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CANADIAN DEFENCE TRADE WITH THE U.S.
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SUBSIDY PACTS
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THE BEHAVIOUR OF U.S. SUBSIDIARIES IN CANADA:
IMPLICATIONS FOR TRADE AND INVESTMENTS
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These papers contain preliminary findings from research still in progress and should not be quoted without prior approval of the author.

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WORKSHOP ON U.S.-CANADIAN RELATIONS

SPENCER HALL, UNIVERSITY OF WESTERN ONTARIO

NOVEMBER 18-19, 1983

CANADIAN DEFENCE TRADE WITH THE U.S.

INTRODUCTION

THE DEFENCE PRODUCTION SHARING ARRANGEMENT (DPSA), WHICH CURRENTLY IMPLEMENTS THE PRINCIPLES OF DEFENCE ECONOMIC CO-OPERATION BETWEEN CANADA AND THE UNITED STATES, WAS FIRST DEFINED BY THE HYDE PARK DECLARATION OF 1941, AND HAS PROVEN TO BE OF MUTUAL BENEFIT TO BOTH THE UNITED STATES AND CANADA. THE PROGRAM WAS ORIGINALLY CONCEIVED TO PROVIDE CANADIAN MANUFACTURERS WITH THE OPPORTUNITY TO SUPPLY A WIDE RANGE OF DEFENCE EQUIPMENT AND SERVICES TO THE UNITED STATES DEPARTMENT OF DEFENSE (DOD) WHILE OFFERING THE U.S. DOD A BROADER INDUSTRIAL BASE TO DRAW ON TO MEET THEIR DEFENCE REQUIREMENTS. THE CANADA/U.S. DEFENCE PRODUCTION SHARING ARRANGEMENT (DPSA) AND ITS COMPANION, DEFENCE DEVELOPMENT SHARING PROGRAM (DDSP) WHICH WAS DESIGNED TO FOSTER JOINT RESEARCH AND DEVELOPMENT, HAVE NOW BEEN IN EXISTENCE, ESSENTIALLY UNCHANGED, FOR OVER 20 YEARS.

THE MARKET

THE DPSA PROVIDES U.S. DEFENSE MARKET ACCESS FOR CANADIAN INDUSTRY BY VIRTUE OF THE WAIVER OF THE "BUY AMERICAN" ACT, THE REMOVAL OF CUSTOMS DUTIES AND TARIFFS, AND THE FREE ACCESS OF U.S. DEFENCE PRODUCTS FOR CANADIAN DEFENCE NEEDS. THE ARRANGEMENT GUARANTEES THAT CANADIAN MANUFACTURERS ARE, IN ESSENCE, DOMESTIC SOURCES OF SUPPLY FOR BOTH THE U.S. MILITARY AND U.S. PRIME CONTRACTORS TO THE U.S. DOD.

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HOWEVER, CERTAIN LIMITATIONS TO A NORTH AMERICAN FREE TRADE ZONE FOR DEFENCE ITEMS DO EXIST. THESE LIMITATIONS ARE SIGNIFICANT, FOR EXAMPLE, THE SMALL AND MINORITY BUSINESS SET ASIDES WHICH OVERRIDES THE DPSA, BUT THESE ARE BASICALLY NON-DISCRIMINATORY AND PRESENT AS MUCH OF A PROBLEM FOR LARGER U.S. CORPORATIONS AS THEY DO FOR CANADIAN FIRMS. MORE IMPORTANT ARE PROGRAMS OF A HIGHLY CLASSIFIED NATURE WHICH ARE SUBJECT TO TRANSFER OF TECHNOLOGY LIMITATIONS AND THOSE LARGE DOLLAR VALUE PROGRAMS WHICH HAVE HIGH CONGRESSIONAL VISIBILITY AND FOR WHICH THE "NOT MADE HERE" CRITERIA BECOME THE GOVERNING ELEMENT, AND MAY OVERCOME THE COMPETITIVITY OF CANADIAN SOURCING. HOWEVER, AFTER REMOVING THOSE PROGRAMS WHICH ARE RESTRICTED OR REQUIRE SPECIAL CONSIDERATION, IT IS ESTIMATED THAT ABOUT 30% OF THE ANNUAL DOD PROGRAM BUDGET (SOME 89 BILLION IN 1983) IS AVAILABLE FOR COMPETITION BY CANADIAN INDUSTRY ON A REGULAR BASIS.

CANADIAN DEFENCE EXPORTS TO THE U.S.

THE DPSA HAS SERVED CANADIAN INDUSTRY WELL, WITH 225 COMPANIES, OBTAINING CONTRACTS FOR DEFENCE OR DEFENCE-RELATED ITEMS IN 1982. EIGHTY-ONE OF THE 225 PARTICIPATING COMPANIES HAD SALES OF OVER \$1,000,000, INDICATING THAT THE BULK OF THE BUSINESS IS NOT RESTRICTED TO A FEW LARGE CORPORATIONS. THE EXPORT SALES OF ALL TYPES OF DEFENCE ITEMS TO THE UNITED STATES HAVE GROWN STEADILY IN RECENT YEARS - \$367.7 M IN 1979, \$481.7 M (1980), \$826.6 M (1981), \$1,027.9 M (1982) AND APPROXIMATELY \$714 M FOR THE FIRST SIX MONTHS IN 1983. AN AVERAGE ANNUAL GROWTH RATE OF SOME 42.3%, WHICH HAS MORE THAN COMPENSATED FOR INFLATION. (SEE - SLIDE 1)

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ONE OF THE DPSA OBJECTIVES IS A ROUGH BALANCE OF DEFENCE TRADE BETWEEN THE TWO COUNTRIES AND THE CUMULATIVE TOTALS FROM 1959 TO DATE (JUNE, 1983) SHOW \$7.8 BILLION IN SALES FROM CANADA TO THE UNITED STATES, WHILE CANADIAN PROCUREMENT IN THE U.S. HAS AMOUNTED TO \$8.9 BILLION RESULTING IN A 23 YEAR IMBALANCE OF \$1.1 BILLION IN FAVOUR OF THE U.S. THE GROWTH IN THE PROGRAM IN RECENT YEARS, AS INDICATED BY THE INCREASE IN DOLLAR VALUE OF DEFENCE EXPORTS, THE NUMBER OF COMPANIES PARTICIPATING, AND THE AMOUNT OF NEW BUSINESS BEING WON, INDICATES THAT THE DPSA REMAINS A SOUND ECONOMIC EXPORT PROGRAM WHICH CONTINUES TO SUPPORT THE GROWTH OF HIGH TECHNOLOGY MANUFACTURING IN CANADA.

RATHER THAN ANY FAILURE OF THE DPSA TO MAINTAIN MARKET ACCESS, THE PRESENT IMBALANCE IS LARGELY DUE TO THE SIGNIFICANTLY INCREASED LEVELS OF CAPITAL PURCHASES FROM THE U.S. IN THE 1977-1982 TIMEFRAME, ESPECIALLY MAJOR AEROSPACE WEAPON SYSTEMS SUCH AS THE CP-140 AURORA AND CF-18, WHICH HAVE ALSO HAD MAJOR NON DEFENCE OFFSETS OR INDUSTRIAL BENEFITS OBLIGATIONS AS WELL.

CANADIAN GOVERNMENT SUPPORT

THE PRESENT DPSA PROGRAM IS STRUCTURALLY WELL SUPPORTED BY THE CANADIAN GOVERNMENT, AND HAS IN PLACE PROGRAMS IN EXTERNAL AFFAIRS SUCH AS DDSA, BILATERAL STEERING COMMITTEES, THE DEPARTMENT OF REGIONAL ECONOMIC EXPANSION, THE CANADIAN COMMERCIAL CORPORATION, ALSO THE SOURCING ACTIVITY OF THE DEPARTMENT OF SUPPLY AND SERVICES, AND THE DEPARTMENT OF NATIONAL DEFENCE WHICH PROVIDES DEFENCE SALES SUPPORTS.

THESE MECHANISMS ARE WELL DEFINED, WITH GOOD INTERFACES BETWEEN THE CANADIAN GOVERNMENT ORGANIZATIONS AND THEIR U.S. COUNTERPARTS. WELL ESTABLISHED PROCEDURES TO DEAL WITH IMPEDIMENTS TO THE SMOOTH OPERATION OF THE PROGRAM AND THE FREE ACCESS TO THE U.S. DEFENSE MARKET FOR CANADIAN INDUSTRY ARE IN PLACE. DIRECT FUNDING MECHANISMS AVAILABLE TO ASSIST INDUSTRY ARE THE PROGRAM FOR EXPORT MARKET DEVELOPMENT (PEMD) FOR MARKET SUPPORT, AND THE DEFENCE INDUSTRY PRODUCTIVITY PROGRAM (DIPP) FOR RESEARCH, SOURCE ESTABLISHMENT AND CAPITAL ASSISTANCE, WHICH HAS PUT OVER \$180 MILLION INTO CANADIAN HIGH TECH INDUSTRY IN THE PAST YEAR. CURRENT BILATERAL ISSUES WHICH HAVE PROVEN TO BE IMPEDIMENTS TO DEFENCE PRODUCTION SHARING ARE TECHNOLOGY TRANSFER, THE RECENTLY SOLVED SPECIALTY METALS RESTRICTION, AND A VARIETY OF CASE-BY-CASE PROCUREMENT ISSUES. THESE, HOWEVER, ARE BEING ADDRESSED AS PART OF THE ONGOING PROCESS OF MANAGING THE PROGRAM BY EXTERNAL AFFAIRS AND OTHER GOVERNMENT DEPARTMENTS.

THE TECHNOLOGY TRANSFER PROBLEM IS SERIOUS AND COULD HAVE A LONG RANGE INFLUENCE THAT WOULD PRODUCE VASTLY DIFFERENT CONDITIONS FOR CANADIAN INDUSTRY IN THE NEXT FEW YEARS. THIS COULD HAVE SERIOUS ^{retained} EFFECTS ON CANADIAN HIGH TECHNOLOGY INDUSTRY AS MOST OF THIS INDUSTRY HAS A RELATED COMMERCIAL PRODUCTS SEGMENT WHICH IS DEPENDENT ON THE SPIN-OFF FROM THE DEFENCE SIDE. EXAMPLES OF THIS ARE MANY, AND CANADIAN INDUSTRY MUST RESPOND BY OFFERING NEW TECHNOLOGY AS WELL, IN ORDER TO COME TO THE TABLE WITH NEGOTIATING POWER.

ALTHOUGH CANADIAN DEFENCE TRADE WITH THE U.S. CURRENTLY EXCEEDS BY A LARGE MARGIN, THE TRADE IN THIS SECTOR WITH ANY OTHER COUNTRY, EUROPEAN AND OTHER COUNTRIES HAVE BEEN SUCCESSFUL RECENTLY IN SELLING MAJOR WEAPONS SYSTEMS TO THE U.S. BASED ON INDIGENOUS TECHNOLOGY WHICH WOULD HAVE FUTURE SIGNIFICANCE TO THE CONTINUANCE OF THE U.S.-CANADIAN RELATIONSHIP.

IN CONCLUSION, ALTHOUGH DEFENCE TRADE BETWEEN OUR TWO COUNTRIES IS CURRENTLY HEALTHY AND BECAUSE OF MAJOR U.S. DEFENCE PROGRAMS, SHOULD CONTINUE, SO IN THE SHORT TERM, PROTECTIONISM, AND LIMITATIONS ON THE TRANSFER OF TECHNOLOGY ^{for future} COULD LIMIT CANADIAN PARTICIPATION IN THE NORTH AMERICAN DEFENCE BASE.

DEFENCE TRADE STATISTICS

1959 - JUNE, 1983

- \$ CANADIAN MILLIONS -

	<u>1950-1980</u>	<u>1981</u>	<u>1982</u>	<u>JAN/JUNE 1983</u>	<u>TOTAL 1959-1983</u>
<u>PROCUREMENT IN CANADA BY THE UNITED STATES</u>	5,195.5	826.6	1,027.9	714.0	7,764.0
<u>CANADIAN PROCUREMENT IN THE UNITED STATES</u>	5,534.9	1,033.8	1,462.4	702.3	8,733.4
<hr/>					
<u>U.S. CROSS-BORDER BALANCE</u>					
IN FAVOUR OF U.S.	339.4	207.2	434.5		969.4
IN FAVOUR OF CANADA				14.7	

DEFENCE EXPORTS BY INDUSTRY SECTOR

1959 - JUNE 1983

- \$ CANADIAN MILLIONS -

	1959 - 1981	1982	JAN/JUNE, 1983	TOTAL
	U.S.	U.S.	U.S.	U.S.
AEROSPACE	2,657.8	260.3	200.5	3,118.6
ELECTRICAL & ELECTRONICS	1,890.7	412.0	170.4	2,473.1
MACHINERY/ARMAMENT	678.8	75.6	37.5	791.9
MARINE	483.4	123.9	91.8	699.1
MECHANICAL TRANSPORT	311.4	156.1	213.8	681.3
TOTAL U.S. EXPORTS	6,022.1	1,027.9	714.0	7,764.0

SUBSIDY PACTS

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Ontario Economic Council

SUBSIDY PACTS
David Conklin*

Introduction

Throughout the world, governments offer investment subsidies to entice firms to locate in particular geographic areas, 'ball-outs' to encourage firms to maintain plants they would otherwise close, and operating subsidies, such as R & D grants or export credits, to ensure that firms engage in particular types and volumes of production. Governments have implemented a wide array of industrial policies to achieve specific development goals.¹ A common instrument of industrial policies is the provision of public money, sometimes through direct grants or subsidized loans, but often through indirect subsidies. The latter may include procurement programs that pay higher than market prices; tax concessions, available only for specific types of activities; funding of government-owned corporations that need not achieve the profit rates necessary in private firms; or provision of inputs at lower than market prices. The visibility and value of subsidies - individually and collectively - appear to be increasing in many countries. Furthermore, with current and projected reductions in tariff barriers, such subsidies will become relatively more important as a trade-determining process. Hence it will not be surprising if international trade negotiations devote more attention to these government subsidies. In particular, discussions of sectoral free trade between Canada and the United States will have to confront the subsidy issue, since the elimination of tariffs increases the vulnerability of a nation to the subsidies provided by its trading partners.

1 See, for example, David Conklin, Methodologies and Themes for the Analysis and Evaluation of Industrial Policies: A Survey of Recent O.E.C.D. Studies, an Ontario Economic Council Working Paper, October, 1983. Also, see Phillip H. Doherty, Industrial Assistance Programs in Canada, CDA Canadian Limited, published annually.

* Research Director, Ontario Economic Council.

It is tempting to discuss subsidies in the context of the substantial literature that deals with international tariff agreements. At the outset, it is important to note that subsidies differ from tariffs and that the tariff reduction literature cannot automatically be applied to the subsidy issue. Differences include the problem of defining and calculating subsidies when government financial assistance can take a myriad of forms, the dissimilar impact on regions within a nation and even on firms within an industry, the role of sub-national governments, and the procedures for enforcement. Many such differences arise from the fact that tariffs are product-specific and country-specific and they deal with imports, whereas subsidies can be firm-specific, region-specific, project-specific, or activity-specific and can deal with all types of production whether or not they involve imports. Furthermore, subsidies cannot be analyzed in the same way as quotas, which are product-specific, country-specific and deal with imports.

A central theme of this paper is that, if subsidies are implemented to achieve specific objectives, then an intergovernmental pact that limits subsidies may diminish rather than improve the well-being of signatories. Rather, a pact may increase welfare by improving the allocation of investments among regions and industries through a more appropriate pattern of subsidies. The phrase 'free trade' is frequently used in the tariff-reduction literature to describe the elimination of tariffs. In a discussion of intergovernmental subsidy negotiations, 'free trade' is a more ambiguous term. The definition of what should be considered a subsidy is not precise; the size of many subsidies cannot be calculated exactly; and much of the existing literature concerning free trade is not applicable.

This paper examines the economic rationales for offering subsidies in an attempt to determine the appropriate economic objectives of international subsidy negotiations. At the outset, it is important to note that current high levels of unemployment and low rates of productivity growth underlie much of the argument in favour of industrial policies and subsidies. If all political entities were to experience rapid growth and full employment, the economic rationales for subsidies would lose some of their significance. In fact, some observers may oppose subsidies, not because of their concern that subsidies alter international trade, but because they believe in the free adjustment of the economy as the optimal way of attaining efficiency and growth. This paper avoids an evaluation of the success or failure of subsidies and simply examines possible economic rationales for subsidies in

order to provide a basis for analyzing the economic implications of various types of subsidy pacts.

An investment by a private firm may provide benefits which cannot be appropriated by the firm but which are significant for others within the political entity where the investment is located. Such benefits which are external to the firm include employment opportunities, the sharing of government costs and the advancement of technology. These are often referred to as externalities.² A central argument of this paper is that it is useful to regard such externalities as goods offered by potential investors for sale to governments.³ An international market exists for these externalities; and the prices governments offer to acquire them are quoted in the form of subsidies. Economists and others have devoted considerable thought to negative externalities such as pollution. In such analyses, the use of fines, special taxes, and regulation is seen as a means of introducing a firm's negative externalities into the firm's investment and production decisions.⁴ Such negative externalities are not the focus of this paper except in the following sense: where an investment or production decision results in negative as well as positive externalities, political entities seeking to maximize their welfare should offer a subsidy equal to net externalities. One particularly important type of negative externality results from the impact of a subsidized investment on existing manufacturers. Subsidized investment will expand the supply of a product,

2 See, for example, Ron Saunders, Aid to Workers in Declining Industries, Ontario Economic Council, forthcoming.

3 It is not clear whether a government will focus only on externalities as they affect government revenue and expenditures or whether the government will also consider the impact of externalities on other individuals within the political entity. Recently, a substantial literature has developed concerning the ability of individuals to influence a government's decision so as to benefit themselves. See Hartle, Trebilcock, and DeWees, The Choice of Governing Instrument, Economic Council of Canada. The extent to which a government includes externality effects on third parties will depend upon the society's political power structure. See J.R. Melvin, "Political Structure and the Pursuit of Economic Objectives," in Trebilcock, et. alii, Federalism and the Canadian Economic Union, Ontario Economic Council, 1983. For example, private costs of unemployment caused by a plant closing may or may not be included in a government's calculations. Economists would argue that at least some private costs should be included, such as loss of income due to job search and retraining, if the political entity's overall welfare is to be maximized. See Ron Saunders, *op. cit.*

4 See, for example, R.H. Coase, 'The Problem of Social Cost', The Journal of Law and Economics, October, 1960 pages 1-44.

and existing manufacturers of that product may consequently suffer reductions in output, employment, and profits. The calculation of net externalities and subsidies should include such negative results.

The paper examines this externality-subsidy market in the following sequence. Many types of subsidies are offered by governments, and so negotiators of a subsidy pact will have to decide upon the definition of subsidies to be dealt with, a problem made more difficult by the ability of signatories to switch their financial assistance to forms that have not been included in the pact. The paper considers why the competition for externalities has intensified and consequently, why the analysis of this market has grown in importance. The perfectly competitive model for an externality-subsidy market is presented, where a large number of governments compete to obtain the investment and production of a large number of firms. Analysis of such a market structure indicates that a pact which seeks to reduce subsidy levels may actually diminish, rather than increase, the welfare of the signatories. Important characteristics of a subsidy pact in a perfectly competitive market include the ceilings established for subsidies, the provisions for adjusting these ceilings, the relationships with non-signatories, the degree to which firms can choose to locate in non-pact countries, and the opportunity for signatories to shift their assistance to forms not included in the pact.

The paper then considers the case where perfect competition in the externality - subsidy market fails because there are too few firms, such that a location decision may alter the terms of trade. In such a market, it is suggested that a series of pacts may be necessary, with one for each type of product. The externality - subsidy market may also fail because the information available to governments is imperfect. In such circumstances, it is suggested that a pact for the sharing of information may improve the welfare of all signatories. The competitive model may fail because externalities may spill over into other jurisdictions. In this case, a pact under which subsidies are pooled could rationalize subsidy offers, allocate costs in accordance with externalities, and so make all participants better off than if the investments went elsewhere. The reduction of political barriers can serve as an alternative to subsidy pacts. Finally, the enforcement issue is considered and several concerns are raised, particularly the independence of state and provincial governments and the ability to retaliate against the subsidies of non-signatories. Throughout the paper, it is suggested that analysis of the externality-subsidy market

and the process of negotiating subsidy pacts will rely heavily on studies of specific firms, production processes, groups of unemployed workers, and regional disparities. The techniques of industrial organization studies including cost-benefit analyses of subsidies will be necessary to place estimates on the various aspects of the externality-subsidy relationships. Analysis and negotiation sector by sector seems most appropriate. A set of observations are drawn from these discussions.

Under perfectly competitive conditions, the market for externalities, like any other market, should result in an efficient solution, with investments going to those locations (or staying in those locations) where the internal rate of return, plus subsidies equal to externalities, is greatest.⁵ Collusion among political entities could reduce the level of subsidies, but at the same time it could create distortions and inefficiencies. A subsidy pact must find its justification not in the simple objective of reducing subsidy levels, but rather in the desire to overcome specific market failures in the externality-subsidy process. This paper argues that such market failures do exist and that they determine the appropriate features of a subsidy pact.

Many of these issues and analyses are relevant for all levels of government. Within a single nation, municipalities, provinces, and states use subsidies to compete with each other for private investment and production. Concern for an internal common market or economic union may focus on these issues.⁶ Furthermore, international investment competition may occur not only at a national level but also between sub-national governments.

The problem of defining subsidies for the purpose of a pact

Negotiation of a subsidy pact will have to deal with the definition of subsidies; and the definition chosen will affect the nature of the pact. The following examples illustrate this point:

5 It should be noted that, as in other markets there may be intra-marginal purchasers who are able to purchase externalities at a lower price than they would be willing to pay. This may occur because an investment's internal rate of return may vary from one political entity to another. Investors may choose one particular location in spite of being offered higher subsidies elsewhere.
6 See Trebilcock, et. alia, Federalism and the Canadian Economic Union, Ontario Economic Council, 1983.

Inclusion of state, provincial, and municipal assistance as subsidies under the pact. A 1982 book by Davenport et. alia., Industrial Policy in Ontario and Quebec has examined the recent substantial growth of provincial financial assistance. The authors have estimated that total provincial direct subsidies grew from an annual level of \$1 million in 1970 to \$204 million in 1979.⁷ Apart from these, provincial governments have implemented various procurement policies through which domestic companies can receive higher prices than those quoted by foreign companies. Such practices are followed by many American states. All levels of government provide goods and services at less than market prices in a manner that subsidizes the costs of private firms.

In regard to this aspect of negotiations, a subsidy pact will be quite different from those aimed at tariff reductions. To what extent can a national government control the actions of minor governments within its borders? In both Canada and the United States, it is difficult to imagine effective national government commitments. Will it be possible to include provincial and state governments in negotiations? The mechanics for such involvement would be new for many participants, and the process somewhat unclear. Even the Constitutional division of powers entails ambiguities which could become important in such negotiations. A pact that includes sub-national governments will likely have to focus initially on a narrow and precise definition of subsidies, with gradual extensions in future agreements to include additional types of government assistance.

Government Ownership of Corporations. Canada and its provinces have developed a large set of Crown Corporations, many of which produce and sell significant quantities of goods that are produced by private firms in other countries. Generally, such government operations do not base their prices on the same market criteria followed by private firms, nor do they pay corporate income taxes, as private firms must. In particular, a market rate of return on capital invested is usually not of the same concern in government operations. Government provision of capital to such firms at less than market rates, and government payments to cover operating losses, can form significant subsidies for the products concerned, and these subsidies may distort trade patterns. The energy sector provides

7 Davenport, Green, Hlane, Saunders, Watson, Industrial Policy in Ontario and Quebec, Ontario Economic Council, 1982, p. 12.

At the one extreme, programs aimed at improving the education and skills of the labor force are unlikely to be subject to subsidy pacts in spite of their importance. Yet many recently instituted programs aimed at stimulating R & D may well be the subject for international negotiation, particularly when these take the form of linkages between government-funded universities, research laboratories, or technology centres, on the one hand, and private corporations on the other.

Of major significance are the provision of government capital at interest rates below those prevailing in the market and the provision of government guarantees for corporate loans from the private sector. Most dramatic, perhaps, are government subsidies for the purpose of bailing-out firms considered to be in such severe distress that they will close some or all of their operations if not granted financial assistance.⁸ Capital assistance can be directed at many objectives other than bail-outs. A 1982 study by the Economic Council of Canada has documented dozens of Canadian government programs - both federal and provincial - which provide loans and loan guarantees. This study uses the government bond yield to estimate the amount of subsidy involved in the special interest rates charged for these loans.⁹ To calculate the subsidy component of such assistance and to relate that component to a particular firm at a particular time is extremely difficult and results in imprecise estimates. Even the calculations of the Economic Council as they relate to subsidy estimates by program can be subjected to criticism.

Government Tax Concessions. Special tax concessions can reduce a private firm's costs and provide a competitive advantage to much the same extent as direct subsidies can. Consequently, it is likely that governments negotiating a subsidy pact will wish to include special tax concessions in such discussions.

On a general level, some countries have relied on a value-added tax which is not payable on exports. In countries that impose corporate income taxes instead of value-added taxes, the argument can be made that foreign competitors' firms are being subsidized by the VAT export-rebate programs.

8 See Chandler, Gunderson, Halpern, Trebilcock, and Quinn, The Political Economy of Business Bail-Outs, Ontario Economic Council, forthcoming.

9 Economic Council of Canada, Intervention and Efficiency, A Study of Government Credit and Credit Guarantees to the Private Sector, 1982.

examples of this, where Canadian government-owned hydro and oil companies may compete with private U.S. corporations. Aircraft manufacturing may be particularly important in the near future, as government-owned Canadair competes internationally, with its Dash-7, a 50 seat commuter aircraft with STOL capacity, with its Dash-8, a 36-seat aircraft, and with its new executive jet. The Ontario government's Urban Transportation Development Corporation is actively competing across Canada and in other nations to sell rail passenger vehicles, subway cars, and integrated urban transit systems. Government marketing agencies may subsidize private domestic producers in a manner that affects international trade. This has particularly been the case with agricultural marketing agencies, and the EEC's common agricultural policy (CAP) has had serious effects on world trade, recently, for example, involving disputes with the U.S. over exports to Egypt and China. For its own part, of course, the U.S. government price-support programmes have a major effect on the prices and quantities of traded agricultural products. Government corporations may provide subsidized inputs, such as cheap energy or petrochemicals, that give private firms an advantage in international competition.

Of particular interest are manufacturing firms which initially received explicit subsidies but which later were taken over by government. In Canada, Consolidated Computer Incorporated and Canadair both became government-owned, after a period of receiving explicit subsidies. With the change to government ownership, however, calculation of the value of the implicit subsidies becomes much more difficult.

Communist and other non-market nations present special difficulties in that a substantial proportion of their prices do not reflect production costs. Implicit subsidies may provide many of their products with special advantages in international competition, and yet it may not be possible to calculate the extent of such subsidies. How such nations could participate in a subsidy pact is a most perplexing issue. Yet to establish subsidy pacts without their involvement, while still permitting trade with them, would jeopardize particular firms within the signatories.

Government Provision of Goods and Services. All levels of government provide goods and services at less than market prices. Many municipalities offer commercial land at subsidized prices, often in specially developed industrial parks. A vast array of government programs reduces the costs of private corporations below the level they would otherwise pay.

Cultural Subsidies. Canadian governments have developed significant subsidy programs to stimulate the growth and refinement of a distinctive culture.¹⁰ Some such activities reduce the level of Canadian spending on non-Canadian cultural activities. In July, 1983, for example, a new federal government fund of \$230 million was established to assist Canadian television production over the next five years. Arrangements are made on the basis of \$1 of public money to match every \$2 of private money. Together with this explicit subsidy program, the government also introduced additional tax concessions for such private investment.¹¹ No doubt some recognition must be given to a nation's desire to strengthen its cultural identity, and some level and types of subsidies must be permitted for this purpose. What level of such activity and what types of programs exceed reasonable behaviour and so should become the subject for international subsidy negotiations? The issue of tax-deductibility of Canadian advertisements in U.S. magazines has shown that such cultural protection can cause bitter reaction and significant retaliation.

Different Assistance for Foreign versus Domestic Investors. The exclusion of foreign investors from some of the subsidies offered to domestic investors has created another area of potential conflict that could be the subject of international negotiations. Special assistance to the exploration activities of Canadian-owned oil companies through PIP grants leaves foreign-owned firms at a competitive disadvantage even if their performance within Canada is no different from that of Canadian firms. To qualify as having Canadian content, film productions must fulfill an arbitrary set of nationality requirements in terms of the individuals in such productions. Within any subsidy pact, an important question will be the right of access by foreigners to the subsidies being offered, and the conditions that should govern that access.

Competition for Externalities: Recent Intensification

Three major investment externalities relate to employment, the sharing of government costs, and the advancement of technology. In recent years,

10 See, for example, S. Daniel Lyon and Michael Trebilcock, Public Strategy and Motion Pictures: The Choice of Instruments to Promote the Development of the Canadian Film Production Industry, Ontario Economic Council, 1982.

11 Globe and Mail, October 27, 1983, page B7.

these have grown substantially in importance for a variety of reasons:

Political entities at all levels have increased their spending for the unemployed. Many government programs cater specifically to the needs of the unemployed. If a potential investor creates a job opening for an unemployed person, this will result in a decrease in government spending that will be equal to a substantial portion of the wage. Hence the linkage has become clearer and more substantial between investment subsidies on the one hand, and decreases in spending on the unemployed, on the other.

It appears that the nature of unemployment has changed. Many of the unemployed will need to learn new skills in order to work, and these skills may best be learned in an apprentice-type of training within a firm. Without such retraining, many of the unemployed may remain jobless indefinitely. In the past, governments may have viewed unemployment as a cyclical phenomenon, with economic recovery bringing an automatic solution. The perceived investment externality is thus much greater than in former years, since investment may provide the optimal means of retraining and since the spending on some members of the unemployed may otherwise continue indefinitely.

Government expenditures have risen dramatically in recent decades. New investment is often seen as a means of spreading these high government costs over new taxpayers. Recent recession and diminished productivity growth have strengthened this view.

Many governments have become more responsive to the lobbying of third party individuals who may be affected by an investment decision. In particular, the closing of a plant will hurt employees who, in their own right, will influence a government's decision to provide industrial subsidies.

'High tech' has come to be a significant component of productivity growth. New 'high tech' investment can advance the general

level. Those governments for whom particular externalities would be worth more than this level will not be able to purchase as much investment or production as they would under the perfectly competitive approach. Overall efficiency is reduced, since non-price elements will become a determining factor in location decisions. Investments and production will not be drawn to the political territory where they are valued the most. The lower the maximum permissible subsidy level the greater will be this distortion. Externalities will be of most value to those political territories with the highest rates of unemployment, and so these will be the territories most hurt by such a non-competition pact.

In recognition of this likelihood, the E.E.C. has established three different subsidy levels to reduce distortions caused by its non-competition subsidy pact:

'In the first, poorest, area the ceiling on aid is set at 75 per cent net grant equivalent of initial investment' or '13,000 ECU (European Units of Account) per job created by the initial investment'. In the second group the ceiling is set at 30 per cent net grant equivalent, or 5,000 ECU per job created, provided that the 'job creating' grant does not exceed 40 per cent of the initial investment. In the third group the ceiling is set at 25 per cent net grant, or 4,500 ECU per job created, but not to exceed 30 per cent net grant equivalent. For the final group, which comprises the major part of the Community, the ceiling is set at 20 per cent net grant equivalent, or 3,500 ECU per job created, not to exceed 25 per cent of the initial investment.'¹³

The E.E.C. approach will only be successful in allocating investment externalities to the extent that these ratios mirror their relative values to each political territory. That regulators will be able to establish price ratios that closely resemble those of a free market seems unlikely. Distortions will probably remain.

Five other issues deserve mention. First, regulators such as those who set the E.E.C. subsidy levels should retain the right to alter these ratios as circumstances change and as distortions become apparent. That is, a non-competition pact of this type should provide for changes to be made over time, whenever the regulators see that the ratios are, indeed, causing distortions.

Second, the process of establishing such ratios may well involve political trade-offs and non-economic elements, and the procedures for

13 Warren Schwartz, 'Regulation of Industrial Subsidies in the EEC, the United States, and GATT,' in Federalism and the Canadian Economic Union, edited by Trebilcock, Pritchard, Courchene, and Whalley, page 401.

level of scientific knowledge and skill and can assist other firms and individuals in their adoption of new technology. The Economic Council of Canada has recently published The Bottom Line: Technology Trade and Income Growth, which describes current government assistance programs that seek to stimulate R&D, and which advocates extensions and modifications to improve their effectiveness.¹²

As a result of these trends, the externality - subsidy market has become increasingly active. Hence analysis of this market has grown in importance, particularly in regard to the question of whether unlimited competition among governments will result in efficient location decisions, or whether a pact that limits subsidies might be more appropriate.

The Perfectly Competitive Solution

A government should be prepared to offer a subsidy equal to the present discounted value of the future stream of externalities associated with any investment. To offer less would mean that the firm would locate elsewhere, to the detriment of the local economy. A government should calculate the appropriate subsidy for each potential investment, offering such subsidies as long as its well-being could be enhanced by more investment. Since a very large number of investment possibilities exist, with a very wide range of sizes, no government is noticeably affected by the subsidy offers of any other government, except insofar as all such offers influence the market price of externalities. A particular externality may not be of the same value to all governments. For example, the social cost of unemployment or the presence of underutilized government services may vary among political entities. Similarly, the projected internal profitability will vary among political regions. Consequently, each firm locates in the particular territory where its combination of externalities, plus its internal profitability, is highest.

A Pact for the Sole Purpose of Reducing Subsidy Levels

Suppose that a subsidy pact provides for a maximum permissible subsidy

12 Economic Council of Canada, The Bottom Line: Technology Trade and Income Growth, 1983.

establishing these ratios may affect the ratios themselves. In Canada, substantial discussion has focussed, in the past, on the impact of tariffs on different regions of the country and the question of the regional beneficiaries of tariff reduction. Such discussion will probably shift its focus to subsidies, and regional political forces will advocate their respective interests in any subsidy pact negotiations.

Third, a pact of this type exposes all of its participants to the risk that non-signatories will gain the benefits of the pact. Firms with externalities having a free market value higher than the permissible subsidy levels will consider locating in political territories that are not subject to the pact. The participants in the pact have deprived themselves of a set of potential investments, while for non-pact members the total supply of externalities has increased, thereby decreasing their market price of subsidies.

Fourth, the extent to which such a pact can achieve its objective will depend upon the degree to which firms can locate in non-pact political territories. The post-1945 expansion of international investment suggests that such a pact will become less useful. Firms are increasingly able to shift production facilities to other nations, particularly with recent and projected decreases in tariff barriers.

Fifth, a subsidy pact that deals only with new investment may shift the competitive bidding towards bail-out subsidies, as pact members strive more vigorously to retain the investment they already have. The extent to which such bail-out competition will intensify will depend upon the degree to which the subsidy pact forces new investment to other nations. Hence, a subsidy pact which firms can avoid through international investment will face particularly severe difficulties in terms of bail-out competition among the signatories.

A subsidy pact may focus on one particular type of subsidy, such as government export financing. At present, a consensus arrangement exists among twenty-two industrial countries, establishing minimum government interest rates for export financing. The comments above are generally applicable for such agreements. In particular, recent significant changes in interest rates and exchange rates have emphasized the need for flexibility in the provisions of such a subsidy pact. Recent amendments to the O.E.C.D. pact provide a formula for automatic adjustments in permissible interest rates for export financing. Only experience will be able to tell whether the formula itself will have to be changed over time.

Market Failure Due to Too Few Firms

The perfectly competitive model presented above will fail if a particular industry has so few members worldwide and such a low elasticity of product substitution that firms in that industry possess market power. Such a situation may rest upon the existence of substantial economies of scale, or the possession of essential technical knowledge. In such a case, the location decision of the firm involves more than the externalities discussed above. By enticing such a firm, a political territory may alter the market structure for the relevant product. In the extreme, a political entity might attempt to monopolize production and alter the international terms of trade. A substantial body of economic literature deals with competitive behaviour when few producers exist, such that decisions of one firm directly affect the welfare of the others. Game theoretic analysis suggests a variety of strategic reactions. Much of this discussion is relevant in considering the use of subsidies by political entities in order to maximize their interests vis-a-vis those of other political entities.¹⁴

When such a situation exists, there is no doubt that the subsidy market can deteriorate to a crude level of economic warfare. One might imagine a country monopolizing production of particular types of aircraft, or some microelectronics or biotechnology product, and then raising the international price. And one might imagine a country offering special subsidies to attain this objective, particularly R & D subsidies.

Such situations can be important, politically as well as economically. Boeing argues, for example, that Airbus Industrie has been subsidized by over \$5 billion in 1982 prices. From the perspective of Boeing, these subsidies have created unfair competition. From the perspective of France, these subsidies have prevented a complete reliance on Boeing, with the risk of substantially higher aircraft prices.

Professor Wonnacott has focused on this type of market situation in discussing the question, 'Can comparative advantage be created or engineered?' He refers to 'a broad range of high-tech products that may now be almost equally well produced in the U.S., Europe or Japan'.¹⁵ Technology is now of central importance to many production processes, and

14 A recent article by James Brander and Barbara Spencer cites many such references. See 'Strategic Commitment with R & D: The Symmetric Case' in *Bell Journal of Economics*, 1983, Volume 4, pages 225-235.
15 R.J. Wonnacott, *Canada-U.S. Economic Relations - A Canadian View*, page 8. Although Wonnacott refers to this as a 'modern-day infant protec-

economies of scale mean that the first nation to 'target' a particular product for special subsidies and protection may gain a comparative advantage.

Is a subsidy pact of any use in this type of market failure? If so, what type of pact would be most appropriate? A subsidy pact may not be in the interests of the political entity expecting to win, but it may be of substantial benefit to the political entity expecting to lose. An interesting question concerns the ability to predict beforehand what the results of such competition would be, in particular whether a small open economy like Canada would be able to compete effectively or whether the larger nations would consistently be victorious. Furthermore, especially in cases involving R & D subsidies, it is not clear even what subsidy pact could be established that would have an economic rationale. The most that could be hoped for would be a separate pact for each such situation, with the pact subject to revision as circumstances change. The objective of each pact would be to replace the market result with a political result, negotiated between the governments concerned. The uncertainty of the market result, together with its unknown threat of extreme outcomes, would be replaced with a political result, probably based on a compromise.

Three Canadian examples illustrate different aspects of the uncertainty of market results and the role of political involvement when subsidies and trade involve few producers. First, Canadian political leaders must decide whether to join the Airbus Industrie consortium, with an up-front subsidy-investment of some \$500 million and perhaps the expectation that Air Canada will purchase its airplanes from the consortium.¹⁶ For the United States and Boeing this may be a significant decision, and so they may be prepared to negotiate special concessions for Canada as an alternative to the European connection. The details of such possible concessions, the process of negotiation, and the ultimate outcome cannot be predicted with much certainty.

Second, the Canada-U.S. Defence Production Sharing Agreement provides for trade in defense products to be 'in rough balance'. This agreement which has been in effect for twenty years represents a political compromise concerning trade. The 'rough balance' concept has no appar-

¹⁶ tion' argument, it is not the infant industry argument traditionally found in the economics literature nor is it the only argument in favour of subsidies.
Economist, August 27, 1983, p. 58.

ent basis in comparative production costs. In both nations, defense industries have been given substantial subsidies, and one may regard this agreement as a political means for dealing with the competitive subsidy problem when few producers exist.

Third, when Canadians were recently considering the oil industry mega-projects, Canadian content in the provision of the mega-projects became a political issue. A major concern was that imports not take over too much of the subcontracting. The media discussion at the time and the appointment by the government of a Task Force to provide recommendations concerning mega-project procurement policy illustrated the political nature of this issue.

In cases such as these, economic analysis is limited in its predictive insights; the outcomes have an added element of uncertainty; and political considerations and compromise are important. Special intergovernmental negotiations may be necessary on a case-by-case basis. In the future this will likely be important for aircraft, automobiles, energy, petrochemicals, and defense equipment.

Market Failure Due to Imperfect Information

The economic information on which governments base their decisions is far from perfect. Information necessary for a perfectly competitive externality-subsidy market has several special characteristics, each of which complicates the government's task.

First, much of the relevant information must come from the individual firm requesting the subsidy. This involves the moral hazard problem that the firm has an incentive to present imperfect information in an attempt to maximize its subsidy.

Second, some externalities are particularly difficult to estimate. For example, the extent to which a new investment will be able to bear some of the cost of existing government services will depend upon the investment's profitability--hence its ability to pay taxes--and also upon the extra burden it will place on those government services. Employment estimates may differ substantially from actual employment simply because the investment's success cannot be predicted with a high degree of accuracy. The firm's success will depend upon developments in a wide range of factors, many of which will be beyond the control of the individual firm.

Third, the future stream of net externality benefits must be discounted to calculate their present value, which will be the upper limit of the subsidy to be offered. What is the appropriate rate of discount for this purpose? Economists have encountered substantial difficulties in analyzing this issue, and no particular discount rate can avoid criticism.

Faced with these imperfections in information, one may conclude that the calculation of subsidy offers is subject to a substantial margin of error. From this perspective, a subsidy pact could be helpful if it sought to improve the quality of information on which political entities base their subsidy calculations. That is, participants could agree to collude in the sharing of information while agreeing to maintain competition in the offering of subsidies.

Such an information-sharing pact might improve the welfare of all participants, for two reasons. First, when a government quotes an erroneously high subsidy and thereby acquires a particular investment, the government for whom the benefits would be greatest must experience a welfare loss. The existence of a large number of other potential investments may mean that any such loss will be small. Nevertheless, if a large proportion of subsidy offers is erroneously high, one might expect a major deterioration in the market. On the other hand, a consistent underpricing of subsidies would also result in market distortions. In the latter case, the wise bidder would gain from, rather than be hurt by, the errors of other governments, since it would pay lower subsidies than otherwise. Consequently, a participant that was confident of its relative wisdom might eschew a pact. Apart from this possibility, an information-sharing pact could reduce the number and extent of erroneous calculations and, hence, could improve all participants' positions.

The second reason why an information-sharing pact might improve the welfare of all participants is that the process of exchanging information could lead to an improvement in the quality of that information. Ideally, such an exchange would provide for discussions of differences in the calculations among governments. Even the discussion of previous subsidy experiences could improve the process of analyzing such information. Faced with more accurate information, all participants would be able to reduce errors in their subsidy offers, and so all might gain as a result of such a pact.

Such information-sharing seems to occur regularly within nations as different levels of government participate together in providing financial

assistance. However, among nations, this process seems to be at a preliminary stage. The GATT Tokyo Round Code on Subsidies and Countervailing Duties provides a structure for the examination of complaints and the resolution of disputes which may, over time, serve the purposes of an information-sharing pact. The informal understandings among its signatories also provide for negotiations prior to the appeal to the formal GATT structure. For example, the 1982 U.S. - EEC steel pricing dispute was settled directly by the parties involved.¹⁷ Conflict resolution may be a useful forum for information-sharing, but more efficient arrangements can be envisaged. In regard to the U.S. and Canada, Rodney Grey has expressed the view that "One proposal of the highest priority is the need to develop the habit of Canada and the U.S. consulting about subsidy policy."¹⁸

Market failure due to spillover effects

The perfectly competitive solution rests upon the assumption that, for each potential investment, all externalities can be captured by individuals, firms and the government within the political area in which the investment locates. In fact, however, externalities may accrue to individuals and firms outside the political region. In such cases, governments will not be prepared to offer a subsidy equal to the investments' externalities, but only a subsidy equal to the portion of externalities captured by its residents.

(a) Net Positive Spillovers

In such circumstances, governments may improve upon the perfectly competitive solution through a subsidy pact that results in jointly funded subsidy offers, larger than any one government could propose. That is, governments may recognize the spillover effects of an investment, realize that more than one political entity can gain from the investment, and calculate a sharing of subsidy costs in accordance with the expected division of externalities. Effectively, this process occurs when subordinate

17 See Hans Mueller and Hans van der Ven, "Pettis in the Brussels-Washington Steel Pact of 1982", *World Economy*, Volume 5, #3, November 1982, pp. 259-278.

18 Rodney de C. Grey, "Some Issues in Canada-U.S. Trade Relations", *Canadian Public Policy*, October, 1982, p. 453.

levels of government surrender the right to grant subsidies to a higher level of government. The latter can raise revenue across all subordinate political entities and grant a subsidy which may benefit all the subordinates.

To minimize administrative costs, governments may enter a subsidy pact of this type for all potential investments. Subordinate governments may surrender their right to grant subsidies. Their willingness to enter such a pact will depend upon the confidence they have that the senior government will perform subsidy calculations and will raise revenue in an efficient and equitable manner. Their willingness will also depend upon the strength of their common interests - the degree to which they regard each other's success as being interdependent - and the ability of their residents to migrate or otherwise share in any exceptional winnings of the others.

Not surprisingly, political entities have been reluctant to enter a permanent, all-inclusive subsidy pact of this type. American states and Canadian provinces have avoided such a pact, as have the EEC nations. Nevertheless, it is possible that such a pact may be in potential signatories' best interests for a particular range of investments. For example, it is conceivable that EEC countries will develop joint subsidy proposals in order to ensure that a particular investment will occur in Western Europe. At the present time, these nations are considering the joint funding of a \$1.5 billion research program, called Esprit, for semiconductor and computer technologies.¹⁹ It may even be in the interests of sub-national governments to develop single-industry pacts. Michigan, Ohio, and Ontario are so intimately linked in terms of the automobile industry that new automobile investments in any one of the three may provide some benefits to the other two. In such a case, a pact to rationalize subsidy offers and allocate costs in accordance with externalities could make all participants better off than if the investments went elsewhere. The Chrysler bail-out situation illustrated this interdependence, as both Canada and the U.S. stood to lose if Chrysler failed and so both were prepared to offer assistance. Explicit recognition of this interdependence would improve the overall allocation of subsidies.

¹⁹ Business Week, May 30, 1983, page 45.

(b) Net Negative Spillovers

Subsidized investment will expand the supply of a product, and existing manufacturers of that product may consequently suffer reductions in output, employment, and profits. While a government should include these negative externalities in its subsidy calculations, it may omit them to the extent that existing manufacturers are located in another political entity. A pact may obligate its signatories to consider such effects in its subsidy calculations. This is a central purpose of recent GATT agreements concerning subsidies.

Negative spillovers can take three distinct forms. Foreign firms may find their sales hurt in their own country, since the subsidized firm can export at a lower cost than otherwise. Foreign firms may find their own export sales hurt as they compete abroad against subsidized products. Foreigners may be discouraged from undertaking new investments or making new products if they know that the subsidies will put them at a competitive disadvantage. While the last two forms of negative spillovers may be extremely important, it is the first form that has generally elicited most response. The GATT provisions seek to guard against all three forms of negative spillovers, but, since formal complaints are required to start GATT procedures, foreign firms finding their sales hurt in their own country will remain the principal focus of concern. The need to demonstrate "material injury" in order to impose countervailing duties will also tend to focus on such domestic sales where the injury can be seen most clearly.

Reduction of political barriers as an alternative to subsidy pacts

The analysis of this paper has rested upon the existence of discrete political entities. Each government seeks to maximize the well-being of its particular individuals and firms, and an important instrument is the ability to attract new investment through subsidy offers. Pacts have been shown to be capable, in some circumstances, of increasing the welfare of all signatories. It should be noted that the reduction of political barriers can serve as an alternative to subsidy pacts.

In the extreme, if two separate political entities decide to merge, then the new government can examine investment potentials throughout the two areas and can allocate subsidies in the same pattern as would be achieved

through the pacts discussed above. The reduction of political barriers can also improve efficiency through facilitation of labour and capital mobility and the reduction of tariffs. In such a process, a high unemployment area may experience emigration. Consequently, the externalities that investment can provide may be diminished and the optimal subsidies for investment in such an area may decrease.

Enforcement mechanisms

A discussion of enforcement of subsidy pact provisions crystallizes the ambiguities and complexities of this subject. It is not likely that state, provincial and local governments can be prosecuted before international judicial bodies. The place of such governments in international agreements and enforcement bodies has not yet been clarified. Definitions of subsidies are necessary for compliance and essential for enforcement. Yet such definitions will not be developed easily. A wide array of government activities can act as substitutes within the subsidy field, and the prohibition of a few specific types of subsidies may well lead to a shift to the use of other types of subsidies. Furthermore, many programs such as those assisting R & D can be tailored so that in practise, they benefit only one, or a few, firms.

An injured nation may have difficulty in retaliating directly against a violator of the pact without at the same time punishing all the signatories. A recent illustration of this type of problem was the 1983 U.S. restriction of specially steel imports in retaliation against EEC subsidies. As noted by Robert Stern, 'Canada may be affected adversely even though its exports are not subsidized'.²⁰ This situation, which Stern has called the 'innocent bystander' problem, is likely to occur regularly in the enforcement of subsidy pacts. Conceivably, a U.S.-Canada subsidy pact might preclude U.S. action of this type.

The U.S. Trade Agreements Act of 1979 rests upon a "material injury" requirement. As such, it relies upon complaints by U.S. firms; and it provides for the U.S. imposition of countervailing duties if such injury is proven. Rodney Grey has referred to these types of provisions

20 Robert Stern, U.S.-Canadian Trade and Investment Frictions: The U.S. View pages 5-6.

as "a system" and has described "the increasing legalization of trade relations,"²¹ caused by this reliance upon contingency protection. Grey has gone so far as to state, "Nor is it clear that GATT is now about trade liberalization. Rather, it is about trade policy regulation."²²

In this process of enforcement and regulation, interesting questions will arise concerning the effectiveness of one's ability to retaliate if injured. Important to this will be the nature and extent of one's relations with the violating government. For example, Canada's ability to enforce a pact will be much less than that of the United States. Small signatories will have to rely on joint retaliation or upon the goodwill of larger members.

Political elements will no doubt enter the enforcement and dispute-resolution mechanisms. This tendency has been illustrated in the U.S.-EEC 1982 steel subsidies conflict:

'The Reagan Administration had repeatedly voiced its resolve to stay out of the conflict and not to interfere with the steel industry's efforts to seek relief under the laws of the land from alleged unfair competition. This resolve did not endure, however. What had begun as private legal action turned into a bitter international dispute and, also, as on previous occasions, high-level government officials soon found themselves engaging in 'shuttle diplomacy'.'²³

The Ontario Ministry of Industry and Trade has published its position on these enforcement issues in a document, Canadian Trade Policy for the 1980s: An Ontario Perspective. The following quotation is significant not only as an indication of Ontario's views but also as an insightful commentary on the shortcomings of the existing GATT procedures:

'The various concepts of injury both in relation to unfair trade practices, as in the Antidumping and Countervailing Codes, and to disruptive trade, as in the Safeguards Code, have never been defined to GATT signatories. It is, therefore, left primarily to domestic legislation and practice to give interpretation of these key concepts. In a number of countries, moreover, national legislation is not sufficiently consistent with the GATT codes, thus creating disparities between levels of import protection afforded to domestic industry in different countries.'

21 Rodney de C. Grey, "The General Agreement After the Tokyo Round," in John Quinn and Philip Slayton editors, Non-Tariff Barriers After the Tokyo Round, Institute Research on Public Policy, 1982, p. 8.

22 Ibid, page 17.

23 Hans Hoeller and Hans van der Ven, op. cit., p. 262.

'In order to encourage consistent, multilaterally accepted interpretations of key GATT terms and concepts and to ensure that these emerge by way of negotiation and agreement between signatories, rather than primarily by the weight of U.S. practice, Canada should be seeking further clarification of these codes at the multilateral level. With such a dependence on exports, Canada has a particular interest in ensuring that the threshold of pain, the criteria for material, serious and regional injury and the required causal link between imports and injury are not overly loose. Ontario, therefore, recommends that:

- agreement be sought to review and clarify definitions of injury in existing GATT codes with a view to laying the basis for more consistent multilateral interpretations of these codes.

The ability of the GATT system to establish appropriate mechanisms and procedures for dispute settlement between signatories is a central element of the system and the basis of much of its legitimacy and credibility. This credibility is undermined if dispute settlement procedures are not adhered to and results of these procedures not respected. Ontario, therefore, recommends that:

- Canada commit itself to 'support and respect the results that emerge from the GATT dispute settlement procedures' and firmly encourage similar adherence by other signatories, such as the United States, which continues to try to negotiate out of having to accept the fact that DISC is a breach of its GATT most-favoured-nation obligations.

'Canada should also come forward with some constructive criticism of GATT dispute settlement mechanisms (notifications, consultation, surveillance, dispute settlement) with a view to encouraging 'review and improvement' of certain aspects of the mechanisms. This would include proposals for examination of such issues as delays in adopting terms of reference of panels, delays in forming panels, time limits and enforcement of decisions.'

Observations

A series of observations can be made concerning intergovernmental subsidy negotiations:

- The subsidy negotiations will be extremely complex, more so than traditional tariff negotiations. In particular, they will have to deal with problems of definition and with the ability of signatories to switch their financial assistance to forms that have not been prohibited, and they will have to cope with novel enforcement problems.
- Simple agreements to reduce the levels of subsidies may conceivably reduce the welfare of the signatories.

- Sharing information in regard to the subsidy-investment-externality process may reduce errors in estimation and, consequently, may improve the well-being of all participants.
- An optimal subsidy pact will likely involve a set of pacts, some dealing with specific types of subsidies, and some dealing with specific firms. In particular, subsidies to firms possessing market power and considering large investment or production decisions may require special intergovernmental negotiations on a case-by-case basis. This will likely be true for aircraft, automobiles, energy, petrochemicals, and defense equipment.
- An optimal set of pacts will have to provide for review and adjustments to its provisions on a frequent or continual basis. A permanent structure for such review may deserve consideration.
- In negotiations, all levels of government will have to be involved. This contrasts in fundamental ways with traditional tariff negotiations, which have involved only national governments.
- Negotiations will have to consider the impact of a subsidy pact on trade with non-signatories. Pursuant to tariff negotiations, concessions can be extended to other governments whenever the latter chose to participate in the agreements. With a subsidy pact, non-signatories may automatically benefit from signatories' reductions of subsidies without themselves providing any concessions. This factor alone is a sufficient condition to necessitate review and flexibility within a subsidy pact, as experience accumulates and as circumstances change.
- Externalities may spill over into other jurisdictions. In this case, a pact to pool subsidies and rationalize subsidy offers could make all participants better off than if the investments went elsewhere.
- Reductions of political barriers can serve as an alternative to subsidy pacts.
- Analysis of the externality-subsidy market and the process of negotiating subsidy pacts will rely heavily on studies of specific firms.

production processes, groups of unemployed workers, and regional disparities. This industrial organization approach will involve elements not central to traditional trade theory - elements that seek, through cost-benefit calculations, to place estimates on the various aspects of the externally-subsidy relationships. Consequently, the analysis and negotiation sector by sector seems most appropriate, together with the recognition that this must be an ongoing process.

THE BEHAVIOUR OF U.S. SUBSIDIARIES IN CANADA:
IMPLICATIONS FOR TRADE AND INVESTMENTS

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The Behaviour of U.S. Subsidiaries in Canada:

Implications for Trade and Investments

Introduction

This paper first presents in summary form details of the primary characteristics of the Canadian subsidiaries of the largest U.S.-based multinational enterprises (MNEs) operating in Canada. Data are reported on the sales, R and D to sales ratio, exports to sales ratio and performance of each of the 22 largest U.S. subsidiaries. These data are used to interpret some theoretical propositions about why the parent MNE chose to enter the Canadian market by FDI rather than alternative modes of entry. The nature of subsidiary performance is also discussed and related to the behaviour of U.S. parent MNEs and Canadian based MNEs. Finally I discuss the manner in which recent Canadian policy towards FDI has evolved and drawn reactions from U.S. MNEs as they have adjusted to changes in the environmental parameters imposed by Canadian federal and provincial governments.

The second major theme of the paper is developed in sections which investigate the implications for trade and investments of two critical aspects of the behaviour of U.S. subsidiaries. These are: first the degree to which R and D can be decentralized by U.S. parents to their Canadian subsidiaries, and second the contribution made by such subsidiaries to Canadian exports. Other important topics, such

as local purchasing requirements and their effect on Canada's imports, cannot be discussed in this short paper. In the latter part of the paper reference will be made to issues of public policy concerning, firstly work on Canada's world product mandate policy and its potential effect on parent-subsidiary relationships, and second, evidence of the export performance of subsidiaries, and the reasons for their surprisingly good export performance.

Identification and Size of the Largest U.S. Subsidiaries in Canada

The significance of foreign direct investment (FDI) in Canada is well known. Foreign ownership of the Canadian economy is approximately 27 percent in non-financial industries. Certain sectors of the economy have a far greater foreign participation than this, notably fuels at 60 percent and manufacturing at 43 percent (see CALUPA, 1980). The latest Financial Post listing of the 500 largest corporations in Canada includes 222 foreign-owned firms, which is 44 percent of the total. American (U.S.) FDI accounts for the great majority of the FDI in Canada. To keep this study to a manageable size I confine my analysis to the largest 22 of these U.S. subsidiaries in Canada.

The 22 largest U.S.-owned Canadian subsidiaries are identified in Table 1. They are ranked in decreasing order of size, as measured by 1982 Canadian sales. The largest, General

Table 1

Size of 22 Large Canadian Subsidiaries
of U.S. Multinationals

Subsidiary	Parent	1982 Sales (US \$ 000's)		Subsidiary Sales (%)
		Subsidiary	Parent	
GM	GM	7,752	60,026	12.9
Imperial	Exxon	6,981	97,173	7.2
Ford	Ford	5,942	37,067	16.0
Texaco	Texaco	3,862	46,986	8.2
Gulf	Gulf	3,792	28,427	13.3
Chrysler	Chrysler	2,962	10,045	29.5
Safeway	Safeway	2,673	17,633	15.2
Simpson	S. Roebuck	2,541	30,020	8.5
IBM	IBM	1,785	34,364	5.2
Woolworth	Woolworth	1,353	6,590	20.5
CGE	GE	1,324	26,500	5.0
Suncor	Sun	1,250	15,519	8.1
AGT	GTE	1,139	12,066	9.4
Mobil	Mobil	1,005	59,946	1.7
Anoco	Standard (Ind.)	981	28,073	3.5
Dow	Dow	872	10,618	8.2
DuPont	DuPont	794	33,331	7.5
K-Mart	K-Mart	765	16,772	4.6
I. Harvester	I. Harvester	712	4,725	15.1
P and G	P and G	670	11,994	5.6
Chevron	Standard (Ca.)	580	34,362	1.7
Westinghouse	W.E.	573	9,745	5.9
				<u>9.67</u>

MEAN

Sources: Financial Post, "The Financial Post 500", Annual.
Fortune, "The Fortune 500 Largest U.S. Industrial Corporations",
May Issues, 1974-83.

Financial Post Survey of Industrials.
Canadian Business, "The Canadian Business 500", July, 1980.
Corporate Annual Reports.

Motors of Canada, ranks at number two on the Financial Post 500 list for 1982. The twenty-second, Westinghouse Canada, ranks at number 104.

One problem with the population of firms in Table 1 is that it is too small to control for industry effects. Given the heavy concentration of foreign ownership in fuels and manufacturing, it is not surprising to find seven and nine firms in these categories respectively. The interpretation of the results in this paper should be qualified by this limitation.

In Canada there is a popular yardstick that everything is 10 percent of the size of its American counterpart. Thus it is not unexpected that the mean percentage contribution to parent company sales by Canadian subsidiaries is nearly 10 percent (shown in the last column of Table 1). Individual subsidiary contributions to parent sales range from 29.5 percent (Chrysler) to 1.7 percent (Mobil and Chevron).

Evidence on the Performance of U.S. Subsidiaries in Canada

The performance of the Canadian subsidiaries and their American parents over the last decade is reported in summary form in Table 2. The conventional measure of performance used is the return on equity (ROE). Return is defined as the net income after taxes and equity is the year end value of stockholders' equity. The standard deviation (S.D.) about the mean of the 10 year ROE is used as a proxy measure for risk. When interpreting these results it is useful to keep in

Table 2
Performance of 22 Large Canadian Subsidiaries
of U.S. Multinationals

Subsidiary	1973-1982		ROE-Parent	
	Mean	S.D.	Mean	S.D.
GN	20.1	12.85	12.0	8.11
Imperial	16.1	4.62	16.8	3.28
Ford	8.1	8.74	8.6	7.40
Texaco	17.9	9.25	13.5	4.53
Gulf	15.6	3.38	12.5	2.57
Chrysler	4.6	5.86	3.1	5.29
Safeway	13.8	1.55	13.3	2.47
Simpson Sears	10.5	3.22	10.7	2.04
3M	22.7	2.95	19.9	2.06
Woolworth	11.6	2.37	8.8	3.81
CGE	11.2	1.96	17.2	2.51
Suncor	10.7	9.93	14.6	4.09
ACT	5.02	1.65	12.9	1.92
Nobell	24.7	5.06	15.0	4.52
Asoco	18.0	6.70	16.2	2.49
How	16.0	9.75	18.5	5.62
DuPont	9.8	9.80	12.7	3.70
K-Mart	10.2	3.85	14.3	3.75
I. Harvester	14.5	9.87	7.4	5.85
P and G	19.0	6.84	17.1	1.06
Chevron	13.23	5.59	15.1	3.63
Hestinghouse	14.5	3.47	10.5	4.47
MEAN	14.0	5.88	13.21	3.87

Sources: Financial Post, "The Financial Post 500", Annual Fortune, "The Fortune 500 Largest U.S. Industrial Corporations", May Issues, 1974-83, Financial Post Survey of Industrials, Canadian Business, "The Canadian Business 500", July, 1980, Corporate Annual Reports.

Notes:
1. 1977-82.
2. 1974-82.
3. 1976-82.

perspective the previous findings in Rugman (1980, 1981, 1983), and by others, that the ROE of MNEs average around 12 to 14 percent and that there is no significant difference between the reported earnings of MNEs and unnational firms of similar size, or between the reported ROE of parent MNEs and their subsidiaries.

In 12 of the 22 cases the subsidiary's ROE exceeds that of the parent although generally at greater total risk. The mean ROE of both subsidiaries (at 14 percent) and parents (at 13.4 percent) is not significantly different. But the S.D. for all 22 subsidiaries is 5.88 percent compared to that of the parent MNEs at 3.87 percent. On average, the subsidiaries have similar returns to their parents but the variability of returns, or risk, is substantially higher. Identical results, but for earlier time periods, and especially for MNEs in the petroleum and mineral resource industries were reported in Rugman (1979, 1980). It should be noted from this previous work that the mean return for oil subsidiaries has increased steadily over the last 20 years, while the risk of earnings of mining subsidiaries has decreased.

While the level of profits is the same why is the mean S.D. of the subsidiaries more than 50 percent greater than that of their parents? The answer probably lies in the relatively smaller size of the Canadian economy in which all firms experience more risk than firms operating in the larger and more diversified U.S. economy. Canadian business cycles are

typically more pronounced than U.S. ones, reflecting the thin nature of the economy and its dependence on resources. In addition, some of the subsidiaries may be in more specialized activities than their diversified parents, for example some of the fuels subsidiaries may be engaged in upstream activities. The difference also partly reflects the degree of multinationality of the parent MNEs, who are active in more foreign markets than the subsidiaries. The benefits of international diversification for parent MNEs, where offsetting national covariances tend to stabilize returns were demonstrated for these U.S. MNEs in Rugman (1979).

The data in Table 2 also help to dispel another popular misconception about the power of MNEs. It is sometimes argued that the parent MNEs can use transfer prices to squeeze the profits of their Canadian subsidiaries. If this were being done then we would expect to observe the Canadian ROE being lower than that of their parent ROE. However, as the mean ROEs are roughly equivalent, such an argument cannot be supported. This point was developed in more detail in Chapter 7 of Rugman (1980), for data on the mining industry.

Evidence on R and D and Exports by Canadian Subsidiaries

The 1970s have been characterized by increasing government regulation of the Canadian economy. In the area of FDI much of the nationalistic case for regulation of foreign ownership has been summarized, if not embellished, by the Gray

Report (1972). Policy instruments such as the National Energy Policy (NEP) and the Foreign Investment Review Agency (FIRA) have sought to increase the Canadian ownership of the economy and to increase the "net benefits" of FDI, however these are defined. In the context of government support for research and development (R and D) recently a world product mandate (WPM) policy has been advocated by the Science Council of Canada (1980). Under this policy only subsidiaries which have a WPM are to receive R and D grants, whereas present research policy does not discriminate in this manner. With a WPM the subsidiary of an MNE acquires full responsibility for the development, production and marketing of a single product on a worldwide scale.

The Science Council of Canada views increased R and D as the primary means to increase exports of technologically intensive products. The advanced nations of the world are moving to specialize in more research intensive goods, leaving the production of standardized product lines to newly industrialized nations such as the four dragons of East Asia. Canada, as a high income nation, is apparently not making the high-technology transition as rapidly as the others. R and D expenditure in Canada is less than one percent of GNP, compared to well over two percent for the United States and most European countries. The Science Council, by recommending policies to encourage WPMs, are assigning part of the blame for the relatively low level of R and D in Canada to foreign subsidiaries.

For Canada to join the high-technology race would imply the creation of a new country-specific advantage (CSA).

Canada's current major CSAs are in the exploration, processing and marketing of raw materials and resources. Only in isolated cases has Canada enjoyed preeminence in a particular technological field. The movement of scarce resources to high-technology industries may be at the expense of Canada's traditional CSAs at a time when considerable improvements in efficiency are required to meet expanding global competition.

The underlying objective of the promotion of WPMs by selective R and D subsidies is to decentralize R and D from parent MNEs to Canadian subsidiaries, but this faces many problems at the MNE level, see Poynter and Rugman (1982) and Rugman and Bennett (1982). These studies applied internalization theory to conclude that parent MNEs would be unwilling to compromise their internal organizational structure by moving towards the decentralization required for WPMs. Thus the two primary benefits sought by the WPM policy, increased R and D expenditures and more technologically based exports, are both doomed to failure. ¹

Furthermore, the WPM policy is not based on a sound assessment of the R and D performance of subsidiaries, which is just as good, if not better, than domestic Canadian firms. For the 22 largest U.S. subsidiaries in Canada the evidence on R and D is now examined, as is the export performance of their subsidiaries. Data on R and D expenditure and export sales are

presented in Table 3 for 18 of the 22 subsidiaries. Data for Woolworth, Anglo Canadian Telephone, Simpsons-Sears, and K-Mart Canada were not available, so these four U.S.-owned subsidiaries are excluded from further work.

It is to be expected that most U.S. subsidiaries in Canada would be in import competing sectors, having entered Canada to either avoid the tariff or other barriers to entry. This is difficult to test using these firm level data since Canada is a more open economy than the United States, so its firms should be expected to export more on average. In Table 3 no support is found for the belief that foreign ownership worsens Canada's trade position. It can be observed that exports by the subsidiaries exceed those of the parents at 29.5 percent and 10.2 percent respectively². It should also be noted that the largest 22 U.S. subsidiaries are not dominated by resource extraction firms, which might have been expected to export from Canada simply to supply their parents. Instead, most of the 22 subsidiaries use parent firm specific advantages in technology, knowledge and other areas to service the Canadian market, so exporting is a bonus.

The export performance of this group of subsidiaries is indeed remarkably similar to that of the largest Canadian-owned MNEs listed in Scopford's Directory. The mean export to sales percentage for these Canadian firms is 28.8, roughly the same as the export performance of the subsidiaries.³

Turning from export performance to R and D performance,

Table 3
Research and Export Performance
of Canadian Subsidiaries
(Percent)

Canadian Subsidiary (percent owned)	R&D to Sales ²		Exports to Sales ³	
	Sub	Parent	Sub	Parent
General Motors of Canada (100)	0.25	3.47	65.6	25.0 ¹
Imperial Oil (74)	0.65	0.53	na	74.0 ¹
Ford Motor of Canada (92)	na	4.30	na	49.0 ¹
Texaco Canada (90)	0.37	2.33	na	0.0
Gulf Canada (75)	1.27	0.55	na	38.0 ¹
Chrysler Canada (100)	na	2.60	na	20.0 ¹
Canada Safeway (96)	na	na	4.0 ¹	na
IBM Canada (100)	1.23	5.73	30.7	6.0
Canadian General Electric (92)	1.53	2.97	na	13.0 ¹
Suncor (75)	0.45	0.30	19.7	26.0 ¹
Mobil Oil Canada (91)	0.35	0.30	na	65.0 ¹
Amoco (100)	na	4.67	na	18.0 ¹
Dow Chemical Canada (100)	1.00	3.10	20.1	49.0 ¹
DuPont of Canada (75)	0.90	3.20	18.4	12.0
International Harvester Canada (100)	na	3.37	43.0 ¹	6.0
Proctor and Gamble (100)	na	2.17	na	32.0 ¹
Chevron Canada (100)	na	3.33	na	53.0 ¹
Westinghouse Canada (95)	na	2.30	22.2	14.0
	<u>0.80</u>	<u>2.25⁴</u>	<u>29.5⁵</u>	<u>10.2⁵</u>

- Notes: 1. Foreign Sales to Total Sales, where foreign sales includes both exports of the parent firm plus production by overseas subsidiaries
2. Subsidiary R&D is mean R&D for 1979-82. Parent Company R&D is the mean R&D for 1979-81.
3. Figure shown is for the most recent available period: 1980, 81 or 82.
4. Mean shown is for those ten parent companies for which a comparative subsidiary figure is available. The actual mean for 17 parents is 2.66.
5. Mean export sales only, foreign to total sales excluded from computation.

Sources: Financial Post, March 12, 1983 and November 28, 1981 (R&D).
Corporate Annual Reports.

the mean R and D to sales percentages in Table 3 show that these subsidiaries undertake less R and D than their parents at 0.8 and 2.25 percent respectively. Less R and D in the subsidiaries is to be expected given that the initial reasons for FDI in Canada are either horizontal integration to service the Canadian market from within, thereby avoiding the tariff, or vertical integration to seek resources unobtainable or less attractive in the home country. Compounding these reasons is the need for the MNE to retain property rights over its firm-specific advantage, which requires propriety of R and D knowledge. The parent MNE risks dissipation of its firm-specific advantage in technology when it decentralizes its R and D function. There is a loss of control and a possibility of the subsidiary becoming too autonomous within the organizational structure of the MNE.

Despite these problems, foreign subsidiaries in Canada are observed to at least contribute to the level of R and D performed and their R and D performance is no worse than Canadian-owned firms. Data on R and D at the firm level are limited and few of the comparative studies have been at the firm level. Safarian (1968) did not find any difference in R and D between resident and non-resident firms in his survey. Rugman (1981) confirmed this finding and also found that subsidiaries had more R and D than other Canadian firms; the mean R and D to sales percentages for groups of the largest 12 parents, subsidiaries and domestic firms were 3.12, 2.07 and

1.19 respectively. ⁴

To extend this work, the R and D to sales for 13 Canadian MNEs was calculated for the same time period reported in Table 3. The mean R and D of these Canadian-owned firms is 0.94, which is not significantly different than the mean R and D of the 10 subsidiaries for which data are available. If Northern Telecom, Canada's largest R and D establishment, is omitted the mean falls to 0.44. This similarity in R and D performance (and in export intensity) of U.S.-based subsidiaries and in Canadian MNEs is surprising to many people. They expect the U.S.-based MNEs to be R and D intensive and Canadian MNEs to be natural resource intensive, which implies a far higher R and D to sales ratio for U.S. MNEs. Yet this is not observed. Canadian MNEs do as well as U.S. MNEs in these areas.

The ratio of R and D expenditures to sales for an expanded list of U.S. subsidiaries is given in Table 4. Eleven more subsidiaries (for which data are available) are added to the list of ten in Table 3. All firms are listed in the Financial Post's leading R and D spenders in Canada, so the higher mean R and D to sales percentage of 1.73 is to be expected versus 0.80 in Table 3. It is interesting to note that the Financial Post's total sample of leading R and D spenders includes eight government controlled firms, 22 private Canadian-owned firms, and 21 foreign subsidiaries.

Table 4
R and D to Sales Percentages for Selected
Canadian Subsidiaries of U.S. Multinationals

	Parent Co. ³		Sub.					Trend
	Mean	Mean	1982	1981	1980	1979		
General Motors	3.47	0.25	0.3	0.2	na	na	Stable ²	
Imperial Oil	0.53	0.65	0.6	0.7	0.7	0.6	Stable	
Texaco	2.33	0.37	na	0.5	0.4	0.2	Rising	
Gulf	0.55	1.27	na	1.6	1.1	1.1	Rising	
IBY	5.73	1.23	1.6	1.2	1.1	1.0	Rising	
CCE	2.97	1.33	1.1	1.6	1.9	1.5	Fluctuating	
Suncor	0.30	0.45	0.4	0.5	na	na	NA	
Nobil	0.30	0.35	0.2	0.5	na	na	NA	
Dow Chemical	3.10	1.00	1.0	1.0	1.0	1.0	Stable	
DuPont	0.90	0.90	1.2	0.9	0.7	0.8	Rising	
Pratt and Whitney ¹	3.20	16.10	21.6	14.6	12.1	15.9	Rising	
NCR	5.93	6.78	8.7	7.3	6.0	5.1	Rising	
Control Data	na	6.08	5.2	5.7	6.3	7.1	Decline	
Honeywell	6.17	1.43	2.7	2.0	0.8	0.2	Rising	
Xerox ¹	5.57	1.43	1.4	1.3	1.5	1.5	Stable	
Litcon ¹	1.73	4.10	5.8	2.4	4.1	na	Fluctuating	
Fiberglass	na	1.68	2.0	1.6	1.6	1.5	Rising	
General Foods	1.37	1.00	1.0	1.0	1.0	1.0	Stable	
Johnson & Johnson	4.87	3.20	3.2	3.2	na	na	NA	
Sheriff Gordon	na	1.53	1.8	1.7	1.3	1.3	Rising	
Ingersoll Rand	na	0.80	1.2	0.4	na	na	NA	
Union Carbide	1.90	0.30	na	0.4	0.3	0.2	Stable	
MEAN ⁴	2.76	1.73						

- Notes: 1. Firm has a world product mandate.
 2. Stable is defined as fluctuating by less than 0.2 percentage points.
 3. 1979-1981.
 4. Excludes Pratt and Whitney as unrepresentative of the sample in general.
 5. na - Not Available.
 6. NA - Not Applicable, insufficient data available to indicate a trend.
- Sources: Financial Post, March 12, 1983.
Financial Post, November 28, 1981
 Corporate Annual Reports.

Table 4 also reveals the trends in the ratios of R and D expenditures to sales over recent years. Of the 18 subsidiaries for which data are listed, nine are increasing their R and D to sales ratios, six are maintaining their R and D at stable levels, two are fluctuating and only one is in decline. Thus one-half of the subsidiaries are increasing their R and D to sales ratios while another third are maintaining theirs. It is ironic that the WPM initiative is occurring at a time when these subsidiaries are already achieving the Science Council's objective of increased R and D in Canada!

Based on this evidence it can be concluded that foreign subsidiaries in Canada do as much R and D as domestically-owned firms. A policy to encourage R and D in Canada by focusing on any particular so-called deficient group is misdirected. Instead, a non-discriminatory policy which provides all interested parties with the same incentives for R and D is likely to be beneficial in terms of the number of participants and efficiency of R and D expenditures.

Some Conclusions on Canadian Policy Towards MNEs

As discussed at length in Rugman (1980), and confirmed here, the high degree of FDI in Canada has not resulted in an unsatisfactory performance by the subsidiaries themselves. In terms of profitability, R and D capacity and exporting, foreign subsidiaries of U.S. MNEs perform as well as domestic Canadian firms. FDI itself can be largely attributed to two factors;

tariffs and the nature of the Canadian country-specific advantage (CSA).

Since Confederation, to protect manufacturing (and now high-tech industries), Canada has erected tariff (and non-tariff) barriers to imports. U.S. MNEs, with close proximity to Canadian markets, have usually regarded Canada as one of the earliest foreign markets to enter, due to the perceived low information costs of exporting to a neighbouring country. As MNEs vied for market shares in import competing sectors in Canada, some found it necessary to keep down their costs by avoiding the Canadian tariff. Thus they switched to Canadian production by FDI. The tariff, while attempting to promote and protect domestically-owned industry, has actually encouraged FDI in Canada by these types of horizontally integrated MNEs.

The second major reason for FDI in Canada is to exploit the country's CSAs in raw materials and resources. Vertical integration has been a factor since resource based MNEs need to acquire control over raw material inputs in order to reduce interruptions in supply, operate capital intensive plants at as near full capacity as possible, and ensure orderly marketing of narrow product lines.

The nature of horizontal and vertical integration by MNEs in Canada has been fostered by inappropriate Canadian policies. Horizontally integrated MNEs can be discouraged by removal of tariffs. Then many U.S.-based MNEs would export rather than engage in FDI in Canada. Of course, this would now

lead to major problems of unemployment and resource reallocation, especially in Southern Ontario. However, one hundred years of inefficiency is no recommendation for another century of myopic Canadian trade policy. Vertically integrated MNEs can be discouraged by the development of Canadian-based MNEs.

If Canada encourages the development of its own MNEs which build upon its CSAs in resources, energy and services, then they will act as rivals to U.S.-based MNEs. By building upon Canada's natural CSAs both trade and investments will be encouraged and promoted. R and D can be focused upon Canadian-based MNEs, where this R and D builds upon the natural CSAs of Canada. Novel technologies in the energy, fish, food and services sectors can be developed by Canadian MNEs, which can gain markets in new global niches.

Such a strategy has been advocated elsewhere, see Rugman (1984). It is a fitting antidote to the current self-inflicted sickness observed in some sectors of the foreign owned Canadian economy. That the patient has not yet died is a tribute to the efficiency of MNEs, which survive despite the poison of government regulations.

Footnotes

¹For a more sanguine view of the possibilities of decentralization of R and D through a WPW strategy see Wolf (1983) and Crookell (1983).

²The sample size is small at six for both subsidiary and parent MNE. Caution should be used in interpreting the data on exports to total sales. Yet as a mitigating factor consider that both Canadian and American accounting conventions require disclosure of exports when these exceed 10 percent of sales. Therefore the large number of firms not disclosing exports presumably indicates in their cases that the ratio of exports to total sales is less than 10 percent. Thus although the export to total sales percentages discussed may be overstated for both parents and subsidiaries, they are suitable for the group comparisons made here.

³These Canadian MNEs are: Northern Telecom, Canada Packers, Noranda, MacMillan Bloedel, Abitibi Price, Molson, Inco, Consolidated Bathurst, and Husky Oil.

⁴For R and D findings of a different nature, see Caves, Porter, Spence and Scott (1980).

⁵The good performance of the group of U.S. subsidiaries in terms of R and D is all the more remarkable given the recent chastening experience with the compulsory licensing of pharmaceuticals in Canada. Recent government imposed legislation to substitute the use of generic drugs for the products of drug MNEs after a patent period of only three years has led to the virtual cessation of R and D activity in the subsidiaries of U.S.-based drug MNEs operating in Canada.

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