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# CANADA-U.S. FREE TRADE PACT
# THE INEVITABLE PATH

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## INTRODUCTION

In 1776, Adam Smith described how the wealth of the British nation might be increased by departing from the prevailing mercantilist doctrine, (Weston 1966 p. 21). This export balance-of-trade or mercantilist theory of the sixteenth, seventeenth and eighteenth centuries has long since been discarded by economists and by enlightened statesmen and businessmen.

In 1986, the value of international marketing to individual producers, merchants, carriers, business concerns, institutions and the like is not difficult to understand. They are interested in foreign trade because of the direct or indirect profits derived from it. Producers not only expect a profit on the commodities sold abroad, but they also look upon foreign markets as a basis upon which they can increase their production beyond the limits set by domestic commerce. They can expand their plants, keep their labor and capital employed more fully and continuously, (Kramer 1970 P. 13-14), and therefore enjoy the various benefits stemming from international trade such as reduced costs due to mass production, the spread of business and financial risks, enhanced international reputation and goodwill, and higher living standards, to name but a few.

Most responsible democratic governments have the following economic objectives in common: to find a compromise between the rates of inflation and unemployment, achieve price stability, and maintain an acceptable rate of growth. Beyond these basic domestic objectives such governments generally have another one. The promotion of a more stable and open international trading environment within which competitive national and foreign firms alike are encouraged to plan, invest, and grow with confidence. The newly elected Progressive Conservative government in Canada would, of course, like to see the nation exports its way to prosperity. With this country's potential, such prospects are entirely feasible.

## STATEMENT OF THE PROBLEM

The object of this study was to present an analysis of Canada's Trade Policy options mainly toward the U.S. Specifically, the problems involved were:

1) to identify the position of Canada in world trade;
2) to outline the options and avenues open to policy makers in order to achieve what most responsible governments strive for;
3) to suggest the likely economic impacts of the recommended option.

## PURPOSE OF THE STUDY

This study was undertaken for several reasons. First, the topic was chosen based on its relevance from an economic standpoint and the public notoriety given the subject. The second reason was that the public has a major misconception about the Canadian balance of payments, the costs of protectionism, of tariff barriers, and to cast the light on the Canadian competitive entreprise system, a system which, although it has been faring poorly in the last decade, could become the envy of the free world.

The third reason was to introduce some new theories in international trade showing that the benefits of trade liberalization are larger than traditionnaly supposed.

## SOURCES OF DATA

The preponderance of the secondary data used in this study was obtained from economic research studies, reports of Commissions and papers available in the National Research Council Library in Ottawa, Canada. Further information was obtained from The Samuel Bronfman Management Library on the McGill University's Main Campus in Montreal.

## LIMITATIONS



The free trade question touches on two sensitive chords, the sense of country and the sense of economic security. However, to allow for a more detailed analysis of the topic, and avoid the general political fear of "one market, one country" followed by the economic one of "one market, one currency", the study was limited to the following options: status quo, sectoral bilateral trade negotiations of bilateral free trade arrangement as opposed to a Canada - U.S. common market. Further limitations were imposed based on the information obtained from the above mentioned sources.

## DEFINITION OF TERMS

It is important that the reader have a basic understanding of the following terms and definitions in order to gain a better grasp of the concepts used throughout the study.

| | |
|---|---|
| BCNI | Business Council on National Issues |
| CACM | Central American Common Market |
| CEA | Canadian Export Association |
| CITC | Canadian International Trade Classification |
| CMA | Canadian Manufacturers Association |
| EC | European Community |
| EFTA | European Free Trade Association |
| EMF | European Management Forum |

* Free Trade - a policy of non-intervention by the state in trade between nations, where trade takes place according to the international division of labour and the theory of comparative advantage. Such a policy would lead to the most efficient allocation of resources on a world scale and to the maximization of world income

FTA* Free Trade Area - is a preferential trade arrangement in which participating countries eliminate tariff and quota restrictions among themselves in specified commodities but remain free to retain their national trade barriers and trade policies with regard to the rest of the world

GATT* The General Agreement on Tariffs and Trade is a multilateral trade agreement whose members, its "contracting parties," include all the major trading nations of the Free World, among them Canada and the United States. The Agreement consists of a schedule of tariff commitments, a group of common rules of trade, and an organizational framework to promote negotiations, settle disputes, and administer the provisions of the Agreement.

GDP Gross Domestic Product

GNP Gross National Product

ITC International Trade Commission, a federal agency that deals with trade complaints

MFN Most Favored Nation

MTN Multilateral Trade Negotiations

NIC Newly Industrialized Countries

PCIR Parliamentary Committee on International Relations

R&D Research & Development

## CHAPTER ORGANIZATION

This research study will be divided into 5 parts. Chapter II will explain why, what and when (the law of comparative advantage) nations should trade. It will also introduce Canada, a trading nation whose well being depends heavily on exports. A thorough analysis of Canada's trade frailty will be presented in Chapter III. One avenue open to Canada is freer trade with the United States and Chapter IV will show the economic advantages and disadvantages of such an option and also the two main negotiating approaches: sectoral bilateral trade negotiations, also called the industry-by-industry approach, versus a complete bilateral free trade arrangement known as the "across the board" approach. A summary and conclusions of the research study will be presented in Chapter V.

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* The Dictionary of Modern Economics, Revised Edition 1984, David W. Pearce

## WHY DO NATIONS TRADE?

Nations trade because it is useful and profitable. It enables them to buy foreign commodities which are very costly or impractical to produce at home; and it allows them to specialize and sell to a large international marketplace those commodities which they can produce relatively more efficiently than other countries.

Without trade, every country would have to be or become self-sufficient. Since countries vary greatly in their production capabilities, it would be cost-prohibitive -- and in many cases, impossible -- for countries to become totally self-sufficient. Classical economist Adam Smith reportedly pointed out the downside of self-sufficiency in these terms:

> "With hothouse procedures and forcing methods, wine grapes could perhaps be grown in Scotland; but the cost in terms of economic resources would be exorbitant and the resulting product would be scarcely fit to drink." (Samuelson 1980 P. 708)

With trade, countries can specialise in what they do well and satisfy other needs through trade. Just how this can be done is explained in British classical economist David Ricardo's theory of "comparative advantage," or comparative cost. Ricardo demonstrates that it pays countries to specialize internationally in areas where they have the greatest relative efficiency, and it allows them to reap the available economies of scale.

### The Gains from Specialization

The gains seem obvious enough when one country can produce more of a commodity than another country with the same quantity of resources. Such a country has an "absolute advantage" (Steiner 1984 p. 777) over the other. Take the situation where there are two countries, each having an absolute advantage over the other in different commodities. Each country can increase its production and profits by reallocating resources into the production of the "absolute advantage" commodity (see Table A).

Table A

Gains from Specialization with Absolute Advantage

| | One unit of resources can produce | |
|---|---|---|
| | Artichokes (bushels) | Bikinis (one swimsuit) |
| U.S. | 10 | 6 |
| England | 5 | 10 |

Changes resulting from the transfer of one unit of U.S. resources into artichoke production and one unit of British resources into bikini production.

| | Artichokes (bushels) | Bikinis (one swimsuit) |
|---|---|---|
| U.S. | +10 | -6 |
| England | -5 | +10 |
| World | +5 | +4 |

Source: Steiner 1984 p. 777

However, gains from trade are less evident when one country in general produces more efficiently than another. If, for example, the U.S. is 10 times more efficient than England in producing bikinis and 12 times more efficient in producing artichokes, then the U.S. has a "comparative advantage" over England in artichokes (Steiner 1984 p. 783). In other words, the U.S. margin of advantage over England is greater in artichokes than in bikinis. Therefore, world production of these commodities can be increased if each country transfers resources into the area having a comparative advantage. (See table B). Thus the gains from specialization and trade depend on the pattern of comparative, not absolute advantage (Steiner 1984 p. 779).

Table B

Gains from Specialization with Comparative Advantge

| | One unit of resources can produce | |
|---|---|---|
| | Wheat (bushels) | Cloth (yard) |
| U.S. | 100 | 60 |
| England | 5 | 10 |

Changes resulting from the transfer of one-tenth of one unit of American resources into wheat production and one unit of British resources into cloth production.

| | Wheat (bushels) | Cloth (yard) |
|---|---|---|
| U.S. | +10 | -6 |
| England | -5 | +10 |
| World | +5 | +4 |

"Moving one-tenth of one unit of American resources out of cloth and into wheat and moving one unit of resources in the opposite direction in England causes world production of wheat to rise by 5 bushels and cloth by 4 yards. Reciprocal absolute advantage is not necessary for gains from trade".

Source: Steiner 1984 p. 778

• **Opportunity Costs** Comparative advantage is also influenced by "opportunity costs", or the production sacrificed when resources are taken from the production of one commodity and used to produce more of another (Steiner p. 779). A look at the opportunity cost of lobsters and computers in Canada and Japan will illustrate this point.

In Japan, one unit of resources will produce 10 computers or 6 lobsters; thus the "opportunity cost" of producing one computer is 6/10 or 0.6 lobsters. In Canada, the "opportunity cost" of one computer is two lobsters foregone, while the "opportunity cost" of a lobster is .50 computers. Thus the sacrifice of lobster involved in reallocating resources to the production of computers is much lower in Japan than in Canada. Because of this lower "opportunity cost", Japan could profit by transferring resources from the production of lobster to the production of computers. It is the differing opportunity costs between the two countries which make gains from trade possible (see Table C).

Table C

The Opportunity Cost of One Unit of Computer
and
One Unit of Lobster in Japan and in Canada

Comparative Advantage

"Opportunity Costs"

| | Computers | Lobster |
|---|---|---|
| Japan | 0.6 Lobsters | 1.67 Computers |
| Canada | 2.0 Lobsters | 0.50 Computers |

Source: Steiner 1984 p. 779

• **Economies of Scale** According to the Dictionary of Economic Terms, (Gilpin 1977) economies of scale are the reductions in the average cost of a product in the long run, resulting from an expanded level of output; they are also known as long run increasing returns. The gains by way of reduced costs of production per unit of output often arise from increasing the size of a plant, business or industry (Gilpin 1977 p. 69). In suitable circumstances, large-scale production leads to important economies in the use of:

a) Land - it is most unlikely that a doubling of production requires twice as much land;
b) Labour - persons with specialised knowledge and skill may devote all their time to the tasks they perform most efficiently;
c) Capital - specialised units of equipment may be brought into use and fully employed;
d) Marketing - advertising costs per unit may be less;
e) Procurement - raw materials may be bought more cheaply by buying in bulk;
f) Finance - a large firm can usually raise new capital more easily and cheaply than a small firm;
g) R&D - development costs are spread over many more units.

Most forms of production are affected, at various periods, by the laws of increasing, constant and diminishing returns. As mentioned above, this is why those reductions in the average cost of a product in the long run are also known as "long run increasing returns". In a large market, firms may attempt to increase profits and spread risks by diversifying activities, producing a wide range of products sometimes of a very contrasting nature. Horizontal and vertical integration of processes may also be sought in order to achieve greater economies. With access to a large market "trade allows smaller countries to specialize and produce a few commodities at high enough levels of output to reap the available economies of scale (Steiner 1984 p. 781).

• **How the Gains of Trade are Divided Among Nations: the Terms of Trade** The division of the gain depends on the terms at which trade takes place. The terms of trade are defined as "the quantity of domestic goods that must be exported to get a unit of imported goods" (Steiner 1984 p. 781). It is

the relationship between the prices of exports and the prices of imports which may be expressed as an index.

$$\text{Index of Terms of Trade} = \frac{\text{Price Index of Exports}}{\text{Price Index of Imports}}$$

At the macro level, the price index of exports measures the change in the aggregate value of a representative selection of exports as compared with the corresponding value in a base year; similarly the price index of imports measures the change in the aggregate value of a representative selection of imports as compared with the corresponding value for the same base year (Gilpin 1977, p. 221).

Countries are concerned about movements in the terms of trade, since an improvement (a rise) in the net terms of trade implies that a given quantity or amount of exports now commands a larger volume or amount of imports, so that prima facie the standard of living could increase.

"The terms of trade also reflect the opportunity cost of imports measured in terms of exports" (Samuelson 1980, p. 709).

For example, the American domestic opportunity cost of a unit of bikinis is 1.67 bushels of artichokes. If the Americans can obtain a unit of bikinis by international trade at terms of trade more favorble than 1.67 bushels of artichokes, they will gain by doing so. Suppose that international prices are such that 1 unit of bikinis exchanges for 1 bushel of artichokes, Americans can obtain bikinis at a lower artichoke opportunity cost by trade rather than by domestic production. Therefore the terms of trade favor selling artichokes and buying bikinis on international markets.

Similarly English consumers gain when they can obtain artichokes abroad at any terms of trade more favorable than 2 bikinis per bushel of artichokes, which is the English domestic opportunity cost. If the terms of trade are 1 bushel of artichokes for 1 bikini, the terms of trade favor English traders' buying artichokes and selling bikinis on international markets. Here both

England and America gain from trade; each can obtain the commodity in which it has a comparative disadvantage at a lower opportunity cost through international trade than through domestic production (Steiner 1984, p. 782).

## THEORY OF COMPARATIVE ADVANTAGE REVISED

Based on the doctrine of comparative advantage, the classic theory of international trade seems to have extended in a number of directions (Cline 1982 p. 38). Many economists felt that Richardo's assumption of a single factor of production and technology which can differ between countries was inappropriate for a static or long-run theory of trade. The Heckscher-Ohlin* version of the theory drops both of these assumptions and the concept of relative factor proportions replaces the concept of comparative cost. For example, Canada has a relative abundance of land to labour over Britain; thus, Canada would export agricultural products as opposed to cloth, because agriculture uses relatively more land.

When it received its first major test using input-output analysis, the theory - with emphasis on the factor proportions version - was not confirmed by the data; it produced the famous "Leontief paradox". Leontief found that American exports tended to be labour intensive rather than capital intensive which was contrary to the belief of most economists, namely, the United States had a higher ratio of capital to labour than its major trading partners (Harris 1985, p. 19). The basic empirical difficulty is fairly simple to explain. In observing trade between nations, Harris reports that "no one disputed the ability of the factor proportions theory to explain trade in primary or natural resource products. After all, Canada exports wheat and Saudi Arabia exports oil. The difficulty was in explaining trade in manufactured products. At that time there was no convincing theory that explained why the United States exported television sets and the Germans steel. By the late 1960's the Japanese case was even more puzzling from a comparative advantage perspective - why should Japan have a comparative advantage in the production of motorcycles and portable radios" (Harris 1985, p. 19).

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*The factor proportions model was first expounded in the case of two factors of production by Heckscher (1919) and Ohlin 1933)

The following developments in Trade Theory suggest a new approach to world trade as far as the law of "comparative advantage" is concerned. In the production of certain manufactured products (such as semiconductors) some countries are artificially achieving a comparative advantage that otherwise would lie with other countries. Analytically there does seem to be a fundamental problem that might be termed "arbitrary comparative advantage".

"Increasingly, trade in manufactured products among industrial countries, even including the newly industrialized countries (NICs), appears to reflect an exchange of goods in which one nation could be just as likely as another, ex ante, to develop comparative advantage, and the actual outcome is in a meaningful sense arbitraty. For a range of manufactured goods, it may be argued that comparative advantage is made, not given", (Cline 1982, p. 38).

This type of trade differs from classical Ricardian trade, where comparative costs differ because (for example) one country has the climate for vineyards while another specializes in manufacturing because of its abundance of skilled labor.

An alternative trade theory (developped by Raymond Vernon in 1966) focuses on technology, maintaining that the technologically leading country invents new products or techniques, exports the resulting products for a while, and is then superseded as other, less technologically advanced nations, take over the product or method once it becomes routinized.

Another theory, that of product differentiation (associated with Staffan B. Linder), advances an even more arbitrary process of comparative advantage. Different countries will produce the same range of goods but with product differentiation, and trade will tend to be intra-industry rather than inter-industry. Intra-industry trade is spurred further by the desire to achieve economies of scale by specialization in sub-categories within an industry (for example, Grubel and Lloyd 1975).

On the other hand, Professor Wonnacott believes (Wannacott 1984) that to a considerable degree, the support for this new approach has been based on the view that in a wide range of emerging products, comparative advantage may be "arbitrary", that is, "created" or "engineered", rather than determined by traditional considerations such as factor endowments. Of course, endowments still determine who produces oil and bananas, but not - according to this view - a broad range of high-tech products that may now be equally well produced in the United States, Europe or Japan.

There are two broad reasons for this:

• Differences in factor endowments - especially among North America, Europe and Japan - are no longer as important as they used to be because some factors have become more freely available. For example, one factor crucial for high-tech industries, namely, capital, has become increasingly mobile among countries. Accordingly, differences in labour/capital endowments have become less significant. Moreover, in many new high-tech products, natural resources are not an important factor.

• Technology has become a more critical consideration. For example, the importance of technology is recognized in the "life-cycle theory" (Cline 1982, p. 39). According to this theory, new products are invented, produced and exported in the technologically advanced country. However, this lasts only for a brief period until production becomes routine and is copied by technologically less-advanced nations. But by then the technologically advanced country has moved on to the development of new products and processes. Indeed, it has been argued that technological capacity should be viewed in its own right as a factor of production, and an increasingly important one, at that. However, it is "created rather than endowed", (Wonnacott 1984, p. 6).

The following is the presentation of a major trading nation.

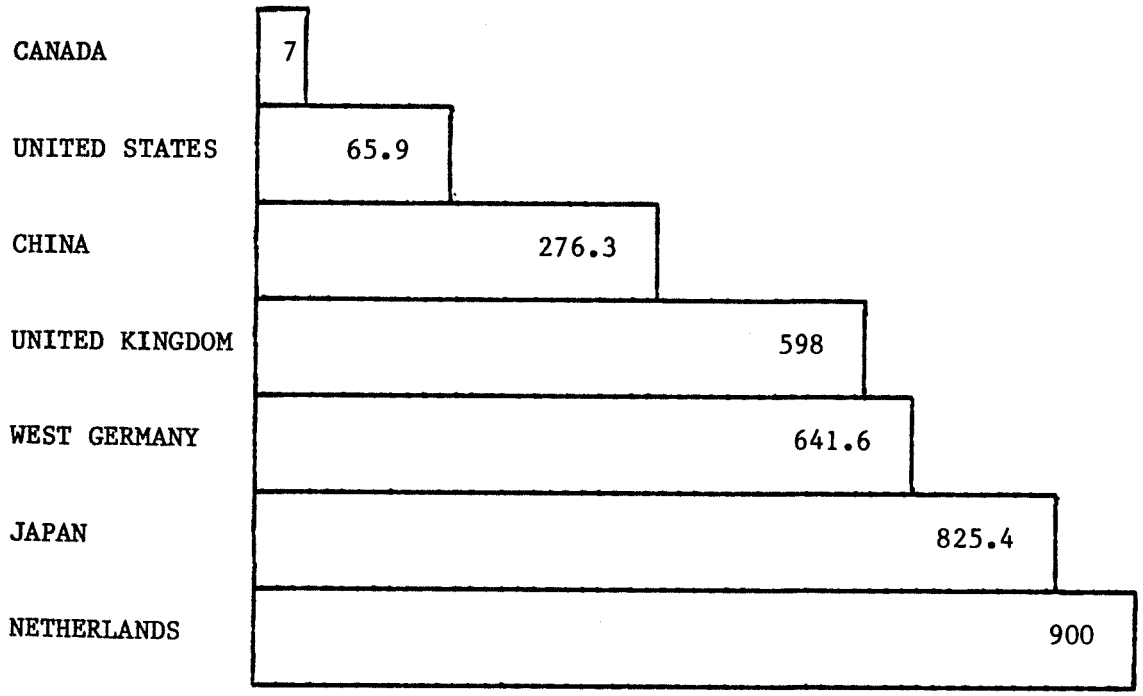
## CANADA: A TRADING NATION

Canada is the largest country in the Western Hemisphere and the second largest country in the world, with an area of 3,851,809 square miles, which includes 3,560,238 square miles of land (92% of the total area) and 291,571 square miles of fresh water (8%) (Canada 1976, p. 9). Given its size, Canada is considered labour-scare (Chart 1) and all its regions are well below what is loosely referred to by many economists as "optimum population density" (Samuelson 1980, p. 612-3).

Chart 1

**COMPARATIVE DENSITY**

Population per square mile of selected countries;




Source: World Almanac, 1986

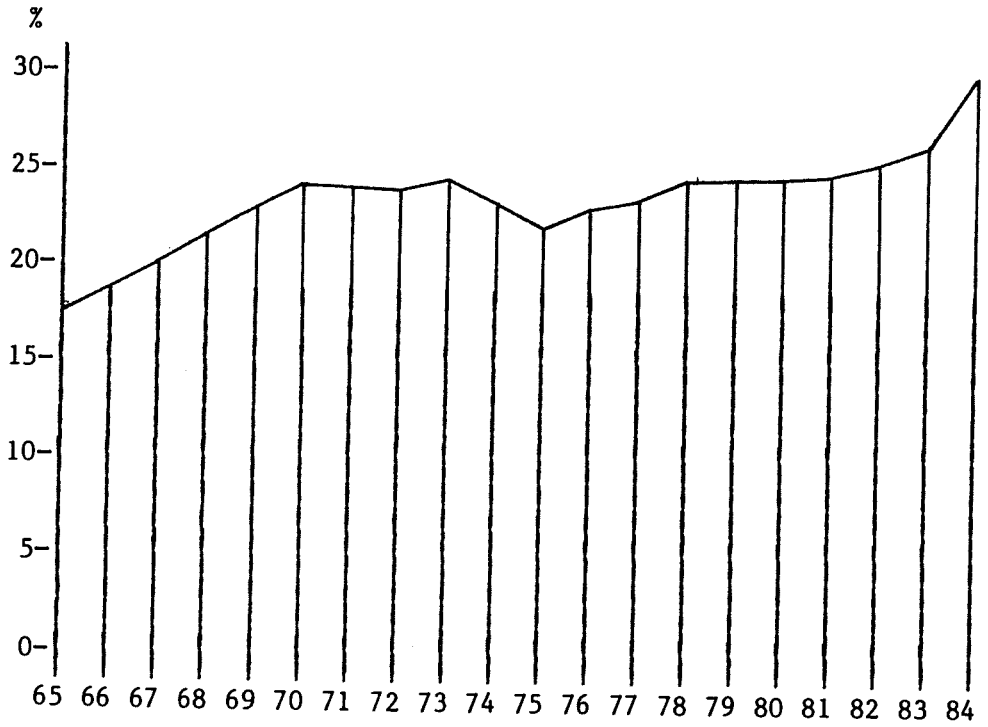
It should also be recalled that about 76 per cent of the Canadian population lives in urban or vilage areas containing over 1,000 people while almost 24 per cent lives in cities with a population over 100,000, all concentrated within 200 miles of the U.S. border (Book of Nations 1983, p. 33).

This country has been described as a continent, as a rich storehouse of natural resources; For example, with less than one per centof the world's population, Canada contains as much as 25 per cent of the global supply of fresh water.

Canada is a trading nation. From the early days of Confederation its various regions have looked abroad for markets for a large proportion of the output of their resource-based industries: agriculture, fisheries, forestry and mining. The founding of the Trade Commission Service in 1892, long before Canada had its own diplomatic service, reflects this traditional importance of the export trade to this country. Today, it is a land of 25 million people, with annual trade at $148 billion and a Gross National Product (GNP) of $290 billion. More than thirty percent of this GNP is generated by exports of goods and services (see Chart 2). And since 1892 the importance of Canada's export trade has never subsided. "Exports are the factor that is responsible for three million jobs, which is one-third of the total work force" (Canada - United States Relations 1982, p. 18).

Chart 2

Canadian Exports as Percent of GNP: 1965-1984




Source: Canada, Ministry of Supplies and Services, Canadian Trade Negotiations, 1986. p. 10

The Canadian economy is small in absolute terms and relatively open in comparison with the large economies. In Table D, this is noted in terms of exports as a percentage of GDP. From 1965 to 1980, this percentage grew from 15.6 to 25.6 percent. In the large industrial countries, the percentage was much smaller but also grew.

Table D

Ratio of Merchandise Exports to Gross Domestic Product

| | 1965 | 1974 | 1980 |
|---|---|---|---|
| | | (percent) | |
| Canada | 15.6 | 21.6 | 25.6 |
| United States | 3.9 | 7.0 | 8.4 |
| Japan | 9.5 | 12.2 | 12.4 |
| EEC | 8.2 | 11.7 | 11.1 |

Source: Canada, Department of External Affairs, A Review of Canadian Trade Policy (Ottawa: Minister of Supply and Services Canada, 1983)

On the other hand, Canadians have become dependent on imports of a wide range of both producer and consumer goods to satisfy their basic demands at the best possible price. Trade is thus a key factor in the efficient development of the national economy and the maintenance of a high standard of living for Canadians. Yet it is important to observe that "Canada is the only major industrialized country without free access to a market of from 100 to 300 million people" (Canada - United States Relations 1982, p. 18), and is n o t part of a large trading bloc.

Although Canada has reached a high level of technological maturity, it is faced with a small domestic market, a slowdown of demographic progression (Pearce 1984, p. 343), decreasing exports of mineral and other natural resources and an increasing interdependent economy. Being able to capture external markets is now a matter of survival for Canada.

## WORLD TRADE PROSPECTS

Nowadays, although there are plenty of external markets, one has to be fully prepared to penetrate them. The General Agreement on Tariffs and Trade (GATT) is the central element in the world trade system; most of the other elements in the system complement or supplement it. Despite its strengths, the GATT has its weaknesses. It is showing signs of age. It has been unable to contain and manage the unanticipated proliferation of preferential trade arrangements. It has not come to grips with the impact of the socialist state-trading economies and with the complete range of non-tariff measures which increasingly affect trade, production and investment. The enlargement of the European Community (EC) with the inclusion of Spain and Portugal will put further strains on the mechanism of the Common Agricultural Policy, and is likely to increase subsidized exports from the Community. The EFTA countries each have a trade agreement with the EC providing for duty-free trade in non-agricultural products. Added to this is the Lomé Convention which provides special trade and aid links between the EC and former colonial dependencies of member states, as well as preferential trade agreements with countries such as Spain (Canada Trade Policy for the 1980's, 1983, p. 198).

Elsewhere in the world, country groupings such as ASEAN (South-East Asia); COMECON (Eastern Europe); CARICOM (the Caribbean); and LAIA (South America) all attest to the tendency towards increased regionalism. This increasing trend towards regional trading blocs poses a particular challenge for Canada, especially given its small domestic market and no free access to any larger one.

"Nor has the GATT so far provided a fully satisfactory basis for trade relations between developed and developing countries, the number of which increased rapidly in the 1960s and 1970s. This may be particularly significant in the future. The Pacific Rim represents an enormous reservoir of potential for Canadian exporters; it holds 35 percent of the world's population and has the greatest potential of all developing nations" (The Public Sector, 1984, Vol. 8 p. 13). "In the next five years the world's population will increase by 500 million - 93 percent of which will be in third

world nations. These figures are ample proof that Canada must turn a serious eye to these markets" (The Public Sector, 1984, Vol 8 p. 22), especially when the U.S.A. and the EC represent relatively slow- growth, shrinking markets and the economies of selected developing countries are growing more rapidly. Furthermore this overall pattern is unlikely to change dramatically in the foreseeable future. Canadian exports to United Kingdom and other western Europe countries have been decreasing for the last two decades (see Table E).

Table E

Distribution of CanadianExports by Trading Areas, 1960-84

(percentage)

| | 1960 | 1970 | 1980 | 1983 | 1984 |
|---|---|---|---|---|---|
| United States | 55.8 | 64.4 | 63.2 | 72.9 | 75.6 |
| United Kingdom | 17.4 | 9.0 | 4.3 | 2.8 | 2.2 |
| Other Western Europe | 11.3 | 9.8 | 10.6 | 5.8 | 5.0 |
| Japan | 3.4 | 4.9 | 5.9 | 5.3 | 5.1 |
| Other Asia | 2.2 | 2.9 | 4.0 | 4.4 | 3.8 |
| Other | 9.9 | 9.0 | 12.0 | 8.8 | 8.3 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Sources:

Statistics Canada, Exports: Merchandise Trade, Cat. no. 65-202, various issues: idem, Summary of External Trade. Cat. no. 65-001, various issues: and idem, Trade of Canada, Summary and Analytical Tables, Cat. no. 65-210, 1959-60.

Lipsey & Smith, 1985, p. 47.

For instance, exports of Canadian goods to the Arab world more than doubled to $2 billion between 1979 and 1982 but the potential for sales in that region has barely been tapped (see Table F and G), since Canada has a trade deficit with some of them. This region should continue to provide excellent prospects because of its immense wealth from natural resources. In

addition, some Arab countries are undergoing rapid development and many don't impose trade barriers of either the tariff or non-tariff variety. All these factors should encourage Canada to pursue the Arab markets with more vigor. "Canada has only begun to scratch the surface of the export opportunities that exist there" (The Gazette, November 20, 1984 p. C-8 col 1). Unlike Canada's trade with many other countries, sales to the Arab region contain a substantial amount of manufactured goods - 45 per cent - and range from fur coats to high technology. In the case of Saudi Arabia, almost all of Canada's exports are either finished or semi-finished goods. "These types of exports - products that have gone through the manufacturing process in Canada - are of critical importance to us. They provide the job-creating impetus so vital to the Canadian economy" (A review of Canadian Trade Policy, 1983, p. 223).

Besides the Arab World, there are other fast growing foreign economies. The growth opportunities (for trade) lie with the newly industrialized countries, China and, in what appear to be less likely prospects right now - Malaysia, Thailand and India. This assessment is based on growth rates. "During the 1970-82 period, the fastest economic growth rates were found in Asia: Japan averages five per cent annually, China 5.6% and each of South Korea, Hong Kong, Singapore, Indonesia, Thailand or Malaysia grew by at least seven per cent annually" (McDonell No. 18).

Many of the Asian and Latin American countries also ranked high in import growth, averaging between 9 and 32% annually. Yet by 1980-83, only three per cent of Canada's exports were destined for those countries. Instead, 79% of our exports headed to countries with import growth rates under two per cent a year, led by the U.S. (see Table E).

What's worse, our share of that market dropped, from 20% to only 17% (A Review of Canadian Trade Policy, 1983, p. 224). "Putting together the implications of the international outlook and Canada's performance, we come up with a less than lustrous picture. It is one of dependency on the U.S. market in a protectionist environment, and under- representation in the new growth areas, (McDonell No. 18). As one could expect, this resource-rich nation has been enjoying a trade surplus for quite a few years.

Table F

Export to Some Arab Countries

| | 1979 | 1980 | 1981 |
|---|---|---|---|
| Algeria | 121,487 | 320,257 | 305,673 |
| Iraq | 71,538 | 131,674 | 253,851 |
| Saudi Arabia | 143,654 | 194,529 | 324,214 |

Source: Canada, External Affairs, A Review of Canadian Trade Plicy, 1983.

Table G

Trade Balance with Some Arab Countries

| | 1981 |
|---|---|
| Saudi Arabia | -1,812,089 |
| Algeria | -44,169 |
| Iraq | +320,333 |
| Egypt | +125,418 |
| Libia | -37,408 |

Sources: Canada, External Affairs, A Review of Canada Trade Policy, 1983.

## SUMMARY

Many economists consider the theory of comparative advantage as the foundation of the pure theory of international trade. Early in the eighteenth century, the economic world inherited the doctrine that it is profitable for a country to import those goods which it is unable to produce at all or which it cannot produce at home at a lower absolute cost than they are produced abroad. A still wider economic rule suggests that it even pays a country to import goods which it can actually produce more cheaply than another country, provided it can pay for them with exports that are still more cheaply produced at home. This means that what governs the profitability of buying at home or abroad is not the absolute, but the

relative or comparative advantage countries have in the production of different goods. The theory of comparative advantage seems to advance that in order to obtain a larger world output, countries should specialize; it also seems to encourage conditions of free competition among nations and to demonstrate the mutual advantages of international division of labor. At the limit, it can be perceived that the larger the market, and the freer the trade, the easier it will be for this theory to fulfill its promises and approximate its plenitude.

Generously endowed with natural resources, Canada, the largest country in the Western Hemisphere, is, by tradition, an active trading nation. A large percentage of its GNP is generated by exports of goods and services to more than 90 countries. Its residents, on the other hand, have become dependent on imports of a wide range of both producer and consumer goods to satisfy their basic demands. Trade is thus a key factor in the efficient development of the national economy and the maintenance of a high standard of living of its citizens.

But technology and other factors have changed the world's economic situation so that Canadians can no longer depend on natural resources to carry them the way they did in the past. Consequently this country is encountering serious difficulties and facing fierce competition from all sides: the enlargement of the European Community; the unexpected development of some Latin American Countries such as Brazil or Mexico; and the superior productivity of some Asian and Pacific Rim countries, such as, Hong Kong, Japan and South Korea to name a few. In addition, Canada's trade position is hampered by an extremely serious handicap: it is the only major industrialized nation without free access to a market of at least 100 million and is not part of any trading bloc. It should also be mentioned that Canada has not been marketing systematically to countries ranking high in import growth; instead, its exports are going to countries with low import growth rates and even in those markets, its share has been dropping consistently.

In spite of its necessity, the GATT has been unable to contain and manage the unanticipated proliferation of preferential trade arrangements; it

has not come to grips with the impact of the socialist state-trading economies and with the complete range of non-tariff measures which increasingly affect trade, production and investment.

The following chapter will explore Canada's trade fragility.

Chapter III

## ANALYSIS OF CANADA'S TRADE SITUATION

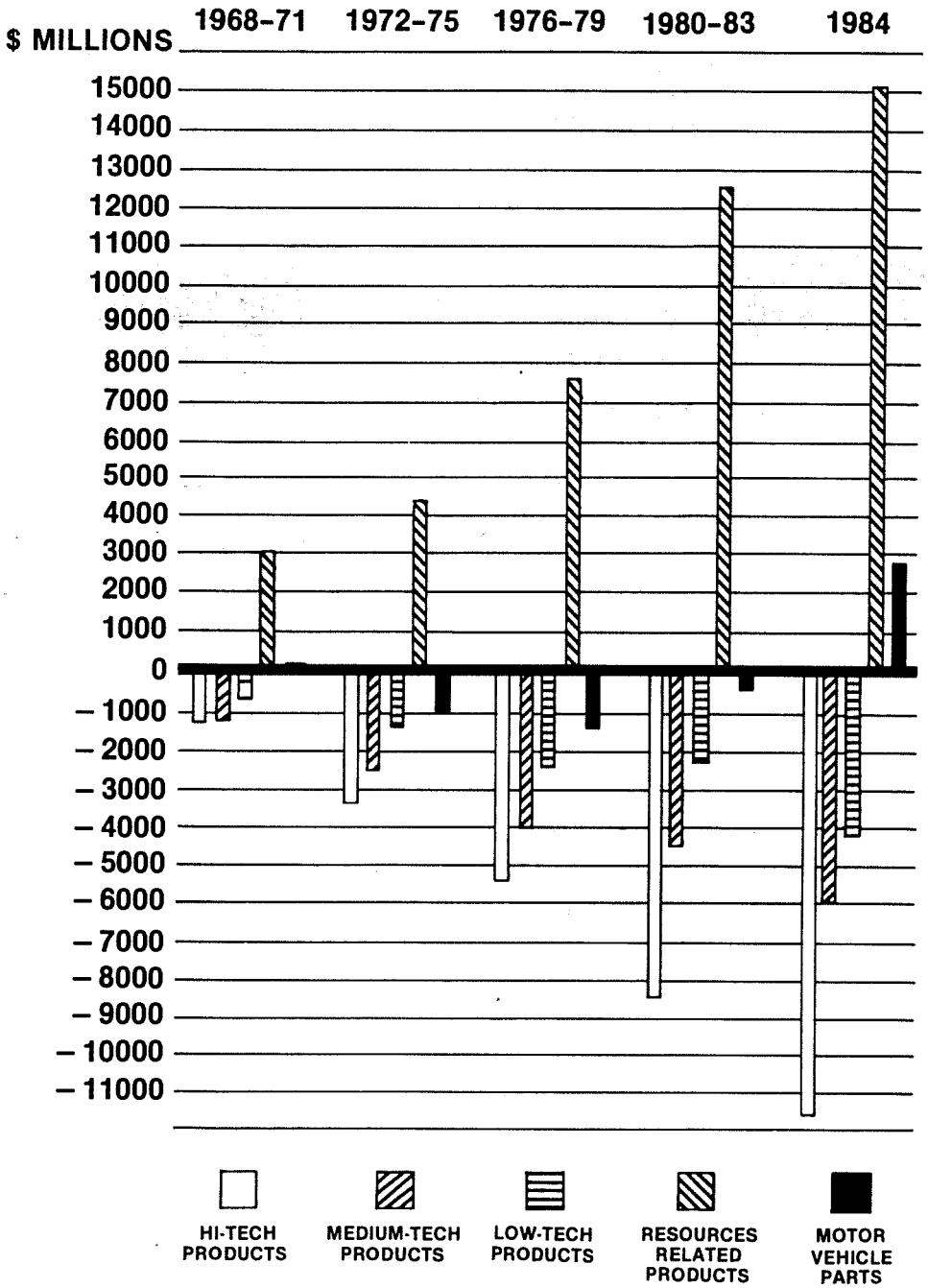
Evaluating bilateral trade solely by its dollar balance (surplus or deficit) carries the false implication that the only issue is the balance itself.

On the surface, Canada's international trade picture looks moderately good. In recent years, this country has kept pace with other nations in job creation while its exports have equalled or exceeded imports. Even during an international recession, when exports usually fall faster than imports, Canada has done well in world trade, finishing with a large surplus of $5.2 billion in 1980 and a lower but still significant surplus of $2.3 billion in 1981 (A Review of Canadian Trade Policy, 1983, p. 7).

But looking more closely, one is faced with more sobering facts. The main reason for Canada's good overall trade performance in 1980 lay in the exports of crude and fabricated materials, commodities such as forest products, grains, natural gas and mineral products. The value of forest product exports alone was $12.8 billion and the value of wheat exports nearly doubled in 1980 to a record $4.1 billion. Minerals and natural gas accounted for a $5 billion export surplus. But in the end-product manufacturing sector (Chart 3), which employs 2 million Canadians and pays $23 billion in wages, it is a completely different picture. For these products, the 1980 deficit in Canada's world-wide trade balance was over $17 billion. This situation worsened in 1981 when the value of imported end-products rose much faster than the value of Canada's end-product exports. The result was a huge $20 billion deficit in Canada's end-product trade (Canada-United States Relations, 1982, p. 4). Statistics Canada figures indicate that the trade deficit in manufactured products averaged $3.7 billion annually between 1968 and 1983, and $8.7 billion per year in the same time period for high-tech products (Chart 4).

CHART 3

# BALANCE OF TRADE IN MANUFACTURED PRODUCTS




Source: Industry Policy Analysis Office, National Research Council, June 1986.

After 12 years of trade surpluses of as much as $1.8 billion with Japan, Canada had an $82 million deficit in 1984. The mix of products flowing between the two countries leaves a lot to be desired. "The majority of Canada's exports are such resource products as lumber, coal and rapeseed, while imports from the high-tech superpower have been mainly motor vehicles and telecommunications equipment. For the past five years Canada has been pressing the Japanese to admit more processed goods. Indeed, of the $5.6 billion worth of Canadian goods exported to Japan in 1984, only $181 million worth (or less than four per cent) were manufactured products" (Pole, April 22, 1985, p. 35).

Many Japanese live in houses built with B.C. lumber and heated with electricity generated from B.C. coal. They read newspapers printed on paper made from Canadian pulp and fry seafood dipped in batter and fried in vegetable oil made from Canadian rapeseed. But their choice of Canadian finished goods is restricted to such items as furs, office furniture, winter clothing, french fries, and luxury items. Noted Lorne Seitz, senior vice-president with the Canadian Chamber of Commerce's international division: "The big money is not made on luxury items" (Pole, April 22, 1985, p. 35)

Such statistics underline the gravity of Canada's main problem - the fact that its export eggs are almost entirely in one basket, a fragile one at that. Canada continues to sell the raw contents of its vast natural storehouse to pay for things it wants but does not make. Today, however, that storehouse is less full and international competitors with more modern equipment, lower labour costs and sound resource management practices are moving into what used to be the sole territory of Canadian firms. To make things even worse, there is currently a global glut of almost every commodity including food. Canada's continuing reliance on exports of natural resources as its main source of income is no longer possible.

The country is also faced with the cold fact that its resource industries no longer have the growth potential to continue providing employment for an ever increasing labor force.

Another problem is that while Canada enjoys a healty surplus in the trade of goods, that surplus is largely eroded by its poor trade performance in services. For example, services trade figures, which are only published every three months, show Canada suffered a $4.8 billion deficit in this activity during the first quarter of 1985, largely offsetting the $5.4 billion merchandise trade surplus for the same period. (The Gazette, July 11, 1985, p. C-8)

Unless things change, Canada's trade situation may well lead to higher unemployment and compromise the national income and standard of living. Somehow, Canada must offset the increasing loss of resource export income and find another way to earn its keep.

How can Canada meet the new dictum of the theory of comparative advantage? One way is to dig deep into its intellectual capability, and build on technology to make its business, industry and manufacturing sector a world competitive force. Only the export of technology intensive goods offers sufficient growth potential to create the jobs and wealth needed to save Canada from economic disability.

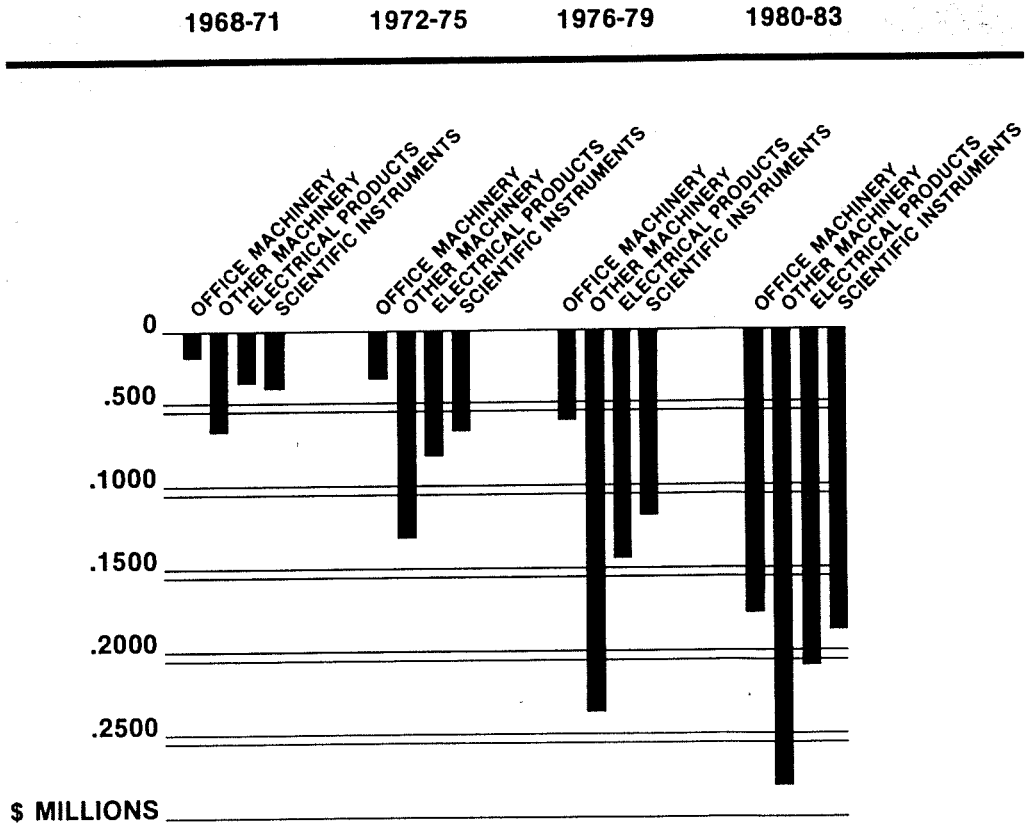
But Canada has a long way to go. Its performance in high-technology industries is the worst among the world's seven major industrial countries, according to a federal report prepared during the term of Science Minister Tom Siddon, (Canada's High-Tech Record: Dept of Science and Technology, July 1985). In 1984, Canada had a trade deficit of almost $12 billion in high-technology products such as computers, microchips, aerospace technology, pharmaceuticals, instruments and other scientific equipment and machinery, the report says.

That would have meant about 120,000 jobs if the work has been done in Canada. Canada's deficit in high-technology products is worsening "and there is no indication of any possible reversal of this trend in the near future," the report warns (see Chart 4).

The report, prepared as part of the internal discussion within the government on Canada-U.S. free trade, also underlines that Canada's hi-tech sector is under study because neither traditional manufacturing of steel and

CHART 4

# NEGATIVE BALANCE OF TRADE IN HIGH-TECHNOLOGY PRODUCTS




Source: Industry Policy Analysis Office, National Research Council, June 1986.

autos nor resource production from the mining, forestry and energy sectors are expected to be major sources of new jobs in the future.

The same report presents the following disturbing profile of Canada's high-technology effort:

- Canada is the only one of the 10 most industrialized nations with a trade deficit in **every** group of high-tech products.

- Canada ranks eighth in market share of high-tech exports among West world countries and is losing that market share, which fell from 4.4 per cent in 1970 to 3.5 per cent in 1983 (see Table H). Even in our most successful high-tech area, telecommunications, Canada's share of total exports fell from 6.8 per cent in 1970 to 3.1 in 1983.

- Our high-tech trade deficit "has become steadily worse over the last 15 years," especially in computers and microchips where Canada in 1984 imported $4.1 billion of computers and $1.4 billion of microchips and related technology, (Canada-United States Relations, 1982, p.4).

Table H

Market Shares of OECD Exports of High R&D Intensity Products

| Country | 1970 | 1975 | 1980 | 1983 | Rank (1) | Rank (2) |
|---|---|---|---|---|---|---|
| United States | 30.4 | 27.5 | 25.5 | 27.4 | 1 | 1 |
| Japan | 8.2 | 9.5 | 12.3 | 16.3 | 2 | 2 |
| F.R.G. | 16.4 | 16.8 | 16.2 | 15.0 | 3 | 3 |
| United Kimgdom | 10.4 | 10.5 | 11.8 | 9.0 | 4 | 4 |
| France | 6.9 | 8.5 | 9.0 | 8.1 | 5 | 5 |
| Italy | 4.8 | 4.4 | 4.5 | 4.3 | 6 | 6 |
| Netherlands | 4.7 | 5.0 | 4.5 | 4.0 | 9 | 7 |
| Canada | 4.4 | 2.8 | 2.7 | 3.5 | 7 | 8 |
| Sweden | 2.5 | 2.7 | 2.1 | 2.0 | 8 | 10 |
| Switzerland | 5.7 | 5.3 | 3.6 | 3.2 | 10 | 9 |
| Total OECD: | 100.00 | 100.00 | 100.00 | 100.00 | | |

Source: OECD, DSTI/IND/84.60, Science, Technology and Economic Development, February 4, 1985

In fact, the deficit in advanced technology products has grown, by federal government estimates, approximately 20 per cent per year since 1970 and now exceeds $12.5 billion. Canada is the only industrialized country in the world with a trade deficit in **every** advanced technology sector, (Position Paper, National Advisory Council, Canadian Advanced Technology Assn, 1986).

With respect to Canada-U.S. trade only, the enormous flows of goods back and forth across the border were almost in balance in 1981 with a small surplus of $1.2 billion in favour of Canada. Again, on looking more closely, a strong surplus for Canada is evident in crude materials and fabricated materials trade with the United States, adding up to almost $16 billion more in exports than in imports. But despite the advantage of its depreciated dollar which assisted the competitiveness of Canadian products in U.S. markets, Canada's bilateral deficit in end-product trade with the United States has continued to rise, reaching over $15 billion in 1981. This widening imbalance occurred despite a lessening in Canada's deficit in bilateral automotive trade from $3 billion in 1979 to $2 billion in 1980 and to $1.8 billion in 1981, (Canada-United States Relations, 1982, p. 4).

Chapter II has presented the introduction of technological factors as a development of the Law of Comparative Advantage. The following is an assessment of technology in Canada.

## TECHNOLOGY: THE CURRENCY OF COMPETITION

Traditionally, Canadian manufacturing firms have managed to find their niche in world markets by being able to choose the right areas of specialization. But to go on competing successfully within these areas or in new ones, their products must continue to appeal to buyers. They must be cheaper, better or, ideally, both.

Today, this competitive advantage can be gained only through use of the best and newest technology in products and processes. The need is particularly great for Canadian small and start-up firms who, by necessity,

are forced into fiercely competitive and expensive export-type activity from the outset. That is, unlike the situation in the U.S. or Japan, there is no place in Canada where an entrepreneur has a local market and technical community of 5 million people or more within a 100 mile radius (a round trip in ½ day). The most lucrative markets for these firms are either at some distances within Canada's borders or offshore. Penetrating these markets is expensive and requires overcoming stiffer technological competition much earlier than in other countries.

Most Canadian companies share the same need for technology. The "haves", those with adequate technology sources, can either buy it or develop it - themselves or together with partners. But the "have-nots" face little chance of getting it without considerable outside assistance.

Although buying or licensing proven technology presents less technical risk, the same technology is equally available to competitors. And it is increasingly difficult to acquire it early in the game. Because of declining tariffs, there is a trend towards the location of world production in places that offer such advantages as access to low cost labour, attractive financing or the resources of a technology-rich community. These factors will make early licenses to foreign technology harder for Canadian firms to get unless production in their country fits the plans of the licensors.

Most firms need more forward looking technology of a kind they cannot obtain with just money - unique technology created with hard-won knowledge as its prime ingredient. The key to getting it is research and development. Canada already does some "and has many important technological achievements. However, our advanced technology base is small compared to other countries and we have failed to lay the groundwork to encourage rapid growth", (1986 Position paper, National Advisor Council, Canadian Advanced Technology Assn).

This home-grown route to technology development involves time, expense and risk, yet offers the greatest potential rewards. If developed successfully, indigenous technology is the most valuable currency available to secure economic success and to exchange for valuable foreign technology.

But it is uncertain whether Canadian industry in its current condition is either willing or able enough to make this R&D investment and recognize the benefits it offers. Certain measures of technological capability, the vital signs of a nation's economic health, suggest it is not.

## CANADIAN MAIN HANDICAPS

Canadian research and development performance is one of the key factors which will determine whether this country can be and remain internationally competitive. Seizing opportunities arising from world-wide technological advances will promote economic growth and enhance the standard of living of Canadians. How does Canada fare in this domain?

The Prime Minister himself thinks there is a problem. He said in a speech: "the way to improve our dismal trade performance lies in increased research and development.", (Langdon 1985, p. A9).

Canada ranks eighth among Western nations in spending on research and development as a percentage of the gross national product (the total value of goods and services a nation produces), (OECD Selected Science and Technology indicators 1981-86, p. 12).

Comparisons of Canada's spending on research and development with that of Japan and the United States continue to be embarrassing. Those two countries, world leaders in R&D, as well as other nations in Europe and even the so-called Third World, are spending at least twice as much per capita as Canada. One Canadian economist observed:

> "In some high-technology industries, foreign spending is five times greater than Canada - or even more.
>
> The need for R&D spending is obvious. As the world plunges into a high-tech future, the have countries will be those which develop space-age techniques, or at least ways to use them efficiently.

> Countries which fail to apply this basic lesson will be in danger of becoming the have-nots of the next century", (Smith 1985, p. 21).

The extent of a nation's commitment to innovation is commonly measured by the ratio between Gross Domestic Expenditures on R&D (GERD) and Gross Domestic Product (GDP). By this yardstick, Canada, at 1.28 per cent in 1983, lagged far behind the U.S. (2.65 per cent), West Germany (2.57 per cent), Japan and Britain (2.4 per cent), and France (2.12 per cent), (Canada Commerce, July/August 1985, p.3).

Looking more closely, the R&D investment of Canada's industrial sectors is no better than that of the nation's laboratories as a whole and underscores the difficulty of gaining ground on the competition.

**A Profile of Industrial R&D Activity**

There are some 50,000 business entities in Canada involved in manufacturing and in technology dependent services. Of these, only a very small number, 1250 or so, actually perform R&D. The rest, over 97%, do none (Industry Policy Analysis Office, National Research Council, June 1986, p. 7).

The total expenditures of the Canadian R&D performers amount to some $2.6B. By contrast, about 15,000 companies in the U.S., Canada's major trading partner, spend over $110B on R&D, a sum roughly 3 times the Canadian figure when expressed as a fraction of GDP (Appendix, Table 1).

Among large companies, only one in Canada has an R&D budget greater than $300 million (its $582 million spending is good for 22nd place when ranked against equivalent outlays of U.S. firms) while 51 U.S. companies exceed this level. The top four U.S. companies each spend more on R&D than all Canadian industry combined (Appendix, Table 2). All of these large R&D performers, in turn, catalyze the growth of secondary industry - smaller companies who benefit from being suppliers, contractors or research associates.

Eight Canadian companies have R&D budgets over $50 million as compared with 162 in the U.S. And this stark contrast with foreign competitors is by no means unique to Canada's southern neighbour. Japanese industry is currently building 76 new laboratories, each to have an average budget of $50 million, to do research in the field of microelectronics alone.

It is clear that there are no R&D organizations in Canadian industry that are of world competitive size in the principal technologies. Even the largest ones simply do not have the resources to address many important technologies in their field at an economically significant level yet, somehow, compete they must against enormous odds.

If there is a bright spot in this picture, it appears when the performance of smaller companies in various countries is compared. Nearly 87% of all R&D performers in the U.S. are small firms with under 500 employees, a percentage comparable to Canada's (77%). But these Canadian companies account for nearly 18% of the total R&D performed by the business enterprise sector, a proportion roughly 7 times higher than in the U.S. and, in fact, one substantially greater than in Japan, West Germany, France and the U.K. (Appendix, Table 3). Of these nations, only West German and French small firms spend more on average per company on R&D than do Canadian ones; Canadian small companies' average R&D budgets are nearly triple those of their Japanese counterparts and are four times the American figure. But there are limits to how much small companies can do. It is unrealistic to expect such firms, already investing heavily in R&D, to increase their research budgets much further. (Other small company data, Table 4 & 5 in Appendix).

And even if they could, money alone doesn't ensure research success - human resources devoted to the task are essential. Here again, according to some standards, Canada fails to measure up to its major competitors. For example, West Germany has four times the number of R&D personnel per thousand of its labor force than Canada (Appendix, Table 6). This country is also outdistanced by the U.K. and Japan (three times), France (2.5) and the U.S. (2). National conditions suggest that even if R&D investments were somehow increased across the board there might not be enough of the particular skills in the work force necessary to respond.

Taken together, such statistics indicate that the capacity to perform a significantly expanded level of R&D does not exist in Canadian industry at present. Even its largest firms are small by world standards and cannot match the R&D spending power or human commitment of its competitors.

And while Canadian small companies perform a relatively high proportion of the national R&D and seem to measure up to others of their size on a world scale, there are signs that their research spending is already running at near peak levels.

But looking only at the amount of money spent on R&D is not enough. Equally important is how those funds are spent. Wise management of limited R&D funds is particularly important in a country like Canada.

The weakness of the Canadian technology infrastructure compared with other countries demands that R&D performers share the technical and economic risk with partner firms, or draw on assistance in developing or acquiring the best technology from other sources - including government.

Such technological assistance is even more critical for the majority of Canadian companies - the "R&D have-nots" who may require a leg-up to new technology but for whom it is not cost effective to perform it themselves.

But whether the federal government has been spending wisely over the years in providing this kind of support has been questioned by a number of sources. A few months before it left office, the Trudeau government received a preliminary report from a task force set up to assess the growing federal effort in R&D. Headed by University of Waterloo President Douglas Wright, the "Task Force on Federal Policies and Programs for Technology Development" found more to criticize than applaud in its report.

Federal industrial and technological development programs are wasteful, overmanaged and ineffective, according to the report. The task force, questioned the entire thrust of federal industrial policy.

It said government should not try to pick technological or industrial winners, but should gear its subsidies to providing aid for the projects that business wants. "Government policies and programs aimed at technology development are not working well, and in some cases are not working at all." (Report of the Task Force on Federal Policies & Programs for Technology Development, July 1984).

In particular, the report attacks as monumentally inefficient the $500-million "alphabet soup" of industrial support grants operated mainly by the federal Department of Regional and Industrial Expansion.

It finds very little private sector research and development undertaken without some form of federal incentive and speculates that this might be less a tribute to the effectiveness of programs than it is a demonstration of the private sector's ability to maximize its opportunities.

"In particular, many of Ottawa's industry R&D support programs, (which total about $500 million a year in subsidies) are overadministered, attempt to achieve too many goals at once (promoting technology and jobs in slow-growth areas), and are run by bureaucrats who shun risk and are insufficiently tuned to market needs" (Soloman 1984, p. 10).

"Canada has wasted the last 30 years daydreaming and has largely been left behind by the high-tech revolution", the 1985 Couchiching conference was told by Francis McInerney, a Canadian who is president of Northern Business Information of New York. He concluded his presentation to the 54th annual think-tank conference by warning that Canada might well "become a demerging nation" and "may start the long British slide into obscurity", (Sutton 1985, p. A-2).

The government, in turn, seemed to be passing the ball to industrialists, businessmen, academics and scientists when the Minister of Science and Technology told Canadian scientists early in 1985 that their own lack of focus, not federal budget cuts, might be most to blame for problems with Canadian scientific research. The minister observed that: "Canada has done poorly in moving research from the laboratory to the marketplace" (The Citizen, June 26, 1985, p. A3).

The real truth could very well be in the answer received by the 1983 Senate Committee on the future of Canada to its question: "why has the Canadian R&D performance in the manufacturing sector been so dismal"? Many in Canada blame the high levels of foreign ownership and assume that the remedy lies in 'Canadianization'. This is, of course, an oversimplification. But it is true that while certain foreign-owned firms do some of the highest levels of R&D in Canada, many subsidiaries, particularly of the branch plant 'miniature replica' variety do very little. They have no incentive to do so.

The Committee concluded that there is an essential ingredient which such firms look for before they commit money to R&D. Market size is the critical factor. In every instance where the Committee examined private firms which made significant R&D expenditures, it found that these companies had access to a market larger than that which Canada alone offers. Such access was either through a duty-free trade arrangement, as for aerospace and defence production, or through an established U.S. source of technological and engineering advice and marketing support as in the case of subsidiaries of large U.S. companies. The point was put succinctly by Mr. R. Simons, whose high technology company, Canadian Marconi, spent $10 million on R&D in 1980. He told the Committee:

"It is almost self-evident from the level of R&D funding required that the Canadian domestic market is too small to support anything developed solely for Canadian use. **Thus access to a larger market is a necessary condition before R&D investment can pay off**", (12:39).

**Productivity and Competition**

The above mentioned OECD report also revealed that Canadian productivity was at its lowest level since the Second World War and one of the worst in the industrialized world. The influential EMF (European Management Forum) annually publishes a comprehensive report on industrial competitiveness based on some 240 subjective and objective criteria. Canada placed sixth in 1982 after Japan, Switzerland, the USA, Germany and the Netherlands. Canada used to be second to the USA, (Canadian Trade Policy

for the 1980's, Canadian Government Publishing Centre, Supply & Services Canada, 1983, p. 10). The already mentioned report by the Ministry of Science and Technology indicated to the minister that Canada was seventh out of seven in 1984.

Table J

Labour Costs per Units Manufacturing, Selected Countries, 1983
United States = 100.0

| | |
|---|---|
| United Kingdom | 136.0 |
| Canada | 129.3 |
| Italy | 107.2 |
| Belgium | 106.3 |
| United States | 100.0 |
| Germany | 92.3 |
| France | 86.5 |
| Sweden | 73.3 |
| Japan | 61.2 |

Source:
D.J. Daly, Canada's Comparative Advantage, (Ottawa: Economic Council of Canada, 1979); A.D. Roy, "Labour Productivity in 1980; an International Comparison," National Institute Economic Review, August 1982, p. 35; updated by U.S. Bureau of Labor Statistics News. May 31, 1984, "International Comparisons of Manufacturing Productivity and labor Cost Trends, Preliminary Measures for 1983." D.J. Daly, 1986.

Productivity (output per hour of work) is the best general measure of a country's ability to generate a high and rising standard of living for each of its citizens. It is also a measure of Canada's ability to compete as a high-wage country (see Table J) on world markets. Professor Lester Thurow of the Massachusetts Institute of Technology (Thurow 1985) argues that to fall behind on productivity is to fall behind on introducing the new products and the new production technologies that give a nation's products an edge in world markets. Between 1977 and 1983 Canada's annual rate of growth was 0.9%; the poorest of the major economies. (see Table K)

Table K

**The World Economy**

Manufacturing Productivity 1983

| Country | Output per hour of Work (1983 prices) | Annual rate of growth 1977-83 |
|---|---|---|
| | $ | % |
| Germany | 20.22 | 2.5 |
| United States | 18.21 | 1.2 |
| France | 19.80 | 3.5 |
| Italy | 17.72 | 3.1 |
| Japan | 17.61 | 3.9 |
| Canada | 17.03 | 0.9 |
| United Kingdom | 11.34 | 3.3 |

Source: Lipsey and Smith 1985

Several internal government studies (Gherson 1984, p. 9) in the past year have concluded that two back-to-back recessions since 1978 have seriously slowed the pace of business investments and plant modernization in Canada, resulting in an overabundance of aging and inefficient capital stock. The fact that much of Canada's manufacturing is said to suffer from high production costs and poor rate of return on investment has meant an increasingly weak capacity to adjust.

As well, these studies suggest a number of Canadian industries, such as food products, petrochemicals, industrial chemicals, metals, ship building and autos are suffering from overcapacity.

Speaking at a news conference about the introduction of robots to the workplace as the most important shakeup in the labor market since the Industrial Revolution, the director of the University of Quebec's robotics program revealed: "Canada ranks dead last among the top 20 industrial countries in the use of computer-aided design and robot technology" (The Gazette, November 16, 1984, p. B-7).

Competition from developing nations is also part of the problem for Canada's manufacturing sector as countries such as South Korea, Hong Kong, Singapore, Brazil, Mexico and Taiwan step up their exports of manufactured items. With considerably lower labor costs, these newly industrialized countries (NIC's) can pour out standard technology items and transport them into markets around the world at a fraction of the Canadian cost of production. Against such products, the average Canadian tariff offers no meaningful protection. The issue is productivity. And Japan's Joji Arai minced no words in describing the problem at a Toronto conference during Canada Export Month. "Over the past five years, manufacturing unit productivity in Japan rose 27.6%, while in Canada 0.3%. Unit labor costs rose 4.2% in Japan, in Canada 59.1%. Expressed in U.S. dollar terms, Japan's unit cost of production rose only 12% in the past five years, while Canada's rose 36.9%," he said.

The only Canadian industrial sector with a productivity rate higher than Japan's was agriculture, which was five times higher, said Arai. "That is why you can export so much wheat and other farm products," he noted wryly, (Derry McDonnel, No. 18).

Canadian manufacturers held their own against foreign competition during the past two decades, despite relatively poor productivity, by keeping down workers' wages and benefits, reports a study made public in July 1985 by the Economic Council of Canada.

But the combination of low productivity and relatively small increases in wages and benefits has exacted a price, says the study done by council researcher Roy Matthews.

"In a very real sense, the implication is that manufacturing in this country has remained internationally competitive at the expense of a deterioration in Canadian living standards relative to those abroad," concluded Matthews, (The Gazette, August 14, 1985).

**Direct Funding**

Canadian government direct funds to R&D in industry account for only about 10% of total industry performance (Appendix, Tables 9 & 10). As a percentage of GDP, the actual investment is small by comparative intrnational standards. The U.S. government spends almost nine times more, the U.K. nearly seven and France and West Germany over four (Appendix, Table 10). Only one of its major competitors, Japan, provides a smaller proportion of direct government funds to R&D in industry than Canada. This position holds even when defence funding is deducted for countries with large defence research programs. Unlike Canada, Japan compensates by having a very active industrial R&D community. Their business sector outspends Canada's nearly three to one, relative to GDP, in funding industrial R&D. The business sectors of its other major competitors spend at least double what Canada does (Appendix, Table 11).

**In-House R&D**

By most measures, the federal government is one of the major R&D performers in Canada. As in other countries, its in-house R&D expenditures are directed to national objectives including industrial development, defence, protection of the environment, energy, health and advancement of knowledge.

Over the years, the Canadian government has been roundly criticized for the amount of money spent on in-house R&D. It has been pointed out that among OECD countries, Canada has a high percentage of the natonal R&D effort performed by government. However, when the actual amount of government expenditure on in-house R&D is expressed relative to GDP, Canada actually falls <u>below</u> the OECD average (Appendix, Table 12). It becomes clear that the apparent R&D overspending by government in the national context is more of an <u>underspending</u> by too few other R&D performers in the country - namely by the private sector. A further decline of government performed R&D may improve the ratio of private-to-public research spending but at a serious cost. The national R&D performance would likely be eroded more by bringing the federal component closer to the same poverty level as the rest.

In 1981, the portion of the government's overall intramural R&D spending directed specifically to industrial development stood at $133 million and was based mainly in The National Research Council of Canada (NRC). Relative to GDP, this amount was greater than Japan's and on a par with West Germany and the U.S. However, similar spending in the U.K. and France exceeded the Canadian government figure (Appendix, Table 13). Evidence suggests that Canada is far from being in too high a bracket. Without a large, active industrial R&D community, or big defence projects to stimulate competitive industrial growth, there is ample reason for this level of government participation. Countries with large military expenditures benefit from the effect such spending has in maintaining all technical activities including those in industry.

The portrait that emerges from all of this - an industrial structure spread thinly across a vast nation and without the technological "critical mass" to be a world force, a willing but weak technical support infrastructure and a lack of national commitment to serious investment in R&D - shows a country which has fallen far behind in equipping itself for the present and future competition of the industrial world.

It is unrealistic to expect Canadian business and industry as it stands to catch up technologically and mount an aggressive market surge with new generations of technically-spawned products overnight. More than ever it needs the assurance of continuing technical support and assistance, not just passing funds and good wishes, while it matures. In this country's state of technological need, national cohesion and strong R&D participation by all partners - companies, industry associations, universities, provincial research organizations and the federal government (Table 7) is not so much a luxury as an economic necessity.

## SUMMARY

On the surface, Canada has been enjoying a trade surplus for quite a few years but, looking more closely, one is faced with more sobering facts. The main reason for Canada's good overall trade performance lay in the export of natural resources production. But, for end-products, manufacturing

sector, Canada's trade figures show: The higher the technology, the higher the deficit. Among the world's major industrial countries, its performance in high-technology industry is the worst and there is no indication of any possible reversal of this trend in the near future, given that advanced technologies have become the key to costs reduction, productivity enhancement, improved product quality and international competitive strength in all industrial sectors. Today, comparative advantages in these sectors are engineered, created and a sure way to make it is through R&D.

One of the factor which separates Canada's relative R&D effort from those of its industrial competitors (1.2 per cent of GNP vs two to three per cent) is all-pervasive. The nation's university research is underfunded, its national laboratories are too small, there are gaps in national competence, and industrial research is particularly weak.

This state of affairs has adversely affected Canada's trade and commerce. In 1985 the country had a trade deficit in high-technology goods of $12B, and a deficit in medium-technology goods of $6B. It imports 80 per cent of its scientific and engineering instruments, 70 per cent of its transportation equipment, 70 per cent of its machinery, 80 per cent of its hospital and health-care equipment. It exports more forest products than any nation on earth but imports chain saws. But, with the current world glut of almost all natural resources, including energy and food, its traditional exporting strenghts are weakening.

The federal government, one of Canada's major R&D players, invests a smaller percentage of GNP in intramural research than do its principal foreign competitors. Even the U.S. - usually touted as the protagonist of contracting out its R&D - spends a higher percentage of its GNP on intramural work (0.4 per cent) than does Canada (0.3 per cent).

In addition, only 1,250 industries out of 50,000 in Canada perform R&D. The vast majority do not and, generally speaking, cannot. There are only four engineers or scientists per 1,000 industrial employees in Canada, compared to 12 in Japan and 19 in the U.S. This is why Canadian industrial R&D has to be incubated for some time to come by increased association with university and national laboratories.

R&D tax credits are useful only to the small percentage of firms that can perform R&D; less than three per cent. There is an obvious need for a Canadian industrial strategy, similar to the dynamic U.S. one, which will create a balance of the components which help bring about modern industrial success: research (in universities, national laboratories and industry), development, market studies, design, venture capital, patents & licensing, marketing, tax reforms, entrepreneurial incentives and foreign market penetration.

The following chapter will study the costs of protectionism and present the advantages and disadvantages of Free Trade.

## PROTECTIONISM Vs FREER TRADE

Becoming less and less competitive, Canada, like many other nations, turned to protectionism as an instrument of its commercial policy. Indeed Canadian industrial policy has generally followed two avenues - tariff protection and incentive schemes.

### Protectionism

In the late 1960s a resurgent nationalistic movement in Canada called for increased tariffs to promote growth of domestic manufacturing industries, and to reduce reliance on foreign (especially American) imports. In response, Eastman and Stykolt (1967) published a study that, not surprisingly, found that previous tariff barriers had led to inefficient production in the Canadian manufacturing sector, with unit costs about 15 per cent higher than corresponding American industries; to a concentrated market structure in the protected industries; and indeed to an increased amount of foreign (especially American) direct investment. These results are not surprising if one accepts the (quite reasonable for Canada) hypothesis of the presence of economies of scale in manufacturing production, as well as the hypothesis that the Canadian market is of inadequate size to realize these economies, so that firms producing only for the domestic market must operate at suboptimal capacity. (Canadian Journal of Economics, May 1984, p. 270-1)

Chapter II also epitomised whether a regime of free trade could be more conducive to the promises of comparative advantage theory. Similar to the Eastman and Stykolt research, the following detailed economic studies of certain sectors of Canadian industries seem to cast the needed light by showing the resulting costs and effects of tariff protection on output compared with output of the same sectors under free trade.

## CANADA'S COMPARATIVE ADVANTAGE

• Metal ore - Canada's comparative advantage at the initial stage of resource processing can be documented by comparing the level of resource

output in Canada to the rest of the world or by simply observing the pattern of trade. To establish this point, it is only necessary to call attention to the large volume of resources currently exported. The abundance of metal ores in Canada gives it a comparative advantage in processing ores, and this is carried forward into later stages of processing. In the absence of trade, mining would be concentrated on high-grade deposits that could be produced at low cost. The costs of commodities produced from metal ores would then be lower in Canada than in nations with fewer high-grade deposits; it is, therefore, expected that, under actual circumstances where trade is present, these processed commodities would constitute Canadian exports. Mathematical simulation shows that the tariff has had the effect of shifting Canada out of metal-based manufacturing and has reduced end-product production as well, (Williams 1977, p.3).

• Iron ore - To illustrate how comparative advantage is conveyed and how the tariff shifts Canada away from optimal allocation, take the case of production based on iron ore. A substantial percentage of iron ore is exported from Canada, but a larger proportion enters domestic processing. It is possible to distinguish three stages of intermediate processing. At the earliest stage, iron ore is converted into pig iron, ingots, blooms, billets, and slabs. The comparative advantage at the first stage of processing carries over to the next level, where one finds production of steel bars, rods, railway tracks, pipes, tanks, and boilers. Although there are some exports and some imports of these items, most production remains in Canada, and trade is roughly balanced. The U.S. tariff that applies to this classification is higher than in the first stage. Since the mathematical analysis indicated that these two earlier stages of processing will expand in free trade, it is concluded that Canada has not fully exploited its comparative advantage. Apparently, output at both stages will need to expand with free trade in order to supply an enlarged manufacturing sector in Canada. The second stage of processing would also benefit from a reduced U.S. tariff, (Williams 1977, p. 4).

The Canadian tariff has distorted prices most at the third and most advanced level of intermediate processing. In this category, it is found output that has been punched, drilled, or otherwise fabricated, including

such items as scaffolding, coated steel strips, and plumbing equipment. For these intermediate products, import competition is very intense; one would expect to find, in most cases, that the price in Canada is higher than the world price by the full amount of the Canadian tariff plus transport cost. Mathematical analysis indicates that products in this classification would not maintain their present level of production under free trade. The Canadian tariff has had the intended effect of encouraging production but, because the output is intermediate input in other production, the rise in prices must increase costs in other firms in proportion to the rise in the tariff. Since intermediate products are higher-priced in Canada, Canadian firms producing end products cannot bring costs and prices down to levels that are competitive internationally. End products in the iron and steel sector include aircraft, trucks, buses, locomotives, transport equipment, and automobiles. Under free trade, the cost of producing these items would fall relative to the price of output.

• Machinery - Canadian protection of machinery and equipment production is a second factor increasing the cost of producing such end products. Under current legislation, a 15 per cent tariff must be paid on imported machines of a class and kind not made in Canada. Machines that, in the judgment of the Machinery and Equipment Advisory Board, are not made in Canada may be imported duty-free; in cases where a machine is considered to have been made in Canada, however, the tariff raises the cost, and the Canadian manufacturer purchasing the machine is thereby forced to raise prices or to depreciate his equipment over a longer period than his foreign rivals. Since new machines embody the latest technological advances, the Canadian rate of technological growth is itself inhibited. In order to minimize cost, Canadian producers need machines of precisely the right type. If a machine is declared to be "of a class and kind made in Canada", the producer must either choose a Canadian type that may not be entirely suitable for the task or pay the higher cost of importing a foreign product.

• Nonferrous Metal - A situation similar to that which exists in the iron and steel sector also occurs in production related to nonferrous metals. Canada is well endowed with deposits of nickel, copper, lead, and zinc ores, from which it derives a comparative advantage that is carried over to later

stages. Trade statistics indicate that, up to the level where metals are cast, rolled, or extruded, Canada is an exporter or can at least hold her own in the domestic market. Typically, firms at earlier stages of ore processing have greater export penetration than those at later stages. As in the case of the iron and steel sector, the U.S. tariff is lowest on goods exported and higher on goods with sales concentrated on the Canadian market.

Nonferrous metals at the third level of intermediate processing are import-competing, and here the Canadian tariff is highest. Firms at this stage of processing typically do not purchase metal ores directly. Comparative advantage comes indirectly through output purchased at prior stages. Among the many commodities classified in the import-competing sector are culvert pipe, metal caps, and coil springs. Mathematical analysis indicates that not only the first two levels of processing expand, as in the iron and steel sector; the third level of nonferrous intermediate processing would also expand with free trade, and this would carry over to the end-product stage of production as well, (Williams 1977, p. 6).

• Electrical Products - Lower costs and prices of intermediate products produced from nonferrous metals would improve the competitive position of producers of electrical products. This is merely an extension of Canada's comparative advantage based on nonferrous metal ores. The most successful group of electrical producers contend with very little import competition, but there is no net export. The class includes products that are at the earlier stage of processing, such as electrical wire. Twenty-two per cent of costs were used to purchase intermediate nonferrous metal products in 1961. The higher cost of these intermediate products as a result of the Canadian tariff placed such production at a disadvantage in competition with imports.

A second electrical classification includes products such as major applicances and industrial machines. This production faces substantial import competition; otherwise, the situation resembles that of the earlier stage of electrical processing described in the preceding paragraph. Both are indirectly related to Canada's comparative advantage based on metal ores, through purchases of intermediate goods, and mathematical analysis indicates that there would be a decline in costs relative to prices under free trade in

each. The analysis is based on assumptions that do not take economies of scale into account. Detailed case studies indicate that economies of scale would reduce costs in some lines of production (Eastman and Stykolt, 1967, p. 250).

• Forest Resources - Canada also derives a comparative advantage from its forest resources. This manifests itself in a manner similar to that observed in the iron and steel and nonferrous metal product sectors. Firms at the early stages of processing benefit directly. Canada exports logs and bolts and pulpwood. Indirect benefit is passed on to a variety of wood and pulp and paper producers, who jointly exported nearly 70 per cent of their 1961 output. At a higher level of processing, a classification of producers specializing in paper products can be identified. This output is sold on the domestic market, with some competition from imports. The most advanced stage of processing is printing. Here, import competition is substantial. Mathematical analysis indicates that all stages of processing, including printing, would expand under conditions of free trade.

• Paper Products - As in the other sectors considered, the failure to reach free trade levels of output is explained by the higher cost of intermediate goods in Canada as a result of the Canadian tariff. In foreign markets, the U.S. tariff is the most significant consideration. Recent research has shown that cost reductions could be achieved through greater specialization and integration in the North American market (Haviland et al., 1967, p. 77-78). Paper products are obviously an important intermediate product required in printing. The Canadian and U.S. tariff schedules jointly are a cause of higher printing costs in Canada relative to costs than would prevail under free trade.

• Perverse Effects of Tariffs - The nonferrous metals sector best illustrates the interdependence of the economy and the perverse effects of tariffs. The final stages of electrical production depend on earlier stages. Fifteen per cent of costs at the later stage of electrical processing is used to purchase the output of the earlier stage. At the earlier stage of processing electrical products, 22 per cent of costs is used to purchase nonferrous metal products. The third stage of processing nonferrous

intermediate products requires intermediate inputs also -- in this case, iron and steel products. Analysis of the iron and steel and nonferrous metal product sectors simultaneously leads to the conclusion that the level of processing in Canada, and particularly Ontario, would be greater with free trade than with the tariff. Canada has a comparative advantage based on iron ore and nonferrous metals, but the higher costs of intermediate goods and machinery and equipment put production at a disadvantage in the Canadian market, and the foreign tariff prevents realization of cost-reducing economies of scale, (Williams 1977, p. 6).

## CANADA'S COMPARATIVE DISADVANTAGE

• Chemical Sector - The analysis indicates that, in the aggregate, there would be a decline in the production of chemicals under free trade. Canadian chemical production is based on nonmetallic minerals, crude oil, and coal. Chemical exports require these resources in greater proportion than chemicals produced in competition with imports. The chemical sector, measured in dollard of value added, is small; and it must be remembered that Canada, (see Chapter II) is a vast land. Resources exported from some parts of Canada may be simultaneously imported elsewhere. Coal is exported from the East and the West Coasts but is imported into Ontario. Where the chemical industry is based on Canadian resources, the mathematical analysis indicates that it would expand under free trade. However, this analysis also shows that production of plastic products (which is the closest to end-stage production in the chemical sector) would expand with free trade if intermediate products could be obtained at world prices. The chemicals that do not depend on the Canadian resources base would decline, (Williams 1977, p. 7)

• Agriculture - Although Canada is an agriculture exporting nation, this factor has not established a comparative advantage at later stages of processing. Imported goods processed from agricultural resources exceed the value of exported goods processed from agricultural resources (Williams, 1967). It seems that the Canadian agricultural base is too specialized to provide the broad spectrum of required resources at international prices. Mathematical analysis indicates that, even under free trade, the adjustments

to comparative advantage would constitute a decline in food processing relative to manufacturing.

Agricultural resources are the first measurable product of land. Food processing consists of intermediate services such as dehydrating, concentrating, canning, freezing, and cooking. These activities are more costly in Canada because many of the agricultural resources required must be imported and because economies of scale are necessary to achieve minimum processing costs. Some agricultural resources are not produced in Canada -- e.g., cotton, sugar cane, coffee, tea, rice, natural rubber, and some tropical fruits. The cost of processing these resources in Canada can be no less than the cost of processing them in any other importing nation. Other agricultural resources are currently produced in Canada at higher cost than abroad because of protective tariffs and nontariff barriers. These include such items as eggs, nuts, fruits, berries, vegetables, milk, and wool. Mathematical analysis indicates that the tariff has expanded food processing beyond the level it would reach with free trade.

• Food Processing - To day that food processing has been extended beyond the optimal level is not to suggest that, under free trade, it would disappear entirely. As in the case of chemicals, there are local areas of resource production within Canada, and food processing would likely expand in such locations. Empirical research has established that there are unrealized opportunities for economies of scale in Canadian food processing (Eastman and Stykolt, 1967, p. 137-38). In order to reach the output level necessary, Canadian firms must have access to the large foreign markets and be able to purchase complementary agricultural resources at world prices. The effect of Canadian agricultural policy is to raise prices at the stage where resources are produced, increasing costs at later stages. If the prices of unprocessed milk and sugar are raised above international levels, confectonery products, cereal, and bakery and processed foods, in general, will cost more to produce.

• Textile - The textile industry in Canada is a much more serious consideration. Comparative advantage in textiles cannot be estabished on the basis of resource abundance. Although Canada does have a dependable supply

of hides with which to make leather, it must import cotton, natural rubber, and wool in the grease. All textile producers face substantial import competition from the densely populated regions of the world, and it is unlikely that present levels of production could be sustained under conditions of free trade. Canada is a nation relatively scarce in labour (Postner, 1976; Williams, 1976); it therefore has a comparative disadvantage in commodities produced by labour-intensive processes.

## MACROECONOMIC ANALYSIS

To the same problem of evaluating protectionism, another series of economic studies have adopted different approaches. The following macroeconomic analysis is based on three seperate studies.

### A) The Harris Study

This paper provides estimates of the cost of protection to the Canadian economy for the mid 1970s in the order of 8-10% of G.N.P. Both unilateral and multilateral tariff reduction calculations are presented. The estimates are based on an applied general equilibrium model incorporating scale economies, imperfect competition and capital mobility. Sensitivity results are also reported.

This paper reports on some trade liberalization experiments undertaken with a recently constructed general equilibrium model of the Canadian economy Harris (1983a). The model incorporates features of industrial organization thought to be important in considering the effects of international trade on small open economies. Of these, the most significant are the inclusion of economies of scale and imperfectly competitive market structures. Both of these features are thought to be important by some economists in assessing the costs of protection in small open economies. It is argued that the presence of foreign and domestic tariffs, by restricting domestic industry to produce for the small domestic market, leads to highly concentrated industries in which firms do not exhaust economies of scale. The result in the manufacturing sector is industries characterized by high costs and low productivity. This view suggests the cost of tariff protection is quite high.

Freer trade, by subjecting domestic industry to increased foreign competition and allowing access to the large world market, results in lower price-cost margins and in firms achieving longer production runs with lower average cost of production.

This view, which is outside the traditional theoretical framework of neo-classical trade theory, has been expressed by a number of economists. Economists emphasizing scale economies and imperfect competition as important variables in estimating the impact of trade liberalization include Balassa (1967), Corden (1972), Dales (1966), Eastman and Stykolt (1966), and the Wonnacotts (1967).

Although the theoretical literature integrating industrial organization and international trade is growing quite rapidly (see for example Brander (1981), Helpman (1981), Krugman (1980a,b), and Lancaster (1979)), to date the industrial organization (I.O.) approach has had little impact on empirical studies of the costs of protection. In most empirical work, variants of the basic neo-classical trade model have been employed. Examples of recent studies adapting this framework are: Boadway and Treddenick (1978), Brown and Whalley (1980), Cine et. al (1978), Deardorff and Stern (1981), Magee (1972), and Williams (1976). The early partial equilibrium studies are summarized in Corden (1975). The results, implementing the model on a 1976 Canadian data set, suggest the gains are considerably greater than suggested by conventional G.E. analysis. The benefits to two trade liberalization policies are considered: a unilateral removal of domestic tariffs and a multilateral removal of both domestic and foreign tariffs. The multilateral tariff cuts yield the largest benefits with a gain in welfare equivalent to approximately eight and a half percent of national income. This number is substantially larger than those found with the neo-classical trade models cited above and comparable to the figure reported by the Wonnacotts (1967) for Canada in the mid 1960s. The mechanism by which the welfare gains are achieved is also in broad agreement with that suggested by the I.O. view. Accompanying both trade policies is a rationalization of industries with a lengthening of production runs, lowering of price-cost markups, and increases in factor productivity. The results indicate that rationalization effects play an important role in the adjustment of the economy to trade liberalization, (Cox and Harris, April 1983).

B) THE INFORMETRICA MODEL (TIM)

(Canada External Affairs, August 23, 1985)

To analyse the proposed policy change, Informetrica Ltd (based in Canada), uses their TIM* model of the Canadian economy and estimates the impact on the major macroeconomic aggregates such as GNP, employment, prices, investment, net exports, etc., as well as the output of different industrial groups. The model begins with a basic - or "base case" - projection of how the economy would perform in the absence of Free trade. Informetrica's base case projection assumes that current trade practices are maintained over 1985-2005. Then, seven alternative trade liberalization cases were selected for comparaison with the base case. Some of them are defined briefly below:

Case 1: Tariff elimination only. Canadian and U.S. tariff barriers are phased out at the rate of 20 percent per year over the period 1988 to 1992.

Case 2: Elimination of non-tariff barriers only (excluding subsidies) phased out over the same period.

Case 3: Combined elimination of tariffs and non-tariff barriers.

Case 4: Productivity improvement. The same as Case 3, plus an assumption that, in addition to the usual cyclical gains in productivity, there will be a further rise in manufacturing productivity of 5 percent over the base case, representating the productivity gain from economies of scale.

Case 5: U.S. protectionism in the absence of a trade agreement with Canada. This case retains the assumptions of Case 4 but also assumes that the U.S. would impose a large import surcharge in 1988-1992 and that Canada would be exempt from this surcharge under the proposed trade agreement. (in effect, an alternative base case is used.) The assumed surcharged of about 10% would move average U.S. tariff rates to 3 times their current level.

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*TIM uses nonlinear and dynamically specified equatiuons to combine a detailed keynesian final demand framework with adjusted input-output tables that provide sectorally detailed estimates of industry output, employment, and prices.

Case 6: No revenue recovery. In Cases 1, 3, 4 and 5 it has been assumed that the federal government imposes direct taxes to recover all revenues lost through tariff elimination. In Case 6 the government does not take this action. Case 6 includes productivity improvement, but not the U.S. protectionist assumption).

Case 7: The same as Case 6 except that Case 5 is also included (that is, the U.S. protectionism assumption is included).

Although simulation results of all seven Cases of trade enhancement were found to make a positive contribution to GNP, Case 4, combining the elimination of tariff and NTB with an exogenously asumed productivity increase due to the economies of scale, was retained since it appears to be the most probable scenario - the closest to reality in terms of both economic and policy assumptions.

**Impact of Case 4**

i) Real industry output (Real Domestic Product) follows a similar, and even steadier pattern than the Real Gross National Product. By 1991 it is 1.1 percent above the base case, and the gains increase in size every year to almost 2.5 percent in 2005. (see Table L)

ii) Reduction of tariffs and non-tariff barriers by the United States yields real Canadian export increases that are more than sufficient to offset increased real imports into Canada in response to Canadian reduction of tariffs and NTB's and increased Canadian final demand. In other words, Canada's real net exports increase relative to the base case.

iii) Increased competition from foreign suppliers drives Canadian industrial prices down. Productivity gains (both from cyclical and scale sources) reinforce this cownward pressure. Industry output prices are below the base case level throughout the period and after 1995 they are about 6 percent below base case level every year.

TABLE L

SUMMARY OF NATIONAL RESULTS

Impact of "Case 4" Relative to Base Case

| % Change | 1992 | 2005 |
|---|---|---|
| Real GNP | 1.6 | 2.5 |
| Real Consumption | 0.5 | 2.3 |
| Real Business Investment | 3.9 | 3.7 |
| Real Net Exports | 19.9 | 3.0 |
| Employment | 0.5 | 1.0 |
| Real Per-Capita Personal Income | 1.3 | 3.0 |

iv) The industrial price effects decribed above are transmitted to the rest of the economy and contribute to a general lowering of prices. This is reflected in the Consumer Price Index whose level is lower than the base case in every year of the period and, like industry prices, runs about 6 percent below base case after 1995.

v) Lower prices imply an increase in disposable income. (Remember that although the government is assumed to increase taxes to recover lost revenue, consumers still get the benefit of price reductions by import-competing domestic producers plus the "price equivalent" benefits of NTB removal.)

vi) As a result of increased consumption, higher net exports, a drop in nominal interest rates, and reduced costs of materials and equipment, business investment increases substantially. To these endogenous increases, INFORMETRICA has added exogenous increases in investment, reflecting an assumption that businesses will make extra investments in new production processes and technology in order to reap economies of scale.

vii) Employment gains are evident from the outset, reflecting increases in industry output. The largest absolute gains occur in services (averaging about 50,00 per year from 1997 on), and trade (about 37,000 a year from 1997).

viii) Employment losses are indicated in agriculture and manufacturing, in spite of the aggregate rise in employment. The agriculture losses are very small, but in manufacturing they are quite large, especially after the mid-1990's. From 1988 to 1994, manufacturing employemnt runs about 3,000 per year below base case. Then the losses increase sharply.

ix) The unemployment rate falls from th base case level but only by a small degree, in spite of the substantial rise in overall employment. On average, the unemployment rate is only about one-third of a percentage point below the base case level even after full implementation of the agreement in 1992.

x) The exchange value of the Canadian dollar appreciates, and by 2005 it is running around 92 2/3 cents U.S., compared with the base case projection of 85 cents and the current level of about 73 cents. (Some degree of appreciation had already been projected in the base case, with a gradual rise to 85 cents by 1995, remaining constant thereafter.) The exchange rate in Case 4 runs above the base case rate throughout 1989-2005, and the gap widens steadily over that period. The increae reflects improved growth prospects, reduced inflation and, in the early years of the impact, an improved balance of payments on current account. After the mid-1990's the exchange rate appreciation diminishes the positive impact of the trade agreement on net exports.

C) ANALYSIS BASED ON UNIVERSITY OF MARYLAND'S (USA) Inforum Model
(Canada, External Affairs, August 23, 1985)

This last macroeconomic study used the Inforum Model which contains 28 Canadian industrial sectors. A number of computer simulations on the Inforum Interindustry Macro Model (University of Maryland, USA) were carried out to measure the industry-by-industry direct and indirect impact of Canada-US trade liberalization on employment in Canada. In producing these results, the Inforum Model also yields information on a wide range of other macroeconomic variables such as output and investment, but this report focusses on employment.

## SIMULATION RESULTS

First, a base-line picture of the Canadian economy that is expected to exist in 1995 was designed. The picture is the result of Simulation 1 which is carried out on the INFORUM model under the assumption that the MFN tariff concessions, negotiated by Canada and the U.S.A. under the Tokyo Round, will be fully implemented by 1987 and that the reduction in tariff barriers will take 5 years to have a full impact on Canadian trade flows. In Simulation 2, the Post-Tokyo Canada and US tariff rates were reduced to zero over the years 1988-1992 and the impact on Canadian exports, imports, real output and employment by 28 industrial sectors, (see Table M) were determined. The difference in results between Simulation 2 and Simulation 1 measures the impact of a complete free trade arrangement between the U.S.A. and Canada. The overall effect of complete free trade is that Canada will lose about 212,000 jobs through rising imports from the U.S.A. and gain about 81,000 jobs through rising exports to the U.S.A. Thus, the net employment loss, attributable to the complete removal of the Post-Tokyo Round tariff rates by both Canada and the U.S.A., amounts to 131,000 jobs by 1995.

## CONCLUSION

The last two studies also show more economic growth, more consumer spending, more business investment, more exports, more imports, higher per-capita personal income and more jobs resulting from free trade. The study also concludes tht if tariff and non-tariff barriers are eliminated between Canada and the U.S. there will be major dislocation of workers as some industries (cloting, textiles, rubber, leather, furniture and small manufacturing) will be adversely affected.

According to the INFORUM study, the reason why Canaa will experience a negative employment change is that the Canadian economy is more protected from foreign import competition than the American economy. Whereas the average proportion of U.S. duty-free imports and the U.S. average tariff rate on dutiable imports from Canada will be 74% and 3%, respectively, at the end of the Tokyo Round in 1987, the proportion of Canadian duty-free imports and Canadian averge tariff on dutiable imports from the U.S.A. will be 72% and 11%. With the removal of Canadian and American tariff duties, Canadian

TABLE M:

Job Changes After Elimination of
Canadian and American Tariffs, Canada 1995
(Thousands of Employed Workers)

| Industrial Sector | Import-Related Employment Changes | Export-Related Employment Changes | Net Employment Changes Changes |
|---|---|---|---|
| 1. Agricultural and Fishing | -2 | +2 | 0 |
| 2. Forestry | -1 | 0 | -1 |
| 3. Mining, quarrying and oil well | -1 | 0 | -1 |
| 4. Food and Beverages* | -1 | +1 | 0 |
| 5. Tobacco Products* | -1 | 0 | -1 |
| 6. Rubber products* | -6 | 0 | -6 |
| 7. Leather products* | -2 | 0 | -2 |
| 8. Textile products* | -8 | +1 | -7 |
| 9. Clothing & Knitting Mills* | -28 | +1 | -27 |
| 10. Wood Products* | -2 | +1 | -1 |
| 11. Furniture & Fixtures* | -3 | 0 | -3 |
| 12. Paper & Allied Industries | -3 | +1 | -2 |
| 13. Printing & Publishing & Allied | -2 | 0 | -2 |
| 14. Primary Metal* | -8 | +4 | -4 |
| 15. Metal Fabricating* | -19 | +4 | -15 |
| 16. Machinery Industries* | -7 | +13 | +6 |
| 17. Transport Equipment* | -1 | 0 | -1 |
| 18. Electrical Products* | -9 | +4 | -5 |
| 19. Non-Metallic Mineral Products* | -2 | 0 | -2 |
| 20. Petroleum & Coal Product* | 0 | 0 | 0 |
| 21. Chemical & Chemical Products* | -3 | 0 | -3 |
| 22. Miscellaneous Manufacturing* | -18 | +1 | -17 |
| 23. Construction Industry | -6 | +2 | -4 |
| 24. Transport & Utilities | -9 | +6 | -3 |
| 25. Trade-Wholesale & Retail | -36 | +25 | -11 |
| 26. Finance & Insurance & Real Estate | -4 | +1 | -3 |
| 27. Commercial Services | -23 | +9 | -14 |
| 28. Other Private Services (elevators, telephones, broadcasting, universities, etc.) | -9 | +3 | -6 |

* Belongs to the Manufacturing Sector

Source: EA/CPE - Simulations carried out on the INFORUM MODEL - University of Manyland - U.S.A.

External Affairs Canada CPE-02134, August 23, 1985

imports from the U.S.A. will rise more than Canadian exports to the U.S.A. Thus, there will be a greater displacement of Canadian production and a net decline in real output and employment in Canada.

But there would be increases in jobs in other sectors such as forestry, food and beverage, metal fabricating, transportation and utilities, trade, commercial services and machinery industries.

The dislocation and job loss would be felt in the first few years, while the major benefits would be felt after 1995 as Canadian industries geared up to take advantage of the economies of scale that access to a much larger market would make possible.

**Trade Liberalization**

To be an economist, as I am, and to oppose free trade is tantamount to heresy, said Mel Watkins, professor of political economy at the University of Toronto. Nothing is more central to orthodox economic theory, he added, than the case for free trade based on comparative advantage without impediments from tariffs or other barriers, and its concomitant, the case for free mobility for capital with no discrimination based on nationality, (Canadian Forum Aug-Sept. 1985 Issue).

Some of the major gains from trade arise, indeed, from the fact that costs per unit of output vary with the scale of output. These cost variations are due to what may be loosely described as "economies of scale". They are a major reason why a small country, such as Canada, gains so much from international trade. Here are some of the sources of these economies.

- One important source relates to the size of plants. The larger the market that a firm is serving, the larger the plant that can be utilized to serve that market. Up to a point, the larger the plant, the lower its unit costs, because of the specialization that can be built into the plant's fixed capital equipment. These scale economies tend to be found most extensively in the processes used by such traditional heavy manufacturing industries as electricity generation, automobile production, steelmaking, and aluminum production.