

● Of much more importance to modern-day Canada are the economies of larger production runs. There is a fixed cost in setting up the production equipment for a particular model of product. The length of the production run then determines the number of units of output over which the fixed costs can be spread. The longer the production run, the lower the unit cost of production and the lower the price that is needed to recover the fixed, as well as the direct, costs of production. The length of production run, in turn, depends on the size of the market. When producing for a protected home market, Canadian firms have typically found it necessary to produce the whole possible range of allied products, which can easily stretch into hundreds of different associated product lines. When trade has been liberalized, one common reaction has been to specialize in a smaller range of products, leaving the rest of the product range to be served by imports. On this smaller range of products, produced for the domestic market as well as for export, the production runs can be much longer and, hence, unit costs much lower.

● A further economy arises from product specialization. When the range of product lines is narrowed, more attention can be, and often is, devoted to improving the characteristics of the products that are produced.

● Another cost gain comes from so-called "dynamic considerations". The phenomenon of learning curves is well established in many industries: costs fall as the total amount produced increases. The higher the rate of output, the faster a firm moves down its learning curve and, hence, the lower its costs at any point in time.

● It is commonly argued that Canada has a lower rate of adoption of known improvements in technology than do other industrial countries, (Daly and Globerman 1976). If this is related to the length of time that it takes to write off the value of older technology, then the higher the rate of output, the faster the rate at which new technology is introduced and the lower will costs be at any point in time.

● There can also be important economies of scale for firms in activities such as product design and marketing, sometimes referred to as "economies of

scope". Access to large markets may be a critical factor influencing the capability of firms to exploit such growth opportunities, (Wolf 1984 p. 5-6).

"People who worry about trade liberalization often wonder if we will be able to hold our own against lower-wage countries on the one hand and higher-productivity countries on the other. Many of these concerns exist because the world has yet to learn fully the lesson taught by David Ricardo. Ricardo asked, "Can there be mutually advantageous trade between various type of countries? Can rich and poor countries, high- and low-productivity countries, and high- and low-wage countries trade with each other to their mutual advantage?" Ricardo's answer was an unequivocal "Yes", and the reason he gave is as valid today as it was in the early nineteenth century when he first gave it. His reason was that profitable trade between countries depends on comparative, not absolute, advantage. Countries that trade with each other will export those things that they can produce comparatively cheaply and import those things that they can only produce comparatively expensively.

Current Canada - U.S. Trade Ties

The objectives or rather the central challenges of a sound and balanced trade policy are commonplace in economic text books and relevant literature. Most of them define those objectives as: Enhancing the opportunities of various sectors of Canadian economy and its regions to expand investment and production facilities and create jobs offered by further penetration of world markets. If it is so, then why not further penetrate on a rational basis that huge store to the south? What does the trade picture between Canada and U.S.A. look like?

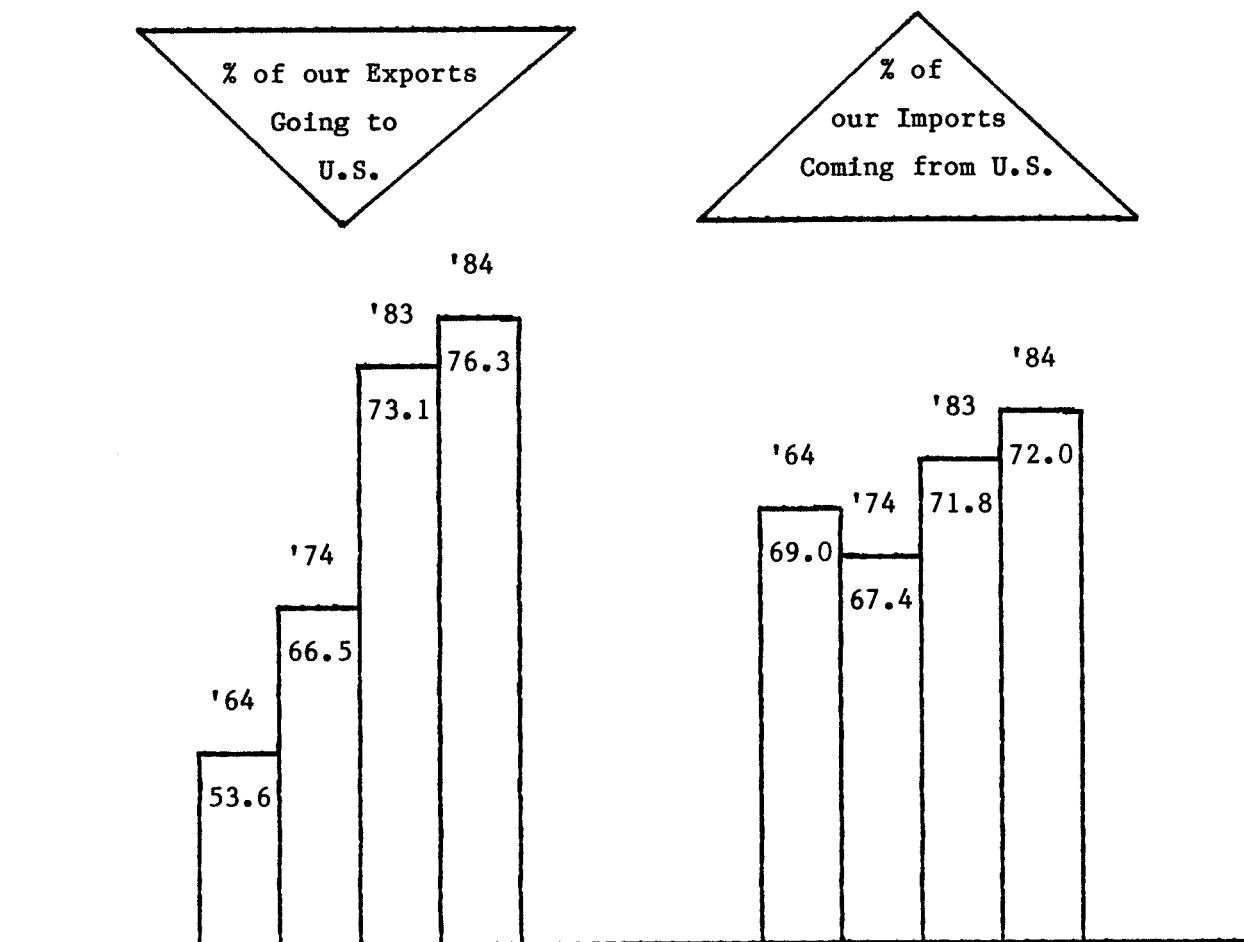
On a per capita basis Canada has long been one of the world's leading trading nations and Canadians are acutely aware that their country's economic performance depends significantly on that of its major trading partners, of which the United States is by far the most important. Canada and the United States are each other's largest trading partners. U.S. trade with Canada exceeds the former's trade with the entire European Community. In 1983, Canada-U.S. bilateral trade reached C\$118.7 billion. Canadian exports amounted to C\$64.5 billion while imports totalled C\$54.2 billion, both of

which accounted for 72 per cent of Canada's overall exports and imports (see Table N). One-fifth of total US foreign trade is conducted with Canada. Almost 80 per cent of Canadian exports to the U.S. consisted of processed goods, one-third of which was composed of automotive products.

Table N

Canada's Trade Ties with the United States

Canada's Trade Balance in Canadian Dollars was at a Deficit of \$715.4 Million in 1964; in 1984 it was a \$19.8 Billion Surplus.



Source: Department of External Affairs (Canada) 1985

Leading Canadian exports to the U.S. were motor vehicles and parts, natural gas, newsprint, crude petroleum, chemicals and lumber. One-quarter of total Canadian exports to the U.S. comprised automotive products. Major imports were motor vehicles and parts, machinery, chemicals, electronic computers, and fruits and vegetables.

In terms of tariff application it is estimated that, on a value basis, roughly 65 per cent of two-way trade between Canada and the U.S. is already duty-free. Two-thirds of Canada's dutiable exports to the U.S. face tariffs of 5 per cent or less. When the tariff cuts negotiated in the MTN are completed in 1987, the average U.S. tariff on manufactured goods will be in the area of 4 per cent compared to 9 per cent in Canada. This means that 80 per cent of current Canadian exports will enter the U.S. free of duty, taking into account trade under the Canada-U.S. Auto Pact, while 15 per cent will be subject to tariffs of 5 per cent or less and the remainder of exports will face duties over 5 per cent. For its part, the U.S. will find 65 per cent of its exports to Canada free of duty and a further 25 per cent subject to tariffs under 5 per cent, (Sarna, June 1985, p. 300).

Presented with those facts, the Senate Committee on Foreign Affairs has concluded that by 1987 a de facto free trade area between Canada and the United States could be deemed to exist in respect to tariffs. Under GATT rules, therefore, Canada and the United States could theoretically declare in 1987 that a bilateral free trade area already existed and then proceed on a product by product or sectoral basis to liberalize trade without recourse to further GATT exemptions.

Such a finding might lead the casual observer to ask, if a de facto free trade area will exist in any case by 1987, why does Canada need to pursue the matter further. The answer is that the 80 percent of bilateral trade which will be duty-free by 1987 will be composed mainly of resources and resource-based goods plus the substantial duty-free trade under the auto pact, the defence production sharing arrangement and the civil aircraft agreement. Where Canada's problem lies is in the remaining protected 15 or 20 percent, all involving its manufacturing sector which must be rationalized and placed in a world competitive mode if Canada is to redress its \$20 billion trade deficit in end products, (The Standing Senate Committee, 1983, p. 3).

Time is not on the side of this country's manufacturing industry, wrote the Economic Council in 1975. The prospects have not been greatly improved by the completion of the Tokyo Round negotiations, and in a number of

respects the outlook is less promising than before. It is perhaps why some want to pursue the matter further. The Toronto-based Canadian Manufacturers' Association has published in December 1984 its latest submission to the MacDonalld Royal Commission on the Economy, recommending that Ottawa review all options to secure "dependable and preferential access to the U.S. markets". Indeed the matter must be pursued further, and the various categories of non-tariff measures must be addressed, because they are the hidden blocks to trade.

The Hidden Blocks to Trade

In Geneva on April 12, 1979, representatives of 99 nations ended six years of painstaking negotiation begun in Tokyo by approving a historic agreement to cut tariffs on the goods trading between countries by an average of 33 percent over the next eight years. The deal was the seventh concluded under the General Agreement on Tariffs and Trade (GATT), the international body set up in 1948 to limit trade barriers. But critics now charge that GATT's success in eroding tariffs has simply encouraged use of more subtle roadblocks to trade, known collectively as non-tariff barriers (NTBs). In fact, non-tariff barriers have become the weapon of choice for most GATT signatories, allowing them to shield domestic industries from foreign rivals while following the letter - if not the spirit - of GATT.

The MTN activity with the greatest potential importance for Canada-U.S. trade could well be in the non-tariff area, because any further agreement toward international rules could head off misunderstandings that continue to occur. Three forms of non-tariff distortion appear particularly important to bilateral trade.

- The most sensitive bilateral area is subsidies and countervailing duties. An important aspect of a country's industrial policy may be the encouragement of industrial production in less favored regions, a process usually involving assistance in a variety of forms from various levels of government. When the output of a subsidized business is exported to another country, however, the assistance, although intended mainly to increase employment or to minimize regional disparities, may well be interpreted as

constituting a subsidy that stimulates exports and be answered as such by a countervailing duty. The United States applies countervailing duties on dutiable imports without observing the GATT requirement to first find injury.

The classic example of this process in the bilateral context occurred in 1973, when the United States countervailed against Michelin tires imported from new production facilities in Nova Scotia - facilities that had benefited from assistance by the federal, provincial, and local governments and that would be exporting three-quarters of their production to the United States. The U.S. Treasury found in June, 1978, that a production subsidy to assist Canada's depressed east coast groundfish industry justified countervailing under U.S. law, (Canada-U.S. Relations in 1978, November 1978, p. 39).

Canada's greatest non-tariff threat, however, comes from the Washington-based International Trade Commission (ITC), a federal agency that investigates charges of unfair competition. If the six government appointees who comprise the commission accept a complaint as valid, the ITC recommends to the Department of Commerce that a "countervailing duty" be applied. In the past two years alone U.S. firms have filed complaints against Canadian producers of such diverse commodities as sugar, fish, hogs, raspberries and steel.

The number of U.S. complaints filed against foreign imports has been rising. In 1979 the ITC handled 62 cases; in 1984 it investigated 186. In 1982 a flurry of complaints by U.S. steelmakers - many of them aimed at Canadian competitors - drove the total to a record 232 cases.

According to John Armstrong manager of tariff and trade affairs for Defasco Inc. of Hamilton, Canada's second largest steel manufacturer, "U.S. industry has learned to fine tune these tools by dragging their competitors into lengthy and expensive defences", (Macleans, September 16, 1985, p. 38).

- The second non-tariff area of considerable relevance to Canadian-U.S. trade is safeguards. Article XIX of the GATT provides temporary import restrictions for an industry confronted by imports "in such increased

quantities and under such conditions as to cause or threaten serious injury to domestic producers... of like or directly competing products." Both Canada and the United States have used this provision in cases that turned out mainly to affect each other, even though bilateral trade was not the cause of the difficulties. In 1976 the Canadian government imposed import quotas on doubleknit fabric and on a wide variety of clothing - quotas that affected nearly 25 percent of all U.S. textile exports. In December 1977, Canada followed somewhat the same action for footwear. In the same month U.S. zinc producers petitioned the International Trade Commission for an escape clause action against imports of zinc slab, a product of which Canada is the largest foreign supplier to the United States, but this was later rejected by the ITC.

One issue being negotiated in the MTN - whether safeguards can be applied selectively rather than against all exporters of the product in question - poses something of a dilemma for Canada and the United States. On the one hand, each of these countries has frequently hurt the other inadvertently when adopting safeguard against some other low-cost producer - textiles being a case in point - which argues for selective safeguards. On the other hand, this policy would violate the strong tradition in both countries to uphold the most-favored-nation doctrine of non-discrimination.

Another issue related to safeguards has proved to be an irritant to bilateral trade relations during the past two years. The United States maintains that the country applying temporary restrictions must offer temporary compensation to restore the "balance of concessions." Canada understands no such obligation to exist so long as the original action taken satisfies Article XIX. In the textile case, agreement regarding compensation was finally reached in September, 1977; Canada temporarily reduced or suspended import duties on about \$127 million of imported U.S. fabrics, yarns, and fibers. Meanwhile, the footwear case now involves considerable disagreement as to whether Canada owes compensation. Again, progress in the MTN toward internationally acceptable rules would ease what proved to be a cause of friction over the past two years, (Canada-U.S. Relations in 1978, November 1978, p. 39).

The number and variety of NTBs continue to grow. Some barriers masquerade as technical or health regulations or as labelling requirements. Occasionally governments resort to outright harassment. In 1983, when Ottawa was pressing Japanese automakers to limit their imports to Canada, Canadian customs officials kept thousands of Japanese cars languishing on Vancouver docks by insisting on inspections of each vehicle, (Marc Clark, September 16, 1985, p. 38).

• The third area of non-tariff distortions is government procurement. Recent examples include procurement preferences in Quebec, British Columbia, Minnesota, Pennsylvania, Indiana, West Virginia, and Maryland, as well as certain U.S. federal legislation such as the Public Works Employment Act (1977) and the Clean Water Act (1977). While the MTN might be helpful in discouraging such actions in North America, the problems are basically those of the relations of state and provincial actions to federal law in the two countries on matters affecting trade, (Canada-U.S. Relations in 1978, November 1978, p. 39).

But while Canadian officials dispute the significance of the subsidies, they freely acknowledge that Canada also uses NTBs. One common barrier is legislation, both federal and provincial, that gives preference to Canadian or local bidders on government contracts. GATT officials in Geneva are currently reviewing two complaints against Canada. Last January the European Community formally charged provincial liquor boards with discrimination against imported products because of excessive markups of foreign wines. South Africa has also complained of discrimination against Krugerrand gold coins because, since 1983, Ontario has exempted the Canadian Maple Leaf, the Krugerrand's major competitor, from a seven percent provincial sales tax, (Macleans, September 16, 1985, p. 38).

Canadian economists and politicians have long thought of ways to put down this wall of protectionism, to eliminate those irritants and to expand trade between these two neighbours.

Here, two points should be emphasized. First, a free trade area does not imply a common labour pool or, for that matter, any other form of economic agreement, such as a common currency. Second, undertaking any of these forms of economic union does not automatically launch the participants into an irreversible and irresistible escalation, with the eventual result of complete economic and political union. Indeed, no free trade area has ever led to political union. Economics is not the controlling force in the political sphere that it is often supposed to be, (Wonnacott, 1985 Ontario Economic Council, p. 12-13).

According to a study by Lipsey and Smith, dependable and preferential access to the U.S. markets should have at least the following beneficial effects on the economy.

- It would force private-sector firms to produce at world-competitive costs, rather than sheltering some existing inefficient practices behind trade barriers. This removes what economists call "X-inefficiency".

- It would promote the economy's adjustment to external competitive forces by encouraging the reallocation of labor and capital out of potentially declining industries and into potentially expanding ones. This allows the economy to become specialized in the areas of its comparative advantage. It would reduce the government's temptation to inhibit the adjustment process by shoring up firms in declining industries that are more profitably located in lower-wage countries.

- It would allow Canadian firms to introduce new products and to participate early in emerging industries because of free access to large, high-income markets. Many people regard this as the most import dynamic effect of trade liberalization, (Lipsey and Smith 1985, p. 42-43).

- It would provide Canadian firms with secure access to a market of over 250 million people. This would then allow them to achieve competitive costs based on large economies of scale and long production runs resulting from a narrower range of products than is now produced.

- The low costs achieved in this market would make it easier to export to third countries so that, although Canada would conduct a higher proportion of its trade with the United States, it would also increase its trade with the rest of the world.

- Achieving world-competitive costs now would leave Canadian industries poised to compete in the expanding markets of the newly industrializing countries and Japan - especially when that country becomes a mature creditor with the excess of imports over exports such status implies. If such cost competitiveness is not achieved now, we may be left behind as these third markets expand over the next decade.

- By achieving costs and prices now available in the United States, Canadian living standards would undergo a rise of something between 4 and 7 per cent. (Since the evidence for cost-reducing, scale effects seems strong to us, we believe the actual number would be close to the top of this range.)

- Gains, although hard to measure, would result from a wider range of products becoming fully available to Canadian consumers. This was an important effect of the European Community.

- Once a FTA exists, or is anticipated with a reasonable degree of certainty, a new generation of Canadian investment - still in its early stages - would take place in a known trading environment. A clear signal would be given to invest in ways that make sense in an integrated North American environment. Although nothing is ever certain, a treaty-bound FTA would provide much more planning security to firms wishing to service the North American market from Canada than does the present regime, in which there is uncertainty about the NTBs that the United States will attempt to use to restrict imports from Canada.

- The removal of trade barriers would eliminate one of the incentives of Canadian firms to locate plants in the United States to avoid existing, or anticipated, NTBs. It would also remove one important reason for the worrying flow of employment-creating Canadian direct investment to the United States.

- The removal of trade barriers would eliminate any remaining incentive for U.S. firms to set up branch plants or subsidiaries to serve only the local Canadian market. U.S.-owned subsidiaries would still exist, but they would tend to specialize in the production of certain lines sold in Canada and in other parts of the world.

- Taken together, these last two points suggest that there is a reasonable chance that a FTA would result in an increase in Canadian ownership of Canadian industry.

- As Canadian production patterns change, new employment-creating investment opportunities would be created. This would help offset the unemployment-creating effects of the transition.

"This is an impressive list of advantages concluded Lipsey and Smith and no other option seems to us to offer anything approaching such gains." (Lipsey & Smith, 1985, p. 78-81)

While the Lipsey's study for the C.D. Howe Institute (1985) concluded that Canada's gross national product would increase between 3 and 10 per cent under liberalized trade, the ambitious and influential study on the same subject by Professors Richard Harris and David Cox indicates real wage and productivity increases of between 20 to 25 per cent from their 1976 levels.

But, the strongest argument yet of free trade proponents is that it will increase Canadian exports to the U.S. The indisputable and devastating power of this argument can be explained as follows:

The United States has about 10 times Canada's population and 14 times its total economic activity as measured by gross national product. As a result of this disparity, free access for Canadian production to the U.S. market will add about 1,000 per cent to the present size of its domestic market - or free access to additional population approaching a century of growth on the basis of recent trends. Without major perturbations and/or catastrophies, an additional of 10 times the present Canadian population will occur in 94 years at the rate of 2.5 per cent per annum, or in 80 years at 3 per cent for annum, (Lea 1980, p. 75-76).

The Canadian Dollar

The theory indicates that in free-market economies the market forces determine the value (purchasing power) of the currencies and to a lesser extent, interest rates. The Canadian dollar has been declining against its American counterpart for a decade (see Table 0) and on February 4, 1986, it was 69.24 U.S. The lack of public confidence has reached the point where officials of the Bank of Canada has expressed concerned that \$900 million committed by small investors in Canada Savings Bonds (CSB's) has been cashed in the first three weeks of January 1986. To stop the hemorrhage the Bank of Canada has to raise the rate of return on the vulnerable CSB. Meanwhile, the outlook for long-term investors - the kind who seek to make profits by allocating their money for 10, 15 and 20 years so that the country can modernize, restructure and develop resources at a profit - seems even more gloomy, according to Dian Cohen in her MacLean's column of February 10, 1986. Is it a typical situation in which perception governs reality, and perception is what is encouraging speculators to flood the currency markets with unwanted Canadian dollars.

Table 0
Measuring the Canadian Dollar

Countries	1977	1979	1981	1983	1985	*Jan. 86
British Pound	1.86	2.49	2.43	1.87	1.76	2.00
Japanese Yen	0.0040	0.0054	0.0055	0.0052	0.0057	0.0073
U.S. \$	1.06	1.17	1.20	1.23	1.36	1.41
West German Mark	0.46	0.64	0.53	0.48	0.47	.59

Source: Bank of Canada Review Jan. 1977 - Feb. 1986

The economic history of the last ten years also shows that whenever there is an attack on their dollar and to maintain its strength, Canadian monetary authorities are forced to spend large amounts of precious foreign currency holdings and raise interest rates thereby adding considerably to the cost of doing business in the country. Indeed, a Canadian dollar at around 70

cents U.S. can be viewed as an expression of currency traders and investors in the ability of this nation of 25 million people to maintain a standard of living roughly equal to that of the United States with a market of about 250 million consumers. "The striking weakness the Canadian dollar displayed... is one of the most compelling arguments available for the Federal Government to proceed swiftly to negotiate a new, freer commercial trade agreement with the United States. Only when Canada becomes an acceptable part of a large and secure North American trading base will it be seen as a fully secure and viable economic entity, and only then will the periodic nervousness that batters its currency be reduced to manageable levels." (Maclean's, January 27, 1986)

DISADVANTAGES OF FREE TRADE

Most of what is called "disadvantages" seems to be perceived risks with no real economic substance, political and social issues, that have figured so prominently and for so long in the history of the two countries. Since it is very difficult to pin down the basis for these concerns in factual and analytical terms, "to test in a rational, objective manner these arguments that often take the form of dogmatic statements of belief with a high emotional content" (The Canadian Business Review, Autumn 1985, p. 19), since the answer to the ones with more or less economic contents can be found in the advantages (presented above) of trade liberalization and since Free trade cannot really be tested unless it is actually tried, this paper presents, without further analysis, a list of the "Disadvantages of Free trade".

- Loss of Canadian sovereignty, subversion of its cultural independence.
- Protecting a domestic industry from competition would no longer be possible.
- Removal of tariffs implies a reduction in federal government revenues.
- Many Canadian manufacturing industries are structured to serve the smaller Canadian market and therefore do not have the plant, equipment, technology, personnel, management, experience or connections to withstand foreign

competition or to take advantage of the larger continental market (Canadian Business Review, Autumn 1985, p. 19).

- There will be few major investments in Canada due to the risks of uncertainty about the permanence of the Free trade arrangements.
- Concern is occasionally expressed that a greater proportion of Canadian resources would be exported and end-stage processing would decline (William 1977, p. 10).
- Since many operations were originally located in Canada to obviate the relatively high protective tariff regime (Journal of Common Market Studies, June 1985, p. 308), there is a possibility of significant repatriation of production or closure of branch plants by US-Controlled manufacturing firms and will forestall possibly other investment that would otherwise have occurred.
- In the short run, Free Trade may increase unemployment.
- a decline in the Canadian tariff could constitute an inducement for Canada to increase the aggregate amount borrowed from abroad. (A study by Eastman and Stykolt in 1967 indicates that the tariff has increased foreign investment in Canada and hence has increased foreign borrowing).
- Short-term dislocation and adjustment costs may be incurred.

Sectoral Bilateral Trade

One option long considered is the sectoral free-trade initiative, an incremental, industry-by-industry approach. But for months now the sectoral approach has been losing much of its lustre. The Senate Committee was warned by a number of witnesses, including knowledgeable Americans, that such an approach would be inadvisable and unworkable. Professor Weintraub of the University of Texas stated:

"It is much harder to reach any kind of free trade arrangement if you do it sector-by-sector. The issue is thereby complicated rather than simplified. We started out in GATT by negotiating item-by-item, which became so cumbersome that we had to shift to across the board negotiations, with exceptions. The European Community... reduced duties across-the-board, rather than negotiate item-by-item. The Latin American Free Trade Association chose a different path. It chose item-by-item negotiations and failed, and the organization no longer exists."(Senate Cttee 1983, p.13).

"Or, assume, for a moment, that successful agreements are concluded in "easy" sectors (steel, textiles, petrochemicals and urban transit system), what incentive would Ottawa have to push for agreements in yet other sectors where it was perceived that the gains would be questionable at best, or that there would be clear-cut losses?" (Business review, June 1984, p. 3.

Like Professor Sidney Weintraub, U.S. government officials have clearly expressed their views about this strategy. "The timid sector-by-sector approach seems like a sure way to frustration. Don't tear the adhesive from the hairy, sore skin bit by bit but rather let'er rip". (Westell 1984, p. 24).

The strongest protest against this approach was heard in Quebec City at the 1985 annual meeting of the Chamber of Commerce. Almost 75 per cent of 1,557 corporate Chamber members who responded to a survey said they are against sectoral negotiations. More than 90 per cent of those companies employ more than 500 workers, do business outside Canada and the U.S. and are in the primary or manufacturing sectors. (The Gazette, November 6, 1984, p. E3). For the Canadian businessmen also, a more global solution seems to be more desirable.

Across the Board Negotiations

The idea of a complete bilateral free trade arrangement has recently been gathering momentum in several industrial sectors on both sides of the border. In fact, "these days barely a week goes by without a fresh call from senior business associations for institutionalized closer Canadian-American trade ties", (Gherson 1985). What the business community seems to be after is a comprehensive agreement to remove all tariffs, and to reduce the effect of non-tariff barriers on substantially all trade in goods and services between the two countries, of course with negotiated exemptions. According to Professors Lipsey and Smith, this all inclusive approach is by far the most capable to achieve these objectives, because:

- It would have one enormous advantage over the other forms of bilateral arrangements previously considered: it would start out being inclusive, and negotiations would then be about exclusions both in goods and services and of particular trade-restricting instruments. It would not be necessary in such negotiations, therefore, to judge the balance of advantages sector by sector, or instrument by instrument. Instead, each country would recognize that it will achieve an overall gain, and exemptions would be restricted to areas where particular issues of national policy, or national sovereignty, arose.

- This approach would provide the increase in trade liberalization that is needed to move Canada away from the status quo, and that is the main alternative to the inward-looking option of raising new barriers to trade.

- It would remove the remaining tariffs on Canadian-U.S. trade. Although the Tokyo Round has reduced tariffs substantially, remaining U.S. tariffs still exert a substantial restraining effect on Canadian exports to that country.

- Not only would this approach eliminate tariffs, it would also reduce non-tariff barriers and clarify their applicability. This would help to remove the uncertainty that currently exists among firms and, we strongly suspect, among all levels of Canadian Government as to which actions are and are not countervailable or subject to other NTBs.

SUMMARY

Becoming less and less competitive, Canada, like many other nations, turned in the late 1960s to protectionism as an instrument of its commercial policy, in the hope that increased tariffs would promote growth of domestic manufacturing industries and would reduce reliance on foreign imports. Ironically, economic history has proven that such tariff barriers had led to inefficient production in the manufacturing sector and to higher unit costs. Yet, this disease is spreading; the United States, Canada's major trading partner is being swept away by the protectionist streams. If this trend continues, few countries have more at stake in the outcome than Canada.

An appreciable body of evidence indicates that an inward-looking policy and its protectionist strategies are costly. Protecting the losers, in economic terms, is bearing the brunt of their contribution to total national income - otherwise they would not continue to produce their non-competitive goods; it means also that the burden is then transferred to the population as a whole by means of income subsidies to those who worked in those industries. The greater the number of industries protected, the larger the reduction in national living standards. Supporting high cost, low-income-producing industries in an economy is always at the expense of those industries which have a comparative advantage, this same comparative advantage that David Ricardo showed in the nineteenth century to bring gains from trade and which proved to still be truth today.

By January 1987 when the Tokyo Round tariff reductions are fully implemented, a de facto free trade area between the world's No 1 neighbours and trading partners could be deemed to exist since 80 per cent of current Canadian industrial export to the USA will actually enter duty free, and up to 95 per cent of the rest will be subject to tariff of 5 per cent or less. Again, the truth is that the 80 per cent which will be duty free by 1987 will be composed mainly of resources and resources-based goods plus the substantial duty-free trade under the auto pact, the defence production sharing arrangement and the civil aircraft agreement. Where Canada's problem lies is in the remaining protected 15 or 20 per cent, all involving its manufacturing sector. This sector must be rationalized and placed in a world competitive

mode if Canada is to redress its \$20 billion trade deficit in end products. Reducing this deficit boils down to finding a solution to the three main categories of non-tariff measures which are the hidden blocks to trade. Indeed, subsidies and countervailing duties, safeguards and government procurement must be addressed by Washington and Ottawa.

The other option considered is a Free Trade Area between Canada and the U.S.A. Needless to recite redundantly the gains for a small open economy like Canada from such an arrangement; they fill the Trade and Economics textbooks and literature. Suffice to notice that such a regime would increase the domestic market of Canadian producers by 1,000 per cent or would give them free access to an additional population approaching a century of growth on the basis of recent trends. To achieve this arrangement, there are a few strategies available to the negotiators.

Experienced negotiators have found the sector-by-sector or industry-by-industry approach to be too limited, cumbersome, time-consuming and does not seem to meet quickly enough the Canadian problems of the hour. Across the board negotiations, with its impressive list of advantages appears to be to the business community the only approach really capable of increasing the real income of Canadian workers and of lowering prices for many imported and domestically produced goods.

Freer trade with the United States, in the form of a functional, sectoral or comprehensive arrangement is evaluated in the context of existing economic literature. The dynamics of the world economy and increased protectionism in the U.S. and elsewhere has increased the importance of any Canadian trade-policy decision. The evolution of trade theory and the incorporation of facets of industrial structure and performance into empirical models of trade liberalization show the potential gains for Canada to be large. An increase of up to 9% of GNP is accompanied by increases in employment opportunities and in labour incomes, with all regions benefiting in the medium to long run, while in the short run significant capital and labour adjustment could be expected.

The embattled Canadian currency has been struggling since the beginning of 1986 to stay above 70 cents U.S. If it is true that the market forces determine its value, it seems that short-and long-term investors are turning their backs on the Canadian economy. It has been proven that speculators who play the money markets can temporarily drive down a vulnerable currency. But they cannot keep it down if it has a higher perceived value. The descent of the Canadian dollar started twelve years ago.

A summary and conclusions of the research study will be presented in Chapter V.

SUMMARY AND CONCLUSION

The traditional or neo-classical theoretical economic argument in international trade theory—"that free trade provides net economic benefits to a country"—was established well before Confederation. If prices and quantities are not distorted by trade barriers and if markets are competitive, then each country will produce those products in which it has a natural comparative advantage and through international exchange, will trade them for the products its consumers wish to purchase. Since consumers pay the lowest price possible and firms produce the optimal product mix at the lowest economic cost, the country as a whole will be better off. While it can be shown that a large economic power can use its trade barriers to enhance its own economic welfare, the traditional theoretical argument is unequivocal in its conclusion that a small open economy is better off under free trade.

Even though all its regions are below the "optimum population density, even though it has particular problems in world trade stemming in part from geography, climate, coordination and competition between different levels of government, population dispersal, more fragmented and compartmentalized markets than its competitors, Canada, the second largest country in the world after the Soviet Union, as a small open economy, is a major trading nation. Its export amounted to over \$100 billion for 1985, employ 3 million Canadians, one third of the total labour force; quite an achievement - worthy of pioneers - for the only major industrialized country without free access to a market of from 100 to 300 million people.

On the surface, Canada's international trade situation actually looks fairly good, finishing with a large surplus year after year even during the 1980-82 recession. This overall trade performance is quite comprehensible since this land is a rich storehouse of natural resources. On the other side of the Pacific, the Japanese have achieved their manufacturing position because they had nothing else to fall back on. Here, the political leaders are now realizing that Canada has come to the end of an era in terms of heavy reliance on natural resources for income, jobs and high standards of living. While the prices in the resource sector have been and are going down on world

markets, the end-products and manufacturing sector of this country still reflect an acute state of underdevelopment. That Canada exports more newsprint than any other country but imports most of the machines to print on it is not a surprising feature of the Canadian economy. The value of imported end-products rises faster than the value of the end-product exports; the result in 1981 was a huge \$20 billion deficit in Canada's end-product trade, despite the advantage of the depreciated Canadian dollar. This deficit is still increasing. Some of the reasons for this alarming and widening imbalance are very simple.

R&D performance in the manufacturing sector is abysmally poor; too much basic and fundamental research insufficiently tuned to market needs. National firms, with some exceptions, are technological followers with limited indigenous R&D capabilities, relying on foreign sources for new technology. Canadians have, indeed, been successful innovators, but too often their ideas have had to be executed abroad in larger markets.

Canada's flourishing mishmash of grants, subsidies, preferential purchasing, protectionist measures and tax incentives have in many cases only served to prop up inefficient industries. Some provinces do not even know how to pick and protect the real "losers": a number of Canadian firms in what are considered soft sectors, such as textiles, clothing and shoes are very competitive in export markets. Policy incentives that foresook such companies on the grounds that they belonged to a sector of "losers" are clearly unwise. While recalling that honest capitalist who said: "I have yet to meet anyone who is not an unabashed free trader, that is until his job is in jeopardy or maybe his profits begin to slip a little bit", one cannot help characterize the policy advisers who have been pushing the government toward more protectionist measures as shortsighted, because, protection at the border seeks only to hide problems and not to solve them.

The capital stock is insufficient and old; the use of robotics is almost inexistent in the workplace. With the least stable and the most expensive labor force in the western world, it follows that production cost is high with ample overcapacity. Not surprisingly, Canada's productivity is one of the worst among industrialized nations. Yet the average person seems completely

unaware that this economy is becoming less and less competitive. It is indeed a sad state of affairs and the outlook is worsen when one thinks of developing nations producing at a fraction of the Canadian cost of production and the fact that trading blocs are mushrooming around the globe.

Canada has reached a level of know how where there are areas of economic activity that can no longer be performed efficiently except on a scale that exceeds national dimensions. This country has also reached a point where any U.S. measures that seriously interfere with Canadian exports quickly result in unemployment and falling living standards. Finally, Canada, like many other countries, has to make difficult adjustments to a changing world economy and perhaps to changing concepts of sovereignty. The international trend is to shift production of standard goods from high-cost plants in the democracies to lower-cost plant in Asia and other developing countries just entering the industrial age. This new division of international labor has proved to be just as much of a problem for Britain, Germany, the United States and others. Major corporations now organize their business on a continental or even global scale. The direction of the developed countries has been toward the recognition of their economic interdependence and of the need, consequently, to cooperate in the management of the increasingly complex international system. The major cause of this trend toward the integration of societies has been the new technologies of transportation and communication which have "shrunk the world and made all countries neighbours". It is also a fact that industrialization of developing countries, technological rivalry among trading nations are reshaping global patterns of comparative advantage.

These trends and circumstances - the less than satisfactory Canadian economic performance over the past decade - the importance of trade as a percentage of GDP, have generated a new sense of urgency in addressing fundamental questions of Canadian economic development. Where will the jobs be generated that are lost to the technologies and foreign competitors? Since 1947 the world trading system has been regulated by the various agreements worked out among developed countries in negotiations under the framework of the GATT. In recent years, however, there have been several signs that this system is encountering increasing strains. Member countries have been making greater use of trade measures outside of the GATT framework - particularly

quotas, voluntary export restraints and other measures covering textiles, autos, steel and other products. In addition, while GATT rounds have been successful in reducing tariffs, they have been less successful in regulating the use of key non-tariff measures. There is increasing concern about how developing countries can be brought more fully into discussions on the future of the global trading system. There is also concern that bilateral or regional trade arrangements will further weaken the arrangements worked out in the GATT.

In short, the world trade system may have reached a crossroads. Trade policy avenues outside of the GATT framework are being more openly and more widely discussed in many countries. Canada is no exception. A strong commitment to the multilateral framework of the GATT remains the cornerstone of this country's trade policies and Canada is committed to exploring the possibility of future major rounds of negotiations. However, the proposals made in the summer of 1983 for studying sectoral free trade with the United States imply that Canada too is looking to supplement its multilateral options. Those advocating negotiations on a wider bilateral free trade arrangement with the United States similarly see the multilateral route as a less promising approach for gaining better and more secure access to export markets than it was in decades past. These proposals, while not rejecting multilateralism, show a trend toward a balanced multilateral/bilateral approach to Canada's trade policies.

The challenge of the decades ahead is to select appropriate policies that both protect Canadian interests and are oriented toward both a global trading order and a wider international set of arrangements beneficial to Canada. Major changes in the economic structure and therefore in policy are needed to reshape, in turn, Canada's economic prospects. One of changes which must be made the centerpiece of a policy package is bilateral liberalization of trade with the United States, because it is a choice between freer trade and status quo which is simply a choice between the virtues of open markets and the costs of protectionism.

Since the end of the Second World War, Canada and the United States have pursued largely multilateral foreign economic policies and conducted their own

trade and economic relations within multilateral agreements and institutions. Yet the need to address issues bilaterally has never diminished, nor has the historic question of whether or not to seek closer formal economic ties. This year, 1986, free-trade with the United States is an enormous issue in Canada. Labor leaders argue lost of jobs and other opponents nationalism as the key reason to maintain protectionism. Canada would risk being swallowed and homogenized by the United States, they said. In this instance, contemporary historical parallels will enlighten "the man of good faith".

Do Ireland and Great Britain which have a free trade agreement dance to the same political tune? Even the small Scandinavian countries which have free trade pacts with the huge European Community show little evidence of conformity to "big brother" either in matters of economic or foreign policy. Have free trade areas made Danes into Germans or New Zealanders into Australians? The chairman of the Macdonald Commission on Canada's economy called for a "leap of faith" into free-trade. Some fellow countrymen, fortunately, understood what he really meant. The idea of abandoning barriers in return for sudden access to a market equivalent to a century of internal population growth, shows that Canada, after Scandinavia or Danemark, has gained confidence in the sturdiness of its sovereignty and political will. The advocates feel Canada can compete, and benefit, not only in terms of goods but also in terms of retaining its own self-consciousness.

The grandchildren of pre-confederation pioneers must show to day their ability to anticipate changes in the international economic environment. Here, again, the choice of approaches is clear. Since there is no piecemeal solution to today's trade problems, there is no piecemeal bilateral trade liberalization. It stands to reason that an agreement between two neighbors (sharing the longest unguarded common border on earth), the world's largest trading partners, cultural cousins (sharing the same entertainments) and military allies must be comprehensive. Moreover, any accord limited to specific industrial sector or some other narrow base could be inconsistent with the rules of the GATT.

In light of the above analysis of the issues examined, it follows that:

- 1) Although US import restrictions are being put in place primarily to combat imports from the Third World, some Canadian industries, in the past, have been caught in the middle. Canada needs to get around the US non-tariff protectionist measures and the only way is by a special arrangement (sectoral free trade or across the board);
- 2) Negotiators must realize that a sectoral or industry-by-industry approach is something of the past, reminiscent of a shopkeeper mentality. Often, the decision about what outside components used in one sector should be included or excluded is at worst aberrant, irrational and at best illogical. There is not enough quid pro quo in the sectoral arrangements for the US to be seriously interested nor has Canada been able to find a balance of advantages in various sectors. Moreover limited negotiations if successful can prove to be inhibitive of later efforts to develop a more liberal trading relationship. Last but not least, industry-by-industry approach has been found cumbersome.
- 3) Thus, the promising alternative, the only approach likely to succeed would be one which addresses the whole spectrum of trade i.e. the so called "across the board approach". To begin with, this is the time. Canada-US relations are on the upswing. Since September 4, 1984, Canada is supposedly under new management, an investment and export oriented one. This is the time for the political and administrative elite to play a role of guidance and hopefully of visionary.

As far as further penetrating the US market is concerned, an across the board free trade approach is the solution, because:

- a) from the dawn of this Confederation to today, Canada has striven to maintain a policy which reflects the interests, economic development and potential of its various regions, while remaining national in scope;

- b) Canada's ten provinces form a very uncommon market in which trade is unfree. Indeed, there is no free movement of Agricultural products, of goods of all kinds, of Capital, of people (electricians, plumbers, medical doctors, lawyers, etc.), there are different liquor commission regulations governing production, distribution and sale of beer, wine, strong drink, different federal and provincial purchasing policies and procurement practices, etc. Such approach will force a rationalization of this market;
- c) it would improve the efficiency of the capital investments already in place;
- d) further rationalization of companies across the boarder might slow down the exodus of production facilities from North America, permit greater economies of scale, and enhance North American industries' ability to cope with the shared problem of how to meet the growing pressure and competition from low-cost offshore producers;
- e) in the electronics industry for exemple, U.S. interest have created cooperative organizations such as the Semiconductor Research Corp. and the Microelectronics and Computer Research Corp. allowing groups of companies involved in a smilar industrial sector to pool their resources and support research of value to the sector as a whole. Canadian researchers will be able to join large industry research associations;
- f) the surest way to reduce unemployment and develop this vast country is to welcome foreign investment. Free-trade means first and foremost investment. The USA is the largest exporter of capital in the world and, has long been strongly committed to the freest possible capital flows;
- g) closely associated with the world strongest and most dynamic financial market, the perceived value of the Canadian currency will finally approximate its real value;

- h) it will eliminate some of the costs and problems of monitoring an antiquated, cumbersome, complicated system of regulation, tariffs and other barriers;
- i) it is the only alternative capable of counteracting the restrictive "Buy American" regulations in the US. Non-tariff barriers would be circumvented and this would be of prime importance to Canada who would gain an advantage no other country had in trade with the USA;
- j) Canadian policy makers should follow the movement toward a "global economy". The new government should not only realize that foreign markets are a sine qua non condition of survival, that competition is cannibalistic, but, in order to conquer, it should direct and help his fellow-businessmen pushing export to the developing world in a most rational and aggressive fashion. Are there many nations not casting covetous eyes on the dividends deriving from the Japanese global view of the world market? USA is a part of the world and a special part for its northern neighbors. Canada has just realised that its prosperity depends on making its manufacturing industry competitive on world markets and on preserving its share of American imports. A free-trade agreement with the United States could be the best way to do both. In other words, only by improving the market base in North America for Canadian manufacturers will Canada penetrate third markets and thus diversify its trading relationships. The United States is now Canada's route to the rest of the world.

It is the contention of this paper that it does not really matter if it is difficult for some to imagine that a strong case for freer trade with the United States can be made only on purely economic grounds. Even if the real concern is not necessarily the advantages of trade but the threat of U.S. protectionism to Canadian exports in the American market, what is needed then is, to get inside the protectionist wall the U.S. is now building, an all embracing free trade treaty - of course with negotiated exemptions, whereby the negotiators of this pact will retain the right to prohibit imports of certain commodities in order to protect public morals and human, animal, or plant life or health; to prevent crime or disorder, to protect industrial

property and copyrights, national treasures of artistic, historical, or archeological value, etc.

Given the current rapid advances in technology, the Canadians will have to adjust in the future to large external shocks. A free trade arrangement with the United States will only be the first step in the adjustment process (that Canada has to face one way or the other) - and quite possibly not the most dramatic. Therefore, pressing for free trade with the United States is an imaginative, avant-garde and practical proposal to push events along in the way they must ultimately go.

A P P E N D I X

TABLE 1

LEVELS OF COMPANY EXPENDITURES ON R&D 1985

Size of Firm's R & D Budget	U.S.A.		CANADA	
	Total <u>Expend.</u>	No. of <u>Cos.</u>	Total <u>Expend.</u>	No. of <u>Cos.</u>
	Cdn \$xB		Cdn \$xB	
Greater than \$600M	30.4	21	0.	0
between \$300M and \$600M	12.1	30	0.58	1
between \$50M and \$300M	13.5	111	0.59	7
less than \$50M	<u>54.7</u>	<u>14,800</u>	<u>1.53</u>	<u>1,242</u>
TOTAL (approx.)	110.7	15,000	2.60	1,250*

* About 2000 Canadian firms claim R&D expenditures for tax purposes, but many claims are rejected.

Source: U.S. Cos. - Business Week R&D Scoreboard July 8, 1985
Cdn Cos. - Financial Post - October 16, 1985

Industry Policy Analysis Office, NRC, June 1986, p.18

TABLE 2

R&D EXPENDITURES BY INDIVIDUAL COMPANIES 1985

Top USA Companies

	<u>CAN \$xB</u>
1 IBM	4.517
2 General Motors	4.414
3 AT&T	3.398
4 Ford Motor	2.748
* Total Canadian Industry	2.60
5 General Electric	1.921
6 Du Pont	1.574
7 United Technologies	1.452
8 Eastman Kodak	1.203
9 Exxon	1.056
10 Digital Equipment	0.899
11 Hewlett-Packard	0.844
12 Xerox	0.799
13 ITT	0.741
14 Dow Chemical	0.722
15 Boeing	0.721

Top Canadian Companies

	<u>CAN \$xB</u>
1 Bell Canada Enterprises	0.582
2 Pratt & Whitney Canada	0.190
3 Ontario Hydro	0.075
4 Imperial Oil	0.071
5 IBM Canada	0.070
6 Canada Development Corp.	0.063
7 Alcan	0.063
8 Mitel	0.060

Several individual U.S. firms outspend all of Canadian industry combined in R&D. The top Canadian company investment would rank no higher than 22nd south of the border.

Source: U.S. Cos. - Business Week R&D Scoreboard July 8, 1985
Cdn Cos. - Financial Post - October 16, 1985

Industry Policy Analysis Office, NRC, June 1986

TABLE 3

COMPARATIVE R&D ACTIVITIES OF SMALL FIRMS

		SMALL FIRMS Under 500 Employees			
	Year	Total Spent on R&D U.S. \$B PPP*	Proportion of Small Cos. Relative to Total %	Spending Relative to Total Business Sector R&D %	Average Budget per Company U.S. \$K PPP *
U.S.	1979	37.95	87	2.5	73
Japan	1981	15.91	81	8.4	110
W. Germany	1979	8.77	41	12.5	2335
France	1981	6.40	53	10.3	940
U.K.	1978	4.66	50	1.1	184
Canada	1981	1.79	77	17.6	315
Netherlands	1979	1.09	NA	7.7	NA
Sweden	1979	0.96	63	6.6	157
Belgium	1977	0.72	76	27.8	318
Denmark	1981	0.24	83	44.1	276
Finland	1979	0.19	NA	15.2	NA
Norway	1979	0.18	73	21.3	194

* Dollar values are expressed as a purchasing power parity (PPP) exchange rate developed by OECD.

Canadian small companies are a major force in our total industrial R&D and spend more on average than many of their foreign equivalents.

Source: Statistics Canada 88-202 Industrial Research and Development
Statistics 1982.

OECD DSTI/SPR/84.44 Science and Technology Indicators
Working Paper #5.

TABLE 4

SMALL COMPANY R&D PERFORMERS

	<u>100 Employees or Fewer</u>	<u>100 to 200 Employees</u>	<u>200 to 500 Employees</u>	<u>500 Employees or Fewer</u>
W. Germany	Approx. 10%	N/A%	N/A%	Approx. 41%
U.K.	" 24	N/A	N/A	" 50
Canada	" 53	13	11	" 77
Sweden	" 16	22	25	" 63
Belgium	" 31	22	23	" 76
Denmark	" 29	26	28	" 83
Norway	" 27	24	22	" 73

Figures represent the proportion of small companies of various sizes relative to the total number of industry R&D performers.

Source: Industry Policy Analysis Office, NRC, June 1986, p. 20

TABLE 5

CANADIAN SMALL R&D FIRMS

	<u>100 Employees or Fewer</u>	<u>100 to 200 Employees</u>	<u>200 to 500 Employees</u>	<u>500 Employees or Fewer</u>
Expenses				
% of Ind. R&D	7.4%	5.3%	5.3%	18.0%
\$ Million Cdn	172	124	123	419
Firms				
No. of Firms	670	185	141	946
% of Total R&D Firms	53%	13%	11%	77%
Average Expenditure per Firm (\$1000 Cdn)				
	300	800	900	420

Source: Industry Policy Analysis Office, NRC, June 1986, p. 21

TABLE 6

TECHNOLOGY INTENSIVENESS
IN BUSINESS SECTOR (OECD)

<u>COUNTRY</u>	<u>YEAR</u>	<u>R&D PERSONNEL PER 1000 TOTAL LABOUR FORCE</u>	<u>RELATIVE TO CANADA</u>
1 West Germany	1979	9.0	4.09 times more
2 U.K.	1978	7.2	3.27
3 Japan	1980	6.2	2.82
4 Sweden	1979	5.7	2.59
5 Switzerland	1979	5.7	2.59
6 Netherlands	1979	5.5	2.50
7 France	1979	5.4	2.45
8 Belgium	1979	4.7	2.14
9 U.S.A.	1979	4.1	1.86
10 Norway	1979	3.5	1.59
11 Austria	1978	3.4	1.55
12 Denmark	1979	3.1	1.41
13 Finland	1979	3.1	1.41
14 Canada	1979	2.2	----
15 Italy	1979	2.1	1.05 times less
16 New Zealand	1979	1.4	1.57
17 Ireland	1979	1.0	2.2
18 Iceland	1979	0.4	5.5
19 Portugal	1978	0.2	11.0
20 Greece	1978	0.0	

R&D personnel represent scientists, engineers, technical assistants and support staff.

Source: Industry Policy Analysis Office, NRC, June 1986, Appendix 6

TABLE 7

INDIVIDUAL VS COOPERATIVE WAYS TO PERFORM INDUSTRIAL R&DINTRAMURAL R&D IN 1983/84

<u>TYPES OF PERFORMERS</u>	<u>NO. OF ENTITIES</u>	<u>EXPENDITURE*</u>		<u>DEGREE OF COOPERATION</u>
		<u>\$ MILLION</u>	<u>RELATIVE TO TOTAL</u>	
Individual Firms	1407	2354	64%	Generally not cooperative
Industry Assoc. Labs.**	28	164	4%	Firms within an industry share R&D costs and results
NRC: - Laboratories - IRAP & PILP Contrib.	1	204 269	7%	Some projects involve firms across regions and industries
Federal Department Labs	13	931	25%	
University Labs	50	33	1%	Firms within a region and an industry contribute to projects
TOTAL	<u>1507</u>	<u>3765</u>		

* Expenditures represent the total spent on R&D in natural sciences and engineering.

** Includes 7 electric utility labs.

Source: - DRIE, list of technology centres having been funded by DRIE
- IDO list of organizations and number of the IRAP Field Advisory Service
- Statistics Canada, "Directory of Federal Government Scientific and Technological Establishment, 1985", publication 88-206-E

TABLE 8

R&D EXPENDITURES IN HIGHER EDUCATION* AS PERCENTAGE OF GDP

<u>COUNTRY</u>	<u>YEAR</u>	<u>% OF GDP</u>	<u>RELATIVE TO CANADA</u>
1 Sweden	1981	0.60	1.76 times more
2 Japan	1982	0.57	1.68
3 Netherlands	1981	0.44	1.29
4 Switzerland	1979	0.42	1.24
5 West Germany	1983	0.41	1.21
6 Norway	1981	0.37	1.09
7 Canada	1983	0.34	-----
8 United States	1983	0.35	1.03 times less
9 France	1981	0.33	1.03
10 Denmark	1981	0.29	1.17
11 U.K.	1979	0.25	1.36
12 Finland	1981	0.19	1.79
13 Iceland	1981	0.19	1.79
14 Italy	1982	0.18	1.89
15 Yugoslavia	1981	0.14	2.43
16 Portugal	1980	0.07	4.86

* Includes R&D in the natural sciences, engineering, the social sciences and humanities.

Canada's performance earns no better than a middle rank position.

Source: UNESCO Statistical Yearbook 1985 p.v. 32-38

TABLE 9

INDUSTRY R&D (1981)

	Cost of R&D Performed by Industry <u>% of GDP</u>	<u>Relative to Canada</u>
1 U.S.A.	1.76	2.89 times more
2 Switzerland	1.70	2.79
3 Germany	1.69	2.77
4 U.K.	1.50	2.46
5 Sweden	1.48	2.43
6 Japan	1.44	2.36
7 France	1.18	1.93
8 Netherlands	1.00	1.64
9 Belgium	1.00*	1.64
10 Norway	0.67	1.10
11 Finland	0.65	1.07
12 Canada	0.61	----
13 Italy	0.57	1.07 times less
14 Denmark	0.54	1.13
15 Australia	0.23	2.65
16 New Zealand	0.21	2.90

*estimate

Source: OECD Selected Science and Technology Indicators
1981-1986 (Retrieved)

Over the years, Canadian industry has gradually increased its performance of R&D, up from a value of 0.48% of GDP in 1969. However, it still lags far behind our major trading partners.

TABLE 10

INDUSTRY R&D (1981)

		Funded by Government <u>% of GDP</u>	Relative to <u>Canada</u>
1	U.S.A.	0.56	8.00 times more
2	U.K.	0.45	6.43
3	Germany	0.29	4.14
4	France	0.29	4.14
5	Sweden	0.20	2.86
6	Norway	0.17	2.43
7	Netherlands	0.08	1.14
8	Canada	0.07	----
9	Finland	0.06	1.17 times less
10	Denmark	0.06	1.17
11	Belgium	0.06*	1.17
12	Italy	0.05	1.40
13	New Zealand	0.03	2.33
14	Japan	0.03	2.33
15	Australia	0.02	3.50
16	Switzerland	0.02	3.50

*estimate

Source: OECD Selected Science and Technology Indicators
1981-1986 (Retrieved)

TABLE 11

INDUSTRY R&D (1981)

	Funded by Industry <u>% of GDP</u>	<u>Relative to Canada</u>
1 Switzerland	1.65*	3.24 times more
2 Japan	1.41	2.76
3 Germany	1.38	2.71
4 Sweden	1.27	2.49
5 U.S.A.	1.21	2.37
6 U.K.	0.92	1.80
7 Belgium	0.90*	1.76
8 Netherlands	0.85	1.67
9 France	0.81	1.59
10 Finland	0.59	1.16
11 Canada	0.51	-----
12 Italy	0.50	1.02 times less
13 Norway	0.49	1.04
14 Denmark	0.47	1.09
15 New Zealand	0.15*	3.40

*estimate

Source: OECD Selected Science and Technology Indicators
1981-1986 (Retrieved)

TABLE 12

GOVERNMENT PERFORMED (AS DISTINCT FROM FUNDED) R&D

	<u>% of GDP (1981)</u>	<u>Relative to Canada</u>
1. U.K.	0.60	1.94 times more
2. New Zealand	0.60	1.94
3. France	0.50	1.61
4. Australia	0.48	1.55
5. Netherlands	0.44	1.42
6. U.S.A.	0.38	1.23
7. W. Germany	0.37	1.19
8. Japan	0.36	1.16
9. Canada	0.31	----
10. Finland	0.28	1.11 times less
11. Italy	0.26	1.19
12. Norway	0.24	1.29
13. Sweden	0.15	2.07
14. Switzerland	0.14	2.21
15. Austria	0.13	2.38

Source: OECD Selected Science and Technology Indicators
1981-1986 (Retrieved)

The figures include provincial government R&D and represent all sciences including the social sciences and humanities. NRC contributes 0.05% to Canada's total, while provincial organizations add 0.02%. In 1969, the comparable government figure was 0.48%.

TABLE 13

GOVERNMENT INTRAMURAL R&D EXPENDITURES
FOR INDUSTRIAL DEVELOPMENT

<u>COUNTRY</u>	<u>% OF GDP</u>	<u>RELATIVE TO CANADA</u>
1 New Zealand	0.055	1.67 times more
2 United Kingdom	0.047	1.42
3 Iceland	0.045	1.36
4 France	0.044	1.33
5 Netherlands	0.042	1.27
6 West Germany	0.034	1.03
7 Canada	0.033	-----
8 United States	0.030	1.10 times less
9 Ireland	0.029	1.14
10 Finland	0.028	1.18
11 Japan	0.025	1.32
12 Norway	0.025	1.32
13 Italy	0.022	1.50
14 Denmark	0.020	1.65
15 Portugal	0.016	2.06
16 Greece	0.015	2.20
17 Switzerland	0.014	2.36
18 Sweden	0.012	2.75

Source: Unesco 1983, Stat. Year Book (NSE & SSH), page V-90-94

Figures do not include government intramural R&D for objectives such as defence, health, environment protection, energy, general advancement of knowledge, etc. In 1981, the federal government in Canada invested \$133 million in intramural R&D for industrial development of which the NRC component was \$68 million. In addition, NRC IRAP contributions to industry R&D amounted to \$33 million.

Canada's position is less satisfactory than it might appear because many countries have large military expenditures which play a large role in maintaining the intellectual infrastructure supporting all technical activities including those in industry.

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