Image Cover Sheet

CLASSIFICATION	SYSTEM NUMBER
UNCLASSIFIED	19406

TITLE

THE DEFENCE PROGRAM AND NATIONAL INDUSTRIAL DEVELOPMENT \(A BACKGROUND PAPER FOR DEFENCE PLANNERS\)

System Number:

Patron Number:

Requester:

Notes:

DSIS Use only:

Deliver to: FF

DEPARTMENT OF NATIONAL DEFENCE

CANADA

DEFENCE RESEARCH ANALYSIS ESTABLISHMENT
DIRECTORATE OF STRATEGIC OPERATIONAL RESEARCH

REPORT NO. DRAE 34

THE DEFENCE PROGRAM AND NATIONAL INDUSTRIAL DEVELOPMENT (A BACKGROUND PAPER FOR DEFENCE PLANNERS)

by

C.F.W. POUND

This report does not necessarily represent the views of the Canadian Forces or of the Defence Research Board.

CAUTION
This information is furnished with the express understanding that proprietary and patent rights will be protected.

OTTAWA APRIL 1973

DEPARTMENT OF NATIONAL DEFENCE

CANADA

DEFENCE RESEARCH ANALYSIS ESTABLISHMENT
DIRECTORATE OF STRATEGIC OPERATIONAL RESEARCH

REPORT NO. DRAE 34

THE DEFENCE PROGRAM AND NATIONAL INDUSTRIAL DEVELOPMENT (A BACKGROUND PAPER FOR DEFENCE PLANNERS)

by

C.F.W. POUND

This report does not necessarily represent the views of the Canadian Forces or of the Defence Research Board.

CAUTION

This information is furnished with the express understanding that proprietary and patent rights will be protected.

OTTAWA APRIL 1973

ABSTRACT

Recent indications are that allocations for Defence equipment acquisition programs will not be decided on the basis of military factors alone but also in consideration of the benefits accruing to national policy goals for social and economic development. The promotion of industrial productivity, emphasizing the growth of Canadian high technology manufacturing and strengthening of the process of industrial innovation, and regional economic development, are important issues. This wider frame of reference imposes increased analytic complexities for Defence planners in formulating programs for central government review.

The paper explores a number of the environmental factors which influence industrial growth in Canada. These include the dominance of the United States in Defence technology, uneven rates of economic growth and the influence of multinational firms in Canadian industry. Canadian factors include the environment for technological innovation, attitudes of Canadians, the government procurement process, and the conflicts which arise between policies for industrial expansion and those for the elimination of regional economic disparities.

While Defence equipment acquisition programs are substantial in value and involve considerable high technology content there is a limited Canadian manufacturing capability and relatively little potential for the growth of industry in economically disadvantaged regions. It might be better from a national point of view to use these programs as an indirect instrument, that is, to import the equipment under a trade arrangement which guarantees offsetting exports of equivalent value, labour and technology content in production lines in which Canada enjoys a greater technological expertise.

ANALYSE

Selon des indications récentes, les allocations pour les programmes d'acquisition d'équipement pour la Défense ne seront pas autorisées en fonction des seuls facteurs militaires, mais aussi en considération des bénéfices revenant aux objectifs d'un plan national de développement économique et social. Le développement de la production industrielle (qui met l'accent sur l'accroissement de la technologie manufacturière très avancée au Canada et renforce le processus d'innovation industrielle) et le développement régional constituent des points importants.

Les spécialistes en planification de la Défense, se voient imposer, du fait d'un champ de références accru, une croissante complexité dans l'analyse destinée à la mise sur pied de programmes appelés à être révisés par le gouvernement central.

L'étude explore un certain nombre de facteurs d'environnement qui influent sur l'expansion industrielle au Canada, notamment la prédominance des Etats-Unis en matière de technologie de la défense, les taux inégaux d'accroissement économique et d'influence de sociétés à ramifications internationales sur l'industrie canadienne. Les facteurs canadiens comprennent l'environnement pour l'innovation technique, la réaction de la population, le processus d'acquisition par le gouvernement, et les conflits qui naissent entre les plans d'expansion industrielle et ceux destinés à éliminer les disparités d'économie régionale.

Si les programmes d'acquisition d'équipement pour la Défense ont une valeur substantielle et nécessitent une teneur considérable en technologie poussée, il y a au Canada une maigre possibilité d'accroissement pour l'industrie dans les régions défavorisées. Peut-être serait-il préférable, du point de vue national, d'user indirectement de ces programmes, en d'autres termes, importer l'équipement requis, selon des accords commerciaux qui garantiraient en contrepartie l'établissement d'exportations égales en valeur, en travail et en technologie dans la ligne de production où le Canada jouit de la supériorité technologique.

TABLE OF CONTENTS

THE DEFENCE PROGRAM AND NATIONAL INDUSTRIAL DEVELOPMENT
(A BACKGROUND PAPER FOR DEFENCE PLANNERS)

CHAPTER 1

DEFENCE PLANNING AND NATIONAL OBJECTIVES

The period of the 1960's has produced in Canada, and also in other industrially mature nations, significant and fundamental changes and challenges both for policymakers and for the policy-making process. Confronted with strong pressures from an increasingly perceptive, active and vocal society, governments are being forced gradually to assume more active and positive roles in responding to the demand for satisfaction of range of societal objectives extending well beyond that of material satisfaction alone. Present major preoccupations of governments are beginning to reflect changes in the criteria by which society measures satisfaction. For an increasing portion of the population national prestige is measured in terms of social development and 'quality of life' achievements rather than in terms of the glories of international power-base politics. Government goals now tend to be somewhat more domestically oriented and centre upon economic policies for industrial growth, control of inflation and international payments balances, expansion of trade and commerce, and alleviation of internal regional economic and

social disparities. Nationalism is a key issue. Social programs centre around development of human resources, health care delivery systems, education, transportation, and environmental protection.

As the social system has achieved higher levels of material benefits at least for the majority of society, these new 'quality of life' demands have also gained strength to assume a degree of urgency which governments will ignore at their peril. At no time in history have these societal goals been better delineated or more forcefully articulated. Their range is considerably broader than that of the factors which have traditionally determined government programs up to this time. As a consequence modern government policies have to be formulated in a much broader framework than ever before. Accompanying this additional complexity is the demand for a greater harmonization between a multiplicity of interdependent objectives and the consequent policies for their achievement so that the programs adopted to benefit one objective do not at the same time hold up the achievement of others (the Pareto Optimum).

Whether or not the machinery of government is at present adequate to this new challenge is a matter of primary concern. Traditionally democratic governments have not been acclaimed for their perception in anticipating and responding rapidly to fundamental environmental changes and are rather inclined to lean heavily upon the institutions which have been successful in the past. The traditional economic institutions which have been adequate in a less complex society now begin to reveal themselves to be less than adequate in a more complex environment. As an example the institutions of free enterprise and private initiative, as foundations of capitalistic systems, have been adequate to provide the material demands of the majority in more or less economically mature societies but it is widely recognized that in their present form, along with other elements of vintage economic theory, they will prove inadequate to satisfy the broader range

of future societal demands. Gross national product alone is an insufficient measure of the well-being of society. The extent to which commerce and industry should be free to pursue its own destiny through free enterprise and private initiative without social responsibility, and the perpetuation of classic principles of non-interference (except to protect the public from specific detrimental acts) on the part of government now become key issues with which modern national policymakers must grapple. This is not to reject capitalism and its institutions outright but is to state the need for modernization of these institutions so that they are more in harmony with the times and the demands of the society which they are to serve. Traditional attitudes of governments wherein the corporation is a free association of individuals with a right to exercise power not generally subject to public control will not suffice for the 1980's. The prospects are that free enterprise will be somewhat less free.

There is on the part of society a growing perception that the marginal social cost of material production often exceeds the marginal material productivity gain, and that there is generated more than an equal stress upon the environment and upon the structure of society itself. This constantly growing deficit in social infrastructure and means through which industrial production will be utilized to reduce the deficit is the vital issue in modern economics. The new role for commerce and industry is to achieve a sufficient level of productivity and profitability that when its debt in terms of these social goals has been met [redacted] still remain sufficient for its own perpetuation and [redacted] This challenge to industrial productivity is paralleled by a challenge of equal magnitude for government to identify key national objectives, adopt 'best' social programs, eliminate preventable waste of national resources, and to direct the course of national industry and its growth in harmony with the public interest. This is to say that national governments rather than responding to events as they have been prone to do in the past must take steps to control their environment. The challenge to

science, industry and commerce, and to government is perhaps unequalled in any recent test of capitalism and the outcome may be the foremost determinant of the future structure of society itself.

As governments begin to assume more and more responsibility for the achievement of social and economic goals the role for private enterprise is changing as are the relationships between government and business in general. These objectives cannot be achieved without benefit of an intimate, open, and cooperative relationship. Gradually industry is being persuaded to assume some of the social cost of its production. Implicit in this new role for government is the existence of some form of planning. Some European governments, notably France and to a lesser extent Britain, the Netherlands, and Belgium, play strong controlling roles in national social and economic planning. Germany and the United States (and by definition Canada) reject planning in this stringent sense but are committed to assuring a satisfactory rate of economic growth and social development through public means while providing at the same time an appropriate climate for private enterprise. This amounts to a mandate to intervene when the situation demands but the situations which might lead to intervention remain undefined.

The recent and strong emphasis upon social development as a key national objective, the need to consider the social implications of all national programs, the special need for taking a multidisciplined approach in formulating all technical programs and the need to promote higher levels of efficiency in the use of national resources to prevent the erosion of national productivity, dictates the employment of a much broader framework for policy analysis than has been traditionally employed. Ideally it is one which recognizes relevant interrelationships among all policy objectives so that no program is counteractive with other programs except with foreknowledge and by design. As a consequence an additional burden of analysis is placed upon the policymaking process and the policymaking function is more than ever confined to an

executive level where such interdependencies can be perceived and controlled effectively.

In organizational terms this means a stronger and more active role for the Cabinet as the only major policy body in the nation. Accompanying this centralization of the policymaking function is the growth of intimate supporting analytic groups within the Cabinet Secretariat whose job is to provide the decisionmakers with a clear understanding of the implications and possible consequences of proposed individual agency programs in the context of the full range of national objectives. As a result the Cabinet, with this sharper perspective, and better informed, is able to direct the course of individual programs so they are in harmony with national goals. To support this more formal and complex procedure modern techniques for dealing with complicated problems of choice are taken into use consistent with the availability of relevant data and the tolerance of senior levels of management to change. As these are adopted at the central executive level of government they are also extended to subordinate agencies to provide organizational and procedural consistency.

These innovations in procedure have implications for the programming process in all government departments. It becomes essential that procedures for program analysis in individual departments are in harmony with those being applied at the central level so that effective communication is possible between the executive and the operating agencies. In some ways this change may have special significance for the Department of National Defence. The recognition and accommodation of interdependencies between the programs of individual departments has not been infrequent in the past but has not often been extended to the Defence Program. Throughout the years since 1947 the Department has tended to believe that Defence policy should be dealt with independently of the programs of other government agencies, and by its uniqueness should stand alone as an independent national

program. Implicitly, perhaps partly as a consequence of Canada's preoccupation with international organization and alliances, this philosophy has often seemed to be shared by the government. While the military effectiveness of the Forces may have been constrained from time to time through lack of available resources, it has seldom been limited in any significant way through the necessity to sub-optimize Defence programs and activities with national requirements in other areas of central government interest. But the nature of the emerging environment now seems to indicate that future resource allocations to the Defence program will not be arrived at without careful consideration on the part of the government of the possible benefits and disbenefits in terms of a wider range of national policy goals.

Where formerly the character and content of the Defence Program and Defence Procurement has been for the most part determined by external factors, the most recent roles for the Department promulgated by the government reflect a stronger national and domestic emphasis, and this has already had its impact upon Defence policy now and for the future. Preoccupation with internal security and with national sovereignty causes the Department to revise its orientation with relatively less emphasis upon the military aspects of international alliances and relatively more attention to a broader range of domestic issues. Such factors as international standardization of military equipment (except in a few instances) and high levels of effectiveness in sophisticated weapon systems may assume relatively less importance than such factors as where the equipment is manufactured and how versatile it is in performing a variety of more simple tasks. This may open up new opportunities for Canadian industry as suppliers of the Forces and bring Canadian industry and the Department closer in the procurement process to the benefit of some industrial sectors. At the same time this reorientation constitutes a broader and somewhat more complicated context for the formulation of appropriate Defence programs. This broader frame of reference will certainly be employed by the Cabinet Secretariat

in the review of submissions from the Department, whether or not the Department incorporates it into its own process.

In consideration of the trend toward greater centralization on the part of the Cabinet and the stronger emphasis upon the relevance of individual programs to a wider range of national domestic goals, there are two courses open to the Department in formulating its program for presentation to the government. The first is for the Department to continue to formulate its program and submit its project proposals in the way it has usually done in the past--that is to say, on the basis of pure military effectiveness without particular regard to interdependencies with other national programs, leaving the Cabinet to deal with other national factors on its own. Unfortunately the developing nature of the policymaking process, as well as the recent revision of Defence roles and a decreasing national interest in Defence, are likely to make the traditional military effectiveness factors less compelling arguments than they have been in the past. The alternative (for which there is no real option) is to expand the Departmental frame of reference for military planning as the Cabinet must soon do in a formal way to take into account the implications of Defence programs for other national goals, promoting or discounting options in terms of these additional factors. There are two strong arguments for adopting the latter course.

The first course, that of continuing present practice, would appear to be out of harmony with the intent and nature of the new Defence roles, with the evolving policymaking process at executive level and with the expectations of society in general. The government frequently might find itself unable to give its approval to Departmental submissions thus formulated without first testing the appropriateness of the proposed program in its own frame of reference--one which is of a much broader scope. The analysis would no doubt be performed by the Cabinet's supporting analytic groups. Unless substantial military expertise existed in these groups the result could well be a less accurate and

balanced analysis than would be the case if the job were performed within the Department. A regrettable consequence of abdicating this analytic responsibility to the Cabinet Secretariat or to the Staff of the Treasury Board would be the resultant widening of the already considerable communication gap between the government and the Department. Any further widening of this gap through the creation of military analysis groups within the Cabinet Secretariat and not responsible to the Department, could amount to the virtual elimination of effective Departmental involvement in key stages of the Defence policy process and the capability to participate in a major way in the determination of the Forces' future.

The second argument for creating a more comprehensive framework in the Defence planning process is that there does not appear to exist at the executive level the formal structure of objectives, policies and goals which is needed as a context against which to identify and assess the relevancies of the range of Defence functions and programs. In centralized policymaking it is essential that there be some such formal or semi-formal structure. The lack of this fundamental underpinning of centralized policymaking inhibits effective communication between the Department and the executive, and increases the risk that the executive might make inaccurate assessments of the implications of some Departmental programs. Because of lack of perspective and relevant information the executive may expect from some programs national benefits which are not possible. The Department's programs with respect to research, education, manpower and procurement (to mention a few) have important implications for national social and economic development--some of which are only now being recognized and delineated. In the interests of a sound Defence program and in consonance with the nature of the evolving policymaking process it is essential that the Department take positive steps to keep the government constantly aware of the significance of these programs and if necessary provide the perspective in which they can be best reviewed.

At this time when the nation is not confronted with any significant national emergency requiring exceptional military emphasis, or the expectation of the need for such emphasis, national social and economic factors are important and increasingly permissible considerations in Defence planning. The 'best' Defence programs from a national point of view may be those which provide some assistance to these goals without placing in jeopardy basic Defence capability and the potential for orderly expansion should the need arise. Since the Department is the sole source of military expertise the discovery and design of such programs and activities is undoubtedly a function of the Defence planning staffs. In order to fulfill this responsibility they require a comprehensive and sharp perspective of the relevant goals both of the central government and of interrelated departments as a framework in which to work. Beyond this they should also be aware of the kinds of actions which would be instrumental in achieving these goals as well as limiting features of the machinery of government. The following chapters in this paper will explore some of the environmental factors influencing national industrial growth.

CHAPTER 2

GOVERNMENT INDUSTRIAL AND SOCIAL GOALS

The expanded analytic framework for suggested Defence planning requires some cataloguing of national goals and programs, and the identification of interrelationships with elements of the Defence Program. Some understanding of the nature of the issue generated is also needed. Although it is unusual for Canadian governments to publish manifestoes or statements of their goals and objectives in sharp form certain fundamental objectives are identifiable and usually stand the test of time as focal points for government programs. That the government does not promulgate formal statements of policy should not be taken to suggest that there is no planning, although at the same time it must be observed that over the years the traditional role of government has been to take a less than active part in some aspects of national affairs, preferring to remain aloof unless the public interest is threatened. It might be argued that this is a reflection of the short planning horizon of elected governments, but this would be to ignore the long range planning which is conducted by departmental administrative staffs.

Statements of policies over the years, programs which have been legislated, organizational modifications in government, and current observed preoccupations of government, provide a basis from which to postulate policy goals of the government, stemming from the basic government undertaking referred to at page 3. Formal statements are not really needed in order to identify the preferences of the government. Moreover the degree to which a government would constrain its flexibility by publishing such statements

suggests the exercise of caution. Very often the consequence of taking such a step is to generate a change in the environment which would quickly invalidate the factors upon which the policy was formulated.

National social and economic growth is dependent upon the ability of national industry and commerce to sustain a level of productivity and profitability sufficient to meet the cost of social development and at the same time its own perpetuation and growth. The primary concern for government is to create and maintain the conditions in which this may occur. In theory all policies will be full employment policies. Monetary and fiscal policies will aim at the control of inflation (although this is not a primary problem for Canada since it is to a large extent determined by external factors) and balance of international payments. Central government objectives will include the assistance and guidance of the course of national industry, the elimination of waste of national resources, restraint of social irresponsibility on the part of private enterprise, and the adoption of 'best' social programs. Fig. 1 (page 12) demonstrates one plausible version of government policy goals and interrelated programs, though it is not intended to be exhaustive. Those which appear to have possible relevance in Defence planning are: national industrial growth; regional development; human resources, and social infrastructure.

The three major objectives in Fig. 1 are interdependent as are also the policies and programs at the lower levels of detail. But this should not be taken to mean that they are necessarily mutually supporting. As an example, which is of relevance in Defence planning, policies adopted for regional development (regional economic expansion) to the extent that they are applied to create employment and growth of industrially underdeveloped regions might easily be counteractive with policies to promote national industrial productivity and profitability.

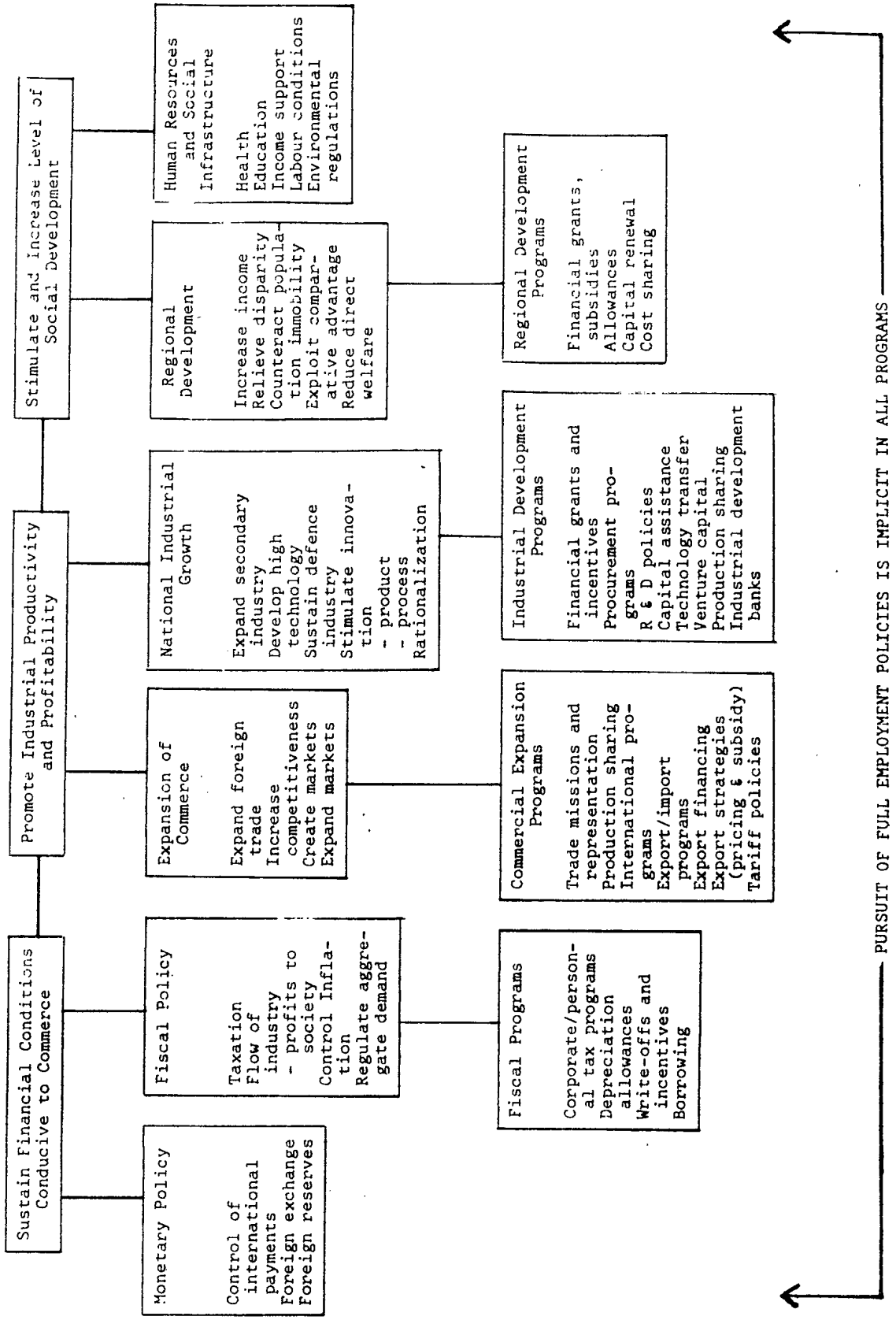
NATIONAL POLICY GOALS
Sustain Financial Conditions Conducive to Commerce
Monetary Policy
Control of international payments
Foreign exchange
Foreign reserves
Fiscal Policy
Taxation
Flow of industry
- profits to society
Control Inflation
Regulate aggregate demand
Fiscal Programs
Corporate/personal tax programs
Depreciation allowances
Write-offs and incentives
Borrowing
Promote Industrial Productivity and Profitability
Expansion of Commerce
Expand foreign trade
Increase competitiveness
Create markets
Expand markets
Commercial Expansion Programs
Trade missions and representation
Production sharing
International programs
Export/import programs
Export financing
Export strategies (pricing & subsidy)
Tariff policies
National Industrial Growth
Expand secondary industry
Develop high technology
Sustain defence industry
Stimulate innovation
- product
- process
Rationalization
Industrial Development Programs
Financial grants and incentives
Procurement programs
R & D policies
Capital assistance
Technology transfer
Venture capital
Production sharing
Industrial development banks
Stimulate and Increase Level of Social Development
Regional Development
Increase income
Relieve disparity
Counteract population immobility
Exploit comparative advantage
Reduce direct welfare
Regional Development Programs
Financial grants, subsidies
Allowances
Capital renewal
Cost sharing
Human Resources and Social Infrastructure
Health
Education
Income support
Labour conditions
Environmental regulations
PURSUIT OF FULL EMPLOYMENT POLICIES IS IMPLICIT IN ALL PROGRAMS

Fig. 1

The essence of industrial growth, productivity and profitability is, in consideration of already successful industrial sectors, to achieve increased international competitiveness, innovation, economies of scale in production, rationalization, and expanded markets to take the output produced at a price which will not result in net loss. The principle of reinforcing success is far more rewarding than that of supporting weakness, so long as the resulting programs also are in reasonable consonance with social development goals. This is not to say that clear social gains are a prerequisite but only that there should not be disbenefits which outweigh productivity gains. Despite the compelling need for greater social responsibility on the part of commerce and industry it has to be recognized that social programs can be undertaken only to the extent that industrial productivity can pay for them. In this sense industrial policies which act to fragment production or programs which create productive capacity without, at the same time, providing a market for consumption of the resulting output, can represent significant diseconomies in national productivity and consequently in social development.

Since a large portion of the Defence acquisition program is concerned with procurement of equipment with a high technolcgical content (aircraft, weapon systems, electronics, and a wide variety of instrumentation) the growth and development of high technology industry is a national policy gcal for which the Defence Program has special implications. The conditions required for the development and growth of high technology industry are rather more stringent than is the case for some classes of industry. Some of the classic factors applicable to industry in general such as proximity to large population centres and transportation facilities are less important because of the high skill-cost to weight-bulk ratio of high technology products. An essential condition for the growth of high technology industry is the presence of an 'incubator' industry, that is, an already successful high technology firm, university or government

laboratory from which new firms 'spin off' with product and process innovations. In other words high technology industry expands and grows in areas where technological expertise already exists. Such areas will be found to possess other characteristics as well. They will normally be in the proximity of a large university with a dynamic graduate school where there is offered the opportunity for technological transfer. The presence of an industrial/research park is also an advantage. They will reflect a community setting where superior services are available, where there is a favourable community attitude, a well trained labour force, reasonable business regulations and a social/cultural atmosphere which is attractive to professional and business talent. Such areas by definition are also the most likely to contain the managerial talent necessary for success and the investment climate needed to support expansion and growth. The most promising 'incubator' organizations which exist in Canada at present are the high technology centres around Montreal, the Ontario Golden Horseshoe, Sarnia, Ottawa and Vancouver.***

Considering the foregoing one should not expect that the actions likely to provide most benefit to programs for increased national industrial productivity would at the same time be effective instruments for the diffusion of technology and dispersion of production into less developed regions--and especially this is the case in respect of high technology industry. Classically the less developed regions lack the conditions which are essential for profitable industrial growth. They lack population, skills, facilities to support industry, and economically advantageous location. They are characterized generally by poor investment

*** For these comments I have leaned exclusively upon an excellent analysis of this subject by Professor J.W. Hodgins, Department of Chemical Engineering, McMaster University, in his paper titled, 'Ingredients of Technological Entrepreneurship'.

climate, high unemployment levels and low income to the extent that tax revenues are insufficient (even with provincial equalization payments) to create and maintain the infrastructure which would generate self-sustaining growth. Simply to lift the employment level by means of government financial assistance to weak firms is not a sufficient remedy since these areas have no 'comparative advantage' to be exploited. Nevertheless, in consideration of the relative immobility of people in these localities, governments are under pressure to take positive steps to alleviate these social inequalities and to show their responsiveness they will undertake such programs. Often they only serve to increase population immobility. Such programs are less regional development programs in the strict sense of the term than they are short term social welfare measures. The fact that these short range programs often are more publicized than more substantial longer range programs for regional development tends to create some misconceptions of regional economic expansion programs in general and a questioning of government motives. Perhaps it is not the best thing for the government's image that the same agency should be responsible for both the short and long range aspects of regional economic programs.

The point is that these short term measures should not be expected to give more than casual consideration to fundamental factors which underlie regional inequalities since they are not capable of creating the conditions for economic self-survival or establishing any regional 'comparative advantage' leading to permanent strengthening of the regional economic structure. The harshest criticism of such programs would be that they involve the subsidization of firms without creating any real improvement in the conditions in which they have already failed to grow. The worth of these programs as short term social and economic instruments is unquestioned; their worth as instruments for regional economic development is another matter.

On the other hand there are programs in the name of regional economic expansion which are somewhat different in nature and are not incompatible with many programs and policies for national industrial growth. They are primarily concerned with creating in selected regions conditions which make them attractive and potentially profitable as areas into which industry can expand. This strategy is the essence of economic development from which self-sustaining economic growth is achieved. As successful and competitive national industry becomes more so and as production facilities reach a size which provides a degree of economic efficiency there will be a motivation for expansion, and this can be guided into other regions if they offer a suitable environment; that is if they provide services, facilities, resources, and a favourable attitude toward business on the part of both provincial and municipal authorities. The identification of localities with such production potential is a matter for consultation between government and industry and for cooperation between federal and provincial authorities in adopting harmonious policies. The decision to expand is for the firm to take and the action cannot be forced by government unless such action is accompanied by substantial incentives which compensate for the disadvantages of the area in question.

A variety of programs which enhance opportunity for regional economic expansion through the strengthening of regional infrastructure such as improvements in transportation facilities, communications, schools, universities, and technical institutes, as well as the support of expansion of successful and competitive manufacturing firms, are important aspects of the economic development of a region. All of these are contributors to national growth in their own right although large increases in industrial profitability will not normally occur at the precise time of construction. Such programs have the additional attribute of providing employment for regional populations and might often be good substitutes for some shorter range programs if they could be well planned. When these programs are complementary to private

investment they tend to increase the willingness of capitalists to add to their real assets. The variety of programs of this type which are possible suggests that there may be as yet undeveloped interrelationships which should be considered between the programs of Public Works, Ministry of Transport, Defence and others with programs for regional economic expansion. However, to suggest that it is possible to assess meaningfully all programs in consideration of all possible factors is to go too far. What needs to be established is an identification of the most relevant goals which can benefit from a particular program. One might be inclined to doubt that the prospects for Defence acquisition programs to stimulate effectively national industrial productivity and at the same time to benefit regional development programs are very good.

In practical terms only a few policy goals other than that which gave rise to a specific project, can be enhanced in useful amounts. To adopt as an operating principle that all national policy goals have to be gainers in real terms is unrealistic and is to create an analytic problem well beyond manageable proportions. There is real danger that the primary project itself begins to lose its direction in terms of its original purpose. A more practical approach which would result in sharper and more manageable analysis, would be to select beforehand those policy goals which benefit industry, private enterprise and society. This presupposes an analysis to identify which of the known range of policy goals might receive the highest benefit and be least counteractive, and the existence of a planning framework as suggested earlier in Chapter 1. One must be as concerned with fringe harm as well as with fringe benefit. Probably not more than one goal in addition to the primary one can be supported effectively. Early agreement upon this point between the government and the implementing department could result in much improved program formulation, definition and eventual implementation. In harmony with earlier comments about the present nature of the policymaking process and bearing in

mind that the implementing agency is the sole source of expertise in its sphere of operations the analysis should be carried out by it. This offers the best prospects of preserving the effectiveness and relevancy of the primary program.

In terms of national policy goals industry and commerce plays its role by achieving a rate of productivity such that there is a margin of output over input sufficient to meet its share of the costs of society, maintain an increment of productivity over world competitors, and still retain enough profitability to be an effective instrument for self-sustaining national economic growth. At the risk of being pedestrian a few brief comments about the role of government with respect to the profitability of industry may be helpful in providing some perspective in which to view various policies which a government may adopt, their limitations and some of the possible consequences.

Fig. 2 (page 19) is designed to reflect a simplified outline of the process of the distribution of industry's profits. Four major demands must be met, two of which are imposed by government and two of which involve the survival of industry itself. Each of the demands is competing with the others and the allocation among them is at the discretion of government mainly through its taxation policies. If the government's demands are inordinately high there will be insufficient for the continued profitability of industry. Firms will cease production because they can no longer reimburse their owners who will shift their investment elsewhere; multinationals will shift their production to other countries and will supply the Canadian market through imports. Canadian investment funds will flow out to other countries. On the other hand the higher the rate of profitability permitted the greater is the potential for expansion and growth up to the limit of market demand and spin-off to social programs. Productivity and profitability depend upon production efficiency, ability to dispose of output and the maintenance of competitiveness.

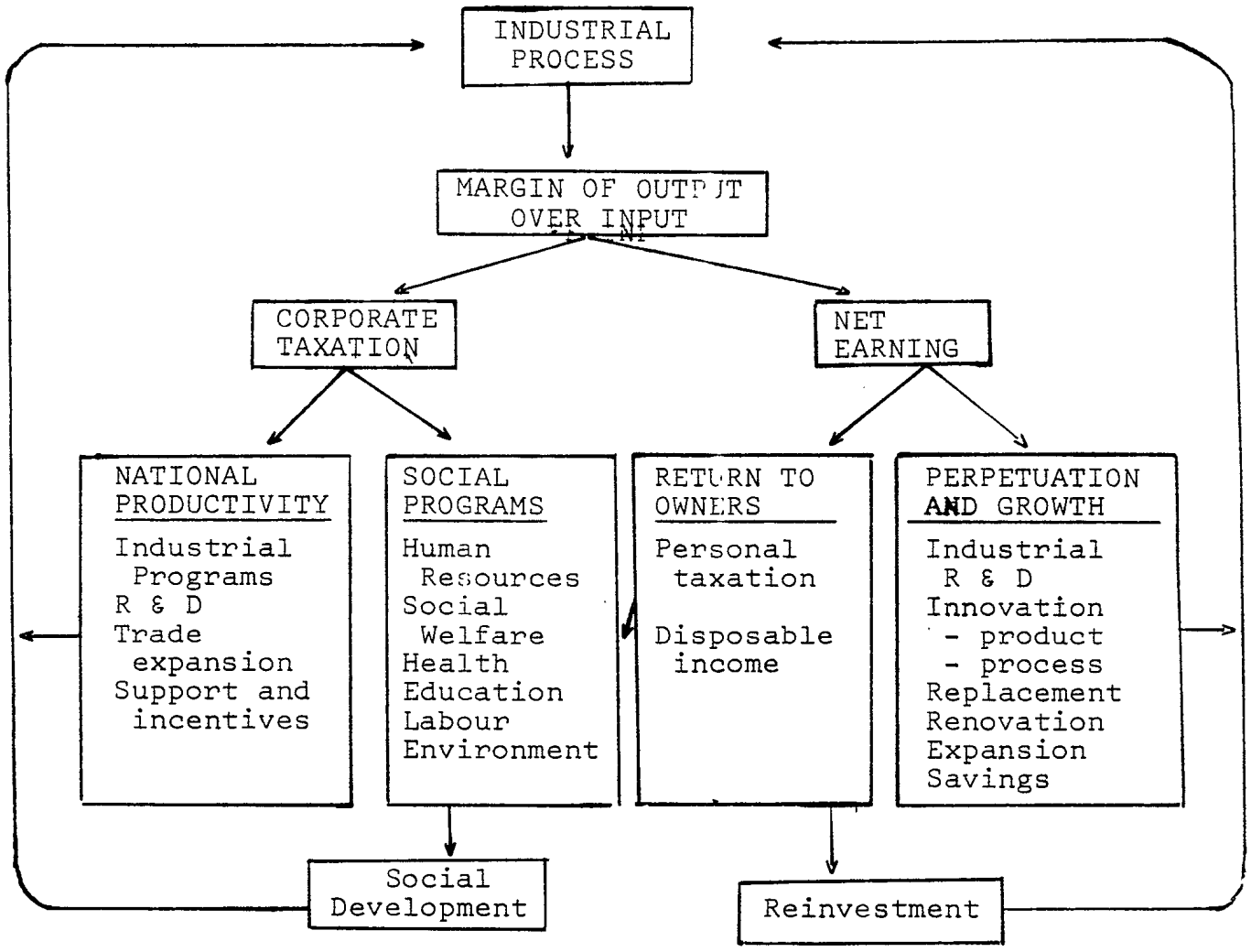

Fig. 2 - Distribution of Industry's Profits

High income levels generating high aggregate demand provide momentum to the process.

Whereas the general level of corporate taxation imposed by the government serves to regulate the net earnings of firms on a non-discriminatory basis there are also certain discriminatory options open to the government. On the constraint side these take the form of sales and excise taxes imposed on the output of specific industrial sectors which act to raise the general price level and are therefore production constraining. In those industries which reflect high elasticities of demand the effect is to limit net earnings and productive efficiency. These constraints are often applied through normative judgements on the part of the government as to what is good or less good for the consumer. Applied to relatively inelastic industries the effect is somewhat less severe since production levels will vary less in consideration of relatively steady consumer demand. On the expansion side the government's options extend to tax incentives and investment/depreciation write-offs which serve to increase net earnings and provide stimulus for expansion and growth in these favoured sectors (often capital intensive).

On the industry side when net earnings either increase or decrease the change will not always be divided proportionately between returns to the owners and growth programs. Returns to owners will always be just that amount which will not cause them to shift their investment to more profitable opportunities. Consequently a reduction in net earnings may not always result in a reduction of the owners' share just as an increase in net earnings may not mean more for the shareholder. The balance of net earning over and above these costs will go to increase corporate savings. The accumulation of corporate savings by the firm reflects a desire to be less dependent upon the will of the owners for policy formulation and to be less dependent upon public investment. High levels of corporate savings may reflect also that the firm prefers liquidity and/or returns from investment over

reinvestment in its own production, perhaps due to lack of confidence in the future or as a consequence of restrictive government policies. Corporate savings invested in other industrial sectors with a high growth potential are a stimulant to those sectors and to the national economy but may serve to restrict private investors whose funds may then flow out of the country for investment. The direction of corporate savings to other industrial sectors permits the firm to diversify through control or takeover of other firms thus expanding the product range and minimizing sensitivity to market changes. This tendency toward the growth of multiproduct conglomerates has often led to highly centralized production (although not always with proportionate increase in productive efficiency) and has acted to weaken the potential for the growth of broad-based regional industry. Multinational firms (both foreign and domestic) often accumulate corporate savings in one country for investment in similar production facilities in another country. This represents a financial loss to the nation in addition to placing its national competitiveness in jeopardy. The allocation of domestic investment funds to foreign investment, the repatriation of profits of foreign owned firms to their home countries, and the diversion of corporate savings of multinationals to other countries constitutes a large outflow of funds which by far exceeds Canadian receipts from foreign investment. All governments attempt to minimize such losses. The deficit flow must be balanced by maintaining an offsetting surplus on foreign trade account and in this respect Canada has become highly dependent upon the United States through such devices as the Defence Industry and other production sharing arrangements. It is apparent that a key factor for the government in regulating industrial profitability will be the achievement of a level of material exports sufficient to offset the monetary outflow which the nation experiences. These exports flow from the extraction of primary resources (under increasing public scrutiny recently) and from the productivity of national industry, both foreign and domestic.

The government in its role as agent and guardian of the public interest has a primary concern that the evolution and growth of industry not only results in optimum profitability but that its structure is appropriate to the needs and character of the nation. Consequently in deploying the resources which it appropriates for industrial growth and development programs it will seek to fill the gaps in its concept of the ideal structure which develops through the uneven operation of the private enterprise system. The public interest is not a primary consideration of industry in its policy formulation process unless by chance some national goals should turn out to be harmonious with its profitability motives. As reflected in the second and third levels of detail (Fig. 1 page 12) the range of government programs is wide. Some programs will concern the improvement of industrial facilities such as central research programs which industry itself cannot afford but which are deemed important to national development. Other programs will concern commercial relationships with other nations--foreign trade agreements and production sharing arrangements. Some programs will take the form of industrial transfer payments in which some of the profitability of the more affluent firms will be directed to less affluent firms whose stimulation and growth is considered to be in the public interest. At the same time the government will adopt the measures which it considers appropriate to provide a business climate within the country which will attract new industry and encourage expansion.

To a great extent the effectiveness with which the government manages this resource allocation process will be determined by the success with which federal programs are interrelated and coordinated with provincial programs. Just as there is risk of counteractive programs as between policy goals at the federal level there is risk also of counteractive programs as between federal and provincial levels. This situation is complicated by the fact that a firm may receive direct support from two government levels simultaneously, and sometimes it appears independently. In this sense there has evolved a double echelon of industrial

development support which in turn invites industry to orient itself to two levels of government. The federal government continues to reflect a determination that industrial and economic policy shall remain centralized in all its aspects. The inherent disadvantages in such a situation can be overcome only through the closest possible cooperation between the two government levels. Whether or not there has been such a cooperative climate has been the source of some controversy with respect to regional economic expansion programs. It has been alleged that the provinces concerned have not always been fully consulted in some cases and that federal programs have not only threatened provincial autonomy but have been counteractive with provincial programs and preferences. In this context it is easy to see how the accusation can arise that often such programs may simply provide a vehicle through which the federal government is enabled to distribute its largesse to its favoured recipients without regard for provincial preferences with which it may not be in political sympathy. In the hands of an unscrupulous federal government direct support of this kind could become a powerful and divisive political tool. While there are few who would suggest that any federal government has acted in this manner so far, there are many who believe that the best and least contentious procedure would be for the federal government to place regional development funds in the hands of provincial governments through the existing equalization payment process.

CHAPTER 3

CANADIAN ECONOMIC GROWTH, GOVERNMENT POLICY AND CANADIAN INDUSTRY

Canadian economic growth and development from the mid-nineteenth century reflects the influence of two major factors. The first of these is the phenomenon of politics and geography which has resulted in Canada and the United States sharing the temperate zones of the North American continent but with unequal endowment of natural resources relative to population ratio, as well as unequal industrial capacity and potential. The second factor is the unequal rate of growth experienced by the two nations largely as a consequence of the independent status of the one and the colonial status of the other. There is little doubt that the rigours and challenge of survival and growth as an independent nation have formed an overriding stimulus for the drive of the United States to self-sustaining economic growth. Uncertainty and risk have been an integral part of being an American businessman and this factor has shaped over the years the unique character of the tough aggressive entrepreneur. There is relatively little evidence of the same motivation and dedication on the part of Canadians or in British colonial policies for Canada throughout the same period.

Canadian economic growth has been led by that of the United States by about fifty years. The United States entered its period of economic take-off (the achievement of regular growth) between 1843-1860; Canada experienced take-off between 1895-1914. It is important to note that a key element in the

achievement of regular economic growth in the United States was manufacturing, as compared with agriculture in Canada. The United States reached the stage of economic maturity about 1900 and Canada reached the same point about 1950. The continuing lead of the United States through these successive stages of economic growth and the spin-off effects of that growth lead are responsible for the nature of the Canadian economy and the present structure of national industry in Canada. The fact of the geographical proximity of Canada and the United States in consideration of their relative stages of economic growth, have generated through the years a strong Canadian consumer demand for the durable goods produced by United States industry and for the same level of affluence which United States citizens have enjoyed as a result of their manufacturing success.

Initially this strong consumer demand arose at a point when Canada had neither the required capitalization nor the manufacturing capability and technology to be able to respond. The demand was satisfied through imports from the United States and this in turn invited the expansion of that country's firms into Canada. Canada proved to be a stable and substantial source of raw materials to feed the expanding United States industrial complex and provided high returns on investment. As this foreign industry continued to expand Canada was also found to be a convenient gateway to the penetration of Empire and later Commonwealth markets to which she had preferential and unrestricted access. As an example of the strength of the Canadian consumer market for manufactured durables, automobile ownership in Canada in the 1920's per million of population was 50% that in the United States, and was in excess of the European ratio by a factor of three. The building of the Canadian railroads (British financed), the development of material resources through borrowing, and the expansion of United States manufacturing generated a large inflow of capital. Canada's net balance of international indebtedness which stood at the level of $1 billion in 1900 rose rapidly to $5.4 billions in 1926, $9.9 billions in 1955, and

by 1964 stood at the level of $18.2 billions.*** Initially the burden of this debt was divided about equally between the United States and Great Britain but as a result of the financing arrangements of World War II this shifted almost totally to the United States and in 1965 about 95% of Canada's total international indebtedness was to the United States.

Despite the extent to which Canada, through the years, has continued to maintain its ties with Great Britain, and the inequalities in the rates of economic growth, there has evolved between Canada and the United States a level of economic integration in which the continued separation of the two nations is in clear defiance of a strong centripetal pull toward a single nation. It must be emphasized continually that most of the issues which arise between Canada and the United States can be understood only from the perspective of a basic determination on the part of Canadians to maintain a separate national political identity. Nevertheless, at the same time Canadians are also conscious with pride of a continental identity in which they, along with the United States, reflect one of the highest standards of living, technological development, wealth and political stability that the world has yet seen. Joint undertaking in the development and improvement of continental facilities and resource development have served to further cement economic integration. Unhappily for Canadians, their determination to preserve a separate national identity is complicated by these facts of economic integration--a partnership in which the partners are unequal--and economic interdependence which embodies many of the aspects of dependence. The inequality of this economic partnership puts a considerable strain on Canadian concepts of independence and sovereignty. Such issues as the extent of United States'

*** Statistics Canada, Catalogue 13-522

ownership of Canadian manufacturing, foreign direct investment in Canada, and the exploitation of national material resources become inextricably intertwined with concerns for the sovereignty and preservation of the nation. However, to undertake to remove these economic obstacles would entail sacrifices which only the stoutest of these Canadian nationalists would be willing to bear. The future holds little prospect for relief of this national neurosis with which Canadians have been afflicted in varying degrees over the last fifty years.

Throughout the years since World War II Canadian governments in their economic policies have placed a great deal of emphasis upon high levels of industrial productivity and industrial growth as key factors leading to national economic well-being and full employment. Secondary manufacturing and the service industry being more labour intensive than primary industry have traditionally provided the highest levels of employment and so have been emphasized. Secondary industry being more sensitive to economies of scale usually has received the greatest accent and many government support and incentive programs are directed to the various steps of secondary manufacturing ranging from research and development through marketing.

A complicating feature of the Canadian industrial picture is that large and productive industry in Canada is virtually synonymous with foreign owned industry. Thus Canadianism in national industry has always been a controversial issue. To some observers, in reviewing reports of government industrial tax incentives and support programs, it has seemed that a disproportionate quantity of assistance is provided to foreign owned large industry with too little to smaller scale Canadian owned/controlled industry. Granted that there are weaknesses in the administrative machinery which may act to dampen the effect and intent of government legislation there is no convincing evidence of any motivation on the part of government to discriminate in favour of either large or small. Nevertheless this large industry

even though mostly foreign owned, is by far the greatest contributor to national economic growth. In order to maintain the level of productivity needed to perpetuate present levels of national prosperity and to achieve highest possible levels of employment, this sector must be accorded at least the same support as that accorded to smaller scale business and industry. On the other hand the Government's motivation toward Canadianism in national industry is exemplified by its proposed legislative action to monitor the acquisition and takeover of Canadian firms by foreign interests and to intervene in such aquisition if it is considered to be in the public interest to do so. Once again the conditions which would result in intervention are not specified and will probably be adjusted to public reaction at the time, none the less the intent is clear. This may provide better opportunity than heretofore for the survival of Canadian firms through their early stages of growth as long as some steps are taken at the same time to provide adequate capitalization and production support for these firms to the point where they can become self-sustaining. Unless this additional financial support is forthcoming, subsequent to government intervention, the consequence might only be to deny to the entrepreneur the opportunity to sell a business which he is unable to operate at a profit.

The government's policymaking process with respect to national industrial development has come under pressure recently from without by national industrial associations and also from within by the Special Senate Committee on Science Policy. It is alleged generally that the government does not have a clear and comprehensive plan for science and technology and for the growth of national industry and that the enunciation of a national industrial strategy is a matter of primary national importance. To an extent such criticism is not without foundation.***

*** See 'A New Perspective for Government R & D and Purchasing Policies'; C.F. Pound and B.G. McRoberts, DRAE Report No 30, May 1972.

Although it is not entirely clear what all the points are that such a policy statement would be expected to contain, four major concerns are apparent--the amount of research and development performed in government laboratories; the innovation process in technologically-based industry; 'Buy Canadian' policies, and the need to create a technological monopoly for Canadian industry through government support of some major project in technologically-based industry such as the development and production of VTOL/STOL aircraft (to name one under current discussion).

All of these points are basically rooted in the issue of technological innovation as the key to industrial development and growth. The ability to achieve or to retain an internationally competitive position is determined not only by the price at which existing products are sold but also by the speed with which new and superior products and processes are introduced to the marketplace. To achieve a world technological monopoly as a national program is a most difficult and expensive undertaking; to retain such a monopoly may be even more difficult and expensive. Technological monopolies (to the extent to which they can be said to exist) are rooted for the most part in large multinationally based firms which have the resources and the technical talent (it is in this latter factor that their real monopoly really lies) for transferring their technology beyond national boundaries and can achieve competitiveness on a world-scale. Such technological monopolies are in no sense national property and there is little that any government can do to prevent this dissipation. Some control of the technological diffusion process is exercised in United States defence industry by the government controlling the rights to technology which goes into the manufacture of defence equipment. It manages to do this on national security grounds despite industry objections. Apart from this special case it has become increasingly clear in recent years, both to international observers as well as to United States industrial executives, that the United States has lost its technological lead in such fields as aircraft manufacturing, optics, electronics,

and automobiles. (Technological advantage in the latter case is more rooted in the technology of the moving production line than in automotive engineering in the pure sense.) This loss of technological lead through diffusion, combined with loss of productivity through obsolescence in major industry and the demand for increased social responsibility in production, has created a difficult situation for United States trade. United States owned nationals and multinationals can be expected to make a maximum effort in the near future to increase national industrial productivity, with emphasis upon technological innovation. This will have a significant effect upon national industrial policies in other nations for it will be increasingly difficult to persuade United States firms to exploit new technology anywhere but at home.

A large segment of Canadian manufacturing industry is of a nature which might accurately be described as technologically-based, although there is no real Canadian controlled multinational strength in this field. Its maintenance and growth therefore is highly dependent upon technological innovation. Consequently the innovation process in Canadian industry is always a factor of great concern in government industrial policy. Innovation is the total process through which technology is applied to the process of production and manufacturing--that is to invent, develop, produce, and market successfully a new product or process, and to keep that product competitive through subsequent and continuing innovation. Consequently engineering design, manufacturing engineering, production, marketing and entrepreneurial expertise are all elements of equal importance in successful innovation and government support programs generally reflect this fact. However, the success of these programs and the growth of innovative industry has fallen somewhat short of expectations.

Despite relatively large expenditures for research and development both in government and in industry Canada has not had an impressive record of technological innovation even though

such a large element of Canadian industry is technologically-based. One reason for this is that with more than 60% of Canadian industry under foreign control the technology employed is mostly imported. Imported technology is stale technology. Consequently the output of the largest segment of national industry is founded on the technology diffusion process resulting in an industry which though technologically-based is not technologically dynamic, and whose innovative energy is largely consumed in minor innovation related to adapting existing products and processes to the peculiarities of the Canadian market. This is not to say, however, that there is any shortage of good ideas in Canada or on the part of Canadians a lack of inventiveness with innovative potential. Unfortunately new technology created in Canadian laboratories and engineering units of foreign owned firms tends to be exploited by those firms in their home countries and eventually arrives back in Canada in the form of imported technology for which substantial royalties are paid. Prospects of new technology breakthroughs in United States owned industry in Canada for the future are even less optimistic than formerly now that United States home productivity is threatened.

At the same time attempts to exploit Canadian created technology either on the part of smaller Canadian controlled firms or by groups of engineers spinning off from large firms tend to fail through lack of adequate entrepreneurship and the financing needed to provide sufficient profit potential. The role of the small firm or the group of inventive engineers in technological innovation should not be discounted however. Large firms do not have impressive track records as innovators except as concerns product and process improvement in their own product main-stream. Their large research and development effort is almost totally concentrated on this and they can seldom afford to get involved with technology outside their primary area of manufacture. Some will make the motions of doing so to enhance their public image. Many of the most impressive technological breakthroughs on the other hand (Xerox, Polaroid, oxygen steel-making, etc) have occurred in small firms or by groups of

engineers breaking away from the parent firm with an invention which the large firm could not see its way to exploit. If there are to be new technological monopolies in the future it will probably be through this process that they will be achieved or through university research institutes which are beginning to thrive in Canada.

While large industry in Canada has not contributed in any great measure to technological innovation for Canadian account, and not much more can be said for small industry (including that which is Canadian controlled), this is not because the innovation process is not a central issue in national industrial programs. In some aspects the government's policies have been ineffective and perhaps inadequate in their scope but at the same time there are also weaknesses in the Canadian investment climate and attitudes on the part of Canadian inventors to reckon with. It has often been argued that Canadians in general are reluctant to invest in high risk enterprise and much prefer to put their savings into insurance and portfolio investment. While there may have been substance to this point of view earlier in this century when Canadians were perhaps a reflection of the habits of British 19th century investors (but often even more cautious), it is not so clear that this is an accurate assessment at present. There is a considerable amount of money available in Canada for investment, much of it available for risk enterprise. Venture capital institutions have grown and the attitudes of administrators of pension funds, mutual funds, and trust companies have broadened considerably with respect to risk investment, although not yet to the extent of those in the United States. However investment will not occur unless there are profitable opportunities and this is where the problem lies. There are simply not enough investment opportunities with sufficient profit potential to take up the money that could be made available. Consequently much of it is flowing out of the country to areas where more profitable opportunities exist or is being invested in mutual funds or other portfolio investments (and flows out of the country through

these vehicles).

The lack of business management expertise in small technological Canadian business and attitudes of Canadian inventors, both act to inhibit investors. Most newly formed firms initially depend upon the savings of relatives, colleagues and the inventors themselves for their foundation. The family lawyer looks after the legal problems and often ends up acting as the comptroller and business manager. There is no real business management capability and relatively little knowledge of the full implications of starting up a new firm with a new product. The consequences are initial underestimation of capital needs (often by as much as a factor of three), ignorance of the magnitude of start-up and marketing costs, and overestimation of the degree of market penetration which the new product might achieve relative to marketing budget levels. The second factor is a stubborn resistance on the part of Canadian inventors and newly formed but financially insecure firms to give up any equity in their invention in return for the funds which might make the difference between success and failure. It seems that these firms will go to almost any extreme to obtain debt financing, even at interest rates (commensurate with level of risk and unsecured by real assets) which create a burden of interest payments which effectively eliminate all prospects of profitability and attractiveness for venture capital institutions. The most probable eventual fate is to sell out to an established firm which can write off a portion of the debt burden against corporate taxes. While there has been considerable criticism of the effectiveness of government programs for industry in general and small industry in particular, in point of fact these programs probably achieve as much as reasonably can be expected in consideration of a rather wide range of environmental factors which are outside the mandate of any government.

Government research and development and industrial support programs in general are often criticized because most of the

allocations end up in the hands of already established and wealthy firms, mostly foreign owned, with a disproportionately smaller amount going to smaller firms where the real potential for growth lies for increasing the strength of Canadian owned/controlled industry. Certainly this argument appears to be at least plausible with respect to research and development where 75% of the funds allocated are to foreign owned Canadian subsidiaries as against 19% to Canadian owned firms.*** Yet this should not, without further convincing evidence, be taken to imply that the government discriminates in favour of large industry. This admittedly large amount may be only that which is needed to perpetuate productivity in the existing and established product lines of these firms, and not more than the government must provide in order to maintain an attractive climate to retain production in Canada. In this case it would not be very much more support than that which would be provided by any other nation but would be enough to keep the firm from shifting its production. While undoubtedly it is valid to accuse the Canadian bank of discrimination against small industry in Canada it is not valid to so accuse the government. The suspected inequality of support between large and small industry (foreign and Canadian as described by some) is more a function of the inability of the small firm to take full advantage of the opportunities which the government is willing to provide. In this regard, however, it is fair to observe that the government appears to have a less than full understanding of the nature and administration of small business as compared with large business and is inclined to treat them the same. Taxation policies are substantially the same for both as are rigid administrative and audit regulations in connection with grants and incentives programs--the latter representing a substantial cost to the small firm but probably buried in routine

*** DRAE Report No. 30

overhead costs of the large firm.

Many have argued that the government performs too much research and development in-house and would provide greater stimulus to national industrial growth by contracting with industry for more of its needs. It is alleged that the National Research Council with its propensity for basic research has failed to make significant progress in fostering product oriented research and development in industry just as the research incentive programs of the Department of Industry Trade and Commerce have failed to produce technological innovation. The expansion and proliferation of government laboratories have duplicated in some important areas established industrial capabilities, and have furthermore inhibited the flow of technological information to the public sector. The Special Senate Committee on Science Policy and the Air Industries Association of Canada have put strong pressure upon the government to act to restrict its in-house research programs. Recently the government has acceded to this pressure (May 1972) and has promulgated a policy through which its requirements for research and development are to be contracted out wherever possible. Although there should be no quarrel with industry's demands for the opportunity to perform more research and development (but noting that the stimulus came from large industry) nor with the motivation of the government to encourage a move in this direction, one should not automatically take the position that all industrial research and development is by definition good or that this policy will prove to be a strong stimulus for technological innovation. Large, developed and wealthy firms, and especially those with international affiliations, following objectives of profitability and expansion, employing defensive strategies to protect international positions, and pursuing main product lines to exhaustion are neither great innovators nor are they noted for their concern with the public interest. Some maintain large research and development units which perform valuable research but dedicated to the firm's main product line; others exist to enhance the corporate image. Many

Canadian affiliates maintain research facilities which are exclusively concerned with adaptive research and development related to unique features of the Canadian market or Canadian tastes in consumer goods. The size, versatility and technical talent of these research and development units will, however, make them the likely recipients of most of the government's contract work. Smaller technologically-based firms are seldom able to achieve a level of profitability which permits facilities of sufficient versatility to be able to undertake contract work unless it is precisely related to their more restricted capability range. Perhaps a strong potential lies in the university graduate schools and university operated research and engineering institutes. On balance it seems fair to comment that if the research and development contracting process operates as stringently as the rest of the government procurement process the prospects for small industry in Canada to get a piece of the action are not very good.

During the last few years there has been considerable debate with respect to the way in which the government acquires its equipment and material and the extent to which the government procurement process is, or is not, a factor in stimulating national industrial growth and innovation. Partly out of respect for the sanctity of the taxpayers' dollar, but also with a propensity for fair play and laissez-faire in the classic sense the government's procurement process is still strictly based upon the principle of buying at the cheapest price. Little concession is provided to Canadian manufacturers competing with foreign firms or to requisitioning departments which might be motivated toward Canadian procurement if they did not have to meet the extra cost from their operating budgets. Granting that Canadianism is a fundamental issue in Canada's national industrial policies and programs there is little convincing evidence of any effective 'Buy Canadian' policy on the part of the government in its own acquisition programs. To some analysts it is disconcerting to observe the extent to which, and the frequency with which,

Canadian industry fails to achieve competitiveness in fulfilling the needs of the government which it is responsible to maintain through its productivity and profitability. That any government can, in conscience, decline to buy from the industry which it supports with grants and incentive funds, whether or not that industry is internationally competitive, is bound to arouse comment. That the Steel Company of Canada should buy overhead conveyors manufactured in Cleveland is regrettable but understandable. For the government to buy for its own use electronic equipment manufactured outside of Canada, for which there is a clear Canadian manufacturing capability, is not so understandable. If such a transaction involved the exchange of products of approximately equal technology, skill and labour content, there could be no complaint. Unfortunately, however, this is not the case and we find ourselves selling Ontario cheddar and British Columbia apples, and relatively little skill and labour intensive production. Dollar value alone is not always a sufficient criterion for equitable trade. The foregone industrial production represents a considerable loss to the national economy and to national industrial goals.

In bidding for government contracts a Canadian supplier will be selected if his quotation is not more than 15% higher than that of his foreign competitor. This increment may be assumed to represent the productivity differential between the domestic and the foreign firm. But in consideration of the wide range of non-tariff barriers employed by most nations this small concession is seldom sufficient to give the Canadian manufacturer the edge. Some nations subsidize their industrial exports by as much as 50%. Manufacturers in the United States receive state as well as federal subsidies. Given these benefits plus a higher level of productivity it is easy for the foreign contractor to outbid the Canadian consistently and still be assured of a high rate of profitability even if he sells at bare production costs. Up to now the Canadian government has remained steadfastly unwilling to support Canadian manufacturers

to any equivalent degree or to take strong countervailing measures which would come close to making Canadian firms more competitive either at home or abroad. Consequently it has not been unusual in recent years to have no Canadian bids for government contracts in some lines of production.

Returning to the point that the government may have a less than adequate understanding of basic differences between large and small firms, some evidence of this is present in the procurement process. More and more there has been a tendency toward cost-plus contracts with the allowable profit margin being established around the 7% level. To the larger firm with established credit at prime interest rates, cash in the bank and unused productive capacity, a profit level of 7% may be adequate and reasonably attractive. But for the small firm with limited operating cash, paying higher interest rates, and faced with the need to hire extra clerical staff for contract administration (none of which are allowable contract expenses), the profit will be much less than 7% and may be barely adequate to meet machinery and plant depreciation costs. It is clear that large and small firms do not compete on an equal basis.

Profitability and technological innovation are the two key issues in the growth and development of national industry. The environment is complicated by proximity to the United States which is entering a post industrial growth stage and by a high degree of foreign ownership of national industry and dependence upon imported technology. Large firms are committed to pushing their main product lines to commercial exhaustion but small firms have a high potential for the creation of new technology if they can be adequately supported. Large foreign controlled firms will be inclined more and more to exploit their new technologies in their home countries. The best prospects for the strengthening of Canadian owned/controlled industry lie in great measure in the potential of the small technologically-based innovative firm strongly supported by government. While it is not likely that the magnitude of Defence general procurement is sufficient to

have any great impact upon Canadian industry (especially that which relies on economies of scale),the fact that a large proportion of Defence equipment is of a high technology nature may have implications for technologically-based industry if projects are carefully planned in terms of the rather complex array of environmental factors.

CHAPTER 4

IMPLICATIONS OF THE MULTINATIONAL FIRM

As national firms expand their production up to the demands of their domestic market, and being in possession of technological monopolies or differentiated products in international demand, *** they find it advantageous to invest profits directly in the creation of productive facilities in their foreign markets rather than in the expansion of their home facilities for export. That is to say, they extend their monopolies abroad through foreign direct investment. The source of the strength of the multinational firm is in its organizational capacity. In general multinationals are welcome arrivals in a country but they are difficult to live with. Even with the royalties which the host nation pays for imported technology it is indisputably cheaper and more effective from a national point of view to diffuse existing technology than to replicate that technology. Many industrialists in the United States now believe that huge national resources have been wasted in that country by duplicating foreign technology which could have been bought or licensed and that this factor alone has cost the United States a great deal in terms of national productivity.

Assuming the technological superiority of the multinational, its access to cheap funds and use of retained earnings (corporate savings), its superior management and production skills brought

*** Products for which consumers have strong "brand" preferences --providing conditions for monopolistic competition.

from the home country, and economies of scale, the foreign firm enjoys cost advantages which are not available to the domestic firm. Fully exploited and unconstrained by excessive control on the part of the host country this advantage will produce close to monopoly profit levels, which in turn lead to diversification and expansion into other industrial sectors, but as well provide resources for expansion into other foreign markets thus limiting the international trade opportunities for the host. Having achieved a broad international base the multinational further adds to its already substantial advantages by being able to direct its production into the best economic climates, exploit the cheapest labour opportunities and the cheapest sources of materials. This growth process is accompanied by a weakening and diffusion of owner control and a shift of power toward Dr Galbraith's technocrats.

As the universe unfolds it becomes apparent that economic and political relationships between nations, particularly since the close of World War II, evolve in the presence of a factor not incorporated into earlier growth theory--that of the multinational firm. For the most part political scientists have been slow to recognize that their descriptions of international relations in terms of power, use of force, and struggle for security and status, are inadequate in so far as they fail to comprehend the increasing role of economic activities and relationships in world politics. Many multinational firms have sales levels which exceed national budgets. In 1967 the aggregate output of United States' owned multinationals alone exceeded $120 billions, representing in effect the world's third largest economy. The nineteen Canadian controlled multinationals in 1968 posted sales exceeding $7 billions. To some economists the phenomenon of the multinational firm represents the closest which society has yet come to world organization and economic efficiency; to others it represents a new kind of economic imperialism. What one feels is determined by whether one takes a national or a cosmopolitan point of view. If one is concerned with nationalism and sovereignty, and most nations are, it is difficult to be

cosmopolitan. For Canadians, disinclined to subscribe to the immediate inevitability of the world state and sensitive to United States influences, it would be especially difficult.

There is no doubt that the multinational corporation through its technological diffusion processes, management and production superiority, and cost reduction advantages has accelerated the pace of the economic growth not only in developing nations but also in those which have reached economic maturity. The constant quest for higher levels of productivity and profitability on a world scale by the multinational organization serves to introduce technology and the benefits of an industrial economy into nations much more rapidly than the traditional slow stages of internal self-induced development. Foreign ownership of important and major segments of industry in all nations is now common. Canadians may be better acclimatized than most to this since they have lived in such an environment for decades. The key issue is not the international character of industry per se but the extent to which this industry, bearing in mind that it is controlled by some body in its country of origin, constitutes a threat to the sovereignty of nations--that is, their ability to shape their own policies and programs for the benefit of their own people without interference. This is not to impute to the multinational firm a political character to which it does not aspire--multinationals do not in any sense act purposefully to interfere with the national policy goals (political or economic) of any nation. Nevertheless they constitute an environmental factor which no government can ignore. That the economic growth of nations may often be determined by what occurs in the corporate boardrooms of multinationals is far from a myth. Their range of options with respect to expansion, production, repatriation or retention of profits, and their influence upon national firms, have to be key issues in national planning.

To suggest that the multinational firm represents a

new kind of economic imperialism is too extreme because it implies a planned national political stimulus and backing of which there is no evidence. Few nations would have the temerity to attempt to exploit their multinationals as political instruments. The United States does not control its multinationals much more effectively than Canada does. Nevertheless in developing their business strategies multinationals are naturally conscious of a loyalty to the country where they are controlled and they may often take actions over which government can quarrel. Only under the greatest pressure will the affiliates of United States multinationals undertake programs which are not in harmony with the national policies of the United States. Sometimes they will attempt to extend national policies of their home country into the host country, as did the affiliate of the United States automobile firm in Canada which attempted to apply President Nixon's wage freeze policies to its employees. On past occasions Canada's international trade manoeuvrability has been constrained by resistance on the part of Canadian affiliates of United States multinationals to export to Cuba and China. In this case they were supported by their home government. There is no doubt that these firms constitute channels of influence through which a nation may extend its national policies abroad, and that there have been occasions in which the United States has taken advantage of such opportunities because they were there to be exploited. On the other hand, significant investment in a host country conveys to the host certain bargaining power advantages, and the more developed the host is the stronger is its bargaining position with the United States.

There is no doubt that the world growth of the multinational firm through its deployment of development capital, technology, and industrialization has provided an economic growth rate for many nations exceeding that which is described to be the pattern and pace in classic economics texts. Nevertheless there is a strong resistance in host countries to multinational penetration, both on the part of governments concerned with

problems of balanced national development and nationalism in this more complex situation, and also on the part of society inclined to judge today's economic situations in terms of the past. Problems which concern host governments are fear of technological dependence, disturbance of economic plans, difficulties in controlling balance of payments, export and technology controls exercised by multinationals, and problems of strengthening and expanding national industry.

The fear of technological dependence is a matter of some concern for Canada. As mentioned earlier, Canadian industry has been built upon the foundation of imported technology. With more than 60% of Canadian industry foreign controlled and that foreign segment being almost totally technologically-based, it is obvious that the effectiveness of the technological innovation process in Canada is not entirely within the sphere of control of the government. The concentration of United States investment in research intensive industry, or in those industries subject to economies of scale and with high income elasticities of demand, imposes severe constraints upon policies for strengthening and expanding domestic industry. Although, as mentioned earlier, a large amount of research is performed in the Canadian affiliates of foreign controlled multinationals in Canada, (much of this with government financial grants and assisted through government sponsored incentives programs), the results do not provide benefits to Canada proportionate to cost in all cases. Much of the research is performed to adapt existing products to Canadian conditions and to smaller production runs. New ideas and technology created in the research units of these affiliates are, if potentially profitable, exploited in the home market of the multinational or transferred to other nations where the opportunity for cheaper production is offered, or where monopoly or oligopoly profits are achievable. It is substantially true to say that the introduction of new products and new manufacturing technology in Canada (and in other nations) has taken place as and when it is so decided by the multinational firm which controls the technology. Depending upon the way in which the multinational exercises its options it

may deny the creation or expansion of a manufacturing facility in a host country thereby forcing it to import to the detriment of its balance of trade position and national employment. By not passing its technology on to an affiliate it may prevent that affiliate from expansion in its host country and from creating an export market which would improve the international position of the host country, while at the same time acting to reinforce a monopolistic advantage in the home country. It seems clear that the policies which are likely to provide highest productivity and profitability for the multinational firm as a whole are not also likely to be those which provide maximum efficiency for each affiliate. It is this latter point which is the greatest concern for the host government in formulating its policies with respect to multinational industry, for it will attempt, naturally, to stimulate the highest possible level of efficiency in the affiliate resident within its borders.

One of the issues of consequence is the way in which the multinational firm distributes its profits and invests its earnings. It should be appreciated that any multinational, enjoying a monopolistic or oligopolistic position and cost advantages over domestic firms, will realize a margin of profit well beyond that which must be paid out to widely dispersed shareholders. Depending on how the firm deploys these retained earnings (that is, investment in foreign facilities or repatriation to parent firms in preference to reinvestment in the host country) a considerable outflow of funds can be experienced by the host country to result in an overall deficit in international transactions. In many cases this outflow can be large enough to offset a favourable international trade balance. In consideration of the extent of foreign ownership of Canadian industry this is not an uncommon occurrence for Canada. Moreover dividends, when declared, are not always repatriated at that time but may be exported when the exchange rate between the two nations favours such action. Often remittances by Canadian affiliates to their United States parent companies have been four times the amount of inflow of funds from these companies, and this has had considerable effect

upon Canada's international position. Fees and royalties for imported technology have been in some years as high as $300 millions. At the same time the ways in which the foreign affiliate disposes of its retained earnings can also be a problem. These too, may be shifted when exchange rates favour. Some earnings will be invested in expansion of production in the affiliate and this will benefit the host country particularly if the affiliate is allowed by its parent firm to participate in export trade. Often this is not the case. Some portion of retained earnings will no doubt be invested in other sectors of host country industry and this may inhibit the development of domestic industry as well as restrict investment opportunities for domestic investors. Some retained earnings may be shifted also to other countries for the development of productive facilities in competition with the host country affiliate. The point is that many of these actions, while sound from the firm's point of view, could be disrupting and detrimental to national policies and it will tax the ingenuity of all national governments to constrain these potentially detrimental acts, at the same time retaining a climate conducive to the retention of this industry upon which it is so dependent.

The extent of foreign ownership of Canadian industry has been a foremost issue for Canadians and their government for a number of years. While carefully informed by various opposition parties of various governments over the years about the extent of this foreign control, Canadians seem somehat less well informed about the role which this segment of industry plays in their economic well-being. Their strong sense of Canadianism tends to reject the economic facts of life. Fortunately Canadian governments have been inclined to take a less emotional point of view (when in power) and over the years have not adopted extreme positions with respect to foreign industry, and have not exhibited any conclusive beliefs that Canadian national development is threatened by these firms. Such policies as have been adopted have been in the nature of reasonable constraint rather than prohibitions and rejections. There is no basis upon which any

government can rationally set out to fight multinational industry or to buy it out. To purchase only one-half of the book value of United States' investment in Canadian enterprise would require $9-10 billions (an amount by far greater than the total annual contribution of Canadians to domestic capital formation) and in consideration of present capital outflow rates and balance of payments position would be difficult to transfer in less than a fifteen year period. At market value this portion of foreign ownership might be difficult to transfer through international accounts in twenty-five years. If during the course of this transfer the United States parent firms turned around and re-invested this money back in Canada their control of Canadian industry would turn out to be inestimably greater than it is now.

Two additional points concerning the multinational firm are worth short comment. The first is that as a consequence of competitive strategies which multinationals employ with each other they may prevent a sufficient rationalization of production in the host country which will result in the lowest prices for the consumer. As an example, the fact that there are several affiliates of multinationals resident in Canada producing automobile tires, none of which have export privileges, means that none achieve the highest possible level of productivity and all consumers pay more. The addition of Michelin recently to this array with export privileges does not do anything for domestic rationalization of the industry but provides employment in one region of the country. However, since all firms are in monopolistic or oligopolistic positions all will still be profitable despite this relative inefficiency. The point is that multi-multinationals do not result in lower prices for the consumer in all cases. The second point concerns social responsibility. As governments begin to assume more and more responsibility for the achievement of social goals of society the relationships between government and industry are also changing. Gradually governments are demanding a higher degree of social responsibility on the part

of manufacturers. The point is that this demand tends to reduce the productivity and profitability of multinational industry in localities where such policies are adopted as compared with those localities where social development is a less compelling issue, and can affect international competitiveness. This factor may well tend to dampen government programs for increased social responsibility, particularly as concerns multinational firms, until such time as all nations impose some level of social constraints.

A summary of the characteristics of multinational firms which can prove disrupting to national economic plans can be a fairly long list. They cause significant outflow of capital through repatriation of profits, charges for technology, and their investment programs, and may execute these monetary transfers at the least opportune time for the host country. They retain earnings which are used for expansion and takeover of domestic industry in the host country. They repartriate for exploitation at home, technology developed in their host country research facilities. They limit export programs of their affiliates in host countries and in many cases reflect the national policies of their home countries. They act as monopolists in respect of skills and technology and create imperfect market conditions through their production policies. Through their investment programs they act to limit investment opportunities for host country nationals. They are wealthy, flexible, and mobile, and can shift their production rapidly when confronted with adverse conditions. Despite these numerous disruptive features which threaten the stability of national policies it is clear that the multinational firm will continue to exert its presence in international economic and political matters. Obviously government strategies which discriminate strongly against the multinational firm can be damaging to any national economy in which their productivity and profitability play a large part. It is doubtful that domestic industry can be strengthened and expanded at their expense in their own product lines. On the other hand, being for the most part technologically-based and research oriented, but primarily concerned with their main product lines, they offer

the opportunity for the birth of technologically-based domestic spin-off firms, if there exist the conditions for the growth of such firms and strong enough government support programs. The best national strategies will be those which increase the productive efficiency of the multinational affiliate and constrain it from acts which are damaging to national plans, and at the same time to adopt strong supporting policies for the growth of domestic industry emphasizing new technology and new product lines not in competition with multinational technological monopolies.

CHAPTER 5

THE DEFENCE ACQUISITION PROGRAM AND NATIONAL INDUSTRIAL GOALS

While the foregoing chapters have not provided any particularly deep study of specific factors related to the objective of national industrial development and growth, nevertheless they may be adequate to provide some perspective and background in which to examine the relevancies between some aspects of the Defence Program and these objectives. It has not been normal for those concerned with the Defence acquisition program to accord any special attention to national goals such as industrial growth and stimulation of technological innovation. Factors such as price, standardization with allies, and levels of operational effectiveness have been the dominant considerations. As a consequence most acquisition has been through import or manufacture in Canada under license. Occasionally when there have been purchase options offering equal or almost equal levels of operational effectiveness, attention has been given to these factors, although price has usually been the major constraint.

As additional economic considerations become more important in the eyes of the government, and as a consequence, also more important for Defence planners, it becomes necessary to see how these factors may impinge upon the Defence Program--that is to say, whether or not the Defence Program is or can be an effective instrument toward the achievement of these national objectives. Present evidence indicates that in the acquisition of major equipment systems for Defence the government will expect these national factors to be given much more attention and will expect

the maximum amount of Canadian content in these systems. The focus appears to be on industrial benefits to Canadian owned, controlled, or based industry and upon programs for regional economic expansion. Unfortunately since much of this acquisition involves the application of existing technology already in the hands of multinational firms the prospects for Canadian owned/controlled industry to benefit in substantial measure are limited. Moreover, in view of the rather special nature of Canadian industrial structure, some aspects of the government procurement process, and the high technology content of the equipment acquisition, there arises the further problem of some fundamental incompatabilities between the national goals.

In attempting to achieve greater Canadian content in Defence systems purchasing one must expect to pay more if Canadian firms are less productive than their competitors in foreign countries. This invites some examination of the government procurement process which puts great emphasis upon competitiveness, to see if the administrative machinery of the process is in harmony with the achievement of some national goals. There appear to be two points of substance in this respect: the first concerns the extent to which the government supports industry in achieving competitiveness; the second concerns the way in which such support as is provided is financed.

As mentioned earlier the response of the government to certain features of export policy adopted by other nations has up to now not been sufficient to protect the competitiveness of Canadian manufacturers bidding for government contracts. While the 15% concession made to Canadian manufacturers competing with foreign firms may possibly represent a fair estimate of productivity differential it is by no means sufficient to compete with the cost advantages which the foreign contractor enjoys. The result is that Canadian contractors do not compete at all except for those few who have an element of world technological leadership in some component or sub-component of a major system, and even in these

cases there is seldom sufficient profitability to provide great stimulus for growth and expansion.

Despite the lack of adequate support for Canadian manufacturers there is as well a further obstacle in the method of financing contracts which acts as a deterrent to government departments in purchasing from Canadian firms. The nature of the procurement process is that the requisitioning department (National Defence in this case) is required to meet, out of its own budgetary appropriation, the additional cost of procurement resulting from not accepting the lowest bid for work. In this sense the burden of support of Canadian industry through the procurement process falls directly upon the requisitioning department. Under the constraint of fixed budgets and the need to maximize purchasing power in order to achieve their goals and objectives, the departments can experience considerable loss in their effectiveness if they also have to take into consideration and accommodate the financial support of other national policy goals and programs which are in effect unfunded. If there is to be a program to support Canadian industry through the procurement process or a 'Buy Canadian' policy it would seem to be desirable that this be established as a funded program formulated in harmony with the government's concepts of program budgeting. In this department where the level of expenditure in high technology equipment averages in the area of $100 millions annually, the necessity to subsidize Canadian manufacture of that equipment (where such a capability exists) could easily amount to $10 millions. In view of the recent restrictions in Defence spending this is an indirect cost of some consequence and one for which little credit is given in program review.

As reflected in Chapter 1 the policy goals covering economic, social, and industrial development are wide ranging and it should not be expected that they will all be mutually supporting. This seems to be the case particularly in consideration of the two goals upon which most attention is being focussed at present--industrial expansion and regional economic expansion. It is too

much to expect that any single procurement program can contribute effectively to more than one such major goal in addition to serving the primary purpose of the program itself. Indeed it may not be able to serve any other purpose. Initially it is necessary to be aware that industrial growth and development does not occur simply as a consequence of employment but rather as a consequence of strengthening of the industrial structure, achieving higher levels of productivity and profitability which provide the capability for self-sustaining expansion, and in the case of high technology industry the penetration and maintenance of foreign markets. On the other hand it must be pointed out that policies for regional economic expansion in the Canadian context are policies for the growth of disadvantaged regions and do not, at least at the moment, extend to include the further strengthening of already prosperous and self-sustaining regions. In this sense the two objectives are almost directly opposed because policies for economic growth in disadvantaged regions are not likely to result in increased national productivity. As was said earlier the real potential lies in pushing success and not in reinforcing failure. Procurement of common goods which have slight technological and skill content, allocated to firms in less affluent regions, will provide employment where otherwise there might be none, reduce unemployment compensation, and provide benefit through a general increase in income and social morale in the region. These benefits may be sufficient to justify the payment of a higher than competitive price. But even so such programs will not be a satisfactory instrument to overcome the inherent disadvantages of firms located in poor economic areas, not exploiting natural comparative advantage, undercapitalized, and without the potential for self-sustaining profitability. The food and wood products industries are more appropriate for New Brunswick than the aircraft industry. Some of the most damaging policies for this nation might well be those which would attempt to direct high technology industry into areas where there is no potential for growth, or in fragmenting the production of successful industries which depend upon centralization and scale for their competitiveness and profitability. To follow such policies would

be to risk both the present and the future level of productivity upon which the nation depends for its foreign trade competitiveness (and the government for its income) in order to attain an equal level of prosperity in all regions of the country--an impractical and impossible objective. In consideration of the nature of the Defence Program and its high technological content in terms of the goals and objectives referred to in Chapter 1, it certainly appears that the Program should be oriented toward industrial goals in preference to those for regional economic expansion, if a choice must be made between the two.

One should not take the industrial goals mentioned in Chapter 1 to extend to gaining world leadership in some major field of new technology, but only to mean the growth and expansion of Canadian manufacturing in those fields where there is already a demonstrated competence and the maintenance of international competitiveness where this has been achieved. Even this lesser objective is impressive in its complexity and cost, and the payoffs are in the future rather than the present. This calls for a high degree of integration and coordination within government and between government and industry. Very often governments, faced with the need of appearing responsive to public attitudes, must be able to demonstrate the beneficial consequences of their policies in a shorter time frame. The nature of public opinion is to discount promised future benefits in favour of present gains, the evidence of which is perceivable. This factor acts strongly to constrain government programs oriented to future economic and industrial growth and compromise positions become necessary. Consequently it should not be expected that all government programs will be oriented to long range goals; some must also be directed to shorter range issues and among these employment is an important one. However, it does not seem unreasonable to suggest that the high technology content of Defence equipment procurement is of such importance to the strengthening of domestic industry and to the innovation process that any tendency to compromise in this regard with short range issues should be resisted.

The nature of Canadian industry as determined by the present stage of Canada-United States industrial integration, the technological leadership which the United States holds in most fields relevant to the Defence industry, the extent of the penetration of multinational firms (and the range of their operational options as concerns technology, pricing, and resource sourcing), and the national character of Canadians with respect to entrepreneurship and risk-taking, all form impressive constraints with respect to national industrial development. In the presence of these factors the acquisition program of the Department will not have a great impact upon industrial development unless some of its content should be specially conceived in terms of present Canadian industrial capability. In present circumstances in which the program is designed primarily for military needs rather than as an instrument for the development of national industry, not a great deal of the Department's needs will be manufactured in Canada. Even so, productive capability in present conditions is considerable and could provide a powerful stimulus to Canadian firms providing contracts are awarded where they will provide profitability and growth opportunities.

If it is desired to take the fullest advantage of the opportunities which this procurement would provide for the growth of domestic high technology industry, contracts would be allocated to those firms which have proven records of innovation, have already achieved some degree of production success, and are resident in localities where the conditions exist for development and expansion of this type of manufacturing. At the same time such programs probably would be integrated with the support and incentive programs through which the Department of Industry, Trade and Commerce, Defence Research Board, and the National Research Council act to stimulate research and development activities and the innovation process in general. The most likely areas would be the technological centres of Montreal, Toronto, Vancouver and south-western Ontario. In other words, high technology equipment procurement would be directed to long range industrial development in areas where the potential for growth is known to exist.

Undoubtedly higher prices would be paid for such Canadian content, though less than if the manufacturer were required to spread his production geographically. Obviously such policies involve considerable risk, very high cost, and relatively slow but very high payoff. They will also be discriminatory since they will tend to concentrate technologically-based industry. They may be, however, the only effective way to produce measurable industrial benefit.

It is easy to understand that a government wishing to gain the maximum benefit from its Defence procurement program might specify that procurement should involve the highest possible amount of nationally produced content. In doing so it would have the expectation that this would prove helpful to national industry, and at the same time, provide national employment. Unfortunately in the Canadian context this would create some problem since the industry with which the government would be concerned, and the unemployed with which it would be concerned, are not co-located and neither is mobile. In point of fact, however, there are alternatives which are worthy of exploration.

In consideration of all policy goals it may often be advantageous for some equipment purchases to be arranged through import from off-shore sources and not worry about Canadian content of the program at all. This may be the case when the weapon system to be purchased offers limited scope for domestic industry participation and for the advancement of technological innovation, and when the prospects for significant employment benefits in economically depressed regions are marginal at best, because these regions lack industrial competence relative to the specific equipment system. If the system to be purchased is one in which the research and development is completed and production is in motion, then off-shore procurement could result in considerable savings in price. If these savings, taken in net government context*** were

*** That is, excluding import and excise duties which form part of departmental costs.

allocated carefully to other national policy goals (both industrial support and regional economic expansion) the benefits could be as great as those accruing from Canadian manufacture. Beyond this there is the added opportunity for production sharing programs with the source nation and for offsetting Canadian exports of reasonable technological and skill content which might be more in our production line and for which production might be allocated to disadvantaged regions. Assuming the strong possibility that the value of the Canadian dollar will rise in terms of the United States' dollar the opportunities for advantageous arrangements of this nature with the United States might be quite attractive.

At the same time, the possible benefits of arranging full system procurement with Canadian affiliates of multinational firms are worthy of consideration wherever this is possible. First of all these firms have control over, or access to the required technology and production processes. They contribute to national employment and produce at relatively cheap prices. There does not appear to be any logical reason to resist the import of technology which one cannot create and exploit nationally at a profit. Moreover in contracting with a multinational Canadian affiliate one may succeed in making the firm productively more efficient and achieve a bargaining position with the parent firm, such that it would convey broader export and technology privileges to its affiliate which in turn might significantly improve Canada's international trade position.

In consideration of limited Canadian manufacturing capability, in terms of United States (and others) large firm technological monopolies in Defence manufacturing, the Defence industry in Canada is not likely to constitute a strong stimulator of technological innovation in the smaller Canadian owned/controlled firm. Nevertheless it is true that a number of military equipment systems employ high technology components which are not exclusively military in use and for which some Canadian firms have demonstrated manufacturing and technological competence. Where possible,

procurement from such firms will assist in strengthening their position providing contracting can be made profitable for them. It is not very likely, however, that the value of any such procurement would in itself be high enough to create self-sustaining profitability. Other environmental factors constitute formidable obstacles to profitability for domestic industry in Defence contracting. At the same time, the nature of high technology procurement offers limited opportunity at best for the assistance of economically depressed regions. On the basis that the impact of this procurement is marginal for both goals (assuming that the procurement is not specifically designed with a particular goal in mind) it may often be more beneficial to adopt other procurement options though they may be somewhat less attractive for the government's image.

ADDITIONAL READING

1. Hodgins, Dr JW, The Ingredients of Technological Entrepreneurship, Department of Chemical Engineering, McMaster University, 1972. (Unpublished - copy available in DRAE.)

2. Technological Innovation, Its Environment and Management, US Department of Commerce, January 1967, Library Department of Industry, Ottawa HC 110.T6U5 (copy available in DRAE.)

3. Behrman, Jack N, National Interests and the Multinational Enterprise, Prentice Hall, 1970.

4. Kindleberger, Charles P, Ed, The International Corporation, MIT Press, Cambridge Mass, 1970.

5. Atkinson, Mary HE, Entrepreneurship and How it Relates to Canada, June 1971, DRAE Library Acc No 14843.

6. Sinclair, George, The Need for an Economic Policy to Encourage Secondary Industry, Sinclair Radio Laboratories Ltd, 1971 (copy available in DRAE.)

7. Sinclair, George, The Lack of Innovation in Canada, 1971 (copy available in DRAE.)

8. Vanterpool, A, The Potential for Science-Based Industry in the Halifax-Dartmouth Area, Department of Regional Economic Expansion, 1971.

9. Pound, CF and BG McRoberts, A New Perspective for Government R & D and Purchasing Policies, Defence Research Analysis Establishment, Report No 30, May 1972.

Unclassified

Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall document is classified)

1. ORIGINATING ACTIVITY
Defence Research Analysis Establishment
National Defence HQ, Ottawa, Canada

2a. DOCUMENT SECURITY CLASSIFICATION
Unclassified

2b. GROUP Two

3. DOCUMENT TITLE The Defence Program and National Industrial Development
(A Background Paper for Defence Planners)

4. DESCRIPTIVE NOTES (Type of report and inclusive dates)

5. AUTHOR(S) (Last name, first name, middle initial)
POUND, C.F.W.

6. DOCUMENT DATE April 1973

7a. TOTAL NO. OF PAGES 64

7b. NO. OF REFS 9

8a. PROJECT OR GRANT NO. 7207

9a. ORIGINATOR'S DOCUMENT NUMBER(S)
REPORT NO. DRAE 34

8b. CONTRACT NO.

9b. OTHER DOCUMENT NO.(S) (Any other numbers that may be assigned this document)

10. DISTRIBUTION STATEMENT
Additional distribution is allowed at the discretion of DSIS

11. SUPPLEMENTARY NOTES

12. SPONSORING ACTIVITY

13. ABSTRACT

Recent indications are that allocations for Defence equipment acquisition programs will not be decided on the basis of military factors alone but also in consideration of the benefits accruing to national policy goals for social and economic development.

The paper explores a number of the environmental factors which influence industrial growth in Canada. These include the dominance of th United States in Defence technology, uneven rates of economic growth and the influence of multinational firms in Canadian industry. Canadian factors include the environment for technological innovation, attitudes of Canadians, the government procurement process, and the conflicts whicl arise between policies for industrial expansion and those for the elimination of regional disparities.

DSIS
78-070

Unclassified

Security Classification

KEY WORDS

Defence Planning
National Objectives
Government goals
Nationalism
economic institutions
commerce & industry
free enterprise
private initiative
industrial production
economic growth
social development
policymaking
Defence procurement
technology
subsidization
regional development
sovereignty
tax incentives

INSTRUCTIONS

. ORIGINATING ACTIVITY: Enter the name and address of the organization issuing the document.

2a. DOCUMENT SECURITY CLASSIFICATION: Enter the overall security classification of the document including special warning terms whenever applicable.

b. GROUP: Enter security reclassification group number. The three groups are defined in Appendix 'M' of the DRB Security Regulations.

. DOCUMENT TITLE: Enter the complete document title in all capital letters. Titles in all cases should be unclassified. If a sufficiently descriptive title cannot be selected without classification, show title classification with the usual one-capital-letter abbreviation in parentheses immediately following the title.

. DESCRIPTIVE NOTES: Enter the category of document, e.g. technical report, technical note or technical letter. If appropriate, enter the type of document, e.g. interim, progress, summary, annual or final. Give the inclusive dates when a specific reporting period is covered.

AUTHOR(S): Enter the name(s) of author(s) as shown on or in the document. Enter last name, first name, middle initial. If military, show rank. The name of the principal author is an absolute minimum requirement.

DOCUMENT DATE: Enter the date (month, year) of Establishment approval for publication of the document.

. TOTAL NUMBER OF PAGES: The total page count should follow normal pagination procedures, i.e., enter the number of pages containing information.

. NUMBER OF REFERENCES: Enter the total number of references cited in the document.

. PROJECT OR GRANT NUMBER: If appropriate, enter the applicable research and development project or grant number under which the document was written.

. CONTRACT NUMBER: If appropriate, enter the applicable number under which the document was written.

. ORIGINATOR'S DOCUMENT NUMBER(S): Enter the official document number by which the document will be identified and controlled by the originating activity. This number must be unique to this document.

9b. OTHER DOCUMENT NUMBER(S): If the document has been assigned any other document numbers (either by the originator or by the sponsor), also enter this number(s).

10. DISTRIBUTION STATEMENT: Enter any limitations on further dissemination of the document, other than those imposed by security classification, using standard statements such as:

(1) "Qualified requesters may obtain copies of this document from their defence documentation center."

(2) "Announcement and dissemination of this document is not authorized without prior approval from originating activity."

11. SUPPLEMENTARY NOTES: Use for additional explanatory notes.

12. SPONSORING ACTIVITY: Enter the name of the departmental project office or laboratory sponsoring the research and development. Include address.

13. ABSTRACT: Enter an abstract giving a brief and factual summary of the document, even though it may also appear elsewhere in the body of the document itself. It is highly desirable that the abstract of classified documents be unclassified. Each paragraph of the abstract shall end with an indication of the security classification of the information in the paragraph (unless the document itself is unclassified) represented as (TS), (S), (C), (R), or (U).

The length of the abstract should be limited to 20 single-spaced standard typewritten lines; 7½ inches long.

14. KEY WORDS: Key words are technically meaningful terms or short phrases that characterize a document and could be helpful in cataloging the document. Key words should be selected so that no security classification is required. Identifiers, such as equipment model designation, trade name, military project code name, geographic location, may be used as key words but will be followed by an indication of technical context.

19406

73-4268