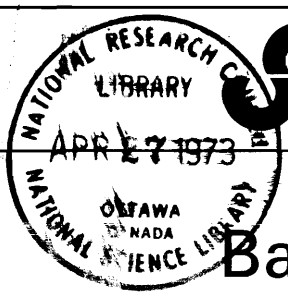

Background Study for the Science Council of Canada

April 1973 Special Study No. 26

Governments and Innovation

by Andrew H. Wilson

April 1973

Governments and Innovation

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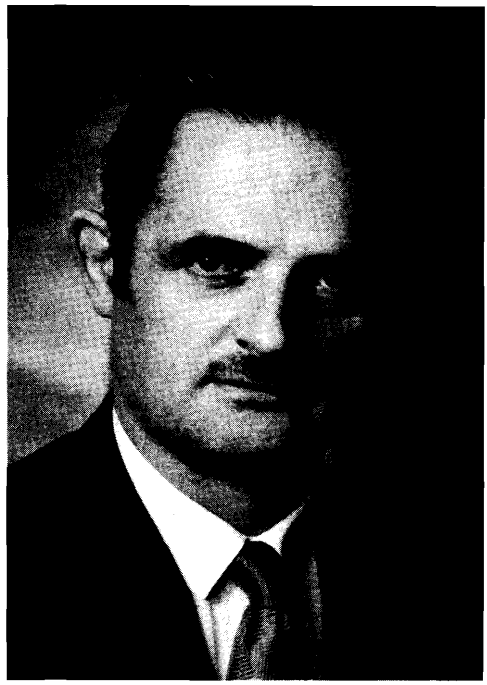

Andrew H. Wilson

Born in Scotland in 1928. Educated at George Watson's College, Edinburgh, and at the University of Glasgow. Graduated B.Sc. in 1949 (mechanical engineering) and M.A. in 1954 (economics and mathematics). Came to Canada in 1957.

Served a cooperative – or "sandwich" – apprenticeship in marine engineering from 1946 until 1949. Gained experience in the mechanical design of hydraulic equipment in 1949 and 1950, technical and business experience in the ball and roller bearing industry between 1954 and 1957, and further mechanical design experience – principally in nuclear physics instrumentation – between 1958 and 1960.

Commissioned in the Technical Branch of the Royal Air Force in 1950 and subsequently served as a technical staff officer at the Headquarters of Coastal Command. Active member of the RAF Reserve of Officers from 1951 to 1954.

Served as Scientific Administrative Officer of the Physics Division of Atomic Energy of Canada Limited at Chalk River from 1960 to 1964.

Served as Secretary and Chief Research Officer of the Advisory Committee on Industrial Research and Technology of the Economic Council of Canada between 1964 and 1968. Joined the Science Secretariat of the Privy Council Office in September 1, 1968, and two months later was assigned to the staff of the Science Council of Canada as a Science Adviser. Served, since joining the Science Council staff, as Project Officer for the group studying aeronautical research and development activities in Canada and as a member of the research team associated with the Council's Committee on Industrial Research and Innovation.

Member of the Engineering Institute of Canada, the Canadian Society for Mechanical Engineering, the Association of Professional Engineers of Ontario, and the (U.K.) Institution of Mechanical Engineers. Also qualified for designation in the U.K. as a Chartered Engineer.

Author of background and research papers for both the Science and Economic Councils, and author of articles and papers published elsewhere.

Foreword

This background study is one of several written by members of the professional staff of the Science Council for the Council's Committee on Industrial Research and Innovation and in support of the Council's Report No. 15, *Innovation in a Cold Climate.*

This particular study is concerned principally with the roles and responsibilities of the three levels of government in Canada with regard to technology-based innovative activities in domestic manufacturing industry. It examines a variety of public measures which were designed to encourage these activities both directly and indirectly as well as measures which were designed to regulate them. Some measures are found to work well, others raise impediments to innovation which too often go undetected.

As with all background studies published by the Science Council, this study represents views developed by the author which are not necessarily reflected in the views of the Council or, in this case, of the Council Committee which commissioned the work. Nevertheless, the Council is publishing the study because it thinks it makes an important contribution to our understanding of an important area of concern.

The author of the study, an engineer/economist, has been a member of the staff of the Science Council for four years, prior to which he was associated with the Economic Council of Canada. His main interest for some time has been in the area of industrial research and innovation.

P.D. McTaggart-Cowan,
Executive Director,
Science Council of Canada.

Acknowledgements

This study contains a great deal of material from a wide variety of sources, and it has been some time in preparation. In its final form, the study represents a compromise between an in-depth examination of those factors with origins in the government sector that strongly influence the innovation process in manufacturing industry in Canada, and an examination of sufficient scope to support the Science Council's own analysis published in October 1971.

During the research project of which this study is a visible result, I have received assistance and advice from a good many people. My thanks for these go, in particular, to the officers of the government departments and agencies and of the private institutions who provided important parts of the background material, to the Chairman and Members of the Science Council's Industrial Research and Innovation Committee, to my Science Council staff colleagues and former colleagues – J. Richard Armstrong, Pierre L. Bourgault, Arthur J. Cordell and Frank J. Kelly – who were also studying aspects of the innovation process, to other members of the Council's staff who made contributions, and to those who kindly reviewed the draft report prior to publication.

I must also acknowledge the work done by the research assistants assigned to help with the collection, analysis and review of the input material, and the work of the other members of the Council's support staff who were involved in the logistics of the project. Special thanks go to my secretary, Miss Florence Wark, whose patience and diligence helped carry the project through the preliminary and draft report stages and to the final version, and to the members of my family, who sometimes wondered if it would ever be finished.

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Introduction

In October of 1971 the Science Council of Canada published a report, *Innovation in a Cold Climate*[1], which drew attention to a group of situations and factors that were currently, and adversely, affecting the performance of the manufacturing industry in this country. This present study is one of the series of studies prepared at the request of the Council's Committee on Industrial Research and Innovation to make available background material used in the preparation of the Council's own report.[2]

This report had its origins in a study intended to describe and analyse the principal roles and responsibilities of the three levels of government in Canada in relation to the encouragement – and the frustration – of technology-based innovative activities in the manufacturing industry. By means of policies, laws, regulations and programs, these governments effectively establish the "rules of the game" of business enterprise, and of technological innovation, in this country. They are, of course, helped or hindered by one another and by foreign governments, by conditions in the different market places of the world, by the characteristics of different industries, by history, custom, and tradition, by geographical location and climate, by present and future prospects, and by individuals and groups of customers. The principal end-products of the study were to be the identification of the most obvious legal, administrative and regulatory incentives and impediments to technology-based innovation, and a consideration of methods for the improvement of existing and the design of new incentives, and for the complete or partial removal of the impediments.

Material was gathered for the study in accordance with the original aims and intentions. However, following discussions at the Science Council staff level and within the Industrial Research and Innovation Committee, the results of the study have been compressed into a single volume in order to relate them more closely to the Council's own report. An attempt has nevertheless been made to portray the actual environment in which the Canadian manufacturing industry has operated in the recent past.

This present study is incomplete from the point of view of the available material. It should therefore be looked upon as a series of ten basic and interrelated essays along with a series of conclusions which draw support from all or most of them.[3] *The essay Chapters have been designed*

[1]Science Council of Canada Report No. 15, *Innovation in a Cold Climate: The Dilemma of Canadian Manufacturing*, Information Canada, Ottawa, 1971.

[2]This series includes the following additional Science Council of Canada background studies: Andrew H. Wilson, *Background to Invention*, Science Council of Canada Special Study No. 11, Information Canada, Ottawa, 1970. Andrew H. Wilson, *The Research Councils in the Provinces*, Science Council of Canada Special Study No. 19, Information Canada, Ottawa, 1971. Frank J. Kelly, *Prospects for Scientists and Engineers in Canada*, Science Council of Canada Special Study No. 20, Information Canada, Ottawa, 1971. Arthur J. Cordell, *The Multinational Firm, Foreign Direct Investment, and Canadian Science Policy*, Science Council of Canada Special Study No. 22, Information Canada, Ottawa, 1971. Pierre L. Bourgault, *Innovation and the Structure of Canadian Industry*, Science Council of Canada Special Study No. 23, Information Canada, Ottawa, 1972. Two additional studies by A.D. Boyd and A.C. Gross, and by Jean-Claude Richer are in preparation.

[3]Some of the missing descriptive material can be found in Statistics Canada, *Canada Yearbook, 1970-71*, Information Canada, Ottawa, February, 1971, in the most recent *Annual Reports* of departments, agencies and institutions mentioned in the various chapters, and in specific statutes, regulations, Orders-in-Council, etc. Other material has been cited in footnotes wherever possible.

for study by staff officers and specialists in industry, in the universities and in government agencies and departments in Canada, and by students of the innovation process in this country and abroad. The "Conclusions" have been written in a manner that incorporates a summary of the essays, and this "package" has been addressed to senior executives in both the public and private sectors. In view of the scope and complexity of the material included in the essays, the "Conclusions" have not been developed further into a series of positive recommendations for action, nor has the analysis been sufficiently extensive that it reflects to any great extent the personal opinions of the author. A separate "Postscript" has been added in order to make a number of observations which place the essays and the conclusions within the perspective of the industrial strategy recommended by the Science Council in its own report. The material covered by this present study has not previously been published in a single volume in Canada.

The two principal sources of the information gathered for this report were published documents and interviews with officers of government departments and agencies, industrial companies and public bodies who appeared best able to provide what was needed. No attempt was made to interview representatives of each and every federal department agency with a role to play in the innovation process, although departments in the limelight did receive particular attention. Coverage of the provinces was more selective than for the federal government, although several common points of contact were made. Local government coverage was quite limited but sufficient to place the responsibilities of this level alongside those of the other two. Unfortunately, for reasons beyond the control of the author, the interviews were spread unevenly throughout the period May 1970 to June 1971. During this period and the subsequent time of data study and writing, many new developments took place at the federal and provincial government levels. Elections were held in certain provinces, for example, and several new governing parties took office. In addition, material has been used which postdates the approval of the final text of the Science Council's own report in August 1971. An effort has been made, however, to keep abreast of all relevant changes. Some have been incorporated directly into the text, while others have been mentioned in footnotes.[4]

The Industrial Research and Innovation Committee also asked that the degree of detail developed in each of the essay chapters reflect the Committee's view of its relative importance to the major issues in the Science Council's own report. As a result, the most extensive treatment has been given in Chapter 2 (Attitudes: Governments Toward Industry), Chapter 3 (Industrial Assistance Programs), Chapter 4 (Federal Government Purchasing and Research Transfer Programs), and in Chapter 5 (Taxation). Less detail has been included in Chapter 6 (Regional Development Programs) and in Chapter 7 (Industrial Financing, with Particular Reference to Small Business). The least amount of detail has been given in Chapter 1 (The Structure of Governments), Chapter 8 (Trade, Tariffs and Non-Tariff Barriers), Chapter 9 (Amendments to the Canada Labour Code, and the

[4]In effect the text of this present study was "frozen" as of the end of December 1971, but a number of events which took place in the first half of 1972 could not be omitted. The manuscript was completed in August 1972.

Proposed New Competition Act), and in Chapter 10 (The Industrial Design and Patent Acts).

In recent years, it has become commonplace to hear expressions of general concern about the application of advancing technology in an innovative way and about the effects of specific applications on Man himself, on his quality of life, and on his physical environment. While recognizing that social as well as economic and other costs are involved, this present study makes no judgements on social or moral issues involving past, present or future innovations. The study starts from two assumptions: first, that there will be a continuing need for effective technology-based innovative activities by manufacturing companies in Canada and, second, that governments in this country have roles and responsibilities with regard to the encouragement of this effectiveness. The problems facing industrial managements are, therefore, of primary concern.

A number of other ground rules have been applied to the preparation of this study:

– Those topics already covered, or about to be covered, in other Science Council reports or special studies have not been included;

– No analyses or discussions of the published reports of the Senate Special Committee on Science Policy have been included;[5]

– With the exception of part of Chapter 7, the report deals with the influence of the public sector on technological innovation in Canadian manufacturing. The principal analyses of private sector incentives and impediments have been included in the other background reports in the series;

– The study concentrates on the Canadian environment and on Canadian problems, and the majority of the references are to Canadian sources. Only Chapter 8 deals at any length with this environment and a number of these problems in the international context. Descriptions of foreign government institutions have, however, been introduced from time to time for purposes of illustration;

– This study carries no brief for any particular sector of the manufacturing industry.

Before passing to the body of the study, some of the terminology used in it needs to be defined. For example, the term "manufacturing industry" includes both "primary" and "secondary" manufacturing. In other words, the primary conversion and processing of materials and the manufacture of end-products are included, but harvesting and initial extraction operations are not. The breakdown by industry groups which appears in the *Census of Manufactures* compiled by Statistics Canada is therefore relevant and has been used whenever possible throughout the report.

For the purpose of this study, the *process* of technological innovation has been considered as a two-step affair. The first, or *invention*, step involves the research, development, design and testing activities which, broadly speaking, may go into the making of a technical innovation. The second, or *innovation-proper*, step is concerned with the business of making, selling, and gaining acceptance of a *new or improved* product, or with the incorporation of a *new or improved* method or process into a regular manufactur-

[5]The Science Council's views on Volume II of the Senate Committee's report have been included in its *Annual Report*, 1971-72, Information Canada, Ottawa, 1972. p. 27-40.

ing operation. This second step may, therefore, involve technical activities such as additional development plus design, testing, feasibility studies and other evaluations, production engineering and quality control, as well as non-technical activities such as the raising of capital, the securing of patent rights and licences, the purchase of materials and equipment, marketing and selling.

As is the case at the interface between research and development, the interface between the first and second steps in the process of technological innovation cannot always be clearly identified. Nor does innovation-proper necessarily follow invention. Somewhere along the line a conscious decision to market the product or to use the process must be made. In practice, this decision will seldom be made by the inventor himself. And, if one step does follow the other, there may be a considerable time lag or a geographical separation – or both – between them.

Unfortunately, the studies of the process of technological innovations published thus far have been given pride of place to innovations that could clearly be identified as *original* – that is, associated with completely new products or processes. These studies have taken little or no account of innovations that were strongly *imitative* and involved the addition of only a small contribution to new technology on the part of the innovator. The reasons for this gap are, quite simply, that original innovations are easier to identify and "hard" information is more readily available on them. It is easier still to identify and gather data for those original innovations that are *revolutionary* – that is, those which embody considerable technical advances – than for those that are *evolutionary* and part of the gradual change in a particular branch of process or product technology. Imitative innovations, which are usually evolutionary, are quite common and a series of them may make a significant contribution to an innovative company's long-run performance record.[6] Finally, as noted in an earlier report:

"The innovation process ... needs the talents and resourcefulness of at least five different kinds of people. These are: the scientists, engineers and other technical people who look after the R & D, the design, and the engineering aspects of a project; the project manager who becomes identified with the project and carries it forward through the laboratory, through feasibility and market studies, and through the other stages right down to the assembly line; the marketing and sales specialists who find the customers; the entrepreneur who recognizes the need or the opportunity for innovation, who decides to bring the necessary resources together, and who accepts the risk of failure; and the venture capitalist – who may be an individual, an organization or a government – but who, after appraising the risks and resources involved, is willing to back the project financially (and managerially as well, if necessary). Occasionally the engineer, the

[6]Innovations can, of course, be classified in other ways. For example, some are labour-saving while others are capital saving.

project manager, the salesman, and the entrepreneur are one and the same person. Very rarely is this person also the venture capitalist."[7]

As will be made clear in the chapters that follow, successful technology-based innovation by the manufacturing industry also requires the attention, the understanding and the actions of governments. The "non-science" and "non-technology" decisions of the public sector may encourage or frustrate innovative activities in the private sector as much, if not more, than decisions taken in regard to purely scientific or technical matters.

[7]Andrew H. Wilson, *Science, Technology and Innovation*, Economic Council of Canada Special Study No. 8, Queen's Printer, Ottawa, 1968. p. 83-84. It should be noted that the term "venture capitalist" has been used very broadly in this quotation and not in the restricted sense applied in Chapter 7.

I. The Structure of Governments

"The character of a government, like that of an individual, is shaped by the two primary forces of heredity and environment; and the study of a government, again like that of an individual, must perforce devote some attention to parentage and the special associations which have had direct contact with each particular institution.... But there are also other influences of a similar though more general nature to be considered – influences which can be traced beyond the immediate family to the more remote ancestors or which flow in from the broader *milieu* in which the institution has developed. Thus while the government of Canada came into existence on July 1, 1867, and its features were to a material degree determined by the British North America Act, a very significant part of the new government was contributed by the practices of the component provinces which, in turn, were associated with the political experience of other areas on the continent. The greater part of the government was also profoundly affected by British law, traditions, and habits of mind, and by precepts and examples in the United States, and these influences have never ceased to operate during the ensuing years...."[1]

The two main purposes of this first essay chapter are to examine quite briefly the hereditary and environmental factors that affect the present structure of the three levels of government in Canada and to identify the elements in this structure that have particular relevance for the well-being of technology-based innovative activities in the manufacturing industry in this country. These may well be lofty purposes, but the information given in this chapter is necessary in order to provide an understanding of the complexities involved in the governing of contemporary Canada.

The material in this chapter played no special part in the arguments raised in the Science Council's own report, *Innovation in a Cold Climate*.[2] The structure and the associated mechanisms of the business of government were not, however, forgotten. The need for more effective interaction between the federal and provincial government and for a more effective co-ordination of their respective activities were constantly recurring themes in the report.

Two words of warning about this chapter should be given at this point. First, the need to present much of the material in the form of descriptive institutional titles should not obscure the fact that governments are managed and operated by people. Second, what may have been learned from the structural and other mistakes of the past may not be wholly relevant to the prevention of the same kinds of mistakes in the future. For this reason, much of what has happened in the past has been omitted. But whatever the limitations of this chapter, it does begin at the beginning....

[1]R. MacGregor Dawson, *The Governments of Canada*, Third Edition, Norman Ward, ed., University of Toronto Press, Toronto, 1963. p. 3.

[2]Science Council of Canada Report No. 15, *Innovation in a Cold Climate*, Information Canada, Ottawa, 1971.

The British North America Act

For the purposes of this study, the most important sections of the BNA Act are the ones dealing with the distribution of legislative powers between the federal and provincial levels of government.[3]

Under Section 91 of the Act the authority of the Parliament of Canada extends to such matters as:

- the regulation of trade and commerce,
- the raising of money "by any Mode or System of Taxation",
- the borrowing of money "on the Public Credit",
- the postal service,
- defence,
- navigation and shipping,
- banking, the incorporation of banks and the issue of paper money,
- weights and measures,
- interest,
- patents of discovery and invention,
- copyright, and
- the criminal law, except the constitution of courts of criminal jurisdiction, but including the procedure in criminal matters.

Under Section 92 of the Act, the exclusive powers of the provincial legislatures extend, for example, to:

- direct taxation within the provinces to raise revenue "for Provincial Purposes",
- the borrowing of money "on the sole Credit of the Province",
- the management and sale of public lands belonging to the province and of the timber and wood on them,
- responsibility for municipal institutions,
- "Local Works and Undertakings" except for example, "Lines of of Steam or other Ships, Railways, Canals, Telegraphs, and Works and Undertakings connecting the Province with any other or others of the Provinces, or extending beyond the limits of the Province",
- the incorporation of companies with provincial objects, and the administration of justice, including the constitution, maintenance, and organization of provincial courts – of both civil and criminal juristiction – and including procedure in civil matters in these courts.

Under Section 93 of the Act, provincial legislatures have the power to make laws with regard to education.

Under Section 95, both levels of goverment have concurrent jurisdiction over agriculture and immigration.

Under Section 121, "All articles of Growth, Produce or Manufacture of any one Province shall, from and after the Union, be admitted free into each of the other Provinces".

Unlike the United States' Constitution, which gives all residual powers to the States, the BNA Act assigns these powers to the Parliament of Canada.

Although responsibility for "patents of discovery and invention" was

[3]The Consolidation of the BNA Act used for this study was prepared by Elmer A. Driedger, the former federal Deputy Minister of Justice, and published in January 1967 by the Department.

given to the Parliament of Canada, there was no mention in the original BNA Act of the delegation of powers over matters associated specifically with science, research, or development. However, as needs arose in these and other related areas of concern, the federal or the provincial governments have undertaken to set up institutions, to enact laws and make regulations, and to establish programs without recourse to the amendment of the BNA Act or to the invocation of residual powers. As a result, responsibility for some areas of activity associated with the innovation process has been formally assigned, while responsibility for other areas has been "acquired" by one or by both levels. Jurisdiction within these latter areas may be the subject of negotiation between the federal government and the provinces, either singly or collectively.

Under the present provisions of the BNA Act, any bill passed by a provincial legislature may be disallowed or rendered void by the federal Cabinet through an Order-in-Council. The federal Cabinet may also be asked to give or refuse its consent to any provincial bill which the Lieutenant Governor of the Province has "reserved" for Cabinet consideration. Since Confederation, only a hundred or so bills have been disallowed, the last one, an Alberta bill, in 1943. Only seventy bills have been "reserved", the power of reservation being used last in Saskatchewan in 1961. In June, 1971, the federal government agreed to give up these powers.[4]

As it now stands, the BNA Act may appear to be an outmoded and unrealistic instrument of government in relation to present – and likely future – economic, social, and technological patterns of development in Canada. Federal-provincial discussions on various aspects of constitutional reform have, of course, been in progress for some time. Canada does not have a Constitution on the U.S. model. Until an alternative is drawn up and agreed upon, the BNA Act is all there is.

The Federal Government

Over the 100-odd years since the BNA Act first came into force, the federal level of government has grown to the point where there are about 150 line departments, Crown Corporations, boards, councils, and commissions which have identities of their own under federal legislation and which normally report to Parliament through a Cabinet Minister. A few are joint ventures with the provinces and some involve the private sector directly.

The political and administrative influence of each department or agency or technology-based innovation in the manufacturing industry in Canada varies considerably. On the basis of an analysis of their various duties, the federal institutions have been placed in three broad groups according to an "innovation-influence" rating. The following basic innovation-related roles and responsibilities were considered in making the analysis:

1. The performance of in-house R & D having potential "spin-off" to manufacturing industry.

[4]The BNA Act has not yet been amended to this effect.

2. The contracting-out of R & D to industry.[5]

3. The provision of cost-shared forms of encouragement for R & D performance in industry.

4. The support and encouragement of design, production, marketing, export, and other non-laboratory activities associated with the innovation process in industry.

5. The support and encouragement of improved productivity and technical and management competence in industry by means of financial, information and advisory services.

6. The provision of support for increased opportunities for productive employment in industry, including the provision of financial assistance.

7. The negotiation of technical, trade, tax or other relevant treaties or agreements of importance to industry.

8. Liaison and cooperation with the provinces and/or foreign governments in innovation-related matters affecting industry.

9. The management of the federal government's own in-house operations and the allocation of resources to these operations.

10. The initiation of action for the purchase of significant quantities of technology-based products from Canadian and/or foreign companies, or the authority to act as agent for such purchases.

11. Forecasting, planning and advisory duties associated with the federal government's own in-house operations, and with support to be given to manufacturing industry generally.

12. Regulatory authority over the conduct of the business of manufacturing, and over products/processes, imports/exports, and safety and other performance standards.

13. The management of the economic and financial conditions under which the business of manufacturing is carried out in Canada.

14. Status as a full department or agency and not as a subordinate or subsidiary agency.

The three groups are as follows:

Group A[6]

Innovation-Influence Rating: Not Significant

Approximately 60 per cent of all departments and agencies belong to this group.

Examples:

Canadian Dairy Commission	Library of Parliament
Canada Council	Tax Appeal Board
Canadian Saltfish Corporation	Crown Assets Disposal Corporation
Department of Veterans Affairs	Department of the Solicitor General
Farm Credit Corporation	Public Service Commission

[5]This role will be influenced by the new R & D "contracting-out" policy of the federal government announced in the Spring of 1972. For further discussion see Chapter 4.

[6]For descriptions of the duties of the individual departments and agencies, reference should be made to the appropriate statutes or to the *Canada Year Books* published by Statistics Canada, Ottawa.

Group B

Innovation-Influence Rating: Significant

Approximately 30 per cent of all departments and agencies belong to this group.

Examples:

Atomic Energy Control Board
Anti-Dumping Tribunal
Department of Agriculture
Canadian Patents & Development Limited
Cape Breton Development Corp.
Department of Labour
Export Development Corporation
Tariff Board
Department of National Health and Welfare
Industrial Development Bank

Group C

Innovation-Influence Rating: Very Significant

The remaining 10 per cent of departments and agencies belong to this group. The 15 members are listed in Table I.1, which also shows the principal innovation-related roles and responsibilities of each of them in accordance with the numbered list immediately above.

Table I.1–Federal Departments and Agencies having a Very Significant Influence on Technology-based Innovative Activities in Manufacturing Industry in Canada in 1972

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Atomic Energy of Canada Ltd.	*	*		*	*		*	*	*	*	*			*
Canada Development Corp.						*							*	*
Department of Communications	*	*		*	*		*	*	*	*	*	*		*
Department of Consumer and Corporate Affairs								*	*		*	*		*
Department of Energy, Mines and Resources	*	*		*	*			*	*	*	*			*
Department of the Environment	*	*		*	*		*	*	*	*	*	*		*
Department of Finance						*	*	*	*		*		*	*
Department of Industry, Trade and Commerce			*	*	*	*	*	*	*		*	*		*
Department of National Defence	*	*	*	*	*		*	*	*	*	*	*		*
Department of Regional Economic Expansion						*		*	*		*			*
Department of Supply and Services		*		*		*		*	*	*	*	*		*
Minister of State for Science and Technology								*	*		*			*
Ministry of Transport	*	*		*		*	*	*	*	*	*	*		*
National Research Council	*	*	*	*	*		*	*	*	*	*			*
Treasury Board									*		*			*

Note: For explanations of the numbered categories, see pages 20 and 21.
Source: Statistics Canada, *Canada Year Book* 1970–71 and *Annual Reports* of the Departments.

A further examination of the roles and responsiblities of the Group C departments and agencies indicates that three of them may be considered to play "spearhead" roles with regard to the federal government's direct encouragement of technology-based innovation in manufacturing industry. They are the Department of Industry, Trade and Commerce, the new Canada Development Corporation (which has not, thus far, established a

"track record" of performance in this role[7]), and the National Research Council. The role of the new Ministry of State for Science and Technology is to be policy formulation, advice and co-ordination. Its role with regard to innovation in industry will therefore be indirect or passive.

It is also important to recognize that the established departments and agencies included in Group C have undergone some structural or role changes during the past five years. In 1966, for example, the Treasury Board secretariat became a separate agency in its own right. The Departments of Transport, and Energy, Mines and Resources underwent changes in fiscal year 1966/67 and again in fiscal year 1970/71. The Department of Consumer and Corporate Affairs was established in 1967, and Regional Economic Expansion in 1969. In 1969, also, the Departments of Industry, Defence Production, and Trade and Commerce were re-formed as the Department of Supply and Services, and Industry, Trade and Commerce. The Department of the Environment was formed from the Departments of Fisheries and Forestry and several other smaller groups in 1971.[8]

The Provincial Governments

The departmental structures of the provincial governments look remarkably similar. For example, all ten have departments dealing with agriculture, mines, lands and forests, education, municipal affairs, highways, public works, health, justice, and finance. All of these departments have essentially similar functions, but may be combined in different ministerial portfolios. The provinces also have Crown corporations, commissions, and boards, and most have a research council or an equivalent. The functions and numbers of the institutions within each of these classes may, however, vary considerably from province to province.[9]

Some important changes in the structure and organization of provincial governments have taken place in recent years. For example, most provinces now have Ministers responsible for environmental problems and for inter-governmental affairs. Ontario now has a group of four senior Ministers responsible for policy matters, while the remaining Ministers have "line" responsibilities as before.[10] The changes that have taken place in the governing parties and/or party leaders in the majority of the provinces have generally brought about changes in the techniques of management of the provincial governments and in the attitudes of the governments towards constitutional reform. The move towards the union of the Maritime Provinces has made some visible progress.

The interest taken in scientific research and development by the in-

[7]The appointments to the founding Board of Directors of the CDC were made on November 29, 1971. The CDC's first major investment was in the Connaught Medical Laboratories, in the Spring of 1972. See also Chapter 7.

[8]The roles, responsibilities, and activities of all of the Group C departments and agencies have not received equal treatment in this report. Departments such as Industry, Trade and Commerce and Regional Economic Expansion appear frequently in the text. The Departments of Communications, National Defence and Transport do not.

[9]Details of roles and responsibilities can be found in the corresponding provincial statutes and in departmental *Annual Reports* and in *Brochures* published by the provinces.

[10]It is interesting to note that, in contrast with Ontario, the two Ministers of State appointed thus far to policy/study posts in the federal Cabinet have been much less senior in standing. The federal and Ontario concepts of "policy" Ministers are therefore different.

dividual provinces varies considerably, as do the capabilities and inclinations of their departments and agencies to perform these activities or to support R & D in industry or in the universities. The principal technical activities of the provinces are, in practice, associated with engineering rather than research and development. The technical fields concerned include highway construction, traffic control and transportation systems, water supply and sewage treatment, anti-pollution and pollution control measures, agricultural engineering, forestry operations, industrial safety, and energy production. With regard to the research activities of long-term value to the manufacturing industry, the leading roles in the provinces are played by the eight Research Councils[11] and by the laboratories of Hydro-Québec and Ontario Hydro.

Each province provides a unique portfolio of advisory measures in support of technology-based manufacturing within its borders. The provinces exert control over business operations. They set or adopt technical specifications and manufacturing standards in, for example, housing and electrical equipment. All of the provinces are anxious to encourage the exploitation of new markets and the growth of manufacturing activities, although not all of them set out to attract new firms with specially designed financial incentives.

Thus far, science policy has not yet become an identifiable preoccupation in nine of the provincial governments although, for all of them, economic and industrial policies have vital roles to play. Quebec has been the only province to establish an institutional structure to examine science policy questions. This structure includes a Ministerial-level Science Policy Committee, a Science Policy Secretariat, and an advisory Science Policy Council.

Innovation-influence ratings have not been compiled for the various departments and agencies in the provinces because of the difficulty of making meaningful inter-provincial and federal-provincial comparisons. Nevertheless, it has been possible to identify "spearhead" groups in the provinces which correspond to the federal "troika". These groups are shown in Table I.2

Local Governments

A recent book of essays on the problems of local governments began with this paragraph:

"Municipalities are often forgotten when we think of the institutions of government. Local government seems dull and uninteresting in contrast with the fascinating problems at the higher levels. We think of municipalities dealing with such prosaic things as garbage-removal and sewers, as opposed to such world-shaking problems as separatism or Canada's role in nuclear disarmament.... Yet local government, because it is local, is of vital importance to the health of a democracy."[12]

[11]Andrew H. Wilson, *The Research Councils in the Provinces*, Science Council of Canada Special Study No. 19, Information Canada, Ottawa, 1971.

[12]Donald C. Rowat, *The Canadian Municipal System*, The Carleton Library No. 48, McClelland and Stewart, Toronto/Montreal, 1969. p. vii.

Table I.2–Principal Provincial Departments and Agencies Providing Special Encouragement for Manufacturing Industry

	Industry Departments	Funding Sources	Research Councils
Alberta	Department of Industry and Tourism	Alberta Commercial Corporation	Research Council of Alberta
British Columbia	Department of Industrial Development, Trade and Commerce	[a]	B.C. Research
Manitoba	Department of Industry and Commerce	Manitoba Development Corporation	Manitoba Research Council
New Brunswick	Department of Economic Growth	N.B. Development Corporation	Research and Productivity Council
Newfoundland	Department of Economic Development	Newfoundland and Labrador Development Corporation[b]	(Legislation establishing a council was passed in 1961 but was never proclaimed)
Nova Scotia	Department of Development	Industrial Estates Limited	N.S. Research Foundation
Ontario	Department of Industry and Tourism	Ontario Development Corporation and the Northern Ontario Development Corporation	Ontario Research Foundation
P.E.I.	Department of Industry and Commerce	Industrial Enterprises Incorporated	(Assistance from RPC of New Brunswick)
Quebec	Department of Industry and Commerce	General Investment Corporation; Quebec Deposit Investment Fund; and Industrial Development Corp.	Le Centre de recherche industrielle du Québec
Saskatchewan	Department of Industry and Commerce	Saskatchewan Economic Development Corp.	Saskatchewan Research Council

Notes: [a]The Government of British Columbia under Premier Bennett proposed to establish a B.C. Development Corporation to provide industrial development funding.
[b]This Corporation is not a funding source in the active sense but assists with the arranging of loans and equity financing. The Government of Newfoundland has been negotiating for some time with the federal Department of Regional Economic Expansion to establish an Industrial Development Corporation. This latter Corporation will have financial resources.
Source: *Annual Reports* of the Departments; government *Brochures*; and private communications.

There are as many local government systems in Canada as there are provinces. The powers and responsibilities of local governments are those delegated to them by the provinces by means, for example, of Municipal Acts and separate city statutes. Local governments, generally, provide for the protection of persons and property, public works, sanitation and waste removal, certain aspects of health, welfare and education, zoning, and many of the community and recreation services. They may also participate in the provision and operation of facilities for public transportation, the supply of electricity and gas, and telephone services. They can raise taxes and regulate the conduct of business and industry.

Local governments are concerned almost exclusively with engineering and with the purchase of equipment and services. They may do so on their own account or, in the highways field, for example, in association with the

provincial government from which they receive financial assistance and technical supervision. But these engineering concerns are not always small scale concerns. The engineering and financial problems faced by Canada's largest cities are at least as complex as those of the less populous provinces. More people live in Metropolitan Montreal than in British Columbia, the third most populous province, and more people live in Greater Vancouver than in any one of the Atlantic Provinces.

Local governments also have concerns for the existence, growth and profitability of manufacturing industry within their jurisdictions and may take positive steps, either alone or with assistance from the province, to keep what industry they have and to attract new companies and plants. The Commercial and Industrial Development Corporation of Ottawa-Carleton, for example, is a non-profit organization with a charter from the Province of Ontario and is engaged in promoting industrial development in that regional municipality. The members of CIDC are the constituent municipalities themselves as well as business, industrial and other firms and organizations. The members are jointly responsible for financing the Corporation's activities.

In recent years, the burden of administration and finance falling on local governments has increased enormously. As Rowat has pointed out:

"Canada's municipal systems, except in Newfoundland, were created before the invention of rapid means of transportation and communication – the automobile, the aeroplane, the telephone, radio and television. The rural units were therefore made small enough to be traversed conveniently by horse and buggy. The systems were also created before the modern age of the welfare state. As a result, a great many municipalities are too small to provide the skilled staff and financial resources required of local government today.... Altogether, there are over 4 500 self-governing municipalities in Canada, a great many of which have fewer than 1 000 habitants and a pityfully small budget."[13]

In spite of the political hazards involved, some provinces have been attempting to consolidate and improve the efficiency of local government jurisdictions. However, since there are wide variations in the numbers, types and "densities" of local jurisdictions in the ten provinces, the urgency with regard to consolidation does not apply equally to all of them. Quebec, for example, has roughly 1 600 jurisdictions serving around 6 million people. Ontario has just over half as many jurisdictions for a population 1.8 million larger. Saskatchewan, however, has only about 100 jurisdictions fewer than Ontario to serve one-seventh of the number of people. The intention of new legislation brought forward by the Quebec Government is to reduce the jurisdiction in that Province by half over the next decade. Table I.3 shows the situation as it was on January 1, 1970, before the Quebec bill was introduced.

[13] *Ibid.*, p. xi.

Table I.3–Local Governments in the Canadian Provinces in January 1970

	Canada	N.W.T. & Yukon	B.C.	Alta.	Sask.	Man.	Ont.	Que.	N.B.	N.S.	P.E.I.	Nfld.
Regional Municipalities	141											
Metro Corporations						1	1					
Regional Municipalities							2					
Counties & Regional Districts			28				35	74				
Unitary Municipalities	4 276											
Cities		3	31	9	11	9	38	64	6	3	1	2
Towns		3	13	101	131	36	151	195	21	39	7	72
Villages			54	168	360	41	150	292	93		24	
Rural Municipalities			40	48	292	109	551	1 084		24		
Quasi-Municipalities	216	6		50	9	18	17					116
Totals	**4 633**	**12**	**166**	**376**	**803**	**214**	**945**	**1 709**	**120**	**66**	**32**	**190**
Population Size Groups in Unitary Municipalities (1966 Census)												
Over 100 000	20		2	2	2	1	9	3		1		
50 000 to 99 999	32		4			1	16	7	1	2		1
10 000 to 49 000	202		25	9	5	10	55	72	6	16	2	2
Under 10 000	4 022	6	107	315	787	183	810	1 553	113	47	30	71
Total	**4 276**	**6**	**138**	**326**	**794**	**195**	**890**	**1 635**	**120**	**66**	**32**	**74**

Source: Statistics Canada, *Canada Yearbook 1970-71*, Information Canada, Ottawa, 1971. p. 129.

The Three Levels of Government

It has been said in jest, but with a good deal of feeling, that local governments have the problems, provincial governments have the power, and the federal government has the money. It could also be said, more seriously, that local governments are the closest to day-to-day issues and the federal government is the farthest removed, but the provinces are somewhere in between. The Ontario Committee on Taxation had views on the differences between the three levels of government. It said, for example, in its report:

"Three major elements of contrast between federalism and the provincial-municipal realm suggest themselves to us. First, in legal terms, the federal-provincial relationship is based on constitutional law; the provincial-municipal on statutory law. Second, in policy terms, the federal-provincial relationship is one of equal to equal; the provincial-municipal one is one of superior to subordinate. Third, in structural terms, the federal-provincial relationship is one of relative simplicity, the provincial-municipal is highly complex."[14]

In spite of the predominant provincial-local government relationship, the direct and indirect effects of federal department and agency activities and of federal statutes, regulations and programs can be felt at the local level. The Department of Regional Economic Expansion, for example, has a portfolio of programs to improve economic opportunities in special areas of the country. The federal Minister of State for Urban Affairs has responsibilities which touch local governments. In the technical field, the National Research Council is responsible for the National Building Code and helps to operate and support technical information and industrial engineering services. There is federal anti-pollution legislation under the Canada Shipping Act, the Canada Water Act, the Fisheries Act and other statutes.

Federal-provincial interactions are, of course, much more visible. There has been, for example, a continuous series of First-Minister conferences on constitutional, social and economic issues during the last several years. Consultations between senior departmental officials on these issues have been less visible, but no less frequent. Although much lip-service has been paid to the idea of three-level consultations, there remains no senior political forum for regular meetings between the federal and provincial governments, and the representatives of the municipalities most concerned, on problems affecting the performance of manufacturing industry in this country. As recommended in the Science Council's own report,[15] such consultations are urgently required in order to arrive at a suitable industrial strategy for Canada. Such a forum will also be an essential mechanism in the removal of two increasingly important frustra-

[14] *Report of the Ontario Committee on Taxation*, (The Smith Report), Government Printing Office, Queen's Park, Toronto, 1967. Volume 1, p. 42.

[15] Report No. 15, *op. cit.* p. 39.

tions which are impeding the business of manufacturing in this country. The first of these is the lack of coordination and streamlining by all three levels of government – separately and collectively – with regard to operations and programs designed to encourage profitable manufacturing and increased manufacturing employment in Canada. The second is the combined legal, regulatory and administrative burden placed by the three levels – separately and collectively – on individual companies and on small resident-owned companies in particular.

There is, of course, no golden rule which says that the federal and provincial levels of government should agree on everything or that the individual provinces should do likewise. Nor is it reasonable to expect that all of the policies and actions of the municipalities in each province can be brought into line. The dominant political trends of the past ten years have been towards stronger provincial governments with new federal-provincial divisions of labour, and greater independence of action and policy by each province. For example, the federal and Quebec governments have been engaged in talks over jurisdiction in the communications field. There are deep differences between Ontario, Quebec and British Columbia on the foreign ownership of firms in the investment field. The governments of Alberta and British Columbia were, at one time, reported to be discussing the formation of a jointly owned corporation to handle negotiations with overseas customers for the sale of mineral resources. All of the provinces are agreed that they want a larger collective voice in federal economic planning, as municipalities do in provincial planning. The largest of the municipalities want a voice in federal-provincial matters.

Important elements in the structures of the three levels of government are the various committees, advisory councils, task forces, etc. These bodies may serve the needs of politicians, as in the case of the party caucus and the parliamentary committee. Except where they have been excluded, industry representatives, academics and representatives of the general public may share in the activities of these bodies at all three levels of government. The committees, councils and task forces vary in their terms of reference, composition, and effectiveness, and in their ability to influence policies, programs and events. However, Cabinets and politicians are dominant within the system and monopolize the decision-making process within their respective spheres of influence.

The federal Minister of Industry, Trade and Commerce has a large and broadly representative Advisory Council which he invites to examine and review the policies, programs and services of his Department that have been brought to the Council's attention. The meetings of the Council give the Minister an opportunity to consult directly with leaders of industry on a regular basis and to improve the two-way communication process. But this arrangement has two important drawbacks. First, the members of the Council do not participate in the *planning* of departmental programs and services. Second, the Minister of Industry, Trade and Commerce is not the only member of the federal Cabinet to have jurisdiction over the conduct of the business of manufacturing. His Council may therefore have little or no influence over actual or potential conflicts between the Industry Department and the other departments on matters of policy unless the

Minister or his officials choose to intervene.[16]

It has not been possible in this study to outline and comment upon foreign government structures relevant to the present analysis, or to include descriptions of the roles and responsibilities of particular foreign government departments and agencies of particular interest in the light of Canadian experience. Instead, a number of brief observations will be made in this chapter.

The United States' Department of Commerce, like the Industry Department (IT&C) in Ottawa, plays a "spearhead" role with regard to the encouragement of manufacturing, technology-based innovation, and industrial research and development. The Department does not yet, like IT&C, administer a portfolio of incentive and assistance programs, although there are indications that current U.S. economic problems may bring about a change in this regard. The Commerce Department does, however, have direct responsibility for the U.S. Patent Office and the National Bureau of Standards. It shares responsibility for foreign direct investment flows and for the long-range development of slow-growth regions with other agencies.

In Japan, the Ministry of International Trade and Industry (MITI) also has a "spearhead" role, but its responsibilities are perhaps closer to those of the U.S. Commerce Department than they are to IT&C. For example, MITI is responsible for the Japanese Patent Office, the Agency of Industrial Science and Technology and its network of standards and other laboratories, the Small and Medium Enterprises Agency, and for international trade and industrial policies, environmental protection and the Heavy Industry and other related bureaux. In Japan, also, the government financial structure is more closely associated with the private banks and with industry than is the case in Canada. The Supreme Trade Council, a government sponsored 30-member group whose chairman is the Prime Minister, includes top private industry representatives and government officials. Among its roles are the development and planning of export market strategies and the setting of production targets. In both areas, the government-manufacturing industry relationships are closer than they are in Canada.

In the United Kingdom, the National Research Development Corporation (NRDC) has been in the business of exploiting both publicly-financed and private invention for more than two decades and has enjoyed a measure of success. In Canada, Canadian Patents and Development Limited (CPDL), a federal Crown corporation, has quite different roles and responsibilities. For example, NRDC encourages the patenting of inventions by private individuals and may subsequently help to exploit them, CPDL only handles patents resulting from government and university research and does not provide encouragement or assistance to the talented individual working on his own.

[16]The meetings held late in 1971 by the Prime Minister in Ottawa with representatives of industry and the trade unions may serve to overcome some of these latter problems. But since such meetings have no visible "track record", they cannot be judged effective or otherwise. It should be remembered, however, that representatives of Canadian industry have participated effectively in government planning in the communications field through the Canadian Radio Technical Planning Board. The Board was established in 1944.

II. Attitudes: Governments toward Industry

Dictionaries define "attitudes" as "modes of settled behaviour, indicating opinion" and as "settled modes of thinking". Unfortunately, the attitudes of governments towards industry are usually far from "settled" nowadays, and may change rapidly with changing political, economic and social circumstances.

This chapter analyses a range of problems associated with the government: industry "interface". When considered as a whole, the government side of the interface is complicated by the existence of three levels in Canada. At each of these levels, the government side has two principal components with their own specific roles and responsibilities. One is the legislative system, which is basically political; and the other is the public service system, which is basically managerial. Both systems have to interface with one another as well as with industry. The manufacturing industry side is even more complex since it includes the different product sectors, large companies as well as small ones, subsidiary and resident-owned companies, and companies in different provinces and regions. Within most of these companies there are also management and labour union components, each with its own functions and problems.

The analysis barely touches upon problems at the interfaces between governments or the manufacturing industry and the general public, but the existence of these interfaces has not been forgotten. Politicians receive their mandates from "the people", and "the people" are industry's customers. In Canada nowadays, the increase in the number of educated people has led to increasing demands for dialogue between people, individually and collectively, and those in power politically or industrially.

The majority of what follows is relevant to attitudes at the level of the federal government but its conclusions apply, suitably modified to take their different roles, responsibilities and circumstances into account, to the other two levels of government. It is concerned only with the management component of the manufacturing industry side of the interface. As suggested in the Postscript, the question of attitudes within the labour union element deserves a full scale study on its own account. The analysis is intended to indicate some of the ways in which relations and problems at this particular interface have changed in recent years, and to identify those areas in which problems will continue to exist. Applied in a general way, the conclusions resulting from this chapter support the proposals made by the Science Council in its own report. The starting point is the problem of government intervention in the business of manufacturing.

Historical Perspective on Government Intervention in Industry

For centuries, governments have been making laws designed to encourage the side-by-side development of trade and technology, usually at the expense of competing nations. In Canada, some of the early legislation of the central government had implications for trade and for technology associated with the opening up of the country. For example, the Geological Survey of Canada had its origins in legislation passed before Confederation. The first railway legislation also predates Confederation, and the first

federal Railway Act received Royal Assent in May 1868. The Experimental Farm Stations Act was passed in 1886, following an enquiry by a Select Committee of the House of Commons into the parlous state of Canadian agriculture. The first Department of Trade and Commerce Act received Assent in June, 1887. However, the first Minister was not appointed until December 1892, and the Department itself did not become operational until the following year.

Since the end of World War II, interventions by governments in the market place and in the affairs of business and industry have increased. The three levels of government in Canada have added steadily to the burden of laws, regulations, permissions and prohibitions with which manufacturers must learn to live. The motives for these interventions have usually been well-intentioned. As Thain has pointed out, recent federal government moves and legislation, while lacking consistency and reflecting both internal conflict and changing priorities, were undertaken for the following reasons:[1]

- to solve political problems and respond to political pressures,
- to lessen criticism of government policies,
- to promote economic growth and stability,
- to solve international trading problems,
- to protect consumers against fraud, misrepresentation, and other disturbing influences such as environmental pollution and needless advertising,
- to regulate businessmen who apparently lacked an enlightened sense of responsibility to society,
- to protect, and rationalize, the use of natural resources,
- to maintain Canadian sovereignty and jurisdiction over many of the important wealth-creating assets and activities in Canada,
- to protect a bargaining position for future international trading negotiations,
- to attempt to improve analysis, planning, and policy-making,
- to lessen the negative effects of U.S.-type industrial structure and competition in Canada, and
- to regulate the operations of foreign subsidiaries.

At the present time, industry is concerned about the degree to which intervention by the three levels of government will increase further in the future.

In the Recent Past . . .

Since 1968, the mood of management in the manufacturing industry in Canada has changed from cautious optimism with emphasis on growth possibilities, to one dominated by uncertainty with regard to markets, profitability, job opportunities, and even survival. There are fears that current impairments will seriously affect prospects for stability and resumed confidence in the future.

[1]Donald H. Thain, *The Key Issues in Canadian Government-Business Relations*, The Business Quarterly, School of Business Administration, University of Western Ontario, London, Winter 1970. p. 32.

The reasons for the change include, for example, the continuing increase in the importance of Japan in world trade in manufactures, the forthcoming enlargement of the European Economic Community, persistent inflation, economic recession, the United States' difficulties with its external trade balance, and the continuing gap between the richer and poorer parts of the world. Canadian governments and manufacturing industry sectors have had little or no control over these factors. But with its open economy, and especially since the broadly protectionist economic measures taken in recent months by the United States, the degrees of vulnerability of the various manufacturing sectors within the Canadian economy have been clearly evident.[2] The chemical producers and the pulp and paper sectors, for example, have been seriously affected.

Among the domestic difficulties since 1968 have been, for example, the inflation-employment problem and the lack of suitable employment for technically qualified university graduates. In the provinces, the majority of the governing parties have been turned out of office in the most recent general elections. The federal government has proceeded with the passage of a massive and complex tax reform bill.[3] The Government has also introduced, and has had passed, a bill to amend the Canada Labour Code which includes provisions with regard to the negotiation of the effects of technological change within collective bargaining. It has introduced and withdrawn for further study a complicated bill to replace the present Combines Investigation Act.[4] A modest bill to establish a new federal policy on the questions of the ownership and control of Canadian business activity has also been introduced. All of these measures have implications for provincial legislation, and some of the provinces have already reacted. In addition, the Economic Council of Canada issued early in 1971 a report designed to assist in the reform of patent, trademark, copyright, and industrial design legislation. Federal action in this area is expected in the near future. The Council's recommendations, if implemented, would generally weaken the protection available at the present time.[5]

The federal government has, however, taken a number of steps to help manufacturers during the last year or so. For example, the assistance available under the Program for the Advancement of Industrial Technology (PAIT) has been extended. The resources available to the Department of Regional Economic Expansion have been reorganized. Corporate tax cuts have been announced. Some steps have been taken to lessen the impact of the recent U.S. economic measures. The Prime Minister and Cabinet Members have held high level talks with industry representatives and with representatives of the trade unions. The members of the Cabinet have been trying to remove the negative "anti-industry" posture which has been ascribed to the present federal government and to disperse some of the uncertainty and hostility that had become widespread among industrial managements and associations, and among the labour unions.

[2]It has been said in jest that, when the U.S. sneezes, Canada catches a cold!

[3]Taxation is discussed more fully in Chapter 5.

[4]These measures are analysed, in part, in Chapter 9.

[5]The Industrial Design and Patent Acts are discussed in Chapter 10, as are some of the Economic Council's recommendations.

Nevertheless, the steadily increasing load of frustrations and interventions experienced by Canadian manufacturers that have originated in the three levels of government has tended to encourage the belief that some politicians and public servants consider company managements to be basically dishonest and profit a dirty word. Management people seem to believe that "government" sees itself more fitted than any other sector of Canadian society to decide what is good for industry and for society in general. They consider the federal Capital, Ottawa, to be far removed physically and emotionally from the realities and the mainstream of Canadian economic life, and suspect that the economy as a whole will eventually be undermined by government planners who have never experienced the day-to-day pressures of business and have never met a production target, a delivery deadline or a payroll. They watch as federal and provincial First Ministers discuss the redistribution of political powers and tax fields, and as one department of a government encourages companies to produce new products for new markets while another department of the same or of another government makes the sale of these products difficult or even impossible. Management people can see no merit in "penalizing" the successful company or individual through taxation or any other method, and they deplore the absence of an enforceable "Buy Canadian" policy at all levels of government.

Politicians, and public servants, have reservations about industry. They are concerned that industry people do not know how governments "work", how the roles and responsibilities are divided, how policies are developed and implemented, and that restraints have to be incorporated into regulations to prevent abuses. They are unable to find out who *really* speaks for business or industry. They are anxious to stop the spread of pollution and urban congestion, and to promote equity and improvement in the quality of life, in neither of which industry or business seems to be interested. They have been trying by means of a variety of techniques to make Canadian companies more research-conscious, more innovation-conscious, and more competitive, and they have been trying to take people to jobs as well as jobs to people.

These positions may seem to be extreme but, in their less extreme forms, they are widely held. Their effects cannot be measured in terms of harm done to industry over the years or of the benefits that would follow their removal. All sectors of industry are affected, but to different degrees. Those industries whose futures are entirely, or almost entirely, in government hands are perhaps the most nervous of government actions.

A slow but general improvement in activity and communication has, however, taken place across the government: industry interface in Canada since the early 1960s. This has been especially true at the "working" level, if not always at the policy level. Nevertheless, some businessmen still feel strongly that, although they are now being listened to as never before, what they say is not being sufficiently well understood by the legislative policy-makers and public service and political advisers.

Canadian attitudes, within governments and industry sectors alike, have been shaped by the enormous influence of the United States. The 30 per cent difference in per capita output and the differences in industrial,

technological and other performance measures between the two countries have been constantly in the limelight in spite of the fact that, from the social and humanitarian points of view, the United States' image is not now perhaps as bright and worthy of imitation as it once was. But, as Ronald Anderson wrote in a recent article:

"It is difficult for Canadians, overshadowed as they are by the record of accomplishment and the sheer size of the United States, to develop a balanced, realistic feeling of national self-confidence. The tendency too often has been to veer erratically between the extremes of chauvinism and an enervating and destructive sense of national inferiority that may, to some extent, be self-fulfilling.

"Canada will not reach its full potential unless Canadians come to believe they can achieve any ambitious, but reasonable, goal they set for themselves."[6]

The Legislative/Political System

In practice, governments in Canada or elsewhere are moving targets. For example, strong political pressures can bring about significant changes in policies, programs, laws, and regulations very quickly. Several dozen new pieces of legislation – some major, some minor – will be dealt with during each legislative session. Government policies and programs normally change with the governing parties. Laws and regulations change with operating experience. A new federal governing party will evoke different responses from the provinces at conferences and in day-to-day dealings. Canada, with its open economy and resource-based exports, is particularly vulnerable to changing government policies, laws, and regulations in the rest of the world.

In practice, the main preoccupation of a governing party is to survive the next general election, and the principal aim of the Opposition is to unseat it at that election.[7] For this reason, the legislative objectives of governing parties tend to be strongly influenced by the time remaining until their mandates expire. As a general rule, the closer the election date, the less controversial any proposed new legislation, policies and programs are likely to be. In practice, also, governments' actions are linked to annual budgets, whether or not elastic, moving-base, five-year Program Planning and Budgeting (PPB) systems are in use as well. On the other hand, governments seem to find it quite difficult to "disestablish" their own firmly entrenched programs, again in spite of the existence of PPB systems.

Government policy-makers often associate such things as increased interventions in business activities, expensive new programs, and rapidly growing needs for new revenues, to forces beyond their control or to "the wishes of the people". Sometimes these reasons may be perfectly valid, but at other times they may not. The following example, taken from

[6] *The Globe and Mail*, Toronto, December 8, 1971.

[7] Opposition parties may also take heart from the fact that governing parties will eventually be voted out of office. On the other hand, recent Canadian experience has shown that "eventually" may be as long as 36 years!

the Budget Speech by the federal Minister of Finance, the Honourable E.J. Benson, in June, 1971, illustrates the point:

"In large measure, the growth of spending by all levels of government from $10.8 billion in fiscal year 1960-61 to $29.8 billion in 1970-71 occurred in response to the wish of Canadians for improved and extended governmental services, especially in the areas of social security, health and education. The decade therefore witnessed the introduction or expansion of the Canada and Quebec Pension Plans, the Old Age Security system, hospital and medical plans, and unemployment insurance programs. In addition to these, burgeoning requirements for post-secondary education, manpower training, regional economic expansion, urban development, and other programs at all levels of governments....

"These rapid rates of increase in government expenditures reflect the real changes which have occurred in the level and quality of public services. They also reflect, however, the vulnerability of the government sector to inflationary processes. The labour intensity of the government sector, the practice of measuring the value of government output by the cost of the inputs necessary to produce it, and the very rapid increase in wages and salaries all combined to generate a rapid expansion of government expenditures as measured in current dollars. Of considerable importance in this context was the introduction of collective bargaining in the public sector."[8]

The political leaders and other elected representatives of the Canadian people are unlikely to allow their individual or collective lack of understanding or experience of technology, the innovation process, or the manufacturing industry to hinder the making of political decisions or the initiation of legislation action when decisions and actions in these areas seem to be expedient. This is particularly true if, and when, the man in the street becomes alarmed by the effects of innovations, industrial practices, and so on, and converts this alarm into effective political pressure. But the pressure can come from a variety of sources including the party caucus, the Cabinet, the Opposition, the public service, other levels of government, from abroad, or from the noisiest and best-organized of the domestic non-elected groups currently trying to influence the direction of policy. Depending on the circumstances, the elected representatives will have to choose between yielding completely to the pressure or diffusing it by means of some compromise through which the technological or other imperative for action may eventually be forgotten.

A number of other attitude-forming complications in the Canadian legislative system helps to determine the reactions of politicians to specific pressures related to manufacturing industry. For example:

– Regardless of party, profession or pre-election experience, these people are first and foremost politicians and must behave as such.

– However much secrecy may be deplored, it is not always possible for those in the governing party to defend their policies and actions fully in public.

[8]House of Commons, *Votes and Proceedings, No. 154*, Queen's Printer, Ottawa, June 16, 1971.

– The passing of a law by Parliament or a Legislature will not necessarily provide the solution to a particular political problem, because additional regulations are normally required. Also, the rigidity with which these regulations are framed and administered by public servants may thwart the original purpose of the law.

– There is a limit to what the manufacturing industry can, or will, do to apply technology in the "national interest".

– The "national interest" with regard to manufacturing is served not by the federal government, but by all three levels of government.

The attitudes of individual federal and provincial politicians in office at any one time are shaped by an amalgam of factors such as education, working experience and party affiliation. The same may be said about the members of the non-party Councils and Boards of Control and Education at the local government level. It is, therefore, of some interest to examine the professional backgrounds of Members of the present House of Commons and to compare these with the backgrounds of Members who sat in the House some thirty years earlier. This has been done, in broad terms, in Table II.1.

Table II.1–Professional Backgrounds of Members of the House of Commons in 1940 and 1970

	1940	1970
Law	73	68
Agriculture	37	18
Business	64	80
Health Professions	17	6
Engineering, Science and Architecture	6	5
Education	11	21
Information Media	11	10
Other	17	31
Not Known and Vacant	9	25
Totals	**245**	**264**

Source: *Canadian Parliamentary Guide* for 1940 and for 1970. (The 1940 Edition was edited by Major A.C. Normandin, P.O. Box 513, Ottawa. The 1970 Edition was edited by P.G. Normandin, P.O. Box 3453, Station C, Ottawa).

In both years, lawyers and businessmen formed the two largest identifiable groups. The percentage representation of the legal profession – around 30 per cent – was not perhaps as high as might have been expected on the basis of conventional wisdom. The business groups were, of course, quite heterogeneous in terms of experience. Few had been in manufacturing. Most had been associated with small businesses in such fields as insurance, real estate, and wholesale and retail merchandising.

The most noticeable differences in numbers between the various groups in 1940 and in 1970 were in the agriculture and health professions – both down in 1970, and in education and business – both up in 1970. Within the "Other" group, the number of professional economists rose from none in 1940 to four in 1970, and the number of accountants rose from one to five. The median age of Members of the House of Commons fell from 55 in 1940 to 48 in 1970, a drop similar to that for the Canadian population as a whole. There were no Ph.D. graduates among the members

of the House in 1940. Of the seven known to hold this degree in 1970, the majority received it for work in economics or political science. Around one dozen Members in 1940, and about the same number in 1970, were graduates in the physical sciences and engineering.[9]

It is also of some interest to examine the professional backgrounds of Members of the provincial Legislatures and Assemblies. As might be expected, these backgrounds reflect the different industrial development stages, resource bases, and political histories of the individual provinces. Taking Quebec as a broadly representative example, the data in Table II.2 compare the background of Members of the Assembly in 1940 and 1970 using the same groupings as for the House of Common. Again, the two dominant groups in both years were the lawyers and businessmen with the businessmen associated principally with insurance, real estate and retail trade and few, apparently, with experience in manufacturing. Again, the numbers of education professionals and businessmen rose between 1940 and 1970, but so did the number of members of the health professions.

Table II.2–Professional Backgrounds of Members of the Quebec Legislative Assembly in 1940 and 1970

	1940	1970
Law	19	21
Agriculture	5	4
Business	26	35
Health Professions	7	14
Engineering, Science and Architecture	1	4
Education	2	7
Information Media	1	4
Other	6	19
Not Known and Vacant	19	–
Totals	**86**	**108**

Sources: *The Canadian Parliamentary Guide* for 1940, *op. cit.* and *L'Annuaire du Québec*, Ministry of Industry and Commerce, Quebec, 1971.

The backgrounds of groups of municipal politicians have not been analysed for this report. Nonetheless, it is interesting to note that participation in municipal politics has frequently been part of the pre-Ottawa or pre-Legislature experience of many federal and provincial politicians. For example, about one-third of the Members of the House of Commons in 1970 had served as mayors, aldermen or councillors. In the Ontario Legislature as it was in 1970, two out of every five members had served in these capacities. In Alberta, however, the ratio was only one out of every five of the Members who sat during the same year. Many others in the House and in the Legislatures had served on School Boards, Planning Boards and on other municipal bodies.

[9]The American Journal, *Science*, for July 30, 1971, p. 408, had this to say about the Membership of the U.S. 92nd Congress: "The 1970 elections brought to the House of Representatives one of the few working scientists ever to win election to Congress. He is Mike McCormack, a Democrat from Washington State's 4th District, and the only Member of the 92nd Congress listed by *Congressional Quarterly* as having the occupation title of scientist. The Congress traditionally is made up of lawyers (60 per cent this session) and businessmen (32 per cent). There are seven physicians and two ministers."

The above analysis lends support to the thesis of Professor John Porter that the "economic elite" of Canada seldom participate in the political system.[10] Professor Porter wrote:

"There is no clear alignment between the economic elite and the two major political parties. In fact, political affiliation is, in the majority of cases, omitted from biographical reference material, but this political anonymity does not mean a sinister concealment of political loyalty. In the corporate world both major parties ... are seen as being favourable to the interests of corporate power."[11]

Professor Porter defined the "political elite" for the purposes of his study as those who were federal Cabinet Ministers during the period 1940–60, all provincial premiers in office during that period, all justices of the Supreme Court, the president of the Exchequer Court, and the provincial chief justices who held office during that period. Because of overlapping, only 157 individuals held the 170 possible positions. On their education, Professor Porter commented that the political elite had a higher proportion of university graduates than the general population or any other elite group. One reason for this was, of course, the requirement that judges be graduates. Of federal Cabinet Ministers, 86 per cent who held office between 1940 and 1960 were graduates, of provincial premiers, 71 per cent.

Porter went on to note that the pre-eminence of lawyers in the federal Cabinet has existed since Confederation. Of the 242 federal Ministers in Office between 1867 and 1940, 48 per cent were lawyers. However, the comparison between the Cabinets of Mr. King in 1940 and of Mr. Trudeau in 1970 shown in Table II.3, reflects both the changing House of Commons and the changing times. Two of the four Ministers listed as educators in 1970 were actually law professors, bringing the total representation of the legal profession in the Cabinet to 43 per cent, compared with 63 per cent for 1940. The median age of Ministers was 60 in Mr. King's Cabinet – above the median age of the House as a whole, but only 48 in the Trudeau Cabinet – the same as the figure for the House. The businessmen serving Mr. Trudeau were former executives of larger companies. This kind of statistical comparison cannot, of course, reflect the influence of Mr. Howe, the consulting engineer, in the King Cabinet or the influence of Mr. Davis, the engineer/economist, in the Trudeau Cabinet.

It is important to make the point that these first three Tables have not been included in this chapter as the basis for criticism of the background experience of Canadian legislators in 1940 or 1970 or in order to suggest necessarily that arrangements should be made, somehow, for the

[10]Two recent federal exceptions were the late Senator M. Wallace McCutcheon and the late Robert H. Winters, both former Ministers of Trade and Commerce.

[11]John Porter, *The Vertical Mosaic*, University of Toronto Press, 1965. p. 296. Professor Porter defined the "economic elite" as the 985 Canadian residents holding directorships in 170 (of 183) dominant corporations, in 9 chartered banks, 10 insurance companies, and numerous other non-dominant corporations. (The directors of the remaining 13 dominant companies could not be identified.) Of the total of 183 dominant corporations, 148 were in manufacturing, 14 in mining, 14 in public utilies, and 7 in retail distribution. The dominant corporations were identified for the period 1948-50. (p. 274 and Table 11 of *The Vertical Mosiac.*)

Table II.3–Professional Backgrounds of Members of the Federal Cabinet in 1940 and 1970

	1940	1970
Law	10	11
Agriculture	1	1
Business	1	6
Health Professions	–	–
Engineering, Science and Architecture	1	1
Education	1	4
Information Media	1	3
Other	1	4
Totals	**16**	**30**

Sources: *The Canadian Parliamentary Guides* for 1940 and 1970; *op. cit.*

sum total of this experience to be changed significantly in the future. The fact is that the background experience of legislators, in spite of the best of efforts and goodwill, will probably never be ideal for the kinds of problems to be faced at any one time. The Tables do suggest, however, that the legislators of 1970 in particular, were less likely to be well-informed at the start about the problems of the manufacturing industry or about the various activities associated with the innovation process as a whole. They would need both time and diligence to acquire the necessary information and to hear the different sides of particular related questions. Unless well briefed, they would also be less likely to foresee the full consequences of their subsequent policy conclusions and actions. The backgrounds and attitudes of legislators are therefore only part of the whole story. The backgrounds and attitudes of those who do the briefing are equally important.

Responsibility for all policy decisions, however they may be arrived at, and after however many "layers" of discussion, falls on the Cabinet Ministers in general, and on the Prime Minister in particular. Speaking of the federal level, MacGregor Dawson said:

"The basic legislative power of the Cabinet is the general control which it is able to exercise over the House of Commons at all times. The Prime Minister, assisted by his Cabinet, leads and directs the House in virtually everything it attempts to do."[12]

The Cabinet can, through Orders-in-Council, enact subordinate legislation in a wide variety of matters, including regulations, for which it has statutory authority. These orders give the government departments, and their Deputy Ministers, authority to act without having to refer back to Parliament.[13] The Prime Minister and Cabinet must deal with a constantly increasing work-load and strive to keep the machinery of government in good order. The Cabinet must also give formal approval to Treasury Board Minutes that deal, for example, with payments for services rendered. Although, theoretically, all Ministers may have a voice in the

[12]R. MacGregor Dawson, *The Governments of Canada*, Third Edition, Norman Ward, ed., University of Toronto Press, Toronto, 1963. p. 247.

[13]Provincial Cabinets have similar powers.

approval of the legislation with which the Cabinet deals, it is important to remember – as the data above help to show – that they bring different backgrounds and degrees of expertise and understanding to the discussions. A bill detrimental to industry may succeed in Cabinet because it is supported by a large enough group of technologically inexpert Ministers sympathetic towards it, and not because it is a good bill or because its sponsors were necessarily competent.

The Privy Council Office (PCO) is the public service department most closely associated with the Cabinet and the Prime Minister. The principal duties of the Office are secretariat work for the Cabinet and Cabinet committees, work for interdepartmental committees and special studies, and liaison with departments on Cabinet matters.[14] Being the head of the governing party, the Prime Minister also has his own separate political staff. The Prime Minister's Office (PMO) was quite small until Mr. Trudeau came to office in 1968. Its main functions include responsibility for the day-to-day activities of the Prime Minister, liaison with various party organizations, special studies, information gathering from sources across the country, and the planning of legislature programs. Gordon Robertson, the head of the PCO, has described the difference between the two Offices as follows:

"The Prime Minister's Office is partisan, politically-oriented yet operationally sensitive. The Privy Council Office is non-partisan, operationally-oriented yet politically sensitive."

Robertson went on to say:

"One result of the changes introduced in 1968 was to increase greatly the number of Cabinet committee meetings. The other was to reduce equally sharply the number of meetings of the Cabinet ... [Another] difference is the more probing, searching and formative nature of discussion that the committees permit, with both Ministers and officials present.... Nowadays Ministers have more influence on the shape of policy as a whole, and on its development, and officials have proportionately less."[15]

The Public Service/Management System

These words are from a recent article:

"It takes years of hard work and experience to produce top-flight public servants, and Canada has been blessed with an exceptionally good number of these....

The job of the top civil servants is to provide their Ministers with the facts on which to base policy and to set out alternatives."[16]

[14]Until the establishment of the Ministry of State for Science and Technology, the PCO included the Science Secretariat.

[15]Annual Meeting of the Institute of Public Administration of Canada, Regina, 1971.

[16]John Bird, *The Financial Post*, Toronto, April 24, 1971.

From both the management and advisory points of view, the role of the public servant has changed considerably since World War II. Fraser Robertson, in a recent article, put these changes in the same context as those experienced by business during the same period. He said:

"In the past 20 years, the [public] service in Canada, whether at the federal, the provincial or the municipal level, has changed a great deal. It has grown in size and is required to handle far more matters of great complexity. In this respect, it has followed the same growth pattern as big business. Equally, in business and in government, the professional administrator has had thrust upon him or has taken unto himself, as the case may be, much greater responsibilities for initiating and impleting policy ... ."[17]

The attitudes and actions of public servants are influenced by the policies of the governments they serve, by *inter*-government and *intra*-government pressures, by public pressures exerted on governments, Ministers and other elected representatives, and by the current system of bureaucratic rewards. Public servants must cope with changes of Minister and with budgetary constraints but, in contrast with the politicians, they enjoy relatively more job security. The views of public servants are perhaps longer-range and more specialized than those of most politicians. These views can, however, be up-to-date or out-of-date. The attitudes of public servants, like those of politicians, are based on an amalgam of factors including education and experience.

One of the unresolved problems associated with the management system, and one which has an important bearing on the attitudes of public servants, is the problem of how to measure its output and effectiveness. One view of this problem seems to be that, if only government could operate as efficiently as industry, there would be much less need for such high levels of taxation, and so many departments and officials, less for the Auditors-General to do, and so on. Waste and incompetence would be significantly reduced. But inefficiency and waste also exist in industry. Direct comparisons between the two sectors tend to be over-simplistic because different sets of values are involved. Even the cost-benefit techniques which work for industrial activities may not reveal enough about the effectiveness of government sector activities. In a recent essay, R.H. Dowdell had this to say, from the management point of view:

"In a commercial enterprise, the produce or service must be produced at a profit. In the long run, there must be prospects of a reasonable rate of return on investment to bring the business into being and ensure its continued existence. The profit criterion is at once an important motive underlying plans, policies and decisions, and a yardstick against which their effectiveness can be assessed....

"The pervasive character of the public service is political rather than commercial. The administrator in the public service implements public

[17]Fraser Robertson, *The Globe and Mail*, Toronto, August 21, 1969.

policies and programs which have been shaped by political forces. His superiors are politicians.... The public service is subject to their direction and accountable to them. They in turn are accountable to Parliament for the conduct of the public service and not the least of the senior public servant's concerns is to avoid embarrassing his minister. Thus, the political criterion is to the public service what the profit criterion is to industry ...."[18]

Nevertheless, industry people become concerned that the public servant's influence on Ministers is increasing as the business of government grows and becomes more complex. Ministers have limited amounts of time for the study of areas in which a public servant may have spent his working lifetime. Industry people become concerned about the kinds of authority which individual Ministers do, or do not, delegate to their officials. Senior public officials at the federal level appear to play more active roles in association with industry and its people than do public servants at the provincial levels, although at the provincial levels public servants are fewer and the politicians, and particularly the Ministers, are more active in day-to-day direct contacts than are their federal counterparts. Industry people are also concerned about the endless studies performed by, or commissioned by, public servants which are not always published because specific follow-up action is often hard to identify. In the reverse direction, public servants worry, for example, about the effectiveness of their information transfer activities to industry, and about the misconception that assistance programs have few strings attached and no end to their financial resources. They also want to know, as do the politicians, who really speaks for an industry or for a company.

Nowadays, the most valuable senior public servant, at each of the three levels of government, is the one who is able to integrate successfully his political and departmental terms of reference with the multidiscipline knowledge and experience of his subordinate and, at the same time, take advantage of new and enterprising management methods and the many other sources of assistance available to them.

Departments and agencies with extensive scientific and technical roles and responsibilities do not always have Deputy Ministers or presidents with the appropriate education and experience. The same is true in those departments and agencies with economic, legal and other roles. Nevertheless, as pointed out in Chapter 1, there is a group of fifteen federal departments and agencies which have very significant "innovation-influence" ratings and, consequently, very significant roles and responsibilities in relation to the overall environment created by the federal government in which manufacturing, innovation and research can flourish. In Table II.4 the main background, education and experience of the Ministers or the Chairmen responsible, and of the Deputy Ministers or the Presidents, of the Group C departments and agencies have been noted as of

[18]R.H. Dowdell, *Bureaucracy in Canadian Government*, Selected Readings Edited by W.D.K. Kernaghan, Methuen Publications, Toronto, 1969. p. 52.

Table II.4–The Backgrounds of the Most Senior Officials of the 15 Federal Departments and Agencies Most Closely Associated with Technology-based Innovation in Manufacturing Industry in March 1970 and December 1971.

Department or Agency	Background of the Minister or Chairman Responsible		Background of the Deputy Minister or the President	
	March 1970	December 1971	March 1970	December 1971
Atomic Energy of Canada	Law*	No change	FPS[a]: Engineering/Management	No change
Canada Development Corp.	No Appointment	Economics/ Investments	No Appointment	FPS: Economics/ Finance/Privy Council Office Private Sector: Banking
Department of Communications	Economics/Investments	Law	FPS: Law/External Affairs	No Change
Department of Consumer and Corporate Affairs	Law	No Change	FPS: External Affairs/Finance/ Economics	Vacant
Department of Energy, Mines and Resources	Law*	No change	FPS: Trade/Economics	Private Sector: Law/ Investments/Politics
Department of Fisheries and Forestry (Mar. 70) and of the Environment (Dec. 71)	Engineering/Economics	No change	FPS: Scientific Research/ Management	Private Sector: Engineering/ Management
Department of Finance	Accountancy	No change	FPS: Finance/Economics	No change
Department of Industry, Trade and Commerce	Education (University – Political Science)	No change	FPS: External Affairs/Finance/ Economics	No change
Department of National Defence	Journalism	Law	FPS: Accountancy/Finance	FPS: Finance/ Economics
Department of Regional Economic Expansion	Labour Union Leadership	No change	Private Sector: Journalism/ Commerce/Politics	FPS: Labour/ Economics
Department of Supply and Services	Investments	No change	(1) FPS: Management (2) FPS: Accountancy/Finance	No change No change
Ministry of State for Science and Technology	No Appointment	Business	No Appointment	Private Sector: Medical Research
Minister of Transport	Broadcasting	No change	FPS: External Affairs/Privy Council Office	No change
National Research Council	Business/FPS†	No change	FPS: Scientific Research/ Management	No change
Treasury Board	Business/FPS†	No change	P/FPS: Finance/Economics	No change

[a]FPS – Federal Public Service (P – Provincial)

*† – Same person

Sources: *The Canadian Parliamentary Guide* for 1970 and 1971, *op. cit.*, Departmental Press Releases, and *Who's Who in Canada 1971-72*, International Press Limited, Toronto, 1971.

mid-March 1970 and eighteen months later.[19]

Again, it is important to make the point that this Table has not been included to provide the basis for criticism of the Ministers and their Deputies on the grounds of adequacy or suitability, but in order to indicate the likelihood that the majority of them are likely to be, at least initially, relatively unfamiliar with the manufacturing industry and the technology-based innovation process.

On the Ministerial side, where the intentional matching of specialized expertise with a particular portfolio is the exception rather than the rule, there were two new positions in December 1971, the Minister of State for Science and Technology and the Chairman of the Canada Development Corporation, and two other portfolio changes, from March 1970, in which two lawyers replaced an economist and a former journalist. On the Deputy Minister side, the available positions in March 1970, were, with one exception, filled by career public servants. Between then and December 1971, however, three of six new appointees came directly from the private sector and a fourth had served in this sector for an extended period. One notable feature of the Deputy Minister side is that 10 of 16 career public servants had their principal background experience in finance and economics.

There has always been some mobility of senior people between the public service and the private sector and in the reverse direction. The Wartime Prices and Trade Board, for example, was an important catalyst of mobility. Royal Commissions and Task Forces have used private sector people extensively. The Department of Industry, Trade and Commerce hired a significant number of middle-level specialists from the private sector when it was established in 1963, and some have since returned there. Shortly after he came to office in 1968, Prime Minister Trudeau appealed to industry to help recruit executives for service with the federal government. On one occasion he is reported to have said:

"I have the impression that, while in some countries it is a common occurrence for businessmen to move in and out of government employment, in Canada it happens relatively rarely. I hope we could count on the collaboration of businessmen in recruiting experienced executives for responsible positions which might require one, two, or three years of their time."[20]

Since then, a number of positive steps have been taken to increase mobility in and out of government. For example, under the *Career Assignment Program* (CAP) middle management people are being interchanged between the public service and the private sectors for tour of duty. A new

[19]The appointment of Deputy Ministers and Crown agency Presidents is the prerogative of the Prime Minister. The appointment of Assistant Deputy Ministers (ADM's) is normally a Public Service Commission function. Similarly, the appointments of the Vice Presidents of Crown agencies are internal matters. ADM's and Vice Presidents tend to have the specialist qualifications required for the positions they occupy. For this reason, and because they are numerous even within the Group C departments and agencies, the ADM's and Vice Presidents have not been included in the analysis in this chapter.

[20]*The Globe and Mail*, Toronto, October 3, 1972.

mechanism, the *Executive Interchange Program*, has been established to encourage the mobility of senior level executives. And, under the 1971 omnibus Government Organization Bill, non-punitive earlier retirement provisions were instituted for long-service government officers. The principal impediments to mobility still remain the relatively lower levels of compensation paid to senior public servants and the problem of pension portability. Some steps have, however, been taken in the recent past towards the removal of these impediments. Another, quite different, set of problems is associated with the length of time an industry executive should stay in the public service. At the beginning, the executive requires time to assimilate into the new environment but, if he stays much longer than, say, three years, he may have lost part of the intimate contact with the industrial environment which made him valuable to the government in the first place.

Mobility between the federal and provincial governments, in both directions, has been more common in the past than industry-government mobility. The 1960s, for example, have seen many senior public servants move from Ottawa to Quebec City and Toronto. Mobility of public servants between Canadian positions and temporary foreign service outside the federal government is possible through the Canadian International Development Agency.

A Note on Federal-Provincial Problems

Federal-provincial conferences between First Ministers, departmental Ministers and senior public officials have been more frequent in recent years. At the political level, unanimous agreement on basic issues is often difficult to reach and this factor must be taken into account in any assessment of the possibilities of reaching agreement on a national industrial strategy of the kind proposed by the Science Council in its recent report.

In recognition of the growing seriousness and complexity of inter-governmental matters, a number of provinces have recently established portfolios in this area or have assigned additional responsibilities to an existing portfolio. These steps have brought about some subtle changes in the mechanisms of inter-governmental relations. A new Department of the Alberta Government, for example, is responsible for "establishing with Ottawa and with the other provinces the understanding that they can't deal exclusively with individual Alberta departments when they get on to a level involving policy, only with the Department of Inter-governmental Affairs".[21] Another part of the Department's task will be to match the capability of Ottawa in specific fields, either from its own resources or from other Departments, where this is appropriate. The present Alberta Government believes the provinces lose ground in federal-provincial negotiations simply because Ottawa has more experts and more information. Ontario and Quebec have already moved much closer to the federal government in terms of expertise. But no province is likely to match Ottawa

[21]Joseph Clark, *The Globe and Mail*, Toronto, December 10, 1971.

on every front, only on those in which they have special needs.[22]

What has been happening, in effect, is the recognition that governments throughout the country have mutual interests, that the various formal federal-provincial discussions which take place from time to time are only elements in the complete mechanisms for co-ordination and cooperation, and that the Canadian economy itself will be stronger if cooperation over mutual interests can be made more effective.

A Note on the Industry Side of the Interface

Some of the hazards faced by the manufacturing industry in Canada such as bad management, bad judgement, bad luck, and superior competition have not changed. But nowadays the entrepreneur and the manager have to face new hazards, such as consumer movements, environmentalists, more extensive labour union influence, and student hostility, in addition to increased government intervention, regulation and exhortation. Many of these factors may have little to do directly with attempts to innovate on the basis of newly acquired technology but they may nevertheless have profound effects on a company's ability to survive. For the entrepreneur and the manager, the fiercest struggles for survival take place in the early, and inexperienced, stage in a company's history, and at other times at which quantum jumps in risk or growth are being made or at which external economic influences become particularly unfavourable. Depending on the times and the type of business, threats to survival may appear quite suddenly.

The survival of the manufacturing industry in Canada has been increasingly threatened in the past few years. The removal of the 10 per cent surcharge by the United States and the revaluation of world currencies in mid-December 1971 have not solved the long term survival problem. Canada's future as an exporter of manufactures is probably in greater danger than its future as a partial supplier of the needs of the domestic market.

The fact remains, however, that the dominant impression many Canadian politicians and most politically active consumers seem to have of the Canadian manufacturer is that he is always looking for help in the form of protection or a "handout". In the consumer's eyes, the manufacturer's case is weakened by the fact that imported goods are often of better quality and less expensive. In the politician's eyes, the manufacturer's case is weakened further by the fact that "protective" measures in the past have not led to increased competitiveness in the present. The consumer's answer is to buy the foreign imports. The politicians' answers are to break down the remaining protective barriers to competition in the interests of "economic efficiency" and to use a variety of methods to encourage foreign-owned companies in Canada to rationalize their production on international or at least continental lines. The manufacturer, meanwhile, looks longingly at his Japanese counterpart who has, among

[22]Similarly it has been recognized that the Opposition parties in Parliament and in the Legislatures need to improve their expertise and increase the quantity and quality of their research.

other things, a domestic market five times larger and a government economic policy which seems to keep out foreign competitors until the domestic industry is ready to compete with them.[23] This analysis of this dominant impression may be oversimplified. The impression is, nonetheless, very real.

The cry of the manufacturers for help has been undermined by the apparently unceasing disparagement of the standards of skill and expertise of Canadian manufacturing managers in going about their business. The Science and Economic Councils, among others, have contributed to this criticism. The manufacturers themselves have also contributed on occasions. There has been no shortage of explanations for this lack of skill and expertise. For example: Canadian managements have no sense of urgency; managers have had very little formal management training; the best managers always go to the United States; Americans (nearly) always head up subsidiaries, and then only stay around for a little while; Canadian companies have hidden behind tariff walls for too long; Canadian managers will not take risks. It has been implied that Canadian managers lack even the political consciousness and knowledge of the political system to fight for themselves. Manufacturing managements in Canada have, by their widely supposed ineptness, contributed to the lack of political and public loyalty in this country towards the industry as a whole. There has also been in Canada no "manufacturism" to line up alongside the consumers, the environmentalists, and the other special interests groups to put pressure on the politician, the public servant, and the public. Indeed, as soon as a senior manager or trade association voices objections to a new government policy or bill he, she, or it, is accused of harbouring a vested interest. While this last analysis is also over-simplified, there is in Canada a lack of confidence in the management of manufacturing industry which management itself has been unable, thus far, to reverse.

The managements of manufacturing companies have, of course, taken collective action through the Chambers of Commerce and various other trade and manufacturing associations to place their views on record. Occasionally, in response to specific government actions or proposals, special *ad hoc* groups have been formed for this purpose.[24] But these associations and groups have not been without problems in the development and presentation of the views of their members:

– These views are normally developed as consensus views and, as such, may be focussed on a single, politically naïve solution to a problem rather than on the evaluation of alternative and viable political solutions.

– The associations may represent such a wide variety of membership subgroups that the merit of concensus and even of alternative views may be open to serious question.

– As has been the experience in the provinces, the research and other

[23]It is important to remember that the size of a domestic market is fixed but that a government's economic policy can change overnight.

[24]For example, following the publication of the federal government's White Paper on Tax Reform in November 1969 one such organization, the Canadian Council for Fair Taxation, was formed to present the views of small, independent businessmen. Out of this Council came another similar organization, the Canadian Federation of Independent Business, to present views on the proposed new Competition Act and the Canada Labour Code amendments.

resources available to Ministers and senior public servants in Ottawa need to be matched in strength, if not in funds or people, in order for the associations' briefs to be effective; the use of part-time help from member companies is not necessarily a satisfactory solution in this regard.

– The industry associations lack wide *public* support. They also often lack wide visibility to the public.

– The industry associations often have a high percentage of members from among subsidiaries of foreign-owned companies.[25]

– There will be times at which the presentation of briefs by a number of individuals will provide a wider spectrum of opinion and solution and be more acceptable politically than the single association-sponsored brief, and there are individual Ministers who respond more effectively to the advice of individuals than to the advice of large groups.

One recent editorial was critical of the attitudes of senior industry executives towards the work of the Electronics Industry Association of Canada (EIAC).

"Most of the active members in the association are drawn from the ranks of middle management. Top executives of the larger companies are rarely, if ever, seen at EIAC meetings....

"Senior civil servants play an important part in the formulation of their departmental policies. Cabinet ministers rely upon them for information and interpretation of events within their field of responsibility in much the same way that top management of a company is advised by those at lower levels within the company. However, when it comes to speaking out on important issues, or making policy statements, it is the minister who speaks out....

"So, when a visiting governmental official looks around at a quarterly or annual meeting of the association, he sees few top men in the industry, and questions the sincerity and authority behind the positions taken by [the association]...."[26]

On the other hand, the senior company executives and small manufacturers have more than enough calls on their time. The priority matters to which they must attend are chosen for them. Involvement at the association level or with the legislative and public service systems adds to costs, and the benefits may be more imaginary than real. In a recent article, W.L. Dack said that corporate involvement with the federal government had already become a high-cost time-consuming fact of life for Canadian business managers.[27] He went on to say that the current corporate involvement was the product of an unprecedented wave of new and complex legislation that could radically alter the whole business scene. The cost to the companies involved must not be measured solely in financial terms,

[25]For example, it may hurt an association that is making a presentation to a government if the association is asking, actually or apparently, that government to intervene, on behalf of the subsidiaries, in the affairs of the parent corporations.

[26]Cliff Hand, *Canadian Electronics Engineering*, MacLean-Hunter Limited, Toronto, May 1971.

[27]*The Financial Post*, Toronto, December 18, 1971.

or in terms of the additional legal and accounting experts required to examine the government's proposals in detail, but should include the disadvantages of having senior executives spend time away from their normal duties.

The free enterprise system in Canada and in the other industralized countries is not longer *free* in the absolute sense – if, indeed, it ever was so. The continuing problem for those responsible for the manufacturing industry side of the *limited enterprise* system in this country would seem therefore, to be to prevent the narrowing, by the increasing influence of governments, of opportunities for profitable, and sometimes substantially profitable, manufacturing activities to the point at which companies and individuals are no longer willing to take the risks and responsibilities involved. The manufacturer himself must bear the ultimate responsibility for selling and servicing his product; he will do this less effectively with one hand tied behind his back. His impaired efforts will also frustrate the governments in their desire to expand social action programs on the basis of increased tax revenues. Government-industry attitudes, at the management level, need therefore to change from conflict to collaboration – if not to partnership – in order that their mutual interests and the interests of consumers, employees in manufacturing, and others can be safeguarded. But as long as the profit motive remains viable in Canada as a reward for risk-taking and as a source of revenue for governments, it is important to recall that the actual risks will be taken by relatively few people while the benefits may be enjoyed by many.

III. Industrial Assistance Programs

This chapter is concerned with the different kinds of assistance programs provided by the federal and provincial governments in support of the various elements in the technology-based innovation process in the Canadian manufacturing industry. No attempt has been made to discuss the programs available to industry through local governments and their agencies. There are simply too many of them. There exist in fact a sufficiently large and changing number of federal and provincial programs that no attempt has been made to provide a complete list of all those that were available at the time of writing.[1] However, some of them will be discussed in detail in this chapter and in others throughout the study.

A number of the programs included in the analysis and discussion in this chapter began life, so to speak, as "incentive" programs. The tax-based industrial R & D incentive program, which was in operation between 1962 and 1966, is one of these and the IRDIA program[2] which followed it is another. The federal cost-shared industrial R & D programs such as PAIT[3] have been considered by some as incentives but by others as assistance programs. Experience over the years has tended to favour the use of the latter description. Again, it is normal practice to describe the financial programs in the regional development field as "incentives", but there are many smaller programs in this field that give no financial benefits and are accurately described as assistance programs or services. Governments in Canada actually provide a wide range of services to manufacturing industry to assist companies increase their production, productivity, exports, technical competence, and so on, and these cannot be excluded from a general analysis and discussion. These services usually supplement the other available programs and may be considered as incentives from the point of view that, if they did not exist, some companies would miss opportunities to become more technically competent and profitable.

While it may be a semantic over-simplification to lump assistance and incentive programs and services together into a single "assistance" category, this has nevertheless been adopted as the most suitable for the purposes of this chapter and of the study as a whole.

Parts of this chapter have been devoted to a discussion of examples of assistance programs established by governments abroad and to a brief review of the studies and events that preceded the U.S. President's Special Message to Congress on Science and Technology of March 16, 1972. This chapter does not, however, include a separate analysis or discussion of the participation of foreign-owned subsidiaries in Canadian assistance

[1]Descriptions of federal and provincial programs can be found, for example, in several of the handbooks published from time to time by CCH Canadian Limited, Don Mills, Ontario. Federal program descriptions can also be obtained from the brochures and publications of the Department of Industry, Trade and Commerce and the other sponsoring departments and agencies. A complete listing of programs for Ontario, for example, can be found in the *Catalogue of Ontario Government Services 1970*, available through the Queen's Publisher, Queen's Park, Ontario.

[2]IRDIA – Industrial Research and Development Incentives Act. The tax-based program is discussed in Chapter 5.

[3]PAIT – Program for the Advancement of Industrial Technology.

programs. Foreign-ownership questions have been discussed in two of the companion studies in this present series.[4]

The chapter begins with a general analysis of federal and provincial industrial assistance programs. This is followed by a review of recent statistics on the performance of research and development in manufacturing industry in this country, a discussion of the five principal federal financial assistance programs for R & D activities in industry, a discussion of industrial assistance programs that are available in a handful of countries abroad, and a review of the recent developments with regard to federal support for industrial research and innovation in the United States. Finally, there is a section which discusses the problems associated with assistance programs.

The contribution of this chapter to the discussion of impediments to innovation in the Science Council's own report was rather limited. But when making recommendations for the removal of the impediments and for the development of a national industrial strategy, the Council did have industrial assistance programs very much in mind.[5]

A General Analysis of Industrial Assistance Programs

Until quite recently, most discussions of Canadian programs associated with the innovation process began and ended with the *research and development* assistance programs – IRAP, PAIT, DIR, DIP, IRDIA, and the old tax-based general incentive program.[6] Speaking of these programs just over two years ago, the OECD review of Canadian science policy said:

"... Canada will henceforth be engaged in a series of varied aid programmes which seem to form a coherent whole and to fit fairly logically into a genuine policy of assistance to industrial research. This may be surprising in view of the fact that at the beginning no broad theoretical approach or institutional view was apparent and the whole process consisted of a series of successive and essentially empirical approaches."[7]

The report was correct about the lack of a theoretical approach or institutional view, and neither exists even today. In fact, the situation has grown more complex. As Dr. Charpie and his colleagues found in 1967, research and development typically make up between 5 and 10 per cent of industry's costs for a successful product innovation.[8] Therefore, the assistance offered, or not offered, for *other* elements in the innovation

[4]Arthur J. Cordell, *The Multinational Firm, Foreign Direct Investment, and Canadian Science Policy*, Science Council of Canada Special Study No. 22, Information Canada, Ottawa, 1971. Pierre L. Bourgault, *Innovation and the Structure of Canadian Industry*, Science Council of Canada Special Study No. 23, Information Canada, Ottawa, 1972.

[5]Science Council of Canada Report No. 15, *Innovation in a Cold Climate*, Information Canada, Ottawa, 1971.

[6]These five code named programs have been discussed in a later section of this chapter. The "old tax-based incentive", as already noted, is discussed in Chapter 5.

[7]*Reviews of National Science Policy: Canada*, OECD, Paris, 1969. p. 289.

[8]*Technological Innovation: Its Environment and Management*, Department of Commerce, Washington, D.C., 1967. p. 9.

process has to be taken into account. So also must the impediments which apply to both the laboratory and post-laboratory stages of the process. The problems nowadays involve not only the improvement of the R & D assistance programs, but also the assurance that the other elements are also pulling in the proper direction.

One Canadian commentator, Robert Schnay, concluded that the federal government's efforts to encourage innovation in manufacturing by means of ever-increasing expenditures on research and development, encouraged in turn by R & D assistance programs, have corresponded in their effects to "pushing on a rope". He went on to say:

"The federal government has opted for pushing more funds into industrial R & D. The thinking here is, that if more opportunities are delivered to the corporation, more will be exploited. There is an obvious analogy here to a warehousing operation. Surely the output from the warehouse cannot be continually increased simply by pushing more goods onto the loading dock. Handling facilities, transportation methods and destinations must all be co-ordinated to the loading dock. Similarly, production facilities, distribution and marketing must be in harmony with the research program."[9]

Parodoxically, four of the top R & D performing industry groups in Canada in the 1960s have recently been in serious difficulties from the points of view of markets, employment and profits. These are the chemicals, electrical products, and pulp and paper groups, and the aircraft and parts sector of the transportation equipment group. These groups have also participated to a significant extent in the federal cost-shared assistance programs. But the kind of assistance needed by these and other sectors in trouble may have passed beyond the universally applicable research- or export-oriented types of programs to ones of a much more discriminatory nature. Textiles and shipbuilding have already had this kind of help, which does not of course guarantee success. Programs related to whole industries can still be of the "band-aid" type if they are inexpertly and short-sightedly applied, if the responsibility for providing help is scattered among several government agencies, and if the provinces involved have quite different economic and social priorities.

The shift of interest in industrial assistance programs from research and development to the innovation process as a whole has effectively put the R & D and related technical information service programs in the same basket as regional development and employment assistance programs, productivity and adjustment assistance programs, plant and equipment loan programs, management and other advisory services, programs and services related to exports and marketing, and a whole host of little programs and services dealing, for example, with sales tax reductions, manpower mobility and government representation abroad. Another result of the shift of interest has been that the provinces and the federal government

[9]Robert Schnay, *Canadian Research and Development*, McLean-Hunter, March/April 1970. p. 48.

have been thrown together in new areas of divided or uncertain jurisdiction and potential conflict.

One example of this kind of situation could develop with regard to programs for the improvement of management skills in small companies. Most provincial governments have at least one agency that will provide management advice and assistance. Quite recently, however, the federal Department of Industry, Trade and Commerce (IT&C) announced the establishment of two programs intended to help small business managements. The first of these programs, *Counselling Assistance to Small Enterprises* (CASE), applies to small manufacturing and tourist operations with fewer than fifty employees and less than $5 million in annual sales. Eligible companies and operators will be able to secure the professional advice of retired Canadian business executives for a nominal daily fee, the remainder of the fee plus travel expenses being paid by the Department. The program is being operated in conjunction with the Canadian Executive Service Overseas (CESO), based in Montreal, which has been highly successful in providing advisory services to developing countries. The Department will also pay half the cost of hiring consultants in those instances which are beyond the scope of the available CESO expertise. For the time being, only companies within a 70-mile radius of Montreal will be able to qualify. Canadian-controlled businesses will be given priority. The second program is aimed at the development of management courses for retraining and upgrading company personnel. Grants of up to $50 000 to cover up to 100 per cent of the costs of developing new courses or revising existing ones will be available to non-profit professional, industrial, business, and management associations.

Different kinds of conflict can arise as the result of another of the IT&C programs. For several years, the Department has been sponsoring and financially supporting the establishment and initial operations of *Industrial Research Institutes.* The objective of this program is to help universities undertake research on behalf of industry on a contract basis. The first four Institutes were established at the Universities of Windsor and Waterloo, at McMaster, and at Nova Scotia Technical College. Two new institutes at McGill University and l'École Polytechnique in Montreal began operations in 1971. Two separate interface problems are involved in the operations of these Institutes. One is with regard to the roles of the universities which fall under provincial jurisdiction, and the other is with regard to consulting and other companies that provide commercial services of the kinds available through the Institutes.[10]

At the federal level, one of the most significant changes in the focus of assistance programs has been the lengthening of the list of responsible departments and agencies. A few years ago the National Research Council, the Defence Research Board, the Department of Industry, and the Department of National Revenue were the only ones deeply involved. The responsibility for the success of the assistance program portfolio now rests

[10]The IT&C has also assisted in the establishment of three Centres of Excellence – at the University of Guelph (food technology), at McMaster University (metalworking) and at the Ontario Research Foundation (powder metallurgy) – all of which are relevant to innovation in manufacturing industry.

with all of the departments and agencies whose innovation/influence ratings are given in Chapter 1 as "very significant", but it also requires the participation of those whose ratings are considered to be "significant".

The principal provincial assistance programs of a financial nature are loans or grants to encourage the location of new plants and the extension of existing ones. A province may offer a tax incentive as part of a regional development program. Manitoba has comprehensive selections of programs to assist manufacturing in, for example, research and development, design improvement, and exports. Ontario has an experimental venture capital assitance program of its own. The provinces also operate a number of non-financial programs designed to provide advice on a wide variety of subjects associated with manufacturing. Information dissemination is among the most important objectives of many of these programs. Small businesses are the principal targets for these programs and for the various advisory services. Another way in which the provinces provide incentives is by means of provincial enterprises or Crown corporations with responsibilities for giving both financial and non-financial help, for example: SIDBEC, SOQUIP and REXFOR in Quebec, and the Multiplex Corporation in New Brunswick, which is actually a joint federal-provincial venture. There are the services provided by the Research Councils in the provinces. Since these have been extensively documented in another report, no analysis of their specific responsibilities is being made in this one.[11] Their three general responsibilities are for contract research, technical and field services, and management-type advice.

Some assistance programs such as the federal government's IRDIA program were established by means of separate statutes, but the statutes which contain industrial assistance provisions are not limited to those associated with formal programs. For example, the sum total of the active federal statutes includes a good many that are related to the roles and responsibilities of federal departments and agencies. The implementation of these statutes influences the business of manufacturing and the activity of innovation. Another fifty or so have some special significance for manufacturing and innovation. They range, for example, from the Patent Act to the Weights and Measures Act. An illustrative alphabetical listing of some of these laws using a two-degree rating is as follows:

Very Significant	**Significant**
Anti-dumping Act	Aeronautics Act
Bank Act	Atomic Energy Control Act
Combines Investigation Act	Copyright Act
Customs Tariff and Excise Acts	Corporations Act
Income Tax Act	Food and Drug Act
Industrial Design Act	National Transportation Act
Industrial Research & Development Incentives Act	Small Business Loans Act
Patent Act	Trade Marks Act
Regional Development Incentives Act	Weights and Measures Act

[11]Andrew H. Wilson, *The Research Councils in the Provinces*, Science Council of Canada Special Study No. 19, Information Canada, Ottawa, 1971.

The same points may be made with regard to the laws and regulations of the provinces and the by-laws and regulations of local governments. It is also pertinent to note that some of the laws and regulations made in foreign countries and some of the multilateral and bilateral agreements made between countries, not necessarily including Canada, may be effective extra-territorially in Canada. The General Agreement on Tariffs and Trade is an example. But whatever their origin, laws and regulations may encourage or discourage technology-based innovation in manufacturing. Indeed, it is possible for elements of both to be present in the same statutes.

Federal and provincial industrial assistance programs may be divided into two broad groups: the direct financial assistance programs, and all the others.[12] The direct financial assistance programs are listed in Table III.1.

As might be expected, the federal government is active in all of the areas in which assistance programs have been established. The provincial programs are associated principally with regional development and with the setting up of manufacturing facilities. Significantly, the missing programs are in those areas in which the costs normally account for the largest portion of total operating costs.

The majority of "all the other" assistance programs are actually services provided by the governments for which money seldom changes hands. The federal government is active in every program area, as are the majority of the provinces. The areas are as follows:

Research and Development:
(e.g. In-house R & D in support of Industry, or Testing and Evaluation Services)
Technical Information:
(e.g. TIS, Industrial Engineering and other Services)
Industrial Location:
(e.g. Information and Advice)
Marketing:
(e.g. Information and Advice, Product Promotion)
Exports:
(e.g. Trade Missions and Fairs, Promotion and Representation Abroad)
Productivity Improvement:
(e.g. Information and Advice)
Assistance to Inventors:
(e.g. Information and Advice)
Management Assistance and Advice
Manpower, Employment & Training

Research and Development Expenditures by Canadian Industry

It has sometimes been said – half seriously – that companies have three different sets of figures for their annual aggregate research and development expenditures. In descending order of magnitude these are the amount declared to the Department of National Revenue for tax purposes, the amount entered in the semi-annual Statistics Canada surveys of R & D in industry, and the amount "actually" spent. The fact that the three different figures can coexist does not necessarily imply that companies are dishonest. It means that there are effectively three different definitions of "research

[12]For the purpose of this present chapter, "all the others" do not include government purchasing activities, the contracting out of government R & D, and the legal-regulatory measures under, say, the Anti-dumping Act that are not normally considered as "programs".

Table III.1–Direct Financial Assistance Programs Related to Technological Innovation in Manufacturing Industry in March 1972.

Principal Assistance Program Areas	Canada	Provinces B.C.	Alta.	Sask.	Man.	Ont.	Que.	N.B.	N.S.	P.E.I.	Nfld.
Research and Development	x				x						
Industrial Design	x				x	x					
Purchase of Raw Materials and Supplies						No Programs					
Engineering and Product Design, and Production Engineering						No Programs					
Productivity Improvement	x				x	x					
Exports	x					x	x				
Regional Development/Industrial Location	x		x	x	x	x	x	x	x	x	x
Venture Capital (Directly and Indirectly)	x					x					
Other Capital Grants, Loans and Guarantees (includes loans, etc. for the purchase of machinery and equipment)	x		x	x	x	x	x	x	x	x	x
Specific Industries	x			x			x	x	x	x	x
Specific Companies or Major Projects	x			x	x		x		x	x	x
Crown Corporations in Manufacturing, Processing or Special Development	x	x					x		x	x	x
Joint Federal/Provincial Ventures	x				x	x	x	x	x		
Regional Development Infrastructure	x	x	x	x	x	x	x	x	x	x	x
Industrial Park Development					x	x	x	x	x		

Source: *Annual Reports* and *Brochures* of the Federal and Provincial Departments and Agencies concerned.

and development" in use. What is more important, however, is the lowly position of company assessments of the dollar value of their "actual" R & D activities.

On the basis of the middle estimate figures gathered by Statistics Canada, and using non-capital intramural expenditures as the barometer of R & D performance in industry, the trend of this activity between 1957 and 1969 has been given in Table III.2. The data include the expenditures for industry as a whole and for the manufacturing sector of it. This sector has been assumed to account for 91 per cent of the aggregate for industry for each of the years quoted. The barometer expenditures dropped between 1957 and 1960, due in a large measure to the withdrawal of government support for the CF-104 ARROW aircraft project, then rose steadily up until 1969. If the price deflator is applied, then the gain between 1960 and 1969, in real dollar terms, becomes less spectacular. If a 6 per cent sophistication factor is also applied, the effective gain becomes smaller still.

Table III.2–Non-Capital Intramural R & D Expenditure in Canadian Industry in 1957, 1960 and 1969.

	$ Millions (Approximately)		
	1957	1960	1969
Industry As a Whole:			
Current Dollars	125	90	340
With price deflator, since 1957	125	75	250
With 6 per cent sophistication factor and price deflator	125	70	165
Manufacturing only:			
Current Dollars	115	82	310
With price deflator, since 1957	115	67	228
With 6 per cent sophistication factor and price deflator	115	64	150

Source: Statistics Canada, *Industrial Research and Development Expenditures in Canada*, September 1971. Cat. No. 13-203.

The available statistics also indicate that, in the manufacturing sector, the largest gains made between the low-point in 1960 and 1969 were in the electrical products group, with more modest gains in chemicals and chemical products, petroleum products, machinery and primary metals groups. The most significant loser group was transportation equipment, especially aircraft and parts. The number of industrial firms reporting R & D expenditures was between 400 and 450 in 1957. There appears to have been little or no drop in this total between then and 1960. After 1960 the number rose steadily to around 900 in 1969. However, in 1969:

– The top 5 firms spent just over one quarter of the total non-capital intramural R & D expenditures by industry as a whole; the top 25 firms spent about 54 per cent of the total.

– The top 200 firms spent over 88 per cent of the non-capital, intramural total.

– The industry groups with relatively large expenditures were electrical products (27 per cent of the total for industry as a whole), followed by transportation equipment (16 per cent), and chemicals and chemical products (13 per cent).

– Of the 900 companies reporting, around 600 were resident-owned. However, the top 25 resident-owned companies accounted for only 27 per

cent of the total expenditures for industry as a whole, while the top 25 foreign-owned firms accounted for 38 per cent.[13]

At the time of writing, the results of the most recent Statistics Canada survey, for 1971, have not been published. The preliminary indications are, however, that there has been no increase in the barometer aggregates in current dollar terms between 1969 and 1971 – indicating a decline in real terms, and a larger decline still if the sophistication factor is applied.

It has not been possible to isolate the effects of the financial assistance programs available between 1957 and 1969 on the funding of non-capital intramural R & D in the manufacturing sector or in industry as a whole, from the effects of other factors such as fluctuations in sales, profit levels, and exports. From contacts with both industry and government officials, from the expenditures on each program, and from conditions under which these expenditures were made, it is nevertheless clear that the programs have had some effect. In practice, the causes and effects which influence industrial R & D expenditure levels tend to reflect the unique experience and circumstances surrounding the activities of each individual firm.

With regard to capital expenditures by industry in R & D related buildings and equipment, the fluctuations have been more pronounced. These expenditures were (in current dollars) only $12.6 million in 1957, and the drop to the 1960 level was less marked than for the non-capital intramural expenditures. But spending rose rapidly after 1960, reaching $50 million in 1965 and 1966. Thereafter it fell to $36 million in 1968, but returned almost to the 1966 level a year later.[14] The tax-based general incentive program strongly influenced R & D capital expenditures by companies between taxation years 1962 and 1966 since the incentive itself was based on incremental or new expenditures above those of the base year. The relatively modest drop after 1966 was not primarily due to the change-over from the tax-based program to grant-based IRDIA because the new program was potentially more generous towards capital expenditures. Rather, it was largely the result of the combination of two factors, namely, the less attractive economic prospects for the years immediately ahead and the completion of the first round of new R & D facility construction. The IRDIA program had undoubtedly begun to play its part by 1969.

The IRDIA and the R & D Cost-Shared Programs of the Federal Government[15]

The **Industrial Research and Development Incentives Act** (IRDIA) received Royal Assent in March, 1967. The regulations were published under an

[13]Statistics Canada, *Industrial Research and Development Expenditures in Canada*, September 1971. Cat. No. 13-203.

[14]*Ibid.*

[15]The conditions and regulations for the award of benefits under these programs are not described in detail in this section. In Canada, they are now well known. Reference can, however, be made to the responsible agencies for this information. Additional discussions and analyses of the program are also available, for example, Andrew H. Wilson, *Background to Invention*, Science Council of Canada Special Study No. 11, Information Canada, Ottawa, 1970, and in the study by Pierre L. Bourgault, *Innovation and the Structure of Canadian Industry*, Science Council of Canada Special Study No. 23, Information Canada, Ottawa, 1972.

Order-in-Council two months later. Both the law and the regulations have since been amended in minor ways to remove anomalies and to clarify certain provisions. IRDIA is a grant-based general incentive assistance program and replaced the tax-based program available under Section 72A of the Income Tax Act for taxation years 1962 through 1966. The IRDIA benefits may, however, be taken as a tax credit. The program is the responsibility of the federal Department of Industry, Trade and Commerce.

The IRDIA grants equal:

– 25 per cent of capital expenditures made by a corporation in its fiscal year for the provision of facilities to conduct scientific research and development activities in Canada; and

– 25 per cent of the increase in eligible current expenditures made by a corporation in Canada over the average of such expenditures in a base period consisting of the five preceding years.

Application for IRDIA grants are submitted in arrears but, in order to reduce the time delay between the dates of application and payment, an administrative procedure was introduced on January 1, 1971, permitting a partial advance of about 75 per cent of a claim to be paid to most applicants prior to the completion of the assessment of the claim by the Department. Under the regulations, the claims must be for *bona fide* scientific research and development which, if successful, will be likely to benefit Canada. A Corporation must apply for a grant within six months of the end of its fiscal year. Company contributions and repayments associated with any of the cost-shared programs can be included in IRDIA submissions. IRDIA disbursements in 1970/71 were approximately $30 million. In the four-year period between its inception and the end of March 1971, a total of 1 937 grants worth about $70 million to over 1 400 corporations have been authorized. The breakdown by industry group has been given in Table III.3. The so-called "high-technology" industry groups, electrical products and chemicals, for example, are relatively well represented in this breakdown. Those industry groups that appear to have taken little or no part in IRDIA have been, generally speaking, in the less technologically sophisticated groups in which the average company size was also relatively small.

The **Defence Industry Productivity** (DIP) program was established in 1968 by the combination of the former Defence Development Sharing (DDS) and Industry Modernization for Defence Exports (IMDE) programs.[16] DIP is administered by the Department of Industry, Trade and Commerce. Its immediate objective is to assist, develop and sustain the technological capability of Canadian defence industry for the purpose of defence export sales or of civil export sales resulting from having this capability. Assistance is given in the form of grants and repayable advances on a shared-cost basis. Although the shares may vary, the Canadian Government normally contributed 50 per cent of the approved costs of all projects under the DIP program. From the inception of the DDS program in 1959, and until the end of fiscal year 1970/71, 480 projects were supported with federal expenditures of $270 million. The broad breakdown of the financial

[16]The DDS program began in 1959, to complement the Canada-U.S. Defence Production Sharing Agreement. The IMDE program was initiated during fiscal year 1964/65.

Table III.3–Grants Authorized Under the Industrial Research and Development Incentives Act in March 1967 to March 1971

Industry Group	Number of Grants Authorized	Aggregate Grant Disbursements $ Millions
Food and Beverage	164	3.0
Tobacco	–	–
Rubber	4	0.4
Leather	–	–
Textiles	39	0.8
Knitting Mills	–	–
Clothing	–	–
Wood	50	0.5
Furniture and Fixtures	8	< 0.1
Paper and Allied	135	4.4
Printing, Publishing	–	–
Primary Metal	56	4.2
Metal Fabricating	139	3.9
Machinery	210	3.5
Transportation Equipment	79	8.9
Electrical Products	249	14.7
Non-metallic Minerals	45	0.8
Petroleum and Coal Products	23	6.2
Chemicals and Chemical Products	295	7.6
Miscellaneous Manufacturing	223	3.2
Sub Total	*1 719*	*62.2*
Non-Manufacturing	218	5.9
Total	**1 937**	**68.1**

Source: IRDIA *Annual Report 1970/71*, Department of Industry, Trade and Commerce, Information Canada, Ottawa, 1971.

support by industry was: aerospace – 50 per cent; electronics – 40 per cent; and mechanical vehicles and others – 10 per cent. Of these 480 projects, 261 were completed by the end of March 1971 with federal expenditures of $213 million. The value of the sales from these completed projects had by that time reached $2.6 billion – 40 per cent in the civil sector. In fiscal 1970/71 alone, the DIP program supported 198 projects with $45 million.[17]

The **Defence Industrial Research** (DIR) program which the Defence Research Board administers was established in 1961 in order to provide assistance for research work in the defence field that might conceivably precede the kinds of development projects for which DDS and later DIP program assistance would be available. Assistance under DIR is available in the form of cost-shared conditional grants. The government's share is normally about half of the total project cost but may be greater in certain circumstances, for example, if higher than usual risks of technical success are involved, if long-term research and high commercial risks are involved, or if a small company is getting into the defence research business for the first time. During the fiscal years 1962/63 through 1970/71, DIR support has been given to about eighty companies for 250 or so individual projects and a total government expenditure of $35 million. The industry groups receiving most support were in the electronics and

[17]*Annual Report 1970/71*, Department of Industry, Trade and Commerce, Information Canada, Ottawa, 1971 and Private Communication from the Department.

aerospace groups.[18] Budgeted expenditures under this program are now being held at $4.5 million. Actual disbursements vary from year to year.

Early in 1962 the National Research Council (NRC) established the civil research counterpart of DIR. The general objective of the **Industrial Research Assistance Program** (IRAP) has been to stimulate the interest of Canadian industry in scientific research by promoting the establishment of new research and development groups or the expansion of existing ones. Work approved under IRAP is intended to be mostly in applied research and development, at the laboratory level, of prototypes and processes. Work in areas such as quality control, product testing and market research has been excluded. Under IRAP, the federal government will share the cost of a project on the basis that salaries and wages will be paid by NRC, and overhead and equipment costs by the company. Originally, a 5-year limit was placed on the available support for individual projects. This limit was removed in February 1970. At that time, also, the requirement that new staff had to be hired for assisted projects was relaxed but not completely discontinued. One of the ways in which IRAP has been found particularly useful is in assisting companies to move out of unprofitable product areas into new and potentially more rewarding ones. The program has also been characterized by its administrative simplicity and low cost and by the fact that it permits cooperation and interchanges of ideas between industrial, government and university scientists. The participation of industrial associations in joint ventures has also been encouraged but participation by the Research Councils in the provinces has so far been restricted.

Actual expenditures by NRC under IRAP have risen continuously since the program's inception. In fiscal 1970/71 they stood at $6.9 million, for 219 active projects. From its inception until October of 1971, IRAP assistance has been given to over two hundred companies for 400 individual projects at a cost to the federal government of $30 million.[19] The support given to the different industry groups over these years has been much more widely distributed than under either the DIP or DIR programs. Using three categories, high, medium and low, the grant support was given as follows:
High: chemicals and chemical products, electrical products.
Medium: paper and allied products, food and beverages, rubber, primary metals, machinery, non-metallic minerals.
Low: textiles, wood products, metal fabrication, petroleum and coal products, transportation equipment.

The **Program for the Advancement of Industrial Technology** (PAIT) is the civil counterpart of the DIP program and the development counterpart of the IRAP program. It is the responsibility of the federal Department of Industry, Trade and Commerce. Established in 1965, PAIT is intended to give direct financial assistance to industry for the purpose of upgrading its technology, technical competence, and innovative capacity. The conditions under which PAIT support is given have been changed as some of the weaknesses of the program have become known. Initially, a PAIT grant

[18]Private Communication from the Defence Research Board.
[19]Private Communication from the National Research Council.

covered half of the estimated cost of a project, but the federal contribution was repayable if the project was successful. The grant therefore became, in practice, a loan. In February 1970 the repayment of the federal contribution was discontinued. However, under special circumstances, assistance could be extended to cover more than half the cost of a project, with the additional amount given as an interest-free loan in successful projects. The eligible cost was also extended beyond development work in the strict sense to include the preparation of industrial designs, production drawings, process data, reports, and other non-recurring pre-production activities. More recently still, the PAIT program has been expanded to provide support for the drawing up of product and process specifications and for the assessment of their commercial feasibility and market prospects.

During the fiscal year 1970/71, the PAIT program supported around 140 projects with a total government commitment of just over $50 million – a 400 per cent increase from the previous fiscal year and an indication of the increased effectiveness of the changes made in February 1970. This commitment will, however, be disbursed over the lifetimes of the projects involved, several years in most cases. The actual disbursements made by the Department of Industry under the PAIT program between its inception and the end of fiscal year 1970/71 have been in the neighbourhood of $34 million, including $13 million in fiscal 1970/71 alone.[20] The program has become well established among the so-called "high-technology" industries.

Under the five programs included in this section, the federal government paid out approximately $100 million during the fiscal year 1970/71 and approximately $440 million during their combined lifetimes.[21] The programs have particular appeal for companies that are dependent for survival on their technical knowledge and competence.

A Note on Industrial Assistance Programs in Certain Foreign Countries

This section and the next one have been included for two reasons. The first is to emphasize that the governments in Canada are not alone in their search for effective measures through which to encourage research, development and innovation in manufacturing industry. The second is to illustrate some of the approaches and programs devised by governments in other countries and, potentially, to increase the range of Canadian options. Current experience suggests that no one country has yet devised a "best" approach or portfolio of programs. Examination and re-examination are taking place continuously.

The choice of countries for this particular section was made on the basis that there were certain similarities between them *as a group* and Canada with regard to government structure, industrial problems, and R & D and innovation assistance programs. The source material on the

[20]Private communication from the Department of Industry, Trade and Commerce.

[21]To recapitulate, these totals were made up as follows:
1970/71: IRDIA – $30 m, PAIT – $13 m, DIP – $45 m, IRAP – $6.9 m, and DIR – 4.5 m for a total of $99.4 m.
Lifetime: IRDIA – $70 m, PAIT – $34 m, DIP – $270 m, IRAP – $30 m, and DIR – $35 m for a total of $439 m.

three countries was taken from a recent OECD report.[22] However, the material actually presented is not complete and may not be fully representative of the programs and policies currently in force in these countries.

Norway, like Canada, has a highly localized manufacturing industry and a need to increase its manufacturing exports. The majority of the value added in manufacturing takes place in the private sector and, consequently, the main task of Norway's recent industrial policies has been to promote the growth of this sector. At the central government level the responsibility for manufacturing rests with the Ministry of Industry and Handicraft. The Ministry also has special responsibility for industrial research but no direct responsibility for the general economic or social policies affecting industry. There is close cooperation between State authorities and private organizations and institutions such as the Federation of Norwegian Industries, labour organizations, and financial institutions.

Developments affecting Norwegian industry during the 1960s broadened the scope of its manufacturing considerably. More attention was given, for example, to finished goods, to structural adaptation, and to the promotion of industrial research and development. The principal features of the developments taking place during the 1960s include high levels of investment for modernization and the manufacture of new products, a change to an export sales orientation and a general drive towards specialization in manufacturing, an increasing number of mergers, and intensified new product development efforts.

In Norway, the beginnings of a concerted R & D policy relating to industry dates back to the founding of the Royal Norwegian Council for Scientific and Industrial Research (NTNF) in 1946 and of the Central Institute for Industrial Research in 1950. The NTNF is the co-ordinating and executive body in policy matters and allocates the government contributions to industrial and allied research. Recent NTNF policy changes have included:

– The establishment in 1965 of a special State credit institute to finance development projects undertaken by industrial companies by means of medium-term loans covering 50 per cent of estimated expenditures; repayment of these loans may be waived in unsuccessful projects.

– The establishment in 1967 of a separate fund for the promotion of research in individual industry sectors; the purpose of the fund being to strengthen joint research activities within the sectors, with the research normally performed in private institutes associated with the various sectors.

– The introduction in 1969 of a special arrangement for government development contracts, permitting agencies to draw on extra-budgetary funds under certain conditions.

– The establishment in 1969 of an advisory service for individual inventors.

The Norwegian Bank for Industry provides long-term mortgage loans to industry for buildings and machinery, etc. The State Guarantee Fund

[22] *The Industrial Policies of 14 Member Countries*, OECD, Paris, 1971.

for Industry guarantees the Bank's loans over its normal security limits. The Fund works closely with a new institute, *the Strukturfinans*, which was established in 1970 as a joint government-private venture to provide loans to facilitate, for example, mergers and the internal reorganization of individual companies. A Fund for Handicrafts and Small Business founded in 1914 was reorganized and extended in 1967. The main function of the State Export Credit Guarantee Institute is self-evident, but it may also guarantee the initial expenses involved in establishing sales outlets in new markets. The Regional Development Fund, established in 1961, may offer loans and guarantees, normally for medium and long-term investment and for working capital, either on its own or in association with the Bank for Industry. Under special conditions, the Fund may acquire company shares. It may also offer consultant services.

Two other institutions with functions related to industrial assistance are the Norwegian Productivity Centre, now almost 20 years old, and the National Institute of Technology, which was established in 1917. The Institute has a particularly important role to play with regard to small and medium-sized companies through the provision of management consulting, education and information services, materials and other research, and testing. It is supported by fees as well as from government sources.

Historically an agricultural society, **Ireland** has turned increasingly to manufacturing to slow down emigration from the country and to raise the standard of living. In order to implement its new policy, the Irish Government has established a comprehensive set of incentive and assistance programs to attract and expand manufacturing companies along lines similar to the federal-provincial "mix" in Canada. The spearhead agency in the assistance scheme has been the Industrial Development Authority (IDA). There have been four principal elements in the scheme:

– Non-repayable cash grants are available for site purchase and development, and plant buildings and equipment, up to a maximum of two-thirds of the cost of fixed assets for plants established in the less-developed area of the country, and up to half of the cost of these assets in the remainder of the country.[23]

– The government-sponsored Industrial Credit Company has provided facilities supplementary to those available through the commercial banks and finance companies, including long and medium-term loans, underwriting, the purchase of shares, and advisory services.

– Complete relief from tax on profits received from exports of goods made in Ireland is allowed to new industries for a period of 15 years, and for a further 5 years at reduced rates; existing companies qualify for similar relief on the basis of the additional export trade generated.

– Certain restrictions on foreign investment in Ireland were completely removed on January 1, 1968.

A survey has shown that almost all the new enterprises established in Ireland by foreign companies have been aimed chiefly at the export market. From the point of view of products, the manufacturing base of Ireland has been broadened considerably. Experience has also shown that incentive

[23]Grants have also been made available for the training of skilled workers.

/assistance packages must be sufficiently flexible to meet the special needs of each new enterprise.

Ireland has a Department of Industry and Commerce, an Export Promotion Board, and a recently established Committee on Industrial Progress. The adaptation grants to existing plants have been made available and over one thousand firms have been approved for financial aid to re-equip and modernize, with special consideration being given to companies in the less-developed areas. The government has sponsored the establishment of a number of industrial parks in the less-developed areas and will provide ready-built factories as required.

A Small Industries Program was established to identify the problems and needs of small industries and to secure management, financial, marketing, and other kinds of specialized help for small companies from other private and public agencies. The Industrial Credit Corporation (ICC) has the means to assist under-capitalized small and medium-sized companies through loan programs, to initiate and facilitate mergers, and to promote financial and other advice. The Government of Ireland has also set up a special company to assist firms which are in danger of closing down because of their inability to raise capital from the regular sources, but which are still potentially viable. Some weight will be attached to the firms' abilities to export. The Institute for Industrial Research and Standards is the national industrial research centre. It is largely government-financed and, in recent years, its activities have been steadily expanded. Its principal objectives are to foster research, to promote the utilization of the natural resources of the country, to improve the technical effectiveness of industry, and to develop new products.

West Germany, like Canada, is a federal state but, unlike Canada, there is no federal Ministry of Industry and no special industrial policies that are separate from economic policies. The federal government in West Germany has exclusive jurisdiction over economic policy in monetary and currency matters, weights and measures, agreements involving commerce and navigation, foreign trade and payments, railways and aviation, industrial property rights, customs duties, and fiscal monopolies. The federal and Laender governments have concurrent jurisdiction in matters affecting banking, trades, distribution, the promotion of research and the "prevention of the misuse of economic power". Regional development in Germany is the joint responsibility of the federal and Laender governments and the local governments. The Laender participate in federal legislation and administration through the upper chamber of Parliament.

The federal government in West Germany has taken the view that it is the responsibility of individual firms to cope with changing economic conditions by growing to their optimum size. Nevertheless, the government provides some assistance in the processes of structural change and productivity improvement – with particular regard for small and medium-sized companies. This assistance is given by the following means: information and advice, training programs, the investigation of special problems such as those of small and medium-sized firms, credit on favourable terms through a special fund, guarantees for loans to small and medium-sized enterprises and self-help endeavours and re-guarantees for credit guarantee

associations, tax law, and the promotion of cooperation between companies.

The government's view with regard to incentive programs for industrial research has been described in the following way:

"The industrial research and development necessary for a changeover to new techniques and products is primarily the responsibility of the enterprises themselves. The State, however, does offer incentives, while endeavouring to establish a climate favourable to innovation. Most of the support is general in nature, and in principle the enterprise being assisted continues to bear the entire risk. When, in certain key sectors of technology, the costs of research and the uncertainty of success exceed the capacity of the enterprise, assistance may take a form in which the State assumes a share of the risk. It remains to be examined whether certain planned innovations in other industrial sectors, of great importance to the whole economy, may not also receive assistance if they cannot become effective, or cannot do so rapidly enough, without government help."[24]

The West German government's principal means of encouraging industrial research and innovation is – unlike that of Canada, Ireland and Norway – through tax law.

The United States Government and the Encouragement of Industrial Research and Innovation

Without doubt, the principal stimulus for industrial research and innovation provided by the U.S. Government in the post-war years has been through R & D and procurement contracts. These contracts have, for example, been influential in raising the proportion of the national aggregate R & D activity performed in the industrial sector as a whole. Nevertheless, these contracts have tended to favour some industry groups and companies and to ignore others that might otherwise have benefitted from assistance. The situation became more serious as the U.S. economic difficulties increased during 1970 and 1971.

It is relevant to recall that the report by Dr. Robert H. Charpie and his Committee to the U.S. Secretary of Commerce in 1967 included recommendations in the fields of taxation, innovation, financing, the encouragement of enterprise, venture capital, anti-trust, and the regulation of industry.[25] None of the recommendations called for incentive programs, as such. They dealt principally with the removal of financial, administrative and regulatory burdens, and were focussed on the individual enterpreneur and the small company. Not unexpectedly, the major responsibility for the encouragement of enterprise and innovation was placed on the Department of Commerce.

The Charpie Report was discussed extensively when it appeared. Its analysis and recommendations have been widely quoted in science policy

[24] *The Industrial Policies of 14 Member Countries, op. cit.*, p. 19.
[25] *Technological Innovation: Its Environment and Management, op. cit.*

literature. But the U.S. Government took no visible action on its recommendations. Recently, however, the issues raised in the report have come again to the surface: the encouragement of enterprise generally, tax incentives, anti-trust, patent policies, venture capital, and industrial R & D expenditures. For example, in a statement made to a House of Representatives Subcommittee in July 1971, Assistant Secretary of the Treasury, Murray L. Weidenbaum said that, in his opinion, there were strong indications that the United States might have become too niggardly in its overall support of science, engineering and the related intellectual activities fundamental to growth and progress. There was, therefore, an immediate need to raise the level of overall support for research and development.[26] Later in his presentation, Mr. Weidenbaum said:

"When we examine the various industrial nations, we find that each of them has substantial programs underway to encourage private sector research and development ....

"The major methods currently in use to encourage R & D include tax benefits, government-sponsored associations and institutes, patents, and technical assistance. When I last examined this area, I found that tax benefits were the most frequently used governmental aid to R & D. Specific provisions included tax deductability, tax exemptions, liberalized depreciation allowances, and tax credits."

In July of 1971 the U.S. Administration began a crash effort to identify ways in which the federal government could stimulate research and development work in specific areas of new technology and could stimulate technology-based innovation generally. This effort became known as the New Technological Opportunities Program (NTOP). It was to be associated with other measures, such as the budget, important for the well-being of the U.S. domestic economy, for the competitive muscle of U.S. companies in international trade, and for the employment of scientists, engineers and others recently displaced from aerospace and defence industries. The Office of Science and Technology (OST), under Presidential Adviser Edward E. David, was involved in NTOP from the beginning. One of the first steps taken under the program was to ask a dozen or so federal agencies for new technology proposals.

On August 15, President Nixon announced his economic measures designed to strengthen the American international trade position and the domestic economy. In his speech, the President said:

"I have directed the Secretary of the Treasury to recommend to the Congress in January new tax proposals for stimulating research and development of new industries and new technologies to help provide the 20 million new jobs that America needs for the young people who will be coming into the job market in the next decade."

[26]The Honourable Murray L. Weidenbaum, Assistant Secretary of the Treasury for Economic Policy, before the Subcommittee on Science, Research and Development of the House Committee on Science and Astronautics, Washington, D.C., July 29, 1971.

The NTOP work got into full swing with the appointment on September 13, 1971, of William M. Magruder as the co-ordinator of the program. The termination of the work was set for January, 1972 and the annual Presidential State of the Union Message, to be followed by the presentation of the 1973 Budget. One of Magruder's early actions was to send letters to hundreds of industrial associations, organizations and individuals asking for ideas about new technological opportunities and about how the federal government might stimulate them. Ideas were also sought with regard to government incentives that would help to increase innovative activities on industry. Many replies to these requests were received and studied.

Between September and December, 1971, the detailed work was performed under Magruder's co-ordination by OST, by task forces, and by officials working directly for Mr. Magruder. At one time during this period it was estimated that three hundred people and fourteen federal agencies were involved in the program.[27] Outside consultants were also involved. For the last few weeks of NTOP, the principal activities were centered around the senior government officials and the members of the President's staff charged with making the final decisions with regard to future policies and programs.[28]

On January 20, 1972, the President's State of the Union Message indicated that the U.S. Administration would *not* be proposing financial assistance for extensive new civil technology programs in the near future. In support of this decision the President said that much more would have to be known about the process of stimulating and applying research, and development, and about the barriers to technological innovation, before these programs could be started. Mr. Nixon indicated, however, that the speed up of the change from defence to civil support would continue.

Several days later, in the 1973 Budget Message, the President called for increases in federal spending on science and technology during the coming fiscal year. There were proposals for R & D expenditure increases of about 8.4 per cent over 1972 making a total of $17.8 billion, but some of this money would not actually be spent during the year. Of the $700 million increase earmarked for civil R & D assistance, the majority would be spent on work in the clean energy and pollution-free transportation fields, a move which owed something to the NTOP work. The Administration did not propose, as had been implied as a possibility by the President in August 1971, any special tax incentives to encourage industrial R & D expenditures. Such incentives had been found, as a result of NTOP work, to be of questionable value in the larger socio-economic context. However, within the R & D budget the Administration proposed to set aside $40 million for studies and experiments to be carried out by the National

[27] *Science*, October 22, 1971. p. 386.

[28] It is not the intention in this present study to give a complete account of the NTO Program or the subsequent results. Only the highlights have been included. A much more complete description may be obtained by reference to the following two articles: *Science Report/White House Views intense technology hunt as useful exercise, though few projects emerge*, by Claude E. Barfield, in the *National Journal*, May 6, 1972. p. 756 *et seq.*; and *Science Report/Nixon Administration gradually unveils new policies for technology development*, by Claude E. Barfield, in the *National Journal*, May 13, 1972. p. 819 *et seq.*

Science Foundation (NSF) and the National Bureau of Standards (NBS) to obtain some of the R & D and innovation management information needed to support future assistance program decisions. Of this sum, the NSF would get $22 million and the NBS $15.5 million for a new program, the Experimental Incentives Program, to investigate and experiment with approaches to the problem of increasing non-federal investment in research and development and the problem of speeding up the conversion of research results into new and improved products, processes and services. In addition, the NSF would be allotted a further $2.5 million for a general examination of the impediments to technological innovation in the United States.

On March 16, 1972, the President of the United States sent his first Special Message to the Congress on the *Importance of our Investment in Science and Technology*, a Message originally intended to complete the NTOP work.[29] At the beginning of the Message, the President said that the importance of technological innovation had become dramatically evident in the past few years, that the Administration had come to recognize that innovation was essential in the improvement of economic productivity, and that improved productivity, in turn, was essential for the achievement of full and durable prosperity, for strengthening old industries and creating new ones, and for the creation of millions of new jobs.

The President said he believed it was appropriate for the federal government to encourage private research and development to the extent that the market mechanism was not effective in bringing needed innovations into use. He said that federal support should be made available through cost-sharing agreements, procurements policies, or other arrangements. In his view, federal research and development activities generated a great deal of new and useful information that should be put to wider use in the private sector. The National Technical Information Service of the Department of Commerce, created in 1970, and new programs of the National Science Foundation and the National Bureau of Standards would also seek effective means of improving and accelerating the transfer of R & D results from federal programs. The President emphasized that the U.S. Government influenced the level and quality of private R & D directly, but that other policies such as tax, patent, procurement, regulation and anti-trust policies could also have a significant effect on the climate for innovation. He said that in addition to the $40 million NSF/NBS programs, he would submit to Congress legislation designed to encourage improved performances from small, high technology firms with distinguished pioneering records by means of additional support for the Small Business Investment Companies.[30]

The President then spoke about the need for inter-government cooperation. He said:

"To help build a greater sense of partnership among the three levels of the federal system, I am directing my Science Adviser, in cooperation with

[29]The full text of this message may be obtained through the United States Information Service, U.S. Embassy, 100 Wellington Street E., Ottawa, Canada.

[30]These Companies are discussed further in Chapter 7.

the Office of Intergovernmental Relations, to serve as a focal point for discussions among various federal agencies and the representatives of State and local governments. These discussions should lay the basis for developing a better means for collaboration and consultation on scientific and technological questions in the future."

Assistance Programs in Perspective

The portfolio of industrial assistance programs available in Canada is formidable. The federal and provincial governments have also been in the forefront, internationally, in the regional development program area and the federal government pioneered the introduction of cost-shared and tax-based assistance programs. The variety of financial programs and services available through the governments of Quebec and Ontario is remarkable for non-central governments. The Canadian provinces have also pioneered the establishment of multi-purpose Research Councils. As is now well known, Canada's standing among the most technically innovative countries of the world is not high and this is one reason for the existence of the programs. The extent to which the programs have improved the innovative abilities of Canadian manufacturers and their market opportunities is impossible to measure; this fact is complicated by the openness of the Canadian economy and its vulnerability to protectionist moves by the United States and the other more successful manufacturing countries.

Federal and provincial assistance programs have, in practice, evolved largely by design, but in a piecemeal fashion. A particular need or situation, a new department or mission, or any one of a dozen different reasons can be found for the establishment of new programs. The provinces perceive detrimental gaps in federal programs and fill them. The federal government perceives a gap in the portfolios of some of the provinces, but fills this gap nationally rather than on a selective basis. The municipalities, along with their respective provinces, have their own ideas on what needs to be done. The trouble is that the reasons for starting up a particular new assistance program are usually both economically and politically desirable.

The broad objectives of government programs of assistance to industry are first, to alter the behaviour of the recipient individuals, companies, associations or industries and second, to provide financial and other assistance that is either not available from private sources or is available only to a limited extent from these sources. Most programs are aimed at both objectives, but with varying degrees of emphasis. When the behaviour altering objective predominates, the programs are often introduced for finite periods of time or are subject to periodical review and revision. When the supplementation objective predominates, the lifetimes or review periods are not usually specified. The individual company will use or ignore the programs available to it in accordance with its needs, market opportunities, technical capability and so on. But, generally speaking, the behaviour altering objective appeals to larger companies and the supplementation objectives to smaller ones.

Programs aimed at altering behaviour need to remain in force unchanged for a sufficiently long period for them to accomplish this objective.

On the other hand, these programs should be sufficiently flexible to be able to respond to changing conditions, but they should not be expected to handle crises as well as longer-term problems. Crises require special, short-term measures.

Longer-term, behaviour altering programs may also give rise to a number of undesirable side effects. For example, a company or an industry may become so dependent on a generous financial program that the program becomes a permanent "crutch". Attempts to remove it will be fiercely resisted. For this reason, it is usually beneficial for there to be a "self-destruct" or "self-change" mechanism in all non-service programs. Another quite different problem associated with the removal of a program will be the reduction of the influence of the sponsoring government on the participating companies and industries.

It has not been possible to arrive at a short and objective evaluation, in financial terms, of the benefits received by Canadian taxpayers and companies over particular periods of time as the result of expenditures made by governments in this country on industrial assistance programs. Even the expenditure figures have been elusive. The principal difficulties stem from the sheer number and variety of the available programs, from the multiplicity of their individual and collective objectives, from the fact that the programs do not cover all of the factors in the cause-and-effect "equation", and from the need to apply subjective judgement to the available statistics in most cases. Similar difficulties are involved in the evaluation of the effects of particular programs and particular projects and, where multinational companies are involved, it may also be necessary to take some account of competing programs established in other countries. In the absence of detailed studies, the evaluation must therefore remain essentially descriptive and non-statistical.

There is already some evidence in Canada of a rough "division of labour" between the federal and provincial governments with regard to industrial assistance programs. For example, the federal government and the Research Councils in the provinces provide the bulk of the R & D assistance to industry. The federal government takes the national view while the provincial governments take the regional and local view in providing industrial location and regional development assistance. While both levels of government provide advice and information services, the provincial governments are the most active. The federal government will help a whole industry. The provinces are concerned with the gaps in their industrial diversification. The federal government helps more large companies, the provinces help more small ones.

With regard to the various elements in the innovation process as a whole, the principal gap in government support is in the actual manufacturing part of the process. Manufacturing expenses alone may cost between 40 per cent and 80 per cent of all of the costs of developing, designing, making, and selling products. Opportunities for extending government assistance for technology-based innovation in manufacturing industry, in particular with regard to direct financial programs, would seem therefore to be available in meeting the product design, tooling, raw materials, actual production, and associated labour costs. But two alter-

native approaches should be borne in mind. One is that the existing programs might first be made more effective than they are at present. The second is that, by removing the *dis*-incentives to innovation that are built into the legal and regulatory systems and into the economy generally, the need for new incentives may be reduced and even eliminated and the need for some of the existing incentives may also disappear. The overall analysis in this study favours the latter approach.

At the federal level, the principal responsibility for the provision of industrial assistance programs is borne by the Department of Industry, Trade and Commerce. In the past, the Department and its personnel have been criticized for shortcomings and shortsightedness, and for an apparent unwillingness to make changes.[31] The Department has also been reluctant to assume any of the burden of regional development from the Department of Regional Economic Expansion – but DREE has not shown enthusiasm for cooperation with IT&C over assistance programs. The main questions, however, are how far the Industry Department should go in its efforts to meet its objectives *and* its critics, and the extent to which the critics should be helped by another government agency or should help themselves.

For example, the Department does not provide high-risk financing in support of new technology-based ventures, and it tends to support established firms with known strengths and weaknesses rather than those whose future potential may be impressive but whose record has not been exceptional. But three considerations should be taken into account with regard to the role of government in risk-taking. The first is the degree to which the involvement of government departments in commercial risks can change in the future and still be politically acceptable. The second has both political and constitutional implications and involves the degree to which the federal Department of Industry, Trade and Commerce and its counterparts in the provinces, where these exist, are willing to co-ordinate their activities. The third follows from the other two and involves the priority which the federal department should give to small, resident-owned companies to which they do not at present give special attention within the departmental organizational structure.

In Canada, with the proliferation of jurisdictions and programs, it is easy to get the impression that the individual assistance programs merely tinker with the situation, apply temporary relief, and are not sufficiently big or bold, either singly or collectively, to solve the real problems. But what are the real problems? A decade ago, it appeared to be a lack of industrial research and unacceptably persistent regional disparities. More recently, it has become a lack of technology-based innovation and a great deal of unemployment. A decade ago, high rates of economic growth and personal consumption were prime objectives. Nowadays, growth and consumption have become less desirable in some quarters. A decade ago, the call was for more and more "seed money" to be provided by the federal government, and to be poured without delay into companies which were in the process of making technical developments of exceptional promise.

[31]The Department has, in fact, improved its operation and changed its programs in response to experience and new circumstances.

Now the emphasis is being placed increasingly on the ability to *sell* profitably whatever industry makes. The real problems seem, therefore, to be associated with changes in national and regional objectives.

One of the difficulties facing those who design an assistance program is to decide on the degree of discrimination that should be applied in favour of, or against, the applicant or client. The federal government's cost-shared programs, for example, are in theory open to almost all possible applicants. Information, advisory, and other services are universally available. But programs can be much more narrowly defined, particularly in the provinces. On balance, the governments in Canada have tended to err on the side of non-discrimination. But the following points with regard to the discrimination question should be taken into account:

– Assistance grants or other benefits that overextend the resources of recipient companies are wasteful.

– Similarly, the simple act of getting a badly-managed company to set about innovating or doing research is not usually enough to turn it into a well-managed company.

– Large manufacturing companies usually rely on an army of subcontractors, subsidiaries and other suppliers and do not attempt to make or assemble everything themselves. It is not therefore sufficient to encourage the large companies without taking account of the needs of the others, and *vice versa.*

With regard to financial assistance programs in other countries, it is clear that some are trying the same kinds of programs as are being tried in Canada, particularly with regard to encouraging industry to establish new manufacturing facilities. On the other hand, West Germany has given much of the responsibility for effective industrial performance to the companies themselves and, with the exception of regional development programs, has been relying on the tax system to be the principal incentive instrument. The recent developments in the United States are of interest to Canada for a number of reasons. For example, it now seems that the Administration has ruled out generally applicable and tax-based programs but is still very much interested in assistance programs other than those based on taxes and contracts. The Administration has also clearly spelled out the need for cooperation between the three levels of government in the U.S. in questions relating to the application of science and technology.

IV. Federal Government Purchasing and Research Transfer Programs

This chapter is principally concerned with the influence of the purchasing operations of governments and their agencies in Canada on the encouragement of technology-based innovation in the manufacturing industry in this country and has less to say about research transfer programs. Some of the misgivings expressed with regard to the failure of these latter programs at the federal level in the past have been set aside, for the time being at least, in the light of policy statements made by the Minister of State for Science and Technology during the Spring of 1972. The Minister made it clear that, in the future, federal departments and agencies will be expected to satisfy more of their research and development needs by means of contracts with Canadian industry.

With regard to purchasing, the analysis and discussion that follow have been limited to the federal government and, in particular, to the relevant roles and responsibilities of the Department of Supply and Services (DSS) and the Treasury Board. Those federal agencies whose purchasing operations are still under their own control have not been forgotten, nor have the operations of provincial and local government departments and agencies, some of which have extensive budgets and purchasing powers.[1] The task of taking all three levels of government into account was simply too large for the purposes of this present study. Nevertheless, the main thrust of the material presented on the DSS-Treasury Board should be applied to all of the governments in Canada. These governments, between them, make annual purchases of goods manufactured in Canada and abroad that may be measured in the low billions of dollars rather than in the high hundreds-of-millions.[2] This material should be regarded as beginning, and not concluding, the examination of government purchasing and research transfer problems in this country. It should also be regarded as oriented towards policies and not towards administrative details. But, since the effects of good policies can be spoiled by the poor handling of these details, it should be taken for granted that neither purchasing operations nor research transfer programs can be successful unless the administrative machinery and the people concerned with it are properly motivated and are unencumbered by unnecessary interventions, checks and balances, and delays.[3]

The chapter begins with a number of general comments and moves on to the description of the federal purchasing system and to a discussion of the "Make-or-Buy" and "Buy Canadian" problems. Some comments are then made with regard to purchasing restrictions applied by foreign governments. The last section deals with federal research transfer programs.

The material covered in this chapter had some influence on the discussions of the Science Council prior to the writing of its own report. In the report itself the Council said, for example, that every effort should be made to transfer to industry, wherever practical, research work now carried out in-house by the governments that might lead to industrial innovation.

[1]For example, the federally-owned transportation companies and the provincially- and municipally-owned public utility systems.

[2]Attempts were made to make more accurate estimates of these purchases in recent years but the available data and time were inadequate for the task and it had to be abandoned.

[3]Good administration is, of course, no substitute for bad policies.

Later on, the Council recommended that, wherever possible, governments' purchasing powers should be used increasingly as a tool for implementing a national industrial strategy.[4]

Some General Comments

Criticisms of the effectiveness of government purchasing and research transfer programs in relation to the well-being of domestic manufacturing industry are not new in Canada. In 1968, for example, the Science Council recommended in its first full report on science policy that the federal government should further encourage industrial involvement in research and development by contracting out federal projects in which participation was likely to increase the technological and innovative capacities of the companies.[5] Industrial critics have usually been more direct in their recommendations for the adoption of explicit "Buy Canadian", "Buy-Rather-Than-Make", and contracting out policies by the federal government in particular. For example, a recent editorial had this to say:

"Evidently afraid of criticism, or even retaliation from other countries, the federal Department of Industry, Trade and Commerce seems determined not to advocate a Buy Canadian policy. This strange reluctance to foster a domestic base for the export markets on which it exerts so much effort may seem politically wise in Ottawa, but it doesn't make sense to the domestic manufacturer. Nor does it make economic sense to spend vast sums of money developing markets for exports so that Canadians will have the foreign exchange with which to import unemployment from other countries."[6]

The principal arguments advanced in favour of these policies are first, that Canadian industry will not grow, develop and become competitive internationally, especially in expensive, high-technology fields, unless positive government assistance is given; second, that other countries have "Buy-at-Home", "Subsidize-and-Support", and foreign tendering limitation policies; and third, that the development of export markets for specific Canadian manufactured products is being seriously impaired by the refusal of the governments in this country, especially the federal government, to purchase these products from domestic sources.

Governments have not been altogether silent on these subjects. For example, industry has been told repeatedly that departments and agencies must operate within their allocated budgets, that standardization in, say, defence equipment among allied countries is necessary for security reasons, that mechanisms and regulations *do* exist for giving preference to Canadian products and contractors, that Canadian companies have benefitted from bilateral and multilateral purchasing programs such as the Canada-U.S.

[4]Science Council of Canada Report No. 15, *Innovation in a Cold Climate*, Information Canada, Ottawa, 1971. pp. 30 and 40.

[5]Science Council of Canada Report No. 4, *Towards a National Science Policy for Canada*, Information Canada, Ottawa, 1968. p. 24.

[6]*Electronics Communicator*, Teccom Publication, Don Mills, Ontario, July 26, 1971.

Defence Production Sharing Agreement, and that industry itself ought to adopt a "Buy Canadian" policy at the same time that it asks governments to do so.

But there are other, less visible, aspects associated with the purchasing-research transfer problems. For example, small companies may have difficulty obtaining the recognition of governments that their products are reliable, economical and serviceable. Provincial governments may adopt "Buy-at-Home" policies equivalent to the national policy to the disadvantage of more competitive manufacturers in other parts of the country. And the general economic environment of the past two years or so has resulted in increased "nationalism" in purchasing by foreign governments.

There seem to be at the heart of the matter two principal factors. One is the tendency of governments to place short-term interests before longer-term ones and to limit their overall cost accounting accordingly. The other is the lack of confidence that departments and agencies have in some domestic products and the associated difficulty of achieving significantly high Canadian content in others. But two qualifying statements must also be made. First, it is unlikely that Canadian manufacturers will ever be able to supply all of their governments' needs and, second, there are research programs that cannot and should not be performed in the private sector.

The Federal Purchasing System

The Royal Commission on Government Organization (J. Grant Glassco, Chairman) began its discussion of the purchasing and supply function of the federal government as follows:

"In the year 1960 the Government of Canada spent more than $1 billion for materials, supplies, equipment and services. In its warehouses across Canada it holds inventories worth between one-half and three-quarters of a billion dollars ....

"No other organization in Canada rivals the federal government in the wide range of its annual purchases, in the scale of its warehouse requirements, or in the value of its purchases. These vary from paper clips and pencils to icebreakers and jet aircraft, from missiles to school books, and from gasoline to milk. Four-fifths of the huge total is represented by purchases for the Department of National Defence. Among other departments and agencies, those with the largest volume of requirements are the Departments of Transport, Public Printing and Stationery, Public Works and Veterans Affairs, Atomic Energy of Canada Limited and the National Harbours Board."[7]

The Commission recommended that a central purchasing and supply agency should be established within the federal government structure to serve the majority of its departments and agencies and that the Department

[7]*Supporting Services for Government*: Report of the Royal Commission on Government Organization, Vol. 2, Queen's Printer, Ottawa, 1962. p. 77.

of Defence Production (DDP) should become the nucleus of this agency. This recommendation was not implemented fully until the establishment, in April 1969, of the Department of Supply and Services (DSS). The supply element of the new Department was based on DDP, with the addition of the Department of Public Printing and Stationery and the Shipbuilding Branch of the Ministry of Transport.[8]

In April 1971, with the authority of the Treasury Board, the DSS carried through a reorganization of its Supply Administration, deploying it into three separate services.

The Commercial Supply service became responsible for satisfying a range of requirements of a general nature, for example: apparel and textiles; food, drugs and medical services, metal products; fuels, chemicals and photographic supplies; paper products; furniture; vehicles, and certain electrical and electronic equipment. This Service is also responsible for the government printing operations and for warehousing.

The Engineering Procurement service became responsible for technically complex contracting activities involving aerospace products, the remaining electrical and electronic equipment, armament and mechanical equipment, and shipbuilding. Special branches of this Service deal with field contract administration and the management of major acquisitions. The Export Contracts Branch is responsible for the management of all procurement dealings with foreign governments and with the Canadian International Development Agency (CIDA): in other words, for the work of the DSS's subsidiary agency, the Canadian Commercial Corporation (CCC).[9]

The Corporate Management service of the Supply Administration became responsible for the integration of planning, policy formulation, contract performance evaluation, operational audit and other activities for the Administration as a whole. The work of the Canadian Government Specifications Board (CGSB) is now supported within the Technical Services Branch of Corporate Management.

The principal objective of the DSS Supply Administration is to acquire and provide in the most economical manner, goods and related services required by departments and agencies, including the Services Administration of the Department itself. The subobjectives are as follows:[10]

—to supply at minimum total cost a range of goods and services for which material management responsibility has been assumed;

[8]From 1963 to 1969, DDP was closely associated with the original Department of Industry.

[9]It is worth noting that the 1969-70 *Annual Report* of the Canadian Commercial Corporation, a Crown corporation in terms of its official status, included the following comment: "There is no competition between the Corporation and established export marketing and distribution channels and Canadian firms are perfectly free within Canadian government export policy to sell directly to foreign governments with whatever assistance the Corporation can provide. However, many Canadian firms find it an advantage to be able to contract for export directly with the Canadian Government (through CCC) in accordance with known standards and procedures and for foreign governments to be confident that in the light of distance, language problems and differing engineering standards the technical requirements will be fully and promptly met and that quality and delivery will be assured."

[10]*Federal Government Estimates, 1971-72*, (The Blue Book), Information Canada, Ottawa, 1972. p. 25-100.

—to provide effective purchasing and other related services to federal departments and agencies;

—to provide graphic arts, printing, reproduction and mass publications distribution services comparable in cost and efficiency to industry in the private sector; and

—to plan and have a readiness capability to put a War Supply Agency into operation.

The Department is currently the purchasing agency for some 125 federal departments and agencies, placing contracts for an estimated 80 per cent of all federal purchases for materials, supplies, equipment, etc. Some departments, such as Public Works, Transport, and Regional Economic Expansion, also have powers to enter into contracts in their particular areas of responsibility without reference to DSS. The remaining agencies, such as the Telesat Corporation, purchase independently of DSS.

The Annual Report of the Department of Supply and Services for fiscal year 1970/71 noted that almost 237 000 contractual documents were raised during the year for a net total of $823 million in purchases. The breakdown of this latter figure has been given in Table IV.1. The corresponding net total for fiscal year 1969/70 was $914 million for almost 200 000 contracts. In recent years the widest fluctuations in the value of contracts experienced by predecessor departments of DSS has been in the defence procurement field. In recent years, also, the value of purchases by the central federal agency of products made, and material processed, by industry in Canada have been in the neighbourhood of $500 million a year. The most important source of technically sophisticated equipment purchases has been the Department of National Defence.[11]

Table IV.1–Dollar Values of Purchases by the Department of Supply and Services during Fiscal Year 1970/71

Contract Type	Net Total Value $ Millions
Procurement – Domestic:	
Defence	404
Civil	205
Procurement – Foreign:[a]	
Defence	131
Civil	42
Industrial Assistance:[b]	41
Net Total	**823**

[a]Includes purchases made by Foreign Governments and External Aid Agencies through the Canadian Commercial Corporation.
[b]Includes contracts paid out of Department of Industry, Trade and Commerce votes.
Source: *Annual Report 1970/71*, Department of Supply and Services, Ottawa, 1971. p. 21.

[11]It should be noted, however, that the responsibility for the *operation* of the Canada-U.S. Defence Production Sharing Agreement now rests with the International Defence Programs Branch of the Department of Industry, Trade and Commerce and not with the DSS or its subsidiary, the Canadian Commercial Corporation. (In the past the Corporation has acted as purchasing agent on behalf of 30 to 40 countries of which the United States has been the largest from the point of view of purchases. Since U.S. offshore defence expenditures have been reduced considerably, the Corporation has been looking elsewhere for new business, particularly in South American countries and in those countries that were once British Colonies in the Caribbean. The CCC does not intend, however, to duplicate the services and efforts of the Department of Industry, Trade and Commerce.)

Until quite recently it has not been the policy of the Department of Supply and Services, or of its predecessors, to give warning of buying plans in advance of the start of the actual negotiations, but this situation may be changing. In December 1971, about 150 senior and middle management people from Canadian electrical and electronics firms were invited to Ottawa, for the first time, to receive detailed briefings on the five-year buying plans of the Department of National Defence and the Ministry of Transport. They were also briefed by the Department of Industry, Trade and Commerce on the airports-for-export program. The invitations were arranged by the DSS through the Electronics Industries Association of Canada. The visitors were warned by government officials that Canadian suppliers would face stiff competition from abroad, especially from Britain and France. With regard to the airports-for-export program, however, the Department of Industry, Trade and Commerce has been taking steps to safeguard the interests of companies in Canada likely to participate in this program.

With regard to future equipment purchases by the Department of National Defence, it should be noted that the Canada-U.S. Defence Production Sharing Agreement has, since 1959, shown a surplus in Canada's favour. This fact has been under attack from the U.S., especially since August 1971, and in the present economic climate it seems likely that the United States Government will press strongly for a reduction in the surplus. The Agreement itself is currently under renegotiation. In addition, defence procurement has been declining steadily in importance in Canada for a decade and, with the possible exception of limited-term aircraft replacement requirements, it is unlikely that projects and programs now in being or in the planning stages will reverse this trend to the advantage of domestic manufacturing industry.

The Minister of Supply and Services, the Honourable James Richardson, announced another new policy development in the House of Commons on June 12, 1972, that is being designed to give suppliers in the principal regions of Canada more equal shares of federal business. The Minister said, in part:

"The policy I am developing . . . has three main characteristics or three main parts. The first part, which is still in the nature of an objective, is that we propose to establish federal government purchasing targets within four large regions of Canada. These targets would be based roughly upon the population in each region. . . .

"The second characteristic of this evolving policy – and this part in fact is now being implemented and is policy . is to increase the amount of purchasing done through our regional offices. . . .

"Finally, the third and most important characteristic . . . which I think should be considered relates to the cost of transportation. It is apparent to everyone that in a country of vast distances there are many companies that are a long way from the destination where the goods are required and thus are prevented from bidding effectively because of transportation costs. . . . A proposal which I intend to discuss further with my colleagues is the establishment of a policy under which any Canadian who wishes to sell

to his national government can bid on the basis of his costs at his plant."[12]

The Minister went on to say that the proposed policy would be one way to demonstrate clearly that the federal government meant what it said when it spoke of equality of opportunity for Canadians in all parts of Canada. The Minister's proposals would, in all probability, encourage manufacturing companies to take advantage of location incentives offered by the federal and provincial governments.[13] The transportation proposal would presumably help to erode the advantage enjoyed by suppliers in Central Canada which currently provide over 80 per cent of the federal government's needs. On the other hand, the proposals could increase the cost of the administration of federal purchasing and relax a little the centralization so strongly recommended by the Glassco Commission. But the proposal may add yet another hazard for innovatively-minded manufacturers already burdened by the lowest bid rule in general operation throughout DSS. The government may lose twice if these particular manufacturers have taken advantage of federal research or development grants only to be by-passed in favour of run of the mill producers with lower prices located a thousand miles from Ottawa.

The Minister of Supply and Services has the authority under Section 11 of the Departmental Act to prescribe the terms and conditions for purchasing and other contracts negotiated by the DSS. However, the primary authority for the overall regulation of the majority of contracts administered by federal departments and agencies lies with the Treasury Board under the terms of Section 34 of the Financial Administration Act. The Board makes known its regulations in detail by means of the *Treasury Board Manual*.[14]

The Treasury Board's authority also influences the budgetary system throughout the federal government and, consequently, the financial resources placed in the hands of the individual departments and agencies. Since the publication of the Report of the Royal Commission on Government Organization, the policy followed by the government and the Treasury Board with regard to the management of these resources has changed. As a former Secretary of the Board has written:

"The government approved two major recommendations of the Glassco Commission that made improvement in financial management

[12]Canada, *Hansard*, House of Commons Debates, June 12, 1972. p. 3039.

[13]The DSS would then be *helping* the Department of Regional Economic Expansion with its work, something that receives little attention from government critics. On the other hand, the proposed new Competition Act introduced in June 1971 but later withdrawn (see Chapter 9) included provisions that would have prohibited discounting for bulk purchases – a feature that would negate DSS efforts to make procurement dollars go further.

[14]The full procedures of the federal contract system cannot be discussed in this present study. Needless to say, the system is a complex one. That the Treasury Board itself has recognized this fact is shown by the following quotation from one of the Board's own publications (*Financial Management in Departments and Agencies of the Government of Canada*, Treasury Board, Queen's Printer, Ottawa, 1966. p. 47) as follows: "History records that Alphonso X of Castile, called the Wise, was not only a man of piety but a great patron of astronomy. When he was initiated into the intricacies of the Ptolemaic system, with its epicycles, excentrics, and deferents, he sighed: 'If the Lord Almighty had consulted me before embarking on the Creation, I should have recommended something simpler'."

the joint task of the Board and the departments. The first recommendation would give to departments the necessary financial authority to hold them accountable for the effective management of financial resources placed at their disposal, while the second provided for the Treasury Board to continue to lay down policies on financial and administrative matters, but in a less restrictive manner. Only an active partnership can do the job."[15]

More recently, with the introduction of the Program, Planning and Budgeting (PPB) system throughout the federal government and the extension of the Cabinet committee system, the role of the Treasury Board has been further modified. It has become the Cabinet's Committees on the Expenditure Budget and on Management. The present secretary of the Board, A.W. Johnson, has written:

"As the Committee on the Expenditure Budget it is for the Treasury Board to propose to Cabinet the allocation of funds as between the myriads of competing programs and projects, taking into account three things: the priorities of the government and its broad policy directions; the effectiveness of the programs in achieving the government's objectives; and the efficiency with which the programs are being administered....

"The job of the Treasury Board as the Cabinet Committee on Management, on the other hand, is to establish on behalf of the government the administrative policies or regulations – the constraints, in short – which are seen by ministers to be desirable in guiding or governing departments in the use of public funds which have been allocated to them."[16]

In his paper, Mr. Johnson drew attention, in turn, to the Board's role in pulling individual program proposals together and in the articulation of choices, to its role in obtaining, through its Secretariat, better information on the efficiency of the activities of the individual departments, and to its role in determining, for example, what procedures should be followed in the awarding of contracts for equipment, capital structures, services, by the central authorities. With regard to contracts, Mr. Johnson wrote:

"Where in the letting of contracts price is the sole determinant, it is possible for the Board to establish the simple requirement that all contracts will be let on the basis of the lowest tender. Where, however, this is not the case – where uncertain factors such as quality and service enter in, or where other government objectives are being pursued through procurement policies – the Treasury Board has established the requirement that all such contracts, valued over a certain amount, be approved by the Board or its Secretariat."[17]

[15]George F. Davidson in the Preface to *Financial Management in Departments and Agencies of the Government of Canada, op. cit.*

[16]A.W. Johnson, *The Treasury Board of Canada and the Machinery of Government in the 1970's*, Canadian Journal of Political Science, University of Toronto Press, September 1971. Vol. 4, No. 3, p. 346-7. Mr. Johnson's paper contains no discussion of, for example, the "Buy Canadian" problem.

[17]*Ibid*, p. 363.

"Make-or-Buy Decisions"

The Glassco Commission looked closely into "Make or Buy" decisions throughout the federal government's operations. The following are three pertinent paragraphs from its Report:

"It should be apparent that each venture into a secondary field of activity by government is attended by added responsibilities and increased complexity of management. On these grounds alone such involvement should be avoided to the greatest possible extent. But cumulatively these secondary activities of government can prejudice the position of the private sector through the withholding of a volume of business which could stimulate development and initiative. A not unimportant incidental benefit is that the government itself stands to gain from the tax revenues derived from the profits of those industries which obtain government orders...."

"The government can often, although not always, obtain its requirements from private enterprise. In choosing this alternative, the government needs personnel to plan, to establish specifications, to negotiate and contract with suppliers, and to inspect the products supplied. However, the staff required for these purposes are few compared to the numbers involved when the government undertakes the activity itself...."

"Since the government's total purchases probably make it the largest single market for the products of Canadian enterprise, 'make or buy' decisions should not be framed without concern for the welfare of present or potential suppliers. The government, in meeting certain of its own needs from its own resources, may deprive the outside suppliers of a significant market, thereby discouraging the creation or growth of secondary industries."[18]

It has not been possible to review the contemporary circumstances under which federal departments, agencies and Crown corporations "make" rather than "buy", as was done by the Royal Commission. It is clear, however, that in the years between the publication of the Commission's Report and the present time there have been changes in the federal government's approach to the management of its budgetary operations. The Treasury Board has become increasingly concerned about ways of measuring departmental and agency "productivity". The Board has also undertaken organization "audits" designed to provide harder information on which its own judgements will be based. Information resulting from management studies by the departments themselves has increasingly been used as input material for the budgetary process. But being a very large and diverse organization, the federal government's progress in these areas has not been rapid. There have been a number of constraints, for example, departmental and agency programs still need to be responsive to Parliament and to the short-term demands of changing economic and political circumstances and teething troubles can be expected following the introduction of new methods of financial and contract administration and control. Some of these new methods also have disad-

[18] *Supporting Services for Government, op. cit.*, pp. 318, 319, 322

vantages in the longer haul if they give rise to little more than bureaucratic rigidity and the production of large quantities of paper and reports.

The federal government has also adopted the twin concepts of the decentralization of decision-making with regard to the details of management at the operating level and of freedom of choice to manage at these levels within approved budgetary limits.

The Board does not normally *oblige* managers to purchase goods and services from outside suppliers.[19] Nor does it insist that, in every case, the government's own facilities and services should be used where these exist. But most managers must write contracts in cooperation with the centralized authorities, must utilize the available facilities and services whenever possible, and must seek from their superiors and from the Treasury Board approval to increase their own operations, as the regulations require. In practice, therefore, the departments find it easier to "make" rather than to "buy" because the procedure to accomplish the latter is more difficult to complete expeditiously and because the current system of management rewards does not recognize the difference between "making" and "buying".

It is not enough for the Treasury Board to adopt the principle enunciated by the Glassco Commission that decisions to "make" rather than to "buy" should be taken only on the basis of conclusive evidence of the unavailability *on reasonable terms* of the required goods or services from outside the government.[20] The adoption of such a principle requires clarification, qualification and regulation by the Board – all of which might defeat the Board's desire to promote departmental responsibility and efficiency, a department's desire to be increasingly independent in its decision-making and in the operations of its managers, and industry's desire for more business through increased flexibility and decreased regulation by government authorities.

The "Make-or-Buy" situation can be complicated further by a number of other considerations and circumstances:

– if, after undertaking a program of product or service development at the insistence – and with the help – of a customer department, a company is not then assured of enough follow-on business to justify its participation in the development stage;

– if suppliers are unable to see sufficient opportunities for continuing business in new or improved product lines to encourage them to invest in additional manufacturing facilities, post-sale services, etc.;

– if departments overspecify their technical and performance requirements and make the problem of product or service supply by industry unduly difficult or even impossible;

– if a department has invested in new plant and equipment and, lacking the anticipated degree of use, must then "sell" the use of the plant and equipment to other departments and agencies;

– if the government's own mechanisms for anticipating future technology-based needs are faulty, inactive or inadequate, either in the depart-

[19]The recently announced policy for contracting-out the government's research needs would be an exception (See the discussion below on Research Transfer Programs).

[20]*Supporting Services for Government, op. cit.*, p. 319. The italics are the author's.

ments or in DSS, and research and development contracts are not placed sufficiently early to ensure manufacture at the proper time;

– if the Armed Forces, in support of their roles and responsibilities, seek an unnecessarily high level of self-sufficiency;

– if manufacturers are asked to reserve unused plant capacity against the possibility of an emergency but without assurance of compensation for so doing; and

– if profit levels allowed to contractors are held at 10 per cent, or some such figure, and are not allowed to vary according to the technological uncertainties and commercial risks involved in individual contracts.

A new element in the "Make-or-Buy" situation has become increasingly important in recent years. The growth in the business of leasing equipment has added a "Rent-or-Buy" option to conventional procurement. The most visible examples of this option have perhaps been in the computer field. It has not been possible to estimate the dollar value of the federal government's current leasing agreements, but it is safe to say that the trend over the years has been upwards. Leasing can of course be practised *within* government, in which case the basic decision is once again of the "Make-or-Buy" kind.

How then may manufacturing industry in Canada, in particular, be assured of a greater share in the supply of federal government needs for matériel and services? Industry is caught in a three-cornered box of the government's making. In one corner is the need to adopt a principle and to regulate it consistently and effectively. In the second is the stated policy to decentralize operational decision-making within a budgetary framework. In the third is the centralization of the government's contract-letting activities. The government, on the other hand, is in a box of industry's making, circumscribed by industry's willingness and ability to meet government needs. The answer to the question seems to have several parts to it.

One part lies in regular briefings for industry on potential purchases by the federal government in specific industry sectors, such as took place recently under the initiative of DSS. Another lies in more appropriate cost accounting and stiffer budgetary tests being incorporated into the arguments made by departments and agencies for the provision of new equipment, facilities and services. The initiative for instituting these procedures and tests will rest with the Treasury Board. A third part lies in improved technological forecasting and anticipation of longer-term departmental and agency purchasing requirements and in a steady expansion, by the departments and agencies themselves, in the contracting-out of their future research needs.[21] A fourth lies in the need for a flexible financial approach to government purchasing, an approach which takes into account the longer-term improvement of the capabilities of manufacturing and service companies in Canada and of resident-owned companies, in particular, where this is appropriate. The initiative in this regard will rest with the Treasury Board and the Department of Industry, Trade and Commerce as well as with the departments and agencies themselves.

[21]The recently approved federal "contracting-out" policy should assist this expansion.

"Buy Canadian" Decisions

"Buy National" or "Buy Provincial" decisions are a special class of "Make-or-Buy" decisions. They may be taken as part of a conscious and formally stated government policy, under a statute or set of regulations. They may be taken under an unwritten law built on experience or precedent. Or they may simply be the most sensible ones to take in particular circumstances.

Arguments in favour of a "Buy Canadian" policy for the purchase of the products of manufacturing industry can be persuasive:

– New Canadian manufacturing activities usually mean more Canadian jobs, tax revenues, and other multiplier effects.

– At the present time, Canada has unused manufacturing capacity, unemployed people, unemployed and under-utilized scientists, engineers, technicians and managers, and under-processed natural resources. Imports make few contributions to the improved allocation of these resources.

– Unless Canadian companies can be assured of satisfactory shares of the domestic market, their competitive abilities at home and abroad may be less effective or non-existent.

– Canadian companies are often reluctant to enter fields of manufacture in which the resources and selling techniques of foreign companies can corner the government procurement market. This is especially true in the newer, and more risky, technology-based fields of manufacture. The danger is that, in the shorter-term, Canadian sources of supply may disappear altogether, or not appear at all, even in certain fields in which the longer-term potential for them may be exceptional.

– The ability of Canadian manufacturers to sell particular products abroad, to both government and non-government customers, can be seriously impaired if the government at home does not purchase these products from domestic sources.

– The existence of a more attractive government procurement policy could help to improve significantly the research, and particularly the development, capabilities of Canadian companies. But not only will R & D activities in industry be encouraged: market opportunities will also be opened up.

– The federal government should not rely on foreign sources of equipment that may be cut off in emergency situations.

– As taxpayers, and as employers of taxpayers, manufacturing companies in this country should have a larger role to play in the use to which tax revenues are put.

– Some "unfriendly" governments have statutory "Buy National" policies or administrative policies which include, for example, provisions forbidding tendering by non-domestic companies. Canadian companies cannot compete for business subject to these exclusions although, at home, firms based in these "unfriendly" countries are usually permitted to compete for government business.

Arguments against a "Buy Canadian" policy for manufacturing can also be persuasive:

– A "Buy Canadian" policy can be used as a crutch to prop up weak

or ailing companies or industries. Canadian manufacturers have performed ineffectively in the past in the face of international competition, so that the policy may have little or no beneficial effect. Indeed, it is likely that the taxpayers' dollars would buy less than they do now.

– Canadian companies, including branch plants and subsidiaries, do not make all of the products required by government. To apply the policy to some goods and not to others creates uncertainty and administrative problems.

– The "best" products, especially in high-technology fields, are often foreign-made. A "Buy Canadian" policy would limit the government to the purchase of many second-class products, and most likely at greater cost to the taxpayer.

– Manufacturing industry is only one of the major sources of tax revenues, employment, and "multiplier" effects in Canada. The commission of more resources to the extractive industries and the service industries may provide more effective results from the national point of view.

– The majority of the manufacturing activities in this country take place in Quebec and Ontario. A "Buy Canadian" policy would not necessarily help the other regions.

– A "Buy Canadian" policy will not reduce the competition for government business significantly in every case. The competition will simply be limited to domestic companies. In practice, the fact that a winning bid was domestic rather than foreign will be of little comfort to a losing Canadian bidder.

– Technology and government need may move faster than the ability of Canadian industry to develop, design, produce and have approved alternative products to those currently available from abroad. The penalty for waiting may also include lost efficiency which again may also be costly in financial terms.

– Military requirements, which form a significant proportion of federal procurement, are frequently subject to specifications of foreign origin and, hence, must also be manufactured abroad in order to meet these specifications at a reasonable cost.

– Canada has a more open economy than most other countries. Those countries whose companies are unable to tender and supply to the government of this country may therefore raise similar or other barriers to the participation of Canadian companies in their own markets. Alternatively, they may refuse to buy any more staples or raw materials from Canada.

– Unless modified by an implicit selection process, the extensive and sustained shift away from foreign sources of manufactured goods towards domestic ones may present difficulties for Canada's balance of international payments. Such an unmodified shift might aslo reduce the government's ability to manoeuvre in the field of international trade as a whole.

– Canadian industry, itself, has no general "Buy Canadian" policy. Although temporary situations, such as the introduction in August 1971 and subsequently, of restrictive measures on trade with the United States may encourage domestic purchasing, the penalties on profits are too high for the policy to become a long-term one.

To some of the proponents of "Buy Canadian" policy, the term itself

is construed to mean "Buy from a resident-owned and resident-controlled company". To others, it means buying from suppliers in Canada whatever their ownership or control rather than from suppliers abroad. Unfortunately, this deceptively simple divergence of opinion becomes quite a complex matter in practice. For example, it is possible that particular purchases from a resident-owned company may have a lower *Canadian content* than similar purchases from a foreign-owned one. Again, it is possible that equipment purchased from a resident-owned company and made entirely in Canada may incorporate foreign technology and specifications and may use patents owned by non-residents. In the last analysis, the ownership and value added aspects of a "Buy Canadian" policy and the associated question of technical control will require resolution from the political point of view.

The above points by no means exhaust the arguments on both sides. They serve, however, to illustrate the fact that the decision to adopt a "Buy Canadian" policy by the federal government in Canada will not be an easy one to make. But the fact remains that the government already has some means of favouring domestic companies and domestic manufacturing. For example, the Department of Supply and Services may apply a premium of the order of 10 per cent in order to accept a Canadian tender over a lower tender from a foreign-based company. Preference may also be given on the basis of Canadian content. With regard to content, when accepting the general conditions for a firm price purchase contract, a domestic company must agree as follows:

"(1) The contractor shall use Canadian labour and materials in carrying out the work, to the full extent to which they are procurable, consistent with proper economy and the expeditious carrying out of the work.

(2) Subject to subsection (1) the contractor shall employ labour from the locality where the work is being executed if it is available."[22]

The "Buy Canadian" problem may be resolved in a number of ways without resorting to legislation. It should be possible, for example, for the federal government to follow the lead of some American states by increasing significantly the premiums payable for purchases made from Canadian companies, especially when high Canadian content and domestic technology are involved. It should also be possible for the departments concerned with procurement to restrict supply sources in such a way that will favour Canadian suppliers. Exclusive supply agreements might be worked out on conditions favourable to the government and to the companies concerned. Premiums could also be paid to domestic companies, at the same time as procurement contracts are written, for additional design and development efforts put into specific products or product lines. On the other hand, it should be possible to retain the existing "Canadian" premium for run of the mill products and to apply higher premiums or foreign-supply exclusions on a discriminatory and selective basis.[23]

[22]DSS General Conditions S-100A (Supplies-Firm Price), Section 20(1) and (2).

[23]Parliament – and the Auditor General – may object, however, to foreign supply exclusions that increase the cost of purchases to the taxpayer beyond "reasonable" limits and compensatory benefits.

A Note on Purchasing Restrictions by Foreign Governments[24]

Government purchasing policies and procedures have been the subject of international agreement and study. For example, under the General Agreement on Tariffs and Trade (GATT), government purchasing policies were excluded from the basic non-discriminatory rule of the Agreement. Under the Treaty of Rome, on the other hand, preferential treatment for domestic producers in relation to producers in other member countries has, with some exceptions, been forbidden. The OECD has had a study of government purchasing under way for several years with a view to establishing internationally acceptable guidelines. The stimulus for much of the international interest appears to have been the rapidly growing levels of government procurement among the industrialized nations of the world.

Perhaps the restriction with which Canadians are most familiar is the so-called "Buy American" Act. The original Act was passed in 1933, during the Depression years, and spelled out the general policy to be followed by U.S. Government Departments and independent agencies when purchasing materials for public use in the United States. The law required that these materials be of domestic origin unless:

– the head of the department or agency decided that such a purchase would be inconsistent with the public interest,

– the department or Agency head found the cost to be unreasonably high, or

– the materials were not available in the U.S. in the required quantities and of the required quality.

A subsequent Executive Order, No. 10582, issued in 1954 indicated that materials would be considered of foreign origin if foreign products accounted for half or more of the cost of all of the products used in the materials. The Order also stated that a domestic price would be considered "unreasonable" if it exceeded the delivered cost of the foreign material, including duty, by 6 per cent. This 6 per cent rule could be waived in the "national interest". On the other hand, departments and agencies were made responsible, under the Order, for placing a "fair proportion" of orders with small business firms and with companies which would manufacture in areas of substantial unemployment. In 1955, these two classes of companies were allowed a total of 12 per cent price preference over foreign suppliers.

Another discriminatory practice with which some Canadian manufacturers are familiar is the denial, by foreign government agencies, of permission to tender for particular classes of products, for example, heavy electrical machinery. This practice has been considered especially objectionable when reciprocal denials have not been made by the governments in Canada. Of three possible types of government-initiated tendering, public, selective and private, the available evidence would seem to indicate that the governments of Western Europe do not favour the first method and make extensive use of the third. In non-defence procurement, however,

[24]A much more comprehensive discussion of this subject has been included in Robert E. Baldwin, *Nontariff Distortions of International Trade*, Chapter 3, The Brookings Institution, Washington, D.C., 1970.

the United States Government makes extensive use of public tenders. It is of course possible for a government to accept the principle of permitting foreign bids under public tenders but to sabotage the process by failing to provide the potential bidders with sufficient information. Other artificial barriers to foreign bidders include special residence requirements, short time periods for bidding, and reciprocity in overall balances of payments.

The available evidence seems to point to the fact that individual governments normally give some preference to domestic firms in the supply of goods and services for public use. The following additional broadly-based restrictions are relevant to the abilities of Canadian manufacturers to tender successfully for purchase contracts awarded by foreign government departments and agencies:

– In the public works and civil engineering construction fields, contract awards are usually limited to domestic firms or to foreign firms which can qualify as domestic ones.

– In those cases in which there are two equal "lowest bids", preference will be given to the domestic firm.

– In procurement to meet national security requirements, and particularly when domestic firms can supply the high-technology products required, preference will be given to these domestic suppliers.

– Preferential treatment may be given to small companies, small *new* companies, and companies manufacturing in depressed areas.

– Except where bilateral or multilateral agreements exist, countries which sell large quantities of staples and raw materials may find themselves under government pressure to purchase, in return, the high-technology products of their resource-poor customers in order to ease balance of payments difficulties.

Research Transfer Programs

As mentioned at the beginning of this chapter, the federal government announced in the Spring of 1972 that it would take steps to have more of its own research and development needs supplied under contract from Canadian industrial laboratories.

This aspect of an overall "Make-or-Buy" policy was developed by the Ministry of State for Science and Technology. Initially, contracts are to be awarded for new R & D projects, but additions to existing in-house projects may also qualify in certain cases. Particular emphasis is being placed on the encouragement of research and innovation in the manufacturing sectors of industry. Later, the new policy may be extended to include other sectors and the service industry. Criteria are to be applied by federal departments and agencies to help them decide whether new R & D projects should be assigned to industry or whether, for some cogent reason, they should be performed in-house.

Among the other features of the new policy are these:

– Although some unassigned research projects for the fiscal year 1972/73 may be affected, the policy will not be in full operation until fiscal year 1973/74.

– There will be no "target" percentage of federal research require-

ments that must be contracted out to industry.

– The Department of Supply and Services is to undertake the task of finding companies to perform the contract research and development work for the government. Dss has had no previous experience in this field.

– There will be no firing or lay-offs among the government's own research and development staffs.

– The new policy is intended to create new jobs in the industrial laboratories and outside of them.

– In most cases, R & D contracts will be awarded to Canadian-based companies.

As might be expected, the new policy has been generally welcomed by industry, but some government researchers are less enthusiastic. The question of whether it will be successful in practice will not be answered for some time to come. It is an addition to the federal government's portfolio of industrial assistance programs, although the initiative in formally proposing the individual projects will be taken by departments and agencies in the light of perceived government needs rather than by industry sectors or individual firms in response to their own particular needs and opportunities.

While the announcement of the new policy has resulted in the revision of some of the original text of this final section of Chapter 4, it has not made a brief review of the situation as it was in the recent past entirely superfluous. And, since the contracting-out of research performance is only one aspect of the research transfer problem, there are still some other aspects of the problem that should be covered. The analysis that follows proceeds along these lines with particular reference to the federal level of government.[25]

The view that the Canadian federal laboratories have been performing research and development work that could have been more effectively done by the manufacturing industry is not a new one. Support for this view has been given over the years by various sources of which three have perhaps carried more weight than the others. The first is the fact that, in most industrially-developed countries, the manufacturing industry has consistently performed higher proportions of national R & D activities than has been the case in Canada and their governments have performed consistently lower proportions. Second, Canada has relied very heavily on imported technology. And, third, manufacturers' laboratories are a lot closer to the market place than are government laboratories. On the other hand, governments *do* have research requirements that cannot always be adequately or effectively met by the manufacturers' laboratories, for example, some kinds of research associated with defence and security matters, most of the research associated with codes, standards and regulations, and research involving projects that are beyond industry's need or capacity to

[25]A detailed discussion of the formal scientific and technical dissemination activities of the federal government has not been included, nor have comments been made about transfers across the government: university interface. The present information dissemination and other research transfer activities of eight of the provincial governments have been analysed in another report in this present series. Andrew H. Wilson, *Research Councils in the Provinces: A Canadian Resource*, Science Council of Canada Special Study No. 23, Information Canada, Ottawa, 1972.

support or perform. In the past, federal departments and agencies have of course contracted out some of their research requirements. The available statistics show that, between 1963/64 and 1970/71, the sum of the federal expenditures on R & D contracts in industry *and* on cost-shared assistance programs with industry averaged around 19 per cent of total annual federal R & D expenditures.[26]

Table IV.2 shows a breakdown by departments and agencies, in fiscal year 1971/72, of the estimated costs of federal support for intramural research and development, for R & D performed in industry, and for university and other research. The leading position of the Department of Industry, Trade and Commerce in support of industrial R & D has been well established by the figures, but this support was given by means of the PAIT, IRDIA and DIP programs. After deducting the IT&C contribution and the support provided to industry by means of the IRAP and DIR programs of the National Research Council and the Defence Research Board, the figure remaining, approximately $45 million, or about 7 per cent of the total federal support for all sectors, represents the value of the R & D contracted out to industry. This figure also represents about one-third of the value of the grants, etc. awarded by the federal government for research in the universities and elsewhere. The leading "contracting-out" agencies were Atomic Energy of Canada Limited (AECL) and the Department of National Defence.[27] The positions of the Departments of the Environment, Health and Welfare, and Agriculture as effective "non-contractors" were also notable, as were the relatively low positions of the National Research Council, especially after the IRAP funds have been omitted, and the Department of Energy, Mines and Resources. It appears likely, however, that almost all of the contract support went to manufacturing and processing industries.

The federal government's new contracting-out policy will obviously not convert anything like $350-odd million of intramural expenditures, or the equivalent aggregates of future years, into contracts with industry for research and development work. It is possible that the combined spending of $100 million or so through PAIT, DIP, IRAP, DIR and IRDIA could exceed the contract funds for some years to come. On the other hand, if the government's contracting program is attractive enough, some or all of these five programs could lose their appeal.[28]

One federal agency which performs no research of its own, and sponsors little of it at the present time, has key responsibilities for the transfer of research *information* to industry. Canadian Patents and De-

[26]Expenditures on the IRDIA program are not included in this arithmetic. *Scientific Activities: Federal Government Costs 1958-59 to 1971-72*, Ministry of State for Science and Technology, Information Canada, Ottawa, November 1971.

[27]The interests of the Atomic Energy Control Board (AECB) were principally in the support of university research.

[28]It should be noted in passing that, in the reverse direction, federal departments and agencies undertake research, testing and design work on the basis of need (and on repayment) on behalf of industry. One very active federal unit performing this kind of work is the Manufacturing Technology Centre in the Division of Mechanical Engineering of the National Research Council. Government laboratories also rent out some of their facilities to industrial companies. One example would be the wind tunnel facilities of the National Research Council at Ottawa.

Table IV.2–Federal Government Research and Development Expenditure Estimates for Fiscal Year 1971/72

Department or Agency	Intramural Expenditures	Expenditures in Industry		Universities and Others	**Total**
	$ Millions	$ Millions	Per cent of Total Expenditures by Department or Agency	$ Millions	$ Millions
National Research Council	50	9	7.6	59	**118**
AECL and AECB	59	22	24.4	9	**90**
Department of Environment	83	1	1.1	4	**88**
Department of Industry, Trade and Commerce	2	83	96.5	1	**86**
Department of Agriculture	68	0	0	1	**69**
Department of National Defence	41	17	27.4	4	**62**
Department of Energy, Mines and Resources	27	3	9.7	1	**31**
Department of National Health and Welfare	6	0	0	20	**26**
Department of Communications	12	4	25.0	0	**16**
Others	10	1	2.0	38	**49**
Total	**358**	**140**	**22.0**	**137**	**635**

Source: *Scientific Activities*: *Federal Government Costs 1958–59 to 1971–72*, Ministry of State for Science and Technology, Information Canada, Ottawa, November 1971.

velopment Limited (CPDL) is the Crown corporation which licences inventions made and patented by those federal and provincial agencies and universities on whose behalf it has been empowered to act.[29] Formed in 1947 as a subsidiary of the National Research Council, CPDL was eligible at the end of fiscal year 1970/71 to accept and manage the administration of patents for all federal departments and agencies.[30] It also had agreements with 23 Canadian universities and 14 provincial and other organizations operating wholly or partly with public financing. Since 1947, CPDL has received patent proposals from 29 federal departments and a total of almost 3 000 proposals from all sources, 249 of them in fiscal year 1970/71 alone. The origins of the latter are shown in Table IV.3. Of these 249 proposals:

– 40 per cent were types of instruments,

– 20 per cent were for performing operations such as separating, mixing and shaping,

– 10 per cent *each* were electrical-electronic, chemistry/metallurgy, and mechanical, and

– 10 per cent were distributed among drugs, foodstuffs, textiles, paper, etc.

Table IV.3–Origins of Patent Proposals to Canadian Patents and Development Limited During Fiscal Year 1970/71

Department or Agency	Number of Proposals
National Research Council	55
Department of National Defence	10
Atomic Energy of Canada Limited	20
Department of Energy, Mines and Resources	21
Department of Fisheries and Forestry	18
Department of Agriculture	5
Other federal departments and agencies	10
Federal Government Sub-Total	*139*
Universities	96
Provincial Research Councils	6
Other Sources	8
Total	**249**

Source: *Annual Report 1970/71*, Canadian Patents and Development Limited, Ottawa, 1971.

During 1970/71, CPDL filed first applications for patents on 57 inventions, and made 244 further applications abroad. Over the years, CPDL has filed in 61 different countries and has had an accumulated issue of patents on 968 different inventions. As at March 31, 1971, the corporation had licences in force on 261 inventions – in 144 different companies – out of the total of 750 available for licensing. CPDL's gross royalty earnings for 1970/71 were just over $481 000; most of it from a handful of inventions. During the year the Corporation spent only $41 762 to assist licensees with

[29]Additional comments on CPDL activities have been made in another study in this present series: Andrew H. Wilson, *Background to Invention*, Science Council of Canada Special Study No. 11, Information Canada, Ottawa, 1970. pp. 33-35.

[30]CPDL does not always have full management. For example, the Department of National Defence handles the patenting of its inventions, with CPDL becoming responsible subsequently for the commercial exploitation of those that the Department considers can be released to the corporation.

the costs of developing its inventions, a decrease from the previous year of about $30 000. The following comment in the Corporation's *Annual Report* for 1970/71 is of interest:

"$36,000 of the 1970/71 total was [for] financial assistance to licensees for developing inventions they had licensed and $5,762 was for improving inventions, i.e. preliminary development, to make them more attractive for licensing. The decrease from previous years in the amount of financial assistance to licensees reflects the increased use by our licensees of the PAIT program .... However, the year's operations did show a continuing need for CPDL assistance in circumstances in which the amounts of individual support required quick responses and were in the order of $35,000 or smaller."

The Crown's equity in CPDL is of the order of $1 million, most of it in the form of investments in bonds. The Corporation's operations have been self-financed from royalties and licence fees, investment income, profits from the sale of investments, and service charges. CPDL has no authority over the promotion of the kinds of R & D which would make its patent portfolio more valuable. In recent years it has come to work more closely with the Department of Industry, Trade and Commerce (IT&C) whose PAIT program it encourages its licensees to use.

CPDL has been a useful research transfer agency but its activities have not been uniformly successful. The Corporation has not yet achieved anything like its full potential. As has been pointed out elsewhere,[31] there have been two main reasons for this, namely, the Corporation's efforts have been too thinly spread and too timid, and the "raw material" it has had to work with has often been unsuitable for exploitation by industry. On the other hand, Canadian industry has not been noted for its enthusiasm in support of the exploitation of products originating in government laboratories.

Two possible solutions to the problem of CPDL's effectiveness suggest themselves. First, the Corporation could retain its independence but be re-financed to increase its ability to back new development and exploitation programs, in competition with IT&C if necessary. This particular alternative might help promote more and larger joint ventures with industry as well as providing access to increased, and hopefully, speedier, development support. Secondly, the Corporation could be merged with IT&C under conditions which would also speed up approvals for development funds and increase the promotion of licences.

[31]Andrew H. Wilson, *Background to Invention, op. cit.* p. 35.

V. Taxation

Until the White Paper appeared, Canadians thought they had the worst tax system in the world. Now they're not so sure![1]

Taxation is a most complex subject, particularly if the tax laws of other countries as well as those of Canada are taken into account. This present essay chapter is not a learned dissertation on the subject. It is simply a first-step analysis which has three broad aims. The first of these is to look at the Canadian tax system and policies and some of the ways in which they act as incentives or disincentives to manufacturing activities in this country. The second is to examine the various stages of tax reform in Canada, beginning with the federal White Paper of 1969.[2] The third is to look into the question of tax incentives as they apply to activities associated with technology-based innovation. Although particular emphasis will be given to the taxation of corporate incomes, there will be some discussion of personal income and other kinds of taxation.

The sheer complexity of present-day tax matters has placed limitations on the type of analysis which can be carried out in a general study such as this present one.[3] Other limitations have been imposed, for example, by the fact that the full implications of the recently passed federal tax reform legislation have not yet been worked out at the federal and provincial levels of government. This chapter, therefore, will deal only with the principal reform provisions and with the principal tax changes announced in the federal budgets of June and October 1971, and May 1972.

It should also be mentioned that comparative tax calculations have not been included in this chapter, and no attempt has been made to develop sophisticated correlations between tax levels and innovative activities in manufacturing industry as a whole. As part of the preparatory work for the report, a number of trial calculations were made, for example, to demonstrate the tax advantages of manufacturing in Province A rather than in Province B or in Canada rather than in the United States. But these were considered to be beyond the scope of the chapter and the study for three principal reasons. First, the arithmetic itself, and the explanations of how the arithmetic was done, became quite involved. Second, the insertion of simplifying assumptions could destroy the validity of the results. And, third, a large number of calculations would be needed to illustrate the differences in the tax problems between large and small companies and companies in different industries. Individual tax burdens are a bit like fingerprints. They all tend to be different.

This chapter is particularly relevant to the discussions of profitability and investment in the Science Council's own report and to the proposals made for removing the impediments to innovation in manufacturing industry.[4]

[1]Author unknown.

[2]The Honourable E.J. Benson, Minister of Finance, *Proposals For Tax Reform*, Queen's Printer, Ottawa, November, 1969.

[3]For example, there has been no discussion of the rules governing depreciation under the tax laws and regulations.

[4]Science Council of Canada Report No. 15, *Innovation in a Cold Climate*, Information Canada, Ottawa, 1971. pp. 20 to 22, 30, 31, 38 and 39.

The Canadian Tax System

In an editorial written several months before the publication of the federal government's White Paper on tax reform, a plain-speaking commentator said, in part:

"[Canadians] have had to take their risks under an income tax law which forces risk-takers to make their investments with after-tax dollars.

"On the other hand, the tax laws of the United States over the last 30 years have become so over-loaded with incentives for investors that the Nixon Administration has now cried, 'Hold, enough!'

"American tax law has become so riddled with loopholes that tax lawyers now ride through it trailing herds of elephants. But the fact that they have turned legitimate incentives into gimmicks cannot alter the additional fact that the incentives built into American tax law created the richest, most expensive industrial empire the world has ever seen ....

"The trouble with Canada is not the absence of risk-takers but a risk-discouraging taxation system. The designers and managers of our taxation system from the very beginning seem to have regarded it as a sin ... for anyone to get rich in this country. From 1917 onward there has been virtually no recognition that the income tax could be used as a superb instrument to encourage initiative and develop our country as well as a means of raising revenue for governments. The fatal blunder of the Carter Commission was its total preoccupation with 'equitable' tax collecting rather than with devising a system to encourage economic expansion."[5]

These comments emphasize only a few aspects of the problem of taxation in Canada and the United States and, indeed, may overemphasize them. Nevertheless, they serve to illustrate that a tax system is more than a vehicle for raising government revenues, that it can play a role in an economy and in the business of risk-taking, that it can be abused and, as a result, should be re-examined from time to time.

As noted earlier in this study, the Parliament of Canada has power under the BNA Act to raise money by "any Mode or System of Taxation", and may do so using direct or indirect tax methods. The provinces, on the other hand, are limited to raising revenue "for provincial purposes" using direct methods only. In practice, the judical interpretation of "direct methods" has allowed the provinces latitude to tax recipients of income, holders of capital, succession beneficiaries and, in the case of sales taxes, ultimate purchasers or users. The only taxes the provinces cannot levy are those that are expected to be passed on to other people, for example, sales and excise taxes applied at other than the retail level. The tax powers of local governments are those given to them by their provinces.

Since the tax revenue raising capacities of the individual provinces vary enormously, measures have been adopted over the years by the federal government in agreement with the provinces to reduce the effects of these disparities by redistributing part of the federal tax revenues among the less affluent provinces in the form of equalization payments. Federal-provincial

[5]James H. Gray, *This is Calgary*, June 1969, p. 13.

equalization agreements normally run for five years. The present period began on April 1, 1972. Arrangements have also been made by the two levels of government to promote the orderly collection of direct taxes. For example, the federal government collects the personal income taxes for all the provinces except Quebec and all the corporation income taxes for all the provinces except Ontario and Quebec.

Prior to the implementation of the federal tax reform legislation on January 1, 1972, the following was the description of the Canadian tax system:

Federal Government

Income tax – individuals
Income tax – corporations
Gifts
Estates of Deceased persons
General sales tax on the price of goods manufactured in Canada and on the duty-free value of imported goods
Withholding tax on dividends, etc., paid to non-residents
Customs Duties
Taxes on trusts governed by deferrred profit sharing plans, insurance companies, and corporation organization fees.
Excise taxes on alcoholic beverages, tobacco, matches, cosmetics and toilet preparations, and miscellaneous luxury items.
For the period May 1, 1966, to March 31, 1967, the federal government levied a special refundable tax on corporation and trust incomes.

Provincial Governments

Income tax – individuals
Income tax – corporations
Retail sales tax (except Alberta)
Succession duties (Quebec, Ontario and British Columbia, only, in 1971)
Plus in all provinces: Fuel tax, motor vehicle licences and fees, insurance taxes, race track tax, liquor and tobacco taxes.
And, in certain provinces: Amusement tax, logging tax, mining tax, land transfer tax, telecommunications tax, fur tax, security transfer, and several other taxes levied in only one province.

Municipal Government

Real Estate
Places of Business
Water Consumption
Local Improvements

Finally, there is a series of programs which are not normally referred to as taxes, but which should be included with them:

Unemployment Insurance: a national program, administered by a federal commission and financed by contributions from employers, employees and the federal government.

Workmens' Compensation: accident funds established under provincial statutes, to which employers are required to contribute at rates proportional to the hazards of their sector of industry.

Hospital Insurance: a federal-provincial program adopted by all ten provinces under which the federal and provincial governments meet the

cost of hospitalization for participants who contribute to the program in a variety of ways depending on their province of residence.

Canada and Quebec Pension Plans: a compulsory government-operated program, supplementary to the universal old-age security pension which is paid out of tax revenues. Employers and employees contribute.

Federal tax laws and regulations apply to all companies regardless of their location, but the burdens imposed by provincial and municipal taxes, on the basis of specific taxes and the corresponding rates of tax, are not equally distributed across the country. Historically, tax rates have been changed from time to time in response to economic, social and political pressures. Federal income tax rates, for example, have been altered several times since the beginning of 1971 as a result of budgetary and tax reform measures. Taxation at all three levels is also subject to exemptions, allowances and other adjustments to taxes payable and, in addition, non-tax subsidies, grants, low-cost loans, and so on, are provided by the different governments. The tax burdens resulting from the profitable manufacture of one thousand units of product in St. John's, Newfoundland, in Hamilton, Ontario, and in Kelowna, British Columbia are therefore unlikely to be identical.

The "old" Canadian tax system had been criticized on a number of grounds. Among those applicable to the business of manufacturing were the following:

– The total tax burden placed Canadian companies at a disadvantage in relation to foreign competitors, particularly in the North American market.

– The combination of income, estate and succession duties encouraged the sale of Canadian companies to foreign interests and generally discouraged the accumulation of pools of private capital that could be put at risk in new ventures.

– Manufacturing industry never had a depletion allowance similar to the mining, oil and gas industries.

– While capital gains were not taxed in Canada, capital losses incurred in high-risk ventures could not be written off either.

– The U.S. federal government, unlike the Canadian Government, had no sales tax. U.S. consumers could therefore pay less for the same article manufactured in a third country.

The recent tax law reforms, together with a number of the 1971 and 1972 budgetary measures, have changed the Canadian tax system. But there are three basic points that have to be made with regard to the nature of the system itself. First, it is unlikely that there will ever be identical and non-competitive total tax burdens on manufacturing companies in all of the cities and towns across Canada because it is unlikely that the disparities between them in physical and human resources, in market access, or in social capital will disappear completely. Second, it is not possible to use tax rates as the basis of comparison between the tax burdens in different countries because the coverage, deductions, and other elements in the total tax burden calculations are not identical. Third, the tax component of the final selling price of a product in the market place is only one of several cost components. From the point of view of international competi-

tion, Canada could perhaps endure a relatively less attractive tax climate provided that the other components of the manufacturers' final selling prices were more attractive as packages than the packages available to their foreign-based competitors.

Tax Reform in Canada

The following paragraphs appeared in a newspaper article early in 1970:

"The tax planners in Ottawa, listening to the public discussion of the White Paper proposals, must have great difficulty in deciding what Canadians really want in their tax system.

"The problem is not simply that some groups are creating a volume of sound that is disproportionate to their numbers or the validity of their arguments; this reaction can be expected whenever any major policy matter is under discussion.

"Frequently, though, even the most eminent and rational of tax authorities disagree flatly on the changes that should be made in the tax system."[6]

The Great Canadian Tax Debate began with the publication early in 1967, of the report of the Royal Commission on Taxation, of which the late Kenneth L. Carter was Chairman. The federal government's White Paper proposals for income tax reform were published in November 1969, and from then until the passage of the new Income Tax Act, Bill C-259, by the Senate late in December 1971 the debate was particularly energetic.

It was the intention of the federal government to enact reform legislation in each of the fields of taxation in which it was active. Estate taxes were extensively modified in 1968. Income tax reform followed in 1971, and the sales tax structure will presumably be dealt with sometime in the future. Meanwhile, tax reform studies have been made in the provinces. In Ontario, for example, there was the Smith Report, corresponding to the Carter Report.

The objectives sought by the federal government in framing its White Paper proposals appear to have been the following:

– to achieve a fairer distribution of the income tax burden, based on ability to pay,

– to interfere as little as possible with the process of economic growth and productivity improvement but, at the same time, to recognize current and future social needs,

– to encourage the repatriation of Canadian funds from abroad, and to reduce further outflows,

– to eliminate abuses, loopholes and inefficiencies in the old system, with particular reference to windfall profits and socially undesirable speculation,

– to provide for a modest increase in federal tax revenues,

[6]Ronald Anderson, *The Globe and Mail*, Toronto, March 3, 1970.

– to simplify the system from the "mechanical" point of view, whenever possible,

– to encourage the continuation of voluntary compliance, and

– to encourage the use of the federal system by the provinces in order to encourage efficiency in tax collection.

It is clear from the White Paper that the federal government considered the income tax system to be a vehicle through which national policy changes could be implemented. As both the Prime Minister and the Minister of Finance said, the White Paper was essentially a social document which described a system through which financial pressure could be removed from low income groups; pressure which could lead to some very undesirable social consequences if not relieved before long. The Minister of Finance indicated, for example, that the proposed tax increases for middle and upper income people were unavoidable because of the high levels of government-operated social services being asked for by Canadians and because of the "nature of the country" from the physical point of view.

The White Paper should also be considered as a potentially valuable political document in which the government was seen to have come out clearly on the side of disadvantaged people. But it was an economic document too and, as such, was considered inadequate by some of the provinces, by many of the people whose business it was to make the Canadian economy "work", and particularly by small businessmen whose special tax incentive was to disappear. The provinces, faced with large public expenditures and financial deficits in the foreseeable future, were concerned among other things with the allocation procedure for the new tax revenues. By the very nature of the reform process, as well as in recognition of the fact that some people were receiving significant levels of income in a tax-exempt form, it was inevitable that a proposal to tax capital gains should be included in the White Paper. In general terms, such a tax had already been accepted politically. The differences between parties and politicians with regard to the tax were on matters of detail and not on points of principle.

The White Paper proposed to modify the prevailing federal tax policy with regard to special tax incentives and preferred subsidies. For example, the incentive provisions that remained for the mining, petroleum and natural gas companies were limited to activities associated with exploration and development. No special incentives to encourage industrial research and development were proposed. However, the White Paper attempted to show that the government understood that some incentives would still be required. It said:

"The government is aware of a continuing need to spur certain kinds of activities. Some economic ventures that involve exceptional risks also promise exceptional rewards – in employing Canadians, in pushing back frontiers, in spurring trade and technology, and in improving secondary industries. Some of the government help now given to such development is through expenditures and credits. Tax laws, however, have long been used to provide incentives to such ventures, and the government believes

they should continue to be so used in a number of specific ways that are clearly understood and justified."[7]

The White Paper's distinction between public widely-held and private closely-held corporations was intended to reflect the difference in the relationship between the two types of corporations and the different relationships between the corporations and their shareholders.[8] It was also intended to reflect the fact that, by and large, closely-held corporations competed with proprietorships, partnerships and other closely-held corporations while public corporations competed with other similar corporations, both Canadian and foreign. However, the arbitrary distinction and treatment given to private and public companies in the White Paper demonstrated the difficulties involved in considering companies in an oversimplified way. There are, for example, a fair number of closely-held foreign-owned corporations in this country which are of considerable size and which compete principally with widely-held corporations.

The government proposed to do away with the double rate of corporate income tax and substitute a single rate.[9] The White Paper took the view that the existing lower rate, 21 per cent on the first $35 000 of taxable income, favoured small, closely-held corporations and could give their managements a significant edge over the unincorporated partnership or proprietorship which was taxed at the personal tax rate. Also, the dual rate, in the opinion of the White Paper's authors, had not been cost-efficient and had been abused. The White Paper proposed no additional special treatment for small or *new* small companies, but noted that some of them would become indistinguishable from partnerships and proprietorships from the tax point of view. In other words, the federal government did not propose to encourage enterprise, individuality, and high risk-taking in small or new small companies by means of the tax system.

The White Paper included proposals to modify the tax payable by individuals, for example, by increasing federal exemptions, by adding new allowances covering "expenses legitimately incurred in earning wages or salaries", by changing the rate schedule, and by extending income averaging to all personal taxpayers. On the other hand, "expense account living" was to be rigorously controlled. Capital gains were to be included as income and not taxed separately, as in the United States.

The major criticisms of the White Paper proposals can be summarized as follows:

– The reform proposals covered only part of the tax burden imposed by the federal government and only part of the total tax burden imposed by all levels of government.

– The social benefits of the proposals were perhaps much easier to identify than the economic ones.

[7] *Proposals for Tax Reform*; *op. cit.*, p. 7.

[8] Closely-held corporations were usually smaller businesses managed by the shareholder, with a close identity between shareholder and managements. Widely-held corporations were usually larger businesses where the link between shareholders and the managements were tenuous.

[9] The lower rate was to be phased out over a 5-year period.

– While the application of a capital gains tax might seem inevitable, it had to be remembered that not all countries similar to Canada, Australia for example, had such taxes.

– The capital gains tax proposals took no account of inflation, which has become increasingly a fact of life.

– The proposals contained little to encourage the establishment of new, small companies, especially those that would be significantly technology-dependent.

– The proposals seemed to be against "bigness" at a time when some federal departments were trying hard to encourage Canadian companies to take advantage of rationalization and of scale and specialization.

– The proposals went some way to improving the equity of the federal income tax system for the individual taxpayer, but did not explain why it was considered equitable to allow a major shareholder to lose control of his own company.

– The distinction made between closely-held and widely-held corporations was not realistic.

– The proposals appeared, on balance, to favour consumption over savings.

– The proposals failed to take into account the international implications and aspects of taxation; tax laws can be used, as the U.S. has done, as weapons in international trade, but Canada has been reluctant to do so.

– The proposals could weaken the Canadian bargaining position in future negotiations of tax treaties with foreign countries.

The June 1971 Federal Tax Reform Legislation

This legislation was introduced by the Minister of Finance, the Honourable E.J. Benson, in the House of Commons on June 18, 1971. It became law, in revised form, effectively on January 1, 1972.[10]

The principal changes with regard to the taxation of personal incomes were as follows:

– Personal exemptions were raised, and a number of new personal tax deductions, such as employment and moving expenses, were added.

– New forms of personal income to be taxed included one-half of capital gains, adult training allowances, unemployment insurance benefits, and scholarships and fellowships over $500.

– Two types of income averaging were permitted: general averaging, to apply automatically when a tax return shows income 10 per cent higher than the preceding year and 20 per cent higher than the average of the preceding four years; and forward averaging, to allow taxpayers to spread unusual lump-sum receipts over future years through the process of income averaging annuities.

– The maximum deductable contributions for registered pension,

[10]A number of budgetary changes were made in June and October 1971 and in May 1972 and have to be considered alongside the reform measures. The budgets have been discussed later in this chapter.

deferral profit-sharing plans, and registered retirement savings plans were raised.

The following major changes, in addition to capital gains, were applied to corporations and shareholders:

– The dividend tax credit was raised from 20 per cent to 33⅓ per cent, but the credit was to be included in income in order to be of greater benefit to low-income shareholders.

– The lower rate of corporate tax was retained as a small business incentive, but this rate was changed to 25 per cent on the first $50 000 of business income of Canadian-controlled private corporations up to an aggregate accumulation of $400 000, after which no further credits will be allowed; the low rate was no longer available to public corporations or to foreign-controlled corporations.

– One-half of the capital gains realized by private corporations could be distributed tax-free to Canadian shareholders.

According to Section 123 of the new Act, the rates of tax payable by corporations not subject to the small business incentive were to decline by one per cent a year, from 50 per cent in 1972 to 46 per cent in 1976 and in subsequent years.

The federal government vacated the estate and gift tax fields effectively on December 31, 1971, but the capital gains tax would be payable after death.

The legislation established two general rules with regard to capital gains: under the first, one-half of capital gains could be included in personal and corporate income and taxed at normal rates; and under the second, taxpayers could deduct one-half of capital losses against one-half of capital gains. In addition, individual taxpayers could deduct up to $1 000 of capital losses against other income, the deductions being made in the current year, the preceding year, or any number of subsequent years until losses were fully absorbed. Capital gains would normally be taxable, and losses deductable, when taxpayers sold an asset, made the gift of an asset, or at death. Capital gains on gifts or bequests to a husband or a wife would be deferred. Principal residences were made exempt from the gains tax, and no tax would be paid on personal property sold for less than $1 000. Capital gains were to be subject to general and forward averaging provisions.

Since the capital gains tax was not retroactive, special rules had to be devised to arrive at the base for calculating future gains or losses held before January 1, 1972. Two Valuation Days were selected: the first, December 22, 1971, for listed Canadian common and preferred shares, listed foreign stocks, most publicly-traded unlisted Canadian stocks, listed and unlisted rights and warrants, and certain convertible corporate bonds; and second, December 31, 1971, for all other taxable assets, including most Canadian bonds, unlisted foreign stocks, foreign bonds, mortgages, real estate investment, second homes, valuable works of art, and shares in private companies.

Unlike the White Paper proposals, the tax incentives given previously to the mining and petroleum industries were maintained under the reform legislation "to recognize the risks involved in exploration and development,

the international competition for capital and the levels of incentives available in other countries".[11] They were, in fact, extended to include corporate taxpayers whose principal business was not in mining, oil production, etc., but who were nevertheless active in them. More generous allowances were given for foreign exploration and development expenses. After 1976, however, depletion allowances would no longer be applied automatically and would have to be earned.

The "old" tax system did not allow companies to deduct interest paid on money borrowed to buy the shares of other companies because the dividends on these shares were normally tax-exempt. To encourage Canadians to invest in Canadian companies, the new legislation would permit the full deduction of interest payments on money borrowed for this purpose. The new legislation would also permit the deduction of one-half of the cost of goodwill and other intangible assets at the rate of 10 per cent a year, using the declining balance method. One half of the proceeds of the sale of these assets were to be included as income. On the other hand, the new legislation laid down stricter ground rules for the deductability of entertainment and other expenses associated with business, and taxpayers in the professions would no longer be allowed to compute their incomes on the basis of cash received and had to do it on the basis of fee billings. Also, *Caisses Populaires* and credit unions would be taxed as cooperatives, and would no longer be exempt from tax for the first three years of their existence. The new legislation treated mutual funds and investment corporations as "conduits" between their shareholder-investors and the sources from which their incomes were derived. Most of the changes to be made in international income will not take full effect until 1976 in order to allow time for the renegotiation of old tax treaties and for the negotiation of new ones.

There have therefore been a number of significant differences between the provisions of the new legislation and the earlier White Paper. For example, the treatment of personal incomes has been more generous in the Act than in the White Paper. The Act has maintained a limited version of the double rate of taxation, the so-called "small business incentive", which the White Paper did not, and the widely-held and closely-held corporation distinction has disappeared. So has the five-year valuation proposal. The White Paper was more restrictive than the Act with regard to entertainment and convention expenses associated with business, and changed the basis for calculating professional income. Under the Act, only one-half of capital gains are to be included in income, as against the full gains according to the White Paper, and the treatment of losses has been a little more generous under the Act. In summary, however, the federal income tax reform has introduced a whole series of new complications with the result that the "average" individual and the "average" company will be required to undertake more complex tax-computing operations and record-keeping than before.

[11]The Honourable E.J. Benson, Minister of Finance, *Summary of 1971 Tax Reform Legislation*, Information Canada, Ottawa, June 1971. p. 45.

A Note on Provincial Government Responses to the Reformed Federal Tax Legislation

As mentioned earlier, the only provinces to levy succession duties in 1971 were Quebec, Ontario and British Columbia. None of the ten had gift or capital gains taxes. The federal government's vacation of the estate and gift tax fields has given all of the provinces opportunities to introduce new taxes and to modify existing ones to take account of the reform legislation. Provincial capital gains taxes may also be in prospect. Unfortunately, at the time of writing, the provincial picture remains confused. Some changes have already been made, but others are either contained in preliminary proposals or are in legislation not yet passed by the Assemblies and Legislatures. The provinces are, quite understandably, concerned about the maintaining of revenues which were formerly shared with the federal government. However, the threat of a "double death tax" by means of the federal capital gains tax and a provincial succession duty may become a formidable deterrent to individual enterprise in this country. At the time of writing, Alberta is the only death and gift tax "haven".

The 1971 Federal Budgets

In addition to the reform of personal and corporate taxation, the federal budget measures introduced in June 1971 included some normal budgetary changes. The underlying policy behind these changes was explained briefly in the *Economic White Paper for 1971*, as follows:

"Both fiscal and monetary policy had been restrictive through 1969 and in the early months of 1970, for the purpose of slowing growth in demand for goods and services by government and by the private sector, in order to combat serious inflationary pressures. As the excess demand in the system came to be eliminated, the policy became more expansive. Throughout the period, the underlying purpose has been to move the economy on to a track of balanced and orderly growth, with high employment and an acceptable long-range performance of costs and prices."[12]

Among the budgetary changes proposed in the June budget were these:

- The removal of the 3 per cent surtax on personal and corporate income taxes effective July 1, 1971.
- Changes effective July 1 in the lowest tax brackets to exempt taxpayers with less than $500 of taxable income.
- The immediate removal of the 12 per cent federal sales tax on all anti-pollution equipment used in production.
- Abolition immediately of the 15 per cent excise tax on television, radio and hi-fi sets, their components and other electronic equipment.

The elimination of the personal and corporate surtaxes was intended to prevent a pause in economic recovery, to give the industry sector added

[12]House of Commons, *Votes and Proceedings, No. 154*, Queen's Printer, Ottawa, June 16, 1971.

encouragement to make new investments, and to stimulate consumer demand. The surtax was first introduced in 1968 and extended on an annual basis.

The Minister of Finance, Mr. Benson, introduced a second Budget in October 1971. The principal fiscal measures announced at that time were a further 7 per cent reduction in corporate taxes payable between July 1, 1971 and December 31, 1972, and a further reduction of 3 per cent in the personal income tax payable during the same period. The corporate tax cut was designed, Mr. Benson said, to give Canadian firms maximum flexibility in responding to the special difficulties they faced and to the opportunities that could be taken in an expanding economy. The corporate sector had, he said, suffered adverse effects from the U.S. import surtax and the threat of additional measures, as well as from the appreciation of the Canadian dollar since it was "floated" in June 1970.

Both of the 1971 Budgets clearly had implications for the manufacturing industry in Canada. The government's intentions were that this industry, and others, should be in a better position to compete, and that profit levels and consumer spending should improve. The only province to implement corresponding personal tax cuts was Ontario. In December 1971, the Legislature passed a bill reducing provincial income tax payable by individuals by 3.6 per cent for the six months from July 1 to December 31, 1971, and by 3 per cent during 1972.

The May 1972 Budget

Incentives for industry and some help for disadvantaged people were the principal features of Finance Minister Turner's first budget. The incentives were intended to stimulate job creation and capital investment and to provide some countervailance for the U.S. DISC program. The Minister laid the responsibility for job creation and capital investment firmly at industry's door. The measures proposed to bring these about included the following:

– Implementation of a two-year write-off for the depreciation of equipment bought for manufacturing and processing in Canada; effective immediately,

– Elimination of the 12 per cent federal sales tax on research equipment bought by manufacturers to test or develop new products or processes,[13]

–Effective on January 1, 1973, a reduction in the top rate of corporation income tax from the 49 per cent which it would have been under the tax reform legislation, to 40 per cent,

– Also effective on January 1, 1973, a reduction of corporation income tax applicable to eligible small companies from 25 per cent to 20 per cent,

– Additional extensions of the accelerated capital cost allowances for new anti-pollution control plants.

[13]The imposition of this tax has long been a bone of contention between industry and successive Ministers of Finance because government and university purchases have been exempt from the tax.

Federal Government Income Tax-Based Incentives for Research and Development Activities in Industry

For almost twenty years, companies operating in Canada have been allowed to deduct a portion of their expenditures for "scientific research" from taxable income. The rules governing the eligible portion have changed from time to time but reached 100 per cent of current and capital expenditures by 1961. Section 72 of the "old" Income Tax Act dealt with research expenditures.

Beginning in taxation year 1962, a general incentive provision was inserted into the Act as Section 72A for an experimental 5-year period. Under this provision, companies were allowed to deduct from their taxable incomes a further 50 per cent of all expenditures in Canada which exceeded expenditures in the 1961 base year period and which were allowable under the Act. As presented by the Minister of Finance of the time, the Hon. Donald Fleming, the principal aims of the incentive were to increase industrial R & D expenditures and to emphasize the vital importance of research activities performed in-house or under contract in Canada. It was also intended to strengthen the R & D capabilities of some Canadian companies in relation to the research activities of their parent companies abroad. The single-base year was used to enable corporate taxpayers to earn substantial tax benefits. The five-year experimental period was chosen because, under normal circumstances, experience with the operation of the incentive would indicate fairly quickly how it could be improved. This was also a long enough period to enable companies to plan R & D expenditures sufficiently ahead of time. The tax-based general incentive program was an example of the "self-destruct" type of legislation.

The tax-based incentive under Section 72A was introduced at a time at which the Canadian economy had begun the general expansion that lasted for most of the balance of the decade. The combination of Sections 72 and 72A along with the other assistance programs available at the time were powerful enough to lead to the establishment of a significant number of new industrial laboratories in this country. The principal influence of Section 72A on industrial R & D was, in practice, on capital expenditures.[14]

The income tax-based incentive was not without its problems. A study of its operation by the Economic Council of Canada identified a number of advantages and defects in the program.[15] For example, among the *advantages* were the following:

– Within the limits of the definition of "scientific research" used under the program, companies were free to decide which projects to pursue and how much to spend on them.

– The incentive was more widely available at the time than were government-funded grants or contracts.

– Some companies were encouraged to start R & D activities of their own or to place contracts with other Canadian organizations.

[14]No province has, so far, introduced tax-based measures to encourage industrial R & D.

[15]Report to the Economic Council of Canada by the Committee on Industrial Research and Technology, *A general incentive program to encourage research and development in Canadian Industry*, Queen's Printer, Ottawa, 1966. pp. 11 and 12.

– The program provided some incentive to individual companies to maintain R & D capability when work under a grant or contract had terminated.

The Council's study also noted that the tax-based program had contributed to the increase in total industrial R & D expenditures but that the full extent of its effect could not be measured. Among the identified *disadvantages* were the following:

– Companies with large base year expenditures received little or no benefit.

– The definition of "scientific research" used under the program was too restricted in its interpretation and administration.

– The 5-year experimental period proved, in practice, to be too short.

– The administrative arrangements for the program were inadequate.

As a result of its study, the Economic Council recommended to the federal government that the tax-based type of general incentive program was sufficiently valuable to Canadian industry that a new and revised program should replace the first one when it expired at the end of taxation year 1966.[16] The Council further recommended that the new program "self destruct" after ten years, that the incentive be in the form of a credit against tax *payable* amounting to 25 per cent of *all* expenditures allowable under the regulations governing the program, and that companies having insufficient tax payable to cover the full credit receive the balance in the form of a credit against future taxes.

The Economic Council's recommendations were made public some eight months after the federal government had announced in the April 1965 Budget Speech that it was considering a new grant-based program to replace the tax-based one. The Council disagreed with this approach on a number of grounds, which were discussed in some detail in the published study. The study said, for example:

"The main purpose of a broad and widely available general incentive programme is to encourage increased investment in the development of competence in the exploitation of new ideas and methods which will improve industrial productivity and efficiency in Canada in the long run. If these improvements do result, then the contributions made through the programme by the Government will be justified. The device of giving benefits under the programme in the form of credits against present or future taxes is therefore a suitable one through which to accomplish the programme's main purpose in contract to the giving of grants or subsidies which may be distributed without regard to results."[17]

In other words, the Economic Council wanted to encourage R & D *and* improvements in the profitability of Canadian companies by means of the same program.

The federal government declined to take the Council's advice and proceeded to drop Section 72A of the Income Tax Act. The government

[16]Economic Council of Canada, *Second Annual Review, Towards Sustained and Balanced Economic Growth*, Queen's Printer, Ottawa, December 1965. p. 175.

[17]*A General Incentive Programme ..., op. cit.*, p. 19.

introduced, late in 1966, the grant-based program that has since become known as IRDIA.[18] The government believed that a grant-based program unrelated to taxable income or to tax payable would be more effective and less discriminatory, that it would reach a larger number of companies, and that the direction of its benefits would be more closely controlled. The government was also influenced by the views of the Carter Commission which had come out strongly against the use of tax incentives.

In a Science Council background study published in 1970, it was concluded that industry people at the senior level of R & D and engineering management favoured a less rigidly controlled tax-based program on the Economic Council model, to the more closely controlled IRDIA approach, and the fully-funded contract to the cost-shared PAIT or other assistance program.[19] But since that study was published, the terms of the cost-shared programs have not only been made more favourable to the industrial applicant, but the economic climate has also become less conducive to profitability and to the performance of *any* R & D industry in Canada.

The White Paper proposals for tax reform made no mention at all of tax-based incentives for industrial research and development. However, the new federal tax legislation under Section 37 does continue the allowances against corporate taxable income that were available under Section 72 of the "old" Tax Act. Current and capital expenditures made in Canada are eligible, as are current expenditures made abroad.

The income tax system is, by any standard, a relatively blunt intrument by means of which to encourage R & D or technology-based innovation. It is, nevertheless, a *possible* instrument and, in Canada at least, an underutilized one. Under the new federal system, for example, corporations receive some help under Section 37 of the Act, but neither corporations nor individuals may derive any special benefits from the patent royalties or licence fees they earn.[20] No benefits are available to the independent inventor or to those who save through buying rights to information developed elsewhere. Industry receives no encouragement to retain the services of professional inventors with proven records.

The federal government's income tax-based program of 1962-1966 is now long-finished and largely forgotten. Various activities associated with innovation are being assisted principally by means of grants and loans. However, in the budget of May 1972, the federal government introduced substantial corporate tax rate reductions and accelerated capital cost allowances for manufacturing and processing industries; measures which can be considered in the same light as the old tax-based program but applicable to the innovation process as a whole.

[18]The Industrial Research and Development Incentives Act. This program was discussed briefly in Chapter 3. Under the IRDIA program, companies may ask that the value of the grants received be credited against income taxes payable.

[19]Andrew H. Wilson, *Background to Invention*, Science Council of Canada Special Study No. 11, Information Canada, Ottawa, June 1971. p. 45.

[20]The *expenses* involved in obtaining Canadian patents may, however, be depreciated over the lifetime of the patent. No allowance can be obtained against the costs of unsuccessful applications.

The Taxation of Small Companies[21]

The Carter Commission recommended that it would be unwise to withdraw the lower of the two rates of corporate taxation without making some adjustment within the new tax system to assist new and small business.[22] Simply to be *small* was not enough, in the Commission's view, for special help to be made available to businesses in the form of a tax adjustment. They had to be *new* as well. The White Paper, on the other hand, proposed to do away with the lower of the two corporate income tax rates. In practice, however, few new small companies have taxable incomes until they are no longer new. Established small companies, on the other hand, may well have taxable income. In the end, the federal tax reform legislation retained the dual rate of corporation tax but in a modified form. As noted above, the lower rate became, initially, 25 per cent on the first $50 000 of business income of Canadian-controlled private corporations, but it was not to be applied to public corporations or to foreign-controlled corporations. The new legislation has therefore left the problem of providing special tax incentives for new small companies unresolved.

One province, Ontario, has given some considerations to a special tax incentive for small companies.[23] Basically, the proposed Small Business Incentive (SBI) would lower the cash cost to an individual investing in a small business. Provided that certain eligibility criteria were met, a person investing in a small business would be entitled to a credit against his personal income tax of 50 per cent of a qualified investment up to a maximum lifetime credit of $100 000, so long as the investment remained in the business. Cash distributions from the business and proceeds from the sale of the business or of shares would be taxed at a 50 per cent rate as the credits previously claimed were recovered. The system was designed to be integrated with capital gains taxes.

The small company may have three kinds of "existences", each representing a different set of problems, a different tax position, and a different degree of need for assistance.

The first of these is the start-up situation in which the company is usually dependent upon financial assistance from individuals and non-banking institutions, and in which there is unlikely to be any taxable income. The provision of tax-based incentives during start-up is of little value unless the incentives have generous carry forward provisions into future potentially profitable periods – in other words, unless they are designed as longer-term productivity and efficiency incentives and provide benefits over and above the depreciation, tax loss carry-forward and other provisions already available. At the same time, these incentives should not be introduced by provincial governments in order to counteract any disincentive provisions of federal tax legislation. But basically, the help given

[21]Small business problems have been analysed in more detail in Chapter 7. The comments made in this present chapter are relevant to this later chapter but are more appropriately included in the detailed discussion on taxation.

[22]*Report of the Royal Commission on Taxation*, K. Carter, Chairman, Queen's Printer, Ottawa, 1967. Vol. IV, p. 277.

[23]*Technical Study on Tax Reform and Small Business*, Ontario Department of Treasury and Economics, Government Printing Office, Queen's Park, Toronto, December 1970.

to small companies in their initial years may better be given outside the tax system altogether.

The second is the post-start-up, stable-state situation in which the activities of an established small company have varied very little over a period of years. Such a situation may be found more frequently in the non-manufacturing regions of the country than in the Quebec City – Windsor "corridor". Of the three, this situation should receive no special help.

The third situation is the post-start-up, rapid-growth situation in which an established company has chosen to expand its activities to take advantage of new and enlarged market opportunities. The company may still be privately owned, or it could conceivably have gone public in the recent past. It will most likely be out of the normal venture capital range. It will have a track record, and it should be able to obtain chartered bank loans. However, the company's action in undertaking the expansion may place its future in even greater jeopardy than it was during the start-up situation because more assets and more jobs will have been placed at risk. On the other hand, to provide incentives through the tax system only for expanding small companies may seem inequitable and open to abuse. It may also seem unnecessary to provide tax-based incentives when other kinds of government-supported grant and loan programs are available. Nevertheless, if a special tax-based incentive is to be applied at all to small companies, it should be applied, with necessary but not punitive safeguards, in this rapid-growth situation. The question of whether the tax revenue should be foregone by the federal or by the provincial government will require negotiation.

A Note on Income Tax and Regional Development

Section 71A of the "old" federal Income Tax became law in 1963. The purpose of this section was to provide a 3-year corporate income tax exemption, from the day certified as the one on which commercial production began, for manufacturing and processing plants established in the designated slow-economic-growth areas of the country. Accelerated capital cost allowances for new machinery and equipment and for buildings established in these designated areas were also permitted.

The 1965 *Annual Report* of the federal Department of Industry which administered the program stated that in about two years of operation more than 350 firms indicated their intention to take advantage of the tax incentives, and that another 260 firms were taking advantage of the depreciation allowances. The report said, however, that the Section 71A program had been reviewed and that, for the following reasons, the tax exemption was going to be replaced by a cash grant:

"A tax holiday is of benefit only to those firms which are able to reach a profit position early in their new operations. Most firms are unable to achieve this since they have to provide for market development and for other settling-in costs during their first years of operation. Moreover, it was found that smaller firms of a type well adapted to many designated areas

experienced difficulties in initial financing. Accordingly, the government has decided to replace the system of tax benefits for new manufacturing and processing enterprises in designated areas with a system of capital grants based on investment in new facilities."[24]

The Area Development Incentives Act (ADIA) was subsequently passed by Parliament in June 1965. It provided for these capital grants for new facilities and for substantial expansion by firms in the designated areas, but a company that qualified for a grant could elect to take it in the form of a credit against federal income tax liabilities. The grants themselves were exempt from federal tax, but did not reduce the amount of the capital cost for depreciation purposes. At the same time, the number of designated areas was increased from 35 to 81 – and later to 91. The Section 71A provisions continued to apply to qualified companies that began commercial production before April 1, 1967, or where the Minister responsible was satisfied, for some months after that.

Among the provinces, Quebec has been the only one to include a corporation income tax incentive among its regional development measures. The availability of tax-breaks or tax-holidays is much more common at the local government level in some provinces, and with the cooperation of the provincial governments. While creating differences between possible industrial plant location sites, these tax reductions have made the overall tax problem for companies more complex. And, as mentioned already, tax reductions without carry forward provisions are of little use to companies with no incomes to tax.

A Note Regarding Real Property Taxation

In aggregate and in current dollar terms, the gross revenues of Canada's local governments from all sources rose from around $2.3 billion in 1963 to $7.7 billion in 1970, an increase of about 235 per cent over the seven year period. By 1970, the conditional and unconditional transfers from the senior levels of government accounted for 45 per cent of these revenues, in contrast with about one-third of this figure in 1963. In the reverse direction, the tax revenues raised by local governments from all the sources available to them accounted for 76 per cent of gross revenues in 1963, but for only 47 per cent in 1970. However, the real property tax component of total tax revenues raised by local governments declined only slightly between 1963 and 1970 – from 86 per cent to 85 per cent. In dollar terms, real property taxes yielded $1.5 billion in 1963 and $3 billion in 1970.[25]

Real property taxes are not levied uniformly across the country and their administration varies from province to province. Comparisons of the effects of real property taxation on industry in general and on the manufacturing sector in particular are very difficult to make, and methods for making comparisons between the burdens imposed by different municipalities are still under study. Some of the problems involved were discussed in a recent report, as follows:

[24] *Annual Report, 1965*, Department of Industry, Queen's Printer, Ottawa, 1966. p. 17.

[25] Statistics Canada, *Local Government Finance, Revenue and Expenditure, Preliminary Estimates*, October 1971. Cat. No. 68-203.

"... the real property tax rate in a municipality depends not only on local assessment practices but also on the location and physical make-up of the municipality, the type and level of services the municipality provides and those provided by other local governments whose financial requirements are incorporated in the municipal levy, and the methods the municipality and the other local governments use to finance the provision of these services. Within each of these major factors which influence the mill rate are other variables too numerous to mention ..."[26]

Real property taxes are the most visible component of the tax burden levied on companies and individuals by local governments and this fact is now causing considerable concern. Local governments are well aware of the disincentive effects of high property taxes, but are equally aware that the services required from the local level of government have grown more numerous and expensive. In the face of increasing social, economic and financial responsibilities, the third level of government may now require access to a broader and more responsive tax base. One possibility would be a capital gains tax on the sale of principal residences – a field not included by the federal government in its own capital gains tax. Another would be a local government income tax. And another would be to increase provincial aid still further. As mentioned later in this chapter, a recent proposal originating in the United States has called for the introduction of a federal value added tax (VAT) to raise new revenues for public school education and, at the same time, to relieve the pressure on local real property taxes.

As far as the manufacturing industry is concerned, real property taxes and the less burdensome business taxes are elements in the unit costs of production. To raise these taxes further is to increase costs, which may be absorbed by the consumer in the form of higher prices or by the company in the form of reduced profitability, unless accompanied by improved productivity.

A Note on Tax Agreements

Over the year, Canada has been a party to a number of bilateral tax treaties, conventions, or agreements with other countries.[27] These agreements have usually been aimed at smoothing the way for bilateral trade, providing some equitable tax treatment of nationals working abroad, removing the burden of double taxation, and discouraging tax evasion. Any such agreement reached by Canada with another country has the force of law in this country. The Minister of National Revenue is empowered to make regulation so that the agreements can be implemented. Bilateral tax agreements also open the way for the competent authorities in the countries concerned to exchange information, relating to tax matters, for which there is a

[26]Dominion Bureau of Statistics, *Principal Taxes and Rates, Federal, Provincial and Local Governments*, The Ministry of Industry, Trade and Commerce, Information Canada, Ottawa, November 1971. Cat. No. 68-201. p. 39.

[27]Current treaties are with the United States, the United Kingdom, Australia, Denmark, Finland, France, Ireland, Japan, the Netherlands, New Zealand, Norway, South Africa, Sweden, Trinidad and Tobago, and the Federal Republic of Germany.

mutual requirement. The industrial countries of the world normally have tax agreements with their principal trading partners, but they also have unilateral measures in their domestic tax legislation to deal with problems such as double taxation and foreign-owned income.[28]

The factors that make tax agreements desirable include the following:

– The differences between countries in the scope of income taxes and in the concept of income sources.

– The differences in the methods of determining the amounts of income to be allocated to the countries involved in transactions between parent and subsidiary companies.

– The differences in the rules governing the taxation of incomes earned by businessmen and other temporary visitors from one country in another.

– The differences in the treatment of dividends, royalties, rents, consulting fees, and other outgoing payments from one country to another.

The recent federal income tax reform measures enacted in Canada will affect the terms of bilateral agreements presently in force. However, most of the changes with international implications are not to come into effect until 1976 in order to allow time for government authorities to renegotiate existing agreements and to negotiate new ones. The general principles being applied to international income in the reform legislation have been stated as follows:

"The new legislation reflects some changes in the system of taxing international income, but the basic features of the system continue. Residents of Canada continue to be taxed on their world income, and any foreign taxes paid on this income are taken into account in determining Canadian tax. Non-residents continue to be taxed on their Canadian employment and business income, and the tax will be extended to certain capital gains of non-residents. Investment income received from Canada by a non-resident continues to be taxed at a flat rate of withholding tax."[29]

Tax agreements to which Canada is a party must, therefore, be placed alongside tariff, "know-how", and other agreements as far as their service in the encouragement of export efficiency and technology-based innovation in manufacturing are concerned. As with the domestic tax system, international taxation is part of the environment in which manufacturing industry must operate. The needs of manufacturing for markets, on the one hand, and for capital and know-how, on the other, must be taken into account in *all* of these agreements.

Taxation in Other Countries

Most Canadians and most Canadian companies seldom experience, directly, the tax burden imposed by other countries. Yet most are aware that differences exist between Canadian and foreign systems and that the burdens placed on equivalent personal or corporate situations are seldom,

[28]Taxation is also a concern of multinational institutions. The OECD, for example, has devised a Model Tax Convention.

[29]*Summary of 1971 Tax Reform Legislation op. cit.* p. 56.

if ever, the same. Unfortunately, in order to compare tax burdens internationally, it is necessary to consider not only the types and rates of taxation but also the corresponding inclusions and exclusions and the goods and services that tax revenues actually buy. In this light, the generally higher income taxes imposed in one country, or the generally lower rates imposed in another, may be more, or less, appealing to individuals and to companies in Canada when each has taken his, or its, circumstances into consideration.

Throughout the world, taxation is used not only to raise government revenues but also for the achievement of economic, social and political goals, and may even be used directly or indirectly in the achievement of technological and scientific goals. As circumstances, fashions, pressures and expectations change, so do tax laws. Some countries, for example, clearly relish their roles as tax havens. Canada, and many other countries, use withholding taxes on dividends "exported" to stockholders resident abroad. Different tax rates are applied to the income earned abroad and subject to bilateral tax treaties that may be in force. Tax laws and rates may be modified from time to time to encourage certain kinds of economic activity such as capital investment, the encouragement of exports, and increased consumer expenditure. The recent budgets introduced by Mr. Barber, the U.K. Chancellor of the Exchequer, were designed for these purposes. Tax laws can also be used as barriers to the activities of foreign competitors in a country's domestic market. Under GATT agreements, direct taxes may not be rebated as a bonus for exporting, but no such restrictions apply to indirect taxes. France, for example, has used the indirect value added tax (VAT) to encourage exports and to discourage imports. As was reported recently in a press editorial:

"The value-added tax is not levied against exports – producing what is plainly a tremendous export bonus – but it is levied against imports. The net result is to make French exports more competitive on world markets, and imports less competitive in French markets ....

"Canada does it a different way. Our 12 per cent federal sales tax and various other taxes on such luxuries as alcoholic products, tobacco and cosmetics, are not levied against exports but are levied against imports: thus making exports more competitive abroad and imports less competitive here."[30]

Canada's system is by no means foolproof because sales taxes can be applied by the countries receiving our exports. Remedies may also be taken against imports from countries applying the value added tax. The United States, however, has not yet adopted a VAT and has no federal sales tax but has other import-discouraging and export-encouraging measures available in the tax field, the most recent of which is the Domestic International Sales Corporation (DISC) measure which will modify the taxes payable by these corporations on profits from exports.[31]

[30] *The Globe and Mail*, Toronto, December 28, 1971.

[31] The DISC measure is discussed in Chapter 8.

Canada is not the only country to attempt tax reforms in the recent past. After extensive hearings and debate, and last-minute political accommodations, the United States Congress passed a tax reform bill in December 1969. The U.S. measures were designed to lighten personal taxes for low income people in particular – as were the Canadian reform measures. But as in Canada, events have modified the reforms and, as reforms, they have not lived up to expectations. For example, one business magazine commented as follows:

"The Tax Reform Act of 1969 was supposed to deal an agonizing blow to those who dodged through loopholes in the tax code. So far, some of the most agonizing groans have come from the Internal Revenue Service. Indeed, the Act may contain so many new loopholes – along with vague, convoluted language – that IRS men want Congress to reform the reform, and a growing number of Congressional leaders are inclined to agree."[32]

Meanwhile, the governments of the individual states have been concerned about their own revenue-raising problems. And yet another tax matter of considerable concern recently has been the power of the individual states to levy taxes on out-of-state businesses. Interstate tax bills have been before Congress for some time but have not yet been passed. The magnitude of the interstate tax problem was outlined by Congressman Peter W. Rodino, Jr. of New Jersey in the House of Representatives on June 25, 1969. Among other matters, the Congressman commented on the extensive study of the subject made by an advisory committee to which he had belonged:

"We ascertained that of the several hundred thousand companies engaged in interstate commerce half have fewer than 20 employees, a substantial number have fewer than 10 employees, and a significant minority have fewer than five. Yet these companies typically sell their products in many States, and even among those companies which are so small that their annual gross proceeds are less than $200,000, a considerable number sell their products in a truly nation-wide market.

"The number of jurisdictions taxing these companies is staggering. There are in effect at the State level 41 sets of corporate income tax laws, 44 sales and use tax laws, 37 capital stock laws and eight gross receipts tax laws of general applicability. In addition, to compound further the chaos and confusion, business taxes are rapidly proliferating on a local level – with sales taxes already imposed by about 3,000 localities, gross receipts taxes by over 1,000 and corporate income taxes by more than 200 local governments.

"Under the circumstances, it is not surprising that this chaotic system has broken down ...."[33]

[32] *Business Week*, New York, November 28, 1970. p. 50.

[33] U.S. Congress, *Congressional Record*, Washington, D.C., June 27, 1969. ES331.

The situation is not quite so chaotic in Canada but, given the revenue requirements of the three levels of government in this country and the continuation of the high unemployment/inflation problem, it may be the situation facing manufacturing and other businesses in the near future. These businesses may then react in various ways, for example, by evasion, or by limiting their sales activities geographically.

A Note on the Value Added Tax[34]

In practice, the value added to a product by a manufacturing company is calculated by deducting from the sale price of the product the costs, including taxes, of all the raw materials, components, power, light and other items brought outside by the company and used during the production process. The value added is a measure of the output of the company. It can be used, over a period of time, to measure changes in productivity per employee. It may also be used by governments as the basis for assessing the collecting tax revenue – a procedure which has engendered both support and hostility.

Five of the six original EEC member countries now have VAT. Italy is the exception, but implementation has only been postponed. France, the pioneer country, has had VAT since 1954. Outside EEC, Denmark (1967), Sweden (1969) and Norway (1970) also have VAT. The British value added tax will go into effect in April 1973, and will replace the present purchase and selective employment taxes. Ireland and Austria will soon have VAT.

The recent tax reform debate in Canada has practically nothing to say about this form of taxation. In the United States, there is reported to be a proposal under study for a relatively small scale application of VAT. One chemical industry journal commented as follows:

"Within the next year or two, chemical process companies in the U.S. may learn to live with the value-added tax, an American invention that has become a principal ingredient in the European Common Market's economic success formula. Passage of such a tax is a distinct possibility because it now appears that the federal government will soon have to come up with a quick, sure-fire technique for raising millions of dollars per year to support the nation's public schools.

"VAT is often cited as giving an important advantage to European companies – such as those producing automobiles, chemicals, tires and glass – in global competition. And some businessmen and economists contend the U.S. business needs similar tax terms to hold its own in domestic and foreign markets."[35]

When applied as a single basic rate, VAT avoids the distortions induced into the system by a variety of rates of sales or other similar taxes applied at different stages during manufacture and distribution. However, in practice, the single basic rate system is modified. For example:

[34] *Chemical Week*, March 1, 1972, p. 11.
[35] *Ibid.*

– exports are usually given a zero rate in order to encourage this kind of business;

– "sensitive" industries, such as food, and small companies may be given zero or reduced rates; and

– the VAT may only be mandatory, as it is in the European Economic Community, down to the wholesale distribution stage.[36]

In its effect, VAT is a general sales tax collected in a different way. It differs from the turnover, or cascade, type of tax in which tax is levied on the cumulative value of a product as it moves from one processor to another and on through the distribution chain, but in which no allowances are made for taxes already paid. The adoption of VAT throughout the EEC allowed for the replacement of turnover taxes and, at the same time, for greater harmonization of indirect taxation throughout the community. GATT normally allows VAT rebates for exports but not for any other type of export-boosting tax reductions. Conversely, VAT-type taxes are collected on imports in the rebating countries in the form of border taxes in order that the corresponding domestic products may remain competitive with imports in the market place. On balance, VAT generally encourages exports, especially of top quality and top-price products.

Governments prefer VAT systems that can be administered principally by the companies themselves and not by public servants. A two-rate system – a basic rate plus zero – is normally the easiest to implement, especially if small companies are exempt from the tax. Revenue is more secure with VAT because taxes are paid throughout the production and distribution chain and not solely at the end of it, as is the case with a sales tax restricted to fully-manufactured items. By means of VAT, governments can have greater knowledge of and control over profit levels at the various stages in production and distribution. From a government point of view, it may be politically easier to introduce a new VAT than to raise the rates of an old sales tax significantly in order to raise additional revenues. On the other hand, the numbers of companies and transactions that need to be policed are much larger than under the normal retail sales tax procedure. Manufacturers and distributors may, on balance, be less enthusiastic about a VAT system than their governments. For example, even though the introduction of VAT could encourage companies to keep *better* business records, the net effect for them will be the keeping of *more* records. Under a VAT system, the costs of accounting are likely to increase considerably.

Having just completed a major reform of the federal income tax system and with a series of amendments still to come, the Government of Canada is unlikely to complicate an already complicated situation even further. Nevertheless, in any future federal tax reform proposals in which serious consideration is being given to the implementation of a value added tax system, the proposals should be worked out in collaboration with provincial authorities.

[36]France, Germany and the Netherlands have, however, extended VAT to the retail distribution level.

VI. Regional Development Programs

This chapter reviews recent attempts by the federal and provincial governments to use formal programs to encourage the establishment and expansion of manufacturing activities in certain parts of Canada in order to help solve the problem of unbalanced regional development and to help reduce regional economic disparities. At the federal level, for example, the discussion has been centred around the responsibilities undertaken by the Department of Regional Economic Expansion in relation to the role of the manufacturing industry in what has been called, throughout the chapter, the overall "development/disparity" problem. At the provincial level, the principal agencies involved are the Departments of Development or Industry and those agencies listed in Table I.2 of Chapter 1 as "Funding Sources". The provincial departments and agencies have, of course, heavy responsibilities for the solution of both *inter-* and *intra-*regional development/disparity problems and for the achievement of provincial – as distinct from national – objectives. The activities of local governments have been omitted from the analysis in this chapter on the grounds that their programs are too numerous and often quite complex, making the brief treatment of them impossible, and because the provincial governments set many of the rules whereby local government programs can be designed and implemented.

This chapter will not attempt an exhaustive assessment of the overall effectiveness of federal and provincial regional development programs – a task that is well beyond the scope of this present study – nor will it present a complete listing of the programs and their comparative terms and conditions.

The material assembled for the writing of this chapter provided some of the input for the Science Council's own report. In particular, it influenced the views of the Council and the Committee on Industrial Research and Innovation in the writing of the section on the *Impediments to Innovation* in manufacturing industry and in the development of the concept of a co-ordinated industrial strategy.[1] It should be pointed out, however, that no fully satisfactory way has yet been found to measure the effectiveness of regional development programs, either singly or as a group.

By Way of Introduction . . .

In the beginning, the problem was seen essentially to be the result of low rural incomes. Later, it was broadened to include the apparently persistent and unchanging disparities in per capita incomes between the various regions and provinces. More recently, the high rate of growth of the Canadian labour force and the persistence of high rates of unemployment and under-employment in Canada and in North America as a whole have added another dimension to the overall problem. As things now stand, the need for thousands of new jobs to be made available in a relatively short period of time seems to have taken precedence over per capita disparities and rural incomes.

The earliest attempts by the federal government to encourage regional

[1]Science Council of Canada Report No. 15, *Innovation in a Cold Climate*, Information Canada, Ottawa, 1971. pp. 27 – 35 and pp. 39 and 40.

economic development were made before World War II under the Prairie Farm Rehabilitation Act (PFRA). This Act was passed in 1935, and amended in 1937 and 1961. Headquartered in Regina, Saskatchewan, PFRA became part of the Department of Regional Economic Expansion (DREE) when the Department was formed on April 1, 1969. Another program began with the passing of the Maritime Marshland Rehabilitation Act (MMRA) in 1948. It was also transferred to DREE in April 1969.

The first fully national program was established in 1961 under the Agricultural Rehabilitation and Development Act. The ARDA program, as it has been called, was intended initially to improve the lower incomes in agricultural occupations and was cost-shared equally between the federal and provincial governments. The 1965 federal-provincial ARDA agreements and the 1966 legislation changed the emphasis of the program from the efficiency of land utilization to the correction of rural poverty in general. In 1966 a new program, the Fund for Rural Economic Development (FRED) was introduced. This Fund was intended to provide a more comprehensive approach to the persistent and chronic poverty of certain rural areas than was possible under ARDA. The principal financial contributions to FRED have been made by the federal government. The industry sectors receiving assistance have included agriculture, fisheries, housing, transportation, manufacturing, and processing. Areas of the Atlantic Provinces, Eastern Quebec and Manitoba have received assistance under the program. Both FRED and ARDA were absorbed into DREE in 1969.

The first federal program designed specifically to assist manufacturing industry in Canada was the Area Development Program which began in December 1960. From then until mid-1963, this program provided tax incentives in the form of accelerated capital cost allowances. In July 1963 the program was taken over by the Area Development Agency (ADA) of the new Department of Industry. A three-year exemption from income tax was provided as an additional incentive to eligible companies. In June 1965 the tax incentive was replaced by a sliding-scale capital grant.[2] The areas where the assistance was available were selected on the basis of persistent and high levels of unemployment, slow employment growth, and low levels of non-farm family income. The program, and the ADA, were absorbed by DREE on its formation.

In December 1962 the Atlantic Development Board (ADB) was established by the federal government to strengthen the economy of the four Atlantic Provinces by means of investments in infrastructure and by evolving a planning framework for the development of the region. The ADB was disbanded in April 1969 on the establishment of DREE. Its programs were absorbed into the Department and a new Council established to advise the Minister on the economic problems of the region rather than to devise and administer studies and financial expenditures.[3]

[2]One of the important arguments in favour of this change was the fact that few companies earn significant taxable incomes in the first three years of their operations.

[3]During its lifetime, however, the ADB administered expenditure commitments of almost $200 million for infrastructure and other projects. The "other" projects included, for example, laboratory buildings and equipment for the Nova Scotia Research Foundation and for the Research and Productivity Council in New Brunswick.

The Cape Breton Development Corporation (DEVCO) is an example of a joint federal-provincial venture. It was set up in October 1967 as a federal Crown corporation to establish, on behalf of the federal and Nova Scotia Governments, a new economic base for Cape Breton. Originally, the coal mines were to be phased out and new employment opportunities provided through the promotion of industrial development based on manufacturing, and assistance in the financing of it. However, the changed fortunes of the Sydney Steel Corporation and higher world coal prices changed plans for phasing out the mines. The Corporation reports to Parliament through the Minister of Regional Economic Expansion.

Some of the provincially-financed attacks on the development/disparity problem involving the encouragement of manufacturing are of relatively long standing. For example, the Newfoundland Government established a number of small manufacturing companies as Crown corporations shortly after the province entered Confederation. Nova Scotia established a Crown corporation, Industrial Estates Limited, in 1957 to encourage the location and expansion of secondary manufacturing in the province. During the 1960s, the Province of Quebec established a number of Crown corporations and public/private joint ventures to encourage the location and expansion of manufacturing enterprises of all kinds. The Saskatchewan Economic Development Corporation was established by an Act of the Legislature passed in 1963.[4] The kinds of programs available through local governments are strongly influenced by the provincial governments in office. Because of their number and variety, the local level programs have not been reviewed in this study.

In their essentials, the regional programs of the federal and provincial governments add up to the fact that the richer regions, provinces and areas help the poorer ones. The most commonly used measures of the disparities between regions, provinces and areas are made on the basis of per capita incomes and unemployment rates, although these measures fail to reflect the disparities fully in "quality of life" terms. In practice, the governments have been emphasizing the development part of the development/disparity problem and have been concentrating on the business of job creation and preservation. Although tourism has recently been receiving more attention than it once did, the federal and provincial governments have placed their development and employment "bets" on the encouragement of manufacturing activities and, in particular, on manufacturing based on the natural resources found in those places most affected by unemployment. Their reasons for doing so are associated with the notion that the "manufacturing multiplier" will also help to create and preserve jobs in the harvesting, extractive and service industry sectors. Therefore, so long as manufacturing industry has this central role to play in the solution of the development/disparity problem, the progress made by governments in the solution of the problem will depend significantly on the state of health of manufacturing activity in this country and on the health of the economy generally.

[4]British Columbia, on the other hand, has not so far provided the kind of financial assistance available in the other provinces.

Canada, of course, is not the only country with regional development problems and programs. As noted in an article in *The Economist*:

"Britain has the second largest, second most expensive policy of aid for depressed regions in the whole of Europe, surpassed only by Italy. For most of the 1960's, measurable British spending on regional aid was over four times that of either France or Germany. It was also more highly concentrated than all but Germany's and Holland's; covering little more than a quarter of the British population (compared with two-fifths of the Italian and French populations). The explanation is simple. British aid goes to the worn out centres of traditional British heavy industry – Tyne and Wearside, Merseyside, the south Welsh mining valleys, Clydeside. The Six, by contrast, have always thought of their underprivileged places as those rural expanses – notably in the north-west and south-west France and southern Italy – where the flight from the land has created problems in some cases amounting to social disaster."[5]

The origins of Canada's regional development/disparity problem, therefore, resemble France's and Italy's more than they resemble Britain's. The same article went on to say:

"The most effective regional policy of all is, of course, a high rate of growth. The Six's prosperity (whatever its cause) has helped their depressed areas quite spectacularly. It explains why the gap between employment in rich and poor areas has closed in all of them, with the single exception of Belgium. The biggest turn around of all was in Italy, where the boom of the 1960's overflowed to the impoverished south. The explanation was by no means simply a drift from the land. The array of loans and other incentives available in Italy's south was sufficient to send, among others, its most capital-intensive industries there – steel to Taranto, chemicals to Sicily. By contrast, the unemployment gap is now widening in the poor areas of Britain because in an investment recession, and during a period of nil growth, no amount of regional incentives make much difference."[6]

In this viewpoint lie two possible lessons for Canada. First, the general economic pattern for successful regional development does seem to be a strong growth pattern. Second, development programs should "shovel" money into the regions which are to receive it. However, the Six and Britain are more populous and much more compact than Canada, they are not staple or raw material producers, and they are not neighbours of the United States. The regional programs devised by the Canadian government and by the provincial and municipal governments compete not only with one another, but also with federal, state and municipal programs south of the border.

[5] *The Economist*, London, October 16, 1971. p. 72.
[6] *Ibid.* p. 73.

Some Regional Statistics Related to Employment and Manufacturing in Canada

The intention in presenting these statistics is to help highlight the problems associated with manufacturing in the regional development context. Unfortunately, it has not always been possible to find statistics for the latest calendar or fiscal years but, since the *Census of Manufactures* most recent published by Statistics Canada covers the year 1969, the majority of the figures used have been for this particular year. Some measure of intercomparison has therefore been preserved. Most of the aggregates have been broken down by provinces, but others are in regional form. This inconsistency does not interfere with the analysis.

The first set of data, in Table VI.1, is intended to illustrate regional disparities expressed in terms of income per head of population and in terms of value added per production or related worker in manufacturing. The leading positions of Ontario and British Columbia in both categories are quite clear, as are the lagging positions of Quebec and the Atlantic Provinces. Preliminary indications are that the relative positions of the regions with regard to these parameters have not changed.

The second set of data, in Table VI.2, gives the estimated population levels for the principal regions of Canada in 1969, 1970 and 1971, and the changes in these levels between 1969 and 1971. A companion set of figures showing unadjusted unemployment estimates for the regions for these same years has been shown in Table VI.3. These latter figures give yet another measure of the size of the development/disparity problem. The Tables show that the highest net population growth took place in Ontario and British Columbia and that, with the exception of the Prairie Region, these provinces also experienced the lowest relative unemployment levels. The positions of the Atlantic Provinces and Quebec were the reverse in both cases. With regard to the Prairie Region, the unemployment figures were the lowest for the five regions, and the population growth was larger than that of Quebec. Much of this growth was in Alberta and offset a decline in population in Saskatchewan.

In its 1970-71 *Annual Report*, the Department of Regional Economic Expansion drew attention to important shifts in the geographic distribution

Table VI.1–Regional Breakdown of Income per Head of Population and of Value Added per Production or Related Worker in Manufacturing in Canada in 1969

Region	Income per Head of Population	Ranking	Value Added per Production or Related Worker in Manufacturing	Ranking
	$		$	
Atlantic	2 033	5	11 700	5
Quebec	2 627	4	14 930	4
Ontario	3 367	1	18 510	2
Prairies	2 786	3	16 800	3
British Columbia	3 121	2	18 700	1
Canada	2 908		16 970	

Sources:
Statistics Canada, *Annual Census of Manufactures for 1969*, Ottawa, October 1971.
Statistics Canada, *Canada Year Book 1970-71*, Information Canada, Ottawa, 1971. p. 1181.
Statistics Canada, *Canadian Statistical Review*, Ottawa, February 1972.

Table VI.2–Estimates of Population in Canada, by Regions in 1969, 1970 and 1971 (in thousands)

	Canada (Incl. Yukon & N.W.T.)	Atlantic Region	Quebec	Ontario	Prairie Region	British Columbia
June 1969	21 061	2 012	5 984	7 452	3 499	2 067
June 1970	21 377	2 018	6 013	7 637	3 523	2 137
June 1971	21 681	2 037	6 030	7 815	3 550	2 197
Growth 1969 to 1971	+ 620	+ 25	+ 46	+ 363	+ 51	+ 129

Source: Statistics Canada, *Canadian Statistical Review*, Ottawa, February 1972.

Table VI.3–Estimated Unemployment Rates and Annual Averages (Unadjusted) in Canada, by Regions in 1969, 1970 and 1971

		Unadjusted Unemployment Estimates, by Region				
		Rates and Annual Averages				
		Atlantic Provinces	Quebec	Ontario	Prairie Provinces	British Columbia
1969	Average (Thousands)	49	158	95	39	42
	Per cent of Labour Force	7.5	6.9	3.1	2.9	5.0
1970	Average (Thousands)	50	183	134	61	67
	Per cent of Labour Force	7.6	7.9	4.3	4.4	7.6
1971	Average (Thousands)	58	198	169	63	64
	Per cent of Labour Force	8.6	8.3	5.3	4.7	7.1

Source: Statistics Canada, *Canadian Statistical Review*, Ottawa, February 1972.

of the population of Canada. Out-migration from the Atlantic Region averaged around 10 000 people a year between 1946 and 1956, and rose to 20 000 a year over the next decade. In overall terms, the people actually in the Atlantic Region accounted for 11.7 per cent of the Canadian population in 1950, 10.5 per cent in 1960, and fell further to 9.4 per cent in 1970. There were similar declines in Quebec, Manitoba and Saskatchewan. Major gains from inter-regional migrations were made by Ontario, British Columbia and Alberta. These three provinces, along with Quebec, also had major gains from immigration from abroad.

Yet another way of looking at the size of the disparities between the regions is on the basis of their relative "stocks" of scientists and engineers. These people represent a basic resource, or strength, which is particularly germane to the potential of a region to respond to programs designed to increase manufacturing activities in all industry groups and in high-technology groups in particular. This kind of information is given in Table VI.4. But the Table should only be considered as indicative of the distribution of the "stocks" and not as a firm measurement of them – for three reasons. First, the figures relate to January 1967; that is, to the situation as it was over five years ago. Second, the coverage of the survey from which the figures were derived did not include all of the eligible scientists and engineers.[7] And third, the principal conclusions have been drawn from highly aggregated inter-regional comparisons. Nevertheless, with these limitations in mind, the distribution shown reflects the relative demand for the skills of scientists and engineers in the various regions of Canada early in 1967.

Table VI.4–The Distribution of Scientists and Engineers in Canada, by Region in 1967

Field of Employment	Percentages of the National Total				
	Atlantic	Quebec	Ontario	Prairie	B.C.
Architecture	3.5	25.5	44.7	13.5	12.8
Engineering	5.6	25.8	45.0	13.8	9.9
Physical Sciences	5.1	21.8	48.4	17.1	7.5
Life Sciences	7.0	20.0	34.6	23.7	14.7
Social Sciences	5.0	18.3	50.1	16.4	10.3
Other	6.6	17.6	53.1	12.2	10.5
Percentage of all Scientists and Engineers	5.7	23.2	45.3	15.6	10.2
Percentage of Canadian Population living in Each Region	9.7	28.8	35.0	16.7	9.8

Note: The "Universe" – or national "stock" – on which this percentage breakdown was based numbered 69 216.
Source: A.G. Atkinson, K.J. Barnes and Ellen Richardson, *Canada's Highly Qualified Manpower Resources*, Research Branch, Program Development Service, Department of Manpower and Immigration, Information Canada, Ottawa, 1970. pp. 92 and 93.

The next two Tables have been constructed from information given in the *Annual Census of Manufactures* for 1969. Table VI.5 emphasizes that 80 per cent of all Canadian manufacturing activities and employment were to be found in Ontario and Quebec, along with 70 per cent of all of the manufacturing establishments. The third province in order, British Columbia, had only about 10 per cent of manufacturing establishments

[7]The coverage was somewhere between 60 and 70 per cent of total eligible "universe".

Table VI.5–National and Provincial Activities in Manufacturing in 1969

Province	Percentage of National Total of Value of Shipments of Goods of own Manufacture	Ranking on Basis of Value of Shipments	Percentage of National Total of Value Added in Manufacturing Activity	Percentage of National Total of Manufacturing Establishments	Percentage of National Total of Production and Related Employees
Ontario	52.0	1	52.8	39.8	48.3
Quebec	27.8	2	28.2	32.1	31.9
British Columbia	8.5	3	8.7	10.2	7.9
Alberta	4.0	4	3.5	5.7	3.0
Manitoba	2.7	5	2.4	4.2	3.0
Nova Scotia	1.6	6	1.5	2.6	2.2
New Brunswick	1.5	7	1.4	1.9	1.9
Saskatchewan	1.2	8	0.9	2.3	0.8
Newfoundland	0.5	9	0.5	0.8	0.8
Prince Edward Island	0.1	10	0.1	0.4	0.2
Yukon and N.W.T.	–	11	–	–	–
Canada National Totals	$45.9 billion	–	$20.1 billion	32 676	$ 1.19 million

Source: Statistics Canada, *Annual Census of Manufactures* for 1969, Ottawa, 1971.

Table VI.6–Provincial Activities in Manufacturing, by Industry Groups and Numbers of Establishments in 1969

Industry Group	Numbers of Manufacturing Establishments											
	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon & N.W.T.	Total
Food and Beverage	97	79	274	208	1 798	2 049	337	227	461	548	5	**6 083**
Tobacco Products	–	–	–	–	17	13	–	–	–	–	–	**30**
Rubber	–	–	–	–	36	55	1	–	4	8	–	**104**
Leather	3	1	1	4	268	201	17	–	10	16	–	**521**
Textile	2	4	12	8	435	391	43	8	22	48	–	**973**
Knitting Mills	–	–	6	2	203	108	5	–	3	6	–	**333**
Clothing	2	–	4	5	1 552	526	121	3	23	52	1	**2 289**
Wood	74	28	209	150	1 090	775	91	99	250	724	11	**3 501**
Furniture and Fixtures	4	1	40	25	782	944	109	33	120	254	1	**2 313**
Paper and Allied	4	1	13	18	208	291	24	7	20	54	–	**640**
Printing, Publishing	26	7	74	48	1 054	1 584	187	121	225	321	5	**3 652**
Primary Metal	2	–	6	7	104	216	16	3	24	39	–	**417**
Metal Fabrication	10	6	50	40	959	2 066	132	81	229	415	3	**3 991**
Machinery (except electrical)	–	2	7	6	133	498	46	29	43	65	–	**830**
Transportation equipment	9	6	58	12	162	357	42	7	69	161	–	**881**
Electrical products	1	–	5	5	164	456	24	4	17	50	–	**726**
Non-metallic minerals	15	5	38	37	334	519	45	50	105	136	2	**1 286**
Petroleum and Coal	1	–	2	1	19	29	6	10	16	14	1	**99**
Chemicals and chemical products	5	4	10	14	335	578	32	11	42	102	3	**1 136**
Miscellaneous	6	4	37	37	814	1 320	103	55	179	316	–	**2 871**
Total	**259**	**148**	**846**	**628**	**10 467**	**12 976**	**1 381**	**748**	**1 862**	**3 329**	**52**	**32 676**

Source: Statistics Canada, *Annual Census of Manufactures* for 1969, Ottawa, 1971.

and an even smaller share of aggregate production and employment. Table VI.6 shows the importance, from the point of view of the numbers of establishments, of the resource- and staple-based manufacturing industries: food and beverage, wood products, paper and allied industries, and primary metals groups. Generally speaking, the so-called "high technology" industries such as chemical and electrical products played a secondary role in the numbers game. Also, the resource- and staple-based industry groups were widely spread throughout the provinces while the "high-technology" groups were concentrated in Ontario, Quebec and British Columbia.

The contributions of the cities and metropolitan areas of Canada to manufacturing are usually given much less prominance than are the provincial contributions. One manifestation of this is the dearth of relevant statistics. The most recent year for which these are available is 1967. Table VI.7 gives data for the largest fourteen "census metropolitan areas" ranked according to value of manufacturing shipments. Toronto and Montreal head the list. Although these two metropolitan areas had similar numbers of establishments, Toronto had a visible edge from the point of view of the value of shipments, aggregate value added, and value added per production or related worker. Hamilton, in third place, was well behind both Toronto and Montreal except as regards value added per worker. The high figure for value added per worker in Windsor was, of course, related to the predominance in the city of the auto industry.

As shown in Table VI.8, an average of 56 per cent by value of the shipments made by Canadian manufacturers during 1967 had first destinations in their regions of origin. *In other words, every region was its own best customer* or, put another way, the principal "first destination" markets in Canada are usually local markets. An average of 28 per cent of the shipments had first destinations in the other region, and the remaining 16 per cent were exported. These figures come from what has been, thus far, the most detailed statistical examination by Statistics Canada of the markets served by Canadian manufacturers.

The Current Federal Approaches to Regional Development

Explaining the federal approach, a senior official had this to say:

"While we tend to measure the regional economic disparity problem in terms of per capita income, it is important to keep in mind that this measure reflects the symptoms of the problem and not its causes. The causes stem from differing resource endowments, distance from markets, low productivity, low investment and a variety of structural difficulties ....

"It is possible to define the objective of reducing regional economic disparities in terms of per capita incomes – that is in terms of raising such incomes in all provinces to the national level. It follows from this approach, that the options open are greater mobility out of the slow-growth regions, higher welfare assistance, as well as the development of the economy of the region ....

Table VI.7–Manufacturing Activities in the Principal Metropolitan Areas of Canada in 1967

Census Metropolitan Area	Number of Manufacturing Establishments	Value of Shipments of Goods of own Manufacture $ millions	Ranking by Value of Shipments	Value Added in Manufacturing Activity $ millions	Value Added per Production or Related Worker $
Toronto, Ont.	5 716	7 331	1	3 241	15 710
Montreal, Que.	5 505	5 911	2	2 670	13 510
Hamilton, Ont.	707	1 850	3	918	17 400
Vancouver, B.C.	1 846	1 652	4	715	15 800
Windsor, Ont.	402	1 417	5	608	23 000
Winnipeg, Man.	1 022	897	6	352	12 310
Kitchener, Ont.	521	818	7	386	12 170
Edmonton, Alta.	560	618	8	243	17 680
London, Ont.	324	544	9	265	17 270
Calgary, Alta.	477	466	10	178	18 640
Quebec, Que.	533	458	11	217	12 220
Ottawa, Ont.	350	387	12	190	15 160
St. John, N.B.	96	222	13	82	16 580
Halifax, N.S.	139	204	14	85	16 230

Source: Statistics Canada, *Canada Year Book 1970-71*, Information Canada, Ottawa, 1971.

Table VI.8–First Destinations of Shipments of Canadian Manufactures in 1967

	First Destinations – Percentage of Total Values of Shipments							
Region of Origin	Atlantic Region	Quebec	Ontario	Prairie Region	British Columbia Yukon and N.W.T.	All Canadian Destinations	Other Countries	**Total**
Atlantic	54.4	8.4	8.7	1.8	0.7	74.0	26.0	**100.0**
Quebec	3.8	54.2	19.4	4.6	2.7	84.7	15.3	**100.0**
Ontario	3.3	13.2	57.8	7.3	3.9	85.5	14.5	**100.0**
Prairie	1.0	6.2	8.2	70.9	7.0	93.3	6.7	**100.0**
B.C., Yukon	0.6	2.0	3.9	8.5	48.6	63.6	36.4	**100.0**
Canada	4.9	23.1	36.9	11.5	7.3	83.7	16.3	**100.0**
Canada – by Value ($ billions)	1.9	8.9	14.2	4.4	2.8	32.1	6.3	38.4

Source: Statistics Canada, *Destinations of Shipments of Manufactures, 1967*, July 1971. Cat. No. 31-504.

"It must be recognized that people have always moved, and will continue to move, to those places where opportunities are greater. It must also be recognized that people have a right to welfare assistance when their incomes are interrupted or reduced through circumstances beyond their control.

"The federal government, however, has now stated that it intends to give priority to a development approach to the problem of regional economic disparity."[8]

As noted in the introductory section of this chapter, the federal attack on the development/disparity problem has been led by the Department of Regional Economic Expansion (DREE) since April, 1969. The main purpose in establishing DREE was to bring about the consolidation of a number of different agencies and programs active in regional economic expansion and social adjustment work.

The Second *Annual Report* of the Department described its overall strategy as having three major and closely-related components:[9]

Industrial incentives, the object of which is to create continuing productive employment by making investment in viable industry more attractive in the relatively slow-growth regions of the country.

Infrastructure assistance, the object of which is to provide the additional social capital for water systems, roads, housing, etc., which are necessary to facilitate economic expansion and social adjustment in areas requiring special measures to realize their development capabilities.

Social adjustment and rural development, the object of which is to facilitate the access of people in rural areas to productive employment opportunities and to improve incomes through more efficient utilization of rural resources.

Development incentives are provided by DREE principally under three measures: the Regional Development Incentives Act (RDIA); its predecessor, the Area Development Incentives Act (ADIA); and the Special Areas Incentives designated under the Government Organization Act of 1969. Incentive measures may also take the form of joint federal-provincial projects, of which the New Brunswick Multiplex Corporation is an example. The function of all of the measures is to encourage new, productive industrial employment in the slow-growth regions of the country. The incentive measures are the responsibility of the incentives Division of the Department.[10]

The grant-based Regional Development Incentives Act became effective on July 1, 1969. The initial regulations under the Act were promulgated by Order-in-Council and became effective on August 7, 1969.[11] In cooperation with provincial authorities, DREE officials designated

[8]J.P. Francis, (Assistant Deputy Minister, Planning), *The Federal Approach to Regional Development*, in the Proceedings of the Conference on Economic Development in Manitoba, held at Winnipeg, October 25 – 26, 1971. p. 25.

[9]DREE *Annual Report* 1970-71, Information Canada, Ottawa, 1972. p. 2. The discussion of the third component, social adjustment and rural development, is beyond the scope of this present report.

[10]The work of the division has been described in some detail in the *Annual Report* of the Department for 1970-71.

[11]*Canada Gazette*, P.C. 1969-1571, August 27, 1969. SOR/19-398.

certain regions in all ten provinces as eligible for assistance under the Act. These have been identified as Incentive Regions A and B on the map on Page 141.[12] Their designations were to be subject to review before the end of June 1972, and the incentives applicable to them were to apply to plants brought into production before the end of 1976.[13]

The RDIA Act was amended in December 1970 to make provision for loan guarantees to be available to secondary manufacturing and processing industries in addition to the normal grants. These guarantees were also made available to new ventures such as hotels, recreation facilities, warehouses, and shopping centres, thereby giving recognition to the fact that tourist and retail distribution activities could supplement the regional development and job-creation load being carried by the secondary manufacturing and processing industries. The amendment also made special incentive grants applicable to certain counties in Eastern Ontario and in Southwestern Quebec, including Montreal, that were not originally designated in the Act. This became Incentive Region C, as shown on the map, and the grants awarded within it were to be for plants that would be in production by December 31, 1972.[14] To compensate for possible loss of "appeal" due to the creation of Region C, the levels of the grants available in the designated parts of the Atlantic Provinces – to be called Incentive Region A – were raised by the amounts available in Region C. At the time the amendments were made to the Act, a Regional Development Incentives Board was established to advise the Minister on the administration of the Act. The RDIA Act currently provides four types of incentive:

– a primary incentive grant for the establishment, expansion or modernization of a facility – which cannot exceed the lesser of 20 per cent of the approved capital cost of the facility or $6 million,

– a secondary incentive grant for the establishment of a new facility or expansion into new product lines – which cannot exceed 25 per cent of the approved capital cost, plus $5 000 for each job created directly by the facility,

– the special incentive grant applicable to parts of Quebec and Ontario and, additionally, to the designated parts of the Atlantic Region – where the incentive cannot exceed 10 per cent of the approved capital cost, plus $2 000 for each job created directly by the facility,

– the loan guarantees, to be eligible for which the commercial facilities must have minimum capital costs of $5 million in metropolitan Montreal, one million dollars in other large population centres, and one-half million dollars in any other place – but guarantees cannot exceed 90 per cent of the borrowing plus interest, or 80 per cent of the approved capital cost of the project, and are subject to a fee payable to the federal government.

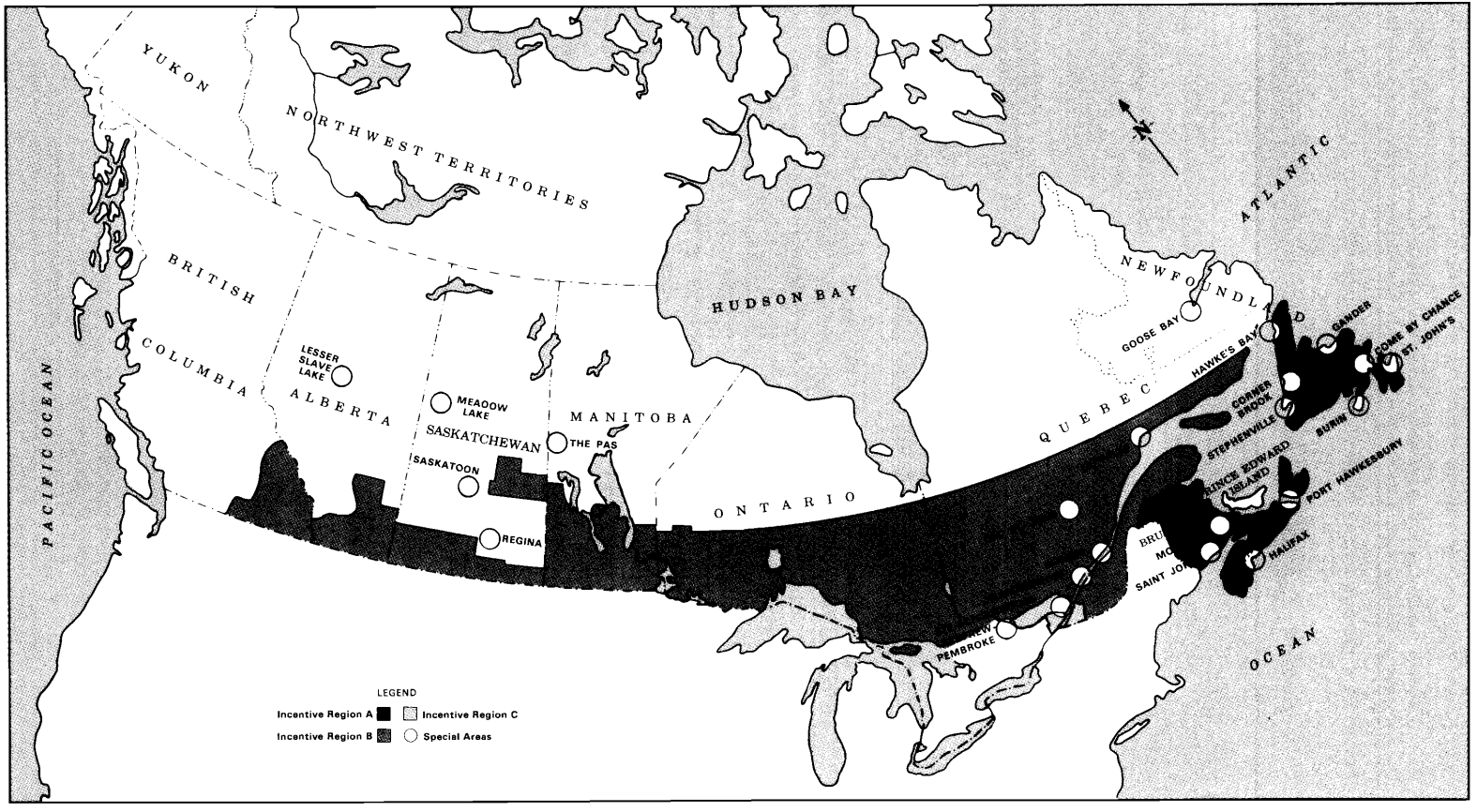
In the designated part of the Atlantic Region, the top incentive grant is, therefore, 35 per cent of the approved capital cash plus $7 000 per directly-created job. However, in no case may the total incentive exceed

[12]These regional "titles" did not actually come into existence until December 1970.

[13]On June 7, 1972, the Regional Expansion Minister, the Honourable Jean Marchand, announced that the designations would be continued unchanged for a further eighteen months.

[14]On June 7, the Minister also announced that the period allowed for qualification for Region C grants would be extended by 12 months, to July 1, 1973.

Figure – Department of Regional Economic Expansion Designated Regions and Special Areas, 1971



Source: Department of Regional Economic Expansion, Public Information Division, Cartographic Unit, 1971.

$30 000 per directly-created job or one half of the total capital cost, whichever is the lesser.

Grants made under RDIA are subject to negotiation between the Department and the applicant companies, and the full amounts need not be awarded. Not all applicants receive offers, and not all offers made by DREE are accepted.

The Department of Regional Economic Expansion has continued to administer the phasing out of RDIA's predecessor, the Area Development Incentives Act. This Act was originally the responsibility of the Department of Industry, and became effective in July 1965. The final date for applications under ADIA was December 31, 1969. The eligible new or expanded plants had to be in operation by March 31, 1971, unless an extension was officially authorized. Under this program, grants were again related to capital costs of new machinery, equipment and buildings under a sliding formula and were applicable to designated areas. The maximum grant for any new facility or expansion was $5 million. Up to March 31, 1967, grants could be taken optionally as a credit against future income taxes under Section 71A of the (old) Income Tax Act. During its lifetime the ADIA program generated 1 920 applications for grants and 460 for tax credits, but not all of these were approved. The program generated, at most, some 60 000 new jobs and new investment in fixed assets estimated at almost $2 billion. The lion's share of jobs and investment went to the Atlantic Region and Quebec.

During 1969-70, federal-provincial task forces reviewed provincial needs for economic expansion and social adjustment and recommended the establishment of 22 special areas in eight of the ten provinces.[15] Later, another was added at Ste. Scholastique, in Quebec. Federal-provincial Special Area Agreements were subsequently negotiated for each of them, covering the period April 1, 1970, to June 30, 1972.[16] All of them are shown by name on the map on Page 141. These Agreements are the principal means through which DREE provides infrastructure assistance.

In addition to the Department of Regional Economic Expansion, an extensive list of other departments and agencies have roles to play, and programs to operate, in support of regional development. The list includes:

– the Cape Breton Development Corporation, the Canadian Council for Rural Development, and the Atlantic Development Council – all of which report to Parliament through the Minister of Regional Economic Expansion,

– the Departments of Manpower and Immigration; Industry, Trade and Commerce; Labour; and Supply and Services; and the National Research Council,

– the Departments of the Environment; Energy, Mines and Resources; and Agriculture; and the National Energy Board,

[15]Omitted: Prince Edward Island, whose Development Plan comes under the FRED program, and British Columbia.

[16]On June 7, Minister Marchand announced that qualification for the special incentive arrangements available at Saskatoon, Regina, and Renfrew-Pembroke would be extended for a further eighteen months, to the end of 1973.

– the Departments of National Health and Welfare and Indian and Northern Affairs,

– the Ministry of Transport, the Canadian National Railways and Air Canada, the Canadian Transport Commission, and the Department of Public Works,

– the Industrial Development Bank, the Export Development Corporation, and the Canada Development Corporation,

– the Ministry of State for Housing and Urban Affairs and the Central Mortgage and Housing Corporation

–the Canadian Wheat Board and the other federally-supported marketing boards and corporations,

– the Department of National Defence.

In financial terms, the federal government assists regional development to some degree by means of short-term programs such as "Winter Works", the Opportunities for Youth Program, and the Local Initiatives Program.[17] It assists significantly through conditional and unconditional grants, including the federal-provincial tax equalization payments. The federal government may also provide encouragement to firms to locate in particular parts of the country by less direct methods; for example, it could make special arrangements for the importation of raw materials or components.

The Current Provincial Approaches to Regional Development[18]

Nine out of the ten provinces now seek to attract new manufacturing plants and expanded or modernized facilities by means of financial incentive grants or loans or both. The exception is British Columbia but, as noted in Chapter 3, the Government of Premier Bennett made a proposal in the Spring of 1972 that called for the establishment of a fund to provide assistance and for a Crown corporation to administer it. Not all of the remaining nine have been, or are, equally committed to providing financial help to individual companies. Until the change of government in 1971, for example, the Province of Alberta was not especially active although it did have the means to assist interested companies. But in all the provinces, different combinations of information and advisory services and other forms of non-financial assistance have been available to both resident and non-resident companies. The municipalities have been as active as the

[17]The "LIP" program has contributed to the encouragement of technology-based innovation. A project called "Innovation-Québec" was started in March 1972 on a limited-time basis. Originated and staffed by people who were themselves unemployed, the project has provided a forum for the preliminary assessment of the work of several hundred independent inventors and has also provided opportunities for some of them to begin the development of their inventions.

[18]The activities of the provincial governments in the encouragement of manufacturing industry in the regional development field are assisted by the eight Research Councils by means of in-house and contract research, information and advisory services and in a number of other ways. The activities of the individual Research Councils will not be included in this section of the chapter because of their general similarity and the fact that these activities have already been described in detail in another study in this series of background studies: Andrew H. Wilson, *Research Councils in the Provinces: A Canadian Resource*, Science Council of Canada Special Study No. 20, Information Canada, Ottawa, 1971.

policies and programs of their provincial jurisdictions and their own needs and resources would allow.

At the provincial government level the methods of search vary from one jurisdiction to the next. In some cases, an active and leading role in large projects is played by the Premier himself. In others, the principal public official is the Minister of Industry or of Development, or the head of a provincial Crown corporation. In some large projects, the provinces will also arrange for a significant portion of the required long-term financing. In others, the province will act more like an accountant than a broker. Not far away is the federal Department of Regional Economic Expansion, although its contribution to the total of any one incentive "package" may be relatively small because of the program rules that must be applied.[19] Again, at the municipal level the prime mover will often be the mayor and the city manager with the province looking over their shoulders.

It is important to recall, in the context of this present discussion of the approaches of the provinces, that there are *intra*-regional development/disparity problems as well as *inter*-regional ones which complicate the whole business of regional development. In the eyes of the provincial governments, the former will usually take precedence over the latter. In situations of this kind lie difficulties for federal-provincial planning and for negotiations leading towards the reduction and eventual removal of both kinds of problems.

In the case of **Newfoundland**, the government of Premier Smallwood was one of the most active in the encouragement of regional development, and by far the most active member of it was the Premier himself. He began right after the Province entered Confederation and continued until the day early in 1972 on which he resigned from office.

Although it has a plentiful supply of labour and a "mid-Atlantic" location, the Province of Newfoundland and the Island, in particular, has supported little in the way of self-sustaining secondary manufacturing industry. Contributing to this situation have been the lack of available technical and management skills, transportation and transportation rate problems, tariff barriers to U.S. and other markets, and labour problems. The only continuing activities have been associated with shipbuilding and repair, the sea, and the exploitation of hydro-electric and mineral resources. The first attempts by the provincial government to assist manufacturing financially were centred on loans of about $17 million, that were made to establish eighteen small companies as Crown corporations but, in the end, almost all of them closed down. The government also introduced a program in association with the federal government to resettle inhabitants of the outports in larger centres of population, but this program has not been an unqualified success. The most recent attempts in association with DREE to establish small manufacturing plants have been more successful. Although

[19]In the past, certain provincial governments have become involved in the promotion and financing of large single manufacturing and resource-development projects. Newfoundland, for example, under the leadership of Premier Smallwood, sponsored the development of hydro-electric power at Hamilton (later Churchill Falls) in the Labrador interior. Not all of these projects have been free from problems. The problems associated with five of them, including Churchill Falls, have been discussed at length in a book: Philip Mathias, *Forced Growth*, James Lewis and Samuel, Publishers, Toronto, 1971.

the Island of Newfoundland is part of the so-called DREE "green-belt", the mainland of Labrador is not. This may have had the effect of encouraging the diversion of ore-beneficiating plants from the Labrador interior to the part of Quebec to the south of Labrador, which is in the "green-belt". For some time the Newfoundland and Canadian Governments have been negotiating the establishment of a (Newfoundland) Industrial Development Corporation to lend money to new businesses, to help expand others and, in some cases, to purchase equity positions.

Employment in manufacturing in **Prince Edward Island** characteristically dips each year to a winter low between January and March and rises again to a summer high in July and August. On the basis of sales, the leading manufacturing industries are meat products (about 37 per cent of the total), processed fruit and vegetables (about 21 per cent), and fish products (about 13 per cent). In spite of the predominance of the agriculture and fish processing industries, the province also has some interest in attracting small, new secondary-type manufacturing plants.

In March, 1965, the Assembly passed an Act establishing Industrial Enterprises Incorporated (IEI) as a provincial agency, but under the authority of a board of directors. The primary objective of IEI has been to provide assistance in the expansion, rehabilitation and diversification of existing companies as well as to assist new companies locating in the province. The Prince Edward Island Lending Authority was established by legislation in 1969 to assist manufacturers, processors, and other eligible businesses to obtain operating capital, as well as medium-term loans, in order to establish and maintain their operations. In addition, the P.E.I. Department of Industry and Commerce has set up a Business Services Unit which provides technical, economic and associated services free to local industries and an Industrial Development Unit which is responsible for attracting new industries to the Island and expanding existing industries. A separate Market Development Centre has also been set up to collect and provide, among other things, up to date information on markets, and to develop, test and complete market analyses for new products.

The Province of **Nova Scotia** established an Industrial Assistance Fund in 1958. In 1972, this Fund's successor was amalgamated with three others under the new Nova Scotia Resources Development Board. The Board, in turn, is affiliated with the recently organized provincial Department of Development, which has a co-ordinating and promotion role. The bulk of the financing of new and expanded manufacturing industry in Nova Scotia has come, and will continue to come, from Industrial Estates Limited (IEL), created as a Crown corporation by the Government in 1957. The Province also participates with the federal government in supporting the Cape Breton Development Corporation (DEVCO), which has been mentioned already in this chapter and in a previous one.

The agency of the **New Brunswick** Government responsible for the co-ordination of development programs and other activities is the Department of Economic Growth. Established a few years ago under the Administration of Premier Robichaud, it was continued by the present Hatfield Administration. The Department of Economic Growth is responsible for two Boards designed to give additional assistance to industry.

The Industrial Finance Board provides assistance to individuals, associations or companies in the business of manufacturing in the form of bank loan or bond guarantees. The purpose of the other Board, the Guarantee Loan Board, is to guarantee large loans for individual projects that require financing beyond the scope of the Industrial Finance Board and the Development Corporation. The Deputy Minister in the Department of Economic Growth is also the Chairman of the New Brunswick Development Corporation (NBDC). The Corporation is a Crown agency whose principal task is to develop new industry in the province and to encourage the expansion of existing companies. It has, for example, responsibility for developing and administering three of the industrial parks in the province, each of which has been set up as a separate company. The N.B. Multiplex Corporation, as it is now known, was "spun-off" by the Development Corporation. Multiplex is supported by the federal and provincial governments and is attempting to assemble a complex of interrelated metalworking industries to be established near Saint John.

In **Quebec**, the Administrations of Premiers Lesage, Johnson and Bertrand and their successor, Premier Bourassa, have all been active in regional development. The measures taken have covered several forms of activity. For example, in the all-important energy field the various independent hydro-electric companies were taken over by the provincial government and brought into the Hydro-Québec system. The massive Manic-Outardes projects were built to supply the province with hydro-electric energy. Hydro-Québec concluded a long term agreement to buy power from Churchill Falls in Labrador and, in association with Atomic Energy of Canada Limited, built a nuclear power plant at Gentilly. The government recently began what may become the very large James Bay hydro-electric project.

In recent years, and in association with the federal government, successive Quebec Governments have also spent considerable sums of money in the upgrading of the provincial highway and other transportation facilities. In common with the other provinces, Quebec has been active in the establishment and development of industrial parks.

Over the years, the Quebec governments have provided many different kinds of support for manufacturing industry. They have, for example, established special agencies such as REXFOR, SOQUEM and SIDBEC whose functions were associated with both regional and industrial development. The General Investment Corporation of Quebec (GIC)[20] was established by law in 1962 as a public holding company, with government financial participation, to bring about the establishment, growth and rationalization of industrial enterprises, to create employment, and to encourage Quebec residents to participate in support of these activities. The Government's loan support for manufacturing industry was administered first of all by the Industrial Credit Bureau, the provincial equivalent of the Industrial Development Bank, which was recently merged into the new and more broadly based Quebec Industrial Development Corpor-

[20]In French: la Societé générale de financement du Québec (SGF). The GIC is the nearest provincial equivalent of the Canada Development Corporation. Its capital structure has recently been reorganized.

ation.[21] The Quebec Deposit and Investment Fund[22] was established in 1965 to invest the pension funds entrusted to it. Although not strictly a regional development or industrial support agency, the Fund nevertheless influences development and manufacturing through the investments it makes. The agency of the Quebec Government which plays the key role in the development of manufacturing industry throughout the province, in the co-ordination of its regional aspects, is the Department of Industry and Commerce.

The Quebec Government has, like the federal government, used the "self-destruct" type of legislation with regard to regional development incentive programs. For example, the Regional Industrial Development Assistance Act (RIDAA) became effective in 1968, but expired on March 31, 1971, after a three-year life. This program was established in order to help economically underdeveloped areas of Quebec which meant, in practice, all of the province except the Montreal area. For the period September 1, 1969, to September 1, 1972, the Province of Quebec has in operation a special incentive program designed to provide financial assistance to companies in high-technology sectors of industry or to companies manufacturing products new to Quebec. Fifty million dollars have been allocated to this program. Grants are available for the construction of new or expanded facilities to companies in the electrical equipment, electronics, chemicals, industrial machinery, and aerospace industry sectors that have not received federal assistance under the RDIA program. The companies themselves, or their parent companies, must be internationally known and they must serve export as well as domestic markets.

For the period covered by the RIDAA program, a new section, 16a, was in force within the Quebec Corporation Tax Act. This section was enacted in order to stimulate industrial development by allowing profit tax reductions to manufacturing and processing companies which invested in plant, machinery and equipment. Section 16a was amended in April 1971 to include additional provisions effectively consolidating and replacing the RIDAA program.

A recent **Ontario** publication lists 470 programs available from the various departments and agencies.[23] About 300 of these are geared to basic social, welfare, health and educational needs, to the preservation or use of natural resources, and to local government support. The remaining 170 or so are classed as "Business Industry and Agricultural Aids" which tend to improve the economic environment of the community. Of this number, about one-third are relevant to agriculture, about one-quarter to the manufacturing industry, and the remainder to other types of business activity. Of the 170, roughly 50 include financial assistance of some kind, 100 include advisory services, and 150 include direct services of one kind or another. The new Ontario Department of Industry and Tourism is responsible for about thirty of these programs and the Ontario Development Corporation (ODC) for five.

[21]In French, l'Office du crédit industriel du Québec (OCI) and la Societé de développement industriel du Québec (SDI).

[22]In French, la Caisse de depôt et placement du Québec (CDP).

[23]Ontario Economic Council, *Catalogue of the Ontario Government Services*, Queen's Publisher, Queen's Park, Toronto, 1970.

The new Department of Industry will continue the promotional activities designed to attract industries in Ontario and to sell Ontario-made goods in foreign markets. Its role may best be described as catalytic. It provides many kinds of assistance, but has no programs involving direct loans or grants to manufacturing industry. These are provided by the Ontario and Northern Ontario Development Corporation (ODC and NODC). The ODC was established in June 1966 as the successor to the Ontario Development Agency. It was given extended financial powers and among its principal functions was the duty to assist companies wishing to locate new manufacturing plants in Ontario or to expand existing operations in the province. Under its Equalization of Industrial Opportunity (EIC) program, ODC can offer loans forgiveable over a six-year period to qualified secondary manufacturing companies wishing to locate in a municipality approved by the Corporation in a slow-growth area of the province. The NODC was established in 1972 to stimulate the economic growth of the Northern part of the province by means of financial and business services to the manufacturing industry.

The participation of the present and the previous two **Manitoba** Administrations in regional development has been coloured by the highly visible problems surrounding the Churchill Forest Industries complex at The Pas. At the time of writing, the judical inquiry into the matter is still in progress. The regional development problem in Manitoba has also been complicated by the federal government through the closing of the Forces bases at Gimli and Rivers, and by Air Canada through the closing of its Winnipeg maintenance base. On the other hand, the first phase of Manitoba Hydro's Kettle Rapids project is almost complete. But the overall employment situation in the province has not been improving rapidly enough and the provincial government has announced an extensive special capital works program and an additional program for local improvements by schools, municipalities, and other agencies. The Government is still concerned about the continuing heavy dependence of the Province on natural resource-based industries which employ relatively fewer people in relation to the capital investments involved than does manufacturing.

The Manitoba Development Corporation (MDC) is one of the two principal government agencies associated with regional development. Its principal objectives are to provide financial assistance to firms to meet their capital requirements, to attract new industries to the province, and to encourage the expansion and modernization of existing companies. In association with the Department of Industry and Commerce, the Corporation will also make available the advice and assistance of its engineers, economists and other experts in the assessment and implementation of potentially innovative manufacturing and marketing ideas and on management problems generally.

With the development of the potash industry in addition to wheat production in **Saskatchewan,** the province had by 1965 become a two-product economy. But as events a few short years later proved, this amount of diversification has not been enough. Both the wheat and potash markets turned down at the same time. Added to the diversification problem was unemployment, especially in the northern half of the province,

where large numbers of native people were involved. In the South, professional people as well as people with lesser skills left the province to find jobs.

The two provincial agencies most concerned with regional development from the point of view of manufacturing industry are the Department of Industry and Commerce and the Saskatchewan Economic Development Corporation (SEDCO). The Corporation and its associated Industry Advisory Council, were established under the Industrial Development Act of 1963 to provide financial and other assistance to industrial enterprises proposing to establish or expand operations in Saskatchewan. SEDCO is a Crown agency and both it and the Council are the responsibility of the Minister of Industry and Commerce. During his period in office, Premier W. Ross Thatcher was also the Minister of Industry and Commerce and took a strong personal interest in the problems of industrial development. His successor, Premier Blakeney, initially took the additional portfolio. The Department of Industry and Commerce offers a wide variety of services which can be related to regional development. Its Area and Trade Development Branch, for example, helps to foster the economic growth of Saskatchewan communities, with particular emphasis on smaller population centres. The Industrial Development Branch is responsible for the promotion of new manufacturing operations, assisting with the expansion of existing companies and the identification of up-coming manufacturing opportunities. In 1970, the Department became responsible for the administration of the Industry Incentives Act designed to encourage by means of loans the establishment, expansion and modernization of the manufacturing industry. The Saskatchewan Act is to be supplementary to the federal RDIA program and is to help smaller centres.

The Province of **Alberta** first began to provide services in support of manufacturing industry thirty years ago when, through the Provincial Marketing Board and Marketing Services Limited (MSL), the province acted as a purchaser and storer of inventories and gave management services. In 1964, the Alberta Commercial Corporation (ACC) was established, replacing the Board and MSL and drawing its support from the new Commercial Branch of the Department of Industry and Tourism. The ACC is a Crown corporation. It may offer financial assistance to companies for the purchase and storage of raw materials for later delivery to the client company, for the purchase of production equipment when no other source of financing is available, and for the purchase of land and buildings. The ACC also offers cost-free business management guidance to small and growing companies that cannot otherwise obtain these services. Until the newly elected Administration of Premier Lougheed introduced the Industrial Development Incentives Act, the ACC was the only provincial agency offering financial assistance to industry. Under the 1971 Act, an Alberta Industrial Incentives Board was established with a membership of five. The Act was specifically designed to attract secondary manufacturing companies. The primary function of the Board and its staff is to administer a $10 million Industrial Development Incentives Fund. The Board may make loans to new companies and to companies proposing to substantially expand, diversify or modernize. The new Alberta program is intended to

fill gaps left by RDIA and to diversify manufacturing into the smaller population centres. It is also intended to help smaller companies.

The Province of **British Columbia** is still very much a natural resource-based province. The leading industry sector is forestry, followed by mining, tourism, agriculture and fishing. Manufacturing as an activity is predominantly resource-based. British Columbia, like Ontario and Manitoba, has a Mineral Processing Act designed to encourage more extensive beneficiation of ores before they leave the province but, again like Ontario and Manitoba, the Act, for all practical purposes, is not in operation.

In the Spring of 1972 proposals were made for the setting up of a financial assistance program to facilitate regional development in British Columbia by means of the establishment of new manufacturing facilities. Only a small part of the southeast corner of the province has so far been designated by the federal government for assistance under RDIA. In practice, in the past, the B.C. Government Departments have done little more than provide information and other services to encourage regional development through manufacturing, although two provincially-owned corporations, B.C. Hydro and the Pacific Great Eastern Railway, have been a great deal more active. The principal departmental support for new and existing manufacturing industry in British Columbia comes from the provincial Department of Industrial Development, Trade and Commerce. Its activities include promotion activities through British Columbia House in London, England, and in San Francisco and Los Angeles, California; participation in trade fairs and international expositions; the publication and distribution of information; the organization of seminars and conferences; and the preparation of economic surveys and market information.

Regional Development Programs in Perspective

The programs never lack critics. Municipalities, for example, become concerned that the federal and provincial governments are exercising their authority under these programs without consulting the local level of government or the people of the region in question, or without regard to their needs for new tax revenues to meet new and expanding responsibilities and commitments. Provincial governments can be apprehensive that their own priorities are being subordinated by the federal government to a set of national priorities that is of less immediate concern to them. One example of this apprehension is the feeling, among the richer provinces, that the tax revenues being taken from them are too high and that some of these revenues are being diverted from high productivity to low productivity use unnecessarily. The federal government, in turn, can have its programs duplicated, or its effects offset in some way, by the governments of the provinces. Taxpayers also worry about wasted tax dollars and ineffectual post-grant activity leading to business failures. The public, generally, may be worried by the lack of government concern for the level of foreign direct investment and for the control of this kind of investment by means of regional development programs. The public may also be critical of the management abilities of the provincial governments.

As federal Minister of Regional Economic Expansion, the Hon. Jean

Marchand has repeatedly stated that the government considers the solution of the development/disparity problem to be essentially a long term commitment and, contrary to the expectations of many critics, not one that can possibly be solved overnight. Nevertheless, at the federal level and also in some of the provinces, there have been considerable accumulations of experience over the past decade or more with regard to programs designed to attack the development/disparity problem. But some of the progress made during the early and middle 1960s has been undone and perhaps over whelmed by the size of the unemployment problem since 1969.

The available evidence points to the fact that, unless living and other standards for most Canadians are to be allowed to fall, the solution of the development/disparity problem in this country will require substantial future growth of the economic kind. The evidence also indicates that the solution has significant political and jurisdictional implications at the national, regional and local levels. But a number of other factors need to be taken into account:

– While it is desirable, in purely economic terms, to move people from low to high productivity employment and from high to low unemployment regions, it is noticeable that people, often in large numbers, can, and do, refuse to be moved.

– Manufacturing is only one of the ways that can be used to help solve the development/disparity problem and, in some parts of the country, it may be the least desirable one: manufacturing, on the other hand, may be the catalyst that makes long term solutions possible in particular areas.

– Social costs are involved whether the programs are put into operation or not.

– The demand for 100 per cent success in all cases in which help is given under regional development programs is, in reality, asking for too much.

– The bulk of manufacturing in Canada is done in two zones – in a narrow strip of Southern Ontario and in another narrow strip in Southern Quebec; nowhere else in the country are there the concentrations of processing and manufacturing plants, the prime contractors and job-shops, the manufacturing industry-conscious colleges and universities, the pools of engineering and scientific talent, and so on, which form the essential base for internationally competitive manufacturing.

– Capital will flow to where the most profitable opportunities exist, in Canada or elsewhere.

– Some companies will move into new areas, or will expand existing facilities within them, regardless of whether or not governments provide them with financial assistance.

Some initial assessments of the influence of the federal Regional Development Incentives Act (RDIA) program on manufacturing can be made from an analysis of data published by the Department of Regional Economic Expansion and covering the first two years of the program's life – from July 1969 to June 1971. Table VI.9 shows the numbers of offers accepted during the two-year period in each of the provinces. Bearing in mind the statistics given earlier in this chapter, the following five comments are relevant to the data in this Table:

– Even allowing that the RDIA program is relatively new, the annual job-creation rate of around 15 000 jobs per year seems quite small in relation to the number of unemployed workers in the country as a whole:

– Even allowing for the higher level of incentive payments available in the Atlantic Region, the attractiveness of the region to manufacturing does not appear to be high:

– Even allowing for the magnitude of its unemployment problem, the size of Quebec's share of the offers accepted must have been influenced to some extent by the size of the domestic market and the availability of skills there:

– The small share of the total offers going to companies in British Columbia reflects the limited extent to which RDIA assistance is available in that province:

– The figures for Saskatchewan would seem to show that lack of manufacturing activity in the past, together with remoteness from markets of any size, may adversely affect attempts to establish manufacturing there for some time to come.

Table VI.10 shows breakdowns of the same RDIA accepted offers by industry groups and by provinces. The data indicate that the resource- and staple-based groups received the largest share of them but that the "high-technology" groups also received their share.[24] However, the data do indicate that while the former groups were widely spread throughout the country the latter were concentrated in Quebec.

Tables VI.11 and VI.12 analyse the types of projects for which the accepted offers were intended. The breakdown has been made by provinces. The figures show that about half of the projects involved new facilities. Looking at the new facilities in Quebec, New Brunswick and Alberta on an industry group basis, it is clear that the dominant group is

Table VI.9–Estimated Costs and New Jobs Resulting from Offers of Grants under the Regional Development Incentives Act Accepted between July 1, 1969, and June 30, 1971

Province	Accepted Offers	Per Cent of Total (Approx.)	Estimated Capital Cost (1) $ Millions	Estimated New Jobs	Estimated Amount of DREE Assistance (2) $ Millions	(2) as Per Cent of (1)
Nfld.	21	3	5.6	883	2.2	39
P.E.I.	15	2	3.1	383	1.1	35
N.S.	56	9	114.3	1 774	21.7	19
N.B.	60	10	33.5	2 938	13.9	41
Quebec	282	45	268.6	14 656	57.4	21
Ontario	39	6	85.2	2 251	15.0	18
Manitoba	81	13	30.4	2 815	8.3	27
Saskatchewan	31	5	23.1	1 519	5.5	24
Alberta	29	5	110.9	1 587	21.9	20
B.C.	12	2	2.9	281	0.7	24
Totals	**626**	**100**	**677.6**	**29 087**	**147.7**	**22**

Source: *Regional Development Incentives Act*: *A Summary of Offers Accepted to June 30, 1971*, DREE Public Information Division, Ottawa, October 1971.

[24]The Table does not reflect an interesting aspect of the offers accepted by companies in the Transportation Equipment and Machinery group: namely, that a significant number of the companies involved were associated with the production of snowmobiles and mobile homes and with components for these products.

Table VI.10–Industry Group and Provincial Distribution of Offers of Grants Accepted Under the Regional Development Incentives Act between July 1, 1969 and June 30, 1971

Industry Group[a]	Numbers of Accepted Offers										
	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Total
Food and Beverage	16	10	17	17	33	3	18	5	7	–	**126**
Tobacco	–	1	2	–	–	–	–	–	–	–	**3**
Rubber	–	–	–	–	1	–	–	–	–	–	**1**
Leather	–	–	–	–	2	–	–	1	1	–	**4**
Textiles	–	–	1	–	32	–	2	–	–	–	**35**
Knitting Mills	–	–	–	1	8	–	–	–	–	1	**10**
Clothing	–	–	2	2	11	1	3	5	–	–	**24**
Wood	–	–	4	15	40	13	1	1	6	11	**91**
Furniture and Fixtures	–	–	1	3	13	–	3	–	–	–	**20**
Paper and Allied	–	–	2	–	4	1	1	–	1	–	**9**
Printing, Publishing and Allied	–	–	3	2	10	2	15	1	1	–	**34**
Primary Metal	–	–	3	–	3	–	–	1	–	–	**7**
Metal Fabrication	1	3	5	5	21	3	5	5	–	–	**48**
Machinery	–	1	2	2	17	5	7	1	2	–	**37**
Transportation Equipment	–	–	2	2	24	2	9	4	4	–	**47**
Electrical	3	–	3	2	12	–	4	–	–	–	**24**
Non-Metallic Minerals	–	–	–	2	10	3	–	–	1	–	**16**
Petroleum and Coal	–	–	–	–	–	1	–	–	–	–	**1**
Chemical & Chemical Products	1	–	3	4	24	3	9	2	1	–	**47**
Miscellaneous	–	–	6	3	17	2	4	5	5	–	**42**
Total	**21**	**15**	**56**	**60**	**282**	**39**	**81**	**31**	**29**	**12**	**626**

[a]The classification by group is the one used in the *Annual Census of Manufactures*, and the allocation of accepted offers to these groups is the responsibility of the author, not the Department of Regional Economic Expansion.

Source: *Region Development Incentives Act: A Summary of Offers Accepted to June 30, 1971*, DREE Public Information Division, Ottawa, October 1971.

Table IV.11–Provincial Distribution of New Facility and Other Projects Resulting from Offers Accepted Under the Regional Development Incentives Act between July 1, 1969 and June 30, 1971

Province	Number of Accepted Offers	NF[a]	NPE	M	M.NPE	E	EM	E.NPE	NF.E	EM NPE	NF NPE EM
Newfoundland	21	7	5	–	–	3	4	–	2	–	–
Prince Edward Island	15	7	5	–	–	2	–	–	–	1	–
Nova Scotia	56	18	10	3	–	14	11	–	–	–	–
New Brunswick	60	32	5	1	1	17	3	1	–	–	–
Quebec	282	130	41	13	2	68	15	7	–	5	1
Ontario	39	25	1	–	1	5	6	–	–	1	–
Manitoba	81	34	7	3	–	16	15	5	–	1	–
Saskatchewan	31	17	–	–	–	5	3	4	1	1	–
Alberta	29	21	3	–	–	4	1	–	–	–	–
British Columbia	12	6	2	–	–	2	1	–	–	1	–
Total	**626**	**297**	**79**	**20**	**4**	**136**	**59**	**17**	**3**	**10**	**1**
Per cent	100	47	13	3	<1	22	9	3	<1	< 2	<1

[a]*Legend*: NF = New Facility
NPE = New Product Expansion
M = Modernization
E = Expansion
EM = Expansion and Modernization

Source: *Regional Development Incentives Act*: *A Summary of Offers Accepted to June 30, 1971*, DREE Public Information Division, Ottawa, October 1971.

Table VI.12–Industry Group Distribution for Three Provinces of the New Facility Offers Accepted Under the Regional Development Incentives Act between July 1, 1969 and June 30, 1971.

Industry Group	New Brunswick	Quebec	Alberta
Food and Beverage	7	13	4
Leather	–	1	1
Textiles	–	9	–
Clothing	1	6	–
Wood	11	25	5
Furniture and Fixtures	1	4	–
Paper and Allied	–	1	1
Printing, Publishing and Allied	–	4	1
Primary Metal	–	1	–
Metal Fabrication	3	12	–
Machinery	2	6	–
Transportation Equipment	–	17	3
Electrical	–	8	–
Non-Metallic Minerals	1	5	–
Chemical and Chemical Products	3	12	1
Miscellaneous	3	6	5
Totals	**32 of 60**	**130 of 282**	**21 of 29**

Source: *Regional Development Incentives Act*: *A Summary of Offers Accepted to June 30, 1971*, DREE Public Information Division, Ottawa, October 1971.

wood products, followed by food and beverages, with transportation equipment, and chemicals and chemical products not far behind. Quebec, as might be expected, has the largest number of new facilities and the largest share of those in "high-technology" groups; reflecting again the possibility that new facilities in these industry groups were established because similar plants already existed and skilled people were available.

Regional development programs have been criticized on the grounds that they induce manufacturing establishments to locate where they have no right to be. This criticism is undoubtedly valid in some cases, and has been amply demonstrated through the failures and problems experienced in most provinces. Nevertheless, the regional development "game" has perhaps gone only far enough to establish *failures*. The companies that enjoy success are often a lot less visible, and they may also take longer to succeed than to fail. This criticism also has an associated problem. In North America, the largest manufacturers and most of the smaller ones do not make all of the components required for their products. They may add, say, 30 – 60 per cent of the value for which they are sold to the distributor. In the larger manufacturing centres, the sub-contractor networks are well developed to supply much of the remaining value added. In areas new to manufacturing, they are not. Large companies induced to set up manufacturing may not wait for the network to appear and may establish sources elsewhere. The areas will not therefore be able to optimize the value added. The problem for the new area is: Which comes first, the network or the large manufacturer? The provinces and the federal government are well aware of this problem and have designed infrastructure programs to help solve it. Unfortunately, the existence of an infrastructure has not always solved the problem.

Regional development programs have also been criticized on the grounds that they favour foreign-owned companies and companies owned

in the manufacturing zones of Quebec and Ontario and work against the establishment and expansion of local companies. An examination of the conditions under which grants and loans are made under federal and provincial programs, shows, however, that the availability of mortgage or other security and of competent management are usually conditions for the making of a grant or loan. The governments also want individual regional developments projects to succeed in order that the *programs* may succeed. They therefore prefer that a "track record" of success can be shown by the companies receiving grants or loans. But, in practice, governments may still be taking substantial risks when assisting relatively well-known and long-established companies or entrepreneurs whose credentials appear to be eminently acceptable.

As was discussed in an earlier chapter of this study with regard to assistance programs generally, there is a great deal of merit in using "self-destruct" legislation for these programs. Both the federal and Quebec governments have used it in connection with regional development. In the changing environment surrounding attempts to solve the development/disparity problem, the short lifetime period for the recent Quebec programs was valuable in that rationalization and some accommodation with federal programs became possible. Nevertheless, a program of this or of any other kind that self-destructs too soon may be of less value than, say, longer programs with some continuing overlap. The short period does not help business planning and frequent changes cause confusion. Again, regardless of their size or ownership, companies that enter a program on the basis of one set of rules do not like the rules to be changed frequently or in mid-stream. There should now be enough experience in Canada that short-term regional development programs can give way to longer-term ones.

It is important to recognize the pattern of federal-provincial financial support for regional development that has emerged over the past decade. Only the federal government, and the most populous provinces, Ontario and Quebec, make grants or forgiveable loans available. Manitoba's grants are small and for study purposes. The other less populous provinces and the less well-endowed from the manufacturing point of view have usually limited themselves to making loans. Quebec has also attempted to attract "necessary" and "high-technology" industries. Venture capital is not normally included in any federal or provincial program, although the Ontario Development Corporation's new experimental program is the exception. British Columbia has, outside of the two Crown corporations, done little in regional development beyond promotional activities. Some of the "smaller" provinces have taken equity or large support positions in specific projects, often at enormous cost. All provinces do some promotion and provide some advice, particularly to potential new manufacturers, to exporters, and to small companies. The provinces have tried to fill "gaps" left by the federal programs and, by so doing, have altered the force of the federal incentives. If the goals and priorities of the provinces are not always the same as those of the federal government, then the differences are bound to show up in regional development activities.

Competition to be the "host" to particular new manufacturing plants has sprung up between provinces – as was the case between Nova Scotia

and Quebec over the coming of the Michelin Company to Canada. But it has also sprung up within provinces, to the embarrassment of the provincial governments concerned. But *inter*-provincial or *intra*-provincial competition does not end the matter. *Any* Canadian province may be competing with a number of American states for the location of subsidiary operations of multinational organizations or for subsidiaries of Canadian companies. As has been shown, Canada is not the only country to have location incentives. Even American states complain about the attractions of low-tax, low-wage, "runaway" countries. Most recently, for example, there has been some alarm in the United States over the flight of labour-intensive manufacturing to Hong Kong, Taiwan, South Korea and Mexico.

The regional development programs of the federal and provincial governments in Canada have been criticized on the grounds that they simply "export" unemployment from one province to another. The usual examples are the pulp and paper companies that have been established recently in the three prairie provinces, leading to some unemployment in the same industry in Eastern Canada and British Columbia. The problem here is to apportion the blame in the proper shares. In view of the weak market and the fact that it takes several years to build and start up a large plant, it would seem appropriate that a share of the blame should go to the market itself and to the market forecasters as well as to the governments and companies concerned. But it must also be remembered that the three prairie plants were built in the north where the most intractable examples of the development/disparity problem are to be found and where opportunities for potentially profitable manufacturing and employment opportunities outside the pulp and paper industry are very hard to find.

The programs have also been criticized because they may give rise to, or accentuate, fragmentation in particular product or industry sectors. A review of the statistics of the RDIA program given earlier in this chapter shows that the sectors already well established in the different regions have, generally speaking, been the ones to receive the largest shares of the available federal help. Fragmentation is also an aspect of the "export" of unemployment problem since it is influenced by market size. For example, when the economy is at potential and consumer demand is high, there may not be enough producers of a particular product in the market but, in bad times, it may be overcrowded. Fragmentation was one of the targets of the proposed new Competition Act.[25] It is also a target of the new Quebec Industrial Development Corporation, and remains one for Quebec's General Investment Corporation. Rules to deal with fragmentation are very difficult to develop. But basically, it will be a less frequent or visible problem in a buoyant and growing economy.

Thus far in Canadian experience, a great deal of stress has been laid on the encouragement of manufacturing as a major factor in the solution of the development/disparity problem. It has, of course, been recognized that there are other activities that should be encouraged, and the development of tourist facilities and services have been included among these. Still others remain to be investigated. But while migration and unemploy-

[25]As discussed in Chapter 9.

ment are highly relevant, the relevance of per capita income as an element in the development/disparity problem is less clear. Although some basic income is required to support life, the total environment in which people live needs to be measured using more than income levels. Some people *prefer* to live in Prince Edward Island, on a lower income than they could earn when living in an Ontario city. Again, some city people in Vancouver would require considerable inducement to move to one of the cities in Eastern Canada in spite of the difficulties of living in *any* city, Vancouver included. On the other hand, no one has yet developed a "quality of life" index which could be substituted in the regional development equation in place of per capita income, and no one has quantified either the trade-offs or the constraints of living in different parts of the country. A better measure of disparity is therefore needed but, until one is devised, the principal emphasis is likely to be given to unemployment, as circumstances are dictating at present, and to *under*-employment when the economic climate improves.

For manufacturing to play its proper role in regional development, a significant number of the government department officials designing and administering the programs need to have had experience in managing manufacturing operations. Those responsible for planning regional development involving manufacturing also need to have had experience in manufacturing, and some need the kind of technical and marketing backgrounds that will help in the identification of future opportunities. Technology-based innovation may happen anywhere, and not by right or in any other way exclusively in the cities or in the existing manufacturing zones. The economist, without the help of the manager, the engineer, the market man and even the salesman will sub-optimize his contribution to the solution of the development/disparity problem, But until it has been established what Canadian manufacturing industry is to do in the longer term, given the resources at its disposal and other factors such as the available markets, the proper place of manufacturing within the group of activities best suited to foster greater equity among the regions of Canada will not be assessable. And the regional development programs themselves will remain less effective than they might otherwise be.

VII. Industrial Financing, with Particular Reference to Small Business

A fair amount of analysis has already been devoted in the three previous chapters to problems associated with small manufacturing business in Canada. The material in this present chapter will focus on three particular areas of concern, namely, the institutional structure for industrial financing in Canada, some entrepreneurial and management problems in small business in Canada and in other countries, and the venture capital problem. It will deal with new small companies as well as with those already in existence.

It was perhaps the spectacular growth of small high-technology manufacturing companies in the United States in the later 1950s and the early 1960s that has made these companies, as a group, the focus of so much attention. Canadians, as close observers of U.S. small companies and as purchasers of their products, have been acutely conscious of what happened along Route 128 near Boston, Massachusetts, and at Palo Alto, California, and have often wondered aloud why the Route 128 "virus" did not infect the Canadian scene. On the other hand, small high-technology manufacturing companies *have* been started in this country. Some of them have flourished, prompting the view that the situation in Canada, particularly in comparison with countries in Western Europe, may be more favourable than would be supposed at first sight. This chapter attempts to look at both the positive and negative factors in the contemporary Canadian situation.

The examination of small business problems in this chapter has not been exhaustive but it has been considered sufficient to provide some guidance to existing small manufacturing companies and to potential entrepreneurs contemplating new business ventures. Additional background information has been made available in a number of other Science Council special studies.[1] The material in this present chapter was of special interest to the Council in the preparation of the section of its own report dealing with the principal impediments to innovation.[2] One of the Council's main recommendations was as follows:

"Both federal and provincial governments should explore the possibility of creating new mechanisms for supplying capital to new and small companies. It may also be necessary to help underwrite their management and training costs. In the last resort, it may even be necessary to insure the loans made by private venture capital firms. Ideally, however, direct governmental intervention should be kept to a minimum; given a more favourable environment for investment, the totally private system should work perfectly well."[3]

[1]Science Council of Canada Special Study No. 23, *Innovation and the Structure of Canadian Industry*, Information Canada, Ottawa, 1972, and Science Council of Canada Special Study No. 11, *Background to Invention*, Andrew H. Wilson, Information Canada, Ottawa, 1970.

[2]Science Council of Canada Report No. 15, *Innovation in a Cold Climate: The Dilemma of Canadian Manufacturing*, Information Canada, Ottawa, 1971. pp. 27 – 35.

[3]*Ibid.* p. 31.

To Set the Scene . . .

Entrepreneurship, small business, and the availability of venture capital received a good deal of attention in this country during 1971 and 1972. For example, the Canadian Association of Physicists held a seminar on *The Scientific Entrepreneur in Canada* in February 1971. The Canadian Broadcasting Corporation produced a one-hour documentary program which was shown for the first time in December 1971. The interviews included in this program, and some additional material, were subsequently published by the *Financial Post*. The April 1972 issue of *Macleans* magazine carried an article by Alexander Ross called "Backing the Better Mousetrap". The enterprise-venture capital problem was the principal subject in the Spring 1972 issue of the University of Western Ontario's *Business Quarterly*.

To place the material of this chapter within the context of the report as a whole, two basic statements should be made:

– The small manufacturing company is an important vehicle for the exploitation of new business opportunities involving the use of new or improved technology.

– Every small company is, potentially, a much larger company.

But all small companies do not grow inevitably or as a matter of right. Some of them are unable to do so, for a variety of reasons. Others have viable growth potential, but their owners are content that they remain at some stable size.

For the purpose of this chapter, a small company has been defined as one having fewer than fifty employees. Of the almost 32 700 manufacturing establishments included in the data collected by Statistics Canada for 1969, 26 000 establishments or just over 81 per cent of the total employed fewer than 50 people. Table VII.1 shows the percentages of small companies in the various regions across the country and Table VII.2 shows the corresponding percentages for the industry groups. The data do not distinguish between new and existing establishments.[4] The data show that there was a very large number of small manufacturing establishments in Canada in 1969 and that they were most heavily concentrated in the Prairie Region and British Columbia and the printing and publishing, furniture and fixtures, and wood products group. It should be added, however, that small companies provided less than 20 per cent of all manufacturing employment in Canada in 1969, and less than 15 per cent of the total value of manufacturing shipments.

A Note on the Principal Financial Institutions in Canada and on Basic Company Financing

The financial system in Canada may be divided into four major institutional groups. The first group includes those institutions associated with the monetary system: the Bank of Canada, the provincial government savings

[4]Figures were not available at the time of writing indicating the number of manufacturing establishments that had gone into production since 1969 or the number of those included in the 1969 data that had subsequently gone out of production.

Table VII.1–Regional Distribution of Small Manufacturing Establishments in Canada in 1969

Region	Percentage of all Manufacturing Establishments in the Region with Fewer than 50 Employees
Atlantic	83
Quebec	81
Ontario	78
Prairie	87
British Columbia (plus Yukon and N.W.T.)	87
All of Canada	81

Source: Statistics Canada, *Statistics Canada Daily*, Friday, June 30, 1972. p. 2.

Table VII.2–Distribution of Small Manufacturing Establishments by Industry Group in Canada in 1969

Industry Group	Percentage of All Manufacturing Establishments in the Industry Group with Fewer than 50 Employees
Food and Beverage	85
Tobacco	[a]
Rubber	50
Leather	66
Textile	73
Knitting Mills	56
Clothing	76
Wood	87
Furniture and Fixtures	90
Paper and Allied	47
Printing and Publishing	91
Primary Metal	54
Metal Fabricating	84
Machinery	67
Transportation Equipment	6
Electrical	53
Non-Metallic Minerals	83
Petroleum and Coal	60
Chemicals and Chemical Products	75
Miscellaneous	88
Manufacturing Industry as a whole	**81**

[a]Not available from the source statistics.
Source: Statistics Canada, *Preliminary Bulletin*, July 1972. Cat. No. 31-210P.

banks in Ontario and Alberta, the two savings banks in Quebec, the chartered banks, trust companies, mortgage and loan companies, and credit unions. The second group includes the life, fire and casualty insurance companies, and the pension funds. The third group includes sales finance and consumer loan companies, and mutual, closed-end and other investment funds. The venture capital companies may be considered as a sub-group of this third group. They are, for the most part, recently established and small in terms of assets. The fourth group includes the "financial" Crown corporations and independent or semi-independent institutions established by the federal government and by the provinces. Examples of these are the Industrial Development Bank, the Central Mortgage and Housing Corporation and the Canada Development Corporation, and the Ontario Development Corporation, the Saskatchewan

Development Fund, and the General Investment Corporation of Quebec.[5]

The development of non-government financial institutions in Canada has been influenced by the development of similar institutions in both the United Kingdom and the United States. From the former, Canada developed the branch banking system, but did not copy the British merchant banking system. The sales finance companies, on the other hand, have evolved from similar institutions in the U.S. Over the years the chartered banks and the life insurance companies have accumulated the largest assets.

With regard to the initial financing of proprietorships and partnerships, the savings of the proprietors/partners together with what they can borrow from relatives and friends are often the principal resources at start-up. In some cases, local government industrial development agencies may be induced to help, along with materials suppliers and other sources of commercial credit. The federal and provincial governments will not normally become involved in start-up situations. The chartered banks may help, as may venture capital companies, but the other private sector sources of capital such as life insurance and trust companies will not. As a partnership/proprietorship acquires a track record, the help received from the chartered banks and credit sources will increase.

In the case of small new private companies, equity funds must normally be obtained from the shareholders and from a variety of other sources, such as venture capital companies and other existing commercial enterprises. Again, only local governments are likely to be involved. Working capital could come from these sources, by means of commercial credit, and from the chartered banks. With experience and a good record, the small private company should be able to extend its sources of funds in both the private and public sectors, but this does not mean to say that its money problems will be over.

The small company planning to "go public" will already have a "track" record, but may still have problems finding the necessary financial support for the change in status. It may be beyond the range of those venture capital companies that specialize in start-up situations and of government agencies such as the Industrial Development Bank. Investment dealers may not consider the company sufficiently ready for the change. There are no merchant banks in Canada to fill this particular gap in the financial system. The company may, of necessity, have to seek further private funds for the time being through an existing institution within the Canadian financial system or through a member of the financial community. Alternatively, the company may seek help from sources in the United States.

Even after it has gone public, a small company may have problems. For example, one of these is the lack of an active after-market for the trading of its stock. Another is that the Canadian stockmarkets are not particularly enthusiastic about the trading of relatively small issues. On the other hand, this is the stage at which provincial governments often start to become interested.

[5]Missing from the groups above are the foundations which, in Canada, have relatively little part to play in financial affairs except from the awarding of grants, mostly in the fields of the arts and medical research.

The problems of financing established private and public companies of all sizes is quite different because of the existence of their financial, management and market records. Their needs can be met – or not – by a variety of private institutions within the financial system and they may, in the case of special need, be able to approach government institutions successfully. They may also be able to look seriously, with government, at the regional incentive programs.

The Chartered Banks and the Bank Act

Canada's oldest chartered bank, the Bank of Montreal, began business in 1817 as a private institution and received a charter in 1822. The newest, the Unity Bank of Canada, received its charter in April 1972. The values of the assets of the nine established banks, as at March 31, 1972, have been shown in Table VII.3.[6] These range from $13.6 billion in the case of the Royal Bank of Canada down to $203 million for the Bank of British Columbia. The five largest banks, with their almost six thousand branches, do business in every part of Canada and have extensive connections abroad. Geographically, the activities of the four smaller banks are more limited. The Mercantile Bank is the only chartered bank in Canada, the majority of whose shares are currently held abroad. The Mercantile Bank must, under the terms of the 1967 Bank Act, increase the degree of Canadian ownership of its share capital.

The five largest Canadian banks have also appeared in the annual listing by the U.S. magazine, *Fortune*, of the fifty largest commercial banks, in terms of assets, outside the United States. In the listing published in August 1971, these banks appeared as follows:[7]

Royal Bank of Canada	7th	Bank of Nova Scotia	33rd
Canadian Imperial Bank of Commerce	9th	Toronto-Dominion Bank	39th
Bank of Montreal	17th		

The federal Bank Act governs the activities of the chartered banks.[8] The law requires that there be a decennial review of this Act. The latest revisions were made in 1967 following a period of intensive study, including the work of the (Porter) Royal Commission on Banking and Finance which was reported in 1964. As a result of these revisions, the banks have been able to compete more effectively with the "near banks", including trust and loan companies. Under the 1967 revisions, the banks

[6]This Table also gives the breakdown of the assets of the nine banks. In this connection, it should be noted that the breakdown will change depending on whether money is "easy" or "tight". In March 1972, it was the former.

[7]The top five banks appearing on this list were: Barclay's (U.K.), National Westminister (U.K.), Banque Nationale de Paris (France), Banca Nazionale del Lavoro (Italy), and Crédit Lyonnais (France). The five largest U.S. Commercial banks, also according to *Fortune*, were: Bank America, the First National City Bank (parent of Canada's Mercantile Bank), the Chase Manhattan Bank, Manufacturers Hanover, and J.P. Morgan. In terms of assets, Bank America was almost twice as large as Barclay's, and almost three times as large as the Royal Bank of Canada.

[8]The chartered banks are subject to a number of other Acts, for example, the Bank of Canada Act and the Canada Deposit Insurance Corporation Act, but these are not of particular concern in this present study.

Table VII.3–Assets of the Canadian Chartered Banks as at March 31, 1972 (in Millions of Dollars)

	Notes and deposits with Bank of Canada	Day, Call & Short Loans	Canada Treasury Bills	Other Govt. of Canada Securities	Other Securities	NHA Mortgages	All loans except Day, Call & Short Loans	Other Assets[a]	**Total**
Royal Bank of Canada	587.0	294.1	723.3	975.0	645.8	499.5	6 825.4	3 086.2	**13 636.3**
Canadian Imperial Bank of Commerce	514.7	232.8	622.4	1 551.1	761.9	376.2	6 065.3	2 505.0	**12 629.4**
Bank of Montreal	380.2	448.7	530.1	896.2	445.6	385.3	5 668.4	1 901.4	**10 665.9**
Bank of Nova Scotia	245.2	245.7	316.1	334.4	405.2	242.3	4 095.3	1 553.7	**7 437.9**
Toronto-Dominion Bank	250.7	273.8	320.3	369.0	375.7	196.6	3 451.6	1 618.1	**6 855.8**
Banque Canadienne Nationale	150.1	94.2	151.7	254.4	357.5	107.4	1 169.6	258.9	**2 543.8**
Banque Provinciale du Canada	51.6	44.7	86.0	87.5	136.8	45.3	871.8	280.6	**1 604.3**
Mercantile Bank of Canada	3.0	16.0	4.9	1.7	16.7	–	269.7	17.3	**329.3**
Bank of British Columbia	11.9	23.9	2.0	2.9	14.5	1.8	114.0	31.9	**202.9**
Total	**2 194.4**	**1 673.9**	**2 756.8**	**4 472.2**	**3 159.7**	**1 854.4**	**28 531.1**	**11 253.1**	**55 895.6**

[a]Includes: Bank premises, Items in transit (net), Customers' liability under Acceptances, etc, and Miscellaneous Assets.
Source: Canadian Banker's Association, *The Globe and Mail*, Toronto, May 9, 1972.

were allowed for the first time to issue loans for mortgages. The banks may now issue debentures, with maturities of at least five years, and this step has provided a new source of capital. The ceiling on loan interest was also raised in stages and became adjustable as the rates of return on short-term government bonds fluctuated. Agreements between banks with regard to loan and deposit interest rates were, however, forbidden.

Although the chartered banks participate extensively in providing commercial loans and are in the market for government securities, they do not buy commercial equities to any great extent. This is due in part to the extent of the combined loan and government business of the banks, and in part to the provision of the Bank Act under which a chartered bank cannot hold more than 10 per cent of the voting stock of any one trust or loan company or of any other Canadian corporation if its total investment is more than $5 million. If less than this, the bank may hold 50 per cent of the voting shares. In other words, the chartered banks can if they wish play a larger role in the equity financing of small companies and of venture capital companies. The level of risk involved in the equity financing of *new* small companies is higher than the level the banks normally assume. The revised Bank Act does not permit the chartered banks to participate directly in the fast-growing and profitable leasing, factoring and trust administration business. However, consumer loans have been increasing significantly in the years since 1967 and banks have been competing vigorously in this field. These loans have been made for a number of reasons, for example: they are profitable to the banks and competitive with the loan company offerings, they have been found to encourage deposits as well as loans, and they are part of the overall service that banks give to their customers, the majority of whom are consumers.

Another avenue into which most of the Canadian chartered banks have expanded very strongly and profitably in recent years has been international banking through branches and agencies. Some have also developed "consortium banking" arrangements with foreign banks. For example, the Toronto-Dominion Bank is a partner with the Midland Bank in the U.K., the Standard Bank of South Africa and the Commercial Bank of Australia in Midland and International Banks Limited (MAIBL), a medium-term loan merchant bank founded in 1964; and the Bank of Nova Scotia and seven other banks have formed the United International Bank Limited. Consortium banking may be regarded as a form of international merchant banking. As mentioned earlier, merchant banking "proper" has not been part of the financial system in Canada. The nearest "equivalent" to the merchant banker at the present time is the investment dealer.[9]

[9]In his paper, "Merchant Banking – A Canadian Requirement?", given at the Corporate and Securities Law Seminar at Osgoode Hall, Toronto, on March 10, 1972, A.G.S. Griffin concluded that financial business in Canada had entered a phase where the techniques and structures of the merchant banking concept might have considerable value. Mr. Griffin listed the fields in which merchant banks (in Europe) operate: general financial advisory services, merger and take-over advisory services, new issues (loans and equities), foreign exchange, bullion broking, investment management or counselling, mutual fund management, securities custodianship, registrar and transfer agency business, wholesale banking at the corporation level, deposit taking (from clients only), acceptance business, and international finance (e.g., the Eurodollar market).

The Canadian branch banking system is often contrasted with the system of local or regional banks in the United States. These local banks, with the president behind the wicket, so to speak, seem at first sight to be better prepared to meet local needs with local knowledge and enthusiasm, to help start new small enterprises, and to counsel businessmen in the management of their companies. In Canada, on the other hand, branch managers seldom stay long in one place and have to work with a distant hierarchy of officials above them. But, in practice, the branch managers often play surprisingly active and successful local roles, and they have the advantage of being able to call, when appropriate, upon the extensive experience and resources of their nation-wide bank organization.

The chartered banks have been criticized for not supporting small enterprises, and especially, new small enterprises. The banks would perhaps reply that they do support the former extensively with both loans and counsel, even if they do not always support the latter directly, and would point out that not all new companies have adequate security to offer, or have managements with the basic abilities. In any event, some of the Canadian chartered banks have recently taken positions in venture capital firms. They seem to prefer this arrangement because venture capital is a different business from banking and because the venture capital companies have the necessary risk-assessment expertise. The banks also have other specialized joint venture and subsidiary interests.[10]

The Canadian banks have on occasions been criticized for their tendency to put the largest loans into the resource-based and service industries and not into manufacturing, and for their apparent failure to hire experts in areas of manufacturing to help assess potential new business in this sector, as the large specialized U.S. banks seem to do. The Canadian banks which do national and international business have, for some time, had staff experts in the mining and petroleum sectors of the resource industries. In reply, it might be pointed out that experience in financial problems of the manufacturing industry is generally available in the chartered banks and that, when expertise beyond existing experience is required, consultants can be asked to provide the advice. It might also be pointed out that the business the banks do with the manufacturing industry tends to be both substantial and continuous. Resource developments, on the other hand, often require large amounts of financial help in a discontinuous, but more visible, pattern.

Again, it has been pointed out that the chartered banks seem to attach insufficient importance to the role they might play in the solution of the problems of regional development. But, as a Chairman of the Bank of Nova Scotia pointed out in this regard:

"In recognition of the public concern in this matter, we in this Bank

[10]For example, the Royal Bank of Canada, la Banque Canadienne Nationale and the Montreal, General, and Canadian Trust Companies founded RoyNat Limited in 1962 prior to the revision of the Bank Act to provide readily available term financing for small and medium-sized Canadian businesses. RoyNat's principal competitor is the Industrial Development Bank. In 1969 a subsidiary, RoyNat Leasing Limited, was formed to provide an equipment leasing service.

have been making every possible effort to finance undertakings in less developed parts of the country. In more than a few cases, indeed, we have approved credits which would in all likelihood not be regarded as economic in the more prosperous regions."[11]

The Financial Intermediates

Table VII.4 shows estimates for the first quarter of 1972 of the assets of the following financial intermediaries in the Canadian financial system: Fire and Casualty Insurance Companies, Trust Companies, Mortgage Companies, (Open-end) Mutual Funds, Closed-end Funds, and Investment Dealers. Between them, these institutions held total assets estimated at $22 billion. Of these assets, the mortgage and trust companies held the majority in mortgage and sales agreements. Investments in Canadian securities and shares were significant. Investments in foreign securities, with the exception of the Mutual Funds, were not.

The importance of the investment dealers and of the public underwriting process, generally, in the financing of manufacturing companies in Canada is not necessarily reflected in the size of the combined assets of the dealers. As one commentator has said:

"The investment dealers have performed their function – the raising of finance and the marketing of securities – in a specially skillful and efficient way. They have on the whole "called" their markets accurately and if sometimes, when it comes to sponsoring smaller and less well-known enterprises, they also have seemed to be a little too cautious, they have only reflected the reigning characteristic of the people who in the end make the markets."[12]

In the case of Local and Central Credit Unions – not included in Table VII.4 – the estimated combined assets of all Unions at the first quarter of 1972 were $5.9 billion. Personal loans and mortgage loans each accounted for almost 30 per cent of these assets, the bulk of the remainder being held as cash, demand and term deposits and in municipal government bonds. With regard to Sales Finance and Consumer Loan Companies, the estimated combined assets were just over $5.6 billion. These assets were held principally in the form of consumer loans and wholesale and retail sales financing. Mortgage holdings were relatively small, as was income from investments in securities.[13]

At the time of writing, data were not available for Business Finance and Investment Management Companies, or for Life Insurance Companies. However, some preliminary estimates for the assets of the latter were published in the April 22, 1972 issue of the *Financial Post* and their book value was placed at $16.5 billion. The major holdings of the companies were in mortgages and securities.

[11]The late F. William Nicks, *Annual Report 1970*, Bank of Nova Scotia, 1970. p. 9.

[12]A.G.S. Griffin, in "Merchant Banking – a Canadian Requirement?" *op. cit.*

[13]Statistics Canada, *Financial Institutions, Financial Statistics*, Ottawa, July 1972. Cat. No. 61-006.

Table VII.4–Assets of Certain Financial Intermediaries in the Canadian Financial System for the First Quarter of 1972 (in Millions of Dollars)

Institutions	Investments in Canadian Securities, etc.	Investments in Foreign Securities	Mortgages and Sales Agreements	Other Assets	Total
Trust Companies	2 512.1	84.7	4 643.5	432.0	**7 672.3**
Mortgage Companies	540.0	8.4	3 194.7	479.0	**4 222.1**
(Open End) Mutual Funds	1 511.6	963.7	239.5	727.1	**3 441.9**
Fire and Casualty Insurance Companies	2 593.5	89.2	56.9	635.8	**3 375.4**
Investment Dealers	1 371.6	0.9	N/A	905.1	**2 277.6**
Closed-end Funds	711.5	25.4	0.3	319.1	**1 056.3**

Source: Statistics Canada, *Financial Institutions, Financial Statistics*, Ottawa, July 1972. Cat. No. 61-006.

The assets of the financial intermediaries in Canada for which data have been given were in the region of $50 billion in the first quarter of 1972. These institutions and the chartered banks together controlled assets at that time in excess of $100 billion, the majority of which was invested in mortgages, in loans to businesses and individuals, and in Canadian securities. The extent to which these institutions assisted Canadian manufacturers cannot be determined from the available published figures.

By design, the federal government has attempted in recent years to increase the competition between the various types of institutions within the system. The provinces have also attempted to bring provincially incorporated institutions into areas "occupied" by federal ones. As one authority on the financial system, E.P. Neufeld, wrote recently:

"Since there is now exceedingly little difference between the chartered banks and their competitors in their legal powers and actual practices relating to the accumulation of funds and the lending of those funds, there is no longer a very meaningful functional definition of a chartered bank.

"Also, since some of those competitors are provincially incorporated, it must be the case that the provinces are exercising jurisdiction over types of activity identical to that carried on by the chartered banks, and therefore over "banking", contrary to the intentions of the British North America Act. Jurisdictional lines separating the federal and provincial areas of authority in the regulation of non-bank financial intermediaries have always been indistinct and the evolution of the financial system has increased the problem."[14]

Professor Neufeld went on to suggest that an area of high priority should be the rationalization of federal and provincial jurisdiction with regard to the supervision and control of financial intermediaries and the supervision and control of the issue and trading of securities.

[14]E.P. Neufeld, *The Financial System of Canada*, MacMillan and Sons, as quoted in *Financial Post*, March 11, 1972.

Industrial Financing: Federal and Provincial Agencies

Two federal agencies that have the principal roles to play in the determination of the money supply, interest rates and taxation, and in the economy generally are the Department of Finance and the Bank of Canada. These agencies therefore have considerable influence on the course and methods of industrial financing in this country.

The influence of the Department of Finance can be felt in many ways. The Minister has responsibility, for example, for tax policy, federal-provincial fiscal arrangements, and the financial operations of the government (the administration of the Bank Act, the Interest Act and the Small Business Loans Act[15]) and for the Industrial Development Bank. The Minister is also the Cabinet member through whom the Bank of Canada reports to Parliament. As the central bank, the Bank of Canada is the fiscal agent of the Government of Canada and maintains its accounts with other governments. It sets the prime interest rate and regulates the money supply. It also makes advances to, and accepts deposits from, the chartered and savings banks, and may trade in bullion or securities. The board of directors of the Bank include the Governor and his Senior Deputy, the Deputy Minister of Finance, and twelve members from the private sector. The Governor of the Bank is also the President of its wholly-owned subsidiary, the Industrial Development Bank, but is not its chief operating officer.

The head office of the Industrial Development Bank (IDB) is in Montreal, and it has over thirty branches across the country. The IDB may raise money by the sale of debentures to the Bank of Canada and to other investors. It may lend money to people engaged, or about to be engaged, in an industrial enterprise when in the opinion of its officers the owners of the enterprise have themselves made an adequate investment in it to provide reasonable security for the IDB loan but have been unable to raise additional funds from private sources on reasonable terms and conditions. The Board members of IDB are the members of the Board of the Bank of Canada plus the federal Deputy Minister of Industry, Trade and Commerce. The IDB is not a venture capital fund in the strict meaning of the term. Its recent activities have been described briefly later in this chapter.

A fourth agency established by the federal government with a mandate to provide industrial financing is the new Canadian Development Corporation. Although the creation of government, the Corporation will lead an independent existence. Its roles and activities have also been described briefly later in this chapter.[16]

At the provincial level, the agencies most concerned with industrial

[15]Under the Small Business Loans Act the federal government guarantees chartered bank loans made to most types of small business for the purpose of modernizing their equipment and premises. Individual loans may not exceed $25 000. The Act "self-destructs" – the current one was renewed for a further three years in July 1971.

[16]Although not primarily relevant to the discussion in this chapter the following other federal departments and agencies are active in providing various forms of financial assistance to manufacturing industry: the Departments of Regional Economic Expansion, Industry, Trade and Commerce, Supply and Services, Manpower, and National Defence; the National Research Council; and the Export Development Corporation.

financing are those that are also concerned with regional and economic development, with loan financing, and with other associated functions. These agencies have been named and some of their activities described already in Chapters 1, 3 and 6.[17] The provinces, generally, provide services to small business and assist the municipalities to attract industry, but only Ontario has a special program designed to provide financial assistance to *small* Canadian-owned companies. The only provincially-sponsored venture capital program is the experimental one also introduced in 1971 by the Ontario Development Corporation (ODC). Under this program, loans of up to $100 000 may be made to small Ontario-based companies to assist with the introduction of new technology, the development of export markets, or the establishment in Ontario of new manufacturing operations in cooperation with other investors. Applicants will have the technical aspects of their inventions or techniques screened by a joint committee of ODC and the Ontario Research Foundation. Normally, the loan will be in the form of a debenture, although other forms of security may be taken. The program is not a new venture start-up program in the strict sense, although this feature has been included.

A Note on Recent Activities of the Industrial Development Bank

This Bank (IDB) was established by Parliament in 1944 to help finance Canadian businesses where financing is not available from the conventional sources on reasonable terms and conditions. IDB loans are not restricted to manufacturing and can be extended to almost any kind of new or existing commercial enterprise. Most IDB loans are for the purchase of land and buildings, the construction of new buildings or the alteration or extension of existing buildings, and for the acquisition of machinery or equipment. In certain circumstances, the IDB will provide loans to complement working capital requirements. Before making a loan, IDB officers must be assured that reasonable-term conventional financing is not available, that the applicant's proposal is sound, that the management is capable, and that the owners have a reasonable amount invested in the business. The Bank's loan approval procedure does, however, take time to complete and the loans themselves may also be delayed in reaching recipient companies.

As a rule, the security of an IDB loan is made against fixed assets. The IDB gives its principal attention to small companies and the average loan is usually for amounts much smaller than $100 000 – in other words, amounts often considered too small to receive "reasonable" terms from conventional sources. The rates of interest vary with the time of repayment and with the status of the applicant. Normally, the larger the loan and the

[17]The basic list (at the time of writing) includes: the Alberta Commercial Corporation; the Manitoba Development Corporation; the New Brunswick Development Corporation; the Newfoundland and Labrador Development Corporation; Industrial Estates Limited in Nova Scotia; the Ontario and Northern Ontario Development Corporations; Industrial Enterprises Incorporated of Prince Edward Island; the General Investment Corporation, the Quebec Deposit Investment Fund and the Industrial Development Corporation in Quebec; and the Saskatchewan Economic Development Corporation.

longer its term, the higher the interest rate. This technique has been adopted not only because these loans are normally riskier, but also in order to encourage their repayment. The Bank may occasionally participate in equity financing and in underwriting agreements.

Between November 1, 1944 and the end of its fiscal year on September 30, 1971, the IDB had authorized 32 460 loans totalling $1 597 million to assist 24 094 separate small and medium-sized businesses. The breakdown by provinces is shown in Table VII.5. The breakdown by size of 4 449 loans for the IDB's fiscal year ending in September 30, 1971 is shown in Table VII.6. The average loan was just under $44 000.

In recent years, between 20 and 25 per cent of IDB loans have gone to manufacturing companies. The leading industry groups have been iron and steel products (including machinery and equipment), food and beverages, and wood products. The so-called "high-technology" industries have received relatively few loans. One possible explanation for this is that the majority of potential applicants have been able to obtain support from the conventional private sector institutions.

Although it may occasionally help companies starting out in business, the IDB is not a source of *venture* capital. Its average loans are also smaller than most companies in venture situations require. The Bank is, effectively, the "third line" source of term financing – after personal or other self-generated funds and private institutional funds – and ahead of the corresponding provincial government granting and lending agencies.

Table VII.5–Loans Made by the Industrial Development Bank, by Provinces, between November 1944 and September 1971

Province	Number of Businesses	Approx. Per Cent of Total	Loan Commitments $ Millions	Approx. Per Cent of Total
Newfoundland	443	2	19.5	1
Prince Edward Island	137	< 1	11.1	< 1
Nova Scotia	664	3	35.3	2
New Brunswick	749	3	39.5	3
Quebec	4 446	18	384.5	24
Ontario	7 563	31	497.2	31
Manitoba	1 264	5	77.8	5
Saskatchewan	1 112	5	56.6	4
Alberta	2 698	11	154.3	10
British Columbia	4 827	20	305.1	19
Yukon and N.W.T.	191	< 1	15.7	< 1
Total	**24 094**		**1 596.6**	

Source: *Annual Report 1971*, Industrial Development Bank, Ottawa, December 1971.

Table VII.6–Loans Made by the Industrial Development Bank, by Size, for the Fiscal Year Ending in September 1971

Loan Size	Number of Loans	Approx. Per Cent of Total
$5 000 or less	176	4
Over $5 000 to $25 000	1 977	44
Over $25 000 to $100 000	1 999	44
Over $100 000	297	7
Total	**4 449**	

Source: Annual Report 1971, Industrial Development Bank, Ottawa, December 1971.

A Note on the Activities of the Canada Development Corporation

The legislation establishing the CDC was passed by Parliament before it recessed in June 1971. The board of directors was subsequently appointed, and met for the first time on November 29. The backgrounds of the 21-member board are principally in finance and manufacturing.

The CDC's mandate is to "assist in the creation or development of businesses, resources, properties and industries in Canada". The resources that may eventually be at its disposal will place the Corporation in the forefront of industrial financing institutions in the country as a whole. It is already clear, however, that it will not behave as a government agency but as a public corporation, and it will take risks for profit. The Chairman, Mr. H.A. Hampson, has said that CDC's directors plan to issue shares only after a reasonable portfolio of investments had been built up.[18] The Corporation will not buy back companies now under foreign ownership, nor will it act as a lender-of-last-resort to companies in financial difficulties. Mr. Hampson has also said that any project in which the CDC invests should show adequate growth prospects to compensate for the higher than normal risks involved. The CDC will not invest in Quebec's James Bay water power project, nor in any enterprises that will continue to be controlled by a level of government. Instead, it will concentrate its investments in six areas: oil and gas, petrochemical-based industries, mining, pipelines and related northern transportation, health care, and venture capital.[19]

The initial emphasis in CDC activities will therefore be in the resource and service areas and, while processing elements in manufacturing will receive attention, it seems unlikely that secondary manufacturing will receive much support. In some ways, this makes for an appropriate division of labour because the other federal agencies and the provincial agencies associated with industrial financing are mainly interested in the so-called secondary industry groups. On the other hand, the multiplicity of agencies may lead to overall ineffectiveness in the longer run even from the point of view of dividing responsibilities.

The Entrepreneurial Climate and Small Companies in Canada

Canadians and their attitudes towards risk, enterprise, and U.S.-style aggressiveness have been examined critically and frequently. For example, several years ago a newspaper article carried the comments of nationals from two other countries. A group of Japanese businessmen found Canadians to be shy of entering high-risk businesses and development ventures and a British commentator found that, in their moods of confidence, Canadians thought they ought to match the enormous economic power of the United States but were also afflicted by the inability to do

[18]In a speech to the Empire Club, Toronto, on February 17, 1972.

[19]The CDC's first acquisition actually was the Connaught Medical Laboratories, owned by the University of Toronto.

without American capital and techniques and the American market.[20] More recently, some comments about Canadian exporters were made by West German business people to the effect that Canadians were not interested in making the effort to develop the new European market and that their sales techniques were unsophisticated, careless and even rude.[21]

Canadians have, of course, been saying things like that about one another, sometimes with amusing side effects. For example, it is usual to hear the small, capital-short Ontario manufacturer complain bitterly that Canadian investment houses, and investors generally, would rather put their money into an unproven gas or oil well or mine somewhere in the wilderness than into a potentially profitable manufacturing concern. On the other hand, in Calgary or another city in the West, it is possible to hear that Canadians prefer to invest in manufacturing plants in the East that are sure to produce earnings rather than in some mine or well that might never produce anything. Some Canadians seem to be constantly apologizing for their country playing second fiddle to the United States, others seem to be perpetually concerned about the search for a Canadian identity. This present study has no psychological inputs to make except the observation that a country – like a company – needs a sense of purpose and direction before it can accomplish very much.

The entrepreneurial "climate" for small business is quite uneven across the country and, in reality, always will be so. This climate is actually a large collection of interacting components, a number of which may at any one time be working favourably for business while a number of others are not. Among the comments made about the inhospitable components in this climate in recent years have been the following:

– Canadian venture capitalists, banks and other potential sources of risk funds have the reputation of looking at small companies in the light of past balance sheets and not from the point of view of the future potential of their developing technology.

– The best available test market for new technology-based products is the United States.

– Managements of small companies become of necessity so involved in day-to-day matters that they are unable to take the broader and more relaxed approach to the future that is possible in larger companies. In other words, it is all very well for management consultants to recommend that small business pay more attention to its accounting procedures, financial control and market analyses, but no one has yet discovered how to increase the length of the day beyond 24 hours.

– The risks of small business management to the financial security and to the health of the management are becoming continuously less attractive as the burdens of legal and regulatory requirements, for example, become increasingly demanding.

– Through the efforts of the labour unions, the additional rewards of small business management and ownership have been reduced, not only from the point of view of differential financial rewards for responsibilities

[20]Garth Hopkins, *Ottawa Citizen*, Ottawa, July 24, 1965.
[21]Robert Duffy, *The Globe and Mail*, Toronto, April 11, 1970.

taken, but also from the point of view of management flexibility in the face of changing business situations.

– The small business manager has few places to turn for help. Although a variety of provincial, and some federal, government programs exist to help these people, few programs are financial and available to companies without adequate collateral.

– Following the branch plant and tariff barrier route, the numbers of foreign subsidiaries manufacturing or marketing in Canada is sometimes so large that the addition of resident-owned companies will fragment the small and marginally profitable market even further.

– Canadians are now, on average, better educated than they have ever been before. Yet, the majority of them appear to be following the safer professional routes in government, the universities and industry. In the "less educated" 1940s and 1950s, more of these same people would have considered establishing their own businesses.

– The proximity of the United States, and the many-fold opportunities it offers, has often been more attractive to ambitious and energetic Canadians than their own country, with its conservatism, lack of confidence, and U.S.-dependence.

In contrast, the provincial capitals are normally closer to small company locations. Although perhaps more restricted in their overviews and responsibilities, provincial officials have correspondingly less expansive roles to play and are perhaps more in tune with local thinking and local problems than are federal officials. Some provinces already have well-developed advisory programs and can make, or receive, personal visits at less cost to the individual company than would be involved in visiting Ottawa. While many Ottawa departments and agencies have representatives scattered across the country, they still maintain an overview approach and a headquarters approvals system.

But the federal government still has important things to do on behalf of small companies across the country. For example, the federal Income Tax Act can provide small companies with encouragement. "Spin-off" enterprises from federal laboratories, with federal financial assistance available, may be established almost anywhere in Canada. The Industrial Development Bank continues to serve some of the needs of small companies in all of the provinces. What is required, however, is a more deliberate division of labour in the support of small manufacturing companies between the federal and provincial governments; one that is sufficiently flexible to accommodate changing situations. The provinces should also consider dividing their own "small company" labour with selected municipalities.

Small Companies and Ottawa

Small companies have their own particular problems when applying for federal programs and when dealing with departments and agencies in Ottawa on matters of law or regulation. For example:

– Ottawa is a long way from points outside Ontario and Quebec for a potential applicant to consider making a trip,

– The smallest approvable grants under a particular program may be larger than the company can match in cost-shared arrangements,

– Few government officials have had first-hand experience of small business,

– Delays in project approvals may force companies to forego participation entirely or to proceed with the projects and risk rejection as a result,

– Small companies are often considered as uncompetitive and as non-exporters and therefore of little assistance to the economy compared to medium-sized and large companies with established production and export records.

The reactions of small companies to federal actions, policies and programs vary a great deal. These companies are often much more enthusiastic about the prospects for a new product or process than larger companies would be, and less inclined to be patient. They can become disenchanted with "government" quite quickly, but they may also have a very great deal more at stake in a single development than the larger companies will have. They may have better product champions and more visible entrepreneurs than the larger companies, but these people may not have much management experience.

Small businesses are generally more vulnerable to failure than larger ones. But companies of all sizes fail for a variety of reasons. Among these, management incompetence and lack of judgement and experience are apparently the most frequent.[22] But recent statistics indicate that, during 1969 and 1970, only 16 to 18 per cent of Canadian business failures were in manufacturing.[23] Individual new products may also fail, again in companies of all sizes, for one or more of a variety of reasons, among which may be inadequate market analysis, product defects, high costs of production, poor timing, and the activities of competitors.

The fact remains that technology-based companies have been started, and have survived, in Canada. Not all of them have been commercially or technically successful, and not all of them have remained in resident-ownership. A few have been "spun-off" from government laboratories. Some have had extensive financial support from governments, while others have survived by their own efforts.[24]

Venture Capital – Semantic Clarifications

The various financial institutions that supply venture capital have the same basic role to play within the financial structure, but may take widely

[22]See, for example, M.I. Wagner, "Why Do Businesses Fail?" *The Canadian Salesman*, Toronto, January, 1967.

[23]*The Failure Record Through 1969 and 1970*, Dun and Bradstreet of Canada, Ottawa, 1969 and 1970.

[24]*The Electronics Communicator* has, for some months, been running a series of profiles of electronic equipment and associated companies. The profiles usefully illustrate establishment and growth histories. Among the companies have been: Sinclair Radio Laboratories Limited (May 31, 1971); Guideline Instruments Limited (June 14, 1971); Northern Radio Manufacturing Co. Ltd. (June 26, 1971); Filtran Limited (August 9, 1971); Lindsay Specialty Products Limited (November 1, 1971); Barringer Research Limited (November 15, 1971); Omicron Data Systems Limited (January 24, 1972); Communtron Limited (February 7, 1972); and Dayton Wright Associates Limited (March 6, 1972).

different approaches to the playing of it. It is important to explore this basic role if only to clarify the roles played in the financial structure by non-venture institutions. It is therefore useful to repeat what one venture capital firm said about itself and its business:

"Venture capital is money which is provided to an enterprise to finance its development, in return for equity or partial ownership of the enterprise. The venture capitalist is the man or organization who provides the venture capital ....

"... the venture capitalist is not an ordinary investor, happy with safe returns and profits. He is not content with the interest rates readily available on commercial or government debt issues, the capital gains and income potential of real estate, or the obvious benefits of investment in listed public companies. Instead, he is prepared to invest his money in high-risk ventures; with the expectation of commensurate rewards. The relationship of the risk and the reward governs the amount of equity (i.e. ownership) that a venture capitalist expects to acquire for his investment ....

"The venture capitalist usually prefers to invest in small enterprises with above-average chances of financial success. Typically, a business needs capital at three stages in its evolution.

"Stage I: Start-up

When capital is required to launch a new enterprise selling a promising product or new service in a well-researched market.

"Stage II: Development

When an operational company with staff, plant and equipment and some customers is finally about to realize or has just begun to realize its profit potential, and needs money to hang on until the profits actually arrive.

"Stage III: Expansion

When a well-established, profitable company could benefit from substantial expansion but lacks the necessary extra funds.

"Most venture capitalists prefer to invest in companies at the development or expansion stage because the future of the companies is more predictable. Some venture capitalists, however, will finance "start-ups" and "turn-arounds"[25] as well, despite the added risks which are entailed."[26]

Venture Capital in Canada

The right way to start a new venture is at the market end, not at the product end, by solving someone's problem for him. It is the right way of proceeding because the *probability* of success is higher. The majority of market needs are not supplied by companies that provide new and technically sophisticated products but by companies that offer evolutionary and some-

[25]A "turn-around" is defined as a company that is in serious difficulty but which can be re-established on a profitable basis by the injection of venture capital and new management.

[26]Varitech Investors Limited, Toronto, Ontario in a promotional booklet. As this booklet says: Varitech Investors Limited is a company which provides management services and venture capital to entrepreneurs. Varitech Investors is made up of businessmen who have first-hand experience of the needs of entrepreneurs, and representatives of the different segments of the financial community.

times pedestrian improvements to the tools, accessories, appliances, and so on, that are already available. Success in the provision of services generally follows the same pattern.

Unfortunately, following this procedure only increases the probability of success. It does not *ensure* success. The casualty rate among companies in venture situations has always been high and is likely to remain so. Most experts in the venture capital business seem to agree that only one new venture in ten will be an outstanding financial success, two or three will fail convincingly, and the remainder will be modestly successful. To compensate for this unspectacular overall financial performance, the venture capital company looks beforehand for opportunities that could multiply its initial investments four or five times in as many years. The venture capital company usually takes an unsecured equity or equity-option position in a venture situation, and is interested in capital gains rather than in dividends. The recent tax reform measures will undoubtedly influence the venture capital business since gains are now to be taxed, but with allowances for losses.

To reduce the possibility of failure which it knows from experience is high, the venture capital company will assess the potential of the entrepreneur himself much more closely than the potential of his product and will examine his financial plans more carefully than his production or engineering competence. Venture company officers are usually risking some of their own money in making an investment, but they are usually also risking a great deal more money belonging to their backers. These backers may belong to other institutions within the financial system such as banks, insurance and trust companies, but they may also be government agencies or wealthy individuals.

Each venture company has its own individual "style" or approach to risk in new situations. It has an area or areas of activity which it knows better than others and in which it prefers to invest. One venture company may decline an opportunity but may send the entrepreneur to see another company, or it may hedge an investment by inviting other companies to share the risks involved. But a venture "package" will also include a majority stake held jointly by the entrepreneur, his friends and relatives, and other private and public institutions within the financial system. One of the most important services provided by the venture capital company is to help put together the venture "package". The average venture company, if there is such a thing, will finance only one of several dozen situations brought to its attention. The company will finance only a handful of new projects each year, provided that the financial and managerial resources at its disposal are not fully committed to ventures already in progress.

Venture capital companies are usually quite small. This is not surprising since, historically speaking, the majority of new high-risk business proposals have always been handled by small groups of men. The essential feature of the venture situation is high risk, and venture companies stay in business on the basis of their abilities to assess and manage these risks. If venture situations did not involve high risks, governments and other more cautious financial institutions would conceivably take over the venture business.

It is, of course, desirable that more of the large, technically-based companies in Canada should become involved in sponsoring new ventures by means of the "spin-off" process. This may be done either directly or indirectly, by spinning-off parts of their own organizations or by setting up subsidiary venture capital companies.[27] One of the principal difficulties is that the managements of large companies often tend to be relatively unsuited to look after "spin-off" companies because of the high degrees of technical and financial enterprise and risk involved.

It is correct to say that there is a wide variety of risk-taking among the venture capital companies in Canada. It is, however, quite difficult to estimate the amount of this kind of money that is available from these sources – or the amounts uncommitted – at any one time. One estimate might place the currently available "conventional" venture capital in Canada somewhere between $100 and $200 million, with between 20 and 35 per cent of it uncommitted. If all of the other sources of high-risk money could be taken into account, both these totals would of course be higher. The venture "business" is itself a relatively new business in Canada. Toronto- and Montreal-based at the present time, few of the three dozen or so companies established in the field were in existence much before 1968, and many of their officers are still relatively young. Venture companies do not invest exclusively in manufacturing or in Canadian companies. In fact, the extent of their investments in the United States has been one reason for the recent criticism of the Canadian venture companies. In mitigation, however, their officers would perhaps make a number of points. For example:

– The numbers of potentially profitable Canadian ventures within the acceptable degrees of commercial risk and return are not high.

– Where the Canadian market for a new product is inadequate, the entrepreneur must export, but he may have insufficient resources, connections or experience to do so.

– It is often difficult to place a realistic financial valuation on a new venture; entrepreneurs are interested in setting the figure as high as possible, and are inclined to believe that venture capital companies always undervalue the assets.

– Most venture support is "syndicated", and this takes time to arrange; meanwhile, other available opportunities cannot be ignored.

– Venture capital has always come into Canada from abroad, and will continue to do so: the new domestic venture business will never take over completely from foreign sources and by the same token, capital from Canadian sources will continue to move internationally.

– Venture capital is certainly not available for all Canadians who might conceivably make use of it. However, the most important question to ask is not why Box failed to get venture support, but why Cox succeeded.

It is by no means clear that governments in Canada should be in the venture capital business or should provide direct financial assistance to it.

[27]An example of a "spin-off" venture capital subsidiary is Nevron Industries Limited, established during the summer of 1972 by the Northern Electric Company Limited of Montreal.

Nevertheless, the federal government and the governments in the provinces most concerned with new venture opportunities in manufacturing have a number of ways in which they can support the venture capital business. One obvious method is through the tax system, and another is by means of the manipulation of interest rates. But the federal and the larger provincial governments in Canada should consider how they might use the Small Business Insurance Corporation (SBIC) technique developed in the United States.[28] Another route would be to change the terms of reference of the Industrial Development Bank and to make it in part the venture equivalent to the Canada Development Corporation.

The following additional results of experience are relevant to new business ventures in Canada:

– If a venture is going to fail, it will do so within three or four years from start-up; however, it will take seven years or more for a venture to become a proven success.

– New business ventures need a great deal of management and administrative help from venture companies, in addition to the undivided attention of the entrepreneurs or the owner-managers themselves.

– The main problem for entrepreneurs is not so much getting the initial $250 000 from venture companies but getting the $1 million to $5 million in additional funding needed to save the $250 000 investment.

– Some venture capital firms support new companies until they go public; other do not, but stay with the venture until it is sufficiently viable to make use of the help of the conventional financial institutions.

– There are, in practice, enormous obstacles between the drawing board and the market place, even in the best-managed companies, and this is not sufficiently recognized; larger companies are usually better able to "bury" their failures; small companies simply go bankrupt.

– The Canadian public still does not seem to want venture capitalists around; and rich men in Canada seem to have little faith in new technology.

– What is needed in venture capital business and in entrepreneurship is not so much education as experience.

– The venture capital business really started in this country *after* the publication of J.J. Brown's critique of enterprise and invention in Canada in his book, *Ideas in Exile*.[29]

Finally, a more whimsical comment by Alexander Ross:

"Raising money to start a business has the same circular quality to it as running for prime minister. If you're strong enough to stand the strain of getting there, you're probably strong enough for the actual job."[30]

Canadian Venture Capital Companies – Some Examples

It is useful to examine very briefly the principal features and approaches of three Canadian financial companies with interest in venture capital.

[28]See the section that follows on "Venture Capital in the United States." Although there may not be unanimous support for SBIC's among Canadian venture capitalists, a Canadian version of the technique is indeed worth investigation.

[29]J.J. Brown, *Ideas in Exile*, McClelland and Stewart Limited, Montreal, 1967.

[30]*Maclean's*, Toronto, April 1972. p. 93.

Helix Investments Limited, of Toronto, was started in November 1968 and since then has accumulated assets of about $8 million. It is devoted to financing new business undertakings, each of which must meet four general criteria, as follows:[31]

– it should have a strong, competent management group, prepared to stake their future on their ideas and business capacities,

– it should have a business concept that provides an unlimited market, not only in Canada, but throughout the world,

– it should have, for exploitation, a technical advance or a marketing or service innovation, and

– it should be a new venture requiring its first input of capital.

Helix Investments Limited provides the formal base for the venture activities of its founder and president, D.C. Webster. The dozen or so institutional investors in Helix include two banks and an insurance company. At one point, Helix had $4 million invested in fifteen enterprises distributed as follows: one in British Columbia, one in Switzerland and Quebec, two in the United States, four in Quebec, and seven in Ontario.[32]

Canadian Enterprise Development Corporation Limited (CED) of Montreal is an associate of American Research and Development Corporation described elsewhere in this chapter. CED was formed in 1962. Its assets at the end of 1970 were approaching $9 million, of which over $5 million had been invested in a variety of enterprises, the majority of them in manufacturing.[33] With the exception of the fulltime President, the directors of CED normally occupy senior positions in internationally known companies. The institutional stockholders in CED are predominantly insurance companies, but include the Toronto-Dominion Bank, the Bank of Montreal, the Royal Trust Company, and La Caisse de depôt et placement du Québec. CED has branches in Toronto and Vancouver.

Charterhouse Canada Limited has been in business for about twenty years. It is associated with the Charterhouse Group in the United Kingdom. Charterhouse does not always invest in start-up situations. Its interpretation of venture capital is therefore broader than, for example, the one used by Varitech Investors and many others. The principal Charterhouse activities are associated with:[34]

– the financing for expansion of sales and facilities,

– the provision of additional working capital,

– the provision of capital for business purchases, mergers, and takeovers,

– the outright purchase of companies,

– the purchase of listed securities,

– assistance in underwritings, and

– capital assistance for new businesses, and consulting services related to mergers and acquisitions.

Charterhouse investments are usually made in established commercial and manufacturing companies. The amounts invested normally range from

[31]Submission by Helix Investments Limited to the House of Commons Committee on Finance, Trade and Economic Affairs with regard to tax reform, March 25, 1970.

[32]private communication.

[33]*8th Annual Report of the* CED, Montreal, 1970.

[34]Company brochure.

$100 000 to $1 000 000. Investments are influenced by what the applicant company has done in the recent past and what it is likely to do in the near future. Charterhouse provides long-term funds. It does not compete with the regular financial institutions, but will provide additional financing to companies in which it already has a position.

Venture Capital in the United States – A Brief Analysis

U.S. history is filled with examples of individuals and companies that made what is now regarded as "venture capital" available and shared in the growth of enterprise and of the country. Yet it was not until after World War II that this kind of financing became more readily available, without the appropriate collateral, from financial institutions in the United States. The most important sources of high-risk start-up funds for the inventor and the entrepreneur were relatives, friends and wealthy individuals. The principal historical difference between the U.S. and Canada seems to lie in the abundance of risk-willing people of these three kinds, in an environment in which risk-taking was considered as a legitimate activity, and in the abundance of capable managers.

Since the war, it has been much easier for the individual or the firm to obtain high-risk financial backing from the new venture capital groups and also from regular institutional sources. The new venture capital groups in the United States as everywhere else are primarily interested in taking equity positions in the hope of procuring extensive capital gains. They are not normally in the loan business. Performance records are still required, but not necessarily for the newly established companies. The careers of their principal or principals may be enough when combined with the potential of their products. Commercial banks, even in the United States, are still not allowed by law to take high venture capital risks, but many of them have subsidiaries that can participate in this kind of business.

But even in the United States, the availability of support for high-risk ventures will fluctuate. For example, in 1970 the amount of venture capital invested in the U.S. may have dropped from the 1969 level. The reasons for this were tight money and the depressed stock market. The venture capital people were themselves looking to the stock market for help. Growing interest in the future of venture capital had been predicted for sophisticated private investors, financial institutions and large industrial organizations, but one of the problems that worked against the participation of these institutions and organizations was that no standard "deal" using standard statistics with a standard chance of success could be put forward in the venture capital business. The computer companies were badly hit in the venture market by 1970. Their heyday was 1967/68 when, as one business publication put it, the stock market "was afire with speculation and Wall Street was turning more daring by the minute" and money men were turning to venture capital as the ultimate investment return.[35] This publication placed the number of U.S. venture capital companies in 1970 at around 450.[36]

[35]Richard J. Handschew, *Business Week*, New York, November 1, 1969. p. 128.
[36]*Business Week*, New York, August 29, 1970. p. 28.

Route 128 companies have also experienced problems of establishment, growth and survival. In the fall of 1970, for example, employers in the plants along the "Golden Semicircle" began to announce cuts in work forces, and scores of smaller firms closed down altogether. The principal cause of the "fall" of Route 128 was the same as the cause of its "rise": government-underwritten defence and aerospace contracts. Another factor has been the fast rise of U.S. salaries and wages, opening up the way for competition from manufacturers in Japan and other countries in the Orient. And many of the young, small companies, regardless of the merits of their ideas as products, have been unable in the tight money market and sluggish economy to obtain the funds needed to grow out of their present problems. But some of the companies involved have succeeded in diversifying their operations and in reducing their dependence on government contracts. Others are waiting out the present "famine" because their technologies and products are so closely linked to defence or aerospace and are too sophisticated for short-term diversification towards the civil market. In the meantime, Route 128 industries have become generally more service-oriented, and the money market has been loosening up.

One recent commentator on the U.S. situation, Mel Mandell, has pointed out that the bull markets of the 1960s included many speculative and non-professional venture capital dollars which have since been withdrawn leaving the professionals, who have also turned cautious, to take up the slack. The net effect of the decline in risk-taking has been to depress the pace of innovation. However, Mandell went on to say:

"... the stock market plunge, the recession and tight money, the very factors that are acting in the manner of a Gresham's law driving out risk dollars are far more significant impediments to innovation. When times are hard, all managers are reluctant to commit scarce dollars to future developments."[37]

Three U.S. institutions associated with small companies and venture capital are of particular relevance to this present chapter: the Small Business Administration, because there is no Canadian equivalent; the Small Business Investment Corporation, because it represents one approach to government participation in venture situations; and the American Research and Development Corporation, because it was among the first of the post-war venture companies and one of the most successful and influential. Their roles and responsibilities are summarized briefly in what follows.[38]

The *Small Business Administration* (SBA) was originally part of the U.S. Department of Commerce. Its separation under the Small Business Act of 1953 reflected the feeling that the Department itself was preoccupied

[37] "When Venture Capital Dries Up", *Innovation*, March 1971. p. 16.

[38] *United States Industrial Policies*, OECD, Paris. 1970.
The United States Government Organization Manual, General Services Administration, Washington, D.C.
Fortune, Chicago, August 1967.
8th Annual Report, Canadian Enterprise Development Corporation, Montreal, 1971.

with big business and the smaller enterprise had to have a "home" of their own. The basic roles and responsibilities of the SBA include: to aid, counsel, assist and protect the interests of small business; to ensure that small business concerns receive a "fair proportion" of government purchases, contracts, etc; to make loans to small businesses and to State and local development companies; to license, regulate and make loans to Small Business Investment Companies; and to improve the management skills of small business. The definition of "small business" varies from one SBA program to the next, and from one industry to the next. For some purposes, quite large companies are considered "small", for example, they could have up to 1 000 employees.

The *Small Business Investment Companies* (SBIC's), of which there are several hundred, are privately owned companies that lend to, and invest in, small businesses. They are licensed and regulated and receive funds from the SBA, whose program relating to the SBIC's dates from 1958. The OECD report has noted:

"The SBIC's have grown since their inception, but they have had many problems also. Many of the companies have been too small to be able to lend or invest in a profitable manner, and they have often lacked adequate management to function properly. The size of the loans that SBA could make has often been too small to meet SBIC needs. As a result there have been violations of the standards and regulations set up by Congress and the SBA."[39]

The minimum private capital required to obtain an SBIC licence is $300 000. Once a company is fully invested, and cannot obtain further private support, the SBA itself can lend it additional funds. The SBA is responsible for supervising the lending operations of the SBIC's and for auditing their financial statements.

The Boston-based *American Research and Development Corporation* (ARD) is perhaps the best-known venture capital company in the United States. ARD has had some commercial notable successes, and has "spun-off" three associated companies including the Canadian Enterprise Development Corporation of Montreal. ARD was formed in 1946 with an initial capital of just over $3 million and has since participated in the development of more than 100 companies. In 1961 ARD became the first venture company to have its shares listed on the New York Stock Exchange. At the end of 1970, the ARD had investments of $313 million in 41 companies in electronics, pharmaceuticals, optics, chemicals and other high-technology manufacturing sectors. Among ARD's best-known ventures have been the Digital Equipment Corporation, Teradyne Inc., and the High Voltage Engineering Corporation. Like its affiliates, ARD puts more than money into its ventures. And, like any other venture capital company, its performance has not always been spectacular. As *Fortune* has noted:

"In the beginning, ARD's performance was anything but spectacular.

[39] *United States Industrial Policies, op. cit.* p. 169.

In 1947, its first full year of operation, the company realized a net profit of $87; it lost $241 228 in 1950, made $138 414 the year following, lost $1 436 in 1954. But since 1955, ARD has consistently reported gains."[40]

A Postscript on the Gray Report

In May 1972, the Government of Canada published the report *Foreign Direct Investment in Canada* for which the Minister of National Revenue, the Hon. Herbert Gray, was responsible. This report noted, for example, that nearly sixty per cent of manufacturing industry in this country was foreign controlled in 1967 and that eighty per cent of the foreign control was exercised by Americans. Within manufacturing, the greatest concentration of non-resident control was in petroleum and coal, followed by transportation equipment, tobacco and chemicals. A number of questions raised in the report are relevant to the discussion in this present chapter.

For example, the report discussed gaps in the Canadian capital market and identified four of them in particular:[41]

- venture capital for new and small firms,
- expansion capital for small and medium-sized Canadian-controlled firms,
- large pools of capital for major resource exploitation and other capital intensive projects under Canadian control, and
- capital for general development of regions of slow economic growth.

The report also said that, while Canadian financial institutions did not appear to be great risk-*takers*, there was no evidence available to suggest that individual Canadians were risk-*averters*. On the other hand, the report noted, little sophisticated analysis had been completed in this field. Another important point was that foreigners appeared to take on projects judged to be too risky by Canadians. A foreigner's perception of a particular risk could, however, be different from a Canadian's, particularly if the real risk to the foreigner was actually much smaller, for some reason or other. The report went on to say that the historical availability of foreign direct investment had not been conducive to the creation, within Canada, of the kinds of institutions and persons able and willing for risk-taking and entrepreneurship.

The report suggested three types of solutions to the capital gap problem. One was to try to create incentives and inducements to get the existing institutions to expand their role in financing new capital stock, for example, by encouraging the grouping of individual pension funds and life insurance companies into investment syndicates, and by altering the equity investment provisions of the 1967 Bank Act. Another was to encourage the creation of special gap-filling institutions, for example, of the merchant banking kind. A third was to mobilize new government sources of capital, for example, by altering the role of the Industrial Development Bank to give it a greater venture capital role and a greater role in the financing of small Canadian-controlled companies generally, or by expanding the role

[40] *Fortune*, Chicago. p. 103.

[41] *Foreign Direct Investment in Canada*, Gray Report, Government of Canada, Information Canada, Ottawa, May 1972. p. 92.

of the General Adjustment Assistance Program to permit it to take equity positions in companies whose capital needs would fall between those that could be supplied by a revised needs would fall between those that could be supplied by a revised IDB and those available through the Canada Development Corporation.

VIII. Trade, Tariffs and Non-Tariff Barriers

As stated in the "Introduction", this particular chapter is the only one in the study that deals at any length with Canadian manufacturing activities in the international context but, as also stated earlier, the analysis and descriptions are neither exhaustive nor extensive. The main objectives of the chapter are, first, to underscore the complexity of the business of trading in manufactures in world markets in general and in the U.S. market in particular and, second, to emphasize that trading in manufactures is a bilateral or multilateral business in which the bargaining strengths of governments are most important. This chapter will have relatively little to say directly about technology-based innovation, but the material has been biased towards those industry sectors that rely especially on the application of new technology to their products and processes.[1] The results of the analysis provided background information for a number of sections in the Science Council's own report, for example, those on tariff and non-tariff barriers, market size, market access, and management skills.[2]

The subject matter included in this chapter is of considerable importance to the Government of Canada and to the provincial governments. For example, Canadians have been warned repeatedly that their country is the only major industrialized one without ready access to a "captive" market of 100 million or more people. Canadian manufacturers have been continuously exhorted by federal and provincial government spokesmen to export more and to strive for economies of scale and specialization. The policy of the federal government in recent years has been to encourage international competitiveness in Canadian manufacturing by means of exposure to competition from foreign producers in the domestic market. From time to time special international trade and marketing agreements have been concluded by the federal government but, with the exception of the Canada-U.S. Defence Production Sharing Program, these arrangements have usually been limited to specific products, staples or raw materials.

Federal actions have not usually been overly protective of Canadian manufacturing although, in the case of the textile industry, steps were recently taken to limit the access of certain foreign producers to the Canadian market. The federal government has placed relatively little emphasis on wider import substitution by means of domestic production or on capturing for Canada, sufficiently far in advance, a sizeable share of future world markets for specific "high-technology" products. At the provincial level, policies and programs to encourage manufacturing exports, import substitution, and specialization have tended to reflect the particular interests and resources of the individual provinces. As would be expected, the most active provinces have been Ontario and Quebec. Provincial policies, opportunities, and needs for specific product protection have not always coincided with those of the federal government.

[1]Further analyses and descriptions of innovation-trade problems have been included in the reports of the Science Council Study series: *The Multinational Firm, Foreign Direct Investment, and Canadian Science Policy*, Information Canada, Ottawa, 1972, and *Innovation and the Structure of Canadian Industry*, Information Canada, Ottawa, 1971.

[2]Science Council of Canada Report No. 15, *Innovation in a Cold Climate*, Information Canada, Ottawa, 1971.

In spite of the postwar moves towards greater interdependence in world trade in manufactures, the environment for this trade has been somewhat inhospitable in recent years. Protectionism, trade bloc "solidarity", and the raising of non-tariff barriers have helped reduce the effectiveness of the lowering of tariff barriers. In Canada's case the situation has been complicated by a number of other factors of which the absence of a reputation as an established manufacturing nation has been one, and the presence of its branch plant reputation another. The list could be extended to include the Canadian dollar exchange rate fluctuations, the effects of domestic inflation, political uncertainties, and the generally higher unit cost of labour in this country. On the other hand, the "rules of the game" in foreign countries often make it necessary for Canadian-based manufacturing companies to establish subsidiaries in these countries instead of operating from facilities which serve the domestic market.

Some Trade Statistics

On the basis of figures compiled by the United Nations, Canada's share of world trade in 1970 was as indicated in Table VIII.1. These figures confirm Canada's continuing role as a supplier of staples and raw materials and as an importer of semi-processed and finished goods. However, as historical data from the U.N. also show, the relative increase in Canada's exports of manufactures during the 1960s was, among the industrialized countries of the world, exceeded only by Japan.

Table VIII.1–Canada's Share of World Trade: 1970

Percentage of Total World Exports or Imports	Total Value of World Exports and Imports U.S. Dollars Billions	Commodity Classification	Percentage of World Exports by Commodity Originating in Canada	Percentage of World Imports by Commodity Entering Canada
10.8	24.3	Food, etc.	7.4	3.5
12.1	27.1	Raw Materials and Fuels	14.8	3.3
8.7	19.4	Chemicals	2.8	3.6
35.1	78.6	Machinery	6.7	8.6
31.7	71.1	Other Manufactures	5.5	3.8
2.1	4.7	Miscellaneous	–	–
100.0[a]	225.2		7.2	5.0

Source: Monthly Bulletin of Statistics, United Nations, New York, 1972. pp. xx to xxxii.
[a]Percentages do not add exactly due to rounding.

Canada's export-import performance may be examined further on the basis of data of domestic origin. Table VIII.2 gives the breakdown of exports and imports by stage of fabrication for the years 1964 through 1971. The data show that the shift to end products for both exports and imports has been quite marked. The principal changes in end product imports were in heavy machinery; in the equipment and tools required for the development, construction and operation of extractive, processing and secondary manufacturing industries; and in automotive products. Export performance was most strongly influenced by increased exports of auto-

motive products, including snowmobiles, to the United States under the Auto Pact. For example, in the early 1960s, automobile product exports to the United States accounted for less than 10 per cent of total value of end product exports, but, by the end of the decade, accounted for over 60 per cent of them. The majority of Canadian exports of manufactures originated in Ontario. Table VIII.3 gives the regional distribution of exports based on first shipment destinations in 1967, the latest year for which such data are available.

Table VIII.2–Canada's Export-Import Performance in Manufactures, by Stage of Fabrication: 1964 to 1971

	Crude Materials		Fabricated Materials		End Products	
	% of Exports	% of Imports	% of Exports	% of Imports	% of Exports	% of Imports
1964	36.6	18.7	45.9	27.4	17.6	53.9
1965	35.1	16.9	46.0	26.9	18.9	56.2
1966	33.7	15.2	41.9	24.8	24.4	60.0
1967	29.0	14.2	39.7	22.8	31.3	63.0
1968	26.7	13.5	37.9	21.4	35.4	65.1
1969	23.0	11.9	36.9	22.1	40.1	66.0
1970	26.1	12.9	37.0	22.3	36.9	64.8
1971	26.6	12.3	34.6	21.5	38.8	66.2
Change, 1964 to 1971	−10.0	− 6.4	−11.3	− 5.9	21.2	12.3

Source: Statistics Canada *Daily Bulletin*, March 4, 1971 and *Daily Bulletin*, February 9, 1972.

Table VIII.3–Canadian Exports of Manufactures by Region of Origin and on the basis of First Shipment Destinations: 1967

Region of Origin	Percentage of Total Canadian Shipments of Manufactures Destined Abroad
Atlantic Provinces	5.7
Quebec	26.5
Ontario	46.3
Prairie Provinces	3.3
British Columbia, Yukon and N.W.T.	18.2
Total	**100.0**

Source: Statistics Canada, *Destination of Shipments of Manufactures 1967*, July 1971. Cat. No. 31-504.

With regard to Canada's merchandise trade as a whole, the following information relates to the year 1971:[3]

– In 1971, Canada's merchandise trade grew by about 7.3 per cent over the previous year. Exports reached $17 704 million and imports $15 608 million, leaving a trade surplus of $2 096 million, which was $772 million behind the record surplus of 1970.

– The United States received 68 per cent of all Canadian merchandise exports in 1971, an increase from 65 per cent in 1970. In the reverse direction, the U.S. provided 70 per cent of Canada's imports. However, if the two-way flow of automotive products is removed, Canada's total, and favourable, balance with the U.S. drops from $1 057 million to $900 million.[4]

[3]Statistics Canada, *Daily Bulletin*, Ottawa, February 12, 1972.

[4]It is recognized that this trade balance data is not necessarily identical with data originating in the United States.

– In 1971, exports of end products accounted for about 48.5 per cent of Canadian exports to the United States, up from 47.5 per cent in 1970, but down from the record 49.0 per cent of 1969. Automobiles are included in these figures. However, the impact of the 10 per cent surcharge imposed by the U.S. between mid-August and mid-December was softened by the catching-up of vehicle exports following the strike in 1970.

– In 1971 the demand for Canadian exports settled at lower levels as production decelerated in the European Economic Community and Japan, and grew very little in the U.K. The trade balances with all three deteriorated: by $242 million with Japan, by $233 million with the EEC, and by $217 million with the U.K.

Significant changes took place in Canadian overall exports and imports by commodity classifications during 1971, as follows:

Exports Rose:	automotive products wheat, barley and cereals flaxseed and rapeseed crude petroleum, natural gas and coal lumber and fabricated wood chemical products fabricated material of petroleum or coal equipment other than transportation or communications (mostly office machines)
Exports Declined:	metal ores, concentrates and scrap non-ferrous metals aircraft iron and steel alloys wire and cable and other fabricated metal products communications and related equipment
Imports Rose:	automotive products office machines and equipment textiles communications equipment clothing and other personal goods fruits, vegetables, sugar, and beverages iron and steel alloys railway rolling stock and other transportation equipment exclusive of automotive or aircraft medical supplies, photographic goods and other miscellaneous end products
Imports Declined:	aircraft

Significantly, also, exports to Japan in 1971 declined by $22 million to $791 million, while imports rose $220 million to $803 million. Canada's positive trade balance deteriorated from a surplus of $231 million in 1970 to a deficit of around $11 million in 1971. Exports of ores, metals, lumber and wood pulp were down in 1971, while imports of automotive products, steel and alloys, textiles and communications equipment rose.

Governments and Trade

Section 91 of the BNA Act gives the federal government jurisdiction over "the regulation of trade and commerce". In practice, this means – among other things – the operation of the customs tariff and excise systems and the negotiation of international trade and tariff agreements. The Act gives the provinces no direct regulatory responsibilities with regard to trade, but their influence in both domestic and foreign trade is nevertheless substantial.[5] Both the federal and provincial levels of government are active in the encouragement and promotion of trade for the benefit of domestic industry. The federal interest includes all sectors of manufacturing while the interests of the provinces are determined largely by market opportunities based upon the human, material and other resources available within their respective jurisdictions: resources which these governments have been trying hard to diversify and expand. In the other direction, the trade policies and activities of foreign governments with regard to manufactures are of particular interest to the federal government and to the governments of Ontario, Quebec and British Columbia, but are only of concern to the other provinces in so far as they affect prospects for the indigenous industry.

At the federal level, the Minister of Industry, Trade and Commerce and his Department (IT&C) play leading roles and carry heavy responsibilities in trade matters associated with manufacturing in Canada. For example, the Minister's formal duties include improving the access of Canadian produce, products and services to foreign markets by means of trade negotiations, and the promotion of bilateral and multilateral trade relations with other countries. With the Department, the structure, organization and programs emphasize increased production and productivity at home and effective trade promotion and intelligence services abroad. The Department has responsibility for the federal Trade Commissioner Service, for the Auto Pact, for the Canada-U.S. Defence Production Sharing Agreement, and for matters affecting Canada's participation in the General Agreement on Tariffs and Trade (GATT).

All of the IT&C programs mentioned in this report are relevant in one way or another to the Department's role in the encouragement of trade involving Canadian manufactures. For example, three of the industrial R & D programs discussed in Chapter 3, PAIT, IRDIA and DIP, were designed with the overall competitive capability and productivity of Canadian manufacturing in mind. The Program to Enhance Productivity (PEP) was introduced in 1971 to help improve productivity in the manufacturing and processing sectors by means of "contributions to encourage companies to undertake intensive studies of significant and imaginative efficiency improvement programs".[6] The Building, Equipment, Accessories and Materials Program (BEAM) is also productivity-oriented, but is concerned principally with information dissemination and does not provide financial

[5]Their roles in domestic trade are analysed in the "Interprovincial Trade" section that follows.

[6]*Program to Enhance Productivity*, PEP Brochure, Department of Industry, Trade and Commerce, Queen's Printer, Ottawa, 1970.

assistance. One of its identified objectives is to encourage the development and expansion of export markets for Canadian buildings, building components and building expertise. The Pharmaceutical Industry Development Program (PIDA) was introduced in 1969, following amendment to Section 41 of the Patent Act allowing importation under compulsory licence, to help increase the efficiency of the smaller pharmaceutical firms and their competitiveness in domestic and export markets. The Machinery, the Automotive Assistance, and the General Adjustment Assistance programs will be discussed briefly later in this present chapter.

Late in 1971 the IT&C introduced a new Program for Export Market Development (PEMD). This particular program has two separate elements: one relating to incentives for the participation of Canadian companies in capital projects abroad, and another relating to financial support for export market identification and for the adjustment of marketing strategies in order to secure entry into export markets. The first element provides for the sharing, by the Department and the company concerned, of the expenses involved in the pre-contractual competition phase of an actual or potential project. The principal objective of the market identification-adjustment element is to increase the export of Canadian manufactured products. There are two important limitations, however. This incentive is *not* applicable to the United States' market, and the term "Canadian manufactured products" is intended to describe products containing a *significant* level of Canadian value added in manufacturing.

A number of IT&C programs have been designed to help entire industries. For example, during fiscal year 1970/71 the Department began developing the measures required to implement a new federal textile industry policy, including the establishment of a Textile and Clothing Board, and undertook to assess the impact on the Canadian industry of concessional export financing provided by other countries. Another element in the new policy has been the Fashion Design Assistance Program (Fashion/Canada) which was aimed at increasing the competitiveness of the Canadian Clothing, textile, leather and footwear industries by stimulating creative design and improving product quality.

Every country in the world that builds ships subsidizes its shipbuilding industry in one way or another in order to make it commercially viable. Canada is no exception. As the *Annual Report* of the Department of Industry, Trade and Commerce for 1970-71 stated:

"Departmental programs designed to assist Canada's shipbuilding industry resulted in contracts amounting to $225 million by the end of the last fiscal year. Contracts worth $125 million have been signed since the plan was introduced to pay subsidies toward the cost of ships built in Canada for Canadian owners. This has been done under the Ship Construction Subsidy Regulations (SCSR). The rate of subsidy was 25 per cent, at introduction, dropping to 17 per cent by 1973. A new Shipbuilding Temporary Assistance Program (STAP), introduced in November, 1970, yielded contracts worth $110 million by March, 1971. It provided grants of 17 per cent of approved costs (14 per cent for very large vessels) of building ships destined to be registered outside Canada."

A second federal institution deeply involved in trade matters is the Export Development Corporation (EDC). Although the Corporation reports to Parliament through the Minister of Industry, Trade and Commerce, it has a life of its own. The EDC was born phoenix-fashion, on October 1, 1969, out of the "ashes" of the 25-year-old Export Credits Insurance Corporation, and is a proprietary Crown corporation. The Chairman of the Board is the Deputy Minister of Industry, Trade and Commerce. The President is full-time officer, and the directors are almost all senior federal officials. Its head office is in Ottawa, but there are branches in Montreal, Toronto and Vancouver. The Corporation's *Annual Report for 1970* gave the following background information about its role:

"EDC is empowered by statute to insure Canadian firms against non-payment when Canadian goods and services are sold abroad and, under certain circumstances, to make loans to foreign entities with which to purchase Canadian goods and services. Within certain limits, EDC is also empowered to insure Canadian firms that invest abroad against loss through political risks such as expropriation or insurrection, and against the inability to repatriate capital or transfer earnings.

"All insurance guarantees, or loans to foreign buyers, except when carried out at the direction of the Governor in Council, are the responsibility of EDC. Thus, except when acting as an agent of the Government, EDC acts on its own account when providing financing or otherwise supporting exporters. Transactions considered to be inappropriate for the resources of EDC but judged to be in the national interest require individual approval by the Government and the funds required are made available directly from the Consolidated Revenue Fund.

"The services EDC provides are not available from commercial sources. Using EDC facilities, Canadian exporters who are competitive in world markets in terms of price, quality, delivery and service, are assisted in meeting international credit terms."

EDC has been given new and expanded facilities for export credits, export credits insurance, guarantees, and associated services, and the authority to encourage Canadian investment in developing countries. Table VIII.4 gives the distribution of the risks underwritten by the EDC during 1971 on the basis of the various commodity groups and their destinations. The data show that few "high technology" product sales are apparently insured through the Corporation. It should be remembered, however, that the EDC provides insurance services not available from normal commercial sources.

The list of federal agencies closely associated with trade in manufactures may be continued to include: the Tariff Board; the Anti-dumping Tribunal; the Canadian Commercial Corporation; the Canadian International Development Agency; Atomic Energy of Canada Limited; the Ministry of Transport and its satellite Crown Corporations. A variety of Departments such as Finance, National Revenue, Supply and Services, the Environment, Regional Economic Expansion, Consumer and Corporate Affairs, Labour, and Energy, Mines and Resources, are also involved to a

greater or lesser extent in the promotion of Canadian participation in international and domestic trade.

Table VIII.4–Distribution of the Risks Underwritten by the Export Development Corporation in 1971

Principal Commodities	Percentage of Total Value of Exports Insured	Commodity Destinations	Percentage of Total Value of Exports Insured
Wood and wood products	32	Europe	30
Agricultural products	23	South America	21
Iron and products	16	Middle East	5
Aircraft and Components	6	North America	15
Non-ferrous metals and products	6	Central America/ Caribbean	9
Chemicals and products	4	Oceania	6
		Far East	10
		Africa	4
Others	13		

Source: *Annual Report 1971*, Export Development Corporation, Export Development Building, 110 O'Connor Street, Ottawa, Canada.

In the provinces, a wide variety of government departments and agencies have activities associated directly or indirectly with trade. Normally, the leading roles and responsibilities in trade matters associated with manufacturing fall upon the Departments of Trade, Industry or Development according to the various descriptions used. The roles of the natural resource and primary industry departments are less important in the area of trade in manufactures, but those of the regulatory departments and agencies and of the marketing agencies have been growing in recent years. The Research Councils in the provinces are also playing increasingly important parts, particularly those in Ontario, British Columbia, New Brunswick and Quebec. Hydro-Electric Commissions are, at one and the same time, users of high-technology equipment and suppliers of energy to manufacturing plants. The provincial Departments of Labour have jurisdiction over the majority of the manufacturing labour force in Canada. Provincial governments have also developed extensive advisory services geared to the needs of small manufacturers and exporters. Specialized agencies and programs dealing directly or indirectly with the stimulation of the trade environment exist in considerable variety in the provinces. They may be fully sponsored by the governments concerned, or constituted as joint public-private enterprises with varying degrees of public support. For example, Manitoba has had an Export Corporation for some time. The Ontario Development Corporation recently established an Export Support Program to fill gaps in the federal export assistance programs. The majority of the provinces now have trade agents at centres abroad.

No government can continuously subsidize or otherwise assist the same commodity exports or continuously encourage the substitution of domestic for foreign production of the same manufactured goods without doing serious economic and other damage in the long run. Ideally, the key to more effective government encouragement of international trade – as well as of domestic trade – should lie in the ability of governments to

anticipate when help will be needed, to assess correctly how much of it will be needed, and to know when to stop supplying it. In other words, governments should learn when to be increasingly "liberal" and when to be increasingly "mercantilist", and when to change from one direction to the other. Life, unfortunately, is seldom as simple in practice. Political, social and economic factors usually intrude to upset the proper "mix" of government support for trade. These factors need not be domestic in origin. As one Canadian commentator wrote even before the new U.S. economic measures were announced in August 1971:

"Canadian exporters are so heavily dependent on the U.S. market that every alteration of commercial policy in Washington and every whisper of protectionist sentiment anywhere in the United States tends to be regarded as an immediate threat to Canadian interests.

"This attitude of wariness is hardly surprising. The United States has long been a receptive market for Canada's raw and semi-processed materials, but it is only recently – hardly longer than a decade – that any substantial number of manufacturers have felt they could successfully develop outlets in the United States."[7]

Governments in Canada are not alone in providing assistance to individual companies or to industries in order to make them more effective in trade but it often seems that foreign governments provide assistance more effectively. The emphasis is normally placed on exports. Import substitution incentives are generally less visible because many – such as import quotas – contravene the spirit of GATT.

Interprovincial Trade

According to Section 121 of the BNA Act there are to be no barriers to interprovincial trade equivalent to international tariff barriers. All articles of growth, produce or manufacture from any one province are to be admitted free into any other province. In practice, barriers of four different "non-tariff" types do exist – three of "provincial" origin, and one of "federal" origin.

The "federal" barrier can be applied through the exercise of federal jurisdiction or as a result of federal policies or programs. For example, the Industry Department's PAIT program, the operation of the programs of the Department of Regional Economic Expansion, or the Canada-U.S. Auto Pact may be regarded as barriers to interprovincial trade in so far as the distribution of grants and of plants is influenced by the availability of qualified applicants, unemployed labour force distribution, suitable sites, and so on. But it is patently impossible for the federal government to manage all of its policies and programs homogeneously all of the time. Also, the federal government has programs designed specifically to discriminate *against* those provinces, or parts of them, which are better

[7]Ronald Anderson, *The Globe and Mail*, Toronto, July 22, 1971.

endowed than the others in order to share Canadian wealth more equitably.[8]

The first type of "provincial" barrier is associated with the material and human resources available in each of the provinces, their different needs, and the different kinds of opportunities open to each of them.

The second type of barrier is erected by the provinces themselves in the form of controls over the use of human and material resources. These controls may vary widely from consumer, safety and other laws for the protection of individuals, to environmental and other standards and codes, to sales taxes and income tax exemptions, and to industrial plant location incentives. Some of these controls are of course desirable and, indeed, some should be mandatory in every province. The difficulties arise – as happens in international trade – when their application varies significantly from one province to the next.

The third type of barrier is a variation of "control" type, but is related to physical, or quota, restrictions on the flow of particular products from one province into another which may be in conflict with the spirit of Section 121 of the BNA Act. A province injured in this way may, of course, seek remedial action through the Federal Court in Ottawa.

One example of this last type of barrier was the so-called – and recently resolved – "chicken and egg war" which began when the Quebec Government decided to stem the flow of low-priced Ontario eggs into the Quebec market. Ontario, as well as Manitoba, British Columbia, Alberta and Nova Scotia became involved by imposing marketing regulations against low-priced chickens from Quebec. In the case of British Columbia, the provincial government was also reacting to the share of the B.C. poultry market acquired by Alberta. The "war" went to court. It was discussed by the provincial premiers at their 1971 annual meeting, and the federal government introduced legislation designed to prevent its recurrence. This legislation was passed by Parliament in December 1971.

The "chicken and egg war" serves to illustrate the difficulties that can be encountered in the encouragement of interprovincial trade in Canada; difficulties that have their origin in the interpretation of Sections 91 and 92 of the British North America Act. In the years since Confederation the provinces have acquired almost total control over local business. A government can regulate – and may even prohibit – the manufacture or sale of a particular product on a province-wide basis. But the "chicken and egg" program is also a warning. Interprovincial trade disputes could spill over into technology-intensive goods and have an adverse impact on efforts to encourage technology-based innovation in product lines in which production concentrations must be developed in order to compete effectively with foreign producers in both the domestic and export markets.

[8]The federally-regulated freight rate structure is also highly discriminatory and compensatory. This structure is an important indirect impediment to technology-based innovation in Canada. Some consideration was given to the presentation of an analysis of this structure as part of the research work for this present study but, because of the enormous complexities of the structure as a whole, the project was abandoned. Nevertheless, when speaking of impediments to innovation and to *trade in manufactures*, the freight rate structure should not be forgotten.

Some Aspects of the Tariff Problem

The following two statements attempt to summarize, in historical terms, the policy approaches which were taken by the two principal political parties in Canada and which had an important effect on the growth and development of domestic manufacturing and on Canadian participation in trade in manufactures:

– The national tariff policy of Conservative Prime Minister, Sir John A. Macdonald, is responsible – in part – for the present unhealthy state of manufacturing industry in this country. This policy permitted companies, many of which were foreign-owned, to grow up behind a tariff wall and to serve the domestic market with products designed and developed abroad. As a result, neither foreign- nor resident-owned companies have ever grown big enough or efficient enough to compete in world markets.

– The later federal Liberal policy was never one of completely open free trade, but it did support those arrangements designed to promote the export of raw materials and staples. It is also responsible – in part – for the present unhealthy state of manufacturing in this country. The policy was remarkably successful in bringing about the growth and development of the Canadian economy as a whole. However, its very success had two important consequences. First, it brought a high degree of foreign ownership to the materials extraction industries which led, in turn, to only the minimum of processing being performed in Canada. And, second, it convinced the policy-makers that they should not interfere with manufacturing because, by so doing, the extractors might be encouraged to go elsewhere.

There is substance in both of these statements. There is also some substance in the assertion that, while they were not necessarily *anti*-manufacturing at heart, the staple-producing and resource-rich provinces encouraged successive federal governments in their pro-staples, pro-resources policies. On the other hand, it is clear from history that powerful manufacturing countries such as the United Kingdom, the United States and, more recently, Japan initially took a protective approach to the building of their manufacturing industries. While admitting staples and materials from abroad, they kept the manufactures of competitor countries out of their domestic markets until such times as their own companies had become able to compete with imported goods.

The present Canadian tariff structure includes three sets of tariff rates: Commonwealth (or British) Preferential, Most-Favoured-Nation (M-F-N), and General.[9] The Customs and Excise Tax Acts provide for the repayment, or drawback, of a portion of the duty, sales and/or excise

[9]British Preferential are normally the lowest rates and apply to imported commodities for Commonwealth countries, except Hong Kong, when conveyed without trans-shipment from a port of any British country enjoying the same tariff rates into a Canadian port of entry. Some Commonwealth countries have made trade agreements with Canada which provide for rates of duty on certain goods below the British Preferential. M-F-N rates are usually between the other two rates, and are applied to other countries with which Canada has trade agreements. GATT countries are entitled to M-F-N rates. General rates apply to goods imported from the few countries with which Canada has not made agreements. British Preferential rates will effectively disappear when Britain enters the European Economic Community.

taxes paid on imported goods used in the manufacture of products later exported. The purpose of these drawbacks is to help Canadian manufacturers compete in foreign markets with foreign producers of similar goods. A second class of drawback, known as a "home consumption" drawback, is also provided for in law and applies to imported materials and/or parts used in the production of goods to be consumed in Canada.

For the domestic market, however, the Canadian manufacturer must normally pay duty on imported components. If this duty forms a high percentage of the total cost of the final product and if, at the same time, the tariff on the imported finished product is at a much lower rate, then the domestic manufacturer can be placed on a serious disadvantage in his own market in competition with the importer. On the other hand, the domestic manufacturer of the components in question can be hurt by the drawback provisions which may also discourage Canadian companies from adding new products to their lines. A different set of problems arises if the components for a product and the finished product itself attract high rates of duty while the semi-finished intermediates or sub-assemblies enter Canada at a lower rate. In these circumstances, the foreign-owned subsidiary will be encouraged to import its product in the form of sub-assemblies, thereby limiting the value that can be added to the product in Canada.[10]

In recent years, the federal government has not been unaware of tariff problems faced by Canadian manufacturers. It has, for example, established the Machinery Program (MACH) within the Department of Industry, Trade and Commerce. The purpose of this program is to allow users of certain types of machinery to acquire, at the lowest possible cost, capital equipment which is not available from Canadian production. The remission of import duty, which is the form in which assistance is given, must be in the public interest. At the same time, the program allows Canadian machinery producers to derive encouragement from the tariff by extending duty protection once they are in a position to supply. MACH was introduced on January 1, 1968. By fiscal year 1970/71, 16 000 applications were being processed annually. The remissions under MACH in 1970-71 were in the neighbourhood of $7.5 million. MACH comes under the purview of the Machinery and Equipment Advisory Board of IT&C.

Another federal Department of Industry program, the General Adjustment Assistance Program (GAAP), was established in 1968. It was designed to assist manufacturers to restructure their operations to take advantage of export opportunities arising out of the Kennedy Round Tariff Agreement or to improve their competitive position if they had been, or were likely to be, seriously affected by the resultant reduction in the Canadian tariff. The program was also intended to help manufacturers in textiles, clothing and footwear to improve their competitive positions in domestic and export markets. To be eligible, a company must meet the necessary criteria and be unable to obtain the financing it requires on

[10]These examples have been included to illustrate tariff problems. There are too many different kinds of situations for an analysis of them all to be attempted in this study. Such analyses are better done in the context of individual industry sectors because the different sectors face different tariff and associated problems.

reasonable terms. Disbursements made under GAAP for the fiscal year 1970/71 were in the neighbourhood of $14 million. The program is administered for IT&C by the General Adjustment Assistance Board, on which both private industry and government members sit. Recently, the ceiling for direct loans under GAAP was raised to $20 million and for insured loans to $250 million.

The principal theoretical reasons advanced for the continued reduction and eventual elimination of Canadian tariffs against foreign manufacturers have been first, that competition from more efficient producers will force Canadian manufacturers to become more efficient or go out of business and second, that it is unfair to expect the consumer to pay for inefficiently manufactured domestic products priced up to a level that tariff protection makes possible. In practice, however, customs tariff levels are fixed or altered for each of the thousands of individual items, in response to a variety of pressures, most of which have little or nothing to do with economic theory. The attitudes toward tariff protection and the use of the tariff system in an economy, of those who advocate and authorize the fixing or altering of tariff levels are, of course, important. The major difficulty is not so much to alter the views of the "anti-protectionists", but to recognize when the existence of an effective tariff will, for example, provide needed employment, provide opportunities to get potentially viable "infant" industries going, or establish a Canadian "presence" in world markets. Tariff protection is also negotiable and may be a factor in international trade or market access bargaining. The country that has few or unusually low tariff walls in place is in a relatively weak bilateral or multilateral bargaining position in relation to more protectionist neighbours, although there are limits to the protection that any country can obtain for sections of its manufacturing industry by means of the tariff system alone.

The trend towards the lowering of tariffs, the abolition of duties no longer required, and the liberalizing of world trade generally, has been fostered in the postwar period through the international tariff-negotiating mechanisms, the General Agreement on Tariffs and Trade (GATT). The first GATT agreement was signed by 23 countries in 1947. Since then, a number of other international agreements have been concluded under the umbrella of GATT. The most recent and best known were the so-called Kennedy Round negotiations of 1964 to 1967. The formal objectives of GATT are similar to those of some other international bodies, namely, to raise standards of living throughout the world, to ensure full employment and a large steadily-growing volume of real income and effective demand, to develop the use of the resources of the world, and to expand the production of the economies of all contracting parties.[11] The contracting parties to GATT now number over ninety. This growth, along with the need to accommodate the less developed, politically non-aligned, and state-trading countries, has put pressure on the GATT organization and its ability to meet its initial objectives. Originally, and among other things, GATT sought

[11]For fuller discussion of GATT and customs tariff systems see, for example, John V. Horne, *Essentials of Export*, Sir Issac Pitman (Canada) Limited, 1969. p. 184 *et seq.*

to extend the use of most-favoured-nation tariff preferences, to reduce Commonwealth preferences, and to prevent the formation of any new tariff preferences and any increases in the margins of existing preferences.

The bulk of the latest GATT negotiations, the Kennedy Round, were concerned with trade in manufactured goods. An estimated $40 billion (U.S.) of trade, principally between the developed countries, was made subject to reductions of 37 per cent on average in existing tariffs. The cuts were to follow either of two schedules. The United States was to make five equal reductions between 1968 and January 1, 1972. The other schedule called for reductions of two-fifths of the total cuts in 1968 and the remainder of the cuts equally in 1970, 1971 and 1972. The U.S. made its final cuts on schedule. The Canadian Government, on the other hand, decided to speed up its schedule in the interests of increased competition and the reduction of prices in the domestic market and ordered that the full range of tariff reductions be made by July 1969. The Kennedy Round reductions were expected to remove tariffs as a formidable barrier to trade, and in this the negotiations may have succeeded. The reductions were also expected to help expand world trade, and this they may have done much less successfully. But since 1967, world trade has become increasingly difficult for most countries, the most recent stage being the series of economic measures and the monetary crises which began with President Nixon's announcement on August 15, 1971.

The main *tariff* problem affecting the manufacturer is not the philosophical one of whether or not the general level of tariffs should be lowered. It is, quite simply, the disadvantage – if any – at which he finds himself after taking into account the *effective* Canadian and foreign tariffs that have been applied to his own product and to those of his competitors on their way to the market.[12] But, in these post-Kennedy Round years, tariff barriers have often been of less concern to trading countries and manufacturers than these non-tariff barriers that have become increasingly prominent and effective. Most tariffs are now so low that there will be little left by the way of margins with which Canada or any other country can begin to negotiate in any future GATT "Round".[13]

A Note on the Canada-United States Agreement on Automotive Products (The Auto Pact)

The Auto Pact came into effect in January 1965. The Pact has resulted, thus far, in increased productive capacity and rationalization in Canada. As noted already in the statistics section, the automotive industry has become Canada's prime manufacturing export industry and its former deficit status with regard to exports to the United States has recently become a surplus, at least for the time being.

The United States undertook to allow the free entry of new cars,

[12]The effective tariff rate problem has been discussed, for example, by James R. Melvin and Bruce W. Wilkinson, *Effective Protection in the Canadian Economy*, Economic Council of Canada Special Study No. 9, Queen's Printer, Ottawa, 1968.

[13]Preparations for the so-called "Nixon Round" are under way. It is expected to deal extensively with non-tariff barriers to trade.

buses and certain trucks, and of original but not replacement parts or tires, when they were substantially made in Canada. Canada agreed to free entry from the U.S. of a similar range of products but only when imported by a Canadian manufacturer, and subject to the safeguards as outlined above. An individual buyer could not, therefore, purchase a lower-priced U.S.-made car and bring it into Canada duty free. The Pact includes snowmobiles, which were a negligible component of the Canada-U.S. auto trade when the agreement was signed.

Article 1 of the agreement committed the signatories to the early achievement of the following objectives:

– The creation of a broader market for automotive products within which the full benefits of specialization and large-scale production could be achieved.

– The liberalization of United States and Canadian automotive trade with respect to tariff barriers and other factors tending to impede it, with a view to enabling the industries of both countries to participate on a fair and equitable basis in the expanding of the total market of the two countries.

– The development of conditions in which market forces may operate effectively to attain the most economic pattern of investment, production and trade.

In addition, there were several safeguards included in the agreement. Their purpose was to prevent the migration of Canadian vehicle manufacturing to the United States, but there was no agreement as to when they should be removed. These safeguards have been met.

The federal government established the Automotive Adjustment Assistance Program (AAA) to provide financial assistance to enable qualified Canadian manufacturers of original automotive parts, tooling and specified commercial vehicles, and suppliers of material to adjust to the new market environment created by the Auto Pact. Assistance is provided by means of a government loan on preferential terms. The allowable costs include the cost of all plant and machinery involved, plus requirements for working capital. To assist automotive parts producers to re-equip as quickly as possible to meet model change-over schedules and to fulfill contract obligations, the program also offers a tariff remission of up to 99 per cent of the duty on imported production machinery and equipment if such machinery were not available in time from Canadian sources. From 1965 until June 30, 1971, the Program was administered by the AAA Board, under the authority of the federal Minister of Industry, Trade and Commerce. Since July 1, 1971 when the AAA Program was extended for two more years, it has been merged with the General Adjustment Assistance Program (GAAP) and administered by the GAA Board, under the same authority. Disbursements made under the AAA Program reached $16.4 million during fiscal year 1969/70, but fell back to $11 million the following year. Over 95 per cent of the disbursements were made to Ontario firms in both years. Since its inception in 1965, and until June 1971, over 100 loans worth about $100 million had been made.[14]

It has been suggested from time to time that the Auto Pact should

[14]The Department of Industry, Trade and Commerce.

become the archetype for subsequent Canada-U.S. agreements in other sectors of industry and, perhaps, the forerunner of a North American Common Market agreement. It is not the purpose in this study to argue for or against either or both of these propositions. The Auto Pact has demonstrated what can be done to increase jobs and output in the automotive industry in Canada. Some would argue that, politics and safeguards aside, the price paid for these was the loss of a great deal of technical autonomy. Others would argue that Canada never really had this autonomy in the first place and to want to have it is to want something new.

As mentioned in a later section, the recent Canada-U.S. trade negotiations have included discussions on the future of the Auto Pact. The Pact talks themselves have, however, been in progress for over three years. The effectiveness of the current Pact will also be influenced by the U.S. DISC export incentive program since a number of U.S. auto and auto-parts manufacturers have apparently taken advantage of it.[15]

A Note on the Trade Bloc Problem

Consider the following facts:

– Over 50 million people live within a day's drive of Toronto, Ottawa and Montreal, but 80 per cent of them are not part of Canada's domestic market.

– The United Kingdom and two other countries are in the process of joining the European Economic Community. From a domestic market of only 55 million people, the U.K. will eventually have access to a market of over 250 million, all of whom live much closer to Britain than the members of the old Commonwealth trading bloc.

– The State of California has a population about equal to that of all of Canada. The City of San Diego, on the California/Mexico border, is about the same distance from Vancouver as is Winnipeg.

Besides Canada, the only other major industrial nation that does not belong to a formal trading bloc is Japan. But the Japanese domestic market includes 100 million people and the islands that make up the country cover less than 4 per cent of the land mass of Canada.

Canada still belongs to one trade bloc, the Commonwealth, but this bloc is disappearing. Canada's trade with the U.S. and the other Commonwealth preference countries accounted for 15 per cent of total trade in 1960 but for less than 10 per cent of it by 1970. Britain's entry into Europe will mean the end of the preferential access of Canadian products into the British market. Canada belongs to most of the principal international "clubs", such as GATT, the United Nations, OECD and the International Monetary Fund. Canada also belongs to the Pacific Basin Economic Cooperation Council, along with Australia, New Zealand, the United States and Japan; but this is not yet a trade bloc. In addition to about a hundred tariff and trade agreements with other countries, Canada has two special trading arrangements – in automotive and defence products – with the United States, but no universal agreement.

[15]The DISC (Domestic International Sales Corporation) program is discussed later in this chapter.

Besides the Commonwealth, the European Free Trade Association (EFTA) whose future is also uncertain, and the European Economic Community (EEC) which is becoming larger and stronger, there are several other trade blocs with varying degrees of influence on world trade. For example, there are the Soviet-bloc countries, the Latin American Free Trade Association (LAFTA), the Caribbean Free Trade Area (CARIFTA), the Central American Common Market (CACM), and the Andean Pact countries. New Zealand and Australia have a bilateral free trade agreement (NAFTA). It may seem unnecessarily repetitive to stress again Canada's relative isolation as a manufacturing country. But Canada will continue to be isolated unless it joins an existing bloc or becomes part of a new one with, say, the United States. Alternatively, Canada could become part of a free trade area involving the Pacific Rim countries, for example, or seek access to new markets through further bilateral and multilateral negotiations, or simply close its borders to most manufactured imports. None of the available options are very new or particularly easy to implement. They also bristle with political difficulties.

The fact remains that, without access to larger markets, the profitable production of many manufactured products will not be possible in this country in the future. Membership of a bloc may not be the appropriate or complete answer, but an answer needs to be found.

Non-Tariff Barriers to Trade

"... The lowering of tariffs has, in effect, been like draining a swamp. The lower water level has revealed all the snags and stumps of non-tariff barriers that still have to be cleared away."[16]

Among the most contentious non-tariff barriers of recent years have been the import quotas applied by Japan, the American selling price (ASP) method of valuing certain chemicals entering the United States, the border taxes applied to chemicals by the European Economic Community (EEC), the U.S. oil import program, and the various forms of "Buy National" programs employed by some countries to give preference to domestic manufacturers. All of these barriers are applied by importing countries. Dumping, on the other hand, is an example of a "barrier" applied by an exporting country. It is intended to help maintain a high level of domestic output and to spread overhead costs. But, unlike export subsidies, dumping results from exporter initiatives and not from the initiatives of governments.

Studies of the effects and implications of non-tariff barriers and the development of proposals for their control and eventual removal have been in progress in academic and government circles for some time. Intergovernmentally, the EEC, the European Free Trade Association, and GATT itself have all been active. The Kennedy Round negotiations, for example, led to the adoption of an Anti-dumping Code. It also brought concessions with regard to certain barriers by the United Kingdom and Switzerland

[16]B.A. Jones, *New York Times*, New York, July 10, 1968.

and agreement by the United States and the EEC in their ASP-border tax dispute. But Congress has so far failed to ratify the U.S. part of the agreement and the matter has become linked with the post-August 15 international trade negotiations. Meanwhile, the review of non-tariff barriers has become a continuing major project of GATT.

In substance, a non-tariff barrier is a law, regulation, policy, or practice which places restrictions on international trade. Normally, these barriers result from government action. Nevertheless, restrictive practices and agreements, in addition to dumping in an export market, instituted by individual companies to reduce or eliminate competition in the domestic market can often be considered as non-tariff barriers. Language and cultural differences may also be included.

Non-tariff barriers may be applied internationally by governments for a variety of reasons; not all of which are necessarily harmful to foreign competitors or in restraint of legitimate trade. For example, even under GATT agreements, a country may take steps to restrict imports and promote exports in an effort to conserve foreign exchange or to cure a serious balance of payments problem – as Canada, the United Kingdom, and the United States have all done in the last decade. A government may impose import regulations in order to maintain health, safety and other standards, to control the import of "undesirable" merchandise, or to supervise the practices of potentially unscrupulous importers. A government may also lend limited support to an "infant industry" in hope that, by so doing, the industry will eventually contribute benefits to the country. However, in the most visible applications of non-tariff barriers, the intentions of the governments imposing them are protectionist, or revenue-producing, or both. It is just about impossible to estimate in dollars and cents the effects of foreign non-tariff barriers on a particular country's exports of manufactures, or the effects of the barriers set up by that country itself against imports.

In some countries – and the United States is an example – certain trade restrictions are laid down in detail in government regulations. In other countries, such regulations as exist may be less rigidly defined and may allow a great deal more latitude in their intepretation and administration. Consequently, they can have considerable influence on the discouragement of trade. Indeed, the monetary value of the effects of trade barriers cannot be measured until the price of "discouragement" can be calculated.

The following is a list of some of the principal non-tariff devices which may limit trade and to which international attention has been drawn:[17]

Import and export limitations:
quantitative restrictions, embargoes, licences, bilateral agreement discrimination, price controls, tariff quotas, escape clauses, and parent/subsidiary trading policies.

[17]International Chambers of Commerce; the OECD; the report, *Targets for Economic Development*, prepared for the Government of Manitoba; and Robert E. Baldwin, *Nontariff Distortions of International Trade*, The Brookings Institution, Washington, D.C., 1970. A full list of non-tariff barriers would include several hundred separate items.

Customs and other associated duties and procedures:
countervailing duties, anti-dumping duties and regulations, samples requirements, duty assessment procedures, formalities, certificates of origin and other documentation requirements.

Price mechanism barriers:
prior import duties, surcharges, port taxes, discriminatory excise taxes, discriminatory credit restrictions, consular fees, stamp duties, border tax adjustments, and export or import substitution incentives or subsidies.

Physical procedures and standards:
industrial standards, health and safety standards, weights and measures, building and other codes, pharmaceutical standards, product content requirements, processing and packaging standards, marking and labelling requirements, and container regulations.

Government purchasing limitations:
procurement regulations, outright prohibitions, state trading, government monopoly practices including exclusive franchises to cooperative and private enterprises, and certain foreign aid programs.

Miscellaneous other restraining factors:
advertising or transportation restraints, local content requirements, restrictive business practices, concessional financing, industrial property laws and licensing regulations, language and culture.

The degree to which the application of any one of these limitations, restraints, standards, etc., may be considered as desirable or undesirable or as significant or insignificant, will depend upon the circumstances surrounding its application in practice. But the removal of a particular barrier is often negotiable either bilaterally or multilaterally. It is therefore unfortunate that, as is the case with tariffs, a country having no non-tariff barriers at all is in a poor bargaining position. Human nature and international politics being what they are, the possibility that all such barriers will eventually be eliminated is quite remote.

Perhaps the most important non-tariff barriers do not appear on lists such as the one above. These unlisted barriers are, for the most part, self-inflicted by governments on their own companies and people, or *vice versa*. They may be inflicted innocently or knowingly. Some self-inflicted barriers will be beneficial in the long run but may require that compensating measures be introduced during the period of adjustment in order to save markets, industries and jobs.[18] Less beneficial barriers imposed by a government may be linked, for example, to fiscal and monetary policies and currency exchange rates, to unnecessary regulatory and administrative burdens placed directly on business firms, to over-favouritism shown to

[18]For example, the need for costly anti-pollution measures to be taken by an industry to meet strict standards imposed by a government could lead to the destruction of the industry at the hands of competitors from "less clean" countries unless, during an adjustment period, some measure of equality in competition can be maintained by some unilateral or multilateral means.

foreign manufacturers, and to insufficiently skilled bargaining with other governments. For their part, business firms should understand that no amount of experience in their own domestic market will equip them fully for the ruggedness of the competition in foreign markets.

U.S. Economic Problems and the Future of Canada-U.S. Trade in Manufactures

The warning signals have been visible for some time, indicating that trouble was ahead for the American economy in general and for its standing as a world leader in productivity and the transfer and application of technology.

In the early and mid-sixties, industrial managements in European countries expressed fears that the so-called "technology gap" might eventually leave them powerless against the advance of the U.S.-based multinational corporations. After some study, this gap was identified as having management skill and experience characteristics in addition to purely scientific and technical ones. More recently, it has been the turn of the U.S. managements to wonder if the "gap" is not reversing itself.

By 1969, the United States Administration was grappling with rising inflation and unemployment and a declining trade balance. The proponents of protection were finding more reasons to press their views against those who wished to continue to liberalize U.S. and world trade. During the latter part of 1969 and throughout 1970, the Congress debated Administration proposals for a new bill to replace the Trade Expansion Act of 1962. Some of these proposals would have brought about more liberal trade, but others would have moved toward helping U.S. exporters hold their own in increasingly competitive world markets. After many hearings and much debate, Congress failed to enact a new trade bill. The year 1970 did, however, see the first Treasury Department proposal for a new tax incentive plan to encourage increased exports. Under it, U.S. exporters would have been allowed to form domestic international sales corporations (DISC's) that could accumulate income from exports and defer tax payments on profits for an indefinite period. This first DISC proposal did not become law.

In the spring of 1971 the U.S. Administration was reported to be giving its attention to a number of long-range measures "aimed at making U.S. products competitive in price and quality anywhere in the world"[19], as one article put it. Included were research and development subsidies, a new antitrust policy that would not automatically block mergers on account of bigness alone, a new tax policy to match the export and investment incentives given in other countries, and a new trade policy demanding equal treatment for all trading partners. On June 10, President Nixon ended the 21-year U.S. embargo on trade with Mainland China when he announced a long list of non-strategic goods that would now be permitted for trade under open general export licences.

The now-famous meeting of President Nixon and his advisers at

[19]"A Fresh Strategy to Win World Markets," *Business Week*, New York, May 22, 1971.

Camp David, Maryland, began at 3 p.m. on the afternoon of Friday, August 13, 1971, and ended forty hours later. The President spoke on television at 9 p.m. on Sunday, August 15. His message described economic policy changes involving the following:

– The temporary suspension of full convertibility of U.S. dollars into gold for foreign treasuries and central banks and the start of international consultations to alter the range of exchange between the dollars and other currencies;

– A temporary surcharge on dutiable imports, generally at a rate of 10 per cent. Imports which were subject to quantitative restraints – such as crude oil, petroleum products, meat, cheese, sugar, dairy products, and cotton textiles – were, however, exempt;

– A 90-day wage, price and rent freeze, and the creation of a Cost of Living Council (COLC) to administer it and to draw up voluntary restraints to go into effect when the freeze expired;

– A recommendation to Congress for the approval of an investment tax credit at the rate of 10 per cent for a year, and 5 per cent in following years;

– A 10 per cent cut in foreign economic aid;

– A request to Congress for the repeal of the 7 per cent car excise tax;

– A $4.7 billion cut in federal spending, comprising a 5 per cent cut in federal employment, a six-month freeze on scheduled federal raises, and the postponement of several tax-sharing and welfare programs;

– A recommendation that Congress agree to a one-year advance in tax exemptions on personal income-tax returns.

Before much time had passed, a ministerial delegation from Canada had been to Washington to attempt, for one thing, to have Canadian exports to the U.S. made exempt from the surcharge. The U.S. Government had given concessions to Canada before, for example, with regard to foreign investment curbs and in the matter of the interest equalization tax. But the delegation received no concessions this time. Instead, the talks that had been in progress with regard to Canada-U.S. trade generally and with regard to revisions to the Auto Pact and the Canada-U.S. Defense Sharing Plan became elements in the new and wider trade discussions between the two countries.

The 10 per cent surcharge imposed on August 15 was removed 126 days later. Its purpose was to keep foreign products, particularly high-technology products, out of the U.S. market by making them more expensive. The surcharge had little or no effect on imports from low-wage countries because of the wide differences between foreign and domestic costs of production. Countries, such as Canada, with wage rates approaching the U.S. levels and high-technology products were particularly affected. In Canada, the Employment Support Act was passed by Parliament by the end of September. [20] This Act made $80 million in non-returnable grants available to qualified companies affected by the surcharge. It also established a Board to administer the Act.

President Nixon's wage-price freeze lasted the promised ninety days.

[20]Employment Support Act, Bill C-262, September 1971.

Its place was taken by the Phase II program. The Cost of Living Council remained as the senior body. Under it were placed a Pay Board and a Price Commission. Early in December 1971, President Nixon signed a bill cutting individual and business taxes by an estimated $16 billion over a three-year period. The tax bill included the retroactive reinstatement – to April 1, 1971 – of the investment credit to permit business to deduct from their taxes up to 7 per cent of expenditures on new machinery and equipment, but the bill permitted a credit to be given for imported machinery only under certain circumstances – when a monopolistic situation exists in the U.S. market, when a foreign producer can show he is seeking to develop a U.S. market for his products before establishing a manufacturing facility there, and where there are "practically no" U.S. manufacturers of the products involved. The investment tax credit could seriously affect the level of Canadian exports to the United States.

The tax bill also passed into law the revived proposals to allow U.S. companies to establish domestic international sales corporations. From January 1, 1972, DISC's would be able to receive tax deferral on half of their export sales profits. Participation in a DISC will not only encourage U.S. companies to manufacture in the United States, but it will also give them resources with which to expand. Profits from a Canadian subsidiary will still be subject to the full Canadian tax burden.[21] There is some concern in Canada about the DISC law, but there is also some relief since the final version is less "forbidding" than the earlier version discussed by Congress.

There is also the possibility that the tax deferrals available to DISC's constitute an export bonus and are not permissible under GATT. But the U.S. case for introducing such a measure is strong enough since the benefits available to U.S. companies may be considered as a retaliatory gesture against the export bonuses set up by other countries to encourage domestic manufactures. As one Canadian commentator put it with regard to the U.S. tax bill as a whole:

"The essence of Mr. Nixon's new law is simply a reminder that this is not a perfect world; that there is constant international and inter-regional competition for capital and jobs; and that governments have a responsibility to make certain their citizens get as much as possible of the world's affluence, even if that means they must outsmart or outcompete other governments."[22]

[21]The federal component of this burden was reduced in the May 1972 budget and this reduction may help to offset some of the incentive effects of DISC participation. Also, the U.S. Government could reduce the influence of DISC's if its administrative regulations prove too cumbersome. However, U.S. companies may form Western Hemisphere Trading Corporations which pay tax on all profits, but at a reduced rate.

[22]I.H. Asper, *The Globe and Mail*, Toronto, January 27, 1972.

IX. Amendments to the Canada Labour Code, and the Proposed New Competition Act

At issue in this chapter and in the one that follows is the way in which legal, but non-financial, changes influence the application of technology to products and processes, and the degree to which technology-related objectives can be associated in legislation with other, quite different objectives. Because of the limited number of examples studied, these chapters do not exhaust the impacts and the implications involved at the interfaces between the law, technology and manufacturing. Nevertheless, in their limited way they make a beginning.

The material in this present chapter is related to particular problems arising in two recently proposed federal measures, one of which, the Labour Code Amendments, has been passed by Parliament. This measure also has relevance for the present and future laws and regulations instituted by the provinces with regard to labour force adjustments to technological change. The other measure, the proposed new Competition Act, has been mentioned specifically but briefly in the Science Council's own report.[1]

Two bills containing proposed amendments to the Canada Labour Code have been presented to Parliament. The first of these, Bill C-253, was given first reading in the House of Commons on June 28, 1971, but was subsequently withdrawn. The second, Bill C-183, was given first reading on March 27, 1972, and received the approval of the House and the Senate just over three months later. The amendments were, strictly speaking, to the federal Industrial Relations and Disputes Investigation Act which became Part V of the Canada Labour Code. They apply to the half-million or so employees in the mainly service industry sectors within the jurisdiction of the Parliament of Canada. They will not apply to the remainder of the Canadian labour force, including the majority of those employed in manufacturing, unless the provinces enact similar or equivalent legislation.

The main purpose of the section of this chapter on the Labour Code Amendments is to emphasize the problems of those concerned with the management of technology-based innovation in a competitive environment. While it does not specifically take into account the points of view of the Canadian union member or of the Canadian consumer, it still recognizes that these viewpoints do exist.

Bill C-256, the proposed new Competition Act, was intended as the replacement for the Combines Investigation Act. The bill was given first reading in the House of Commons on June 29, 1971, but the government announced when it was tabled that it would not be taken any further.

Amendments to the Canada Labour Code

The series of events which lent considerable weight to the probability that technological change legislation would eventually be introduced by the Government of Canada began with the Commission of Inquiry by Mr. Justice Freedman, and his subsequent report regarding run-throughs by the Canadian National Railways at the terminals at Nakina, Ontario, and

[1]Science Council of Canada Report No. 15, *Innovation in a Cold Climate*, Information Canada, Ottawa, 1971.

Wainright, Alberta.[2] Basically, the problem arose from the replacement of steam locomotives with diesels, which did not require servicing and crew changes every 125 miles or so. The Freedman Report recommended that negotiation be permitted on *major* technological changes during the lifetime of existing collective bargaining agreements, thus breaking with the practice in collective bargaining in Canada which, in the interests of industrial peace, had not permitted the breaking and renegotiation of contracts while they were still in force.[3] No legislative action was taken by the federal government on the basis of the Freedman Report. Instead, at the direction of the Minister of Labour, a federal Task Force on Labour Relations, under Dean H.D. Woods, was established in 1967. After about two years of study, this task force issued its report.[4]

Meanwhile, in November 1966, the Economic Council published a *Declaration on Manpower Adjustments to Technological and Other Change*.[5] This *Declaration* was the first definitive statement of its kind in Canada. It was discussed and endorsed by representatives of both management and labour at the Council's Second National Conference on Labour-Management Relations in March 1967. Two paragraphs from the document, the first and the ninth, are particularly relevant to this present analysis:

"Ours is an era of technological change. All advanced countries are seeking, through a rapid improvement in their science and technology, to raise their standards of living. For Canada, with its open economy and heavy dependence on exports, it is particularly necessary to keep pace with these developments. If we fall behind technologically, the whole Canadian economy will suffer; we will be unable to maintain our competitive position and achieve full employment and strong economic growth.

"A new approach must be devised to broaden the collective bargaining process. The problems of adjustment to change may arise at any time; they may prove to be too complex to be satisfactorily resolved during the typical bargaining period, which is normally conducted over a relatively short time and often in an atmosphere of crisis. The nature of technological and other change and the consequential impact of such change on individuals require flexible procedures which permit continuous and objective study and action on the problems involved."

The Economic Council's *Declaration* called for adequate advanced notice to be given to unions, employees and labour-management committees – with a 3-month minimum for "significant" changes – but it did not call for legislation. It emphasized, instead, the need to use attrition, transfer, retraining, financial, and other measures to bring about the appropriate labour force adjustments following technological changes. It

[2]*The Report of the Industrial Inquiry Commission on* CNR *"Run-Throughs"*, Chairman, Commissioner Samuel Freedman, Information Canada, Ottawa, November 1965. The hearings began late in 1964.

[3]Only in Saskatchewan is there no law forbidding strikes or lock-outs during the open period of a contract.

[4]*Canada Task Force on Labour Relations*, H.D. Woods (Chairman) *et al.*, Information Canada, Ottawa, 1968.

[5]This document is now available through Information Canada, Ottawa.

made no mention of mid-contract negotiations or of the right to strike over unsatisfactory change adjustments. The *Declaration* did not define "technological change" or a "significant" change, nor did it propose specific mechanisms for the negotiation of change which, it stated, were properly the concern of the negotiating parties.

The report written in 1968 by Dean Woods and his colleagues[6] did not agree fully with the approach taken by Mr. Justice Freedman, stating that management should be protected in its freedom to make changes which, in themselves, were not in violation of a collective agreement. The Task Force concurred with the Economic Council in so far as it endorsed the statement that workers should be protected by expanded public and private mobility and compensation programs. But the Task Force maintained that a union should be free to take action to induce management to negotiate a plan of adjustment to the consequences expected from proposed changes or to delay the changes. A union should also be free to take action to negotiate and strike over the right to strike on an issue of this kind during the lifetime of an agreement.

The most contentious provisions in Bills C-253 and C-183 have been those relating to the negotiation of technological change.[7] The extensive and often heated debates on these provisions which started with the publication of Bill C-253 have undoubtedly had some influence on the modifications that were made to the later bill. In principle, however, the federal government has accepted the thrust of the advice of Freedman and Woods and not that of the Economic Council. The government has succeeded, by means of the passage of Bill C-183, in establishing a procedure whereby employees under its own jurisdiction may bargain in mid-contract over certain kinds of technological change.

The definitions of "technological change" given in Section 149 of Bills C-253 and C-183 are identical. Technological change is:

(a) the introduction by an employer into his work, undertaking or business of equipment or material of a different nature or kind than that previously utilized by him in the operation of the work, undertaking or business; and

(b) a change in the manner in which the employer carries on the work,

[6]*Canada Task Force on Labour Relations*, Chairman, H.D. Woods et al., Information Canada, Ottawa, 1968. This report was originally published through the Privy Council Office, but is now available from Information Canada, Ottawa.

[7]The sections of Bills C-253 and C-183 that are the most relevant to the analysis in this chapter are Nos. 149 to 153 which deal with collective bargaining involving technological change, and Nos. 111 to 123 which deal with the composition, operations, duties and powers of the Canada Labour Relations Board (CLRB). The sections in both bills relating to technological change are mentioned specifically in the text of this chapter, but those relating to the Board are not.

The CLRB operates under the existing federal labour legislation. Under the new legislation there will be changes in its composition and powers. Membership of the Board will be by full-time appointment, and the size of the Board will be reduced. In other words, the Board will become non-representative of the "two sides", as it is at present, and will theoretically afford better representation for "the public interest". The Board is to take over from the courts the duty of adjudicating unfair labour practices disputes in addition to having new responsibilities associated with the negotiation of technological change. The Board's decisions will, however, be subject to appeal under section 28 of the Federal Court Act.

undertaking or business that is directly related to the introduction of that equipment or material.

In Bill C-183, however, two new sub-sections have been added to Section 149 restricting the application of the remaining provisions of the bill related to technological change. One of them states that these provisions will only apply to collective agreements that are made after the new law has come into force. The other spells out three further conditions under which sections 150, 152 and 153 will not apply to an employer and a bargaining agent who are bound by a collective agreement.[8] They are the situations:

– where an employer has given a prescribed amount of notice in writing of a technological change;

– where a collective agreement contains provisions that specify procedures affecting security of employment likely to be affected by a technological change and which may be negotiated and finally settled during the term of an agreement; and,

– where a collective agreement contains provisions that are intended to assist employees affected by any technological change to adjust to its effect, or specifies that Sections 150, 152 and 153 do not apply.

Under Section 150 of both bills, the employer is required to give the bargaining agent concerned advanced notice of ninety days of any technological change likely to affect the conditions or security of employment of a significant number of employees. This notice has to state:

– the nature of the technological change;

– the date upon which the employer proposes to effect the technological change;

– the number and type of employees likely to be affected by the technological change;

– the effect that the technological change is likely to have on the terms and conditions or security of employment of the employees affected; and

– such other information as is required by the regulations.

However, under a stipulation in Bill C-183, and where an employer has given the prescribed amount of notice, this notice is not to be invalidated because the employer cannot give *precise* information so long as notice given is *substantially* along the lines required. For example, the employer may give the approximate numbers of employees likely to be affected.

Responsibility for making regulations affecting the technological change provisions is to rest with the reconstituted Canada Labour Relations Board (CLRB). The Board is to specify the numbers of employees that shall be deemed "significant" for the purposes of the new law, numbers that may vary with the sizes and types of the companies affected. After receiving notice, a bargaining agent has a further thirty days in which to ask the Board for an order granting leave to serve on the employer a notice to begin collective bargaining for the purpose of revising the existing provisions of the appropriate collective agreement by which the employer

[8]Under the legislation a bargaining agent is, essentially, the trade union certified to act for a specified group of employees.

and the agent are bound and which has been affected by a technological change. The Board may subsequently, after consultation with both parties, grant or deny the order against the employer. Such an order, if granted, may:

– direct the employer not to proceed with the technological change or alleged technological change for a period, not in excess of ninety days, which the Board considers appropriate;

– require the reinstatement of any employee displaced by an employer as a result of the technological change; and

– where an employee has been reinstated, require the employer to reimburse him for any loss of pay suffered as a result of his displacement.

In effect, the technological change provisions in the bill passed by Parliament apply to significant technological changes having substantial and adverse effects on the security or conditions of employment of significant numbers of employees under new contracts unless both parties formally agree on alternative arrangements. Where the technological change provisions apply, and in the absence of formal agreement to do otherwise, the mid-contract negotiation steps may still be initiated subject to the approval of the Labour Relations Board. Strike action could conceivably follow. The revised provisions of Bill C-183 have at least moved in the *direction* indicated as desirable by the Economic Council of Canada in its *Declaration*, namely, that the two contracting parties should work out between themselves the procedures through which the impact of technological change can be cushioned from the point of view of the employee.

Perhaps the most fundamental difficulty with Bill C-183 and its predecessor is the prominence they give to technological change which is, after all, only one of many different kinds of change that may affect the terms and conditions, or security, of employment of significant numbers of employees. The changes in consumer tastes, in markets, in general economic conditions, in the available raw materials, and in industrial profit levels that can be equally, if not more, serious have been ignored. Also, a technical change of a revolutionary nature, which the bill seems to have in mind, may possibly have less serious effects on employment and working conditions than a much less significant evolutionary change. But there may also have been confusion between cause and effect. As shown by both bills, the federal government's aim has been to cushion the *effects* of technological changes on employees under contract to their employers. Minister Mackasey, for example, said frequently with regard to Bill C-253 that the federal government did not intend to inhibit or discourage changes of this kind. The government still has to demonstrate that technological change as a *cause* deserves special consideration.

While it is clear that employees adversely affected by technological and other changes should receive a measure of compensation derived from the benefits accruing as the result of these changes, the cost of providing this compensation should not bankrupt the companies or the jurisdictions that should provide it. It is also clear that companies should not be encouraged to introduce "significant" technological changes without warning just as three-year collective agreements are reached with their employees. In addition, employees and managements in service and other industries

dependent on manufacturing for their livelihoods should have early indications of any "ripple" effects that may result from changes in manufacturing activities. The solution of the problem of legislating the negotiation of the *effects* of significant technological changes on employment and working conditions lies somewhere between the right of the employee to complete job security regardless of the consequence to the company and the right of management to make changes to products, materials, methods and so on, regardless of the implications for the labour force. As things stand at the time of writing, the implementation of the technological change provisions of Bill C-183 may not serve to encourage timely and effective technology-based innovation in this country. In other words, the individual company may be damned by the new legislation if it innovates and damned by its customers if it does not. Time will tell.

In the short-term, the effects of the new legislation could lead to:

– additional government interventions in the affairs of both companies and unions;

– an increase in the total number of collective bargaining negotiations, in the time spent by managements, union and government people on the bargaining process, and in the cost to all three parties – and to the consuming public – of industrial peace;

– an increase in the numbers of strikes and lockouts based on the assumption that, while the percentage of negotiations involving strikes or lockouts may remain unchanged, the total number of negotiations will increase;

– a reduction in the average length of a labour-management contract to one year; and

– uncertainty over the *judicial* interpretation of a "significant" technological change and of the phrase "likely to affect the terms and conditions or security of employment ...."

Bill C-183 also stands in isolation from other recent measures introduced by the federal government to encourage technology-based innovation in manufacturing industry. It may, for example, discourage companies from taking advantage of some of the measures discussed in Chapter 3 and Chapter 6 of this report. The bill also leaves non-unionized employees of the federal government at a disadvantage in comparison with their colleagues.

The provisions of Bill C-183 provide no assurance that, in the longer run, technological change will remain the only grounds for the opening of mid-contract negotiations. They invite speculation that, while mid-contract negotiations may begin over a specific technological change, the actual bargaining may, even in the immediate future, be expanded to include other issues. It is also clear that, in the longer run and in the interests of uniformity of legislation, the federal government will wish the provinces to adopt similar measures. Indeed, at the time of writing, Saskatchewan has already done so and the Manitoba Government has tabled proposals in this direction. The attitudes of the Governments of Ontario and Quebec, where the majority of manufacturing activities in Canada take place, have been less visible. These latter provinces already have "advance notice" legislation in force which has been designed to cushion the effects of

various kinds of changes on employment.

The enactment of the new legislation may increase still further the vulnerability of individual Canadian manufacturing companies to adverse international and domestic competitive forces. For example, it will be possible to slow down and even stop the manufacture and sale of a new Canadian-made product while still permitting the importation of a competing product from abroad or from another province or company in this country. Actions of these kinds could be initiated intentionally by either party at a "technology change" negotiation. Instances of the application of this kind of harassment could become quite visible when economic difficulties or management or union pressures threaten Canadian production generally. The CLRB has no mandate or power to ensure the continuing competitiveness of Canadian companies in the international or domestic markets.[9] Also, the Board has no authority to make sure that the managements of *every* Canadian company likely to be affected by a particular technological change have begun mid-contract bargaining with their own unions. And the Board has no authority over the length of time mid-contract negotiations of the effects of a technological change may take.

In the United States, the negotiation of technological change has so far remained the concern of the contracting parties themselves. Appeals are possible, however, to the National Labour Relations Board and to the Courts. As one recent report pointed out:

"Technological change has posed major challenges to union negotiators. Collective bargaining has met this challenge to deal with these problems at the workplace through specific adjustment provisions in union contracts. In terms of thousands of labour-management contracts, in a wide variety of different industries and occupations, collective bargaining has provided measures for humanizing the impact of spreading automation."[10]

Among the measures negotiated in individual contracts have been attrition clauses, advance notice, transfer rights, moving allowances, and severance pay – the kinds of non-government measures envisaged by the Economic Council's *Declaration*.

Although many different kinds of advance notice clauses have been negotiated by managements and unions in the United States, the compulsory mid-contract negotiation of significant technological changes, with the power to strike if agreement is not reached, has not received the backing of the U.S. federal authorities. The AFL-CIO has said, however, that bargaining over specific advance notice situations is now desirable as one result of the shift in emphasis from wage-related bargaining to employ-

[9]As will be mentioned in this chapter, the proposed new Competition Act will give the Competitive Practises Tribunal power to counteract the affects of foreign court decrees, etc. within Canada. But it too will be as powerless as the CLRB to intervene in the affairs of foreign countries in foreign markets.

[10]Rudolph Oswald, *Adjusting to Automation*, American Federation of Labour and Congress of Industrial Organizations (AFL-CIO), Department of Research, Washington, D.C., January 1969. p. 8, 9, 10.

ment-related bargains. The following views appeared in the report quoted above:

"If a union negotiates an "advance notice" clause, it must be very careful that it includes all types of situations. The clause should contain the following elements: (1) Definition of the situations under which advance notice shall be given; (2) Length of advance notice to be presented to the union; (3) Obligation to bargain concerning the situation; (4) Provision for granting full information to the union; and (5) Some provision for resolving a stalemate.

"The definition of the situation must be broad enough to take care of a very wide variety of possible occurrences which may bring about substantial changes in conditions of employment or employment opportunities. The contract clause must not be limited to a specific issue such as "automation", for there is no commonly accepted definition of the term automation ....

"If Labour and Management are not able to negotiate an effective resolution of their differences, the issue should not be left to unilateral determination by the company. The union should be able either to appeal the issue to arbitration or it should retain its right to strike in an effort to resolve the dispute."[11]

The same report noted later that advance notice requirements are common legal and collective bargaining requirements in many other countries, particularly in Europe.[12] The notice requirements usually apply to both temporary and permanent lay-offs, individual dismissals, reductions in work forces and plant closings. The report went on to say that, in European countries, an employer cannot escape liability from advance notice clauses even if he can show that a new process will make certain employees redundant, that continued operation of his plant will be unprofitable, or that there are no more orders.

In Europe, however, union contracts have always been open-ended, and wildcat strikes have been common. In the United Kingdom, the new Industrial Relations Act was a first attempt to control open-endedness, but it came at an unfortunate time from the economic point of view and represents only the minimum first step in the control process. Thus far, only a few provisions of the Act have been implemented. In Europe, generally, there has also been a trend away from centralized labour-management contract bargaining towards more local plant-level bargaining. As far as can be ascertained negotiations tied to specific technological changes have not been sought by the unions. One reason for this is the fact that technological change is only one of the possible kinds of change in which unions are interested. In Europe, also, the position of labour in the bargaining process has been getting significantly stronger and the principal interests of labour have been turning, as in the United States, from wage-related to security- and environment-related bargaining.

[11] *Ibid.* p. 10.
[12] *Ibid.* p. 11.

One of the dominant themes in the history of collective bargaining is the inevitability of conflict between the interests of management and of labour. The mutual interests of, and common ground between, the two sides have usually been ignored. One commentator described the situation as follows:

"Unfortunately, a large number of influential industrial relations opinion-makers in the ranks of labour, management, university and the law are almost totally engulfed in the theory and widespread fact of labour-management conflict. It has blinded them to the economic and other evidence of today's modern industrial economy in which the various segments, including the government's role, are heavily interrelated and interdependent, a situation reinforced by the general rise in education levels and rising expectations among the public at large. Due to these and other factors, the mutual interests of both labour and management have become monumentally greater than the interests over which they quarrel."[13]

As it stands, the new Canadian legislation would seem to perpetuate the labour-management conflict instead of making provisions for the better service of the mutual interests of the two parties, such as has been suggested in the intent, if not in the precise wording, of the Economic Council's *Declaration*. But deep down in this whole business of mutual interest is labour's and management's desire for survival.

The Proposed New Competition Act

In a newspaper article, William A. MacDonald had this to say about Bill C-256:

"The Competition Act is a major policy initiative. It is not only large in scope, it has major implications for the balance between the federal government, on the one hand, and the provinces and the private sector on the other.

"It thus goes to the heart of the kind of political society and economy we will have in years to come. It is far more than another "give the consumer a break" piece of legislation.

"The Bill reflects an approach which many will regard as inappropriate for the kind of society and economy Canadians want."[14]

Anti-combines, anti-trust, or pro-competition issues have hardly ever occupied centre stage in economic and business discussions in Canada as they have, from time to time, in the United States. Indeed, the recent discussions and articles expressing views on Bill C-256 are the first for a

[13]G.K. Cowan, *The Relevance of Communications and Behavioral Knowledge to Labour Relations – A New Route*, Ottawa, November 22, 1968. (Prepared for the Woods Task Force, unpublished.)

[14]William A. MacDonald, *The Globe and Mail*, Toronto, December 2, 1971.

very long time. In this country there are hardly any really big companies, and those that are really big have extensive foreign operations. The principal "bigness" issues are usually raised over the size of foreign-owned subsidiaries in comparison with resident-owned companies or in comparison with one another.

Canada – like the United States – has had a restrictive competition law for much longer than most other industrialized countries. In 1889 an Act was passed prohibiting conspiracies and combinations in restraint of trade. Offenses were made punishable under the Criminal Code. The first Combines Investigation Act was passed in 1910. The prohibitions under this Act were required to be "to the detriment or against the interest of the public" and any six citizens could apply to a Superior Court for an order to have a suspected contravention investigated. The Act has been amended and revised several times, most recently in 1969 when a provision relating to misleading advertising was added.

In 1959, following expressions of concern by the Canadian Government over an anti-trust suit in the United States which affected Canadian interests, an informal Anti-trust Notification and Consultation Procedure between the two countries was developed.[15] As a result, the U.S. and Canada have consulted with each other in the enforcement of their anti-combines laws. In November of 1969, the Canadian Minister of Consumer and Corporate Affairs and the United States Attorney General confirmed and extended the understanding of a decade earlier between the two countries.

It is most certainly in Canada's interest to have an agency "look after" Canadian companies and Canadian interests in the international sense and Bill C-256 attempted to do this. It is also in Canada's interest to have an agreement on anti-combines matters with the United States. But it was quite wrong to assume – as those who framed the proposed new Act appear to have done – that Canadian companies would need policing to the extent that the U.S. Department of Justice polices U.S. companies in the matter of combines, mergers and restrictive practices.

The proposed new Competition Act owes something to the Economic Council's study of competition policy which was commissioned by the federal government in July 1966. In the summer of 1969 the Council published its *Interim Report of Competition Policy*[16] which recommended a revised approach to anti-combines or competition policy involving a mixture of civil and criminal law, but with the objective of furthering the interest of the Canadian consumer in an efficiently working economy. The Council believed that, through this approach, a competition policy could be applied consistently and effectively, although it thought that some form of social control should also be exerted over all commercial activities. The introduction of Bill C-256 took place two years after the publication of the Council's report. The four basic weaknesses of the present Combines

[15]The suit involved the participation of U.S. subsidiaries in Canada in a patent "pool" Canadian Radio Patents Limited, controlled in this country.

[16]Economic Council of Canada, *Interim Report on Competition Policy*, Information Canada, Ottawa, 1969. The Council will not now publish a final report.

Investigation Act appear to be its antiquity as an "unreformed" measure, its emphasis on the punishment of individuals and corporations, the absence within the court structure of the continuing and extensive research into economic and business activities that is thought necessary for the flexible interpretation of the law, and the lack of a formal link between the law and a competition policy.

Bill C-256 was a long and involved piece of legislation, and only parts of it can be discussed in this present study. Once again, the bill gave the appearance of having been conceived and brought forward in isolation from a coherent federal policy or strategy for manufacturing industry. The bill's title[17] indicated its concern with "the general regulation of trade and commerce", which is a prime responsibility of the federal Department of Industry, Trade and Commerce. But the bill could still offend provincial sensitivities for, although the BNA Act states that the federal government has responsibility for the regulation of trade and commerce, the provincial governments have over the years acquired extensive control over manufacturing industry at the regional and local levels. They can, for example, prohibit any particular type of business, make rules for the conduct of business, and grant permits and licences – functions which have a bearing on both competition and competitiveness.[18]

Bill C-256 proposed the establishment of a Competitive Practices Tribunal, and this was the key proposal in the new Act. The Tribunal was to be a court of record. Its proceedings were to be under civil law. It was to perform seven principal functions which, briefly, were as follows:

– To review and approve applications for registered export and specialization agreements, and to accept the registration of franchise agreements:

– To maintain a register of foreign and domestic mergers; to approve or prohibit such mergers challenged according to criteria laid down in the Act:[19]

– To hear evidence relating to contraventions of provisions concerning price discrimination, tied sales, exclusive dealing, etc.:

– To hold hearings on its own initiative or when requested by the Minister to examine any problem area within its jurisdiction and, subsequently, to issue non-binding guidance rules to the parties concerned giving the Tribunal's views on the matters examined:

– To hold general enquiries relevant to the policy and objectives of the Act, at the request of the Minister:

– To give advance rulings on a merger or proposed merger or any other matter within its jurisdiction, at the request of the parties involved

[17]An Act to promote competition, to provide for the general regulation of trade and commerce, to promote honest and fair dealing, to establish a Competitive Practices Tribunal and the Office of Commissioner, to repeal the Combines Investigation Act and to make consequential amendments to the Bank Act.

[18] The resolution of a trade-commerce dispute between the federal government and a province would, in practice, be left to the courts.

[19]Under Section 32 of the Act, every merger involving companies with gross assets or gross annual revenue of $5 million or more had to be registered. Section 33 required every merger where effective control of a Canadian company was acquired by foreign-controlled interest to be registered.

or the Commissioner, these rulings to be binding on the Tribunal but not on the parties requesting the ruling.

The Chairman of the Tribunal was to be its chief executive officer, and there would be six other members. All seven were to be appointed initially for ten years.[20] The Tribunal was to have its own research staff, who would be expert in economics, law, business and public affairs. The Tribunal's research was to be more thorough, and its rules and procedures more flexible, than would be possible in a court of law. The Tribunal would have no power to punish. This was to remain the business of criminal jurisdiction for those convicted under the act for indictable offences. The Tribunal could, however, apply a number of remedies, for example:

– Orders to prevent the continuance of prohibited restrictive trade practices:

– Orders to one or more Canadian suppliers to reverse a "refusal to deal" which would be non-competitive or monopolistic in character:

– Recommendations to Cabinet that certain customs duties be removed, reduced or remitted to remedy a refusal to deal:

– Interim injunctions to delay a merger or prohibit any actions that fall under the Tribunal's authority to issue an order:

– Orders forbidding the implementation of foreign decrees or directives in Canada that are harmful to competition or to Canadian trade and commerce:

– Orders modifying rights related to the use of patents, trademarks and industrial designs if these had been used to contravene the Act.

The Minister (of Consumer and Corporate Affairs) was to be the sole authority for the initiation of general enquiries to the Tribunal and could, along with the Tribunal itself, initiate proceedings leading to the issue of guidance rulings. The present Director of Investigation and Research within the Department of Consumer and Corporate Affairs was to be replaced by a Commissioner. The Commissioner was to have a Deputy and other supporting officers, as the Director now has. The Commissioner, and the Tribunal, would also be able to hire specialists to give temporary help. Under the present Act, the Director has no means of helping business to comply with the Combines Investigation Act. Under the new Act, however, the switch to civil procedures was intended to enable the Commissioner to place much greater emphasis on compliance through cooperation and consultation between his officers and businessmen. The Commissioner's staff was to carry out investigations, as the Director's now does. The Commissioner would have powers of search and seizure. He would be privy to all matters of interest to the Tribunal. And, as indicated in Section 67(a) of the bill, any six persons who were resident in Canada, who were over the age of eighteen years and who were of the opinion that a violation of any of Sections 16 to 26 (of the Act) had taken place or was about to take place or that grounds existed for the making of an order, other than a procedural order, by the Tribunal could apply to the Commissioner for an enquiry.[21]

[20]The Consumers Association of Canada, in a brief, called for three of the seven to be "consumer advocates".

[21]Sections 16 to 26 of Bill C-256 spelled out the agreements, arrangements and practices to be prohibited under the proposed new Act.

The Commissioner had to investigate these applications. Under Sections 27 to 31 of the Act, specialization, export and franchise agreements could be approved and registered by the Tribunal.

In recognition of the fact that the service industries provide a significant portion of the Canadian GNP, these industries were formally covered by an act for the first time. The definition of "services" was extended to include the recognized service professions such as medicine, law and engineering. The proposals did, however, exempt from compliance with the new federal Act the activities of professions and trades that were otherwise regulated by provincial or municipal authority or by the Parliament of Canada.[22] Also exempt were industry sectors which were already regulated "in the public interest", collective bargaining activities and, in certain circumstances, the activities of investment dealers and insurance companies The bill required a number of small changes to be made in the Bank Act.

The proposed new Act could, at one and the same time, help and hinder technology-based innovation and other activities in the business of manufacturing in Canada. For example, it could help reduce fragmentation with specific sectors of industry and it could help research and development, product standardization and other technical activities through specialization-type agreements. It could also help exports. It could strengthen the positions of resident-owned companies by means of the proposed new merger regulations and the power of the Tribunal to forbid the application of foreign decree in Canada. More equity and rationalization could come from the regulation of the service industries under the Act. Justice could be better served through the more effective removal of abuses and the stiffening of penalties following conviction.

However, it appeared that the new Act and the jurisdiction of the Department of Consumer and Corporate Affairs in matters associated with the foreign ownership of manufacturing facilities in Canada could conflict with the jurisdiction of the Department responsible for the implementation of the government's foreign-ownership policy and with the wishes of the various provinces in this field. The Tribunal's views on fragmentation could be too wide or too narrow. They could be in conflict the restrictive practices sections of the Act, on the one hand, or with the views of the Department of Regional Economic Expansion and the corresponding provincial and municipal authorities, on the other. It was not made clear how the Tribunal might enforce the "de-apply" process to foreign decrees in Canada. In the other direction, the reactions of foreign governments against Canadian exports, exporters, and subsidiaries abroad in specific cases of "de-application" could not always be anticipated correctly. And over and above these areas of concern, was the fact that Bill C-256 specifically stated that the new Competition Act would take precedence in law over the Patent Act when the exclusive rights and privileges under that Act had been abused through some form of restrictive practice.

The key provision – the establishment of the Tribunal – might be considered an improvement over the present arrangement because civil

[22]For professions and trades, provincial jurisdiction is already the rule for most.

procedures will allow more selectivity and flexibility than criminal procedures, which must be universal rather than selective. But the changes can be questioned on constitutional grounds because civil procedures are within the exclusive jurisdiction of the provinces.[23]

The Tribunal was not apparently envisaged by those who framed Bill C-256 as an extension of federal government intervention or as a further layer of bureaucracy which would delay or otherwise frustrate industrial and business activities. It was intended to be a vehicle to look after the "public interest" while achieving, at one and the same time, the highest possible level of competition in the economy and the legitimate objectives of trade and industry. It would do the kinds of economic studies avoided by the courts.

But the Tribunal was given no guiding philosophy and no precise terms of reference to be followed in its deliberations. As a result, it could become a creature of its own making – an amalgam of the individual and combined experience of its members, the procedures and the regulations it wrote, and the precedents it set. If the Tribunal took an anti-industry stance, it could seriously frustrate manufacturing activities. On the other hand, a markedly pro-industry stance could defeat the purpose for which it was set up in the first place. The Tribunal might fail to recognize, for example, that in certain specialized sectors of the world there would only be room for *one* Canadian-based but internationally competitive and efficient producer, or that the existence of a monopoly or near-monopoly in a particular sector of the *domestic* market would not mean that the corporation or corporations concerned would necessarily be inefficient or that they would, as a matter of policy, ask exorbitant prices from customers.

It is clear that the full implications of the Act and of the establishment of the Tribunal, in particular, had not been fully considered. This may have been the result of the government's or the Minister's desire to make sweeping rather than progressive, step-by-step changes in the complicated matter of competition law. But it may have been due, in part, to a desire to establish a body less wedded to legal precedent than the courts of law and more willing to understand the effects of mergers, restrictive trade practices, and so on, from the points of view of economics and the public interest. And it may also have been due, in part, to a lack of understanding in the sponsoring Department of the "poker game" nature of the international market place, to the Department's responsibilities with regard to the narrower, shorter-term interests of the consumer, and to its preoccupation with policing, positive regulation, and control as the means of discouraging abuse.

[23]The Economic Council recommended the establishment of the Tribunal and discussed the constitutional point in its report. The Council concluded that the Competition Act could be considered within federal jurisdiction because it will be concerned with the regulation of trade and commerce. But, as indicated earlier, the federal-provincial trade responsibility itself has not been clearly defined in constitutional terms.

X. The Industrial Design and Patent Acts

Protection for inventions and industrial designs has been available in Canada since pre-Confederation days. Since 1867 the federal statutes concerned with these matters have been modified from time to time. But the last major revision to the Patent Act was made over thirty years ago, and much earlier still in the case of the Act covering the registration of industrial designs. There are indications, however, that both of the present Acts could be subject to major revisions in the near future. Those responsible for framing the revisions will undoubtedly take into account the views expressed in the reports of the Royal Commission which sat during the 1950s, and in the much more recent report by the Economic Council of Canada.

The principal purpose of this present chapter is to focus on a number of very important recommendations by the Commission and the Council with regard to the revision of the present Acts, recommendations which do not always appear to encourage *Canadian* invention, design and manufacturing activities. The secondary ones are to draw attention to some of the difficulties and pressures surrounding the revision of laws that may have a very direct effect on technology-based innovation in Canadian manufacturing industry and to suggest how two already weak pieces of legislation may be strengthened in the interests of encouraging risk-taking by *Canadian* companies.

At the request of the Science Council's Industry Committee, the analysis in this chapter has been kept quite short, but a more detailed analysis of the present Patent Act and its administration has been made in one of the other studies in the innovation study series.[1] This chapter does not include analysis of the remaining elements of industrial and intellectual property, trademarks and copyright, since their connections with the innovation process in manufacturing is less direct. Space and priority limitations have also excluded analyses of such topical subjects as software patents, patent reform in other countries, and developments in the internationalization of patent systems. The Patent and Industrial Design Acts were not included in the analysis or the conclusions of the Science Council's own Report No. 15.

General Background

In June of 1954 a Royal Commission under the Chairmanship of the Honourable J.L. Ilsley was established "to enquire as to whether federal legislation relating in any way to patents of invention, industrial designs, copyright and trademarks affords reasonable incentive to invention and research, to the development of literary and artistic talents, to creativeness, and to making available to the Canadian public scientific, technical, literary and artistic creations and other adoptations, applications and uses, in a manner and on terms adequately safeguarding the paramount public interest, the whole in the light of present-day economic conditions, scientific, technical and industrial developments, trade practices and any other

[1]Science Council of Canada Special Study No. 11, *Background to Invention* ,Information Canada, Ottawa, 1970.

relevant factors or circumstances, including practices under or related to the said legislation and any relevant international convention to which Canada is a party".

The Commission took several years to complete its task. Its three reports were Published in August 1957 (*Copyright*), June 1958 (*Industrial Designs*), and December 1959 (*Patents of Invention*).[2] The Commission asked for, and received, permission to delete trademarks from its terms of reference.

In June 1966, the Economic Council of Canada was asked by the federal government, in the light of the government's long-term economic objectives, "to study and advise regarding:

(a) the interests of the consumer particularly as they relate to the functions of the Department of the Registrar General (now the Department of Consumer and Corporate Affairs);

(b) combines, mergers, monopolies and restraint of trade; and

(c) patents, trademarks, copyrights and industrial designs".

The Council studies were to be "... a first and necessary step in the determination of a cohesive economic policy in relation to these important matters considered as a whole and in relation to each other with a view to bringing the policy in these matters into harmony with the overall economic policy and other important segments of the economy".[3]

The Council also took about five years to progress through the subject matter of the reference. The *Interim Report-Consumer Affairs* was published in 1967, the *Interim Report on Competition Policy* in 1969, and the *Report on Intellectual and Industrial Property* in January 1971.[4]

It is important to remember that the Ilsley Royal Commission heard public testimony from a variety of corporations, associations and individuals but that its hearings took place before the years of rapid growth in research and development activities in industry, in government laboratories, and in the universities in Canada. The studies of the Economic Council, on the other hand, began right in the middle of this period of rapid growth but, by January 1971, the growth period in R & D in manufacturing industry had been over for two years. The second and third reports of the Ilsley Royal Commission, plus the philosophy and two of the subjects from the third report by the Economic Council, are relevant to the analysis which follows.

The Industrial Design Act[5]

This Act provides for the registration of industrial designs. It does not, however, define what is meant by an "industrial design". The Minister is given authority, under Section 6 of the Act, to register a design if he finds "that it is not identical with, or does not so closely resemble, any other

[2]These three Royal Commission reports were published initially by the Queen's Printer, but are now available from Information Canada, Ottawa.

[3]Both quotations are from the press release by the President of the Privy Council on July 22, 1966.

[4]All three reports are now available from Information Canada, Ottawa.

[5]Originally the Industrial Design and Union Label Act, the Union Label provisions were incorporated into the Trade Marks Act in 1963.

design already registered". The proprietor of the design, who can be the employer of the designer, receives a certificate of registration. The exclusive right under the registration is valid for five years, but is renewable for another five. The use of every registered design can be assigned, in whole or in part, in writing and a record of the assignment kept in the Patent Office. The law requires that any design for which protection is required should be registered within one year of publication in Canada. Registered designs must be appropriately marked. Designs originating in countries which give convention privileges to Canadians may also be registered in this country. But it is important to remember that other countries do not necessarily allow registration *after* publication as is the case in Canada.

The protection given in Canada under the Industrial Design Act is for designs applicable to articles of manufacture. The rules under the Act generally provide that designs which are to be multiplied by an industrial process in fewer than fifty single articles are to be subject to the Copyright Act. Designs may also be protected as trademarks. A design can become a trademark if it is no longer regarded merely as an attractive design, but has come to indicate a manufacturing source – in other words, has become a distinguishing guise. In Canada, it is possible at the present time to acquire this double protection. Canadian law also separates form from function in design. Form can be protected under the Industrial Design Act, function cannot. Function cannot be subject to copyright protection, although it can be protected under the Patent Act if it constitutes an invention under that Act.

Upwards of 1 200 applications have been submitted for design registration in Canada each year during the recent past, and around 1 000 certificates and 350 renewals have been issued. Assignments have varied between 200 and 400 a year. A handful of examiners in the Patent Office operate the system. The present Canadian Act has its weaknesses, but it still appears to afford more protection to designers than does the U.S. system.[6]

The Ilsley Commission concluded that the Industrial Design Act should be retained and improved. The Commission recommended, for example, that a definition of "design" be written into the Act but thought it quite impracticable to require as a condition of the registrability or validity of a design "that it appeal to the aesthetic sense or sense of the beautiful".[7] It recommended that novelty and originality be conditions of design registration and that the term of exclusive rights be changed to a basic three year period, with renewal possible for two further periods of two years, for a total of seven years. It wanted to see improved marking used, and to have consideration given under the law to innocent infringers including those whose infringement was the consequence of importing a manufactured article involving a design registered in Canada. On the other hand, the Commission wanted designs associated with certain manufactured articles such as apparel, boots and shoes, excluded from registration under the Industrial Design Rules and it wanted every registration application to

[6]The U.S. system is covered in three sections of the present U.S. Patent Act.

[7]*Report on Industrial Designs*, Chairman, Hon. J.L. Ilsley, Queen's Printer, Ottawa, June 1958.

include one claim, after the fashion of patent applications. The Commission recommended the introduction of compulsory licensing and the elimination of simultaneous protection under both the Trade Mark and Industrial Design Acts.

The Economic Council said in its report that industrial design was part of the total innovation process and, for the best results, should be integrated into the process from the start. The Council went on to say that "good industrial design may be depicted to some extent as an acquired taste, like a taste for olives or good music, that has to be taught and learned. Once it has been learned, however, there can be important economic pay-offs".[8]

A little later in the report, the Council revealed more of its philosophy with regard to industrial designs and the other forms of industrial property:

"It is clear ... that industrial design registration involves the same type of payment of economic costs for benefits as do patents and copyrights. There is a power to restrict domestic use, to divide markets within Canada, and – through the right to control sale – an implied right to restrict imports of products embodying the design. Thus, like other intellectual and industrial property laws, this Act effectively sets up certain barriers to both international and domestic trade. This cannot now be remedied by compulsory licensing of designs, since unlike the patent and copyright laws, the present legislation contains no provision for any such licensing. However, the shorter term of protection should be kept in mind in evaluating the effect of this feature, along with the often more ephemeral quality of the style component of a design."[9]

The Economic Council echoed the concern of the Ilsley Commission over the lack of guidance in the present law as to the meaning of "design", "publication and "industrial process". The Council noted also that the law protected the design and not the object itself. Consequently, if a design was dictated by the object's function, it was not registrable. This, the Council said, seemed clearly to run counter to most thinking about the blend of form and function that constituted a "good" industrial design. The Council made the point that a law, such as the Industrial Design Act, could never be entirely precise but that some lessening of confusion was possible. In its view, however, the existing law could be sufficiently "refurbished" to play a useful, if limited, role. Its policy recommendations were intended "to bring this about within a clearer conception of the public interest in good industrial design".[10]

The Royal Commission and the Economic Council, as might be expected, agreed on some points and disagreed on others. The Council was preoccupied with economic efficiency, with the interests of the consumer,

[8]Economic Council of Canada, *Report on Intellectual and Industrial Property*, Information Canada, Ottawa, January 1971. p. 105.

[9]*Ibid.* p. 10.

[10]*Ibid.* p. 116.

and with devising ways to screen out "bad" designs from the registration system. The Commission was less concerned with economics and aesthetics and more concerned with the mechanics and administration of the Act. Its mandate was wider than the Council's and was concerned with the safeguarding of the *public interest.* Neither of the reports provides the full answers to the problems which the revision of the Act should solve.

These problems begin in the market place, for it is here that the acceptance or rejection of a particular design is made. The preferences of the market place cannot always be predicted. A design that is aesthetically pleasing may be rejected in favour of one that is merely functional. Today's favourite may be tomorrow's discard. In other words, the system of industrial design registration must deal with a constantly changing art. This makes it difficult to apply conditions such as "good", "useful", or even "novel" to the designs submitted in some arbitrary way. The system can, however, avoid registering the *same* design more than once. It might also, as the Royal Commission suggested, exclude from registration the designs of those manufactured articles that are subject to frequent fashion changes.

The element of change enters into consideration of exactly how long registered designs should be protected. To be effective, in the economic sense, the term should be long enough to allow the owner of the design or his licensee to profit from it, and there is no golden rule to suggest how long this *ought* to be. A good compromise solution would be an initial 5-year term with a single 3-year renewal term available thereafter.

As is the case with patents, it is unreasonable to expect that every registered industrial design will be exploited in the market place or that every exploited design will be economically successful. Again, there is no golden rule on the permissible success/failure ratio in Canada or elsewhere. Many factors unrelated to the design itself enter the situation. It cannot, therefore, be expected that the contribution to consumer welfare or economic efficiency of "good", or of "bad but registered", designs will be known for certain at the time of registration. Industrial designers are like inventors. Until the market proves otherwise, each one thinks he has a winner.

As the Economic Council pointed out in its report,[11] the Canadian Government has been encouraging industrial design activity in recent years through subsidies, design awards and other means. The National Design Council and the Office of Design of the Department of Industry, Trade and Commerce have also played their parts. The Department is responsible for the administration of the Industrial Design Assistance Program (IDAP). The stated objective of this Program is "to improve the competitive position of Canadian industry by achieving improvement in the quality of industry design for its products". Disbursements under IDAP have been quite modest, although the total rose from $130 000 in fiscal year 1969/70 to $250 000 in fiscal year 1970/71. These figures include scholarships and grants to individuals and institutions for study or research in design.

[11] *Report on Intellectual and Industrial Property, op. cit.* p. 119 (for example).

The Industrial Design Act needs to be improved and strengthened. Canadian designers and manufacturers should be able to see more opportunities and advantages in the use of it. Some further preparatory work needs to be done, however, and this work should be the responsibility of the National Design Council and the federal Department of Industry, Trade and Commerce in cooperation with both user-manufacturers and members of the design and legal professions. In particular, more Canadian experience with the Act and with foreign Acts needs to be analysed with regard to the problems of infringement and abuse, the problem of marking, and the mechanism of publication.

Revisions proposed for the Industrial Design Act must take into account the international convention obligations to which Canada has agreed. Nevertheless, the Act should be written with the Canadian designer, and the Canadian manufacturer, firmly in mind. A design must be considered as a constituent part of the innovation process. Every part of this process needs encouragement. The programs to encourage design improvement that are sponsored by the Department of Industry, Trade and Commerce and by provincial agencies will be less effective if, at the application stage, registration is not considered sufficiently important or if, at a later stage, imitative foreign-made products displace products of Canadian manufacture in domestic markets.

To further encourage both design and manufacture in Canada, the question of integrating the promotion and regulatory functions with regard to industrial designs should be seriously considered. This would mean that the Patent Office which administers the Industrial Design Act would be relocated. The federal Department of Consumer and Corporate Affairs, where the Patent Office now is, has no mandate to encourage manufacturing or design in this country. This mandate is held by the Department of Industry, Trade and Commerce.

As can be seen in the terms of reference for the Royal Commission and Economic Council studies, industrial designs and patents are normally considered together in the study "package" of industrial and intellectual property. But in order of importance to the manufacturing company – and, in the eyes of the politician's review priorities – the Patent Act is normally the *primus inter pares*. The Patent Act is also much more visible than the others. The Industrial Design Act has the additional disadvantage of being associated with form rather than with function and with personal rather than impersonal communication. Nevertheless, as an integral part of the legislation associated with the innovation process, the review and amendment of the Industrial Design Act should parallel any review and amendment of the Patent Act and should not be allowed to die on the vine.

The Patent Act

Speaking to a meeting of patent professionals two years ago, the then Minister of Consumer and Corporate Affairs said:

"In my opinion, our patent system is neither all white nor all black. There are those who believe that patents are sacrosanct. There are others

who believe that patents, at least insofar as Canada is concerned, place an unnecessary burden on the economy. There are those who sincerely believe that without the patent system, research and innovation in industry would dry up. There are those who scorn this belief. The true position, I expect, may well be found somewhere in between."[12]

In a debate over *any* patent system, the economist and the consumer will normally provide the strongest opposition, while the investor and the innovator will provide the greatest weight of support. The patent profession will, quite understandably, be in favour of the system, although the opinions of the legal profession as a whole with regard to its reform may be divided.[13]

Both the Royal Commission and the Economic Council reported in favour of continuing the patent system in Canada, and both made recommendations for changing the present provisions of the Act. The Royal Commission's recommendations appeared to take a legal, administrative and middle of the road approach to the problems of change. The Council's recommendations, on the other hand, were consumer- and competition-oriented, in keeping with its Terms of Reference. The Royal Commission and the Council concurred with regard to a number of specific changes to the Act, for example, that Canada should move to the first-to-file method of granting priority rights, and that renewal fees should be instituted. The general effect of the Council's recommendations, however, would be to weaken seriously the incentive and protection provided by a Canadian patent from the point of view of the inventor, the innovator and the manufacturer.

In its report, the Economic Council seems to have been content to draw its conclusions from such factors as the "past patterns of ownership and working of Canadian patents". These patterns have been uniformly discouraging for a long time from the Canadian point of view. For example, the numbers of patents issued to Canadian residents each year has been in the neighbourhood of 5 per cent of the total and, until Section 41(4) of the Patent Act came into effect in 1969, the numbers of compulsory licence applications made to the Commissioner of Patents were negligible.[14]

The relatively small numbers of patents issued to Canadian residents over the year may also be blamed upon one or more of a series of other causes.[15] For example:

– the lack of *patent*-consciousness among Canadian manufacturers, and the corresponding prevalence of *licence*-consciousness among them;

– the size of the Canadian domestic market, especially when coupled with over-population by competing suppliers and low profit margins;

[12]The Honourable Ronald Basford, Address to Patent and Trade Mark Institute at Niagara Falls, October 3, 1969.

[13]The terms "Patent Act", "Patent Rules", and "Patent System" are used throughout this section. The definitions of the first two terms are quite straightforward. The "Patent System" encompasses the provisions included in the Act and Rules as well as the mechanisms through which the Act and Rules are implemented.

[14]Section 41(4) deals with the compulsory licensing of drug chemicals.

[15]See also *Background to Invention, op. cit.* pp. 18 – 21.

– the growing complexity of present-day invention and the higher commercial risks involved;

– the high cost, to the independent inventor and the small company, of obtaining patent protection and of policing issued patents; the difficulty often experienced by independents and small companies in obtaining start-up funds; and

– the relatively lower quality which Canadian-issued patents are reported to have, unless accompanied by an equivalent U.S. patent.

The basic problem with the Canadian patent system in the past has been its *weakness* in the eyes of Canadian inventors and companies and not its strength in the service of foreign-resident patent owners and licensees. Other countries have taken steps to protect their own resident applicants, whereas the Canadian system has attempted to be scrupulously fair to all applicants.[16] The Banks Committee Report on the U.K. system actually proposed the strengthening of that system, and the recent decision of the U.S. Administration to permit the exclusive licensing of government-owned U.S. patents may also be construed as a move to strengthen the U.S. system even further.[17]

The Economic Council has, however, presented no evidence to show that Canadian inventors and innovative manufacturing companies have been *over*-protected, only that consumers have been paying higher prices than they might have paid in more competitive circumstances. Nor has it examined the national patent policies – in particular, those aspects which favour nationals – of countries such as Japan, West Germany, or the United States, or the special problems faced by a country which has no ready access to a market of 100 million people. The hard evidence for discriminatory pricing given by the Council has been based on experience in only two industry sectors, pharmaceuticals and farm machinery. The Council did say, on the other hand, that small companies in Canada have been under-*assisted.*

The Council summed up its position with regard to the Canadian system as follows:

"On the whole, it is not hard to emerge from [the report's] analysis with the assessment that, as means of encouraging industrial innovation in Canada, whether based on domestic inventions or on foreign inventions, plus rapid 'technological transfer' into Canada, the existing patent system has not been an outstanding success. It appears to have achieved its main objective along only a small proportion of the total front, and even there, cases have undoubtedly occurred where the working of patents in

[16]The British system, for example, requires that all U.K.-resident applicants apply first to London for a patent. Under the present U.S. Patent Act, and unless modified by a Convention policy, the date applied to an invention made by a non-U.S. resident is effectively the filing date at the U.S. Patent Office and not the actual date of invention. A U.S. inventor can, under the first-to-file system, obtain the patent for an invention made previously by a foreign inventor. It should also be remembered that the U.S. has no compulsory licensing system and it is therefore impossible for a Canadian company to apply for such a licence and, by making use of it, to enter the U.S. market.

[17]Reform of the U.S. system depends, in large measure, on the resolution of the licensing-antitrust problem.

Canada has been high-cost working by international standards and consequently a poor use of Canadian productive resources. In other words, the system has operated in some instances as an absolute trade barrier, protecting inefficient Canadian production.

"But a patent system can have important deleterious effects on the Canadian economy even when it shelters no high-cost domestic production. It then becomes a means by which the patentee, with his production facilities perhaps quite rationally located in some other country, maintains a higher price for his product to Canadian buyers. The patent system does, of course, inevitably make for higher prices to the consumer, in the sense and in the fashion described earlier [in the report]. But the impression which strongly emerges from the statistics and from the more detailed evidence of international price discrimination against Canada, flowing from such sources as successive official enquiries into drug prices, is that Canada may well be bearing more than her fair share of the price effect. Looking at patents as an international system, there is a presumption that we are carrying too large a proportion of the costs of the system in relation to the proportion of the benefits that we receive."[18]

It is simply not feasible for Canada to make unilateral changes to its domestic patent system and to ignore the patents-related changes which are in progress or are anticipated elsewhere, especially among Canada's principal manufacturing competitors in foreign market countries.[19] Nor is it sufficient to assume that a world-wide trend towards liberalized trade will necessarily mean that domestic patent systems will also be liberalized. The function of a patent system is to help make products available for trade. To undermine this work in Canada at the present time by weakening the provisions of the Patent Act may be considered somewhat akin to throwing out the baby with the bathwater.

Among the Economic Council's recommendations are three which, if implemented, could have very serious consequences for manufacturing activities in Canada in the future.

The first of these concerns the importation of patented products into Canada:

"The patent right should be so defined that neither the holder of a Canadian patent nor any licensee should have the right to prevent the importation into Canada by any person of the patented article, or an article made by a patented process, from other countries where the article or process enjoys patent protection."[20]

The second and third recommendations with regard to compulsory

[18] *Report on Intellectual and Industrial Property, op. cit.* p. 81.

[19] For example, the changes not only in the United States and the United Kingdom and – in the international sphere – in the European Economic Community, but under the aegis of the new Patent Cooperation Treaty drawn up by the countries adhering to the 1883 Paris Convention.

[20] *Report on Intellectual and Industrial Property, op. cit.* p. 90.

licences and royalty rates are linked.[21] In abbreviated, and divided, form these are as follows:

– All Canadian patents should normally become eligible for an automatic non-exclusive licence to manufacture in Canada five years after the application for the patent. The only exceptions to this rule should be those cases where the first commercial use of the invention anywhere in the world occurs after the Canadian application, in which event the eligibility for an automatic non-exclusive licence to manufacture should become effective five years after this first commercial use.

– When compulsory licences are granted, a basic royalty rate should be given in the legislation or regulations and this should be set in terms of a percentage of the actual (or, if necessary, imputed) selling price of the relevant articles or components.

– When compulsory licences are granted, individual patentees should be given the opportunity to petition and subsequently appeal for higher royalty rates only on grounds of non-recovery from Canada of Canada's share of innovation costs (defined to embrace clearly the concept of the "total innovative process"). This appeal should be such that the onus of proof is on the patentee and can come no sooner than three years after the granting of the first compulsory licence.

Under the present Act, it is possible for a patent owner or his licensee to supply the Canadian market from abroad. The extent to which this practice occurs, and its effect on Canadian production, have not yet been measured. Under the present Act, however, the general compulsory licensing provisions of Sections 66 to 73 make it possible for a third party to begin manufacture in this country and for the licensee or patent owner to receive compensation set by the Commissioner of Patents. In practice, these latter provisions have resulted in few compulsory licence awards but their existence has led to an undetermined number of *voluntary* agreements being concluded concerning the manufacture under a patent not being worked in Canada.

The Economic Council's importation proposal is further complicated because a product's manufacture abroad, even in countries where patent protection exists, cannot easily be limited to the foreign-resident owner or his licensees. Canadian courts have no jurisdiction abroad. There will also be extra-judical policing problems, and the reluctance of foreign governments to interfere with the activities of their own enterprising manufacturers. Severe curtailment in the protection available to Canadian inventors and innovators would result from the adoption of the Council's proposal to make automatic and non-exclusive compulsory licences available five years *after applications are filed.* The proposal also runs counter to Canada's international obligations. Under the terms of the London International Patent Convention, to which Canada is a signatory, the grant of a licence of this kind may *not* be automatic. The Article in question reads as follows:

[21]These recommendations, and the Council's views, are presented on pages 91 to 100 of its report. The recommendations refer to Sections 66 to 73 of the present Act and *not* to the recently amended Section 41.

"Each country of the Union shall have the right to take legislative measures providing for the grant of compulsory licences to prevent the abuses which might result from the exercise of the exclusive rights conferred by the patent, for example, failure to work."[22]

The above recommendations, as a package, constitute a powerful disincentive to research, development, patent action and innovation by individual Canadian manufacturers, even those with efficient operations. What manufacturer can become enthusiastic about pursuing a potentially profitable idea knowing that the Patent Act is working against him and against the purpose for which it was initially enacted? Section 67(3) of the present Act says:

"... it shall be taken that patents for new inventions are granted not only to encourage invention but to secure that new inventions shall so far as possible be worked on a commercial scale in Canada without undue delay."

In the context of this aspect of the analysis, it is important to realize that under Section 58 of the present Patent Act any manufacturer in Canada or abroad, who finds himself able to do so, may make, use and sell in the Canadian market a product for which a product or process patent is pending in the name of someone else. Even after the patent issues, the manufacturer may still use and sell the remaining inventory of the product without liability for infringement. As a result of these provisions, the advantage available to a Canadian-resident patentee – as well as to a foreign-resident one – may be seriously weakened during the early years of a patent's term.

In order to compete in the domestic market, Canadian manufacturers need technological strength. In order to trade successfully on the basis of new technology, Canadian industrial property owners need to have a good product. In order to point to technical successes, Canadians must be able to point to the successful commercial exploitation of domestically-made products. And, in order to make Canadian inventors and companies more patent-conscious, there has to be a strong, attractive and protective domestic patent system.

The fact that the Canadian system may have been abused by some companies or by one or more industries in the past should not lead to the weakening of the system for *everyone* in the future. In a well-managed patent system, every patent will eventually expire. A high quality patent system should add strength to applications by Canadian inventors and innovative manufacturers for start-up funds from domestic financial sources. The strengthening of the Canadian Patent Act and Rules will, of course, involve the risk of improving the positions of foreign-based owners and licensees in the domestic market and the risk of favouring large Canadian companies over small ones, but these risks should be taken in the longer-term interest of Canadian inventors and innovative manufacturers.

[22]Now included as Article 5A(2) of the Stockholm Agreement, which is the most recent in the series which began with the Union Convention of Paris in 1883.

Among the steps which could be taken to strengthen the Patent Act would be the repeal of Section 58 and the revision of Section 41.[23] Sections 66 through 73 should, however, be retained as they are. The quality and speed of issue of patents should be improved, as should the search facilities available across the country. The patent term should not be shortened, and should begin as it now does from the date of issue. The change to the first-to-file method of determining priority dates would bring the Canadian system in line with every other country in the world, except the U.S. and the Philippines, and would make unnecessary the inclusion of a section of the Act favouring resident applicants. Appropriate measures should be inserted in the Rules to allow the Commissioner more latitude in the safeguarding of the incentives, as stated in Section 67(3) of the Act, to Canadian invention and to the commercial working of inventions patented in this country "without undue delay". Consideration should be given to the proposition that the administration of the Act, and of the other industrial property Acts, should not be the responsibility of the Department of Consumer and Corporate Affairs, since it has no specific mandate to encourage invention or innovation in this country. Revisions to the Patent Act and Rules should be made in the light of the continuing differences between the Canadian system and the systems in force in competing industrial countries, and in the light of trends towards international cooperation in patent searches, etc.[24]

It is important to remember that patents are awarded for *technical* advances and that patent ownership is only *one* element in the pricing of a product for sale. Competitors from abroad may, or may not, own Canadian patents. In either case, they may adopt "loss-leader" or other pricing techniques in order to gain entry into the Canadian market. Or they may use the relative affluence of the Canadian consumer or the proximity of the U.S. market to earn "higher-than-average" profits. In these latter circumstances, the remedies should be directed to the levels of profits, not to the ownership of patents.

[23]As noted above, this latter section involves compulsory licensing of chemicals used for drugs. This matter was, at one time, a political and emotional issue. Nevertheless, the threat remains that this section could be extended in the future to cover other types of products whose manufacturers had, in the government's view, "stepped out of line".

[24]Outside of the Patent Act and Rules, the federal government could also make assistance available to Canadian independent inventors and small companies for the policing of their patents in the domestic market. The interests of small Canadian companies in the exploitation of government- and university-owned patents might also be encouraged by means of increased financial support for the development stage being made available through Canadian Patents and Development Limited and, possibly, the Defence Research Board.

Conclusions

As stated in the "Introduction", these "Conclusions" have been written in the form of an executive summary of the study as a whole and incorporate both the general thrust of the material included in the ten essay chapters and the identification of a number of specific conclusions arising from the analysis and discussion in each of them. In view of the scope and complexity of the essay material, and the prior publication of the Science Council's report *Innovation in a Cold Climate*, the specific conclusions have not been developed into a series of positive recommendations for action. However, a separate "Postscript" has been added in order to make a number of additional, broadly-based observations which, for example, place the analysis and the conclusions of this study within the perspective of the industrial strategy envisaged by the Science Council.

As also stated earlier, these "Conclusions" contain no developed judgements on social or moral issues involving past, present or future technology-based innovations in Canada and elsewhere or in relation to the business of manufacturing in this country. The study as a whole has been based on two assumptions:

– *first*, that there will be a continuing need for effective, technology-based innovative activities to be performed by manufacturing companies in Canada in the future, and

– *second*, that governments in this country have roles and responsibilities with regard to the encouragement of this effectiveness.

The report has emphasized that the business of manufacturing is subject to continuous political, economic and social pressures and that these pressures can change in emphasis from time to time. It has attempted to show that the results of innovative activities based on new or improved technology are normally more dependent on encouragements and frustrations originating outside the R & D laboratory rather than inside it. In other words, increasing the level of innovative activity is not simply a matter of stepping up the amount of research and development that is being performed. The study has indicated some of the ways in which the activities of the *three* levels of government in Canada – and the relationship between individual governments – can influence the environment for innovation both directly and indirectly. It has attempted to confirm that innovation is a means to an end rather than an end in itself.

This study has three principal limitations. In the first place, it is a background support study which relies on other documents and reports to illuminate further the underlying problems that have been examined. Secondly, it has by no means looked into all of the ways in which governments in Canada may influence the environment for technological innovation. Thirdly, little has been said about the future for Canada in general or for Canadian manufacturing industry in particular and, as a result, the study does not offer a comprehensive set of guidelines for government actions either now or in the years immediately ahead.

These limitations give the study a "rear-view mirror" quality, but they may not be quite so constraining as appears at first sight. While it is most unlikely that history will repeat itself exactly, the various points of approbation or disapprobation emerging from the essay chapters should be regarded as indicative of the factors that need to be taken into account both

at the present time and in the near future when decisions on the roles or actions of governments that affect the innovative capability of manufacturing industry in this country are being made. From another point of view, the study brings together what one of its reviewers called "a welter of compromises" and "a mish-mash of temporary expedients" associated with our current goals for the development of Canada, goals that badly need reappraisal in the light of a changing Canada and a changing world.

The material that follows has been arranged in two sections. The first of these includes a number of brief reviews of historical and physical characteristics associated with the development of the manufacturing industry in Canada. In the second, the general thrust of the analyses and discussions in the ten essay chapters has been outlined and a number of broad conclusions have been drawn.

Historical and Physical Characteristics Associated with the Development of Manufacturing Industry in Canada

Until about seventy years ago, the role of technology in the socio-economic development of the vast continental land mass of Canada and its surrounding waters was related to human survival in the different environments of Canada, to the transportation of people and goods over difficult terrain and long distances, to the discovery and exploitation of remote natural resources and, latterly, to the provision of plentiful but inexpensive sources of electrical energy. Since the turn of the century, particularly as a result of the two world wars, manufacturing activities have gained in importance alongside the continuing natural resource developments throughout the country. During the post-war period, Canada as a country has played a relatively small, but growing, part in world export trade in manufactures. From the point of view of actual production, the modern day manufacturing activities have become concentrated in Central Canada near the sources of power, population, markets, and well-developed transportation networks. Attempts to disperse manufacturing more homogeneously throughout the country have so far met with limited success.

Manufacturing activities have grown in Canada against a background of foreign ownership and control, particularly with regard to the larger manufacturing establishments and to establishments in the so-called "high-technology" sectors. A significant amount of the new technology and enterprise applied to products made in Canada have come into the country from abroad confirming, as almost everyone seems to know already, that Canada's record with regard to indigenous technology-based enterprise and innovation has been neither clearly visible nor uniformly successful. There have been both welcomed initiatives and missed opportunities, with the latter predominating. Many Canadians have expressed concern about this record, but others have received even the few successes with disinterest or scepticism – and even with outright hostility. People abroad have been known to look on examples of Canadian technical and entrepreneurial initiatives with surprise or mild amusement and to wonder why manufacturing is pursued in one of the world's foremost suppliers of staples and raw materials.

Everyone seems to have his favourite horror story about abortive attempts to organize a new company or to exploit an indigenous invention in Canada, about risk capital shortages and domestically-assisted take-overs by foreign interests, and about the apparent inability of politicians and public servants to do positive things to help industry improve its image, its competence, its profitability, and its muscle in the market place. The prescriptions to cure the situation are almost as numerous as the stories. But one of the basic problems in the past has been a lack of relevant information, description and analysis. There are now signs that this omission is being corrected, if not over-corrected.

One of the most important drawbacks in the development of manufacturing activities in Canada has been the fact that the country is so large. There are 5 000 miles and four and one-half time zones from east to west. The Atlantic Provinces are physically closer to the New England States – and British Columbia to the Pacific West Coast States – than they are to Central Canada, and Central Canadians have sometimes wondered if they are not also closer in spirit. For many manufactured products, the Canadian market might be more attractive if all 21 million of us lived and worked in an area half the size of the Province of Manitoba and stretching from Trois Rivières, Quebec, to London, Ontario. As things stand, the selling and transportation costs involved in serving such a widely dispersed domestic market can be prohibitive for some Canadian companies and for small ones in particular.

Other important drawbacks to the development of manufacturing have been the variations in the regional endowments of physical resources across the country and in the attractiveness of settlement in the different regions. Variations in climatic conditions throughout the year and throughout the country have been of less consequence from the point of view of manufacturing, but they have had some influence on costs of production and distribution. More important, perhaps, have been the variations in the attitudes of Canadians towards, for example, the accumulation of indvidual wealth, rural and urban problems, regional disparities, investment and risk-taking, and towards one another. For many, the watchword has been "security", and the boundary of interest strictly local. It has been suggested that the most energetic, intelligent and aggressive Canadians go on to bigger things in the United States. It has also been suggested that many European immigrants have used Canada as a platform from which to enter the United States. However, a fair number of Canadians have stayed at home, have gone into the business of manufacturing, and have managed to survive in it.

A third important drawback to manufacturing development has been the existence of three separate levels of government in Canada, each with its own particular roles and responsibilities and two of them having multiple membership. Constitutional interpretations, circumstances, experience, and human nature have combined over the years to bring about both divergence and overlap in the interests of the three levels and of the individual constituent members, and to make agreement on currently appropriate "divisions of labour" between them more difficult. But this particular drawback would not necessarily disappear if the number of

levels or their respective memberships were reduced. The remaining levels and members would still need to get along with one another in a physically immense and diversely endowed country.

General Thrust of the Essay Chapters

In a study as long and as complicated as this one, it has not been possible to assemble in summary form and in a modest number of pages all of the arguments necessary to prove out each and every one of the conclusions that have been drawn from the individual essay chapters. **The term "general thrust" has therefore been interpreted quite selectively and the reader is asked to refer to the chapters themselves for the additional supporting analysis and discussion.** However, to help the reader, the text of this summary follows the order of business in the chapters quite closely. The reader has also been spared confrontations with footnotes and quotations.

Chapters 1 and 2

The British North America Act, Canada's constitutional document, has been under review for several years by the federal and provincial governments. The Act assigns roles and responsibilities to these governments which bear both directly and indirectly on the activities of manufacturing industry in this country and on its innovative capacity. But the future of this industry and its ability to grasp market opportunities based on new technology have received little consideration from First Ministers, committees and task forces concerned with the review.

The larger local governments have had no part in the constitutional studies and conferences, although their influence on the future of the manufacturing industry will be considerable. There are as many local government systems in Canada as there are provinces, and there are over 4 000 individual local level jursidictions. In some provinces, steps are being taken to reduce the numbers through amalgamation or consolidation. The need for these steps is generally well understood by the provinces, as are the political hazards that have to be overcome when they are taken. But three-level government consultations are urgently needed in order to streamline the various industry-related operations of the government sector as a whole and to reduce the legal, regulatory and administrative burdens on manufacturing companies.

At the federal level, it is possible to assess the roles and responsibilities of each of the departments and agencies on the basis of its influence on technology-based innovation in manufacturing industry. The departments and agencies having the most significant influence are the following: the Departments of Communications; Consumer and Corporate Affairs; Energy, Mines and Resources; the Environment; Finance; Industry, Trade and Commerce; National Defence; Regional Economic Expansion; Supply and Services; the Ministry of Transport; Atomic Energy of Canada Limited; the Canada Development Corporation; the National Research Council; the Treasury Board; and the Ministry of State for Science and Technology. Of these, a "spearhead" group may be identified, consisting of the Department of Industry, Trade and Commerce, the National Research

Council and the Canada Development Corporation. Spearhead groups similar to the federal one can be identified in each of the provinces. These groups include the Departments of Industry or Development or their equivalents, the principal industrial development finance agencies, and the Research Councils, where these exist. Local governments have no effective groups of this kind.

The scientific and technical interests and activities of the three levels of government, and of individual governments, vary considerably. The federal government, for example, is the most active in research and has the most extensive system of laboratories. Quebec and Ontario also have some strong research interests and activities but, for the most part, the provinces and the local governments are concerned principally with engineering and with technical purchasing.

Government interventions in the manufacturing industry in the form of permissions and prohibitions have been a part of doing business for a very long time and will continue to be so. Although it may be no more welcome, the burden of intervention has often seemed lighter in good times than in bad, and lighter on the large company than on the small one. These factors serve to underline the importance of good judgement on the part of politicians and public servants with regard to the timing and substance of revisions or extensions to current interventions.

In recent years the climate for communication between governments and manufacturing industry has shown some improvement. But the three separate levels of government and the division of responsibility between departments and agencies at each level complicate the communication problem. So also does the fact that each level has its own separate political and managerial systems. In the past, one of the most serious aspects of the communications problem has been the mutual lack of confidence between the two government systems, on the one side, and the leaders and members of manufacturing industry, on the other. The dominant impression of many politicians and public officials seems to have been that industry is always looking for a handout. The motives and actions of the two sides have been questioned by the Canadian public but, in matters affecting them both, the public has tended to take the government view.

Politicians have not been noticeably hindered by lack of understanding or experience when making decisions or taking action involving manufacturing industry or technology when these seemed to be expedient. In 1970, for example, the membership of the House of Commons, the Quebec Legislative Assembly, and the federal Cabinet included a substantial number of representatives from the business community. But their collective experience was mainly in fields such as insurance, real estate and retailing, and only a few had first hand experience in manufacturing. The engineering and science professions were not well represented.

The role of the public servant has grown more complex and more broadly based in the last twenty years. An examination of the backgrounds and experience of the top officials in the federal departments and agencies most deeply involved with manufacturing and technological innovation shows that, in 1970, almost all of them were longtime public servants with working experience predominantly in economics, trade and finance. The

mobility of people between the federal public service and industry has not been actively encouraged until quite recently.

With regard to federal-provincial relations, the provinces are beginning to meet their federal colleagues on more equal terms and most provinces now have Ministers assigned to deal with matters in this field. In other words, the provinces have improved their "confrontation competence" with the federal government. Industry people have begun to appreciate the need to improve their overall competence in confrontations with federal and provincial politicians and officials. The participation of industry representatives in government planning is one area which requires substantial improvement, and this participation will be enhanced when industry and government understand one another better.

The following conclusions are relevant to Chapters 1 and 2:

1. The importance of manufacturing industry to Canada – and of the innovation process to this industry – should be recognized and considered by First Ministers and their officials in their consultations on constitutional reform. The larger local governments should be included in consultations involving manufacturing industry, at least with the government of their respective provinces.

2. Governments should exercise judgement both in the timing of new interventions in the business of manufacturing and in the magnitude of these interventions. They should realize, also, that large companies may be better able to accommodate them than small ones.

3. In the past, one of the most important handicaps in the development of viable and technically sound manufacturing activities in Canada has been the lack of confidence of government in industry and industry in government. The public generally has shared the government view.

4. In order to encourage cooperation, co-ordination, uniformity of legislation, and in the interests of manufacturing generally, the numbers of jurisdictions in Canada should be reduced and formal cooperation between those that remain should be encouraged.

5. All three levels of government should pay more attention to the needs and problems of entrepreneurs and of small and medium-sized resident-owned manufacturing companies.

6. The responsibilities of the federal and provincial departments and agencies that have leading roles to play in the encouragement of technological innovation in manufacturing industry should be clearly established and assigned. The same should be done for those other federal departments and agencies whose own activities influence very significantly the course and effectiveness of industrial innovation in Canada, and especially those whose roles are economic or regulatory.

7. The larger local governments with special interests in manufacturing industry should establish special groups, or designate officials, to examine their roles and responsibilities with regard to the industry and to co-ordinate them once they have been established.

8. Manufacturing industry's representations to governments, and its understanding of government systems and procedures, should be improved in the future so that politicians and public servants may, in turn, acquire a clearer understanding of the business of manufacturing.

9. The improvement of communication across the government: industry interface will require more individual and group contacts from both sides of the interface and more contacts with provincial as well as federal politicians and officials. Representatives of manufacturing industry should participate in government planning affecting their interests.

Chapters 3, 4, 5 and 6

These four chapters are mainly about government-spent money. The last fifteen years have seen substantial increases in the revenues raised and spent by governments and substantial developments in the types of financial and other programs available to help manufacturers in this country. Examined in these chapters are industrial assistance programs, government purchasing, research transfer programs, taxation, and regional development programs.

The best-known assistance programs in the innovation "field" have been those set up to encourage industrial research and development, PAIT, IRDIA, IRAP, DIR, DIP and the "old" tax incentive, programs that have brought recognition to the Canadian Government as a pioneer in this new field. Less widely-known, perhaps, are the federal programs of assistance for non-R & D activities in industry, for example, the Department of Industry, Trade and Commerce's AAA, BEAM, GAAP, IDAP, MACH, PEP, PIDA and SCSR programs, and the incentive and assistance programs of the Department of Regional Economic Expansion.

The financial assistance programs of the provincial governments have generally been more modest and have been directed principally to regional development, with special emphasis on the role of manufacturing in the achievement of objectives. The provinces have developed non-financial advisory programs and services to a much greater extent than the federal government. Local governments have also provided their own forms of assistance to companies, normally with the approval of their respective provincial governments.

The broad objectives of government programs of assistance in Canada are, first, to alter the behaviour of recipient individuals and companies and, second, to provide financial and other assistance that is either not available privately or is available only to a limited extent from these sources. Most programs are aimed at both objectives, but with varying degrees of emphasis.

Whereas a wide variety of financial and other assistance programs have been implemented by the three levels of government to cover the pre- and post-production phases of manufacturing, none of the financial ones relate to the cost of routine design, engineering and production except under a subsidy or special procurement arrangement. It has been claimed that, as a result, R & D assistance funds can be wasted if recipient companies cannot put their results into production, and that export development measures will be of no value unless companies have products to sell. But, if carried to the extreme, government participation in the whole of the innovation process would place industry even more firmly under government control. The choice of whether or not the present range of programs should be extended to fill the "gap" in the middle is therefore a political one.

Governments also provide manufacturing companies with help and encouragement for innovation by means of specific laws and regulations. But governments also frustrate manufacturing by the same means. Canadian companies may also be helped, but more frequently frustrated, by laws and regulations in force in foreign countries. Multilateral and bilateral agreements between countries are supposed to help remove impediments of this kind.

The effects of government programs of assistance to manufacturing, either individually or collectively, cannot be assessed financially or quantitatively without very deep and prolonged examination since factors of many different kinds, which are external to the programs themselves, affect the results. For example, the so-called "high-technology" industry sectors in Canada made the most use of the cost-shared R & D grants throughout the 1960s, but were among those sectors with indifferent growth and profit records between 1968 and 1971.

Among the general criticisms of the industrial assistance measures, especially the financial ones, has been their apparent failure to function effectively as a "package". There are so many of them. Some seem to be in direct conflict with others, and some tend to cancel out the effects of others. While individual programs may require several years of operation in order to become well-known and effective, it would seem advisable that none of them should last so long that they come to be regarded as essential to the long-term existence of manufacturing as a whole or of a sector of it. At the present time, for example, regular review is a feature of most regional development measures. Changes to the R & D assistance grants, on the other hand, tend to be made in response to pressures which have been built up over a period of time.

Another of the criticisms of the financial assistance measures introduced by the federal and provincial governments is that most are too generally available, and this factor has prejudiced their longer term chances for success. Federal, provincial and municipal purchasing administrations, on the other hand, have been faulted for consistently favouring the lowest bidder in order to save the taxpayers' money in the short term. Purchasing administrations have also been criticized for favouring foreign suppliers over domestic ones. In practice, purchasing represents one of the assistance measures over which governments may exert very close control and by means of which several billions of dollars may be spent in only a few years for the purchase of products bearing "Made in Canada" labels. Unfortunately, these labels can be misleading because the value of the Canadian *content* may actually be marginal in relation to the purchase prices of the products.

The most attractive and sophisticated area of government procurement for technical material and equipment has been defence, but requirements have recently been declining. It is also an area in which Canada and the United States have a Production Sharing Agreement which to date has favoured Canadian suppliers.

For most government departments and agencies, it is often less time consuming, less expensive, and less frustrating to make something rather than to buy it from a private supplier. In the "Buy-Rather-Than-Make"

area of policy, an important step was taken in the Spring of 1972 when the federal government decided that additions to its R & D requirements would in future be contracted out to industry, to the manufacturing sector in particular, provided certain criteria were met. Federal departments and agencies would therefore be required to justify new in-house projects.

A new alternative to the standard choice is "Rent-Rather-Than-Buy". The most frequent examples of this have been in the computer field. At any level of government, however, decisions to buy or to make or to rent will take into account the quality of products and the service available from public and private sources of supply. They will be taken as part of agreements with other governments and in "trade-off" and political situations.

"Buy-Rather-Than-Make" decisions at any level of government have always been bound up with the policies and practices laid down for the management of government operations. The Department of Supply and Services plays a key role in the procurement of matériel and services for federal departments and agencies, the decisions which determine actual purchases involve the departments and agencies themselves. The principal agency in the overall management of the federal purchasing system, however, is the Treasury Board.

A "Buy Canadian" policy is simply one aspect of the "Buy-Rather-Than-Make" policy. What may be required in this country is not an explicit "Buy Canadian" policy but new initiatives on the part of the federal and provincial governments to introduce more flexibility and preferences into their procurement rules when high Canadian-content products, or products developed using Canadian technology, are available. More advanced warning of future requirements might also be provided in order to enable Canadian companies to tender for many more development and prototype purchase contracts than has been possible in the past.

Discussions of the lack of a federal "Buy Canadian" policy for manufactured products will usually include the observation that Canadian industry, itself, has no general policy of this kind although individual companies may adopt one in whole or in part. "Buy Canadian" talk will also lead to a discussion of "Buy Provincial" policies in the individual provinces. Provincial governments are known to show some favour for suppliers within their own jurisdictions. But, as far as manufactured products are concerned, it will be difficult and expensive for most provinces to attempt to make much headway within their own jurisdictions by means of a rigid policy of this kind.

In all "Buy-at-Home" policies, policy-*making* is a lot easier than policy-*implementation*. The politician is involved in the first of these activities, and the public servant is involved in the second one. The success of the partial "Buy-at-Home" policies depends very much on the work and attitudes of public servants. To ensure success, public servants need access to systems of incentives in keeping with the changes in policy and procedures. These incentives will be particularly relevant in those semi- or fully-autonomous federal and provincial agencies, such as the public utilities, that have significant purchasing powers and relatively little policy supervision.

The federal government's new contracting-out policy for R & D needs has not covered all aspects of the research and technology transfer problem at the federal level and not at all covered all aspects at the other two levels. Problems that remain relate to improving the performance of Canadian Patents and Development Limited and bringing the Department of Industry, Trade and Commerce closer together at the policy level with the National Research Council, and possibly also the Canada Development Corporation and provincial institutions such as the Research Councils.

Taxation is also an instrument which is under the control of governments and which can be used for economic, social and political purposes. It is, however, a blunt instrument, and one in which equity is difficult to ensure in practice. Taxation can be used internationally as well as domestically in the achievement of political and other objectives. In determining the tax burden on individuals or corporations, account has to be taken of *all* of the taxes paid by them to the three levels of government. Tax law in Canada has become a complex subject which has grown even more complex with time, especially since the recent period of "tax reform".

Federal tax reform began about ten years ago with the appointment of a Royal Commission, which submitted its Report in 1967. A White Paper containing reform proposals was published in November 1969. In June 1971 a new Income Tax Bill, C-259, was introduced into the House of Commons and was passed, with amendments, by the House and the Senate in time to become law on January 1, 1972. This new law, and the three federal budgets in June and October 1971 and May 1972, have brought significant changes in the Canadian tax system.

The changes introduced in Bill C-259 ranged from the new capital gains tax, new income averaging provisions, and a new tax rate structure to the retention of the lower rate of corporate taxation in modified form to serve as an incentive for small resident-owned businesses. The federal government also vacated the estate and gift tax fields. Budget changes included reductions in corporate and personal taxation for specified periods, the removal of the 12 per cent federal sales tax on all anti-pollution equipment used in production, and on research equipment bought by manufacturers, and accelerated capital cost allowances for manufacturing and processing equipment. The May 1972 Budget, in particular, moved to provide tax relief to manufacturing industry for the purpose of increasing the discretionary incomes available to them.

One of the most important drawbacks of the federal tax reform procedures was that it did not involve the provinces directly. The individual taxpayer has, after all, only one pocket into which all levels of government may dip. The federal tax reform, especially in association with the entry of some of the provinces into the estate and gift tax fields, has not lightened the tax burden for the entrepreneur or the small businessman and has not solved the serious problems of raising the additional revenues required by the provinces and local governments. Advantages in the recent federal reforms include lower taxes for lower income groups and small resident-owned Canadian manufacturing companies. The opportunities for financial speculation and for large windfall rewards have been more tightly controlled. A weakness of the reforms is that the costs of compliance with the

tax system as a whole fall most heavily on those least able to bear them.

The federal tax reform legislation and the three recent budgets contained no provisions for the re-institution of a tax-based incentive to encourage research and development in manufacturing industry, although R & D expenses are still deductible at cost under the new legislation. Also omitted was any suggestion of a tax measure designed to encourage the economic and social development of the slow-growth regions of the country. The tax-based R & D incentive, however, merits further study.

Manufacturing has always been given an important place among the weapons used to solve the regional development/disparity problem in view of the employment and income multiplier effects that successful companies can bring into play. Manufacturing has been even more attractive when it involved the use of locally-available natural resources. But experience in Canada and abroad has shown that progress towards the solution of regional problems and the profitability of manufacturing are linked to the state of the economy generally.

The federal government, the provinces, and most local governments have been involved in the business of regional development, and a large number of programs have been designed to encourage companies to become established in particular places. These have not always been the *right* places, but the financial packages and other forms of assistance have been such as to make them acceptable. From the point of view of government policies, regional development programs are regarded as long-term measures although governments have tended to limit the lifetimes of individual programs in order to allow for evolution and changing circumstances. On the other hand, the programs have sometimes become sources of competition, not only between governments in Canada, but between one or more of them and a number of American states.

The majority of manufacturing companies which have so far accepted grants from the Department of Regional Economic Expansion have located in the Atlantic Provinces and Quebec, or intend to do so. These are the regions in which the development/disparity and unemployment problems have been the most serious. Quebec has been the only province to attract the so-called "high-technology" companies in significant numbers.

Some of the provinces have attempted to fill "gaps" left by the federal programs and to re-introduce equalities where differences had been created. Frequent calls have been made for cooperation and co-ordinated planning between the federal and provincial people concerned in order to reconcile the different priorities of the different governments. But little significant progress can be made unless concrete and viable objectives are chosen and pursued. Planners and others must also seek more avenues for higher incomes and more jobs in addition to manufacturing. High-technology companies, in particular, have limited roles to play in regional development because they have fewer location options available to them.

Although the principal federal and provincial programs seem to be providing some new employment, differences in inter- and intra-regional income and employment are likely to persist no matter what the governments do. The overall objective of the various programs has to be concerned

with reducing unacceptable gaps between regions. But it must also achieve this without penalizing the "have" regions to the extent that the whole country suffers. Experience tends to show that the development/disparity problem is more amenable to solution in good times than in bad. But even in bad times, production has to be related to the available markets.

The following conclusions are relevant to Chapters 3, 4, 5 and 6:

10. The stimulants to technology-based innovation in the manufacturing industry in Canada which have their origin in the public sector are generally more visible than are the frustrations. The stimulants are often well known and widely advertised. The frustrations are generally smaller, more numerous and more pervasive. The stimulants are usually under the jurisdiction of the two senior levels of government – but all three levels contribute to the sum of the frustrations.

11. The direct financial incentive programs of the federal and provincial governments have helped to encourage some research, development, innovation and manufacturing that would not otherwise have taken place. The benefits of this assistance cannot be measured solely in dollars on a program-by-program basis because of the large number of interdependent programs in existence, and because many other factors have to be taken into account.

12. Industrial assistance programs that provide direct financial support to industry sectors or individual companies should be subject to periodic review or given limited lifetimes. The use of these mechanisms should ensure that no program remains inflexible or becomes a permanent "crutch". The lifetimes selected should, however, be long enough to permit adequate forward planning by potential beneficiary companies. The conditions under which support is given should avoid uncertainties. The program should be easy to administer.

13. The federal government's financial assistance programs should be designed principally for whole industry sectors, for large projects, or for large companies. The provincial-local financial programs should deal with priorities within these jurisdictions, but should specialize in the provision of assistance for sub-sectors, small projects and small companies.

14. Most of the non-financial service and advisory assistance programs are less expensive than the direct financial ones and function quite effectively. The majority of these non-financial programs should be the responsibility of the provincial governments and should be administered on a provincial-local basis.

15. A great deal has still to be learned about the industrial psychology of assistance programs, about which programs may be of interest to which companies, and about the ways in which government interventions may simultaneously benefit some companies and frustrate others.

16. The purchasing powers of the three levels of government in Canada represent powerful levers by means of which the governments can assist in the development and innovative potential of the manufacturing industry in this country. These powers are not at present being used as effectively as they should.

17. Much of the success enjoyed by Canadian manufactures in foreign

markets depends as much, if not more, on favourable government policies and programs of assistance for industry at home as it does on advantageous agreements worked out with foreign governments. The domestic market provides the starting point for the majority of Canadian manufacturing companies.

18. The Department of Supply and Services, which is the principal federal government purchasing agency, is now organized in such a way that the procurement of "high-technology" equipment, components and services can be given special attention. The principal user of this kind of equipment is the Department of National Defence. But the key role in the implementation of the federal system purchasing and the principal responsibility for its effectiveness is that of the Treasury Board.

19. Although governments at all levels in Canada should implement "Buy-Rather-Than-Make" policies for manufactured goods, they should not adopt formal "Buy Canadian" policies at the present time. Instead, the governments should adopt policies and procedures which provide much more favourable treatment for companies able to offer high Canadian content, and more positive encouragement for companies willing and able to raise Canadian content to more acceptable levels. The governments should also explore and adopt new initiatives of an anticipatory kind that will enable companies in this country to bid more competitively for future government business. The adoption of "Buy Provincial" policies should be approached along the same lines.

20. Since the federal government itself has been providing the largest proportion of its own overall R & D requirements, the recently announced contracting-out policy is a welcome initiative. But it will take some time for the effects of the new policy to be felt in industry and for its success or failure as a stimulant to technological innovation to be judged.

21. The new federal contracting-out policy for R & D should not divert attention from the fact that it deals with only one element of the "research transfer" problem. A dozen or more departments and agencies have roles to play, for example, in the business of information transfer. The provinces are also involved in the problem, principally through their Research Councils.

22. Federal and provincial tax reforms are still in progress in Canada. They have been conducted in a piecemeal fashion and have added confusion rather than clarity to the tax system as a whole. The end results are likely to be higher administrative costs and more inconvenience for individual and corporate taxpayers alike. The tax burden on individuals and on corporations must be regarded as the aggregate of all of the taxes paid by them to the three levels of government. For this reason, tax reforms should take place in the arena of inter-government consultation. The different jurisdictions should also simplify their sub-systems considerably.

23. The most effective tax-based incentive that can be applied to industry is the one which reduces the taxes payable by the individual companies but which encourages them at the same time to become more efficient in their operations.

24. The federal government should study the possibility of re-introducing a tax-based industrial research and development incentive, similar

to the one available in Canada between 1962 and 1966, and of terminating the present IRDIA program. The new program should include an "efficiency incentive" feature, and it should be given a limited initial lifetime.

25. The problem of regional development and inter-regional income disparity are easier to solve in buoyant economic times. In less favourable times, the unemployment problem will usually become the prime target for regional development and other, more temporary, programs designed to provide jobs. Recently, in Canada, the principal elements in the development/disparity problem have been unemployment and job creation.

26. In Canada, the majority of manufacturing and processing companies are located in Southern Quebec and Southern Ontario. This makes it more difficult and less attractive for manufacturing companies to locate elsewhere. In seeking to locate new manufacturing plants in this country, the provincial governments in particular are often in competition with one another, and sometimes with interested jurisdictions in other countries. Since there may not be enough potential new plants to go around, the "costs of attraction" could escalate, especially in unfavourable economic times, with serious consequences for Canada as a whole.

27. Manufacturing industry has been given a leading role to play by the governments in this country in the solution of the development/disparity problem. Nevertheless much more attention should be given to the design of programs which put less emphasis on the role of manufacturing.

28. The overall aim of the regional development programs in Canada should be to make the slow-growth areas economically attractive to industry, but not by means of continuing subsidies. Methods for achieving this aim will require inter-government and inter-agency cooperation and understanding and a more effective division of labour between them. But since the programs will be required to provide sustained efforts over the longer haul, a strong element of leadership will be required from the participating agencies.

Chapter 7

This chapter is about money belonging principally to individuals and managed by private institutions. It is also about small manufacturing companies, of which there are many thousands in Canada, and about the initial financing of new ventures. All three subjects have received a significant amount of attention in this country in recent years.

The financial system in Canada may be divided into four major groups: the government banks, the chartered banks, the trust, mortgage and loan companies and the credit unions (or "near banks"); life, fire and casualty insurance companies, and the pension funds; sales finance and consumer loan companies, mutual, closed-end and other investment funds including venture capital companies; and federal and provincial government institutions such as the Industrial Development Bank, the Canada Development Corporation, the Manitoba Development Corporation and Quebec's General Investment Corporation. At the present time, the Canadian chartered banks have assets in excess of $50 billion. The largest of them are among the largest commercial banks in the world. The "near

banks" and the other private institutions also have assets in excess of $50 billion.

The latest revision to the federal Bank Act in 1967 gave the chartered banks authority to enter the mortgage field and to raise money through the sale of debentures. The ceiling on loan interest was also raised, and became adjustable. Among them, the Canadian chartered banks have around six thousand branches throughout the country. The banks are taking more and more active parts in international business, for example, through their own foreign branches or through consortium arrangements with foreign financial institutions as partners. There are still no "proper" merchant banks in Canada, and this is a serious gap in the Canadian financial system. The chartered banks are not in the venture capital business directly, although some of them have financial interests in private venture companies. The national branch bank system in Canada has often been contrasted with the local system in the United States. Both systems have advantages and drawbacks. The U.S. system, for example, may be more suited to the provision of funds in local high-risk situations and the Canadian system more suited to the mobilization of large-scale loan funds. Canadian bankers have been considered somewhat less enterprising in outlook than their U.S. counterparts.

In Canada, the federal government may assist in the financing of activities within manufacturing industry either directly or indirectly. The roles played by the Industrial Development Bank, for example, take the first approach, while those played by the Department of Finance take the second one. In the provinces, the roles and responsibilities of the agencies vary considerably. Most provide "fourth line" loans rather than grants to companies unable to raise money from their own resources, from the private financial institutions, or from federal agencies. At the time of writing, British Columbia is the only province without an agency of this kind.

The Industrial Development Bank (IDB) provides several thousand small loans to several thousand small and medium-sized companies every year. About one-quarter of the loans go to manufacturing companies. The Bank does not consider itself to be a source of venture capital. The Canada Development Corporation (CDC) has only recently begun its operations and no investment pattern has been established. It seems more likely, however, that the Corporation will support large manufacturing corporations rather than small ones, that it will support a company rather than a new technical development which the company may be making, and that it will participate in venture capital companies rather than in venture situations directly.

The climate for small manufacturing companies has not been as hospitable in Canada as it has in the United States. As suggested in the first section of these "Conclusions", history, geography and psychology, among other things, have combined to make Canada different from the U.S. in many ways. But one basic difference between the two countries is that Canada is not as fully committed to the continuing development of the manufacturing industry as is the United States. A more positive attitude towards manufacturing, either for it, or against it, needs to be established

in this country in order that manufacturing companies of all sizes will know where they stand.

Small company managements often have problems dealing with the federal government, especially in Ottawa. To many companies and individuals, the provincial and local governments are more accessible and provide more relevant advice and assistance. Over the last decade or so, as manufacturing and technology-based innovation have moved more and more into the national spotlight, the financial, advisory and other federal, provincial and local government programs have been developed haphazardly. A more effective division of labour between the three levels of government needs to be made.

A relatively large amount of uncommitted venture capital is available in Canada, but the conditions under which venture support is given are stringent and, since venture financing is normally done on a "package" basis, venture companies normally provide only part of the financing required. The venture "business" is a new one in Canada, and for this reason, is relatively under-developed. Each venture company has its own individual approach to risk in venture situations and will only support a handful of them in any one year. Venture capital is certainly not available to everyone who might conceivably make use of it.

It is by no means clear that governments in Canada should become involved directly in the venture capital business. Indeed, only Ontario has an experimental program at the present time. Federal involvement in the United States is indirect, by means of support for Small Business Investment Corporations, for example. Governments also participate in high-risk ventures through the tax system and by means of assistance programs of many kinds. Larger companies participate in different ways. They may, for example, "spin-off" manufacturing subsidiaries to produce new technology-based products, or they may "spin-off" their own venture capital subsidiaries. The lesson that is fairly clear from U.S. experience with high-risk ventures is that the actual work of negotiating the initial financing of these ventures is best left in private hands.

The conclusions relevant to Chapter 7 are as follows:

29. From the point of view of manufacturing industry, there exists in Canada a division of labour among the various types of institutions in the financial system. The degree of commercial risk and the statutory limitations are two of the principal factors that have brought about this division. The roles and responsibilities of the government institutions within the financial systems are not always motivated by economic or commercial factors. Nevertheless, there are certain activities associated with the system that governments should not undertake. One of these is the venture capital business. But a proportion of Canada's capital needs have always come from abroad, with the result that the financial system, the risk structure, and the statutory limitations have all changed too slowly.

30. The 1967 amendments to the Bank Act extended the business possibilities for the chartered banks and increased the competition within the financial system as a whole. But the ability of the banks and "near banks" to deal imaginatively with the technological aspects of new commercial proposals are limited at the present time. They should be expanded.

31. Small companies are essential for the well-being and innovative capacity of manufacturing industry. However, their requirements from the private sector of the financial system and from government programs of all kinds are not the same as those of larger companies. These differences are not sufficiently well recognized. There should be a better division of labour between the federal and provincial governments with regard to providing assistance to small companies, a division which gives the provinces the dominant role. The overall aim of the private and public sectors should be to give most small companies opportunities to grow larger.

32. The venture capital business is a small, intimate business which should stay in private hands. The business has only recently emerged in Canada, and is in the process of development. Venture capitalists work most effectively with client companies near at hand.

33. Government help for venture capital activities should be given indirectly through the tax system and through a limited number of public institutions. Governments should also make it easier for private institutions within the financial system to participate indirectly in high-risk ventures and for larger manufacturing companies to "spin-off" new venture capital companies, as well as specialized subsidiaries, of their own. The difficulties involved in the "spin-off"and "technology transfer" processes from government laboratories have also been seriously underestimated in the past. Incentives are needed to encourage departments and agencies to participate.

34. Merchant banking on the European model is non-existent within the Canadian financial system. Institutions of this kind should now be encouraged to develop in this country. The multi-function flexibility that they should bring to the system will be of particular value to small and energetic manufacturing enterprises which wish to expand their activities.

Chapter 8

In the past, the federal and provincial governments have been much more concerned with encouraging the export of manufactures than they have been with a domestic substitution for manufactured imports. The major exceptions to this rule have been the Canada-U.S. Automotive and Defense Production Sharing Agreements. The United States has been the source of the majority of Canadian manufactured imports as well as the major export market. At the time of writing, Canada-U.S. trade generally and the two bilateral agreements are under negotiation by the two federal governments.

Since August 15, 1971, both industry and government in Canada have been especially concerned about the country's lack of ready access to the world's major markets for manufactures and about the vulnerability of domestic manufacturing to competition from abroad. The provinces have become increasingly conscious of their limitations of raw material and human resources. But even the major manufacturing provinces, Ontario and Quebec, have become more protective towards manufacturing companies and both have established programs to help them compete against imports. Meanwhile, the other provinces are attempting by means of federal programs and programs of their own design to increase and

diversify their manufacturing capabilities in an international trading environment that, for the past few years, has been increasingly protectionist. During the 1960s the relative increase in Canada's exports of manufactures was, among the industrialized countries of the world, exceeded only by Japan. Nevertheless, it is in manufacturing that Canada's lack of reputation has reacted negatively on the country as a whole.

In the past, the staple- and raw materials-producing provinces have brought pressure to bear on the federal government to have these primary products become, and remain, the principal Canadian exports. Also, the federal government has consistently worked towards the liberalizing of trade for all commodities during negotiations under the General Agreement on Tariffs and Trade (GATT). But the lessons learned from the protective steps taken by the governments of the United Kingdom, the United States and Japan over the years to build their own manufacturing capabilities have not been lost on those in the private sector, which has become concerned about the recent general decline in the fortunes of manufacturing in this country. This concern has been reinforced to some extent by the impending entry of the United Kingdom into the European Economic Community and by the consequent disappearance of the Commonwealth Preference Tariff.

With the general decline in tariff barriers to trade, non-tariff barriers have assumed more importance. These barriers have always been present, but less visibly so when tariffs were higher. The problem has become sufficiently important that GATT and other international bodies are currently examining them and attempting to measure their effects. There are literally hundreds of non-tariff barriers ranging from import quotas, through government procurement and tendering prohibitions, to marketing and labelling requirements. Some non-tariff barriers are genuinely required to enforce standards and protect people, but others are applied solely and simply to discourage imports from abroad or to perpetuate some form of commercial mischief. The erection of a non-tariff barrier by one country can often bring retaliatory action from others.

Perhaps the most harmful non-tariff barriers are those that are self-inflicted by a government on its own domestic industry in the form, for example, of unnecessarily heavy regulatory and administrative burdens or of unskilled negotiation in trade matters with other countries. In practice, however, the country that has few non-tariff barriers or usually low tariffs is in a relatively weak position in relation to other countries having more of them with which to bargain bilaterally multilaterally.

The conclusions relevant to Chapter 8 are as follows:

35. International trade in manufactured goods is not an activity for the fainthearted.

36. The twin factors of growing international protectionism and the problems associated with the U.S. economy have increased the barriers being faced by Canadian manufacturers wishing to enter or maintain their positions in export markets. Elements of manufacturing in Canada will still require special protection from time to time, especially promising technology-based "infant" industries.

37. Governments in Canada have been more active in the encourage-

ment of exports in recent years. Many different measures and programs have been used to provide this encouragement. But the problems of import substitution also need increasing attention. Consultations between governments and increasingly cooperative efforts in which the special needs and opportunities of the provinces and of particular industry sectors are given due weight are required on a regular basis.

38. Tariff and non-tariff barriers to entry to the Canadian market should only be lowered on a bilateral or multilateral basis. Canada's power to bargain by means of these barriers should not be undermined for short-run advantages.

Chapters 9 and 10

The implications of certain legal but non-financial changes on the process of applying new technology in manufacturing industry have been examined in the report by means of four federal examples: the amended Canada Labour Code; the proposed new Competition Act, designed to replace the present Combines Investigation Act; the Industrial Design Act; and the Patent Act. The two latter Acts were examined by the Ilsley Royal Commission in the late 1950s and by the Economic Council of Canada in the late 1960s. The Economic Council also studied competition policy in Canada at the request of the federal government and reported in 1969. The Council had previously published a statement on manpower adjustments to technological and other change. These four Acts by no means exhaust the study of the impacts and implications at the interface between the law, technology and manufacturing but they are illustrative and provide a beginning.

The *Canada Labour Code amendments* were actually amendments to the former Industrial Relations and Disputes Investigation Act. Two bills were introduced. The first one, C-253, was given first reading in the House of Commons in June 1971 but was subsequently withdrawn. The second, C-183, received first reading in March 1972 and the approval of the House and Senate three months later. The Amendments apply only to those half-million or so employees of the federal government. The remainder of the labour force is subject to provincial jurisdiction.

The examination in this study was limited to those sections of the two bills relating to the introduction of technological change. The federal government accepted the principle that, under certain conditions, the introduction by a company of a *significant* technological change likely to affect the conditions or security of employment of a *significant* number of employees should be negotiable and that, if circumstances warranted it, an existing contract should be re-negotiated. In Bill C-183, the government modified the stand it had taken in the earlier bill but retained the principle intact. The administration of the new law is to be the responsibility of the Canada Labour Relations Board whose composition and terms of reference were also changed by the bill.

Perhaps the most fundamental difficulty with both bills has been the prominence given to *technological* change. This is only one of many different kinds of change that may affect the terms, conditions and security of employment of members of the labour force. The bills also made mid-

contract bargaining possible, something that had not been generally practised in North America, and they appeared to stand in isolation from other recent measures introduced by the federal government to encourage technology-based innovation in the manufacturing industry. They invited speculation that the grounds for mid-contract negotiations would be extended in the future and they would be used by foreign interests against Canadian employees in bad economic times. They ruled out the possibility that the federal government would adopt more broadly-based "advance notice" legislation of the kind adopted by Ontario and Quebec. It seems clear, however, that the federal government would prefer that the provinces follow its lead, but so far this has only happened in Saskatchewan and Manitoba. The two bills were also in conflict with views expressed by the Economic Council. As it now stands, the new "technology change" provisions would seem to perpetuate the labour-management conflict instead of making provisions for the better service of the mutual interests of the two parties.

The *proposed new Competition Act*, Bill C-256, was given first reading in the House in June 1971 on the understanding that it would be withdrawn for further study. The bill owed something to the work of the Economic Council which had recommended a new approach to competition policy legislation involving a mixture of civil and criminal law, with the objective of furthering the interest of the Canadian consumer in an efficiently working economy. Once again, Bill C-256 gave the impression of having been conceived and brought forward in isolation from a coherent federal policy or strategy for the manufacturing industry.

Of particular concern in this study was the role and operations of the proposed Competitive Practices Tribunal, whose proceedings were to be under civil law – the field of provincial jurisdiction. The Tribunal was to replace the present Restrictive Trade Practices Commission. It was intended, among other things, to have power to hear applications for export and specialization agreements, to approve certain kinds of mergers, to hear evidence relating to the contravention of provisions relating to price discrimination, to examine problems in its area of interest, and to give advance rulings on proposed mergers, etc. The proposed Tribunal, and the new Act, would have been able to help as well as to hinder innovation in manufacturing in a number of ways. For example, it could help to reduce fragmentation within specific industry sectors and it could encourage exports. On the other hand, the Tribunal's views on fragmentation and on effective ways to encourage exporters might be too wide or too narrow to be of much assistance to the individual companies. In other words, the Act itself set the new scene but left the Tribunal, without proper terms of reference, to provide the performance.

The *Industrial Design Act* is one of those pieces of legislation that should be more important and effective, but is not. The Royal Commission and the Economic Council have both, within a decade or so, examined the Act and made recommendations. Both said that the Act should be retained and improved. The question of revision, however, remains very much in limbo. The Industrial Design Act suffers from two particular disadvantages: the registration of a design for protection is presently based on form

and not on function; and the Patent Act, which is related to function, is considered to be the very much bigger brother of the Design Act.

Neither of the two reports provided the needed answer to the overall problem of revising the Act. Nevertheless, this task must be undertaken and the Act improved and strengthened for the encouragement of design competence in Canadian industry – something that the federal government is already supporting in various ways through the Department of Industry, Trade and Commerce. The Department of Consumer and Corporate Affairs administers the Act, but has no particular mandate to encourage either design or manufacturing in Canada. This point may also be made with regard to the administration of the Patent Act.

The analysis of the *Patent Act* in this report was also focussed on a number of important recommendations by the Royal Commission and the Economic Council. Revisions to the Act have been rumoured since the Council reported in January 1971, but no new legislation has so far been introduced. The Patent Act is one of the most relevant to the process of innovation in manufacturing industry and one through which the federal government may add a substantial degree of encouragement or frustration to technological innovation in this country. At the present time the Patent Act is weak and ineffective from the points of view of the *Canadian* inventor and innovator. But, in practice, it ought to help compensate for the openness of the Canadian economy, for the relatively large degree of foreign ownership among high-technology companies, and for the propensity of Canadians to want U.S.-style products.

The Royal Commission took a largely mechanical/administrative approach to the problem of revising the Patent Act, while the Economic Council was concerned about the consumer, competition, and economic efficiency. Both agreed that the Canadian system should be changed from one in which a patent award is made to the first inventor to one in which the award goes to the first person to file an acceptable application. At present, only Canada, the United States and the Philippines operate "first-to-invent" systems.

The adoption of the Royal Commission's recommendations would strengthen the system a little, but the adoption of several of the Economic Council's recommendations would weaken it to the point of uselessness. The recommendations in question are related to the importation of patented articles or articles made by patented processes, to the conditions for the award of compulsory licences, and to the method for setting the basic royalty rates to be paid when the compulsory licences are granted.

The following conclusions are relevant to Chapters 9 and 10:

39. The amended Canada Labour Code has been designed to make it possible for federal employees to cushion the adverse effects of significant technological changes on the security or conditions of employment by means of collective agreements. Technological changes are, however, only one of several kinds of changes that may have adverse effects on employment.

40. The new Labour Code legislation also permits mid-contract bargaining over technological changes – and possible strike action – as an option in certain circumstances. By so doing, the law has opened up an area of uncertainty in the business of manufacturing, associated not only with the introduction of technological changes, but also with regard to the

possibility that mid-contract bargaining over other kinds of changes will be sanctioned in the future. The legislation has also reinforced the view that conflict is inevitable in labour-management negotiations.

41. The long-term practical results of the new Labour Code provisions with regard to technological change will not be known for some time. These results could significantly discourage innovation in manufacturing industry in Canada, especially if all of the provinces adopt similar legislation. In the shorter-term – and insofar as they may discourage technology-based innovation in manufacturing industry – the new Labour Code provisions seem to stand in isolation from the present policies and programs of federal departments and agencies such as Industry, Trade and Commerce, Finance, and the National Research Council.

42. The proposed new Competition Act included features that might help make manufacturing in this country more efficient. Nevertheless, the Act also seemed to stand in isolation from the federal government policies and programs in other areas affecting manufacturing such as foreign ownership and centralized purchasing. While the new Act took an innovative but very large step forward in the field of regulation, a series of smaller steps over a longer period of time, reinforced by working experience, might have been the more effective way in which to proceed.

43. The Competitive Practices Tribunal proposed in the Competition Act appeared to have enormous power over manufacturing industry, but it was given no guiding philosophy and no precise terms of reference. It could therefore be haunted by precedents of its own making. Its existence might also be challenged on constitutional grounds. The Tribunal's proposed powers and duties should be carefully re-examined.

44. The present Industrial Design Act provides for the protection of industrial property that is an important and integral part of the process of innovation. The Act should be retained, but its provisions and protection should be clarified and strengthened with the interests of Canadian designs and designers in mind. However, the major studies made in recent years and associated with the Industrial Design Act have not provided sufficient guidance on how to clarify and strengthen the Act to meet the needs of Canadian designers in the future. A further study should therefore be undertaken with the full cooperation of the design profession.

45. For some industry sectors, the Patent Act represents one of the most effective measures with which the Government of Canada can encourage research, invention and innovation by Canadians in this country. But the present Act is weak and provides inadequate encouragement. It should be revised and strengthened as soon as possible.

46. The adoption of the recommendations of the Ilsley Royal Commission with regard to the revision of the Patent Act would have added some strength to it. However, the three recommendations made by the Economic Council of Canada covering permissible importation, compulsory licencing and licencing royalty rates would substantially weaken any incentive provided by the Act.

47. The administration of the Industrial Design and Patents Acts should be moved to a department such as Industry, Trade and Commerce whose principal roles and responsibilities are related to the encouragement of manufacturing activities and of technology-based innovation.

Postscript

This "Postscript" has been added in order to make a number of additional, broadly-based observations related to the study as a whole, and in order to identify three aspects of the effective management of the innovation process which deserve follow-up study by the Science Council or by a more appropriate agency.[1] Its existence will also permit one final, philosophical "wrap up" comment to be made.

Progress Towards an Industrial Strategy

In its own report, *Innovation in a Cold Climate*, the Science Council's principal conclusion was, in part, as follows:

"The federal government, in collaboration with the provincial governments, should develop a coordinated industrial strategy which recognizes the significance of innovation and gives priority to industries of high innovative potential. The strategy should be a national one, and should be incorporated in the terms of reference to all government departments and agencies ...."[2]

It is therefore pertinent to draw attention to the following paragraph which was included in the Throne Speech read by the Governor General at the opening of the new Session of Parliament on February 17, 1972. His Excellency said:

"Our economy is dependent, as are the economies of all industrialized countries, on the imagination of entrepreneurs and their use of research and innovation, as well as upon a rational industrial strategy. You will be informed in months to come of government proposals for improved policies in these areas which will be of immense importance to the long term development of our country: of policies for the use of science and technology designed to contribute not only to industry but to the qualitative improvement of the life of Canadians, of an industrial strategy prepared for the peculiar character of the Canadian economy. The basis of each will be spelled out as the session proceeds."

This statement should have provided manufacturing industry in this country with some reassurance that its problems had not been forgotten. This statement also seemed to represent a change in the federal government's general policy towards manufacturing. In recent years, this policy has appeared fragmented, if not identifiably inconsistent or anti-industry.

The principal elements of discouragement for manufacturing companies in the last year or so have undoubtedly been generated to a significant extent by the federal government's policies, by the continuing jurisdictional and other difficulties involving the federal and the provincial

[1]At the time of writing, the federal Department of Industry, Trade and Commerce, for example, has an extensive study of aspects of the innovation process in progress.

[2]Science Council of Canada Report No. 15, *Innovation In a Cold Climate: The Dilemma of Canadian Manufacturing*, Information Canada, Ottawa, October 1971. p. 39.

governments, and by the generally uncertain market situation. But even if the recently expressed federal concern for manufacturing had been followed up by a number of policy changes on the part of the government, not everyone would agree that the way is now clear for a new surge of manufacturing activity which will draw strength and hope from the national industrial strategy. It is significant that even the supporters of the change in emphasis towards manufacturing have been restrained. For example, Michael Barkway wrote:

"Those of us who were hooted as heretics under the Howe orthodoxy are bound to applaud the effort that is at last being made to find a more secure basis for the Canadian economy. But I for one am a little nervous about sanctifying the new orthodoxy. It is still true that 'we know in part and we prophesy in part'."[3]

Again, not everyone will agree that manufacturing activities can or should be allowed to *grow* in this country. Some critics feel that the penalties to be paid by the environment and by society generally will be too high. Others draw attention to the limited powers of the federal and the provincial governments to dissipate the effects of the extra-territorial jurisdiction of other countries – and of the United States, in particular. Still others point to the fact that, while governments in Canada have a large measure of control over domestic markets and what is sold in them, right of access to foreign markets is generally beyond their jurisdiction in the absence of bilateral or multilateral agreements. And, even if these agreement are satisfactorily concluded, Canadian companies still have to *sell* their products abroad in competition with domestic firms and with other potential importers.

There are other serious problems. For example, not only governments are moving targets. So also are markets, technologies, industrial opportunities, and the activities of foreign governments. An industrial strategy must therefore have a number of built-in time scales and objectives as well as alternative courses of action available for when broad changes in circumstances occur. An industrial strategy, even in a limited enterprise system such as exists in Canada, must also allow both manufacturing industry and individual companies the scope to demonstrate initiative and enterprise within the strategic framework; and its cost should be within the bounds of what Canada and Canadians can afford. The new strategy should not be the source of regimentation but, instead, the basis for action and the source of strength from which to respond to pressures from inside and outside the country. And it should not be ordained, from above, by the federal government.

Eventually, it may be possible to determine, by means of an industrial strategy, which industry sectors should be allowed to grow and which to decline in importance. The initial reaction to the suggestion that a Canadian industrial strategy should be articulated has led already to speculation about the sectors to which the growth-decline or life-death decision should

[3]In the *Financial Times*, Montreal, January 31, 1972.

be applied. Perhaps it is too early to go this far. But perhaps there is a step in the right direction that should be taken with little loss of time, a step which this present study may have helped to put into perspective.

As has been shown in the essay chapters, all three levels of government in this country have sought to accomplish many things through the complex accumulation of rules, regulations, assistance programs, taxes, and other measures. Some of these help manufacturing activities, while others frustrate them. Some of the measures have been designed to dissipate the effects of others, some to raise revenues to pay for new but unnecessary programs. It would seem that if certain negative measures were to be removed, some of the corresponding corrective measures could also be wholly or partially removed. For example, as the total tax burden on companies is reduced, the need for industrial R & D assistance programs should become less pressing.

It is still not clear that, given the leadership/co-ordination role of the federal government, a viable *national* industrial strategy can be articulated and implemented in Canada. For one thing, the federal and provincial governments and their respective experts have a great deal of homework to do. A Minister in the Government of Quebec has indicated, for example, that he and his colleagues have had some positive thoughts about a provincial industrial strategy.[4] Such a strategy need not necessarily conflict on all points with the federal strategy or with one designed in Ontario, Alberta or Nova Scotia. But all of the governments concerned need to gather their facts and arguments together and to talk about them. Even more important, the national and provincial industrial strategies for manufacturing need to be linked with the corresponding strategies in such areas as resource or socio-economic developments.

The reaction of the general public, as voters, to the call for a national industrial strategy is still untested. The term "industrial strategy" itself means different things to different people. To some, it is simply the latest "buzz-word" out of Ottawa. The political and practical difficulties associated with the articulation and initial implementation of an industrial strategy cannot be under-estimated, nor can the political and practical consequences of failure. Collectively, these difficulties and these possibilities for failure are serious long-term impediments to technology-based innovation in manufacturing industry in this country. And, as one eminent Canadian, John J. Deutsch, noted recently:

"You won't find, some bright morning, a new industrial strategy on your desk. Before Canadians accomplish what they want, there will be a whole series of issues to be dealt with involving vast compromises, values to be reconciled – and vast debate."[5]

It is to be hoped, nevertheless, that the debate to which Dr. Deutsch referred will not go on for ever.

[4]The Honourable Raymond Garneau, Minister of Finance, at the Annual Meeting of the Grocery Products Manufacturers' Association in March, 1972.

[5]In an address to the Grocery Products Manufacturers' Association of Canada, quoted in *The Financial Post*, Toronto, April 1, 1972.

The Information Problem

Earlier in this present study, certain aspects of government:industry communications were analysed and a number of conclusions were subsequently drawn. But in addition to any *communications* problem, each side of the interface has its own *information* problem. The following are some comments on the government side of this second problem.

The study has been able to analyse only the tips of the structural, jurisdictional and regulatory icebergs associated with the three levels of government in Canada. Nevertheless, the complexity of the overall operation of the government sector in this country should be clear enough. It should also be clear that divisions of labour and overlapping interests co-exist, that the size and some of the physical characteristics of the country can place barriers in the way of information flows, and that regional aspirations and jealousies can have the same effect. All of these things have been taking place in an environment in which some aspects of living are changing very rapidly, others more slowly, and some not at all. Personal expectations are now perhaps higher than ever before, but not all of these are associated with the accumulation of wealth. Developments of these kinds have placed additional pressures on governments and on their need for information.

The information problem for the government sector has inward and outward flow aspects and sub-problems affecting the two-way flows between the senior and junior levels of governments, between departments, between divisions and sections, and between individuals. Information systems and other communications devices have been developed to help cope with information flows. Edicts have been issued instructing public servants on information flow procedures. Screening mechanisms have been set up. Committee structures have been built, report writing is commonplace, but not all of the information that should be moved around is *or can be* moved around.

The business of government in Canada has become so large and complex that it is difficult to see how, at the senior levels in the larger jurisdictions in the public service in particular, the sheer size of the information problem can fail to impede the effective development of policies and programs. The governments in Canada must, therefore, develop their own information flow systems. No one will do this for them.

The Timing Problem

There have been many examples of politicians and public servants acting with too little determination and too late in passing legislation, in writing regulations, in approving incentive program applications, and in the many day-to-day tasks of the departments and agencies.

The time factor is highest in importance in the industrial sector where delivery deadlines and payrolls must be met. Time pressures seem to be least disruptive in the academic environment and, for the most part, this is as it should be. Governments seem to fall between these two extremes to a greater or lesser extent, depending on the issue at stake. They may move quickly in times of crisis. They may also have good reasons for making slower progress when complex issues and public participation are involved,

and on those occasions when time-consuming negotiations are required. On balance, government machinery in Canada still seems to respond too slowly. As one unknown author once wrote: "The opportunity of a lifetime only lasts for the lifetime of the opportunity". Nobody will wait for ever for Ottawa or Toronto or Victoria to make up its mind.

The Problem of Objectives

For some years now, Canadians have been told that theirs is the fastest growing labour force among the developed countries of the world. A combination of circumstances has currently compounded the problem of creating jobs for new entrants first with the task of reducing undesirably high rates of unemployment among the existing labour force and then with the task of re-deploying an undetermined number of people both within and outside the labour force. And over and above these factors are the rural-urban, Maritime-Ontario, and other population shifts that are still continuing.

Leaving re-deployment aside, the magnitude of the conventional employment problem over the next few years can be seen from a little arithmetic. According to figures given recently by Dr. Sylvia Ostry, around 2.6 million additional jobs will have to be generated by the Canadian economy over the decade of the 1970s if the new labour supply is to be absorbed and if acceptable levels of unemployment are to be achieved.[6] The average rate of generation of the new jobs will therefore be around 260 000 each year throughout the decade.

Canadians have also been told that a high percentage of new jobs ought to be forthcoming from the manufacturing industry sector. For example, in its study published early in 1971, the Atlantic Development Council called for the creation of 170 000 additional jobs in the Atlantic provinces during the decade 1971–1981. The Council concluded that approximately 50 000 of these – or 5 000 a year – ought to be found in the manufacturing sector.[7] This was, in fact, a key target in the strategy developed by the Council. In the light of recent national employment figures, the 30 per cent or so of jobs allocated by the Council to manufacturing is rather high. Nevertheless, applying this percentage to the average annual growth figure of 260 000 will place the average number of additional jobs required each year in manufacturing in the country as a whole at 78 000. Assuming no unused capacity and a cost of $20 000 in capital expenditures to create each job, the average annual cost of job creation to the manufacturing sector will be around $1.6 billion.

The assumptions and categorical imperatives that lead to these kinds of numerical results may be both logical and necessary but may, equally well, be far from the mark in terms of eventual performance. The reverses of the past two years will certainly place additional performance burdens on the remaining years of the present decade if the original objectives are to be met. However, from the kinds of impediments originating in the

[6]In the *Financial Post*, Toronto, October 16, 1971. Dr. Ostry is now Chief Statistician of Canada.

[7]*A Strategy for the Economic Development of the Atlantic Region, 1971-1981*, Atlantic Development Council, January 1971. p. 5.

public sector alone that have been examined in this present study, and from the accumulation of handicaps that these impediments are placing on the ability of individual companies within manufacturing industry to perform competitively, it should be clear that the ten-year job creation objectives are already in jeopardy. Significantly, however, the partial or complete removal of impediments to technology-based innovation in manufacturing will not, by themselves, ensure that employment objectives are met.

As go the employment objectives, so also may go the production, sales, profitability, and the other objectives normally pursued by manufacturing industry and those other, newer, social and resource-conservation objectives which industry is now being obliged to achieve.

Areas for Further Study

This present study has only touched upon three important aspects of the management of innovation in industry that deserves further study in some depth.

The *first* of these is concerned with what might be called the "costs of compliance". It is necessary to know not only about the revenues lost by companies to the various forms of taxation, but also to know what it costs companies to comply with the many laws and regulations administered by the three levels of government that influence the conduct of the business of manufacturing. These costs will vary between companies on the basis of size, between industries, and between geographical locations. Some will be desirable expenditures, others will be wasted.

The *second* area for study concerns the policies, actions and attitudes of labour organizations and their memberships with regard to innovation and technological change. It is important, for example, to understand the extent to which attitudes vary in "high-technology" and "low-technology" trades, how they are influenced by having a U.S.-based or a Canadian-based "parent" union, and how they have changed with time and circumstances.

The *third* area is more difficult to study because it is less tangible and involves the political art of compromise and the economic art of "trading-off". In real life – as opposed to the ideal situation – compromises and trade-offs are frequently used to overcome barriers to the achievement of specific objectives. Some of the results of these situations involving the innovation process have been analysed briefly in this study, for example, "Make-or-Buy" decisions. It will be useful to examine the characteristics of some of these situations in greater detail in order to identify factors likely to influence the outcome of future trade-offs.

Finally ...

The problems associated with technology-based innovation in *any* country are basically "people" problems. Individual people have ideas, others turn the ideas into products, to be bought by still others in the market places. Those who regulate the innovation process, those who resist regulation, and those who insist on further regulation are people. Canadian attempts to innovate successfully using technology would be enhanced

enormously, *if* the various groups of people in this country who conceive, make, regulate, or object could agree on those areas in which they have mutual interests, and on effective methods of communication and information transfer, and *when* the grounds for conflict, mistrust, and lack of confidence are identified and resolved. This kind of solution is utopian because people never have, and probably never will, agree on everything. But, through failure to resolve particular disagreements to the point at which firm decisions can be made, unnecessary barriers may be erected between people, and unnecessary impediments to more effective innovation thereby put in place. Canada, and Canadians may also miss some more important opportunities.

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