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WORKING PAPER

OVERVIEW
OF
INDUSTRIAL PERFORMANCE AND GROWTH

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PRODUCTIVITY BRANCH
OFFICE OF ECONOMICS
DEPARTMENT OF INDUSTRY, TRADE AND COMMERCE
OTTAWA, 1972

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OVERVIEW OF INDUSTRIAL PERFORMANCE AND GROWTH

1. Objective and Method

Current interest in industrial strategy, priorities and optimum resource allocation has generated need for a comparative appraisal of Canadian industries and its presentation in a simple form.

The enclosed charts are an attempt to meet this need, by presenting a bird's-eye-view of the relative performance of various industries as well as of their relative growth over the past decade. The left-hand side of the charts shows industrial performance at one point of time, in terms of averages of the 1966-68 period, the latest for which all required data are available. Three-year averages are used in order to reduce erratic influences in single-year data. The right-hand side indicates relative changes from 1961 to 1969.

The purpose of the overview is to present a factual picture of economic performance, which is as up to date as possible, and of the changes which have occurred over the past decade. Recent changes in business conditions may have altered the situation in some areas and, while this information should be a useful basis for assessing future industrial potential, it is not a forecast in itself.

Chart A presents information for the 20 major groups of manufacturing, Chart B provides detail for 87 manufacturing industries and Chart C reviews, in somewhat less detail, the relative performance and growth in 8 major divisions of the economy.

All measures are represented by symbols of high (⊗) , medium () or low (●) performance or growth, for easy overall appraisal.

The underlying data for Charts A and B are available on request from the Productivity Branch. The actual figures for Chart C have statistical limitations, and can only be released in their present form to indicate orders of magnitude.

The object of these charts is to provide a general picture of the various areas of the Canadian economy. Analytical details are provided in five Productivity Branch studies, namely; 1) Comparative Tables of Principal Statistics and Ratios for Selected Manufacturing Industries, Canada and United States, 1967, 1963 and 1958, 2) Indicators of Canadian Manufacturing Performance, 1966-68 Levels and 1961-70 Trends (20 major groups), 3) Statistical Handbook on Canadian Manufacturing Industries, 4) Canadian Manufacturing Industries, Structure and Performance, and 5) The Impact of Effective Protection on Productivity in Canadian Manufacturing. The first three reports have already been released and the other two will be available very shortly.

2. Evaluation Criteria

The indicators of performance and growth shown in the stub of the charts are based on the following criteria:

Efficiency in use
of resources

- Two productivity measures and a profitability indicator are presented.

Perhaps the single most comprehensive indicator of performance is value-added per employed person because the more goods and services Canadians produce per head, the more they have to contribute to the general well-being. It should be noted here that many, if not most aspects, of the quality of life also have to be produced and are, therefore, reflected in productivity measures.

Another particularly meaningful indication of performance can be obtained by the combination of average remuneration to employees, return on capital investment including profits and export involvement (or any other measure indicative of prices charged

by the company relative to prices prevailing in international markets). In short, top performance is achieved by the firm which can pay high remuneration to its employees, yield a good return on capital and entrepreneurial input, while selling at international prices thus giving good value to consumers.

The importance of productivity and the urgency of its increase is underlined by the desire of Canadians to raise the standard of living to American levels as shown, for instance, in the wage parity demands. In general, this is simply not possible as long as our productivity is more than 20 per cent lower than in the U.S. Furthermore, the Americans have realized the tremendous importance of productivity from the point of view of increasing competitiveness and employment as well as in fighting inflation, and are making all-pervasive efforts to increase it. Our past success in gradually reducing the productivity gap may easily be reversed unless much more emphasis is placed on productivity improvement in Canada, through such measures as increased consciousness and knowledge of productivity, increased specialization, improved management, and the development of a co-operative attitude between labour and management. The improvement of Canadian management and higher productivity are also seen as prerequisites to the ultimate solution of the foreign control problem.

Among the most important determinants of the levels and growth of productivity are the tools, equipment and other capital assets used in the production process. In order to reflect the relative allocation of capital and its effects on productivity, a so-called total factor productivity measure is also presented, in which value added is related to a combined denominator of labour and capital inputs.

It should be noted here that, according to various studies, manufacturing seems to be at least as capital-intensive as its American counterpart although the average age of our industrial structures and equipment is indicated to be some one-third higher than those south of the border.

The third measure, profits plus interest over assets, reflects the financial effectiveness of each industry.

Production and
Employment

- Value added is given to indicate the relative importance of each industry in terms of its contribution to total production. Growth of output (and productivity) is shown in deflated, volume measures.

The number of persons employed in each industry also shows its relative importance, and how much the industry contributes to one of the prime public objectives, employment.

Labour Remunera-
tion Level

- Average hourly earnings indicate the relative income level of persons employed in each industry. A ranking by average weekly wages and salaries gives identical results for the manufacturing industries, and is used only in Chart C, where no data are available for average hourly earnings.

Technological
Intensity

- The proportion of persons with post-secondary education is taken as one indicator of the technological standing of each industry. This measure is also important because it shows the industries which are likely to employ the growing numbers of highly educated Canadians.

R & D over shipments is the most commonly used indicator of an industry's technological intensity. It is available for the 20 major groups only. - A third possible measure of technological standing, namely the industry's relative capital intensity is not shown separately because it is already reflected by the differences between the two productivity measures.

Ability to Compete
Internationally

- The proportion of exports to total shipments, and the share of imports in Canadian markets are shown as further indicators of an industry's international competitive strength and of its impact on the balance of payments.

Effective Tariff
Protection

- This indicator reflects the extent to which the net output of an industry is protected, and helps to evaluate its prospective competitiveness in a tariff-free situation. (High tariffs and large imports are marked by dots on the charts).

3. Conclusions

For the appraisal of the relative standing of each industry or industry group, the charts are self-explanatory. It may be useful, however, to make a few observations of a more general nature.

Chart C, showing the relative performance of the major economic sectors, points out clearly the overriding importance of manufacturing to the country. While its present labour productivity is exceeded by that of mining and the utilities, these are relatively small sectors in terms of both output and employment. Manufacturing records, however, one of the highest rates of productivity growth. Its employment is among the highest and continues to chalk up an average growth from its present high level. Its profitability and research spending are among the highest.

It is notable that the manufacturing industries achieve this high standing with a relatively low capital intensity, which barely exceeds that of the trade, service and construction sectors. While this aspect was not feasible to record in the charts, the capital intensity of transportation, and particularly the utilities and primary industries exceeds by far that of the manufacturing industry.

Trade and services score high on employment and growth of employment but their productivity is among the lowest both at the present time and in the terms of growth. It is logical to expect that the trend towards higher wages will bring about higher rates of productivity increases in the latter sectors too, but this is most likely to come through advancing technology and a wider application of machines and more prepared items, such as fitted sheets, disposable items, prepared and prepackaged foods, computer-operated "corner-stores", etc., all of which will create new demand for manufactured products, if our manu-

facturing industries prove to be innovative and well managed to recognize and meet this prospective demand, and a more co-operative attitude can be developed between labour and management.

It should be added that even today, trade, services and the other major sectors depend to a large degree on direct demand from the large manufacturing sector and on the demand created by persons employed in manufacturing industries.

Turning to Chart A, to see the relative performance of industry groups within manufacturing, it appears clear that our main strength is in the durable goods (except furniture) and chemical industries. It is of interest to note that the non-durable goods sector recorded relatively high increases in hourly earnings despite generally low increases in productivity. This suggests that productivity increases in this sector are all the more important if it is to increase its competitive strength.

Chart B shows the performance variation within each major group of manufacturing. The variations are quite significant, see for instance in the food and beverage group. Some individual industries show noticeable improvement while others tend to lag behind. Large variations in performance have also been observed between firms in individual industries although the industry's infrastructure, its suppliers, distributors, etc., obviously tend to set limits to these variations.

Finally a few interesting observations could be made regarding the relationship between the various performance factors.

One of the most significant phenomena is the close correlation between labour productivity and total factor productivity. In 71 of the 87 industries the ranking is identical. (A correlation coefficient of 0.8 out of a possible 1.0, using the actual data).

Another important finding is the close correlation between the levels of labour productivity and wages, particularly up to a \$9. - value added per man-hour level. The same correlation does not appear between the growth of productivity and wages which tend to move independently at the industry level. It is different at the all-inclusive national level where the growth of real earnings is just about identical with the growth of labour productivity.




High-productivity industries tend to employ more graduates, show relatively high growth in output and employment and tend to record more rapid productivity gains than the others.

Industries showing the highest rates of productivity growth show above average increases in output and employment. Among the 29 industries recording the highest labour productivity increases only one showed less than average output growth and only 5 recorded less than average employment increases.

It is equally significant that of the 29 industries with the highest levels of export only 5 had relatively low labour productivity, although exports are also dependant on many other factors such as the comparative international productivity of the industry, tariff and non-tariff barriers, etc.

These relationships are examined at some length in the forthcoming report on Canadian Manufacturing Industries, Structure and Performance.

INDUSTRY GROUP	AVERAGE PERFORMANCE 1960-1968										PER CENT GROWTH 1969/1961						
	Value Added	Employment	Value Added Empl. + Cap.	Value Added Employment	Profits Assets	Hourly Earnings	Graduates (1) Employment	R. & D. Value Added	Exports Shipments	Imports Cdn. Market	Effective Tariff	Output	Employment	Output Person	Hourly Earnings	Exports (2) Shipments	Imports (2) Can. Market
Food & Bev.	X	X	X	X	X	•			X			•	•	•	X	X	X
Tobacco	•	•	X	X	X	•		N.A.	•	X	•	X	X	X	•	X	X
Rubber	•	•	X	X	•	•		N.A.				•	•	X			
Leather	•	•	•	•	•	•		N.A.	•		•	•	•	X	•	X	•
Textiles	•	•	•	•	•	•		N.A.	•		•	•	•	X	•	X	•
Knitting Mills	•	X	•	•	X	•		N.A.	•		•	•	•	X	•	X	•
Clothing	•	X	•	•	X	•		N.A.	•		•	•	•	X	•	X	•
Wood Products	•	•	•	•	•	•		N.A.	•		•	•	•	X	•	X	•
Furniture	•	•	•	•	•	•		N.A.	•		•	•	•	X	•	X	•
Paper & Allied	X	X	•	X	•	X		N.A.	•		•	•	•	X	•	X	•
Print. & Publ.	X	X	X	X	•	X		N.A.	•		•	•	•	X	•	X	•
Primary Metals	X	X	X	X	•	X			•		•	•	•	X	•	X	•
Metal Fabric.	X	X	X	X	X	X		•			•	•	•	X	•	X	•
Machinery	X	X	X	X	X	X			•		•	•	•	X	•	X	•
Transp. Equip.	X	X	X	X	X	X			•		•	•	•	X	•	X	•
Electrical	X	X	X	X	•	X			•		•	•	•	X	•	X	•
Non-Met. Min.	•	•	X	X	•	X		•			•	•	•	X	•	X	•
Petrol. & Coal	X	X	X	X	•	X			•		•	•	•	X	•	X	•
Chemicals	X	X	X	X	X	X			•		•	•	•	X	•	X	•
Misc. Mfg.	X	X	X	X	X	•					N.A.	•	•	X	•	X	•

 HIGH (includes low tariffs and small imports)
 MEDIUM
 LOW (includes high tariffs and large imports)
 N.A. = not available

(1) Graduates and those with some university training, 1961 only
 (2) 1969/1964 only

Productivity Branch
 Office of Economics
 1972




INDUSTRY (GROUP)	AVERAGE PERFORMANCE 1966-1968										PER CENT GROWTH 1969/1961						
	Value Added	Employment	Value Added Empl. + Cap.	Value Added Employment	Profits Assets	Hourly Earnings	Graduates (1) Employment	R. & D. (2) Value Added	Exports Shipments	Imports Cdn. Market	Effective Tariff	Output	Employment	Output Person	Hourly Earnings	Exports (3) Shipments	Imports (3) Cdn. Market
<u>FOOD & BEV.</u>																	
Meat Products	X	X			•				X		X				•	•	
Dairy Products	X	X	•	•	•	•					•	•	•	•	•	•	•
Fish Products	•		•	•	•	•			X		•		•	•	•	•	•
Fruit & Veg.	X	X			•	•			X		X						
Grain Mills	X	X							X		X				•	•	•
Bakery Prod.	X	X	•	•		•			•		X				•	•	•
Other Food	X	X				•			•		X				•	•	•
Soft Drinks	X	X				•			•		X						
Distilleries	X	•	X	X	X	X			X		X						•
Breweries	X		X	X	X	X			•		X						•
Wineries	•	•	X	X	X	X			•		X						•
<u>TOBACCO</u>								N.A.									
Tobacco Prod.			X	X	X	X			•		X						•
<u>RUBBER</u>																	
Rubber Prod.	X	X	X	X							•	X					•
<u>LEATHER</u>								N.A.									
Leather Prod.		X	•	•	•	•					•	•	•				•
<u>TEXTILES</u>									•								
Cotton & Wool			•	•	•	•					•	•	•	•	•	•	•
Synthetics			•	•	•	•					•	•	•	•	•	•	•
Other Prim. Tex.			•	•	•	•					•	•	•	•	•	•	•
Other Tex. Prod.			•	•	•	•					•	•	•	•	•	•	•
<u>KNITTING</u>								N.A.									
Hosiery Mills	•	•	•	•	X	•			•		X			•	•	•	•
Other Knitting	•		•	•	•	•			•		X			•	•	•	•

INDUSTRY (GROUP)	AVERAGE PERFORMANCE 1966-1968											PER CENT GROWTH 1969/1961					
	Value Added	Employment	Value Added Empl. + Cap.	Value Added Employment	Profits Assets	Hourly Earnings	Graduates (1) Employment	R. & D. (2) Value Added	Exports Shipments	Imports Cdn. Market	Effective Tariff	Output	Employment	Output Person	Hourly Earnings	Exports (3) Shipments	Imports (3) Cdn. Market
<u>CLOTHING</u>																	
Men's	X	X	.	.	.	.		.	X	.	.	.	.	X	X	.	.
Women's	X	X	.	.	.	.		.	X	X	X	X	X	X	X	X	.
Fur Goods	.	.	.	.	.	X	X	.	X	X	.	.	.	X	X	.	.
Found. Garments	.	.	.	.	.	.	.	.	X	X	.	.	.	X	.	.	.
Other Clothing	.	.	.	.	.	.	.	.	X	X	.	.	.	X	.	.	.
<u>WOOD</u>																	
Sawmills	X	X	.	.	.	.		X	X	X	X	.	.	X	X	X	X
Veneer-Plywood	X	X	.	.	.	.		X	X	X	X	.	.	X	X	X	.
Planing Mills	X	X	.	.	.	.		X	X	X	X	.	.	X	X	X	X
Wooden Boxes	.	.	.	.	X	.	.	.	X	X	.	.	.	X	X	X	X
Coffins	.	.	.	.	.	.	.	.	X	X	.	.	.	X	X	X	X
Misc. Wood	.	.	.	.	.	.	.	.	X	X	.	.	.	X	X	X	.
<u>FURNITURE</u>																	
Household	X	X	.	.	.	.		.	X	X	.	.	.	X	X	X	X
Office	.	.	.	.	.	.		.	X	X	.	.	.	X	X	X	X
Other	.	.	.	.	.	.		.	X	X	.	.	.	X	X	X	X
<u>PAPER</u>																	
Pulp & Paper	X	X	X	X	X	X		X	X	X	.	.	.	X	X	X	X
Paper Boxes	X	X	X	X	X	X		X	X	X	.	.	.	X	X	X	X
Other Paper	X	X	X	X	X	X		X	X	X	.	.	.	X	X	X	X
<u>PRINT. & PUBL.</u>																	
Commercial	X	X	X	X	X	X		X	X	X	.	.	.	X	X	X	X
Engraving	.	.	X	X	X	X		.	X	X	.	.	.	X	X	X	X
Publ. Only	.	.	X	X	X	X		.	X	X	.	.	.	X	X	X	X
Publ. & Print.	.	.	X	X	X	X		.	X	X	.	.	.	X	X	X	X
<u>PRIMARY METALS</u>																	
Iron & Steel	X	X	X	X	X	X		X	X	X	.	.	.	X	X	X	X
Iron Found.	X	X	X	X	X	X		X	X	X	.	.	.	X	X	X	X
Smelt. & Ref.	X	X	X	X	X	X		X	X	X	.	.	.	X	X	X	X

INDUSTRY (GROUP)	AVERAGE PERFORMANCE 1966-1968										PER CENT GROWTH 1969/1961						
	Value Added	Employment	Value Added Empl. + Cap.	Value Added Employment	Profits Assets	Hourly Earnings	Graduates (1) Employment	R. & D. (2) Value Added	Exports Shipments	Imports Cdn. Market	Effective Tariff	Output	Employment	Output Person	Hourly Earnings	Exports (3) Shipments	Imports (3) Cdn. Market
METAL FABRIC.																	
Boiler & Plate Struct. Steel Ornament, Iron	•	•	X	X	•	X	X	•	X	N.A.	X	X	X	X	X	•	X
Metal Stamping Wire Hardware & Tool	X	X			X	X	•	•	•	X	X	X	•	•	X	•	X
Heating Equip. Machine Shops Misc. Metal	•	•	•	•		X		•	X	N.A.	•	•	•	X	•		
MACHINERY																	
Agric. Impl. Comm. refrig. Other	•	•	X	X	X	X	X	X	X	X	X	X	X	•	N.A.	X	X
TRANSPORT																	
Aircraft Motor Veh. Truck Bodies Misc. Transp.	X	X	•	•	•	X	X	•	•	N.A.	•	•	•	X	•	•	•
ELEC. PROD.																	
Small Appl. Major Appl. Radio & T.V. Communic. Eq.	•	•	X	X	•	X	X	X	X	X	•	•	•	•	X	•	•
Ind. El. Equip. Battery Mfrs. Misc. Elec.	•	•	X	X	•	X	X	X	X	X	•	•	•	•	X	•	•

INDUSTRY (GROUP)	AVERAGE PERFORMANCE 1966-1968										PER CENT GROWTH 1969/1961						
	Value Added	Employment	Value Added Empl. + Cap.	Value Added Employment	Profits Assets	Hourly Earnings	Graduates (1) Employment	R. & D. (2) Value Added	Exports Shipments	Imports Cdn. Market	Effective Tariff	Output	Employment	Output Person	Hourly Earnings	Exports (3) Shipments	Imports (3) Cdn. Market
<u>NON-MET. MIN.</u>																	
Cement	•	•			•							•	•				
Concrete																	
Ready-Mix		•			•			•					•		N.A.	N.A.	
Clay Products	•	•	•	•	•							•	•				
Glass																	
Other Non-Met.														•			
<u>PETROL. & COAL</u>																	
Refineries																	
Other Products	•	•										•	•				
<u>CHEMICALS</u>																	
Fertilizers	•	•	•		•												
Pharmaceut.																	
Paints		•															
Soaps		•															
Toilet Prep.	•	•															
Ind. Chem.					•												
Other Chem.																	
<u>MISC. MFG.</u>																	
Scient. Equip.																	
Jewellery	•	•	•	•													
Broom & Brush	•	•	•	•													
Sport. Goods	•	•	•	•	•	•											
Other Mfg.																	

- (1) Graduates and those with some university training, 1961 only.
- (2) Available on major group basis.
- (3) 1969/1965 only

-  HIGH (includes low tariffs and small imports)
-  MEDIUM
-  LOW (includes high tariffs and large imports)
- N.A. = not available

CANADA - RELATIVE PERFORMANCE AND GROWTH OF VARIOUS ECONOMIC DIVISIONS

CHART C

Economic Sector	AVERAGE PERFORMANCE 1966-1968							PER CENT GROWTH 1969/70			
	Output	Employment	Output Person	Oper. Profit Oper. Assets	Average Weekly Salaries & Wages	Graduates Employment (1961)	R. & D. Output	Output	Employment	Output Person	Average Weekly Salaries & Wages
Agric., Forestry, Fishing	●		●	●	N.A.	●	N.A.	●	●		N.A.
Mining, Gas & Oil Wells	●	●	 	 	 	 	N.A.	 	●	 	
Manufacturing	 	 	 	 	 	 	 	 	 	 	
Construction			 		 	●	N.A.	 	 	●	
El. Power, Gas, Water Util.	●	●	 		N.A.	 	N.A.	 	 	 	
Transport, Communication			 	●		 	N.A.	 	●	 	
Trade (Wholesale & Retail)	 	 	●		●	 	N.A.	 	 	●	●
Services	 	 	●	●	N.A.	 	N.A.	 	 	●	N.A.

 HIGH
  MEDIUM
  LOW

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