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**AN EMPIRICAL ANALYSIS OF
TRIANGULAR TRADE RELATIONSHIPS
AMONG CANADA, THE U.S. AND JAPAN**

by

Elaine Louise Kozak

c (1988) by Elaine L. Kozak

A thesis submitted to the Faculty of
Graduate Studies and Research in partial
fulfilment of the requirements for the degree of
Master of Arts
in International Affairs

The Norman Paterson School of International Affairs

Carleton University

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The undersigned hereby recommend to the Faculty of
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ABSTRACT

The study analyzes the triangular trade relationships among Canada, the U.S. and Japan. The main focus is on potential trade creation or diversion involving Canada stemming from developments in the relationship between the U.S. and Japan. The model used to analyze triangular trade is based on the trade intensity index developed by Kiyoshi Kojima. Trade creation/diversion is operationalized in terms of the correlation between the intensity of the exports from two of the three countries in the triangle to the third. The study demonstrates the strong trade interdependence among Canada the U.S. and Japan. It also shows covariance between many Canadian and U.S. exports of the same products to Japan, and many U.S. and Japanese exports of the same products to Canada. Little covariance between Canadian and Japanese exports to the U.S. was found. Some evidence of triangular trade impacts on Canada was found resulting from U.S. actions to protect its domestic markets against Japanese imports of steel and automobiles, and to open Japanese markets to its exports of beef. The study concludes that Canada should develop a policy to deal with both the negative impacts and opportunities resulting from the triangular relationship, and proposes different options for doing so.

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CHAPTER 1

INTRODUCTION

A. Background

Canada is dependent on exports for 30% of its GNP.¹ Almost 90% of Canadian exports go to the U.S. and Japan, making Canada dependent on these two countries for over one-quarter of its wealth creation.²

Canada's ties to the U.S. are long-standing and unique:

Geography combined with similar cultural and ethnic backgrounds have given rise to an interrelationship between the Canadian and U.S. economies in terms of industry, energy, agriculture, fisheries, as well as of intercorporate and labour links, immeasurably greater than that of any other bilateral relationship in the world economy.³

Despite a deliberate policy by Canada to reduce its dependence on the U.S. market (the "Third Option")⁴, and the deterioration of the state of the bilateral relationship in the 1970's and early 1980's under the Liberal administration⁵, two-way trade between Canada and the U.S. increased from \$46 billion in 1976 to \$170.5 billion in 1986⁶. This strong trade relationship has been consolidated by the Canada-U.S. Trade Agreement which came into effect on January 1, 1989.

Canada's ties to Japan are neither as long standing nor as extensive as its ties to the U.S. (e.g. Japan takes only 5% of Canadian exports while the U.S. takes over 80%).⁷ However, Japan's significance to Canada is growing:

Japan is our second largest trading partner after the USA. Larger than UK, France and West Germany

combined⁸...(Canada's two-way trade with Japan increased from \$3 billion in 1973 to nearly \$20 billion in 1987).⁹

Japanese portfolio investment in Canada exceeds \$35 billion. Canadians are increasingly dependent on Japanese companies for employment; our exchange rate and interest rates are influenced by capital flows to and from Japan.¹⁰

The U.S. and Japan have had a special relationship since the Second World War, beginning with the reconstruction of Japan's devastated economy.¹¹ However, in the last decade, this relationship has evolved into one of extensive and complex interdependence. In this period, the U.S. has been faced with major macroeconomic issues, including an unprecedented fiscal deficit and, in the earlier years, an exchange rate misalignment which contributed to an equally unprecedented trade deficit.¹² Japan has figured significantly in both areas.

Two-way trade between the U.S. and Japan increased from \$54 billion in 1971 to \$115 billion in 1986. Japanese exports to the U.S. contributed \$53 billion of the total \$61 billion increase.¹³ The U.S.'s trade balance dropped from a deficit of approximately \$25 billion in 1980 to one of \$170 billion in 1987, despite a major realignment of the currencies of the G-5 (Britain, France, West Germany, Japan, and the U.S.) in 1985 to lower the value of the U.S. dollar.¹⁴ In the same time period, and despite a significant appreciation of the yen against the U.S. dollar after the G-5 meeting, Japan's trade balance went from zero to a surplus of over \$100 billion, the largest ever

recorded.¹⁵

On the strength of its trade earnings Japan has become the world's banker, and has financed more than half of the current account deficit of the U.S.¹⁶, a debt that is "...greater than the combined debt of Mexico and Brazil. The implications of this extensive financial interdependence have yet to be fully appreciated."¹⁷

Charles J. McMillan, an academic and former advisor to the Right Honourable Brian Mulroney, Prime Minister of Canada, who has written on Japanese industrial structure and trade relations, has observed that the bilateral relationship between the U.S. and Japan is "...the most critical context for assessing Canada-Japan relations...".¹⁸ He also sees U.S.-Canada relations as "...only one side of an important policy triangle linking the capitals of Washington, Tokyo and Ottawa".¹⁹ Others have made observations on this three-way relationship.

The importance of triangular ties among Canada, the United States and Japan must be explicitly recognized and their implications thoroughly analyzed.²⁰

The Canadian forest industry, inextricably linked to the American housing market, is thereby tied to the success of the U.S. economy. And that success depends on U.S. economic performance vis-a-vis Japan. The same is true of Canadian automobile production and the related automobile parts and metals industries. Industrialized central Canada and the staples exporting West find themselves caught in the same triangle, with their major trade partners competing between themselves and with Canada as well.²¹

...[T]here is an increasingly important triangular relationship between Canada-U.S.A.-Japan. Canada sells an interesting mix of products to Japan, a healthy

proportion of which serves as inputs for Japanese industry whose products are principally exported to the U.S.A. Canadian plants are subcontractors for many key parts which make up such important American capital goods as jumbo jets for which Japanese airlines and leasing corporations are substantial off-shore customers. Thus, there are direct and indirect linkages that affect the prosperity of our three countries with each considerably dependent on the business climate and economic policies of the other.²²

Japan-U.S.-Canada trade is a triangular event. We cannot maximize our trade unless the whole triangle is trading freely.²³

Wendy Dobson, former head of the C.D. Howe Institute, observed that "a realistic bilateral picture [between Canada and Japan] is only possible in the context of the triangular economic relationship with the U.S."²⁴ Dobson also noted that "close linkages through trade, technology and investment ties suggest that the major determinants of closer economic relations between Canada and Japan should be sought within this 'triangular' context".²⁵

Dobson undertook a study of the triangular relationship which provided a statistical description of trade and investment flows and explored three cases where one country was affected by policies adopted by the others.²⁶ These cases were the effect of the U.S.-Japan savings imbalance on Canada, the impact on Canadian policy of the U.S. requirement that Japan place voluntary export restraints on autos, and the effect of Japan's tariff on lumber imports on Canada-U.S. trade conflicts. The influence of the reduction of the U.S.-Japan savings-investment imbalance, and a Canada-U.S. bilateral trade agreement on the future of Canada-Japan economic relations also were explored.

Many countries would envy Canada's inclusion in an interrelated and interdependent triangle involving the world's two largest economies. Both McMillan and Dobson discuss it in terms of opportunities for Canada to gain from the relationships. Are there reasons for concern?

Sylvia Ostry, former Canadian Ambassador for Multilateral Relations, observed that while interdependence can be viewed in a neutral manner as increased economic linkages and policy interrelationships, underlying it all is a great sense of uncertainty. Interdependence increases opportunities for mutual benefit but it also increases vulnerability "everywhere and in everything".²⁷ As the junior partner in the triangle, Canada may be particularly vulnerable to being locked into trading patterns and policy positions that are not compatible with its objectives.

Canada's relationship with the U.S. is that of a classical duopoly, with the U.S. obviously the dominant partner, in which the following condition is thought to hold:

Because of its power, the dominant partner will set the constraints on the policy actions by both of the two partners in terms of its own, and its partner's, interests. The dependent power...will conduct its policy broadly in line with that of its larger partner with slight variations due to its particular circumstances, its social make-up, and its economic structures. In other words, its economic policy will largely be harmonized with that of its larger partner.²⁸

If the Canada-U.S.-Japan relationship represents a "tri-opoly", does this not mean that Canada's vulnerability is even greater, and its scope for independent policy and action is constrained even further?

Vulnerability and limited policy independence may not be an issue if all three countries have common objectives and consensus on the means of pursuing them. The Free Trade Agreement is a landmark achievement in terms of the coordination of Canadian and U.S. bilateral trade objectives, and the securing of Canada's interests with respect to its dominant trade partner. Canada also has outlined a joint agenda for its dealings with Japan and is pursuing it methodically, although not brilliantly.²⁹

The U.S.-Japan relationship, however, has been quite volatile. Both countries recognize the need for greater policy coordination. One Japanese commentator put it thus:

Japan's relationship with the United States is, of course, the major premise in the formulation of Japanese policy options and in ultimate policy decision-making.³⁰

However, the U.S. has had difficulty getting a sharp focus on its policy-making related to Japan, as observed by different commentators:

In Washington it is hard to discover a "Japan policy"...U.S. behaviour toward Japan is eccentric, episodic and devoid of any long-term vision of where this important relationship should be headed and how it will get there.³¹

...[W]hat must pass for Japan policy in Washington is so unrealistic as to make the situation considerably worse.³²

The U.S.'s approach generally has been to unilaterally define the objectives in its relationship with Japan, and pursue them through its own domestic legislation and trade remedy laws, and through bilateral agreements to guarantee access to Japanese markets.³³

The conflictual nature of the U.S.-Japan relationship is the source of much of the uncertainty in the triangle to which Canada is vulnerable. For example, the opportunity exists for Canada to "piggyback" on U.S. efforts to open Japanese markets. At the same time, Canada is equally vulnerable to being inadvertently "sideswiped" by trade actions taken by the U.S. and Japan against each other.

McMillan exhorts Canada to become a full player in the triangular relationship to fully share in the growth opportunities offered through close ties with the world's most dynamic economies.³⁴ At the same time he notes that

...relatively little analysis has been done on the potential trade diversion between Japan and the U.S. from and to Canada as a result of trade and investment conflicts arising between industry interests in Washington and Tokyo. Very little of Canada's trade with Japan is immune to potential trade diversion by American sources, especially in such contentious sectors as softwood lumber, coal, fish, aluminum, and steel.³⁵

In order to be a full player and manage its relationships within the triangle in a way which best serves its own interests, Canada must understand how it is affected by developments in the relationship between the U.S. and Japan. The purpose of this study is to contribute to this understanding by undertaking an empirical analysis of the international trade dimension of the triangular relationship. In particular, the study will examine the notion of "triangular impacts, i.e. instances where Canada's trade with either the U.S. or Japan has been affected by developments in the bilateral relationship between these two countries.

B. A Model for Triangular Trade Ties

The empirical study of more than two-party relationships has received limited attention in economic research, and analytical approaches that fully met the needs of the present study were not found. As a result, the first task of the study was to develop an analytical model for this purpose. This proceeded in two steps:

- . Development of the conceptual model for triangular trade ties. The theoretical basis for this model was based on previous work on the economic interdependence of countries, and the research related to the Resistances Theory of Trade. The research in both these areas dealt primarily with two-party relationships. Some preliminary work had been done on relationships among more than two countries, and this provided the critical element in the model for the Canada-U.S.-Japan trade relationship.
- . Development of the statistical model. This involved translating the concepts of "trade relationship" and "trade diversion to or from one country and its two trading partners in response to developments in the bilateral relationship between the two trading partners" into empirical measures and a statistical equation.

Data bases were then created to run against the model. Trade statistics were obtained for commodities and manufactured products for each pair of the three partners, and the statistical measures that were used to represent the trade relationship were generated.

The trade data covered the period 1974-1985. This period was chosen because it covered a time of important developments in the global economy (e.g. oil shocks, recession, exchange rate imbalances, etc.) and increasing complexity in the relationships among Canada, the U.S. and Japan.

The objectives of the study were:

- . to examine the nature and extent of interdependence among the three countries. The analysis looked at revealed bilateral comparative advantage between the different pairs within the triangle, and how this compared to global comparative advantage.
- . to examine triangular trade relationships among Canada, the U.S. and Japan. The analysis looked at how exports in a particular product group between each of two countries and the third change over time to determine whether the changes appeared to be related, i.e. a "triangular" factor was at work. Particular attention was given to trade actions taken by the U.S. in respect of Japan to determine whether Canada's trade with either party was affected by them.

When the trade action taken by the U.S. was in the form of protectionism within the U.S.'s own market against a particular product, the research questions were:

- . did diversion of Japanese exports from the U.S. market to Canada occur?; and
- . did Canada gain ground in the U.S. market at the expense of Japan?

In the first instance, the research tested for a significant increase in exports from Japan to Canada relative to Japan's exports of the same product to the U.S.. In the second, the research tested for an increase in the exports from Canada to the U.S. of products for which the U.S. had taken trade actions against Japan.

When the trade action was in the form of pressure from the U.S. to gain access to Japan's market, the research questions were:

- . was the access achieved at the expense of the exports to Japan by Canada?; or
- . did Canada benefit from the market opening action?

This was tested for by determining how Canadian exports to Japan of products that were the subject of U.S. market opening efforts in Japan, compared to U.S. exports of the same products to Japan.

The study tested the null hypothesis that no "triangular" factors have affected the pattern of trade among the three countries. The analytical framework and assumptions proceed from the liberal economics paradigm.

C. Organization of the Thesis

The thesis is organized in the following manner. Chapter 2 provides background on the developments in the bilateral relationship between the U.S. and Japan which provide the context for the analysis of "triangular" impacts on

Canada's trade ties with these two countries. Chapter 3 reviews the literature on the empirical study of interdependences among countries that provided the theoretical and conceptual basis for the model. Chapter 4 presents the research design and statistical model used in the current study. Chapter 5 presents the study findings. Chapter 6 discusses the conclusions drawn from the study.

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CHAPTER 2

U.S.-JAPAN RELATIONS: BASE OF THE TRIANGLE

This study seeks to analyze the triangular interdependence among Canada, the U.S. and Japan. An aspect of this interdependence is the potential for issues and events involving two members of this triangle to bear on the affairs and fortunes of the third. Canada is expected to be particularly vulnerable to developments in the relationship between the U.S. and Japan given their greater size and economic power.

The basic thesis of this study is that Canada's bilateral trade relationships with the U.S. and Japan respectively are affected by the dynamics of the bilateral relationship between these two countries. Specifically, trade creation and diversion involving Canadian exports to these two countries are expected to occur as a result of developments arising in U.S.-Japan economic ties.

This chapter explores the U.S. - Japan economic relationship since World War II to provide a backdrop against which the impacts of the triangular ties can be explored. The two main issues that dominated the U.S.-Japan economic relationship were technology and trade. The technology issue centered on Japan's changing comparative advantage. The trade issue was characterized by the U.S.'s growing concern with protecting its producers and markets, particularly through trade actions taken against Japan.

Unless otherwise stated, all values are in U.S. dollars.

A. JAPAN'S CHANGING COMPARATIVE ADVANTAGE

The Japanese "miracle" has been exhaustively explored in a number of works.¹ Only key elements related to Japan's changing industrial structure and exports are covered here.

To begin, a few facts: Japan's GNP has increased 11 fold in real terms since 1950 and its share of gross world product has increased from 4% to 10%.² The average annual income of the Japanese (\$17,000) recently surpassed that of Americans (\$16,000), when in 1965 the Japanese average was one-quarter of the American average.³ In 1969, Japan reversed over 20 years of chronic trade deficits and has gone on to reach the point where in 1986 it realized a trade surplus in goods of \$92.66 billion, the largest ever recorded in the world.⁴ After imposing strict controls on the outflows of capital up to the early 1970's, Japan is now awash with funds and the largest exporter of capital in the world.⁵ And, Japan has progressed from labour-intensive, traditional industrial production in the 1950's to displace West Germany in 1980 as the second largest supplier of high tech goods in the world after the U.S.⁶

1. Japan's Industrial Transformation

Japan's lack of basic resource endowments and its shortage of capital in the post war period imposed constraints on

its industrial development that required a long view and careful planning to overcome. The guiding principles for economic development were the recognition of the fundamental requirement to export and, with this, the need for long term comparative advantage and international competitiveness. The strategy pursued involved the deliberate restructuring of industry over time (at times by scraping existing production capacity and rebuilding) to higher value-added, higher productivity industries, and aggressive domestic competition and international marketing.⁷

The country followed an economic policy that "straddled capitalism and socialism" and worked on the basis of a blend of market forces and government planning.⁸ Views differ on the extent and effectiveness of government intervention and targeting.⁹ Nonetheless, the climate created by the Japanese government was favourable to high economic growth and productivity increase.

The business climate in Japan was characterized by: import protection for infant industries, exclusion of foreign investment and controls on licensing, joint ventures and technology sharing, restrictions on the export of capital, controls on interest rates, tax incentives to promote high savings, the discouragement of consumer borrowing, the tolerance of highly levered companies with a high ratio of debt to equity, and less concern for a return to shareholders. In more recent years the government has fostered economic transformation by encouraging "recession cartels" and "rationalization cartels" for depressed industries, and consortia for research and development.¹⁰

Japan was aided in its development by a homogeneous population with a single will in respect of the country's future and a high propensity to save¹¹, new sources of domestic and international demand due to the robustness of the world economy¹², and the U.S.'s post-war commitment to Japan's economic success for security reasons¹³. The general sequence in the transformation of the Japanese industrial structure is outlined below.¹⁴

The focus in the decade after the war was on basic industries such as steel and coal which were viewed as strategic elements to revive a devastated economy and to provide the foundations for continuing economic growth. The labour surplus that existed in the 1950's supported traditional industries: textiles, clothing and footwear, light manufacturing, agriculture, forest products and simple metal products. Fibres, textiles and sundries led the exports comprising over 30% and 20% respectively. Machinery and equipment made up only 14% of exports.

The industrial structure was broadened in the early 1960's to other heavy industries, e.g. iron, steel, metal refining, petrochemicals and oil refining. Traditional industries such as textiles moved upscale into more sophisticated production. In the mid to late 1960's the focus expanded to automobiles, industrial machinery, and consumer electronics (primarily televisions). These were of interest because they offered large economies of scale, a significant capacity for manpower absorption, and considerable links to other industries. The composition of exports changed with machinery and equipment as the leading category making up 40% of total exports followed by metals and metal products with 26% of total exports. Exports of

fibres and textiles now make up less than 10% of the total.

The 1970's were marked by a growing shortage and increased cost of labour, and a dramatic increase in energy and resource prices. The heavy, energy- and resource-intensive industries came under pressure. Some production in heavy and traditional industries began to move offshore as Japanese industries sought assured and affordable sources of resources and labour.

In Japan, the focus of industrial development began to shift to more value-added secondary manufacturing, and specialized production in traditional areas such as textiles, clothing and housewares. Exports increased to pay for the higher priced energy and resources. Areas of strong export growth were specialized machinery, telecommunications equipment, office products, automobiles, trucks and household appliances. The Japanese economy became increasingly internationalized.

In the late 1970's and early 1980's major industrial and social adjustments to the oil shocks occurred. Coal increasingly became a substitute for oil. Energy reliant industries such as petroleum refining, plastics, petrochemicals, and aluminum moved into serious decline. With the reduction in oil shipments, shipbuilding also went into decline.

The focus turned to "small, light, thin, expensive and increasingly skill-based and technology-intensive" production.¹⁵ Services grew in importance and became internationalized (e.g. airlines, banking, insurance, retailing). The notion of an information society gained

prominence.

In the early 1980's, exports, led by transportation equipment, began to skyrocket. By 1982, automobiles and trucks made up 36% of total exports. Other leading exports were telecommunications (12%), iron and steel (10%), electrical machinery (6%) and office equipment and computers (5%) respectively of the total.¹⁶

The concern with knowledge- and technology-intensive production, information industries and advanced services industries dominates the present as Japan seeks to reorient to domestic social and environmental pressures and the changing global economy. Japan is already making its mark in financial services. With the deregulation of the Japanese financial system and the internationalization of the yen, and with the large foreign exchange earnings due to the current account surpluses, Tokyo has gained the status of a pivotal world financial centre.¹⁷ Japan is now the home to five of the top ten banks in the world, and the top two securities firms.¹⁸

There is some question about Japan's ability to advance internationally in other traded services areas because of the flexibility in the social structure, rather than in the industrial structure, required by services involving the transfer of human capital, e.g. software design, accounting, management consulting. Services areas where Japan is expected to be strong internationally are those where the process, rather than knowledge embodied in individuals, is key, e.g. engineering-related consulting, shipping and wholesale trading.¹⁹

2. Technology Development

A dominant theme in the evolution of Japan's comparative advantage is the attention and commitment to harnessing science and technology to the task of industrial development. The government's role has been significant:

By explicitly linking scientific and technological development with industrial development, the Japanese government helped to create a political and economic environment that has encouraged investment and research in new technologies. This commitment...has been supported by more specific policies aimed at fostering priority areas.²⁰

Japan's approach to innovation has been to adapt technology developed elsewhere to its own use. Licensing, joint ventures and even "reverse engineering", i.e. disassembling a product to see how it worked, were means of obtaining know-how.

The initial emphasis on the use of technology was to increase productivity to compete on the basis of cost. The emphasis then shifted to use technology for product development and modification to compete on the basis of quality. The technology "catch-up" was completed in the early 1970's, after which time the emphasis was on pushing the frontiers of core technologies, e.g. semiconductors, optical fibres, new materials, to compete on the basis of innovation.

Mr. Masanori Moritani, a senior analyst at Japan's Nomura Research Institute, describes the progression of technology development in Japan through incremental engineering as occurring in three stages:

- . Refinement technologies for existing products and processes, e.g. automobiles, steel blast furnaces, oil tankers, and televisions (early 1960's).
- . Applied technologies for new products, e.g. consumer electronics (early 1970's).
- . Advanced technologies, e.g. VLSI (very large scale integrated circuits), robotics (late 1970's to present).²¹

The progression of technology development along these stages in key electronics product areas is shown below.²²

- . Consumer electronics: progression from transistor radios, to black and white, then colour televisions, through several generations of audio and tape recording equipment, commercialization and essentially sole production of the world's most advanced VCR's.
- . Information processing: progression from mainframe computer prototypes derived from foreign technology, to mass production of semiconductors and other computer components and plug compatible peripheral equipment, to personal and mainframe computers, to telecommunications and other data transmission and office equipment.
- . Industrial electronics: progression from desktop and pocket calculators, to numerically controlled tools and robots.

Evidence of Japan's achievements due to technology development are numerous. Productivity in Japanese

manufacturing has soared thirty fold since the mid-1950's, and by an average of 8.2% annually in the last 20 years.²³ In the 1960's Japan had a technology import/export ratio of 40/1. By 1975, this was 4.4/1, and in 1981 Japan exported 2.8 times more licences and patents than it imported.²⁴ The revenues from exports of technology (receipts from royalties) increased accordingly: from \$191 million in 1972 to almost \$773 million in 1981. Imports of technology to Japan continued to rise during this period, but the ratio of payments to receipts declined significantly from 4:1 in 1972 to 1.5:1 in 1981.²⁵

These successes notwithstanding, the key issue at present is Japan's ability to go beyond being an adaptor to becoming an originator of technology and a pace-setter in innovation. Japan's economic future is seen to be at stake, as shown in the comments by D. Okimoto of Stanford University:

Is it a technological imitator and industrial over-achiever? Or is Japan an astute learner and unbeatable colossus? Will Japan dislodge the United States from its current position of dominance in high technology as convincingly as it did in the smokestack sectors? Or has it reached the limits of its phenomenal postwar growth?²⁶

The Japanese government has risen to the challenge by launching the Creative Scientific and Technological Promotion Programme in 1981 to advance basic research.²⁷ Total spending on research and development in Japan approached \$25 billion in recent years. This was four times the level of spending in the mid-1970's and about 2.4% of Japan's GNP. Japan has since indicated that it intends to increase spending to 3% of GNP.²⁸

This new spirit and objectives are reflected in the fourth and fifth stages of technological development that Moritani envisages:

- . Future technologies, e.g. micro-electronics, advanced materials such as ceramics, biotechnology, artificial intelligence.
- . Nobel inventions and discoveries. At this stage of development, a country is at the forefront of scientific discovery and leading in revolutionary new technologies.²⁹

3. Summary

Since the Second World War, Japan has progressed from a devastated economy producing low value-added, labour intensive products to being, next to the U.S., the second largest free market economy in the world and producer of high value-added advanced technology goods.

The Japanese have successfully challenged the U.S. in key areas: steel, automobiles, electronics, machine tools, computers and office equipment, biotechnology and medical instruments. They are ahead in consumer electronics, advanced materials and robotics, and threatening in semiconductors and optoelectronics.

Japan's ascendancy has paralleled, and to a significant degree affected, the U.S.'s loss of economic supremacy. The U.S.'s response is the subject of the next section.

B. U.S.'s CHANGING POSITION IN THE WORLD ECONOMY

A number of commentators explain the U.S.'s contemporary trade policy in the context of the erosion of the postwar bipolar political structure, and the decline of the U.S.'s hegemonic position in the global economy.³⁰ After the Second World War, and during the height of the Cold War, the U.S. established "Pax Americana", a new order to safeguard the Western coalition against the socialist bloc. Naohiro Amaya, Vice Minister for International Affairs at MITI in Japan, described it as follows:

The pre-oil-shock era was the age of Pax Americana. The United States was easily able to provide the free world with six fundamentals: values (democracy, free enterprise, lifestyle, etc.); security (an umbrella for both Europe and Japan); low-cost oil; food; technology; multilateral institutions and systems.³¹

This new order was based on growth and welfare-oriented Keynesianism, the gold dollar standard and American hegemony. To nurture allied countries, particularly those badly weakened by the war, into strong economies with close ties to itself, the U.S. provided open access to its markets without being particularly concerned about reciprocal access. The U.S. was able to do this because of the strength and health of its economy at this time.

The Cold War declined in the latter part of the 1960's and with it the U.S.'s incentive to sacrifice its national economic interests. At the same time, the U.S.'s macro-economic position, and its competitiveness in key industries began to weaken. Amaya, once again,:

After the oil shock all changed. The dollar declined, American values were shaken, oil majors lost pricing prerogatives and American supremacy in technology

eroded. Also multilateral institutions lost their influence...Americans began to see values and security threatened, especially in high tech.³²

This began the disintegration of the U.S.'s hegemonic position and "an alteration in American goals from emphasis on long-term global political objectives to an emphasis on specific national economic interests".³³ The U.S. became less patient with the "asymmetry in commercial practices"³⁴, and more susceptible to domestic protectionist pressures. This reaction has contributed to an international economic order that is "messier" and "more fragile".³⁵

1. Decline of U.S. Supremacy

The dimensions of the decline of the U.S.'s economic supremacy are highlighted below. Although the U.S. economy has grown since the Second World War, the rest of the world has grown faster. The U.S. has moved from the position of contributing 50% of world product in 1945 to contributing only 23% at the present time.³⁶ The rate of productivity growth was 2.4% per year between 1948 and 1973. This dropped to -0.5% during 1973 and 1976, and has made only small upward progress since.³⁷

Since 1953, U.S. export growth has averaged only 6% a year, while total free-world trade has increased at a rate of over 7% a year. Total manufactured goods exports have grown at 7.8% a year, but U.S. manufactured exports have only grown at around 5% a year. In 1955 the U.S.'s share of the global market for manufactured goods exports was over 25%. In 1980, this had dropped to 14%.³⁸

While its share of world trade has declined, the U.S. has grown more dependent on trade. Since 1970, the ratio of trade to GNP has nearly doubled and in 1981 stood at 7.8%.³⁹ Eighty per cent of the new jobs in manufacturing created between 1977 and 1980 were in export related industries.⁴⁰

Of greatest significance to the current discussion is the change to the U.S. balance of trade. Until 1970, after 50 years of measured foreign trade, the U.S. had never registered a merchandise deficit.⁴¹ The real trouble began in 1981. The U.S. enjoyed a trade surplus of \$7.3 billion in 1980.⁴² This turned around in 1981 when a deficit of \$18 billion was registered.⁴³ The deficit has continued to worsen dramatically to total \$148.5 billion in 1985 and \$169.8 billion in 1986.⁴⁴

The U.S.'s plight is most evident in the decline in recent years of its position in areas of traditional strength. From a surplus in manufactures of \$11 billion in 1981, the U.S. moved to a deficit of \$32 billion in 1985. Every \$1 billion in manufactures exports lost is estimated to cost 25,000 jobs. In 1981 the U.S. surplus in trade in high tech goods was \$23.6 billion. This declined to \$5 billion in 1984.⁴⁵ In 1984, for the first time ever, the U.S. registered a trade deficit in electronics equipment: imports had grown by 50% from the previous year while exports had grown by only 18%.⁴⁶

Much of the movement in U.S.'s position has been inevitable, due to general expansion of world trade and the emergence of new industrialized countries. The U.S. benefited in many ways from this occurring: new markets

for its products; opportunities for its multinationals; greater stability as more countries shared in each other's prosperity. But the U.S. has lost ground in relative terms.

The longer term decline is thought to be due to a number of internal factors: slow productivity growth; problems with product quality; a reduction in research and development expenditures relative to GNP, and, with this, a slowdown in technological advance; obsolescent capacity and high labour costs in key sectors; preoccupation with short term returns rather than investment in restructuring for long term competitiveness.⁴⁷

The economic crisis in the early 1980's was largely due to the U.S. government policy mix which combined a tight monetary policy with high interest rates and an expansionary fiscal policy and massive tax cuts.⁴⁸ The first pushed up the interest rates and the second created a large market for foreign capital. The inflow of capital caused a significant appreciation of the U.S. dollar which reduced the competitiveness of American products in world markets and increased the competitiveness of foreign products in the U.S. market.

As a result of the inflow of capital, the expansionary fiscal policy did not result in the depreciation of the dollar, as would be expected. Rather, the effective exchange rate of the U.S. dollar rose. As Schlossstein put it, "the U.S. had all the economic faults with none of the exchange rate benefits".⁵⁰ In effect, the adjustments that would normally come into play to bring a country's trade account into balance did not work with the U.S. The

spectacular trade deficits that resulted are history.

The U.S. was obliged to seek adjustments to the policies and practices of its leading trade partners to correct its own position. A key action in this respect was to seek the agreement of the so-called Group of 5 (U.S., Britain, West Germany, France and Japan) in September, 1985, to devalue the U.S. dollar against key currencies.

2. Evolution of U.S. Trade Policy

U.S. trade policy from the post-war era to the launch of the latest MTN reflects its changing fortunes.

Schlossstein⁵⁰ describes the progression as follows. In the first few years after the war, all groups within the U.S. strongly favoured free trade, primarily because there was no real competition. In the 1950's, the U.S. textiles and coal industries began to come under pressure from Japan and Europe. The U.S. Trade bill of 1955 included an escape clause which provided recourse for threatened parties. The free trade rhetoric was strong again in the first half of the 1960's. The U.S. Trade Expansion Act of 1962 encouraged imports. The Kennedy Round of the MTN led to average reductions in import duties of 35% in all countries. By 1971 the U.S.'s tariffs averaged 10%.

In the late 1960's, the U.S.'s trade position began to deteriorate as a result of the overvalued dollar, influx of imports, decline of U.S. exports due to the marked preference of U.S. multinationals to establish subsidiaries abroad rather than export to serve foreign markets, and the closing technology gap. This led to a serious retreat to protectionism which was evident in key provisions of the

1974 Trade Act: a limit on the President's powers to cut tariffs; an easing of the criteria for relief under Section 201, the escape clause providing temporary tariff protection for industries that claim injury from imports; introduction of Section 301, a clause permitting an industry to file a complaint against unfair trade practices and request a Presidential review, and, in the case of agreement with the industry's position, an increase in the President's ability to retaliate.

The concerns with containing damage to domestic industries threatened by foreign imports were matched by concerns over access to foreign markets. The Tokyo Round of the MIN went beyond tariffs to tackle non-tariff restrictions to access such as government procurement.

Market access became a "holy grail" as the overvalued dollar of the first half of the 1980's wreaked havoc with the U.S. trade balance. The Reagan Administration's solution was trade expansion. The Export Trading Company Act was passed in 1982 to encourage American companies to export more.

"Fair trade" became the byword of a move away from the national treatment principle of international trade agreements to reciprocity in relations with primary trading partners. Through reciprocity, the U.S. sought the same treatment for American products in a foreign market, e.g. objective balances or equivalent market access on a sector or product basis, as the subject country's imports received in the U.S.. Failing this, the U.S. threatened to impose on foreign imports the same treatment that U.S. products received in the corresponding foreign market.⁵¹

The U.S Congress began to play a more direct role in trade policy. Hundreds of protectionist trade bills were introduced, despite a stated philosophical commitment to free trade. Local content legislation for automobiles, considered to be the most protectionist action since the Smoot Hawley Act of 1930, was passed by the House in 1982. Protectionism became a popular item on election platforms.⁵²

U.S. industry increasingly turned to the government for aid in dealing with declining international competitiveness and loss of domestic markets. The number of petitions for relief to the International Trade Commission was 98 in 1981, rising to 232 in 1982, compared to only 10 in 1969.⁵³

The U.S. also pursued its objectives in international fora. It was instrumental in the launch of the eighth round of multilateral trade negotiations (MTN) in 1986. This round of talks is dealing with agriculture and services, two areas previously not included and high on the U.S.'s priorities for trade liberalization.⁵⁴

The U.S. has sought changes in economic policies and trade practices with other countries on a bilateral basis as well. Japan has been a primary target of such initiatives.

3. Summary

The U.S.'s dominant economic position has declined since the Second World War due to its own economic policies and to the development and growing importance of other

countries in the global economy. A particularly potent combination of the two at the beginning of this decade has put the U.S. in the extraordinary position of having massive trade deficits and becoming the world's largest debtor nation. This has contrasted to Japan's evident prosperity and the U.S. appears to have focused on Japan in its efforts to resolve the serious state of its international economic and financial position.

C. U.S./Japan Trade Policy

The attention that Japan has received in U.S. trade policy has been prompted by the extraordinary imbalance in their bilateral merchandise trade account. The U.S. deficit with Japan has steadily increased in recent years, as shown in Table 2.1. Other countries, including Canada, have enjoyed sizeable trade surpluses with the U.S., however, and there has been the sense that the U.S. has chosen Japan as a scapegoat for its trade problems.

1. U.S. Policy

The U.S. initially approached the trade imbalance problem by attempting to push up the value of the yen. Working through the Group of 5, the U.S. was successful in achieving a major realignment of currency values in September, 1985. Within nine months, the yen had appreciated by 40% against the dollar. However, there was only a marginal increase in the sale of cheaper U.S. goods in Japan.⁵⁶

The U.S.'s also sought to have Japan reduce the protection in its domestic market and open it up to imports. There

Table 2.1

U.S. TRADE DEFICIT WITH JAPAN, 1981 - 1987⁵⁵

<u>Year</u>	<u>U.S. deficit (\$million)</u>
1981	18,000
1982	19,000
1983	22,000
1984	37,000
1985	49,700
1986	58,600
1987	60,000

was the sense that Japan was taking advantage of the "free ride" provided by the U.S. defence support in the region which permitted it to divert all its resources to economic development. Seabury puts it in the following way:

It is a source of acute embarrassment today that the U.S. whose strategic and economic resources are strained to the breaking point goes on at considerable cost to protect a prosperous economic giant that threatens to overwhelm the American economy".⁵⁷

The U.S. was impatient with Japan's slowness to shed its developing country mentality in the face of its economic ascendancy. Japan's trade practices were viewed as unfair, and the protection they afforded was not justified given Japan's economic status. This perception held despite a lower average tariff rate in Japan compared to the U.S. or Europe (4.5% for dutiable imports and 2.5% for all imports).⁵⁸

The feelings in the U.S. were so strong on this matter that on March 28, 1985, the U.S. Senate voted unanimously to pass a resolution calling for retaliation against Japan for its perceived failure to open domestic markets. A concurrent resolution was passed in the House of Representatives by an overwhelming majority that branded Japan as an unfair trading partner. Shortly thereafter, the Senate Finance Committee approved legislation that would order the President to obtain an elimination of Japanese unfair trade practices or offset their impact.⁵⁹

Of the 248 protectionist pieces of legislation pending before the 99th Congress on June 30, 1986, well over half affected Japan in some way.⁶⁰ The actions of the

Congress have bordered on xenophobia, as in the case in December, 1987, when members smashed a Toshiba product, and voted to ban Japanese construction companies from some public works contracts, and to forbid the Pentagon to buy goods made by Toshiba. This reaction came in response to Toshiba's selling milling machines to Russia which were used to make submarine propellers quieter, and despite Toshiba's quick acknowledgement of the issue and moves to prevent it occurring again.⁶¹

A new tone, viewed as revisionist by some, has entered the U.S.'s orientation towards Japan.⁶² It is being driven by the observation that Japan's political economy is not a capitalist free market economy and consequently will not respond to the types of pressures that work within this type of a system.⁶³

Chalmers Johnson has labelled Japan as a "Capitalist Developmental State", with its key characteristics being the strong partnership between central bureaucrats and entrepreneurs, and the existence of an industrial policy and trade strategy.⁶⁴ In this type of political economy, freedom of the market is not a desirable goal in itself, but just one means to achieve industrial expansion. Protectionism is part of the overall structure to ensure that foreign competition does not defeat the ultimate objective.⁶⁵

This perspective on Japan and its functioning in the international trading system has led key advisors in the current Bush administration to conclude that the conflict can only intensify if the current course is followed. A strategy based on managed trade is being advocated: seek

guaranteed market access for products in which the U.S. is globally competitive, and reciprocity for products in the highly protected sectors such as banking, construction and insurance.⁶⁶

2. Japan's Response

The Japanese resent and protest being the target of what they perceive to be "politics of blame".⁶⁷ They argue that the overall trade balance is a multilateral affair where the deficits with one party are offset by surpluses with another. They point to the weaknesses in the U.S. industrial system and suggest that the U.S. should rather turn its attentions to its problems at home. They also claim that U.S. companies are not making a sufficient effort to penetrate the Japanese market: their market analysis is poor, their products are not always appropriate to Japanese tastes and way of life; they do not bother to learn the language and are insensitive to cultural aspects of doing business.

Nonetheless, Japan has made some apparent efforts to address the problem. In 1985, Japan launched a broad based market opening initiative called "Free Trade for Global Prosperity: Japan's 'Action Program' for Easy Access to its Markets".⁶⁸ The Program identified 1800 items for tariff reductions of 20% of existing rates. It also went beyond tariffs to deal with changes in import quotas, standards and certification, import procedures, government procurement, financial and capital markets, legal, health and distribution services and import promotion.

The effectiveness of the Action Program has been widely criticized to the extent that it has been dismissed as

"propaganda".⁶⁹ Not all the criticism was external; former Japanese foreign affairs minister Shintaro Abe characterized the program as a "table of contents without contents".⁷⁰

An "Advisory Group on Economic Structural Adjustment for International Harmony" comprised of distinguished former politicians and public servants led by former Bank of Japan governor Haruo Mayekawa was established in October, 1985. The group, which reported in 1986, recommended transformations in Japanese social and economic structures that would lead the country to play a more effective role in the global economy. A shift to domestic demand driven growth rather than export driven growth was a key element in the recommendations.

Again, the effectiveness of this effort was undermined within Japan. The Japanese Ministry of Foreign Affairs went as far as to state that the report did not represent Japanese policy.⁷¹

In parallel with the tougher line to be found in Washington, the Japanese are adopting a less accomodating stance vis-a-vis the U.S. Japanese have become bold with their criticisms: a book published in 1989 co-authored by Shintaro Ishibara, a member of the Liberal Democratic Party and Akio Morita, Chairman of Sony Corporation, takes an extremely nationalist stance, claiming that the U.S. is in decline in the face of Japan's ascendancy, and that Japan should say "no" to U.S. demands.⁷² This tone is reflected in the general perception of the Japanese people. In a poll conducted in Japan in 1989, 55% of the respondents indicated that they thought Japan's relationship with the U.S. was bad.⁷³

3. Summary

U.S. trade policy towards Japan has had two main thrusts to-date: revaluation of the yen against the U.S. dollar, and the reduction of protection in Japanese markets. The tone of U.S. policy has changed under the current Bush administration and the U.S. appears to be moving toward reciprocity and guaranteed access in its bilateral trade with Japan.

Japan has generally considered the U.S. as the main author of its trade misfortunes. It did launch high level initiatives to stimulate demand for imports; however, these enjoyed limited success. The Japanese mood toward the U.S. appears to be getting less tolerant and tougher.

It has been noted that U.S./Japan trade policy has not been well thought out. The clearest articulation of this policy has been the various trade actions that the U.S. has taken against Japan. These are summarized in the next section.

D. U.S. TRADE ACTIONS AGAINST JAPAN

As previously indicated, there were two main themes in U.S. trade issues and actions against Japan: protection of U.S. industries threatened by imports, usually through recourse to U.S. trade law; and increasing market access.

This section summarizes the main issues and actions to provide reference points for the analysis of triangular impacts on Canada as a result of these developments in the relationship between the U.S. and Japan.

1. Protection of U.S. industries

The U.S. government's interventions to protect its industries threatened by Japanese imports have followed a repeating pattern. The Japanese have found this approach frustrating, particularly since it inevitably results in their capitulation to U.S. demands.⁷⁴

This pattern has been described as the "sigh and cry" phenomenon: as Japanese imports in a sector dramatically increase in the U.S., the U.S. domestic industry and supporters in Congress "cry" out for protection. The U.S. government approaches the Japanese government requesting voluntary export restrictions (VER's) or orderly marketing arrangements (OMA's) to head off protectionist pressures.

In face of strong objections in Japan, the initial response is usually a refusal to comply. Frustrations build in the U.S. with the threat of protectionist legislation against Japan. The Japanese make last minute concessions sufficient to defuse protectionist pressures. Both governments heave a "sigh" of relief.⁷⁵

The pattern has begun to repeat at shorter and shorter intervals and is increasingly politicized, i.e. going beyond the administration to be resolved at the ministerial or presidential level.

U.S. government interventions related to protection of U.S. industry against Japanese imports of automobiles, steel and consumer electronics are reviewed below.

a) Automobiles:

In 1965, imported cars made up only 6.1% of the U.S. market. By 1975 this had risen to 18%, with Japan accounting for half, or 9% of the total market. In 1980 imports had increased to 26.7% of the U.S. market. Japanese automobiles made up 80% of the import market and over 21% of the total market. This was the year that Japan overtook the U.S. as the leading automobile manufacturer in the world, producing 11 million units to the U.S.'s 8 million units.⁷⁶

The United Auto Workers (UAW) and Ford petitioned the U.S. International Trade Commission (ITC) for relief, but changing tastes and the economic downturn rather than the Japanese were found to be the problem. Despite this ruling, there were strong feelings against Japan in the various sectors associated with the auto industry.

In 1981, the ITC responded by negotiating a three year agreement with the Ministry of International Trade and Industry (MITI) in Japan that provided for the voluntary restriction by Japan of automobile exports to U.S. to a specified limit. In 1982, the U.S. House passed local content for automobiles legislation. This legislation was renewed in 1983, and the Japanese automobile export restraint agreement extended.⁷⁷

In March, 1985 President Reagan decided not to seek another extension of Japanese auto export restraint. The Japanese government responded by continuing the restraint at about 25% above the previous level.⁷⁸

b) Steel:

Imported steel made up only 5% of the U.S. market in the early 1960's. By the late 1960's, this had increased to about one-fifth of the market leading the U.S. to negotiate voluntary export restraints over 3 years with Japan and Western Europe. In 1972, this was extended for another 3 years.

On the expiry of this agreement in 1975, the United Steel Workers (USW) petitioned the ITC under section 201 of the 1984 Trade Act. This was upheld with the recommendation that import quotas on specialty steel be applied for 5 years. Japan signed an export restraint agreement with the U.S. in 1976. Europe did not agree, and was given a three year quota.

At the same time, Japan agreed to slow its shipment to the European Economic Community. This created fears among the USW that steel would be diverted and led them to file a suit with the ITC under section 301 of the 1974 Trade Act. This suit was unsuccessful and was followed by an antidumping suit. The result was the introduction of a Trigger Price Mechanism in 1978 which established the price below which antidumping investigations would be automatically launched. This price mechanism was in effect until 1982.⁷⁹

c) Consumer electronics:

Japan successfully adopted and adapted electronics technology developed in the U.S. to build a consumer electronics industry. It progressed from transistor

radios, to black and white televisions which it began to export to the U.S. in the late 1960's and early 1970's.

The U.S. initially ignored the influx of smaller, cheap televisions as their own manufacturers concentrated on larger, costlier products. This entry, however, enabled the Japanese to establish themselves firmly in the market from which base they successfully challenged U.S. producers at the upper end of the market.⁸⁰ The damage to the U.S. industry led the U.S. to seek an orderly marketing agreement for colour televisions with Japan in May 1977.⁸¹ This was later dissolved in exchange for agreement by Japanese firms to invest directly and produce television sets in the U.S..⁸²

2. Market access

In the same way that the Japanese are frustrated by the pattern of U.S. interventions against Japanese imports, the U.S. is frustrated by what it perceives to be Japan's passive and reactive style of dealing with trade issues. Whenever a problem arises, the U.S. is obliged to pressure the Japanese to take appropriate action. The U.S. has used this approach in its efforts to open the Japanese market to imports. Market access initiatives directed at Japan are outlined below.

a) Agricultural products:

Japan imports over one-third of its total food imports from the U.S. and is the U.S.'s single largest customer for agricultural products, taking 15% of total agricultural exports. Japan continues to protect its largely

uncompetitive agricultural sector with tariffs and other mechanisms. This is to ensure some domestic food production capacity against the eventuality of interruptions of supply of imported food products, as had occurred in 1975 when the U.S. cut off exports of soybeans without prior consultation with Japan.

The U.S. has taken the view, however, that Japan should open its markets for agricultural products to further increase imports from the U.S.. In 1981, the U.S. called for total liberalization of the Japanese beef and citrus markets and launched bilateral agricultural talks. These talks were suspended in 1982, but reestablished to lead to the Brock-Yamamura agreement in 1984 which provided for a substantial increase in both beef and citrus quotas.⁸³

Tobacco products have also been the subject of U.S. trade actions. Two suits were filed under Section 301 of the U.S. 1974 Trade Act in 1979. One was filed by the Cigar Association of America, Inc. concerning cigar exports to Japan, and the second by the Associated Tobacco Manufacturers concerning pipe tobacco exports to Japan. Both claimed that Japan set unreasonable tariff and other barriers and restricted distribution and advertising. Both suits were dealt with through an agreement between the U.S. and Japan to liberalize market restrictions and reduce import duties.⁸⁴

Little progress apparently resulted. In 1985, at the U.S. President's instigation, the U.S. Trade Representatives office launched an investigation of Japanese tariff, monopoly and distribution practices related to tobacco products. The outcome of this action was an agreement in

1986 providing for permanent suspension by Japan of high tariffs and other practices that discriminated against foreign products.⁸⁵

b) Telecommunications:

In 1977, the U.S. established a Trade Facilitation Committee to look into complaints by U.S. companies concerning their difficulties in selling to the Nippon Telephone and Telegraph (NTT). NTT is the public monopoly which at that time controlled the Japanese telephone industry. In 1978, the U.S. Electronics Industry Association sent representatives to Japan to look into industry complaints. NTT argued at that time that imported equipment was not used because of incompatibility and quality.

The U.S. continued to pressure for revisions to NTT procurement policies. Some progress was made through revisions to the government procurement code of the GATT negotiated through the Tokyo Round of the MIN. The U.S. and Japan entered into an agreement in 1980 which provided a 3-track approach to liberalizing NTT's procurement practices.

The first track applied to all NTT purchases of off-line telecommunications equipment and was applicable to all signatories of the Tokyo Round GATT code. The other two tracks applied to the U.S. alone and dealt with mainline equipment available in the market and applicable to NTT needs, as well as mainline equipment not found in the marketplace and requiring special development for NTT.⁸⁶ At the same time, the U.S. passed a telecommunications bill which included strict reciprocity language.⁸⁷

Responding largely to continuing U.S. pressure, the Japanese deregulated NTT on April 1, 1985. This opened Japan's newly privatized telecommunications market to competition.⁸⁸ This was considered "the most politically important test of the U.S.-Japan relationship in decades and the watershed issue".⁸⁹ The deregulation was concurrent with the market-oriented sector specific (M.O.S.S.) talks between the U.S. and Japan. Telecommunications was a key sector in these talks.

c) The M.O.S.S. talks:

The U.S. launched the M.O.S.S. talks in 1985 to gain better opportunities for U.S. business in Japan. Four sectors were covered: telecommunications, medical equipment, electronics and forest products.

Discussions in the first three sectors sought to deal with various non-tariff barriers impeding imports such as standards and certification rules. The results included agreement by Japan to institute important measures such as acceptance of foreign test data for certification, reduction in technical standards, foreign participation in independent standard setting bodies, elimination of tariffs on computers, computer parts and peripherals, and some provisions for access to and protection of intellectual property.

The results of the talks on forest products were proposals by the Japanese to make cross-the-board reductions in tariffs on a range of wood products to come into effect in 1987 and 1988. There also was some progress on technical standards and building codes.⁹⁰

The least successful talks were those concerned with semiconductors. This was an area of growing contention between the U.S. and Japan and trade actions were launched parallel to the M.O.S.S. talks.⁹¹

d) Semiconductors:

In June, 1985, while the M.O.S.S. talks were in progress, the Semiconductor Industry Association (SIA) filed a Section 301 petition with the United States Trade Representative which claimed that the Japanese government had created a protective structure that acted as a major barrier to imports of semiconductors. At the same time, a number of antidumping cases were brought against a variety of Japanese semiconductors. The U.S. Department of Commerce, in an unprecedented move, used its powers to initiate one of the antidumping suits.

An investigation and intensive negotiations with the Japanese followed over the next year. These led to an agreement signed in July, 1986, which caused both the Section 301 and antidumping cases to be dropped.⁹² This agreement was intended to increase market access in Japan and prevent Japanese companies from dumping anywhere in the world. It has been described as a "global price and product cost monitoring system for semiconductor chips".⁹³

The agreement has been strongly criticized by industries in the U.S. that use semiconductors because it increases their costs, and by other countries because of the power that it gives the U.S. to control prices in third country markets.

The European Economic Community, backed by several other countries including Canada, have challenged the agreement in the GATT on the grounds that it violates the principles of nondiscrimination and constitutes a worldwide market sharing arrangement.

At the same time, the U.S. semiconductor industry and the government are not satisfied that Japan is living up to the agreement and are threatening to impose sanctions against Japanese imports in retaliation. The Japanese have responded by attempting to regulate the prices of their products to third countries. At this point the outcome is not known.

e) Other areas:

U.S. pressure was largely responsible for actions to open Japanese markets in a number of other areas. The U.S.-Japanese 1984 Rome Accord began the deregulation of the Japanese financial system through a variety of measures.⁹⁴

At the Economic Summit in Paris, on July 14, 1989, U.S. President Bush and former Japanese Prime Minister Uno agreed to a year long series of bimonthly talks called the Structural Impediments Initiative (SII). Main issue areas for Japan were U.S. budget deficits, the low U.S. saving rate, and the underinvestment in plant and equipment in the U.S., which were seen as key factors affecting the U.S.'s competitiveness. Items on the U.S.'s agenda included structural barriers in Japan, such as the distribution system, rigged pricing and buy-from-within policies, that were affecting U.S. imports. Product areas in which the

U.S. hoped to make some ground included satellites, supercomputers and forest products.⁹⁵

3. Summary

In the period of time dealt with in this study, the U.S. tried in many ways to reduce its trade deficit with Japan. This included working through the international financial system to increase the value of the yen to the dollar, thereby making U.S. goods cheaper in Japan. It also included legislation and trade actions against a number of Japanese imports, and talks to increase access for its own products to Japanese markets. Automobiles, steel and consumer electronics were the subject of high profile trade actions. Targets for market opening initiatives included agricultural products, tobacco, telecommunications equipment, semiconductors, forest products and medical equipment.

Japan attempted to respond by launching its own wide-reaching initiatives to address structural issues and its changing role in the global economy. Neither the Action Plan, nor the Mayekawa task force appear to have led to any substantive changes, however.

At the time of writing, the significant trade imbalance remains, and the harsher tone on both U.S. and Japan's sides suggests that the conflict may be intensifying. A new set of bilateral talks, the Structural Impediments Initiative, have been initiated to deal with aspects of each economy which are preventing the U.S. exports from performing well in Japan. There is some indication that the U.S. - Japan trade relationship will evolve to one

characterized by "managed trade", i.e. guaranteed access and reciprocity.

How has Canada been affected by the complex, stormy dealings between the U.S. and Japan? The best known instance of a direct policy response by Canada to an issue that arose between the U.S. and Japan was the VER for automobile exports that Canada negotiated with Japan in 1983. This was prompted by two concerns: that the U.S.-Japan VER for automobiles would cause Japanese exports to be diverted to Canada, and that only the U.S. would benefit from increased Japanese investment in automobile manufacturing. Canada's VER with Japan was effective in bringing in some Japanese investment, e.g. Honda plant in Alliston, Ontario in 1985.

Apart from this, Canada has maintained a low profile in the face of U.S.-Japan conflicts, preferring to pursue its objectives with these countries on a bilateral basis. In the case of Japan, this has included agreements for Japanese investment to develop coal fields, changes to Japanese building codes and tastes to stimulate demand for forest products, and promoting Canada as a tourist destination. In the case of the U.S. this has been primarily focussed on negotiation of the Free Trade Agreement, and resolution of major trade disputes, e.g. shakes and shingles, and lumber.

This study attempts to determine whether there are any areas where Canada may be directly affected by the U.S.-Japan trade dealings, and to assess the case for a policy that goes beyond its bilateral interests with these countries, to deal with issues that arise from their interaction.

FOOTNOTES

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CHAPTER 3

THE STUDY OF ECONOMIC INTERDEPENDENCE

The theoretical basis for the analysis of the triangular trade relationships between Canada, the U.S. and Japan is the study of economic interdependence of countries. The interest in analysing economic interdependence has grown out of the move towards integration of regional economies and the formation of trading blocs.

A review of the literature on economic interdependence reveals two main areas of enquiry. One followed the formation of the European Economic Community as a customs union in 1957, and the other followed the apparent movement towards integration of national economies in the Pacific region. There is a strong empirical core to these studies of interdependence, facilitated by the increased availability of economic data and computerized analytical techniques in the time period during which they have evolved.

The literature on interdependence in the EEC and Pacific region is extensive. As the main focus of the current study is an empirical analysis of the triangular trade relationships among Canada, the U.S. and Japan, the review of the literature undertaken is selective, focusing on research which dealt with empirical methods for the analysis of interdependence.

A. Interdependence in the EEC - Transaction analysis

An analytical approach known as "transaction analysis" emerged in the 1960's to measure interdependence and

integration among the countries of the EEC. Transaction analysis was based on integration theory, an extensive body of theory which proposed that regional integration was the process of "multidimensional merger". This was considered to encompass:

...the merger of territories, governments, polities, economies, societies and cultures. Empirically, merger in each of these dimensions, and subdimensions within each, can be indexed and charted, so that at the descriptive level we actually "watch" regional integration as it happens.¹

Thus, transaction analysis proceeded on the premise that the extent to which two countries were integrated could be gauged by the nature and extent of "transactions" between them.² Transactions were considered to be any economic, political, cultural, or technical contacts, dealings or exchanges between the two countries. Flows in these areas were measured in terms of intensity, content, direction, valence and timing. Essentially, the analysis of transactions enabled the observation and recording of "who is (was) dealing with whom, how or how much, about what, when".³

Three main models were formulated to operationalize transaction measures.⁴ These were the following:

- . The Savage and Deutsch null model. This was introduced in 1960 and provided the basis for considerable transaction research that followed. It compared a

matrix of expected transactions (calculated on an assumption of complete randomness of transaction flows) against data on actual transactions to produce a relative acceptance coefficient. This coefficient reflected deviance of transactions between countries from a random pattern, and was intended to indicate preferences of one country to deal with another.

- . The export percentage model. This computed a ratio of transactions between one country and a second over total transactions of the first country at a point in time. It was intended to measure the extent to which transactions between two countries increased relative to the total trade of each country concerned.
- . The GDP model. This compared the ratio of transactions between one country and a second over gross national product of the first country. It was intended to test the possibility that a country's internal economic growth had been great enough to offset the increases in relative trade making the country less dependent on external suppliers and markets.

Transaction analysis gave rise to a large body of works related to European integration. Key works included studies of the political and security dimensions of integration by Karl W. Deutsch,⁵ Leon N. Lindberg,⁶ Ronald Inglehart,⁷ Robert Weissberg;⁸ and studies of economic and trade integration by Ingo Walter,⁹ Hayward Alker Jr. and Donald Puchala,¹⁰ Michael Michaely,¹¹ and Bruce Russett.¹²

The use of transaction analysis in the study of regional

integration was controversial. Its relevancy was challenged on theoretical, conceptual and methodological grounds. Some of the criticisms directed at transaction analysis are cited below.

Puchala pointed out the limitations of this approach for investigating a phenomenon as multidimensional and complex as regional integration.¹³ One major limitation was that the full range of transactions between states could never be captured in their entirety; some were never recorded and those which were could lose meaning when reduced to statistics.

What was required was to sample and create indices that served as proxies for transactions. Then several indices would be examined together over time, to provide the basis for any meaningful conclusions. Puchala concluded that these indices had limited power to demonstrate causality; however, he supported the use of certain transaction flow measures as "descriptive barometers" of various social, economic and political process occurring during regional integration.

Hughes claimed that, rather than being a unified research approach to the study of integration, transaction analysis was in fact a combination of approaches each with its own conceptual basis. He viewed integration as an amorphous concept giving rise to different measurement procedures and data types which could lead to contradictory conclusions. Hughes questioned the ultimate appropriateness and validity of transaction measures as operationalizations of integration relative to other types of measures.¹⁴

Nelson raised serious questions about the validity of the Savage and Deutsch model, pointing out that its application yielded results indicating that the countries in the EEC did not apparently become more integrated with the creation of the Community. These results were in conflict with findings of other studies on integration which employed other measures.¹⁵

The limitations of transaction analysis and its apparent decline in use led to its rejection as a conceptual framework for the current study, although one study which used transaction analysis measures contributed other elements to the triangular trade model which was developed. This study, undertaken by Johansson and Spich, involved a comparative analysis of interdependence within and between the EEC and Pacific Region.¹⁶ It will be discussed in more detail in subsequent sections.

B. Pacific Region Interdependence

The research on interdependence within the EEC followed the formal integration of the member countries as a customs union in 1957. The intent was to seek evidence of the greater economic, political and cultural ties among these countries that were expected to follow the formation of the Community.

The research originating in the Pacific Region, by contrast, has focused on demonstrating and understanding the growing ties among the constituent nations which have accompanied the rapid economic growth in the area in the last two decades. A common objective of this research was to contribute to optimization of the division of labour

and harmonization of trade among Asia-Pacific countries. An underlying theme was the formalization of economic co-operation in the region.

The concept of a "Pacific Community" to formalize economic ties among the region's countries was introduced at a conference sponsored by the East-West Centre in Hawaii in February, 1964, entitled "Economic Cooperation for Development and Trade in the Pacific". The concept was further developed and promoted by Kiyoshi Kojima and Japanese Foreign Minister Miki, who initiated the "Pacific Trade and Development Conference" (PAFTAD) in 1968. This conference has since become an institution in its own right.¹⁷

No clear consensus exists at the political level on the need for a formal institutional framework for Pacific trade.¹⁸ However, considerable research has been undertaken related to the Pacific region integration, particularly by Japanese and Australian researchers.

Kiyoshi Kojima engaged in a line of what proved to be seminal research on trade interdependence among countries in the Pacific Region. One of his studies investigating the pattern of triangular trade among the U.S., Japan and Southeast Asia was the inspiration for the current study.¹⁹

The purpose of Kojima's triangular trade study was to contribute to "...a concrete proposal for building harmonious and expanding triangular trade among the U.S., Japan and Southeast Asia and for creating ways and means of an orderly adjustment of their trade and industrial

structure".²⁰ The study reflects a rather extraordinary vision of a rational and obliging economic order.

Kojima's methodology involved the classification of all traded products into eight groups according to their factor content (e.g. natural resources, labour, capital), and the determination of the patterns of bilateral trade among the three areas ("bilateral comparative advantage"). The pattern of exports for each country/area was then compared to that country/area's global comparative advantage. Digression from the global comparative advantage was identified as a problem, and policy prescriptions toward a more rational and efficient division of production and trade were made.

Central to Kojima's analysis was the concept of intensity of trade. This concept was first introduced by A.J. Brown in his book "Applied Economics: Aspects of the World Economy in War and Peace".²¹ Kojima further developed and refined the index representing trade intensity.

Intensity of trade was an indication of the complementarity or competitiveness of the pattern of bilateral comparative advantage between countries. The trade intensity index was intended to reveal whether trade between two partners was greater or less than would be expected given the exports of one, and the demand of the second. The formula for the intensity index is as follows:²²

$$I_{ij}^h = \frac{X_{ij}^h / X_{ij}}{M_j^h / M_j} \times 100$$

where I = trade intensity
 i = exporting country
 j = importing country
 h = product
 X = exports
 M = imports

The numerator, X_{ij}^h / X_{ij} , represents the composition of country i 's exports to country j . The denominator, M_j^h / M_j , represents the structure of j 's total import demand from the world.

The output of the equation is an intensity index. An index of 100 is the level of intensity that would be expected if country i was equally competitive with other trading partners.²³ An index greater (less) than 100 shows that country i is more (less) competitive, and thus its trade with country j in the product is more (less) intense than that of other competitors.

Kojima's findings were that the intensity of bilateral trade in the groups of products among the three areas often conflicted with each country's global comparative advantage. For example, the U.S., which had a comparative advantage in capital-intensive goods, was exporting natural resource-intensive products to both Japan and Southeast Asia. This is the only area of comparative advantage for Southeast Asia, indicating that the countries in this region did not have the opportunity to maximize their benefits from international trade through exports based on their areas of strength.

Also, the highest intensity of trade between Japan and Southeast Asia was in labour-intensive manufactured

products. Japan had a global comparative advantage in both labour-intensive and certain capital-intensive manufacturing. By exporting labour-intensive manufactures to Southeast Asia, Japan may have been limiting the opportunities of the countries in this region to build up their labour-intensive manufacturing capabilities.

Kojima's policy prescriptions were that the U.S. and Japan should adjust their industrial structure and exports to ones which matched their global comparative advantage more closely, thereby contributing to a more efficient triangular organization of production and division of labour among themselves and Southeast Asia. Specifically, the U.S. was advised to eliminate its protection in agriculture and textiles, and shift into heavy manufacturing and services industries. This would allow Japan to move upscale in its textile production, and Southeast Asia to improve its agricultural production.

Kojima used the same analytical framework to investigate the patterns of bilateral trade among advanced industrial countries.²⁴ The problem that he addressed was the apparent increase in trade among advanced industrial countries in the late 1950's, at the same time that there was a stagnation in trade between advanced industrial countries and lesser developed countries. This pattern appeared to depart from the predictions of trade patterns based on global comparative advantage.

Kojima developed a variant of the trade intensity index used in the triangular trade study cited previously for the advanced industrial country trade study. The revised trade index applied to total trade, rather than trade in a

particular product group, between two countries. It also set the bilateral trade in the context of total world trade. The formula for this intensity index was the following:²⁵

$$I_{ij} = \frac{X_{ij} / X_i}{M_j / (M_w - M_i)} \times 100$$

where I = trade intensity
 i = exporting country
 j = importing country
 w = world
 X = exports
 M = imports

In this formula, X_{ij}/X_i represents country i's concentration of exports to j, and $M_j/(M_w - M_i)$ represents country j's relative demand of world imports.

Again, the output of the equation is an intensity index. An index of 100 is intended to indicate that country i's exports to country j are in accordance with country j's demand. An intensity more (less) than 100 indicates that the trade between country i and country j is more (less) intensive than the trade between country j and other countries.

Kojima found that the nature of trade among the advanced industrial countries tended to be "horizontal", i.e. in manufactured products. Where the countries' natural endowments and industrial structure varied to a greater degree, the nature of trade was more "vertical", i.e. among different product groupings. These findings supported the Heckscher-Ohlin theorem that the more similar the factor

endowments of two countries are to each other, the further developed is their horizontal trade.

Later works by Japanese researchers pursued a similar line, examining changing economic relations in the Pacific Region, as a result of Japan's economic ascendancy, with a view to identifying appropriate policies for dealing with the new economic order.

Representative of these studies was one by Yamazawa, Taniguchi, and Hirata undertaken to "...consider the pattern of trade and division of labor among [Japan, the NIC's and ASEAN countries], prospects for future development, and adjustments in their industrial and trade policies necessary for future development".²⁶ The researchers were particularly concerned with the economic similarities in these countries, i.e. their market economy systems, their export orientation and their rapid growth and industrialization in the last two decades. They proceeded from the concept of "positive adjustment", i.e. "medium- and long-term industrial transformation in the direction of promoting international economic welfare".²⁷

The study by Yamazawa et al focused on the nature of export expansion and the changing patterns of production among these countries from 1969 to 1979. The main research tools were trade matrices showing values and percentiles for total trade, industrial goods and textiles, and international input-output tables for 1969 and 1979. The findings of the study demonstrated the growing competition/complementarity relationships that had emerged among the countries studied.²⁸

Another study with a similar focus was undertaken by Watanabe. It demonstrated the changing horizontal division of labour and intermediate goods trade between Japan and the Asian NIC's and ASEAN to underline the "conspicuous development of economic integration in Asia".²⁹ Japan's horizontal trade relations with these countries was profiled by means of coefficients of specialization in trade. The formula for the coefficient of specialization was:

$$\text{Coef. of Specialization} = \frac{X_{ij} - M_{ij}}{X_{ij} + M_{ij}}$$

where X = exports
 M = imports
 i = exporting country
 j = importing country

Specialization was determined by dividing the difference between country i's exports and imports of a particular product to country j, by the sum of these exports and imports.

Watanabe used the findings of the study to argue for greater integration in the region through an "enhanced" division of labour between Japan and the subject countries, that is, a division of labour that took full advantage of factor endowments and comparative advantages. This would move Japan away from a self-sufficient manufacturing system toward a more sophisticated and specialized industrial structure, and increase the export capabilities of the developing countries in the area.

A body of research originating in the Australian National University, led by Professor Peter Drysdale, has pursued

the same types of questions regarding changing economic structure and relations in the Pacific region following the rapid growth of Japan, the NIC's and the ASEAN countries. Of particular interest in this work was the impact of the growth in resource-poor developing countries on resource-rich developed countries, e.g. Australia, Canada.

A primary focus of the work has been the development of a theoretical framework for this analysis which has better explanatory power than conventional trade theory for the pattern of bilateral trade that exists among countries. A key component of the framework developed is the theory of trade resistances.

The theory of trade resistances attempts to explain factors other than traditional determinants of comparative advantage (e.g. factor endowments) that influence economic relations among countries. It also attempts to go beyond mainstream trade theory (e.g. theory of protection and theory of customs unions) that deals with the effects of official barriers to trade such as tariffs and quotas, to consider the effects of factors such as political barriers, and geographic and information cost barriers which affect the size, commodity composition and gains of foreign trade.

One corollary of resistances theory is that the costs of overcoming resistances, and hence the costs at which products are available for sale, varies among a country's bilateral trading relationships. A second corollary is that the factor endowments of nearby countries will be more important in determining a country's comparative advantage than those of more distant countries.

The intensity of trade index developed by Kojima was widely used in the trade resistances research to reveal bilateral comparative advantages that obtain as a result of differential resistances to trade faced by different countries. Trade intensity and the analysis of bilateral trade flows in the context of trade resistances research were explored in depth in a review article by Drysdale and Garnaut.³⁰

The index most commonly used was the one discussed previously which represents total trade among countries, i.e.

$$I_{ij} = \frac{X_{ij} / X_i}{M_j / (M_w - M_i)}$$

This index is defined as "the share of one country's or group of countries' trade with another country or group, divided by the latter's share of world trade".³¹

The use of the intensity index as a measure of bilateral trade flows was considered superior to values of imports and exports because it abstracted from the size of the trading partners, from the effects of excluded variables and from random fluctuations in trade levels.

Drysdale and Garnaut identified the application of trade intensities to a variety of purposes: the association of intensities to major changes in external political relationships of one or the other trading partner; the association of intensities to complementarity between economies (e.g. differing comparative advantages) and

biases (e.g. distance, ownership ties, membership in trading blocs, etc.); the exploration of changes in the geographic structure of trade over time; the effects of free trade areas and customs unions on the trade relations among countries; and the projection of future bilateral trade flows.³²

Anderson³³ applied the trade intensity index for total trade to calculate intensities at the broad product level (agriculture, fuel, manufactures). He used this to demonstrate that despite the high intensity of trade between countries in the Pacific region, the composition of the trade does not reflect the extent of complementarity that exists, i.e. the differing comparative advantages among partners. For example, exports of commodities from primary resource rich countries to those with lesser resource endowments did not occur to the extent that they should have given the complementarities between the economies of these countries. Anderson postulated that the trade barriers employed by countries to protect their areas of weakness were the reason for this occurrence, leading him to conclude that there is potential for even greater increases in trade among these countries through trade liberalization.

The main limitation of the trade intensity index noted by some researchers was that it did not reflect the composition of trade. Drysdale described the index as a "crude" measure in that it did not take into account the differing composition of trade among pairs of partners and the effect that this had on actual opportunities for trade. He refined the index by introducing supplementary complementarity and country bias indexes which separated

the composition of trade between partners from other factors contributing to the intensity of their trade.³⁴

Bowen also criticized the trade intensity index for not reflecting the composition of trade, claiming that this severely limited its value in measuring comparative advantage. He proposed that the proper way to measure this was by calculating the ratio of net trade to expected production. Bowen, however, acknowledged the utility of trade intensity indices as "summary measures of trade flows which eliminate certain scale effects".³⁵

This limitation appears to apply to Kojima's second trade intensity index, i.e. the one dealing with total trade between countries. It is not clear whether it was also intended to apply to the index Kojima used in his triangular trade study which dealt with trade in different product groups. This latter index appears not to be affected by this limitation as it operates at the level of product groups which make up the composition of trade between countries.

C. Inter-regional Dependence

The growing integration within the EEC and Pacific region, respectively, has not occurred without effect on the other. For example, the accession of Britain to the EEC seriously disrupted established trade links with Commonwealth countries in the region such as Australia and New Zealand causing them to seek new markets elsewhere.³⁶ The economic dynamism of the Pacific area as well as its growing strategic significance in the global power balance has caused a "westward" shift in focus in

North America.³⁷

The changing interdependence amongst countries within the two regions, and the changes in interdependence between the two regions were explored in a study by Johansson and Spich in 1981. Specifically, this research sought to establish "(1) the extent to which the trade increases between the Pacific Basin countries can be interpreted as increases in interdependence, (2) the extent to which countries in E.C. show stronger or weaker interdependence patterns, and, (3) the extent to which developments in interdependence in one region seem to be related to contrary developments in the other region".³⁸

Johansson and Spich used transaction analysis measures in this research. While acknowledging that a single index cannot provide a complete description of transactions between countries, they based their research on trade flow data arguing that trade accounts for the majority of economic transactions, and is the "primary determinant of mutual relevance of parties".³⁹ More practically, trade data were viewed as more standardized and readily available than measures of other forms of transactions.

The magnitude of trade transactions was represented by a Directed Trade Measure which is the sum of exports going both ways between a pair of countries, i.e.

$$\text{Directed trade} = X_{ij} + X_{ji}.$$

where X = exports
 i = exporting country
 j = importing country.

This measure, however, did not discriminate between situations where the total trade was dominated by a large

surplus for one of the partners, and situations of more balanced bilateral trade.⁴⁰ As a result, the measure did not allow the changes in the value of one country's exports to the other to be gauged.

In their study, Johansson and Spich attempted to go beyond previous comparative works that were based on data from selected points in time, to a dynamic analysis using time series data. The intent was to determine how the Directed Trade Measure had developed over time and where it would likely go in the future. International Monetary Fund data on imports and exports for the period 1957 - 1976 were used. Regression coefficients were calculated for the trade between individual countries and whole regions.

The findings from this analysis were that the annual increases in directed trade were higher within the regions than between them except for Japan, where trade with the EEC had increased more quickly than trade within the Pacific region. Increases in interregional trade were lower than in intraregional trade, although still positive, indicating that at a time of an overall expansion in the level of trade, countries within a region were the primary targets of new trade activity.

Johansson and Spich also applied the "Export" and "GDP" models from transactions analysis to generally confirm the previous finding of an increasing interdependence among the Pacific Rim countries and away from the EEC. Again, Japan was an exception in that its ties with the EEC increased over the time studied.

Johansson and Spich went further to explore how trade within a region changed over time relative to trade between regions, i.e. whether trade creation or trade diversion was occurring. A negative (positive) correlation between trade among countries within a region, and these countries' trade with others outside of the region was considered evidence of trade diversion (creation) occurring (all else being equal).

Johansson and Spich determined that such an analysis would require calculation of the correlation coefficients between the measures of bilateral trade of one country with each of its partners, e.g. a correlation coefficient for the U.S.-Japan trade and U.S.-Germany trade, U.S.-Japan trade and U.S.-Australia trade, U.S.-Germany trade and U.S.-Australia trade, etc. These coefficients would show how trade between a country and one partner co-varied with the trade between the same country and a second partner.

All else being equal, a significant positive value would show that an increase in trade between one country and a partner was accompanied by an increase in trade between the same country and a second partner. A significant negative value would indicate that the trade increase between the first country and one partner was at the expense of the first country's trade with a second partner.

The analysis described above involved a very large number of variables and was quite difficult to perform. To reduce it to manageable proportions, Johansson and Spich performed a "principal components" analysis to summarize the data.⁴¹ This technique combined highly correlated variables into a single component reducing the overall

number of units to be analysed. The derived components were used to develop the correlation matrix for all the countries.⁴²

The findings of this analysis were that trade diversion appears to have occurred in the case of the EEC. That is, trade among the EEC countries increased at the same time that their trade with the countries of the Pacific region decreased (except for Japan). Trade diversion did not appear to have occurred in the Pacific region, however. When trade increased among countries in this region, it did not decrease with their partners outside the region.

On the basis of these findings, Johansson and Spich concluded that 1) the Pacific region was moving in the direction of greater interdependence although there was little similarity in the development among different countries (especially Japan); 2) the effect of the more formal union of the EEC was shown through the greater degree of similarity among the member countries in the way that their trade relationships have evolved; and 3) there was a stronger tendency for EEC countries, compared to Pacific region countries, to trade within the region to the exclusion of countries outside.⁴³

D. Summary

This chapter has reviewed empirical approaches to the study of interdependence among countries. Most studies surveyed used trade flows as a proxy for interdependence because trade underlies most economic interaction between countries, and because trade data are standardized and readily available.

While the value of exports and imports were used as measures in some studies, various indices have been developed which set the nominal value of trade in the context of what is happening within the economies of trading partners, and globally. These indices are intended to represent a truer picture of the changes in the significance of the trading relationship between two countries than do basic trade figures. Examples of these indices are the Directed Trade Measure, Export Model and GNP Model from the transaction analysis approach developed initially to study integration in Europe, and the trade intensity index developed by Kiyoshi Kojima for the study of the structure and determinants of foreign trade between countries.

The transaction analysis measures appear to have declined in use largely due to conceptual and methodological problems associated with their application. The trade intensity measure has come to be fairly widely applied in the analysis of bilateral trade relationships. It is generally considered to be useful as a summary measure of trade flows in that it controls for factors such as size of partners, fluctuations in trade and excluded variables.

Kojima introduced two intensity indexes. One was used to reveal bilateral comparative advantage at the product or commodity level. The second was applied at the level of total trade and was used to reveal comparative intensities of total trade among pairs of countries.

In a more recent study, Anderson applied the trade intensity measure for total trade among countries at the aggregate product level, e.g. agriculture, fuels and

manufactures. This was done to assess the intensity of bilateral trade in these product groups between pairs of countries against what was expected to obtain given the complementarity in comparative advantages among these countries.

The focus of most studies was bilateral, e.g. changes in the nature of relations between countries at different points of time, or over time. One exception is the work by Kojima which attempted to explore trilateral trade patterns by mapping out the nature and level of trade among three partners. Another is the work by Johansson and Spich which explored how bilateral trade between two countries and a third covaried over time.

The analytical framework developed by Johansson and Spich for the study of triangular trade relations, and the trade intensity index calculated for individual product groups are central components of the research design for the present study. They are combined into a dynamic, i.e. time series, model and applied to product specific trade data for the full range of commodities and manufactured goods to provide a basis for the analysis of the triangular trade relationship among Canada, the U.S. and Japan.

FOOTNOTES

1. D.J. Puchala, "International Transactions and Regional Integration," International Organization 24 (1970): 740.
2. Ibid, 733.
3. Ibid.
4. B.B. Hughes, "Transaction Data and Analysis: In Search of Concepts," International Organization 26 (1972): 661
5. K.W. Deutsch, "Integration and Arms Control in the European Political Environment: A Summary Report," American Political Science Review 60 (1966): 354-365.
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13. Puchala, 732-734.
14. Hughes, 659-660.

15. C.G. Nelson, "European Integration: Trade Data and Measurement Problems," International Organization 28 (1974): 421, 426-427.
- 16 J.K. Johansson and R.S. Spich, "Trade Interdependence in the Pacific Rim Basin and the E.C.: A Comparative Analysis," Journal of Common Market Studies 20 (1981): 41-59.
17. See W.L. Bochum, "Pacific Basin Interdependencies - A Case for Large-scale Economic Cooperation?" Intereconomics (January/February 1983): 28-33; W.G. Magill et al., "Cyclical Interdependence in the Pacific Basin," Economia Internazionale; Rivista Trimestrale Dell'Istituto di Economia Internazionale 34 (1981): 34-43; H.E. English, "Pacific Economic Community: A Consensual Region," International Journal 2 (1983): 330-353; M. Smith, "A Pacific Community: Prospects for Canadian Participation," Pacific Affairs 55 (1982): 660-670; L.B. Krause, "The Pacific Economy in an Interdependent World," Vital Speeches of the Day, XLV (1979): 170-175; M. Nakajimi, "Pacific Basin Cooperation Concepts and Japan's Options," Asia Pacific Community 9 (1980): 1-9; K. Kojima, "Economic Cooperation in a Pacific Community," in Building A Pacific Community -- The Addresses and papers of the Pacific Community Lecture Series, ed. P. Hooper (Honolulu: University of Hawaii Press, 1982), 22-37; and others.
- 18 English, 330-331.
19. K. Kojima, "The Pattern of Triangular Trade Among the U.S.A., Japan and Southeast Asia," The Developing Economies 1 (1962): 48-74.
20. Ibid, **.
21. A.J. Brown, Applied Economics, Aspects of the World Economy in War and Peace (London: George Allen & Unwin Ltd.), 1947.
22. Kojima, 63.
23. In later uses of the intensity index, the quotient is not multiplied by 100, and the base index value is 1.
24. K. Kojima, "The Pattern of Interantional Trade Among Advanced Countries," Hitotsubashi Journal of Economics 5 (June 1964): 16-36.

25. Ibid, 19.
26. I. Yamazawa, "Trade and Industrial Adjustment in Pacific Asian Countries," The Developing Economies 21 (1983): 281
27. Ibid.
28. Ibid, 302.
29. T. Watanabe, "An Analysis of Economic Interdependence Among the Asian NICs, the Asean Nations and Japan," The Developing Economies 18 (1980): 393.
30. See P. Drysdale and R. Garnaut, "Trade Intensities and the Analysis of Bilateral Trade Flows in a Many-country World: A survey," Hitotsubashi Journal of Economics, 22 (1982): 61-84.
31. K. Anderson, "Prospects for Trade Growth Among Pacific Basin Countries," The Developing Economies 21 (1983): 377.
32. Drysdale and Garnaut, 75.
33. Anderson, 378.
34. Drysdale and Garnaut, 68.
35. H.P. Bowen, "On the Theoretical Interpretation of Indices of Trade Intensity and Revealed Comparative Advantage," Weltwirtschaftliches Archivs 119 (1983): 471.
36. English, 343.
37. Johansson and Spich, 41-42. See also P. Seabury, America's Stake in the Pacific (Washington: Ethics and Public Policy Centre, 1981) and references cited in footnote 17.
38. Johansson and Spich, 42.
39. Ibid, 43-44.
40. Ibid, 45.
41. Ibid, 55.
42. A detailed explanation of the transformation which is performed is provided on page 55 of the article.
43. Ibid, 58-59.

CHAPTER 4

RESEARCH DESIGN

This chapter describes the research design for the study to analyze trade interdependence among Canada, the U.S. and Japan, and to determine whether there are any triangular impacts on Canada's bilateral relationships with the U.S. and Japan, as a result of developments in the relationship between these two countries.

The first section presents the model that was developed to represent trade interdependence among the three countries, and test for triangular factors in their relationship. There are two critical elements: the use of a trade intensity index as a proxy for interdependence, and the use of the correlation coefficient to test for triangular factors.

The second section outlines the study methodology, including the data collection, data base creation, statistical analyses and interpretation of results.

A. The Analytical Model

1. Representing trade interdependence

The measure of trade intensity developed by Kiyoshi Kojima is used in this study as a proxy for bilateral trade interdependence among Canada, the U.S. and Japan.¹ Kojima developed two intensity measures: one to deal with trade in specific product groupings, and the other to deal

with total trade between countries.

One of the limitations of the index for total trade is that it does not reflect the varying commodity composition of the trade between countries. This index has been used to analyze trade in specific product groups, but only at a very aggregate level, e.g. agriculture, food, manufactures.²

The current study examines trade interdependence in products represented at a greater level of detail. The index that Kojima used in his triangular trade study which dealt with product specific data is more applicable to the analysis to be performed. The formula for calculating the product specific trade intensity index is the following³:

$$I_{ij}^h = \frac{X_{ij}^h / X_{ij}}{M_j^h / M_j}$$

where: I = intensity
X = exports
Y = imports
i = exporting country
j = importing country
h = product group.

The trade intensity index is used rather than actual export values because it provides a neutral measure of countries' trade relationships with each other by abstracting from the effects of size of both the exporting and importing countries, and from the effects of excluded variables and random fluctuations in trade.⁴ Controlling for the

effects of size is important in the current study given the differences in magnitude of Canada's trade compared to that of the U.S. and Japan.

The index also "neutralizes" other factors which may affect the value of trade without changing the actual trading relationship (e.g. an overall change in the level of trade due to a recession). This provides a more constant measure for comparison of the importance of trade ties across pairs of partners and over time. The intensity of trade will change if the exporting country diversifies its exports or its markets, or if the importing country diversifies its sources or its imports. Thus, it is sensitive to the changing importance of trading partners to each other.

The value of the trade intensity index indicates how important the relationship is relative to what would be expected, where an index of 1 indicates what would be expected. An index of more or less than one indicates that the exports are, respectively, more or less than what would be expected given:

- . the importance of the export to the exporting country,
- . the importance of the import to the importing country, and
- . the level of the importing country's total level of demand in world trade.

In summary, the trade intensity index is the basic unit of analysis. It is intended to represent the importance of

the trading partners to each other, and thus the extent of their interdependence relative to other trading partners. It is used to reveal bilateral comparative advantage among the three countries. The index is calculated for exports of products defined at the SITC level 2 code, from each of the three countries to the others, for the years 1974-1985.

2. Representing the Triangular Relationship

This study is concerned with the pattern of bilateral trade within the context of the ties among three highly interdependent countries. A specific research question to be addressed is how the exports of each of two countries to a third change, i.e. covary, relative to each other over time. Significant covariance is expected to reflect triangular interdependence in the trade among these countries, all else being equal.

An approach to studying this phenomenon was provided by the work of Johansson and Spich on trade interdependence in the Pacific region and the European Economic Community.⁵ Two elements of this work have been adapted for the triangular trade model used in the current study. The first was the use of dynamic analysis using time series data. Many of the previous studies reviewed used statics analysis which compares selected points in time. Time series analysis permits an assessment of the changes in trade relationships between pairs of the three countries over several years.

The second aspect derived from Johansson and Spich's work for application in the current study was their method for analyzing how trade among countries within a region changed over time, relative to changes in the trade by countries

within the region with others outside the region. In the context of the current study, this permits the analysis of how trade between each of two partners with a third covaried over the period studied.

Johansson and Spich's approach involved calculating the correlation coefficients for the measure used to represent trade between one country with each of its partners. Because of the number of countries that were being considered, Johansson and Spich reduced the data involved to a set of "principal components" which aggregated related data. This reduced the volume of data upon which the correlation analysis was performed (see previous chapter for further explanation). In the current study only three partners are involved, making it feasible to perform correlations at the single country level.

Thus, the basic structure of the framework to analyze triangular trade impacts is the computation of the correlation between the annual trade intensities for specific products exported from each pair of partners within the Canada/U.S./Japan triangle to the third partner over the period of time studied (1974-1985).

B. Methodology

1. Data Collection

The data used in this study to represent the value of exports from Canada, the U.S. and Japan to each other are the values of annual imports of goods that are received by the importing country from each of the other two partners. Import data are used instead of export data as they tend to

be more assiduously collected and thus are more complete and accurate.

The data are for goods at the two digit Standard International Trade Classification (SITC) code level as collected by the United Nations (a listing of the codes is provided in Appendix 1). The data cover imports for the years 1974 through 1985. The data were obtained in hard copy form from the International Trade Data System operated by the Department of External Affairs, Government of Canada. The import values for 61 products for each pair of the three countries for the years 1974 to 1985 were input to six computer-readable data files⁶, as follows:

- . Canadian imports from Japan
- . Canadian imports from the U.S.
- . U.S. imports from Canada
- . U.S. imports from Japan
- . Japanese imports from Canada
- . Japanese imports from the U.S.

2. Calculation of Trade Intensities

The trade intensity formula was input to the data base software and applied to the data to obtain the measure of trade intensity for each country's exports (partner's import values) of goods at the SITC 2 code level to each of the two other trading partners (additional data which were used in the intensity formula are provided in Appendix 2). In all, an additional six data files containing trade intensity values for 61 products for the years 1974 to 1985 were created, as follows:

- . Intensity of Japanese exports to Canada
- . Intensity of U.S. exports to Canada

- . Intensity of Canadian exports to the U.S.
- . Intensity of Japanese exports to the U.S.
- . Intensity of Canadian exports to Japan.
- . Intensity of U.S. exports to Japan.

Average annual intensities, and average annual changes in intensity were calculated for each product, for each countries exports to the others. These data are presented in chapter 5.

3. Calculation of Correlation Coefficients⁷

Correlation coefficients were calculated from the trade intensity indexes, as follows:

- . Intensities of Canadian exports of individual products to Japan against intensity of U.S. exports of the same products to Japan;
- . Intensities of Canadian exports of individual products to the U.S. against intensities of Japanese exports of the same products to the U.S.; and
- . Intensities of U.S. exports of individual products to Canada against intensities of Japanese exports of the same products to Canada.

The correlation coefficients and t-values⁸ are presented in chapter 5.

4. Analysis of Results

Analysis of the results of the series of calculations performed were focused as follows:

- a) Areas of strong trade intensity were identified to reflect bilateral comparative advantages between Canada, the U.S. and Japan with each other.
- b) Bilateral comparative advantages thus derived were compared to global comparative advantages.
- c) Areas where significant correlations were found between the exports from two countries to a third were identified and assessed from the perspective of whether trade creation or trade diversion appeared to be occurring.
- d) The correlations of trade in the case of products that had been the subject of a trade action or intervention between the U.S. and Japan were examined to determine whether there was any evidence of trade between these two countries and Canada having been affected by this action.

C. Summary

The model used in this study to analyze the interdependence and bilateral comparative advantage among Canada, the U.S. and Japan involves calculating the intensity of exports in specific products between each pair of countries.

The model developed to analyze the triangular relationship between Canada, the U.S. and Japan basically measures how the trade relationships between two of these three countries to the third change relative to one another over time. It involves calculating the correlation between the intensity of exports for a particular product between one

country and a second country, and the intensity of the exports in the same product between a third country and the second country over the period 1974 to 1985.

The model was developed using aspects of previous models for analyzing economic interdependence. However, the model is completely new in its formulation and application. The research design for the study also goes beyond previous work in that it deals with data at a greater degree of disaggregation than had been previously used.

Specifically,

- . Trade intensities were calculated for individual goods at the 2-digit S.I.T.C. code level, rather than for broad categories of goods; and
- . Correlations of the trade between each of two countries with the same third country were calculated for individual product categories rather than for total trade, and for individual countries rather than for groups of countries.

FOOTNOTES

1. K. Kojima, "The Pattern of Triangular Trade among the U.S.A., Japan and Southeast Asia," The Developing Economies 1 (1962): 48-74.
2. K. Anderson, "Prospects for Trade Growth Among Pacific Basin Countries," The Developing Economies 21 (1983): 377.
3. Kojima, 63.
4. P. Drysdale and R. Garnaut, "Trade Intensities and the Analysis of Bilateral Trade Flows in a Many-country World: A survey," Hitotsubashi Journal of Economics 22 (1982): 68-69.
5. J.K. Johansson and R.S. Spich, "Trade Interdependence in the Pacific Rim Basin and the E.C.: A Comparative Analysis," Journal of Common Market Studies 20 (1981): 41-59.
6. The Lotus 123 software package was used to create the data base and perform the calculations.
7. Refer to G.H. Weinberg and J.A. Schumaker, Statistics: An Intuitive Approach, 2nd ed. (Belmont, Calif.: Wadsworth Publishing), 1969; T.H. Wonnacott and R.J. Wonnacott, Introductory Statistics for Business and Economics, 2nd ed. (New York: John Wiley and Sons), 1977; and P.H. Karmel and M. Polasek, Applied Statistics for Economists, 3rd ed. (London: Pitman Press), 1970.

Correlation analysis seeks to determine the movement of two variables in relation to each other, that is, how the unit change on one variable corresponds to a designated change in the other variable. The geometric interpretation of correlation is the values of two variables: X plotted along the horizontal axis, and Y plotted along the vertical axis, with a line drawn through the points in a way that minimizes the sum of the distances between it and each of the points. A good correlation exists when the line comes close to or contains the data points.

The correlation coefficient is the measure that represents the degree of correspondence. It is

A resolution test chart featuring several groups of horizontal and vertical lines of varying thicknesses and spacings. Each group is accompanied by a numerical value indicating the resolution level. The values include 1.0, 1.1, 1.25, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, and 5.6. The chart is used to measure the resolving power of imaging systems.

MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS
STANDARD REFERENCE MATERIAL 1010a
(ANSI and ISO TEST CHART No. 2)

generally represented by the letter r . The formula for computing r is as follows:

$$r = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{N \sum X^2 - (\sum X)^2} \sqrt{N \sum Y^2 - (\sum Y)^2}}$$

where X and Y are the values for the variables, and N is the number of values for each variable.

The value of r ranges from -1 to $+1$. The closer the value approaches either -1 or $+1$, the stronger the correlation, with the sign indicating the direction of movement of the Y to X . A value of zero indicates no correlation and represents the null hypothesis that the independent variable has no effect on the dependent variable.

The significance of the correlation in this study is measured by a two-tailed t -test. T -values are the distribution of values that would be obtained from random samples of equal size to the size of the sample in a study. The actual t -distribution that applies to a case is based on the number of degrees of freedom in the sample ($N-1$). The t -value of a particular correlation coefficient is calculated according to the following formula:

$$t = r \frac{N-2}{\sqrt{1-r^2}}$$

The significance of r is determined by comparing the t -value calculated to critical t -value for the number of degrees of freedom that apply to the study sample. In the current study, t -test values in the .05 percentile for the given number of degrees of freedom will be considered significant.⁵ A significant t -value will permit the rejection of the null hypothesis that there was no correlation between changes in the trade relationship for a particular product between each one of two countries and a third country, i.e. that no triangular trading relationship exists for that product.

8. There are 10 degrees of freedom (df) for the data in this study. The significant t -value at the .05 percentile for 10 df is 1.812. (Wonnacott and Wonnacott, 713).

CHAPTER 5

FINDINGS

This study is concerned with the trade interdependence among Canada, the U.S. and Japan. A fundamental premise is that the three countries form a triangle whereby developments in relationships between two countries may affect the third. Of particular interest is the way that Canada is affected by developments in the relationship between the U.S. and Japan, because of extensive interdependence with both, and its "junior" position relative to the other two economic giants.

Chapter 2 of this study described developments in the economic relationship between the U.S. and Japan to provide a context for the analysis of the possible effect of "triangular" factors on Canada. The main issues that arose in this relationship related to Japan's changing comparative advantage as its industrial structure evolved from one based on labour intensive manufacturing to one based on advanced manufacturing and technology, and the resulting increase in competition between the U.S. and Japan in trade.

Chapter 3 reviewed approaches to studying trade interdependence among two or more countries. A trade intensity index was identified as an appropriate measure for representing bilateral comparative advantage and trade interdependence in this study. Also, an analytical model based on covariance was found to serve as a framework for studying how the exports of a particular product from each of two countries to a third change relative to each other over time, to determine whether trade creation or trade

diversion occurred among the countries within the triangle.

The previous chapter described the methodology followed in the study. There are two main sets of results:

- . Table 5.1 - for product groups at the SITC 2 code level, the average annual trade intensity, and the average annual change in intensity, for exports from Canada, the U.S. and Japan to each other; and
- . Table 5.3 - for product groups at the SITC 2 code level, the correlation coefficient and t-test (significance) value for the exports from the U.S. and Japan to Canada, from the U.S. and Canada to Japan, and from Canada and Japan to the U.S.

These results are presented in this chapter, and analyzed in terms of the following research questions:

- a) What are the areas of bilateral comparative advantage (i.e. greater than expected trade intensity) in trade from Canada, the U.S. and Japan with each other?
- b) How do these bilateral comparative advantages compare with each country's global comparative advantage?
- c) In what products have the exports from two of the three countries to the third covaried significantly over the

period studied? Does the nature of change in the exports from each of the two countries to third indicate that trade creation or trade diversion is occurring?

- d) In the case of products that have been the subject of a trade action or intervention between the U.S. and Japan, is there any indication that Canada's trade with either country in these products has been affected?

A. Revealed Bilateral Comparative Advantage and Interdependence

The trade intensity index is intended to reflect the importance of the trade in a particular product for both the exporting and importing countries. The formula for the index is:

$$I_{ij}^h = \frac{X_{ij}^h / X_i}{M_j^h / M_j}$$

where: I = trade intensity
i = exporting country
j = importing country
h = product
X = exports
M = imports.

The numerator, X_{ij}^h / X_i , represents country i's concentration of exports of h to country j, relative to its total exports. The denominator, M_j^h / M_j , represents the structure of country j's demand, i.e. how important overall its exports of product h are.

An index of 1 is what would be expected if the trade in the product was no more or less important to both the exporting and importing

countries than the trade in other products and with other partners. An index of greater (less) than 1 indicates that the trade in the product is of greater (less) importance to the two countries than their trade in other products, and with other partners.

Table 5.1 presents the average annual intensities, and the average annual change in intensity, of the exports of product groups defined at the SITC 2 code level of aggregation from Canada, the U.S. and Japan to each other. The findings in respect of each set of bilateral trade relations are summarized below.

1. Canada/U.S.

General observations on the trade between Canada and the U.S. are:

- . the trade profile was quite symmetrical, that is, there was considerable "horizontal" trade, i.e. two-way trade in the same product category; and
- . trade over the period studied was fairly stable overall, with limited downward trends.

Areas of particularly strong two-way intensity were:

- . food, cereals and oils
- . forest products
- . petroleum products
- . minerals
- . transportation equipment.

Products where Canada appeared to have a bilateral comparative advantage in the U.S. included:

- . fish, crustaceans, molluscs
- . metal ores and scrap
- . chemical elements and compounds, including petrochemicals

ITC CODE	CANADA TO U.S.			U.S. TO CANADA			U.S. TO JAPAN			JAPAN TO U.S.			JAPAN TO CANADA			CANADA TO JAPAN		
	INTER- SITY	ANNUAL CHANGE	INTER- SITY	ANNUAL CHANGE	INTER- SITY	ANNUAL CHANGE	INTER- SITY	ANNUAL CHANGE	INTER- SITY	ANNUAL CHANGE	INTER- SITY	ANNUAL CHANGE	INTER- SITY	ANNUAL CHANGE	INTER- SITY	ANNUAL CHANGE	INTER- SITY	ANNUAL CHANGE
Section 0: Food																		
0 Live animals for food	2.92	0.11	1.37	0.00	2.69	-0.08	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.94	-0.04		
1 Meat/meat preparations	0.53	0.07	0.71	0.01	1.38	0.08	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.01		
2 Dairy products/birds' eggs	0.18	-0.01	0.40	0.01	0.31	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.04		
3 Fish, crustaceans, molluscs	1.10	0.02	0.82	0.00	0.70	0.06	0.63	-0.09	0.00	0.00	0.00	0.00	0.00	0.00	1.51	0.04		
4 Cereals/cereal preparations	2.58	-0.13	1.25	-0.02	3.24	0.02	0.25	0.00	0.00	0.00	0.16	0.00	0.00	0.00	3.30	-0.03		
5 Vegetables and fruits	0.19	-0.01	0.96	-0.01	1.65	-0.01	0.12	-0.01	0.00	0.00	0.27	-0.02	0.00	0.00	0.28	0.01		
6 Sugar and honey	0.18	0.03	0.20	0.02	0.06	0.01	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.04	0.01		
7 Coffee, tea, cocoa, spices	0.04	0.00	0.40	-0.01	0.17	-0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00		
8 Animal feed	3.05	0.06	1.40	-0.01	2.29	0.04	0.05	-0.02	0.00	-0.02	0.02	0.00	0.00	0.00	2.88	0.05		
9 Misc. edible products	0.52	0.05	1.07	-0.02	1.95	0.01	1.50	-0.02	0.00	-0.02	0.18	0.01	0.01	0.01	0.26	0.01		
Section 1: Beverages and Tobacco																		
1 Beverages	0.88	-0.01	0.14	0.01	0.26	0.03	0.04	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.23	0.03		
2 Tobacco and manufactures	0.14	0.01	0.89	0.02	3.87	0.09	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	-0.01		
Section 2: Crude materials																		
1 Hides, skins, furskins, raw	1.17	0.03	1.06	0.00	3.44	-0.03	0.05	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.47	0.00		
2 Oil seeds, oleaginous fruit	2.15	0.09	1.33	-0.02	3.49	-0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.19	0.28		
3 Crude rubber	0.55	0.02	0.73	0.01	0.22	0.02	0.18	-0.01	0.00	-0.01	0.62	-0.08	0.00	0.00	0.16	-0.02		
4 Cork and wood	4.82	0.07	1.35	0.00	1.61	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.23	0.22		
5 Pulp and waste paper	4.86	0.02	1.24	-0.02	2.09	-0.02	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	10.71	0.12		
6 Textile fibres	0.31	0.01	89.26	96.17	1.16	0.02	0.48	-0.06	0.00	-0.06	0.21	-0.01	0.00	0.00	0.01	0.00		
7 Crude fertilizers/minerals	1.77	0.00	1.21	0.00	1.41	0.00	0.10	-0.01	0.00	-0.01	0.02	0.00	0.00	0.00	1.50	-0.04		
8 Metal ores and scrap	1.68	-0.04	0.84	0.01	0.50	0.01	0.02	-0.01	0.00	-0.01	0.38	0.05	0.05	0.05	2.55	-0.14		
9 Crude animal/veg. material	0.48	-0.03	0.98	-0.01	0.72	0.01	0.15	0.00	0.00	0.00	0.17	0.01	0.01	0.01	0.23	-0.01		
Section 3: Mineral fuels, lubric.																		
32 Coal, coke and briquettes	1.72	0.14	1.41	0.00	1.73	-0.17	0.56	0.10	0.00	0.10	0.00	0.00	0.00	0.00	4.43	0.33		
33 Petroleum, products	0.38	-0.02	0.23	0.02	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00		
34 Gas, natural and manuf.	4.33	0.05	1.42	-0.01	0.22	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	-0.06		
Section 4: Animal, veg. oils/fats																		
41 Animal oils and fats	1.98	0.02	1.16	0.00	2.81	-0.19	0.99	-0.08	0.00	-0.08	0.58	-0.02	0.00	0.00	5.40	0.62		
42 Fixed vegetable oils/fats	0.03	0.00	0.63	-0.03	0.96	-0.02	0.06	0.00	0.00	0.00	10.00	0.01	0.00	0.00	0.99	0.07		
43 Processed oils/fats/waxes	0.25	0.02	1.30	-0.01	1.16	-0.12	0.12	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.00		

Table 5.1 Average Trade Intensities

SYIC CODE	CANADA TO U.S.			U.S. TO CANADA			U.S. TO JAPAN			JAPAN TO U.S.			JAPAN TO CANADA			CANADA TO JAPAN		
	INTER-SITY	ANNUAL CHANGE		INTER-SITY	ANNUAL CHANGE		INTER-SITY	ANNUAL CHANGE		INTER-SITY	ANNUAL CHANGE		INTER-SITY	ANNUAL CHANGE		INTER-SITY	ANNUAL CHANGE	
Section 5: Chemicals, rel. prod.																		
52 Chemicals	1.29	0.05		0.29	0.08		2.34	0.02		0.69	-0.07		0.50	-0.02		0.79	0.09	
53 Dyeing, tanning stuffs	0.21	0.01		1.00	0.01		1.11	0.03		1.12	0.09		0.19	-0.01		0.04	-0.01	
54 Medicinals/pharmaceuticals	0.15	0.00		0.83	-0.01		1.80	0.07		0.79	-0.04		0.25	0.00		0.09	0.00	
55 Toilet, polishing/cleansing	0.31	0.02		1.14	-0.02		1.71	0.02		0.38	0.01		0.08	0.01		0.23	-0.05	
56 Fertilizers, manufactured	3.91	0.07		1.33	-0.02		1.70	0.02		0.04	0.00		0.04	0.00		7.95	-0.12	
57 Explosives/pyrotechnic prod	1.61	-0.01		1.21	0.00		0.75	0.00		0.28	-0.03		0.05	0.00		0.00	0.00	
58 Artificial resins, plastics	0.77	0.04		1.23	-0.01		3.22	-0.01		1.67	-0.09		0.69	-0.04		0.20	-0.01	
59 Chem. materials/prod. n.e.s	0.46	0.00		1.22	-0.01		2.78	0.03		0.46	0.02		0.22	0.05		0.20	0.01	
Section 6: Manufactured goods																		
61 Leather stuffs, dressed fur	1.34	0.01		0.67	-0.05		0.63	0.09		0.21	-0.04		0.69	-0.02		0.18	0.00	
62 Rubber manufactures, n.e.s.	1.06	0.06		0.92	-0.02		1.59	-0.03		1.43	0.05		2.67	0.15		0.17	0.04	
63 Cork/wood mfc.'s, ex. furn.	1.41	0.05		0.94	-0.01		1.33	-0.16		0.47	-0.06		0.44	-0.01		0.58	0.05	
64 Paper, paperboard, newspaper	4.30	-0.04		1.28	-0.02		2.79	0.13		0.11	0.00		0.20	-0.01		2.95	0.03	
65 Textile, yarn, fabrics	0.15	0.01		0.76	-0.01		0.37	-0.02		1.32	-0.05		1.59	-0.07		0.04	0.00	
66 Non-metal. mineral mfc.'s	0.38	0.01		0.82	-0.01		0.79	-0.02		0.87	-0.03		1.21	-0.03		0.10	0.00	
67 Iron and steel	0.55	0.02		0.72	-0.01		0.35	-0.02		2.67	-0.11		3.45	-0.22		0.38	0.01	
68 Non-ferrous metals	1.60	0.02		1.03	0.00		0.97	0.01		0.38	-0.03		0.25	0.00		1.41	0.05	
69 Manufactures of metal, n.e.	0.87	0.00		1.06	0.00		2.22	0.07		2.17	-0.18		1.30	-0.09		1.00	-0.04	
Section 7: Machinery/trans. equip.																		
71 Machinery, other than elec.	1.14	-0.06		1.26	-0.03		2.39	0.06		2.28	-0.11		1.00	-0.03		0.26	0.00	
72 Elec. machinery, appliances	0.24	0.02		0.75	0.05		2.90	0.02		1.51	0.17		3.93	-0.07		0.17	0.01	
73 Transport equipment	1.94	0.00		1.26	-0.01		2.88	-0.03		2.47	0.00		1.31	0.01		0.17	0.00	
Section 8: Misc. manuf. articles																		
81 Sanitary, plumbing fixtures	0.20	0.00		1.12	-0.02		1.67	0.00		0.45	-0.04		0.19	-0.02		0.16	0.01	
82 Furniture and parts	1.59	-0.05		0.89	-0.03		0.28	-0.01		0.20	-0.01		0.17	0.00		0.03	0.00	
83 Travel goods, handbags, etc	0.04	0.00		0.31	-0.02		0.16	-0.02		0.32	-0.07		1.04	-0.25		0.02	-0.01	
94 Clothing and accessories	0.06	-0.01		0.19	-0.02		0.19	-0.04		0.33	-0.04		0.43	-0.04		0.13	0.00	
85 Footwear	0.05	0.00		0.11	0.00		0.40	0.02		0.07	-0.01		0.10	-0.01		0.02	0.00	
86 Instrum., photo/opt., clock	0.28	0.02		1.00	0.00		2.90	0.06		2.69	-0.08		2.39	0.01		0.16	0.01	
89 Miscellaneous manuf., n.e.s.	0.37	0.02		0.99	0.00		29.66	-0.02		1.82	-0.10		1.74	0.08		1.81	0.00	

Table 5.1 Average Trade Intensities (cont.)

- . rubber manufactures
- . cork and wood manufactures, excluding furniture
- . furniture and parts.

The U.S. appeared to have a bilateral comparative advantage in:

- . dyeing and tanning stuffs
- . toilet, polishing and cleansing materials
- . artificial resins and plastics
- . sanitary and plumbing fixtures
- . scientific instruments, photographic and optical equipment, watches and clocks.

In all, by Kojima's definition, the profile of trade between Canada and the U.S. was that of two highly integrated advanced industrial countries.

2. Canada/Japan

The patterns of trade between Canada and the U.S., and Canada and Japan were in sharp contrast. The latter reflected the traditional complementary trade relationship. The only area where significant horizontal trade occurred was in fish and seafood products.

Otherwise, the areas of high intensity in Canada's exports to Japan were in staples, resource-based products and crude manufactures, while the areas of high intensity in Japan's exports to Canada were in manufactured goods, machinery and equipment.

Specific areas where Canada appeared to have a bilateral comparative advantage in its trade with Japan were:

- . meat products, cereals, animal feed
- . oil seeds, oleaginous fruit
- . cork and wood
- . pulp and waste paper
- . crude fertilizers and minerals
- . metal ores and scrap
- . coal, coke and briquettes
- . animal oils and fats

- . manufactured fertilizers
- . paper, paperboard and newsprint
- . non-ferrous metals

Product areas where Japan showed a bilateral comparative advantage with Canada were:

- . rubber manufactures
- . textiles, yarn, fabrics
- . non-metallic minerals manufactures
- . iron and steel
- . electrical machinery and appliances
- . transport equipment
- . scientific instruments, photographic and optical equipment, clocks and watches.

3. U.S./Japan

The pattern of U.S./Japan trade showed a blend of vertical (one way) and horizontal (two-way) trade in specific products.

The vertical trade was primarily in staples, resource-based products and crude manufactures, as was the case in the trade between Canada and Japan. Unlike Canada, however, the U.S. also exported a range of manufactured products to Japan. Specific product areas where the U.S. appeared to have bilateral comparative advantage in Japan were:

- . meat, cereals, vegetables and fruits and animal feed
- . tobacco and related products
- . hides, skins and furskins
- . oil seeds, oleaginous fruits
- . cork and wood
- . pulp and waste paper
- . textile fibres
- . crude fertilizers/minerals
- . coal, coke and briquettes
- . animal oils and fats
- . processed oils, fats and waxes
- . most chemicals and related products
- . cork and wood manufactures
- . paper, paperboard and newsprint
- . sanitary and plumbing fixtures.

The horizontal trade, i.e. where the U.S. and Japan enjoyed high intensity two way trade, occurred in a small number of manufactured products, specifically:

- . dyeing, tanning stuffs
- . artificial resins and plastics
- . rubber manufactures
- . all machinery and equipment, including transport equipment
- . scientific instruments, photographic and optical products, clocks and watches.

Japan appeared to have bilateral comparative advantage in the U.S. in textiles, yarns and fabrics, and iron and steel. These product areas were prime targets for U.S. protectionist actions against Japanese imports.

4. Summary

The large number of products where the bilateral trade intensity indexes exceeded "one" for trade between Canada, the U.S. and Japan and each other confirms the expectation of a high degree of interdependence among the three countries. The areas of high intensity also confirmed known trade patterns. That is, no distortions appear to be introduced. This supports the validity of the trade intensity index in representing the trade relationship.

The pattern of trade between the U.S. and Japan was that of two advanced industrial countries with strong horizontal trade ties. The trade between the U.S. and Canada was largely the same, with strong horizontal ties in a full range of areas including manufactures. This indicates that Canada had the capability to export a variety of manufactures. Yet, the pattern of trade between Canada and Japan did not reflect Canada's advanced industrial manufacturing capabilities.

Canada and the U.S. were competing exporters of staples, crude

manufactures and resource-based products to Japan. The covariance analysis to follow will indicate how these competing exports fared relative to each other in the Japanese market over the period studied.

The U.S. and Japan were competing exporters of a number of manufactured products to Canada. However, based on the average annual change of the intensity of Canada's imports from these countries, there is an indication that Canada was diversifying its sources of these products away from the U.S. and Japan.

B. Bilateral Compared to Global Comparative Advantage

Edward E. Leamer has analyzed the trade composition and patterns of most countries with market-based economies to derive their global comparative advantage.¹ Table 5.2 provides the product categories used by Leamer in defining comparative advantage.

In this section, Leamer's determination of the global comparative advantage in 1975 for Canada, the U.S. and Japan, respectively, is compared to their bilateral comparative advantage with each other, as revealed from the average annual trade intensities which were calculated for the period 1974-1985.

1. Canada

According to Leamer, Canada enjoyed global comparative advantage in:

- . raw materials;
- . forest products;
- . animal products; and
- . cereals.²

TABLE 5.2. PRODUCT AGGREGATES USED BY LEAMER
TO IDENTIFY GLOBAL COMPARATIVE ADVANTAGE⁴

1. Petroleum and petroleum products.
2. Raw materials (crude fertilizers, metaliferous ores, metal scrap, coal and related products, natural and manufactured gas, nonferrous metals)
3. Forest products (wood, lumber, cork, pulp, waste paper, wood and cork manufactures, paper and paperboard)
4. Tropical agriculture (fruit, vegetables, sugar, honey, coffee, tea, cocoa, spices, beverages, crude rubber)
5. Animal products (meat, dairy products, fish, hides, skins, furskins, crude animal and vegetable materials, animal and vegetable oils)
6. Cereals (animal feed, food preparations, oil seeds, textile fibres, animal oils and fats, fixed vegetable fats)
7. Labour intensive manufactures (nonmetallic mineral manufactures, furniture, clothing, footwear and accessories)
8. Capital intensive manufactures (leather, dressed furskins, rubber manufactures, textile yarn and fabrics, iron and steel, metal manufactures and sanitary fixtures and fittings)
9. Machinery (non-electrical and electrical machinery, transport equipment, instrumentation, photographic and optical goods, clocks and watches, and firearms)
10. Chemicals (elements, compounds, mineral tar and crude chemicals from petroleum products, dyeing, tanning and colouring materials, medicinal and pharmaceutical products, oils and perfumes, manufactured fertilizers, plastics and cellulose).

Areas of strong global comparative disadvantage included:

- . labour intensive manufactures;
- . capital intensive manufactures; and
- . machinery.³

Canada's bilateral comparative advantage with Japan matched very closely to its global comparative advantage. This also was the case in Canada's bilateral comparative advantage with the U.S., with a few exceptions (e.g. petroleum products, transportation equipment, chemicals).

2. The U.S.

In Leamer's work, the U.S. was shown to have relatively strong comparative advantage in:

- . cereals;
- . machinery; and
- . chemicals.⁵

A slight comparative advantage in raw materials, and a neutral (i.e. neither positive or negative) position in forest products also were indicated.

The U.S. had a weak comparative disadvantage in all other product aggregates including, surprisingly, capital intensive manufactures. In the case of petroleum, its comparative disadvantage was fairly strong.⁶

The U.S.'s bilateral comparative advantage with Canada followed its global comparative advantage closely, except in the case of petroleum products where strong horizontal trade intensity was shown.

The U.S.'s bilateral comparative advantage with Japan also followed its global comparative advantage closely, with a small number of anomalies (e.g. some animal products, some tropical agricultural products). Its "one-way" bilateral comparative advantage was primarily in raw materials and forest products. However, the U.S. shared global comparative advantage in machinery and chemicals with Japan. This was apparent in the strong intensity in the two-way trade between the two countries in these products.

3. Japan

Japan was shown to have global comparative advantage in:

- . labour intensive manufactures;
- . capital intensive manufactures;
- . machinery; and
- . chemicals.⁷

It had significant global comparative disadvantage in all other areas, particularly those involving food products, petroleum and raw materials.

Japan's bilateral comparative advantage as shown through its pattern of trade intensities with Canada and the U.S. matched completely its pattern of global comparative advantage.

4. Summary

The bilateral comparative advantages among Canada, the U.S. and Japan for the most part reflected their respective global comparative advantages. The exception was Canada-U.S. trade, where strong trade intensities were shown for products where the exporting country did

not enjoy a global comparative advantage. This finding is compatible with resistances theory, which would argue that the proximity, cultural similarity and extent of corporate interaction between these two partners would offset the greater comparative advantages in these products enjoyed by other countries.

C. Covariance of Trade in the Triangle

The two previous sections examined bilateral trade interdependence among Canada, the U.S. and Japan. This section turns to an analysis of triangular factors. Specifically, the trade interdependence between two of the countries with the third will be compared over the period studied. This will be done by determining how the annual trade intensities for specific products have covaried during this time.

The statistical methodology for determining the covariance was outlined in the previous chapter. The results of the covariance analysis is presented in Table 5.3. In this table, "r" is the correlation coefficient, and "t" is the measure of significance. In this study, "t" values of greater than 1.81 are significant. An asterix next to the "t" value indicates a significant result.

Significant covariances in the intensity of trade for each pair of countries and the third are summarized below. In all cases, the "ceteris parabis" condition holds.

1. Exports from the U.S. and Japan to Canada

Significant covariance was found in the exports from the U.S. and Japan, respectively, to Canada in the following products.

a) Meat and Meat preparations. This is a spurious result; reference

Table 5.3 Correlations of Trade Intensities

SITC CODE	U.S./JAPAN EXPORTS TO CANADA		JAPAN/CANADA EXPORTS TO U.S.		U.S./CANADA EXPORTS TO JAP	
	R	T	R	T	R	T
Section 0: Food						
00 Live animals for food	0.00	0.00	-0.01	-0.03	0.69	3.04
01 Meat/meat preparations	0.60	2.37	-0.60	-2.35	0.59	2.32
02 Dairy products/birds' eggs	0.16	0.52	-0.11	-0.35	0.46	1.64
03 Fish, crustaceans, molluscs	-0.26	-0.86	-0.73	-3.36	0.70	3.13
04 Cereals/cereal preparations	-0.24	-0.78	0.02	0.06	0.25	0.82
05 Vegetables and fruits	0.62	2.50	0.07	0.21	0.30	1.00
06 Sugar and honey	0.81	4.34	0.50	1.81	0.40	1.39
07 Coffee, tea, cocoa, spices	0.32	1.07	0.06	0.17	-0.09	-0.29
08 Animal feed	0.55	2.09	-0.07	-0.22	0.21	0.68
09 Misc. edible products	0.07	0.23	-0.03	-0.11	-0.31	-1.01
Section 1: Beverages and Tobacco						
11 Beverages	0.61	2.43	-0.21	-0.67	0.87	5.52
12 Tobacco and manufactures	-0.41	-1.42	0.72	3.27	-0.70	-3.06
Section 2: Crude materials						
21 Hides, skins, furskins, raw	-0.53	-1.96	0.26	0.86	-0.33	-1.09
22 Oil seeds, oleaginous fruit	-0.24	-0.79	0.10	0.32	-0.04	-0.14
23 Crude rubber	-0.35	-1.18	-0.16	-0.52	-0.23	-0.76
24 Cork and wood	-0.70	-3.06	-0.13	-0.40	0.10	0.33
25 Pulp and waste paper	-0.10	-0.32	0.03	0.09	-0.25	-0.82
26 Textile fibres	-0.29	-0.96	-0.19	-0.63	0.51	1.86
27 Crude fertilizers/minerals	0.14	0.44	0.04	0.14	0.54	2.05
28 Metal ores and scrap	0.28	0.92	0.04	0.12	0.11	0.34
29 Crude animal/veg. material	-0.23	-0.75	0.13	0.42	0.24	0.79
Section 3: Mineral fuels, lubric.						
32 Coal, coke and briquettes	-0.01	-0.04	0.07	0.22	-0.94	-8.42
33 Petroleum, products	-0.31	-1.02	0.41	1.40	0.33	1.11
34 Gas, natural and manuf.	0.41	1.41	-0.04	-0.12	0.71	3.22
Section 4: Animal, veg. oils/fats						
41 Animal oils and fats	-0.44	-1.53	0.04	0.12	0.37	1.24
42 Fixed Vegetable oils/fats	-0.70	-3.11	0.16	0.50	0.00	-0.01
43 Processed oils/fats/waxes	0.04	0.14	-0.30	-0.98	0.63	2.55

Table 5.3 Correlations of Trade Intensities (cont.)

SITC CODE	U.S./JAPAN EXPORTS TO CANADA		JAPAN/CANADA EXPORTS TO U.S.		U.S./CANADA EXPORTS TO JAP	
	R	T	R	T	R	T
Section 5: Chemicals, rel. prod.						
52 Chemicals	-0.53	-1.95	0.35	1.16	-0.33	-1.12
53 Dyeing, tanning stuffs	0.17	0.54	-0.01	-0.04	0.55	2.10
54 Medicinals/pharmaceuticals	0.18	0.60	-0.02	-0.06	-0.27	-0.87
55 Toilet, polishing/cleansing	-0.74	-3.47	-0.01	-0.02	0.21	0.69
56 Fertilisers, manufactured	0.21	0.69	-0.11	-0.34	0.10	0.31
57 Explosives/pyrotechnic prod.	0.58	2.25	-0.19	-0.60	-0.15	-0.48
58 Artificial resins, plastics	-0.15	-0.49	0.22	0.72	0.37	1.25
59 Chem. materials/prod. n.e.s.	-0.50	-1.82	-0.39	-1.33	0.29	0.96
Section 6: Manufactured goods						
61 Leather stuffs, dressed furs	-0.14	-0.44	0.22	0.72	-0.21	-0.69
62 Rubber manufactures, n.e.s.	-0.95	-9.96	-0.39	-1.35	-0.74	-3.53
63 Cork/wood mfc.'s, ex. furn.	-0.07	-0.24	0.00	0.00	-0.43	-1.52
64 Paper, paperboard, newsprint	-0.33	-1.11	-0.22	-0.70	0.94	8.46
65 Textile, yarn, fabrics	0.57	2.19	-0.05	-0.15	0.35	1.18
66 Non-metal. mineral mfc.'s	0.64	2.61	-0.14	-0.44	-0.06	-0.19
67 Iron and steel	0.15	0.48	-0.08	-0.25	-0.40	-1.37
68 Non-ferrous metals	-0.25	-0.82	0.10	0.33	-0.07	-0.22
69 Manufactures of metal, n.e.s.	0.31	1.03	0.32	1.05	0.42	1.48
Section 7: Machinery/Trans. equip.						
71 Machinery, other than elec.	0.88	5.81	0.51	1.87	0.41	1.41
72 Elec. machinery, appliances	-0.06	-0.19	-0.06	-0.19	0.08	0.25
73 Transport equipment	-0.69	-2.98	-0.03	-0.09	0.34	1.14
Section 8: Misc. manuf. articles						
81 Sanitary, plumbing fixtures	0.45	1.60	-0.01	-0.02	0.15	0.47
82 Furniture and parts	-0.57	-2.19	0.54	2.02	0.55	2.07
83 Travel goods, handbags, etc.	0.87	5.69	0.31	1.03	0.78	3.90
84 Clothing and accessories	0.82	4.55	0.42	1.45	0.04	0.13
85 Footwear	0.49	1.80	-0.11	-0.33	0.87	5.48
86 Instrum., photo/opt., clocks	-0.72	-3.29	-0.02	-0.05	1.00	496.43
89 Miscellaneous manuf., n.e.s.	0.44	1.54	-0.09	-0.27	-0.07	-0.23

to Table 5.1 shows that the intensity of Japan's exports to Canada was zero.

- b) Vegetables and fruits. Although there appeared to be a fairly strong covariance, the intensity of exports from both were trending down.
- c) Sugar and honey. This result was spurious; the intensity of Japan's exports to Canada were virtually nil.
- d) Animal feed. The intensity of Japan's exports to Canada was very low. The significant covariance was due to the downward trend in the intensity of exports from both countries.
- e) Beverages. There was a positive correlation, but the intensities were low for both countries (0.05 for Japan; 0.14 for the U.S.).
- f) Hides, skins and furskins. This was a spurious result as the intensity of Japan's exports was virtually nil.
- g) Cork and wood. The significance was spurious because the intensity of Japan's exports to Canada was zero.
- h) Fixed vegetable oils and fats. The intensity of Japanese and U.S. exports of these products to Canada were 0.10 and 0.63, respectively. The correlation was negative. The intensity of Japanese exports increased at an average annual rate of 0.01, while that for the U.S. declined at an average annual rate of -0.03. There is some indication that, all else being equal, Japan may have gained in the Canadian market at the expense of the U.S., but the extent to which it did so would have been limited given the fairly low intensity of Japanese exports.

- i) Chemicals. The average annual intensity indexes for exports from Japan and the U.S. were 0.50 and 0.29 respectively. The correlation was negative. This was supported by the annual changes in intensities calculated: the intensity of Japan's exports decreased at average annual change of -0.02, while that for the U.S. increased, with an average annual change of 0.08. This suggests that, all else being equal, the U.S. gained market share for chemicals in Canada at Japan's expense.
- j) Toilet, polishing and cleansing preparations. The average annual intensity of exports to Canada by Japan and the U.S. were 0.08 and 1.14, respectively. The correlation was negative. The intensity of Japanese exports increased at an average annual rate of 0.01, while that for U.S. decreased at an average annual rate of -0.02. This may indicate that, all else being equal, Japan may have made gains in the Canadian market at the U.S.'s expense; however, given the low intensity for Japanese exports, any possible displacement would have been limited.
- k) Explosives, pyrotechnic products. The average annual intensity of exports by Japan and the U.S. were 0.05 and 1.21, respectively. The correlation was positive; the intensity of exports in both cases did not change at all.
- l) Chemical products, n.e.s. The average annual intensity of exports by Japan and the U.S. were 0.22 and 1.22, respectively. The correlation was negative reflecting the increase of the intensity of Japan's exports at an average annual rate of 0.05, while that of the U.S. declined at an average annual rate of -0.01. There was some indication that, all else being equal, Japan gained in importance in the Canadian market for this product at the U.S.'s expense.

- m) Rubber manufactures. The intensity indexes from Japan and the U.S. were 2.67 and .92 respectively. The correlation coefficient was negative. The average annual intensity for Japan's exports increased at an average annual rate of 0.15, while that for the U.S. declined at a rate of -0.02. This suggests that, all else being equal, Japan gained in importance in the Canadian market at the expense of the U.S.
- n) Textiles, yarns and fabrics. The intensity indexes from Japan and the U.S. were 1.59 and 0.76 respectively. A positive correlation in the changes in intensity were shown; however, in each case the trend in the change was downward. The average annual rate of change for Japan was 0.07, compared to that for the U.S. which was 0.01. All else being equal, this may have been evidence of the diversity of Japan's exports from standard, labour intensive manufacturing to more technology intensive manufacturing.
- o) Non-metallic minerals manufactures. The trade intensity indexes for Japan and the U.S. were 1.21 and .83, respectively. As in the previous case, the correlation was positive while the general trend in the annual changes in intensity was negative in both cases. However, again like the previous case, the intensity of Japan's exports declined at a slightly greater rate than that for the U.S., i.e. -0.03 to -0.01, respectively.
- p) Machinery, other than electrical. This product grouping includes industrial machinery, machine tools, printing machinery, autoparts, etc. The trade intensity indexes for Japan and the U.S. were 1.00 and 1.26, respectively. The correlation was strong and positive; however the intensity of exports in both cases declined at the same rate.

- q) Transportation equipment. The intensity of exports to Canada from Japan and the U.S. were 1.31 and 1.26, respectively. The correlation was negative. The intensity of Japanese exports increased at an average annual rate of 0.01, while that for U.S. exports decreased at an annual rate of -0.01. This appears to indicate that, all else being equal, Japanese exports gained in importance in the Canadian market at the expense of U.S. exports.
- r) Furniture and parts. The correlation for exports of this product group was negative. The intensity of Japan's exports was fairly low (0.17) compared to that for the U.S. (0.89). The trend in changes in intensity for both countries was negative.
- s) Travel goods, handbags, etc. The trade intensity indexes for Japan and the U.S. were 1.04 and 0.31, respectively. The correlation was positive; however, the trade intensities for both countries declined. Japan's trade intensity declined at a considerable rate, with the average annual change in intensity at -.25. The average annual change in intensity for U.S. exports was -.02.
- t) Clothing and accessories. The trade intensity indexes for both Japan and the U.S. were low at 0.43 and 0.19, respectively. The correlation between the trade intensities was positive, with both countries showing a negative trend (average annual change in intensity was -0.04 for Japan and -.02 for the U.S.).
- u) Footwear. The trade intensity indexes for both Japan and the U.S. were fairly low at 0.10 and 0.11, respectively. The correlation was positive, reflecting the generally negative trend in changes in trade intensity for both countries.

In summary, the observation made previously that Canada appears to be diversifying its imports is supported here. In many cases, there was a positive correlation between the intensity of exports from each of the U.S. and Japan to Canada due to the fact that the intensity of exports from both countries was decreasing.

Significant negative correlations occurred in a number of cases, the most notable being for exports of chemicals, rubber manufactures and automobiles. There is some indication that, all else being equal, the U.S. may have increased its importance in the Canadian market for chemicals in Canada at the expense of Japan, while Japan increased its importance in the Canadian markets for rubber manufactures and automobiles, at the expense of the U.S.

2. Exports from Canada and Japan to the U.S.

Because of the complementarity in the general structure of Canada and Japan's exports, there were few product areas where they compete with each other in the U.S. market. Accordingly, there were limited instances where a significant covariance was found in the intensity of their exports to the U.S. The few product areas where this occurred are outlined below.

- a) Meat and meat preparations. The correlation was spurious because the intensity of Japan's exports to the U.S. was zero.
- b) Fish, crustaceans and molluscs. The trade intensity indexes for Canada and Japan were 1.10 and 0.63, respectively. The correlation was negative. In the period studied, the average annual change in intensity for Japan was -0.09, compared to that for Canada which was 0.02. This would indicate that Canada was strengthening its position in the U.S. market while Japan was losing market share.

- c) Sugar and honey. The correlation appeared to be spurious, as the intensity index for both countries was fairly low (index for Japan was 0.02, and for Canada was 0.18).
- d) Tobacco and tobacco manufactures. The same observation applies here. The indexes for both countries were so low (index for Japan was 0.01, and for Canada was 0.14) as to make the correlation meaningless.
- e) Machinery, other than electrical. The trade intensity indexes for Canada and Japan exports to the U.S. were 1.14 and 2.28, respectively. The correlation was positive. The trend in trade intensities in both cases was negative, however, with the average annual change in intensity for Canada at -0.06, and for Japan at -0.11. Both countries appear to have lost market share to other competitors, with Canada having done so to a lesser degree.
- f) Furniture and parts. The trade intensity indexes for Canada and Japan exports to the U.S. were 1.59 and 0.28, respectively. The correlation was positive. As in the previous case, however, the average annual change in intensity for both countries trended down, with Canada's doing so at a slightly greater rate (-0.05) than that of Japan (-0.01).

In summary, there were only three product areas where Canadian and Japanese exports to the U.S. covaried in a meaningful way. In one case, i.e. fish and seafood products, the covariance was negative. This may indicate that, all else being equal, Canadian exports increased in imports in the U.S. market at the expense of Japanese exports.

In the other two cases, non-electrical machinery and furniture, the covariance was positive. This was due, however, to an apparent

decrease in the intensity of exports in these products from both Canada and Japan to the U.S. This may indicate that, all else being equal, both countries were displaced in the U.S. markets for these products by other competitors.

3. Exports from Canada and the U.S. to Japan

As was previously noted in the discussion on bilateral trade interdependence, Canada and the U.S. are competitors in a number of export products. This was reflected in the extent of significant covariance that was found between Canadian and U.S. exports to Japan. The product areas where significant covariance was found are discussed below.

- a) Live animals. The trade intensity indexes for Canadian and U.S. exports to Japan were both fairly high, at 2.94 and 2.69 respectively. The correlation was positive, but the trend in the annual average change in intensity in both cases was downward, (annual change for Canada was -0.04, and for the U.S. was -0.08).
- b) Meat and meat preparations. The trade intensity indexes for Canadian and U.S. exports to Japan were 2.50 and 1.38, respectively. The correlation was positive. The trend in the case of both countries was towards increasing trade intensity. However, with an average annual change in intensity of 0.08, the U.S. appeared to be gaining market share at a faster rate than Canada, whose intensity changed at an average annual rate of only 0.01.
- c) Fish, crustaceans and molluscs. Canada's trade intensity index for its exports of these products to Japan was 1.51, compared to an index of 0.70 for the U.S. The correlation was positive, reflecting the upward trend in intensities over the period

studied for both countries. The U.S. intensity appeared to be increasing at a slightly greater rate, with an average annual change of 0.06, compared to that for Canada which was 0.04.

- d) Beverages. The trade intensity indexes for exports of this product from Canada and the U.S. to Japan were 0.23 and 0.26, respectively. The average annual change in intensity was the same for both countries, at 0.03, contributing to the positive correlation in their trade with Japan.
- e) Tobacco and tobacco manufactures. The U.S. trade intensity index for exports of this product to Japan was quite high at 3.87. This is contrasted to the intensity index for Canada, which was almost negligible at 0.04. The correlation between the two was negative. The U.S. showed an growing intensity of exports, with an average annual change of 0.06, compared to that for Canada which was declining at an average annual rate of 0.01.
- f) Textile fibres. This was a spurious correlation as the trade intensity for Canada was virtually nil.
- g) Crude fertilizers and crude minerals. The trade intensity indexes for exports from Canada and the U.S. to Japan were 1.50 and 1.41, respectively. The average annual change for Canada showed a decrease in intensity, at -0.04, while that for the U.S. showed no annual change on average. Nonetheless, the correlation in trade intensities between the two countries was shown to be positive.
- h) Coal, coke and briquettes. The intensity of Canada's exports to Japan was quite high, at 4.43. The intensity for U.S. exports was 1.73. Canada's trade intensity changed at an annual average rate of 0.33. This is contrasted to the annual average change

for the U.S. which showed a trend to decreasing intensity at -0.17. This was reflected in the correlation which was negative, and very significant at a t-value of -8.42. There is a strong indication that, all else being equal, Canadian exports of coal increased in importance to Japan at the expense of U.S. imports. This is likely due to the major investment by Japanese interests in coal projects in Canada, and the related coal export agreements.

- i) Natural and manufactured gas. The intensity indexes for exports to Japan of this product from both Canada and the U.S. were fairly low, at 0.34 and 0.22, respectively. Both also showed a downward trend, with average annual changes of -0.06 for Canada, and -0.01 for the U.S..
- j) Processed animal and vegetable oils, fats and waxes. This was a spurious correlation, as the intensity of Canada's exports to Japan was virtually nil.
- k) Dyeing, tanning and colouring materials. This correlation also was not very meaningful, as the intensity of Canada's exports to Japan was only 0.04, while that for the U.S. was 1.11.
- l) Rubber manufactures. The intensity index for U.S. exports to Japan was fairly high, at 1.59, while the index for Canada's exports was 0.17. However, the trend for Canada showed increasing intensity, as indicated by the average annual change of 0.04. This is contrasted to the average annual change of -0.03 in intensity for the U.S. The correlation is negative, reflecting the different direction of the changes.
- m) Paper, paperboard, newsprint. The trade intensity indexes for Canada and the U.S. were both high, at 2.95 and 2.79,

respectively. The average annual changes in intensity for both countries was positive. The intensity of U.S. exports, however, appeared to be increasing at a greater rate than that for Canada, as shown by their average annual changes in intensity of .13 and .03 respectively.

- n) Furniture and parts. The average annual intensity of Canada's exports to Japan was very low, at 0.03, limiting the relevance of this significant correlation.
- o) Travel goods, handbags, etc. Once again, the average annual intensity of Canada's exports was very low, at 0.02, and decreasing at an average annual rate of -0.01. The U.S.'s trade intensity index also was fairly low at 0.16, and decreasing at an average annual rate of -0.02. This accounts for the significant positive correlation; however, it is questionable whether the trade is at a high enough intensity to make it meaningful.
- p) Footwear. Again, the average annual intensity for Canada was so low as to render this significant correlation meaningless.
- q) Instruments, photographic and optical goods, watches and clocks. The results show perfect correlation between the intensity of exports in these products from the Canada and the U.S. to Japan. Canada's average annual intensity index was 0.16, while that for the U.S. was 2.90. The changes in intensity for both countries followed a positive trend, with average annual changes of 0.01 for Canada and 0.06 for the U.S.

In summary, there was a significant correlation between the intensity of U.S. and Canadian exports to Japan for a wide range of products. However, the relevance of this relationship was limited in many cases by the low level of the intensity of the Canadian exports. Areas

where the U.S. appeared to gain in importance in Japanese markets at a greater rate than Canada were exports of meat and fish products, paper, paperboard and newsprint. Canada, however, appeared to have made major inroads in the Japanese market for coal at the expense of the U.S. This is likely due to the extent of Japanese investment in coal production in Canada.

D. Triangular Trade Impacts

The basic thesis of this study is that the trade relationships among Canada, the U.S. and Japan are inter-related to the extent that developments between two of the countries can affect their respective relationships with the third. In this section, this thesis is tested by identifying instances when such bilateral developments occurred, and then looking for indications of their impact on the third country.

The primary concern of this study is the effect on Canada of developments in the relationship between the U.S. and Japan. In chapter 2, the history of the relationship between the U.S. and Japan was reviewed. It was noted that the relationship was poorly managed on both sides. In particular, economic conflicts generally were dealt with by the U.S. precipitating some form of action against Japan, and then, after the discussion escalated to a high level, Japan complying with U.S. demands.

Specific trade actions or interventions taken by the U.S. were identified. These actions typically were taken by the U.S. to protect its domestic market against Japanese imports, or to increase market access in Japan for American exports. This section looks at whether Canada was affected by these trade actions or interventions.

1. U.S. actions to protect its market against Japanese imports

The research question here is:

In areas where U.S. protectionist interventions were targeted at Japanese imports, did Canada gain ground in the U.S. market at Japan's expense, or were Japanese exports diverted to Canada?

Products where the U.S. undertook protectionist interventions in the time period covered by the study included:

- . Steel (SITC code 67)
- . Televisions (SITC code 72)
- . Automobiles (SITC code 73)

- (i) Steel: The two critical dates in respect of U.S. trade actions for steel are 1976, when an export restraint agreement was negotiated with the Japanese, and 1978, when a trigger price mechanism was implemented (this continued to 1982).

The intensities of Canadian and Japanese exports of steel to the U.S. are summarized in Table 5.4. There is some indication that Canada may have benefited from the imposition of the Trigger Price Mechanism. The intensity of Canadian exports of steel to the U.S. continued the steadily increasing trend begun a few years earlier, while the intensity of Japanese exports dropped abruptly in 1978. The intensity of exports from both countries strengthened in 1979 and 1980, then dropped in 1981. In 1982, when the Trigger Price Mechanism ended, the intensity of Canadian exports dropped abruptly, while that for Japanese exports remained firm.

TABLE 5.4. INTENSITY OF EXPORTS OF STEEL TO THE U.S.

<u>Year</u>	<u>Canada</u>	<u>Japan</u>
1974	0.37	2.84
1975	0.37	4.07
1976	0.47	3.93
1977	0.53	3.19
1978 - Trigger Price Mechanism	0.57	2.32
1979	0.66	2.88
1980	0.76	3.09
1981	0.67	2.35
1982	0.47	2.38
1983	0.63	1.78
1984	0.58	1.65
1985	0.57	1.49

TABLE 5.5. CORRELATION BETWEEN INTENSITY OF JAPANESE EXPORTS
TO THE U.S. AND TO CANADA - SELECTED PRODUCT GROUPS

<u>Product Group</u>	Japan to U.S./Japan to Canada	
	<u>r</u>	<u>t</u>
Iron and Steel	0.92	7.39
Electrical Machinery and Appliances	-0.20	-0.66
Transportation Equipment	0.52	1.92

In the remaining years of the period studied, the intensity of Canadian exports strengthened again, while the intensity of Japanese exports began a steady decline. This may be explained by the movement by Japan in the last decade towards restructuring its industrial base away from heavy, energy-intensive production, which was discussed in the second chapter.

Referring to Table 5.3, the correlation analysis did not show a significant relationship between the changes in the intensity of exports of iron and steel from Canada and Japan to the U.S. from 1974 to 1985. There was, however, a strong correlation between Japan's exports to the U.S. and its exports to Canada (see Table 5.5). However, referring to the average annual changes in intensity provided in Table 5.1, it appears that the trend was toward declining intensity, with the intensity of exports to Canada declining at a greater rate (-0.22) than the intensity of exports to the U.S. (-0.11). This clearly shows that trade diversion did not occur.

(ii) Televisions: An Orderly Marketing Agreement (OMA) was established between the U.S. and Japan in 1977. This was later dropped in return for increased investment by Japan in the U.S.

Table 5.6 presents the intensity of exports in electrical machinery and appliances, the SITC code group which includes televisions. The application of the findings for this product group to televisions specifically must be qualified because of the number and variety of other products included in the group.

TABLE 5.6. INTENSITY OF EXPORTS OF ELECTRICAL MACHINERY
AND APPLIANCES. FOCUS: TELEVISIONS

<u>Year</u>	<u>Japan to Canada</u>	<u>Japan to U.S.</u>	<u>Canada to U.S.</u>	<u>U.S. to Canada</u>
1974	3.67	0.44	0.10	0.40
1975	4.52	0.43	0.10	0.39
1976	4.31	0.38	0.06	0.37
1977 - U.S./Japan OMA	4.10	0.46	0.08	0.37
1978	3.87	2.30	0.28	0.38
1979	5.36	2.15	0.37	1.06
1980	4.59	2.02	0.39	1.09
1981	4.19	1.96	0.37	1.09
1982	3.55	1.77	0.33	1.03
1983	3.21	1.69	0.27	0.96
1984	2.95	2.27	0.29	0.91
1985	2.87	2.20	0.28	0.93

Referring to Table 5.6, it appears that the OMA may have had the opposite effect of what the U.S. intended: the intensity of Japanese exports to the U.S. is shown to have increased considerably, from 0.46 in 1977, to 2.30 in 1978, the year after the OMA was put in place.

Regarding the question of whether this trade action by the U.S. against Japan enabled exports from Canada to gain ground in U.S. markets, Table 5.6 indicates that the intensity of Canadian exports to the U.S. increased from 0.08 in 1977 to 0.28 in 1978, the year after the OMA was put in place. The intensity of Canadian exports to the U.S. continued to strengthen in the following years.

Canada's apparent increased intensity in the U.S. market does not appear to have been at the expense of Japanese exports, however. The results of the correlation analysis presented in Table 5.3 show no significant relationship between the intensities of Canadian and Japanese exports to the U.S. This was likely due to the increase in the intensity of Japanese exports which occurred at the same time.

Regarding the question of whether Japanese exports of these products were diverted to Canada as a result of the trade action, the correlation between the intensities of Japan's exports to the U.S. and to Canada were calculated. The results are shown in Table 5.5. A significant correlation was not found, suggesting that trade diversion did not occur.

- (iii) Automobiles: In 1981, the U.S. negotiated a three year Voluntary Export Restraint (VER) Agreement with Japan. In 1982, the U.S. House passed "local content for automobiles

TABLE 5.7. INTENSITIES OF EXPORTS OF TRANSPORTION EQUIPMENT

<u>Year</u>	<u>Japan to Canada</u>	<u>Japan to U.S.</u>	<u>Canada to U.S.</u>	<u>U.S. to Canada</u>
1974	1.11	3.32	1.94	1.33
1975	0.95	3.08	2.02	1.34
1976	1.08	2.62	2.20	1.32
1977	1.04	2.43	2.27	1.30
1978	1.21	2.07	2.01	1.27
1979	0.97	1.97	1.86	1.27
1980	1.61	2.11	1.66	1.25
1981 - U.S./Japan VER	1.83	2.03	1.75	1.25
1982 - U.S. Local Content Legis.	1.82	2.14	1.89	1.21
1983 - U.S./Japan VER renewed - Canada/Japan VER	1.59	2.34	1.90	1.20
1984	1.40	2.53	1.97	1.21
1985 - Japan voluntarily renews U.S. VER	1.16	2.98	1.79	1.22

legislation". Both of these instruments were renewed in 1983. In 1985, the U.S. declined to seek an extension of the VER, but Japan voluntarily continued the restraint at 25% of the level of the original VER.

Table 5.7 shows the intensities of exports of the SITC code 73 product grouping which includes automobiles. The U.S. trade actions (VER and local content legislation) do not appear to have reduced the intensity of Japanese exports of transportation equipment to the U.S. In fact, apart from a minor reduction in the intensity in 1981 (when the VER was first arranged), the intensity continued to increase from year to year.

Canadian trade actions, however, may have been more effective in curbing the influx of Japanese imports of automobiles. The intensity of Japanese exports of transportation equipment to Canada showed a marked reduction in 1983, the year that Canada negotiated the VER with Japan, and then continued to decline to the end of the period studied while the VER remained in effect.

Referring to Table 5.1, a significant negative correlation (-2.98) was found between the changing intensity of exports of transportation equipment (SITC code 73) from the U.S. and Japan to Canada. Referring to Table 5.1, the average trade intensities for the exports of this product group to Canada from the U.S. and Japan were 1.26 and 1.31, respectively. The average annual change in trade intensity, however, was -0.01 for the U.S., and 0.01 for Japan, hence the negative correlation. This would appear to indicate that, all else being equal, Japan was making gains in the Canadian market for transportation equipment at the expense of the U.S.

Regarding the question of whether Canada gained ground in the U.S. market at Japan's expense as a result of the U.S. trade actions, a significant correlation was not found between the changing intensity of exports of transportation equipment from Canada and Japan to the U.S.

Regarding the question of whether Japan's exports were diverted to Canada as a result of the U.S. protectionist action, Table 5.1 shows a significant positive correlation between the intensity of Japan's exports to the U.S. and to Canada. Referring to Table 5.1, there was some indication that the intensity of Japan's exports of transportation equipment to Canada was increasing at a marginally greater rate (average annual change was 0.01) than the intensity of Japan's exports of these products to the U.S. (average annual change of zero). This may indicate that, all else being equal, some trade diversion may have occurred.

In summary, Canadian exports of iron and steel may have gained a bit of ground in the U.S. market when the U.S. took trade actions against Japanese imports of steel; however, this was sporadic, and did not endure. There was no evidence of Japanese exports of steel being diverted to Canada from the U.S.

The intensity of Canadian exports of electrical equipment and appliances (the group which includes televisions) did increase during the period during which what the U.S. imposed an OMA on Japan. However, the data were not disaggregated enough to determine whether this applied to exports of televisions. There was no evidence that Japanese exports of these products were diverted to Canada.

There was no indication that Canadian exports of automobiles made any

gains in the U.S. market due to U.S. trade actions against Japan. There was some indication, however, that Japanese exports of automobiles may have been diverted to Canada.

2. U.S. actions to open Japanese markets

The initiatives that the U.S. undertook to open Japanese markets were discussed in chapter 2. The research question to test for triangularity in this context is:

In areas where the U.S. sought to gain access to the Japanese market, was this done at the expense of Canada's exports of the same product to Japan, or did Canada benefit by the market opening action?

Products which were the focus of the U.S.'s market opening efforts were agricultural products (beef, citrus and tobacco) and telecommunications.

- (i) Agricultural products. Canada has no exports of citrus fruits, and very limited exports of tobacco. Accordingly, the analysis will focus on the effect of U.S. market opening efforts on Canadian exports of beef to Japan.

In 1981, the U.S. called for total liberalization of beef markets and launched talks with Japan. In 1984, an agreement was reached which provided for a substantial increase in beef quotas.

Table 5.8 shows the intensity of Canadian and U.S. exports, respectively, to Japan. From the point of the initiation of discussions between the U.S. and Japan in 1981, to the end of the period studied, there is a marked decline in the intensity of Canadian exports of beef to Japan.

**TABLE 5.8. INTENSITY OF CANADIAN AND U.S. EXPORTS
OF MEAT AND MEAT PREPARATIONS TO JAPAN**

<u>Year</u>	<u>Canadian Exports</u>	<u>U.S. Exports</u>
1974	1.38	0.58
1975	2.79	1.18
1976	2.25	1.41
1977	3.00	1.19
1978	2.59	1.36
1979	2.30	1.36
1980	2.66	1.63
1981 - U.S. launches talks with Japan	3.30	1.58
1982	3.48	1.79
1983	2.95	1.65
1984 - Japan agrees to increase beef quotas for U.S.	1.84	1.40
1985	1.48	1.45

Referring to Table 5.3, the correlation between the changes in the intensity of the exports of beef to Japan from Canada and the U.S. shows a significant positive relationship.

Table 5.1 shows that the intensity of exports during 1974-1985 from both Canada and the U.S. trended upward; however, the average annual change in intensity for the U.S. was 0.08 while that for Canada was only 0.01.

In summary, there are indications that, all else being equal, the U.S.'s efforts to open markets for its own exports of beef to Japan may have had a negative effect on Canada's exports of beef to the same market.

- (ii) Telecommunications: In 1977 and 1978, the U.S. began to investigate the difficulties in accessing the Japanese markets for telecommunications products. In 1980, the U.S. and Japan entered into an agreement, two elements of which sought to increase U.S. access alone. In 1982, the U.S. House passed a telecommunications bill including strict reciprocity provisions. In 1985, largely due to U.S. pressure, the Japanese deregulated Nippon Telephone and Telegraph. The M.O.S.S. (market-oriented sector specific) talks, which included telecommunications, also were launched in 1985.

The intensity of exports in electrical machinery and appliances (SITC code 72) from Canada and the U.S. to Japan are summarized in Table 5.9. This is the product group which includes telecommunications. The application of the findings for this product group to televisions specifically must be qualified because of the number and variety of other products included in the group.

**TABLE 5.9. INTENSITY OF EXPORTS OF ELECTRICAL MACHINERY
AND APPLIANCES. FOCUS: TELECOMMUNICATIONS**

<u>Year</u>	<u>Canada to Japan</u>	<u>U.S. to Japan</u>
1974	0.19	2.74
1975	0.22	2.67
1976	0.13	2.68
1977 - U.S.begins to investigate market access problems	0.17	2.83
1978	0.12	2.90
1979	0.10	2.83
1980 - U.S./Japan enter into agreement with elements to increase U.S. access	0.11	2.84
1981	0.15	2.99
1982 - U.S. House passes telecom bill with reciprocity provisions	0.23	3.19
1983	0.19	3.07
1984	0.25	3.06
1985 - NTT deregulated and M.O.S.S. talks started	0.25	2.95

Reviewing the intensities of Canadian exports of electrical machinery and appliances in Table 5.9, there was some indication of declining intensities between 1977 and 1981, when the U.S. began to direct attention to the market access issue. Also, the intensity of U.S. exports strengthened, particularly subsequent to the passage by the U.S. House of the telecommunications bill.

Overall, however, the effect of the U.S. efforts on the intensity of Canadian exports to Japan are indeterminate. This is supported by the correlation analysis, which does not show a significant relationship between the changes in intensity of Canadian and U.S. exports of this product group to Japan.

In summary, there is some indication that Canadian exports of beef to Japan have been negatively affected by the U.S. efforts to increase its access to the Japanese markets for this product. The effect of U.S. market opening actions for telecommunications on Canadian exports of these products to Japan are indeterminate, however.

FOOTNOTES

1. E. E. Leamer, Sources of International Comparative Advantage: Theory and Evidence (Cambridge, Mass.: The MIT Press), 1987.
2. Ibid, 285.
3. Ibid.
4. Ibid, 62-63.
5. Ibid, 334.
6. Ibid.
7. Ibid, 309.

CHAPTER 6

CONCLUSIONS

The purpose of this study was to analyze the interdependence among Canada, the U.S. and Japan. The primary focus was possible "triangular" factors whereby the relationship between two of the countries affect their respective relationships with the third country. The effect of "triangular" factors on Canada as the third country, which could stem from developments in the relationship between the U.S. and Japan, were of particular interest.

The scope of the study was limited to trade relationships. Evidence of a "triangular" influence was defined as trade creation or diversion between Canada and the U.S. or Japan involving products that were the subject of a trade action between the U.S. and Japan.

Trade creation or diversion was operationalized in terms of the correlation between Canadian exports/imports involving the U.S., and Japanese exports/imports involving the U.S.; or between Canadian exports/imports involving Japan and U.S. exports/imports involving Japan. A significant correlation was interpreted as indicating that, all else being equal, the changes in exports/imports between two countries and the third were related. Where a significant relationship existed, it was predicted that a trade action which was taken to change the exports/imports between one country and the third country, would have an effect on the exports/imports between the second country and the third.

The research design for the study was based on conceptual and statistical constructs derived from the body of research on economic interdependence and trade resistances theory. Certain aspects of the research design may have introduced limitations to the sensitivity of the model used and ultimate interpretation of the results. These are noted below.

- . Measure of economic interdependence: The trade intensity index used measured the importance of a relationship relative to a number of factors. While this index controlled for factors such as size and inflation, and reflected the relative levels of exports among different trading partners, it was not the same as the value of exports. Thus, the interpretation of a correlation between the intensity of trade in a product between each of two countries and the third, is the degree to which the importance of the two bilateral trade relationships in that product change in a similar manner over time.
- . Level of data aggregation: Import data for product groups defined at the SITC level 2 code were used in the current study. This was an innovation relative to previous works where interdependence analysis was conducted at the level of more aggregated groupings. Level 2 code group data were adequate to test for "triangular" influences in certain products, e.g. meat products, automobiles and steel. However, in others

such as televisions and telecommunications, which are part of the same SITC code 2 level group, these data were not sufficiently detailed for the analysis, and the results must be qualified.

- . Trade as proxy for interdependence: Looking at trade data only excludes all the other dimensions, e.g. investment, of relationships among countries where "triangular" influences may be revealed. Further, the available trade data only cover trade in goods, and exclude trade in services, an area of growing importance for all these countries.

Also, while working from an empirical base provided the weight of actual actions to the analysis, it does not capture instances where the impact of the "triangular" influence was actions not taken. In all, the current study can only provide an incomplete picture of triangular interdependence.

With these qualifications in mind, the conclusions drawn from the study are discussed in terms of:

- . nature of the interdependence among Canada, the U.S. and Japan;
- . evidence of "triangular" impacts; and
- . the case for a "triangular trade policy" for Canada.

A. Nature of Interdependence among Canada, the U.S. and Japan

Overall, a higher than expected trade intensity was found for a large number of products in the trade among Canada, the U.S. and Japan. This confirms the perception that these countries are greatly interdependent and important to each other as trading partners. The areas of high intensity confirm known trading patterns.

The trade between Canada and the U.S. was quite symmetrical, i.e. horizontal trade exists in a range of product areas, including manufactured goods. Most of Canada's trade with the U.S. matched its global comparative advantage, although Canada exported a number of products to the U.S. in which it was considered to have a global disadvantage. This supports the tenets of trade resistances theory, which argue that proximity, cultural similarity, etc. can override global comparative disadvantage.

The trade between Canada and Japan was completely complementary, and matched each country's global comparative advantage very closely.

The profile of trade between the U.S. and Japan revealed the same anomaly that Kojima noted in the early 1960's. The U.S., an advanced industrial country, continued to be an important supplier of resource-based products and crude materials to Japan. This has contributed to the concern that the U.S. is locked in the "hewer of wood" categorization while Japan forges ahead in its exports of advanced manufactures.

At the same time, however, there was considerable horizontal trade in manufactures, e.g. plastics, machinery and equipment, etc., among the two countries. To the extent that Japan imports these products, the U.S. is a prime supplier.

B. Triangular Impacts

1. Exports to Canada from the U.S. and Japan

There are several products groups where trade between the U.S. and Canada, and Japan and Canada covaries closely.

In a small number of cases, the covariance was negative. In the case of chemical products, the covariance was negative, and there was an indication that, all else being equal, the U.S. may have increased its importance as an exporter to Canada at the expense of Japan. The reverse appears to have been the case with rubber manufactures and transportation equipment. Japan appears to have increased its importance as an exporter of these products to Canada at the expense of U.S. exports.

The covariance was significant and positive in a number of other product areas, such as textiles, non-metallic mineral manufactures, non-electrical machinery, travel goods and handbags, clothing, and footwear. However, in all these cases the changes in the intensity of exports from both countries to Canada showed a negative trend, leading to the conclusion that Canada diversified its sources of imports away from its two main trading partners in the period studied.

2. Exports to the U.S. from Canada and Japan

Because of the complementarity between Canada's and Japan's export profiles, there were few products that both export. Accordingly, there were only a few areas where a significant covariance was found in their trade with the U.S.

One such product group was fish, crustaceans and molluscs. In this case, there was evidence that, all else being equal, Canada was gaining in importance in the U.S. market at the expense of Japan.

A strong covariance was found in Canada and Japan's exports of non-electrical machinery to the U.S. The covariance was positive; however, the trade intensities for both countries showed a negative trend in the period studied, although to a lesser degree for Canada.

A positive covariance also was found between Canadian and Japanese exports of furniture and parts to the U.S. As in the previous case, the relationship was positive because the intensity of exports for both countries trended downward during the period studied. In this case, however, Canada appeared to be losing ground to a greater extent.

3. Exports to Japan from Canada and the U.S.

Canada and the U.S. were export competitors in a number of product categories. Areas of strong covariance where displacement in the Japanese market appeared to have occurred are noted below.

There was a strong negative covariance in the case of meat products, fish products, and paper, paperboard and newsprint, where the intensity of U.S. exports increased over the period studied while the intensity of Canadian exports decreased. This indicates that, all else being equal, the U.S. gained in importance in the Japanese market at Canada's expense.

The covariance in the exports of coal also was strong and negative; however, in this case the intensity of Canada's exports increased while the intensity of U.S. exports declined. The extent of the increase and decline was notable, and may have reflected the gains that Canada made in the Japanese market due to its joint investments with Japan in development of coal fields in British Columbia, and the related coal sales agreements. There are similar major investments currently being made by Japanese companies in pulp and paper plants in Western Canada, leading one to predict that the trend previously noted in trade intensity for paper, paperboard and newsprint may be reversed in the future.

4. Impacts of U.S. Protectionist Trade Actions Against Japan

The question asked here was whether Canada gained ground in the U.S. market at Japan's expense, or whether Japanese exports were diverted to Canada when the U.S. undertook trade actions to protect its market against Japanese exports. Products which were subjects of such trade actions during the period studied included steel, televisions and automobiles.

- a) Steel: There was no evidence from the correlation analysis to indicate that Canadian exports increased in importance in the U.S. market during the period of the study. However, the intensity of Japanese exports dropped abruptly in 1978, the year that the Trigger Price Mechanism was established, while the intensity of Canadian exports continued to strengthen. The reverse was true in 1982 when the Trigger Price Mechanism was removed: in this year the intensity of Canadian exports of steel dropped abruptly, while the intensity of Japanese exports held firm.

There is no evidence to indicate that Japanese exports of steel were diverted to Canada as a result of the U.S. actions.

- b) Televisions: There is some indication that the intensity of Canadian exports to the U.S. increased in the product group which includes televisions. However, this increase was not accompanied by a decrease in the intensity of Japanese exports to the U.S.

There was no evidence of Japanese exports of this product group being diverted to Canada as a result of the U.S. trade action.

- c) Automobiles: There was no indication that Canada gained ground in the U.S. market at the expense of Japan as a result of U.S. protectionist measures against Japanese imports. There was, however, some indication of trade diversion from the U.S. to Canada. Over the period studied, the intensity of Japanese exports to Canada covaried significantly with the

intensity of Japanese exports to the U.S.; however, the intensity of trade with Canada increased at a greater rate. This, and the concern over the lack of investment in automobile manufacturing in Canada, was what prompted the Canadian government to negotiate its own VER with Japan.

5. Impacts of U.S. actions to open Japanese markets

In the period studied, there were only two areas where the U.S. had initiated market opening actions in Japan that involved products also exported by Canada. These were beef and telecommunications. The market-opening talks subsequently undertaken by the U.S. and Japan have dealt with other areas of interest to Canada.

In the case of beef, the evidence from the analysis was that, all else being equal, the U.S. efforts to open Japanese markets to its own exports may have negatively affected Canadian exports of beef to Japan. The increasing intensity of U.S. exports during the period in question was accompanied by a notable decline in the intensity of Canadian exports to Japan.

In the case of telecommunications, the effect was indeterminate. There was some indication, based on the trade intensity figures, that in the early years of U.S. action (the mid- to late-1970's), the intensity of Canadian exports declined. In the later years, the effect was not clear. This may have been due to the fact that not all the market-opening which occurred in Japan for telecommunications was specifically for U.S. products. Also, the picture is clouded by the fact that

telecommunications is only one of several different types of electrical equipment that make up the product group which was analyzed.

C. The Case for a "Triangular Trade Policy" for Canada

The trends which will mark the evolution of the international trade system in the next decade are emerging. There is the noted move to regional trading blocs. The Canada/U.S. Trade Agreement is a recent example. The possibility of expanding the FTA to include Mexico to form a complete North American trading bloc is periodically raised.

In other areas of the world, Europe is moving towards complete integration in 1992, and Pacific Rim countries are formalizing their efforts to explore the possibility of a Pacific trading bloc. The dramatic political changes in Eastern Europe will likely result in equally dramatic economic change. If these economies are reorganized as open economies, and achieve reasonable levels of production and consumption, they will add a potent new element to the world trading system.

Looking within the Canada/U.S./Japan triangle, the trends will likely be to increased integration between Canada and the U.S. as the FTA matures, and production moves to greater specialization and rationalization between the two countries. The U.S. and Japan appear to be headed toward "managed trade", as the U.S. seeks ways of assuring its access to Japanese markets.

The direction that the relationship between Canada and Japan will take is less clear. The conclusion of this

study is that this "link" in the triangle is the weakest, and Canada's exports to Japan may be particularly vulnerable to U.S. actions to gain access to the Japanese market. Canada should formulate a policy for protecting and enhancing its position with respect to Japan that takes full cognizance of U.S.'s trade policy. This policy should provide for both defensive actions, to mitigate against the negative impacts of the U.S.'s efforts to manage its trade with Japan, and offensive actions, to use the U.S. actions as a springboard to achieve Canada's own objectives.

The types of defensive and offensive strategies that Canada may consider adopting are outlined below.

- . In products where Canada's exports covary strongly with U.S. exports to Japan, Canada should seek Japanese investment in Canada to secure certain levels of trade flows. This approach was effective in the case of coal investments, and will likely be effective with pulp and paper.
- . Canada could independently seek its own comprehensive or product/sector specific trade agreements with Japan.
- . Canada could lobby against the U.S.'s actions to seek guaranteed access or reciprocity in Japanese markets in the fora offered by the GATT and current multilateral trade negotiations. Canada also could press the U.S. to resolve its disputes with Japan within the context of these institutions.
- . Conversely, Canada could encourage the U.S. to regularize its trade relationship with Japan in a

comprehensive trade agreement, preferably through an extension of the Canada/U.S. FTA. This would considerably reduce the uncertainties for Canada and other third parties who stand to be negatively affected by the volatile and acrimonious dealings between the U.S. and Japan.

- . Canada could promote a Pacific Rim multilateral trade bloc which would include itself, the U.S., Japan and other countries in the Region.
- . Failing the above, if the U.S. proceeds with product or sector specific trade arrangements with Japan, Canada could seek most favoured nation status on these deals on the strength of its FTA with the U.S. Canada also could go further to seek full common market status with the U.S., whereby it automatically would enjoy the same arrangements that the U.S. negotiates with other countries.

These options clearly require further assessment, and any strategies adopted would of necessity require a balancing of domestic and international political and other sensitivities of the day.

D. Conclusion

This study has demonstrated the strong degree of interdependence among Canada, the U.S. and Japan. It also has shown that Canada's trade with Japan is closely related to the U.S.'s trade with Japan.

Canada has established a formal mechanism through the FTA for pursuing its trade objectives with the U.S. The U.S. is attempting to establish various mechanism to pursue its trade objectives with Japan. There is some evidence that Canada's trade interests are negatively affected by U.S. trade arrangements with Japan.

To "hold its own" within the trade triangle, Canada should develop a policy which deals specifically with the "triangular" aspect of its relationships with the U.S. and Japan. This policy would be best formulated to build on existing multilateral trading institutions. However, the world trading system in the next decade is likely to be less rather than more open, and more complex with new players. If necessary, Canada should seek special considerations and exemptions in U.S.-Japan trade deals to protect its interests and achieve its own trade objectives.

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S.I.T.C. REVISED 2

C.T.C.I. RÉVISÉE

PRODUCT CLASSIFICATION

CLASSIFICATION DES PRODUITS

SECTION 0	FOOD AND LIVE ANIMALS CHIEFLY FOR FOOD	PRODUITS ALIMENTAIRES ET ANIMAUX VIVANTS DESTINÉS PRINCIPALEMENT À L'ALIMENTATION HUMAINE
DIVISION 00	LIVE ANIMALS CHIEFLY FOR FOOD	ANIMAUX VIVANTS DESTINÉS PRINCIPALEMENT À L'ALIMENTATION HUMAINE
001	Group 001 = Division 00	Group 001 = Division 00
DIVISION 01	MEAT AND MEAT PREPARATIONS	VIANDES ET PRÉPARATION DE VIANDE
011	Meat and edible meat offals, fresh, chilled or frozen	Viandes et abats comestibles, frais, réfrigérés ou congelés
012	Meat and edible meat offals (except poultry liver), salted in brine, dried or smoked	Viandes et abats comestibles de toutes espèces (à l'exclusion des foies de volailles), salés ou en saumure, séchés ou fumés
014	Meat and edible meat offals, prepared or preserved n.e.s.	Préparations ou extraits de viandes n.d.a., extraits de poisson
DIVISION 02	DAIRY PRODUCTS AND BIRDS' EGGS	PRODUITS LAITIERS ET ŒUFS D'OISEAUX
022	Milk and cream	Lait et crème de lait
023	Butter	Beurre
024	Cheese and curd	Fromage et caillébrut
025	Eggs, birds', and egg yolks, fresh, dried or otherwise preserved, sweetened or not	Œufs d'oiseaux et jaunes d'œufs, frais, séchés ou autrement conservés, sucrés ou non
DIVISION 03	FISH, CRUSTACEANS AND MOLLUSCS, AND PREPARATIONS THEREOF	POISSONS, CRUSTACÉS ET MOUSQUÉS ET PRÉPARATIONS DE POISSONS, DE CRUSTACÉS ET DE MOUSQUÉS
034	Fish, fresh (live or dead), chilled or frozen	Poissons frais (vivants ou morts), réfrigérés ou congelés
035	Fish, dried, salted or in brine; smoked fish	Poissons séchés, salés ou en saumure, poissons fumés
036	Crustaceans and molluscs, fresh (live or dead), chilled, frozen, salted, in brine or dried;	Crustacés et mollusques, y compris les coquillages, frais (vivants ou morts), réfrigérés, congelés, séchés, salés ou en saumure
037	Fish, crustaceans and molluscs, prepared or preserved n.e.s.	Poissons, crustacés et mollusques, préparés ou conservés n.d.a.
DIVISION 04	CEREALS AND CEREAL PREPARATIONS	CÉRÉALES ET PRÉPARATIONS À BASE DE CÉRÉALES
041	Wheat (including spelt) and meslin, unmilled	Froment (y compris l'épeautre) et mêlé non moulu
042	Rice	Riz
043	Barley, unmilled	Orge non moulue
044	Maize (corn), unmilled	Mais non moulu
045	Cereals, unmilled (other than wheat, rice, barley and maize)	Céréales non moulues, autres que le froment, le riz, l'orge et le maïs
046	Meal and flour of wheat and flour of meslin	Semoule et farine de froment et farine de mêlé
047	Other cereal meals and flours	Autres semoules et farines de céréales
048	Cereal preparations and preparations of flour or starch of fruits or vegetables	Préparations à base de céréales et préparations à base de farines et de féculs de fruits ou de légumes
DIVISION 05	VEGETABLES AND FRUIT	ÉGUMES ET FRUITS
054	Vegetables, fresh, chilled, frozen or simply preserved tubers and other edible vegetable products	Légumes et plantes potagères, frais, congelés ou simplement conservés, racines, tubercules et autres produits végétaux comestibles
056	Vegetables, roots and tubers, prepared or preserved n.e.s.	Légumes, racines et tubercules, préparés ou conservés n.d.a.
057	Fruit and nuts (not including oil nuts), fresh or dried	Fruits (à l'exception des fruits oléagineux), frais ou séchés
058	Fruit, preserved, and fruit preparations	Préparations et conserves de fruits
DIVISION 06	SUGAR, SUGAR PREPARATIONS AND HONEY	SUCRES, PRÉPARATIONS À BASE DE SUCRE ET MIEL
061	Sugar and honey	Sucres et miel
062	Sugar confectionery (except chocolate confectionery) and other sugar preparations	Sucreries et autres préparations à base de sucre (non compris la confiserie au chocolat)
DIVISION 07	COFFEE, TEA, COCOA, SPICES, AND MANUFACTURES THEREOF	CAFÉ, THÉ, CACAO, ÉPICES ET PRODUITS DÉRIVÉS
071	Coffee and coffee substitutes	Café et succédanés du café
072	Cocoa	Cacao
073	Chocolate and other food preparations containing cocoa n.e.s.	Chocolat et autres préparations alimentaires contenant du cacao n.d.a.
074	Tea and mate	Thé et maté
075	Spices	Épices

DIVISION 08	FEEDING STUFF FOR ANIMALS (NOT INCLUDING UNMILLED CEREALS)	NOURRITURE DESTINÉE AUX ANIMAUX (À L'EXCLUSION DES CÉRÉALES NON MOULUES)
081	Group 081 - Division 08	Groupe 081 - Division 08
DIVISION 09	MISCELLANEOUS EDIBLE PRODUCTS AND PREPARATIONS	PRODUITS ET PRÉPARATIONS ALIMENTAIRES DIVERS
091	Margarine and shortening	Margarine et graisses culinaires
098	Edible products and preparations, n.e.s.	Produits et préparations alimentaires, n.d.a.
SECTION 1	BEVERAGES AND TOBACCO	BOISSONS ET TABAC
DIVISION 11	BEVERAGES	BOISSONS
111	Non alcoholic beverages, n.e.s.	Boissons non alcooliques, n.d.a.
112	Alcoholic beverages	Boissons alcooliques
DIVISION 12	TOBACCO AND TOBACCO MANUFACTURES	TABAC BRUTS ET FABRIQUÉS
121	Tobacco, unmanufactured, tobacco refuse	Tabacs bruts ou non fabriqués, déchets de tabac
122	Tobacco, manufactured	Tabacs fabriqués
SECTION 2	CRUDE MATERIALS, INEDIBLE, EXCEPT FUELS	MATIÈRES BRUTES NON COMESTIBLES, CARBURANTS NON COMPRIS
DIVISION 21	HIDES, SKINS AND FURSKINS, RAW	CUIRS, PEaux ET PELLÉTERIES, BRUTS
211	Hides and skins (except furskins), raw	Cuirs et peaux (à l'exception des peletteries), bruts
212	Furskins, raw (including astrakhan, caracul, Persian lamb, broadtail and similar skins)	Pelleteries brutes (y compris les peaux d'astrakan, de caracul, d'agneau Shivar, de breuschwanz et peaux similaires)
DIVISION 22	OIL SEEDS AND OLEAGINOUS FRUIT	GRAINES ET FRUITS OLÉAGINEUX
222	Oil seeds and oleaginous fruit, of a kind used for the extraction of "soft" fixed vegetable oils	Graines et fruits oléagineux servant normalement à l'extraction d'huiles végétales fixes douces
223	Oil seeds and oleaginous fruit, of a kind used for the extraction of other fixed vegetable oils	Graines et fruits oléagineux servant normalement à l'extraction d'autres huiles fixes
DIVISION 23	CRUDE RUBBER (INCLUDING SYNTHETIC AND RECLAIMED)	CAOUTCHOUC BRUT (Y COMPRIS LE CAOUTCHOUC SYNTHÉTIQUE ET LE CAOUTCHOUC RÉGÉNÉRÉ)
232	Natural rubber latex, natural rubber and similar natural gums	Lates de caoutchouc naturel, caoutchouc naturel et gommes naturelles analogues
233	Synthetic rubber latex, synthetic rubber and reclaimed rubber, waste and scraps of unhardened rubber	Lates de caoutchouc synthétique, caoutchouc synthétique et caoutchouc régénéré, déchets et débris d'ouvrages en caoutchouc non durcis
DIVISION 24	CORK AND WOOD	LIÈGE ET BOIS
244	Cork, natural, raw and waste (including natural cork in blocks or sheets)	Liège naturel brut et déchets (y compris le liège naturel en blocs ou en feuilles)
245	Fuel wood (excluding wood waste) and wood charcoal	Bois de chauffage (à l'exclusion des déchets de bois) et charbon de bois
246	Pulpwood (including chips and wood waste)	Bois de tréfilerie (y compris les plaquettes et les déchets de bois)
247	Other wood in the rough or roughly squared	Autres bois bruts ou simplement équarris
248	Wood, simply worked, and railway sleepers of wood	Bois simplement travaillés et traverses en bois pour voies ferrées
DIVISION 25	PULP AND WASTE PAPER	PATES À PAPIER ET DÉCHETS DE PAPIER
251	Group 251 - Division 25	Groupe 251 - Division 25
DIVISION 26	TEXTILE FIBRES (OTHER THAN WOOL TOPS) AND THEIR WASTES (NOT MANUFACTURED INTO YARN OR FABRIC)	FIBRES TEXTILES (À L'EXCEPTION DES LAINES EN RUBANS, TOPS ET FILLES DÉCHETS, NON TRANSFORMÉS EN FILS OU EN TISSUS)
261	Silk	Série
262	Cotton	Coton
264	Jute and other textile bast fibres, n.e.s., raw or processed but not spun, tow and waste thereof	Jute et autres fibres textiles herbacées, n.d.a., brutes, décortiquées ou autrement traitées mais non filées, étoupes et déchets de ces fibres (y compris les effluves)
265	Vegetable textile fibres (other than cotton and jute) and waste of such fibres	Fibres végétales autres que le coton et le jute
266	Synthetic fibres suitable for spinning	Fibres synthétiques de longueur suffisante pour pouvoir être filées
267	Other man made fibres suitable for spinning and waste of man made fibres	Autres fibres textiles synthétiques et artificielles de longueur suffisantes pour pouvoir être filées et déchets de fibres textiles synthétiques et artificielles, n.d.a.
268	Wool and other animal hair (excluding wool tops)	Laines et poils fins ou grossiers (non compris les rubans de laine peignée, étoupes et fils de tops)
269	Old clothing and other old textile articles, rags	Épave, drilles et chiffons
DIVISION 27	CRUDE FERTILIZERS AND CRUDE MINERALS (INCLUDING COAL, PETROLEUM AND PRECIOUS STONES)	ENGRAIS BRUTS ET MINÉRAUX BRUTS (À L'EXCEPTION DU CHARBON, DU PÉTROLE ET DES PIERRES PRÉCIEUSES)
271	Fertilizers, crude	Engrais bruts
273	Stone, sand and gravel	Pierres, sables et graviers
274	Sulphur and unroasted iron pyrites	Soufre et pyrites de fer non grillées
277	Natural abrasives, n.e.s. (including industrial diamonds)	Abrasifs naturels, n.d.a. (y compris les diamants industriels)
278	Other crude minerals	Autres minéraux bruts
DIVISION 28	METALLIFEROUS ORFS AND METAL SCRAP	MINÉRAIS MÉTALLIQUES ET DÉCHETS DE MÉTAUX
281	Iron ore and concentrates	Minerais de fer et concentrés
282	Waste and scrap metal of iron or steel	Ferrailles, déchets et débris d'ouvrages de fonte, de fer ou d'acier

286	Ores and concentrates of uranium and thorium	Minerais d'uranium et de thorium, même enrichis
287	Ores and concentrates of base metals, n.e.s.	Minerais de métaux communs, même enrichis, n.d.a.
288	Non ferrous base metal waste and scrap n.e.s.	Déchets et débris de métaux communs non ferreux, n.d.a.
289	Ores and concentrates of precious metals: waste, scrap and sweepings of precious metals (other than gold)	Minerais des métaux précieux, même enrichis, déchets d'or, déchets et débris de métaux précieux (à l'exclusion de l'or)
DIVISION 29	CRUDE ANIMAL AND VEGETABLE MATERIALS, N.E.S.	MATIÈRES BRUTES D'ORIGINE ANIMALE OU VÉGÉTALE, N.D.A.
291	Crude animal materials, n.e.s.	Matières brutes d'origine animale, n.d.a.
292	Crude vegetable materials, n.e.s.	Matières brutes d'origine végétale, n.d.a.
SECTION 3	MINERAL FUELS, LUBRICANTS AND RELATED MATERIALS	COMBUSTIBLES MINÉRAUX, LUBRIFIANTS ET PRODUITS CONNEXES
DIVISION 32	COAL, COKE ET BRIQUETTES	HOUILLES, COKES ET BRIQUETTES
322	Coal, lignite and peat	Houilles, lignites et tourbe
323	Briquettes; coke and semi-coke of coal, lignite or peat return carbon	Briquettes, cokés et semi-cokés de houille, de lignite et de tourbe, charbon de cokéfaction
DIVISION 33	PETROLEUM, PETROLEUM PRODUCTS AND RELATED MATERIALS	PÉTROLE ET PRODUITS DÉRIVÉS DU PÉTROLE ET PRODUITS CONNEXES
333	Petroleum oils, crude, and crude oils obtained from bituminous minerals	Huiles brutes de pétrole ou de minéraux bitumineux
334	Petroleum products, refined	Produits raffinés du pétrole
335	Residual petroleum products, n.e.s. and related materials	Produits résiduels du pétrole, n.d.a. et produits connexes
DIVISION 34	GAS, NATURAL AND MANUFACTURED	GAZ NATUREL ET GAZ MANUFACTURÉS
341	Group 341 = Division 34	Groupe 341 = Division 34
DIVISION 35	ELECTRIC CURRENT	ÉNERGIE ÉLECTRIQUE
351	Group 351 = Division 35	Groupe 351 = Division 35
SECTION 4	ANIMAL AND VEGETABLE OILS, FATS AND WAXES	HUILES, GRAISSES ET CIRES D'ORIGINE ANIMALE OU VÉGÉTALE
DIVISION 41	ANIMAL OILS AND FATS	HUILES ET GRAISSES D'ORIGINE ANIMALE
411	Group 411 = Division 41	Groupe 411 = Division 41
DIVISION 42	FIXED VEGETABLE OILS AND FATS	HUILES VÉGÉTALES FIXES
423	Fixed vegetable oils, "soft", crude, refined or purified	Huiles végétales fixes, douces, brutes, épurées ou raffinées
424	Other fixed vegetable oils, fluid or solid, crude, refined or purified	Autres huiles végétales fixes
DIVISION 43	ANIMAL AND VEGETABLE OILS AND FATS, PROCESSED, AND WAXES OF ANIMAL OR VEGETABLE ORIGIN	HUILES ET GRAISSES ANIMALES ET VÉGÉTALES, PRÉPARÉES, ET CIRES D'ORIGINE ANIMALE ET VÉGÉTALE
431	Group 431 = Division 43	Groupe 431 = Division 43
SECTION 5	CHEMICALS AND RELATED PRODUCTS, N.E.S.	PRODUITS CHIMIQUES ET PRODUITS CONNEXES, N.D.A.
DIVISION 51	ORGANIC CHEMICALS	PRODUITS CHIMIQUES ORGANIQUES
511	Hydrocarbons, n.e.s., and their halogenated, sulphonated, nitrated or nitrosated derivatives	Hydrocarbures, n.d.a. et leurs dérivés halogénés, sulfonés, nitrés et nitrosés
512	Alcohols, phenols, phenol alcohols, and their halogenated, sulphonated, nitrated or nitrosated derivatives	Alcools, phénols, phénols alcools, et leurs dérivés halogénés, sulfonés, nitrés, nitrosés
513	Carboxylic acids, and their anhydrides, halides, peroxides peroxides and peracids, and their halogenated, sulphonated, nitrated or nitrosated derivatives	Acides carboxyliques, leurs anhydrides, halogénures, peroxydes et peracides, leurs dérivés halogénés, sulfonés, nitrés, nitrosés
514	Nitrogen function compounds	Compounds à fonctions azotées
515	Organo-inorganic and heterocyclic compounds	Compounds organo-minéraux et compounds hétérocycliques
516	Other organic chemicals	Autres produits chimiques organiques
DIVISION 52	INORGANIC CHEMICALS	PRODUITS CHIMIQUES INORGANIQUES
522	Inorganic chemical elements, oxides and halogen salts	Produits chimiques inorganiques, éléments, oxydes et sels halogénés
523	Other inorganic chemicals; organic and inorganic compounds of precious metals	Autres produits chimiques inorganiques, compounds inorganiques ou organiques de métaux précieux
524	Radio active and associated materials	Matières radioactives et produits associés
DIVISION 53	DYEING, TANNING AND COLOURING MATERIALS	PRODUITS POUR TEINTURE ET TANNAGE ET COLORANTS
531	Synthetic organic dyestuffs, etc., natural indigo and colour lakes	Matières colorantes organiques synthétiques, etc., indigo naturel et lacs colorantes
532	Dyeing and tanning extracts, and synthetic tanning materials	Extraits utilisés pour la teinture et le tannage et produits tannants synthétiques
533	Pigments, paints, varnishes and related materials	Pigments, peintures, vernis et produits connexes
DIVISION 54	MEDICINAL AND PHARMACEUTICAL PRODUCTS	PRODUITS MÉDICINAUX ET PHARMACEUTIQUES
541	Group 541 = Division 54	Groupe 541 = Division 54
DIVISION 55	ESSENTIAL OILS AND PERFUME MATERIALS TOILET, POLISHING AND CLEANSING PREPARATIONS	HUILES ESSENTIELLES ET PRODUITS UTILISÉS EN PARFUMERIE, PRÉPARATIONS POUR LA TOILETTE, PRODUITS D'ENTRETIEN ET DE NETTOYAGE
551	Essential oils, perfume and flavour materials	Huiles essentielles, produits utilisés en parfumerie et en confiserie
553	Perfumery, cosmetics and toilet preparations (excluding soaps).	Produits de parfumerie ou de toilette préparés et cosmétiques préparés (à l'exception des savons).
554	Soap, cleansing and polishing preparations	Savons, produits détergents et produits d'entretien

DIVISION 56	FERTILIZERS, MANUFACTURED
562	Group 562 = Division 56
DIVISION 57	EXPLOSIVES AND PYROTECHNIC PRODUCTS
572	Group 572 = Division 57
DIVISION 58	ARTIFICIAL RESINS AND PLASTIC MATERIALS, AND CELLULOSE ESTERS AND ETHERS
582	Condensation, polycondensation and polyaddition products, whether or not modified
583	Polymerization and copolymerization products
584	Regenerated cellulose; cellulose nitrate, cellulose acetate and other cellulose esters, cellulose ethers
585	Other artificial resins and plastic materials
DIVISION 59	CHEMICAL MATERIALS AND PRODUCTS, N.E.S.
591	Disinfectants, insecticides, fungicides, weed killers, anti-sprouting products, rat poisons and similar products
592	Starches, inulin and wheat gluten; albuminoidal substances; glues
598	Miscellaneous chemical products, n.e.s.

SECTION 6 MANUFACTURED GOODS CLASSIFIED CHIEFLY BY MATERIAL

DIVISION 61	LEATHER, LEATHER MANUFACTURES, N.E.S., AND DRESSED FURSKINS
611	Leather
612	Manufactures of leather or of composition leather, n.e.s.; saddlery and harness; parts of footwear n.e.s.
613	Furskins, tanned or dressed
DIVISION 62	RUBBER MANUFACTURES, N.E.S.
621	Materials of rubber (e.g., plates, sheets, rods, thread, tubes, of rubber)
625	Rubber tyres, tyre cases, interchangeable tyre treads, inner tubes and tyre flaps, for wheels of all kinds
628	Articles of rubber, n.e.s.
DIVISION 63	CORK AND WOOD MANUFACTURES (EXCLUDING FURNITURE)
633	Cork manufactures
634	Veneers, plywood, "improved" or reconstituted wood, and other wood, worked, n.e.s.
635	Wood manufactures, n.e.s.
DIVISION 64	PAPER, PAPERBOARD, AND ARTICLES OF PAPER PULP, OF PAPER OR OF PAPERBOARD
641	Paper and paperboard
641.1	Newsprint
642	Paper and paperboard, cut to size or shape, and articles of paper or paperboard
DIVISION 65	TEXTILE YARN, FABRICS, MADE UP ARTICLES, N.E.S., AND RELATED PRODUCTS
651	Textile yarn
652	Cotton fabrics, woven (not including narrow or special fabrics)
653	Fabrics, woven, of man made fibres (not including narrow or special fabrics)
654	Textile fabrics, woven, other than of cotton or man made fibres
655	Knitted or crocheted fabrics (including tubular knit fabrics, pile fabrics and open work fabrics)
656	Tulle, lace, embroidery, ribbons, trimmings and other small wares
657	Special textile fabrics and related products
658	Made-up articles, wholly or chiefly of textile materials, n.e.s.
659	Floor coverings, etc.
DIVISION 66	NON-METALLIC MINERAL MANUFACTURES, N.E.S.
661	Lime, cement, and fabricated construction materials (except glass and clay materials)
662	Clay construction materials and refractory construction materials
663	Mineral manufactures, n.e.s.
664	Glass
665	Glassware
666	Pottery

ENGRAIS MANUFACTURÉS
Group 562 = Division 56
EXPLOSIFS ET ARTICLES DE PYROTECHNIE
Groupe 572 = Division 57
MATIÈRES PLASTIQUES ARTIFICIELLES, ETHERS ET ESTERS DE LA CELLULOSE ET RÉSINES ARTIFICIELLES
Produits de condensation, de polycondensation et de polyaddition, modifiés ou non
Produits de polymérisation et copolymérisation
Cellulose régénérée, nitrates, acétates et autres esters de la cellulose; éthers de la cellulose
Autres résines artificielles et matières plastiques
MATIÈRES ET PRODUITS CHIMIQUES, N.D.A.
Désinfectants, insecticides, fongicides, herbicides, anti-rongeurs, antiparasitaires et similaires présentés à l'état de préparation
Amidons, inuline, gluten de froment, matières albuminoides et colles
Produits divers des industries chimiques, n.d.a.

ARTICLES MANUFACTURÉS CLASSÉS PRINCIPALEMENT D'APRÈS LA MATIÈRE PREMIÈRE

CUIRS ET PEAUX, PRÉPARÉS ET OUVRAGES EN CUIR, N.D.A., ET PELLETIERES APPRÊTÉES
Cuirs et peaux, préparés
Ouvrages en cuir, n.d.a.; articles de bourrellerie ou de sellerie, parties de chaussures, n.d.a.
Pelletteries tannées ou apprêtées
CAOUTCHOUC MANUFACTURÉ, N.D.A.
Produits en caoutchouc (par exemple, pâtes, plaques, feuilles, baguettes, fils et tubes en caoutchouc)
Bandages, pneumatiques, bandes de roulement amovibles pour pneumatiques, chambres à air et « flaps », en caoutchouc vulcanisé non durci, pour roues de tous genres
Ouvrages en caoutchouc, n.d.a.
OUVRAGES EN LIÈGE ET EN BOIS (À L'EXCEPTION DES MEUBLES)
Ouvrages en liège
Placages, contre plaques, bois dits « améliorés » ou « reconstitués » et autres bois façonnés, n.d.a.
Articles manufactures en bois, n.d.a.
PAPIERS, CARTONS ET OUVRAGES EN PÂTE DE CELLULOSE, EN PAPIER ET EN CARTON
Papiers et cartons
Papier journal
Papiers et cartons découpés en vue d'un usage déterminé, ouvrages en papier et carton
FILS, TISSUS, ARTICLES TEXTILES FAÇONNÉS, N.D.A., ET PRODUITS CONNEXES
Fils textiles
Tissus de coton (à l'exception des tissus en petite largeur et des tissus spéciaux)
Tissus de fibres et filés synthétiques ou artificielles (à l'exception des tissus en petite largeur et des tissus spéciaux)
Tissus autres que les tissus de coton ou de matières textiles synthétiques et artificielles
Étoffes de bonneterie, en pièces, plates ou tubulaires, y compris les étoffes façon velours, peluches et tissus bouclés et la bonneterie à jours
Tulles, dentelles, broderies, rubans, passementeries et autres articles de mercerie
Tissus spéciaux et produits connexes en matières textiles
Articles façonnés entièrement ou principalement en matières textiles, n.d.a.
Couvre parquets, tapis, etc.
ARTICLES MINÉRAUX NON MÉTALLIQUES MANUFACTURÉS, N.D.A.
Ciments, ciments et matériaux de construction fabriqués (à l'exception de l'argile et du verre)
Matériaux de construction en argile et matériaux de construction réfractaires
Articles minéraux manufacturés, n.d.a.
Verre
Ouvrages en verre
Poterie

667	Pearls, precious and semi precious stones, unworked or worked
DIVISION 67	IRON AND STEEL
671	Pig iron, spiegelisen, sponge iron, iron or steel powders and shot, and ferro alloys
672	Ingot and other primary forms, of iron or steel
673	Iron and steel bars, rods, angles, shapes and sections (including sheet piling)
674	Universals, plates and sheets, of iron or steel
675	Strip and strip, of iron or steel, hot rolled or cold rolled
676	Rails and railway track construction material, of iron or steel
677	Iron or steel wire (excluding wire rod), whether or not coated but not insulated
678	Tubes, pipes and fittings, of iron or steel
679	Iron and steel castings, forgings and stampings, in the rough state, n.e.s.
DIVISION 68	NON FERROUS METALS
681	Silver, platinum and other metals of the platinum group
682	Copper
683	Nickel
684	Aluminum
685	Lead
686	Zinc
687	Tin
688	Uranium depleted in U235 and thorium, and their alloys, unwrought or wrought, and articles thereof, n.e.s., waste and scrap of uranium depleted in U235 and of thorium
689	Miscellaneous non ferrous base metals employed in metallurgy, and cermets
DIVISION 69	MANUFACTURES OF METAL, N.E.S.
691	Structures and parts of structures, n.e.s., of iron, steel or aluminum
692	Metal containers for storage and transport
693	Wire products (excluding insulated electrical wiring) and fencing grills
694	Nails, screws, nuts, bolts, rivets and the like, of iron, steel or copper
695	Tools for use in the hand or in machines
696	Cutlery
697	Household equipment of base metal, n.e.s.
699	Manufactures of base metal, n.e.s.
SECTION 7	MACHINERY AND TRANSPORT EQUIPMENT
DIVISION 71	POWER GENERATING MACHINERY AND EQUIPMENT
711	Steam and other vapour generating boilers, super heated water boilers, and auxiliary plant for use thereon, and parts thereof, n.e.s.
712	Steam and other vapour power units, not incorporating boilers; steam engines (including mobile engines), and parts thereof, n.e.s.
713	Internal combustion piston engines, and parts thereof, n.e.s.
714	Engines and motors, non electric (other than those of groups 712, 713 and 718); parts, n.e.s. of the engine and motors of group 714 and item 718.88
716	Rotating electric plant and parts thereof, n.e.s.
718	Other power generating machinery and parts thereof, n.e.s.
DIVISION 72	MACHINERY SPECIALIZED FOR PARTICULAR INDUSTRIES
721	Agricultural machinery (excluding tractors) and parts thereof, n.e.s.
722	Tractors, whether or not fitted with power take offs, winches or pulleys
723	Civil engineering and contractors' plant and equipment and parts thereof, n.e.s.
724	Textile and leather machinery, and parts thereof, n.e.s.
725	Paper mill and pulp mill machinery, paper cutting machines and other machinery for the manufacture of paper articles, and parts thereof, n.e.s.

Perles fines, pierres gemmes et simulacres, brutes ou travaillées
FERRAILLAGE
Fente, fonte spiegel, fer spongieux, poudres et grenailles de fer et d'acier et ferro allages
Ingots et formes primaires équivalents en fer ou en acier
Barres et profils en fer ou en acier (y compris les palplanches)
Grands plats et tôles, en fer ou en acier
Feuillards en fer ou en acier, lames à chaud ou à froid
Rails et autres éléments de voies ferrées, en fonte, fer ou acier
Fils de fer ou d'acier, nus ou revêtus (à l'exclusion des fils isolés pour l'électrification)
Tubes, tuyaux et accessoires de tuyauterie, en fonte, fer ou acier
Ouvrages en fonte, fer ou acier, à l'état brut, n.d.a.
MÉTALLS NON FERRUEUX
Argent, platine et autres métaux de la mine du platine
Cuivre
Nickel
Aluminium
Plomb
Zinc
Étain
Uranium appauvri en U235 et thorium et leurs alliages, bruts ou ouvrés, et ouvrages dans ces métaux, n.d.a., déchets et débris d'uranium appauvri en U235 et de thorium
Autres métaux communs non ferreux utilisés en métallurgie et cermets
ARTICLES MANUFACTURÉS EN MÉTAL, N.D.A.
Constructions et parties de constructions, n.d.a., en fer, en acier ou en aluminium
Réceptacles métalliques pour le stockage et le transport
Ouvrages en fils métalliques (à l'exclusion des articles isolés pour l'électrification, grillages et articles similaires)
Clous, vis, écrous, boulons, rondelles, rivets et articles similaires, en fer, en acier ou en cuivre
Outils à main et outils pour machines
Coutellerie
Articles de ménage et d'économie domestique en métaux communs, n.d.a.
Articles manufacturés en métaux communs, n.d.a.
MACHINES ET MATÉRIEL DE TRANSPORT
MACHINES GÉNÉRATRICES MOTEURS ET LEUR EQUIPMENT
Générateurs de vapeur d'eau ou d'autres vapeurs, générateurs de vapeur d'eau surchauffée et leurs appareils auxiliaires, leurs parties et pièces détachées, n.d.a.
Machines à vapeur d'eau ou autres vapeurs, séparées de leurs chaudières, assemblées et machines demi-axes, à vapeur, et leurs parties
Moteurs à explosion ou à combustion interne, à pistons, et leurs parties et pièces détachées, n.d.a.
Moteurs et machines motrices, non électriques (autres que ceux des groupes 712, 713 et 718); parties et pièces détachées, n.d.a., des moteurs et machines motrices du groupe 714 et de la position 718.88
Machines et appareils électriques rotatifs et leurs pièces détachées, n.d.a.
Autres moteurs et machines motrices et leurs parties et pièces détachées, n.d.a.
MACHINES ET APPAREILS SPÉCIALISÉS POUR LES INDUSTRIES PARTICULIÈRES
Machines agricoles (à l'exclusion des tracteurs) et leurs parties et pièces détachées, n.d.a.
Tracteurs, y compris les tracteurs régulés
Appareils et matériels de génie civil et de construction, et leurs parties et pièces détachées, n.d.a.
Machines et appareils pour l'industrie textile et pour la préparation et le travail des cuirs et peaux, et leurs parties et pièces détachées, n.d.a.
Machines et appareils pour la fabrication de la pâte à papier et du papier, coupeuses et autres appareils pour la fabrication d'articles en papier, et leurs parties et pièces détachées, n.d.a.

726	Printing and bookbinding machinery, and parts thereof, n.e.s.	Machines et appareils pour l'imprimerie, le brochage et la reliure; et leurs parties et pièces détachées, n.d.a.
727	Food processing machines (excluding domestic) and parts thereof, n.e.s.	Machines et appareils pour l'industrie alimentaire (à l'exclusion des appareils ménagers) et leurs parties et pièces détachées, n.d.a.
728	Other machinery and equipment specialized for particular industries, and parts thereof, n.e.s.	Autres machines et appareils spécialisés pour industries particulières, et leurs parties et pièces détachées, n.d.a.
DIVISION 73	METALWORKING MACHINERY	MACHINES ET APPAREILS POUR LE TRAVAIL DE MÉTAUX
736	Machine tools for working metal or metal carbides, and parts and accessories thereof, n.e.s.	Machines-outils pour le travail des métaux et des carbures métalliques, leurs parties, pièces détachées et accessoires, n.d.a.
737	Metalworking machinery (other than machine tools), and parts thereof, n.e.s.	Machines et appareils pour le travail des métaux (autres que les machines-outils), et leurs parties et pièces détachées, n.d.a.
DIVISION 74	GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT, N.E.S., AND MACHINE PARTS, N.E.S.	MACHINES ET APPAREILS INDUSTRIELS, D'APPLICATION GÉNÉRALE, N.D.A., ET PARTIES ET PIÈCES DÉTACHÉES, N.D.A., DE MACHINES, D'APPAREILS ET D'ENGINS
741	Heating and cooling equipment and parts thereof, n.e.s.	Machines et appareils de chauffage et de réfrigération, et leurs parties et pièces détachées, n.d.a.
742	Pumps (including motor and turbo pumps) for liquids, whether or not fitted with measuring devices.	Pompes, moto pompes et turbo pompes pour liquides (y compris les pompes non mécaniques et les pompes distributrices comportant un dispositif mesureur).
743	Pumps (other than pumps for liquids) and compressors; fans and blowers; centrifuges.	Pompes (autres que les pompes pour liquides) et compresseurs, ventilateurs et similaires, centrifugeuses.
744	Mechanical handling equipment, and parts thereof, n.e.s.	Équipement mécanique de manutention, parties et pièces détachées, n.d.a.
745	Other non electrical machinery, tools and mechanical apparatus, and parts thereof, n.e.s.	Autres machines, appareils et outils, non électriques; et leurs parties et pièces détachées, n.d.a.
749	Non electric parts and accessories of machinery, n.e.s.	Parties, pièces détachées et accessoires, non électriques, de machines, d'appareils et d'engins mécaniques, n.d.a.
DIVISION 75	OFFICE MACHINES AND AUTOMATIC DATA PROCESSING EQUIPMENT	MACHINES ET APPAREILS DE BUREAU OU POUR LE TRAITEMENT AUTOMATIQUE DE L'INFORMATION
751	Office machines	Machines et appareils de bureau
752	Automatic data processing machines and units thereof; magnetic or optical readers, machines for transcribing data into data media in coded form and machines for processing such data, n.e.s.	Machines automatiques de traitement de l'information et de leurs unités, lecteurs magnétiques ou optiques, machines de mise d'informations sur support sous forme codée et machines de traitement de ces informations, n.d.a.
759	Parts, n.e.s. of and accessories (other than covers, carrying cases and the like) suitable for use solely or principally with machines of a kind falling within heading 751 or 752	Pièces détachées et accessoires (autres que les coffrets, les housses et similaires), n.d.a., reconnaissables comme étant exclusivement ou principalement destinées aux machines et appareils des groupes 751 et 752
DIVISION 76	TELECOMMUNICATIONS AND SOUND RECORDING AND REPRODUCING APPARATUS AND EQUIPMENT	APPAREILS ET ÉQUIPEMENT DE TÉLÉCOMMUNICATION ET POUR L'ENREGISTREMENT ET LA REPRODUCTION DU SON
761	Television receivers (including receivers incorporating radio broadcast receivers or sound recorders or reproducers)	Recepteurs de télévision (y compris les récepteurs combinés avec un récepteur de radiodiffusion ou avec un appareil d'enregistrement ou de reproduction du son)
762	Radio broadcast receivers (including receivers incorporating sound recorders or reproducers)	Recepteurs de radiodiffusion (y compris les récepteurs combinés avec un appareil d'enregistrement ou de reproduction du son)
763	Gramophones, dictating machines and other sound recorders and reproducers, television image and sound recorders and reproducers, magnetic	Phonographes, machines à dicter et autres appareils d'enregistrement et de reproduction du son, appareils d'enregistrement et de reproduction des images et du son en télévision, par procédé magnétique
764	Telecommunications equipment, n.e.s., and parts, n.e.s. of and accessories for the apparatus and equipment falling within division 76	Équipement de télécommunication, n.d.a., et parties, pièces détachées et accessoires, n.d.a., des appareils et de l'équipement de la division 76
DIVISION 77	ELECTRICAL MACHINERY, APPARATUS AND APPLIANCES, N.E.S., AND ELECTRICAL PARTS THEREOF	MACHINES ET APPAREILS ÉLECTRIQUES, N.D.A., ET LEURS PARTIES ET PIÈCES DÉTACHÉES ÉLECTRIQUES
771	Electric power machinery (other than the rotating electric plant of heading 7161) and parts thereof, n.e.s.	Machines et appareils pour la production et la transformation de l'électricité (autres que les machines rotatives électriques du groupe 7161) et leurs parties et pièces détachées, n.d.a.
772	Electrical apparatus for making and breaking electrical circuits, for the protection of electrical circuits or for making connections to or in electrical circuits, resistors, fixed or variable (including potentiometers), printed circuits, switch boards, and control panels, n.e.s., parts, n.e.s.	Appareillage pour la coupure, le sectionnement, la protection, le branchement ou la connexion des circuits électriques, résistances non chauffantes, potentiomètres et rhéostats, circuits imprimés, tableaux de commande ou de distribution, n.d.a., leurs pièces détachées, n.d.a.
773	Equipment for distributing electricity	Équipement pour la distribution d'électricité
774	Electric apparatus for medical purposes and radiological apparatus	Appareils d'électricité médicale et appareils de radiologie
775	Household type, electrical and non electrical equipment, n.e.s.	Machines et appareils, électriques ou non, à usage domestique, n.d.a.
776	Thermionic, cold cathode and photo cathode valves and tubes (including vapour or gas filled valves and tubes, cathode ray tubes, television camera tubes and mercury arc rectifying valves and tubes), photocells, mounted piezo	Lampes, tubes et valves électroniques (à cathode chaude, à cathode froide ou à photocathode, tels que groupes 778, 779) lampes, tubes et valves à vapeur ou à gaz (y compris les tubes rectificateurs à vapeur de

		electric crystals; diodes, transistors and similar semi-conductor devices; electronic microcircuits; and parts thereof, n.e.s.	mercurel, tubes cathodiques, tubes et valves pour appareils de prise de vues en television, etc.; cellules photoelectriques; cristaux piezo electriques montes; diodes, transistors et dispositifs similaires a semi-conducteur; microstructures electroniques et leurs parties et pieces detachees, n.d.a.
	778	Electrical machinery and apparatus, n.e.s.	Autres machines et appareils electriques, n.d.a.
DIVISION 78		ROAD VEHICLES (INCLUDING AIR-CUSHION VEHICLES)	VÉHICULES ROUTIERS (Y COMPRIS LES VÉHICULES A COUSSIN D'AIR)
	781	Passenger motor cars (other than public-service type vehicles), including vehicles designed for the transport of both passengers and goods	Véhicules automobiles a tous moteurs, pour le transport des personnes, autres que pour le transport en commun, y compris les vehicules mixtes
	782	Motor vehicles for the transport of goods or materials and special purpose motor vehicles	Véhicules automobiles a tous moteurs, pour le transport des marchandises et vehicules automobiles a usages speciaux
	783	Road motor vehicles, n.e.s.	Vehicules automobiles routiers, n.d.a.
	784	Parts and accessories, n.e.s. of the motor vehicles falling within heading 722, 781, 782 or 783	Parties, pieces detachees et accessoires, n.d.a., des vehicules automobiles routiers et des tracteurs relevant des groupes 722, 781, 782 et 783
	785	Motorcycles, motor scooters and other cycles, motorized and non-motorized; invalid carriages	Motocycles, scooters et autres vehicules, avec ou sans moteur; fauteuils et vehicules similaires pour le transport des malades et des invalides
	786	Trailers and other vehicles, not motorized, n.e.s. and specially designed and equipped transport containers	Remorques et autres vehicules non automobiles, n.d.a., et cadres et containers pour tous modes de transport
DIVISION 79		OTHER TRANSPORT EQUIPMENT	AUTRE MATÉRIEL DE TRANSPORT
	791	Railway vehicles (including hovertrains) and associated equipment	Vehicules et materiel pour chemins de fer (y compris les aérotrains)
	792	Aircraft and associated equipment, and parts thereof, n.e.s.	Appareils de navigation aerienne et materiel connexe: leurs parties et pieces detachees, n.d.a.
	793	Ships, boats (including hovercraft) and floating structures	Nauvres, bateaux et engins flottants, y compris les semi-glisseurs
SECTION 8		MISCELLANEOUS MANUFACTURED ARTICLES	ARTICLES MANUFACTURÉS DIVERS
DIVISION 81		SANITARY, PLUMBING, HEATING AND LIGHTING FIXTURES AND FITTINGS, N.E.S.	APPAREILS SANITAIRES ET APPAREILS AGÉ DE PLUMBING, DE CHAUFFAGE ET D'ÉCLAIRAGE, N.D.A.
	812	Group 812 = Division 81	Groupe 812 = Division 81
DIVISION 82		FURNITURE AND PARTS THEREOF	MÉUBLES ET LEURS PARTIES ET PIÈCES DÉTACHÉES
	821	Group 821 = Division 82	Groupe 821 = Division 82
DIVISION 83		TRAVEL GOODS, HANDBAGS AND SIMILAR CONTAINERS	ARTICLES DE VOYAGE, SACS À MAIN ET CONTAINANTS SIMILAIRES
	831	Group 831 = Division 83	Groupe 831 = Division 83
DIVISION 84		ARTICLES OF APPAREL AND CLOTHING ACCESSORIES	VÊTEMENTS ET ACCESSOIRES DE VÊTEMENT
	842	Outer garments, men's and boys' of textile fabrics (other than knitted or crocheted goods)	Vêtements de dessus pour hommes et garçonnets, en matières textiles, autres que de bonneterie
	843	Outer garments, women's, girls' and infants', of textile fabrics (other than knitted or crocheted goods)	Vêtements de dessus pour femmes, fillettes et jeunes enfants, en matières textiles, autres que de bonneterie
	844	Under garments of textile fabrics (other than knitted or crocheted goods)	Vêtements de dessous (linge de corps) en matière textiles, autres que de bonneterie
	845	Outer garments and other articles, knitted or crocheted, not elastic nor rubberized	Vêtements de dessous et accessoires du vêtement de bonneterie non élastique ni caoutchoutée
	846	Under garments, knitted or crocheted	Seus vêtements de bonneterie
	847	Clothing accessories, of textile fabrics, n.e.s.	Accessoires du vêtement en matières textiles, n.d.a.
	848	Articles of apparel and clothing accessories, for other than textile fabrics; headgear of all materials	Vêtements et accessoires du vêtement en matières autres que les matières textiles; coiffures en toutes matières
DIVISION 85		FOOTWEAR	CHAUSSURES
	851	Group 851 = Division 85	Groupe 851 = Division 85
DIVISION 87		PROFESSIONAL, SCIENTIFIC AND CONTROLLING INSTRUMENTS AND APPARATUS, N.E.S.	INSTRUMENTS ET APPAREILS PROFESSIONNELS SCIENTIFIQUES ET DE CONTRÔLE, N.D.A.
	871	Optical instruments and apparatus	Appareils et instruments d'optique
	872	Medical instruments and appliances, n.e.s.	Instruments et appareils médicaux chirurgicaux, n.d.a.
	873	Meters and counters, n.e.s.	Compteurs et instruments de mesure, n.d.a.
	874	Measuring, checking, analysing and controlling instruments and apparatus, n.e.s.; parts and accessories, n.e.s. of groups 873 and 874	Instruments de mesure, de vérification, d'analyse et de contrôle, n.d.a.; parties, pieces detachees et accessoires, n.d.a., des groupes 873 et 874
DIVISION 88		PHOTOGRAPHIC APPARATUS, EQUIPMENT AND SUPPLIES AND OPTICAL GOODS, N.E.S.; WATCHES AND CLOCKS	APPAREILS ET FOURNITURES DE PHOTOGRAPHIE ET D'OPTIQUE, N.D.A.; MONTRES ET HORLOGES
	881	Photographic apparatus and equipment, n.e.s.	Appareils et équipement photographiques, n.d.a.
	882	Photographic and cinematographic supplies	Produits photographiques et cinematographiques
	883	Cinematograph film, exposed and developed, whether or not incorporating sound track or consisting only of sound track negative or positive	Films cinematographiques, impressions et des loupes comportant ou non l'enregistrement du son ou ne comportant que l'enregistrement du son; négatifs ou positifs
	884	Optical goods, n.e.s.	Éléments d'optique et articles de lunetterie, n.d.a.
	885	Watches and clocks	Horlogerie
DIVISION 89		MISCELLANEOUS MANUFACTURED ARTICLES, N.E.S.	ARTICLES MANUFACTURÉS DIVERS, N.D.A.

842	Printed matter
843	Articles, n.e.s. of materials of the kinds described in division 38
844	Baby carriages, toys, games and sporting goods
845	Office and stationery supplies, n.e.s.
846	Works of art, collectors' pieces and antiques
847	Jewellery, goldsmiths' and silversmiths' wares, and other articles of precious or semi-precious materials, n.e.s.
848	Musical instruments and parts and accessories thereof (including phonograph records and the like)
849	Other miscellaneous manufactured articles, n.e.s.
SECTION 9	COMMODITIES AND TRANSACTIONS NOT CLASSIFIED ELSEWHERE IN THE SITC
911	Postal package not classified according to kind
931	Special transactions and commodities not classified according to kind
941	Animals, live, n.e.s. (including zoo animals, dogs, cats, insects, etc.)
951	Armoured fighting vehicles, arms of war and ammunition therefor, and parts of arms, n.e.s.
961	Coin (other than gold coin), not being legal tender
971	Gold, non monetary (excluding gold ores and concentrates)

Imprimés
Ouvrages, n.d.a., en matières de la division 38
Voitures pour le transport des enfants, jouets, jeux, et articles pour divertissements et pour sports
Articles de papeterie et fournitures de bureau, n.d.a.
Objets d'art, de collection et d'antiquité
Bijouterie, orfèvrerie, et autres ouvrages en métaux précieux, n.d.a.
Instruments de musique et leurs parties, pièces détachées et accessoires (y compris les disques pour phonographes et articles similaires)
Autres articles manufacturés divers, n.d.a.
ARTICLES ET TRANSACTIONS NON CLASSÉS AILLEURS DANS LA CTCI
Colis postaux, non classés par catégorie
Transactions spéciales et articles non classés par catégorie
Animaux vivants, n.d.a. (y compris les animaux de jardins zoologiques, les chiens, les chats, les insectes, etc.)
Véhicules blindés de combat, armes de guerre et leurs munitions, leurs parties et pièces détachées pour armes, n.d.a.
Monnaies n'ayant pas cours légal (autres que les pièces d'or)
Or, non monétaire (à l'exclusion des minerais et concentrés d'or)

	TOTAL IMPORTS (U.S.\$ Billions)											
	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Canada	34.248	36.106	40.243	42.083	46.278	56.642	62.544	70.01	58.128	64.789	77.789	80.64
U.S.	110.875	105.88	132.498	160.411	196.045	222.228	256.984	273.352	254.884	269.878	341.179	361.627
Japan	61.948	57.86	64.894	71.34	9.922	109.831	141.296	142.866	131.499	126.437	136.176	130.488
World	805.1	837.6	947.6	1085.7	1260.1	1583.6	1946.3	1928.8	1806.6	1751.1	1858.9	1890.2

	TOTAL EXPORTS (U.S.\$ Billions)											
	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Canada	34.508	34.074	40.598	43.545	48.431	58.294	67.734	72.726	71.234	76.749	90.272	90.95
U.S.	98.552	108.112	115.413	121.232	143.766	182.025	220.786	233.739	212.276	200.538	217.89	213.144
Japan	55.469	55.819	67.304	81.083	98.211	102.299	130.441	151.495	138.385	146.965	169.7	177.164

Source: International Monetary Fund, International Financial Statistics Yearbook. (Washington: IMF, 1988), 70-71

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