	6,180	8,354	10,758	12,840	8,478
Gears, power transmission	50444	Total	6,894	9,011	10,304	7,713	7,289	10,459	6,706
		U.S.	5,202	6,717	7,688	5,840	5,253	5,556	3,911
Pulleys belt for power transmission	50469	Total	1,925	2,354	3,661	3,186	4,141	4,255	2,655
		U.S.	1,813	2,232	3,453	2,990	3,806	3,688	2,461
Power transmission equipment and parts	50499	Total	15,154	14,434	16,778	19,289	22,554	21,139	15,949
		U.S.	14,018	13,300	15,783	18,054	20,829	19,570	15,802
	Total	T	78,019	86,305	103,010	110,587	143,344	160,262	104,404
		U.S.	60,986	65,436	74,937	83,214	101,531	106,309	78,149
		U.S./T	78%	76%	73%	75%	71%	66%	75%

(1) 9 months: we do not consider the percentage of U.S. imports to total imports as reliable.

Source: Statistics Canada, Catalogue 65-203

TABLE 5

U.S. Exports to Canada
M.P.T.E.

	1968	1969	1970	1971	1972	1973
Ball bearings, complete annular, ground or precision, not thrust	6,854	6,389	5,844	5,453	7,211	7,620
Ball bearings, complete NEC	2,639	3,987	3,113	3,012	3,438	4,632
Roller bearings, complete, cylindrical, not thrust	3,854	4,026	2,738	3,581	3,827	4,442
Roller bearings, complete, spherical, net thrust	351	565	492	1,154	903	781
Roller bearings, complete, taper, not thrust	10,628	11,421	10,355	12,855	12,037	12,815
Roller bearings, complete, NEC	2,053	2,036	2,094	2,357	2,341	3,736
Mounted ball & roller bearings	128	159	1,269	1,025	1,911	2,550
Plain bearings, mounted and unmounted	8,107	7,530	7,493	9,239	10,606	13,995
Rollersfor roller bearings	1,525	2,305	1,862	1,675	2,330	2,361
Parts, NEC for ball and roller bearings	1,671	2,781	2,384	2,738	4,409	4,628
Balls for ball bearings	104	212	357	130	810	634
Speed changers, industrial high speed drives & gears, & parts, NEC	8,864	5,903	8,026	7,371	8,502	7,878
Flexible couplings, other than hydraulic	1,800	2,350	2,104	2,081	2,265	3,230
Mechanical power transmission equipment, NEC & parts	25,984	30,282	25,192	26,632	30,901	37,635
Sprockets	5,991	5,422	4,488	4,356	4,200(e)	4,000(e)
T o t a l	80,553	85,363	78,811	83,659	95,691	110,937
Excluding bearings	42,639	43,910	39,810	40,440	45,868	52,743

(e) Estimates.

Source: U.S. Bureau of Commerce.

TABLE 6

Mechanical Power Transmission Equipment
Canadian Exports

($ 000)

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976[1]
Bearings and parts	5,926	6,362	10,165	15,157	9,785	11,942	13,607	15,872	17,892	11,293
Speed changers, reducing units and parts	--	--	--	--	65	157	197	284	676	887
Gears, power transmission	--	--	--	--	495	654	1,087	2,213	2,788	1,837
Power transmission and parts, NES	1,790	2,300	3,201	3,775	2,900	2,588	2,860	2,739	4,390	2,293
T o t a l	7,716	8,662	13,186	18,932	13,245	15,341	17,751	21,108	25,746	16,310
Total excluding bearings	1,790	2,300	3,021	3,775	3,460	3,399	4,144	5,236	7,854	5,017

(1) 10 months

Source: Statistics Canada, Catalogue 65 202

TABLE 7

M.P.T.E.
Canadian Exports to U.S.A.

($ 000)

	1970	1971	1972	1973	1974	1975	1976(1)
Bearings and parts	9,099	5,017	8,907	9,875	10,167	9,294	6,054
Speed changers, reducing units and parts	--	35	101	91	180	527	638
Gears, power transmission	--	269	438	953	2,043	2,426	1,580
Power transmission and parts, MES	3,206	2,172	2,341	2,543	2,371	3,374	1,960
T o t a l	12,305	7,493	11,787	13,462	14,761	15,621	10,232
Total excluding bearings	3,206	2,476	2,880	3,587	4,594	6,327	4,178

(1) 10 months

Source: Statistique Canada

Canadian production of M.P.T.E. declined from 20% to 15% from 1970 to 1975. At the same time, Canadian manufacturers tend to be more and more agressive in developping countries, mainly in South America.

Canadian tariff protection is decreasing. For instance, duties on U.S. imports of M.P.T.E. products used to be 22.5% and they are now down to 15%. This situation, beside price competition, explains at least partially the declining share of the market for Canadian manufacturers. In other countries protectionism, is often high, prices are often lower, factors which make it difficult for Canadian producers to sell on these markets.

In conclusion, Canadian external balance of trade for M.P.T.E. product is showing a large deficit

3.3 Canadian Market for Mechanical Power Transmission

3.3.1 The Present Market

Table 8 presents Canadian market and Canadian apparent consumption of M.P.T.E. products.

TABLE 8

Canadian Market and Apparent Consumption (1)
($000)

	1	2	3	1+2	1+2-3
	Canadian Production	Canadian Imports	Canadian Exports	Canadian Market	Canadian Apparent Consumption
1970	60,661	78,019	18,932	138,680	119,748
1971	58,357	86,305	13,252	144,662	131,410
1972	62,786	103,110	15,341	165,896	150,550
1973	66,237	110,587	17,751	176,824	159,073
1974	84,639	143,344	21,108	227,983	206,875
1975	97,400	160,262	25,746	257,662	231,916

From Table 8 we can deduct a few figures that are very significant. For the above period, Canadian production increased by 60%, imports increased by 100% and exports increased by only 35%; Canadian apparent consumption increased by 94%. The share of Canadian producers in the Canadian market increased from 44% to 37%. This drop would have been higher if exports had increased at the same rate as production. The proportion of Canadian production to Canadian apparent consumption decreased from 50% to around 40%.

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(1) Statistics Canada

This overall decline in the importance of Canadian manufacturers cannot be explained by the market situation. The market is growing rapidly, Canadian producers have the know-how, the production capacity, the skill levels and the quality of product to satisfy Canadian needs. There are many small producers competing on the market and this situation makes it hard for a new supplier to get a significant share of the market.

However, there are many factors that can explain this phenomenon. Many manufacturers are subsidiaries of American companies; their possibilities for exports are reduced by the fact that they cannot compete with the parents on foreign markets and obtain a sufficient level of production to compete, through economies of scale, with foreign prices. Second, Canadian protection has diminished over time. Third, some large foreign companies were able to keep prices low over time up to the point where, after many years of difficulties (some took 10 years), they could get an important share of the market. Fourth, even if Canadian M.P.T.E. products are of good quality, the Canadian market is not big enough to justify large expenditures for R and D, a current practice in other countries like the U.S., Europe or Japan. Some products imported to Canada thus offer the combined advantages of competitive (and even lower) prices and of newer technology. Finally, some users of M.P.T.E. products revealed that there are significant delays in delivery of Canadian manufactured products.

All these elements, as well as the Canadian manufacturers comparative advantages will be discussed further in the recommendation section.

3.3.2 Market Trends

Table 9 relates the Canadian market for mechanical power transmission to gross national expenditures for machinery and equipment.

TABLE 9

Market for Mechanical Power Transmission Equipment
and National Expenditures for Machinery and Equipment

Canada

	(1) M.P.T.E. Market ($ million)	(2) G.N.E., M. & E. ($ million)	1 / 2
1970	139	5,957	0.02
1971	145	6,278	0.02
1972	166	7,058	0.02
1973	177	8,829	0.02
1974	228	10,929	0.02
1975	258	12,803	0.02

The ratios indicated in Table 8 reveal that M.P.T.E. expenditures are in constant proportion with the overall level of expenditures on machinery and equipment. M.P.T.E. products being components of complete machinery systems, the growth of this market mainly depends on capital investment expenditures, which itself depends on general economic conditions.

The year 1976 was a bad year for M.P.T.E. producers. Canadian investments in equipment were very low, because of a general decrease in economic activity and, according to the manufacturers, of the government policies, more specifically wage and price controls. As no official data exist yet on actual production, the only source of information as to 1976 general level of production is the data obtained through meetings with producers. If we exclude bearings, the level of Canadian production dropped from $40 million in 1975 to around $30 million. There is now a high level of excess capacity; some companies reduced their number of employees by percentages as high as 50%; some others turned to export markets in order to sell excess production, and profit margins were reduced. The actual market is thus far below the projected $300 million of the previous study and is probably less than $250 million.

Predictions for 1977 are not optimistic. The overall Canadian rate of growth is predicted to drop from 5% to 3%. It is thus likely that original equipment production will continue to be low and that the market for M.P.T.E. will be below its normal level. The only market that will probably behave normally is the replacement part market.

With the release of price controls and the recovery in economic activity, Canadian manufacturers believe that by 1978, the rate of growth of demand for M.P.T.E. products will go back to its former path, which means an average annual increase of 9 to 10%, at current prices. Table 10 shows a five year forecast of the Canadian market based on the preceeding assumptions. These figures can be considered as order of magnitude data.

TABLE 10

Five Year Forecast of Canadian Market for M.P.T.E.

Year	Market ($000 000)
1976	250
1977	260
1978	285
1979	310
1980	340

Sources: Sorès estimate following survey National Economic Council.

4. CHARACTERISTICS OF THE INDUSTRY

4.1 Nature of Market Competition

As already said, the market of M.P.T.E. is rather fragmented. Besides a few big Canadian manufacturers, there exists a large number of smaller producers. Foreign competition is increasing over time and there are many distributors of European and American products. Competition is thus very keen, but the major manufacturers tend to specialize in differentiated lines of production, which helps to lessen their competition in like markets. The Canadian market is very hard to enter, and it is only through time and aggressiveness, with low price and technological advantages, that a foreign company can succeed in getting a profitable share of the market, even if this market has a relatively high historical rate of growth. However, some distribution branches of foreign companies, and more specifically two of them, recently succeeded in placing themselves among the most important suppliers of the Canadian market. Canadian manufacturers do not face a market large enough to have a clear comparative price advantage (even with import duties) and to justify the allocation of significant sums to R & D. As the majority of them are subsidiaries of foreign companies, they are prevented from competing with their parents on international markets, putting serious limits to export sale growth. Up to now, Canadian owned companies have not been very agressive on foreign markets, where protection is often much higher than in Canada. However, over the past few years, exports to developing countries are becoming more significant.

The major competitive factors in this industry are:

- price
- quality
- certifiability
- availability of services
- delivery according to schedule time

In the case of services and delivery, existence of manufacturing facilities in Canada constitute a comparative advantage. However, some buyers of M.P.T.E. products sometimes complained about delays in delivery from Canadian producers. On the other hand, Canadian manufacturers appear to offer convenient services.

4.2 Market Breakdown per Application

The major users of M.P.T.E. are as listed in the original report (general OEM, Mining, Forest and Primary Metals), to which we could add chemicals, power generation, and food and grain. The distribution of sales between OEM and the replacement market can be evaluated to respectively 60% and 40%, although OEM sales accounted for a much lower proportion in 1976. The breakdown of sales between

the different categories varies from one manufacturer to another, but our overall distribution is slightly different from the original report assessments. Our estimate is the following:

- Original Equipment Manufacturers: 30%
- Primary Metals Industry: 30%
- Mining Industry: 20%
- Forest Products Industry: 20%

4.3 Regional Distribution of Sales

No official data exist on Canadian distribution of sales of M.P.T.E. products. However, our discussions with many Canadian manufacturers has permitted us to evaluate their sales distribution roughly as follows:

- Ontario 50%
- Quebec 25%
- British Columbia and Alberta : 15%
- Manitoba and Saskatchewan 5%
- Maritimes 5%

4.4 Distribution Profile

As already assessed in the first study, the great majority of M.P.T.E. products are sold directly. All products going to OEM are handled directly, while products going to replacement markets are partially sold by distributors. Our estimate of the distribution profile is that 70% of the Canadian manufactured M.P.T.E. products are sold directly, the rest being handled by distributors.

4.5 Production Cost Breakdown

The cost distribution varies again from one manufacturer to another, but a summary of the information obtained through our survey leads to the following estimate of cost breakdown to sale value:

- Labor 35%
- Raw materials 30%
- Energy 2%
- Transport 3%
- Overhead 20%
- Profits 10%

4.6 Skill Requirements

The M.P.T.E. manufacturing industry requires skilled labor. For instance, the different categories of labor specifically employed in M.P.T.E. production by one of the Canadian manufacturers are:

- qualified engineers and draftsmen
- qualified pattern makers
- experienced machine tool operators

The preceeding study on M.P.T.E. gives a very accurate idea of the importance of skilled labor in the industry.

4.7 Technological Characteristics

The manufacturing of M.P.T.E. requires highly specialized equipment. Technology is changing slowly yet product quality is improving. However, there is not much research done by Canadian manufacturers and the major improvements and technological changes are embodied in foreign products. This fact contributed to increase the importance of foreign products on the Canadian market.

The components of M.P.T.E. packages tend to be standardized, except for some flexible couplings or gears, but the assembly is designed according to specific applications of the product.

4.8 Major Factors Affecting Demand

As already discussed, the major factors affecting the Canadian market are the general level of investment in equipment and machinery, general economic conditions, and government policies affecting profits (taxes, control, protection,...)

4.9 Major Locational Factors

According to our interviews, the major considerations given to the selection of an area for a new plant are:

- Availability of qualified labor and management.
- Availability of technological services.
- Proximity to the market (OEM).

Proximity to the market was mentioned as of first importance by all the manufacturers that we met, contrary to the conclusion of the first study. This can be explained by two reasons: proximity to OEM permits saving on shipping and easy access to technological services.

5. CONCLUSION & RECOMMENDATIONS

5.1 Summary

Before getting into specific recommendations, we shall summarize the major features of the MPTE market described through this study.

Although there are many small Canadian producers of MPTE products, more than 60% of the Canadian production excluding bearings is accounted for by 5 manufacturers, whose output is specialized equipment, and 2 of these 5 companies are Canadian owned. Four of these 5 producers offer a full range of products while one exclusively specializes in MPTE products.

From 1970 to 1975, the Canadian market increased by 86% and Canadian apparent consumption increased by 94%. Imports grew by 100% while exports increased by 35%. The market share of Canadian producers fell from 44% to 37%.

Foreign competition is thus increasing, and four major factors explain that fact: Canadian tariffs fell from 22.5% to 15%; Canadian market is not large enough to permit economies of scales and lower prices for Canadian products; foreign companies could keep their price low enough to catch an important share of the market; there is not much R & D done in Canada to improve products.

Labor and raw materials are the major factor costs, and the elements taken into consideration for the location of new manufacturing facilities are the existence of a pool of skilled labor, the presence of technical facilities, and the proximity to OEM market.

5.2 Recommendations

The Canadian market for MPTE grew at a relatively high rate in the past and, notwithstanding the present situation of low economic activity, it is expected to continue to grow and to reach an approximate value of $300 million within the 3 coming years. More than 60% of Canadian needs are satisfied through imports which, related to Canadian production, increased in importance during the last 15 years. Canadian exports are more than 5 times lower than imports.

We thus generally agree with the conclusions of the original study. There is a potential for the development of this industry in Canada.

Canadian manufacturers, through better availability of services, could have a comparative advantage on companies manufacturing in foreign countries and exporting to Canada, if they could compete with foreign prices and develop their products. There are three major ways of encouraging Canadian producers to increase their production, through the development of new manufacturing facilities, or, at least, through the use of actual excess

capacity. First, Canadian tariff protection could be revised in order to favor Canadian producers. Second, research and development to find new techniques and improve products could be encouraged through incentive programs. Finally exports could be expanded, especially in the case of developing countries, through government assistance.

On the other hand, foreign companies that succeeded in gaining an important share of the Canadian market, could be encouraged to start producing in Canada. As already assessed in the original report, there are some MPTE products that require lower skilled labor than others (idlers, drives, ...), and that could be manufactured in some of the designated areas. Discussions with members of these companies, and further study on product specifications could contribute to define appropriate product lines for those regions. In any case, designated areas that are situated near large cities, (such as St-Hyacinthe near Montreal), offer the best locational characteristics for new manufacturing facilities, because they are close to pools of skilled labor, they permit easy access to technological support, and finally they are in the proximity of original equipment manufacturer markets.

APPENDIX 1

MAJOR CANADIAN MANUFACTURERS AND DISTRIBUTORS

Canadian manufacturers of MPTE

- Bond Engineering Works: 16 Munition, Toronto, Ontario
  - Product lines: distributors of M.P.T.E.
    producers of gears
  - Number of employees: 25 (small)
- Coutts Machinery Company: 92nd Street & Stadium Road, Edmonton, Alberta
  - Product lines: transmission equipment
  - Number of employees: 50 to 100
- Dominion Engineering Works Limited, P.O. Box 220, Montreal, Quebec
  - Product lines: paper machinery, hydraulic turbines, grinding mills, valves, rolls for steel and paper industry, steel industry and mechanical equipment.

    In transmission equipment: hellical double and single gears, gearboxes, flexible couplings, speed reducers.
  - Number of employees: over 1,500 (only 50 in M.P.T.E. division).
- FMC of Canada Limited: 1960 Eglinton Ave., Toronto, Ontario
  - Product lines: mechanical handling equipment, mechanical handling systems, power transmission, elevators, buckets, idlers, conveyors, pulp and paper systems.

    In M.P.T.E.: chains, speed reducers, gearboxes, flexible couplings.
  - Number of employees: 500 (200 in M.P.T.E. division)
- Forano[(1)] : 1600 St. Paul, Plessisville, Quebec
  - Product lines: belt and chain conveyors, bucket elevators, screw conveyors, apron feeders, vibrating conveyors, wood handling equipment, sawmill equipment, asbestos processing equipment, back handling equipment, stackers, chip handling equipment, dewatering screens.

MAJOR CANADIAN MANUFACTURERS AND DISTRIBUTORS (cont'd)

In M.P.T.E.: pulleys, V-Belt drives, gears, flexible couplings and speed reducers, rollerchain sprockets, shafting.

- Number of employees: 1,000

- Hamilton Gear and Machine Co. Ltd.(1) : 950 Dupont, Toronto, Ontario

  - Product lines: industrial cut tooth gearings, enclosed gear speed reducers, worm, hellical, spiral and spur gears, flexible couplings.

  - Number of employees: 160

- Jeffrey Manufacturing Company Ltd., 300 St. Patrick, Lasalle, Quebec

  - Product lines: conveyor components (belt conveyors, screw conveyors, feeders, bucket elevators), dryers and coolers, crushers.

    In MPTE: chains and sprockets, gears, speed reducers, pulleys and shafting (mainly imported from parents and assembled).

  - Number of employees: 200 to 500

- Letson and Burpee Ltd.: 172 Alexander, Vancouver, British Columbia

  - Product lines: pulleys

  - Number of employees: 200 to 500

- Rexnord (Canada) Ltd.: 1181 Sheppard Ave., Willowdale, Ontario

  - Product lines: conveyor equipment, V-belt drives

  - Number of employees: 100 to 200

- Stephens Adamson Division of Allis-Chalmers Canada Ltd.: P.O. Box 5900, Belleville, Ontario

  - Product lines: bulk material handling equipment (for mining, food, pulp and paper, grain steel, ship loading and unloading)

  - In MPTE: mainly assembly MPTE from components bought from major producers, then used in their own OEM, except speed reducers and couplings that they sell in the free market.

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(1) Canadian owned company.

MAJOR CANADIAN MANUFACTURERS AND DISTRIBUTORS (cont'd)

- Number of employees: 350-400

- Wilson Machine Co. Ltd.: 2299 Lapierre City, Lasalle, Quebec
  - Product lines: pulp and paper machinery (rollers, feeders, ...) mining machinery (conveyors...)

    In MPTE: gears and couplings
  - Number of employees: 100

Canadian manufacturers of bearings

- Canadian SKF Co. Ltd.: 2201 Eglinton Ave., Scarborough, Ontario
  - Number of employees: 500 to 1,000
- Canadian Timken Ltd.: St-Thomas, Ontario
  - Number of employees: 500 to 1,000
- F.A.G. Bearings Ltd.: Stratford, Ontario
  - Number of employees: 150
- Torrington Ltd.: 110 River Bedford, Quebec
  - Number of employees: 500 to 1,000

Canadian distributors of foreign M.P.T.E. products

- David Brown Gear Industries: 60 Emblen, Agincourt, Ontario
  - Distributors of English products: speed reducers, gears and couplings
  - Number of employees: 100
- Falk: 45 Disco Rd., Rexdale, Ontario
  - Distributors of U.S. speed reducers, gears and couplings
  - Number of employees: 50 to 100
  - Does some assembly

MAJOR CANADIAN MANUFACTURERS AND DISTRIBUTORS (cont'd)

- Hansen: 5530 Paré, Montreal, Quebec
  - Distributors of Belgian M.P.T.E. equipment
  - Number of employees: 25
- William and Wilson Co. Ltd.: 544 Inspector, Montreal, Quebec
  - Distributors of U.S. M.P.T.E. products
  - Number of employees: 100

There are many other distributors, the most important being L.S. Tarsish and Sons, Sullivan Strong Scott, Western Gear, Philadelphia Gear, Peacock, Sadler, Horseburgh-Scott, Lufkin and Dick Power Transmission.

APPENDIX 2

QUESTIONNAIRE

1. Name and address of the company:
   - parent
   - subsidiaries

2. Number of employees and level of skill

3. Description of product lines

4. Sale volume and distribution
   - per product
   - per user
   - per region

5. Exports and imports

6. Nature of competition and characteristics of the industry
   - major competitors and market shares
   - export and import trends
   - market trends
   - price trends
   - expansion projects
   - plant locational factors
   - major competitive factors
   - technological characteristics
   - product characteristics
   - factors affecting demand
   - marketing practices

QUESTIONNAIRE (cont'd)

7. Market projection

- level of utilization of capacity
- sale projections
- general comments

APPENDIX 3

LIST OF PERSONS CONTACTED

Dominion Engineering Works Ltd

- Mr. M.G. Hill, Sales Manager - Montreal

Hamilton Gear and Machine Company

- Mr. W.H. Stanfield, Sales Manager

Stephen Adamson

- Mr. S.L. Vohra, Manager

FMC of Canada

- Mr. Jo. Fernandez, Manager

Jeffrey Manufacturing Division of Dresser Industries Canada Limited

- Mr. T.M. O'Neill, Consultant

Dick Power Transmission

- Mr. I. Wilson, Sales Manager

Forano

- Mr. I. Francis, Consultant

- Mr. G. Provencher, Marketing Manager

ITC

- Mr. A. Chiperzak, Chief, Power, Fluids Handling and Environmental Equipment Division, Machinery Branch

- Mr. C. Preston, idem

Statistique Canada

- Mr. G. Blaney, External Trade Division

- Mrs J.L. Barnes, Division of manufacturing industries

S.N.C.

- Mr. S. Hogg, Engineer