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CANADA
IN
INDIA
CANADA-INDIA TRADE

Retrospect and Prospects



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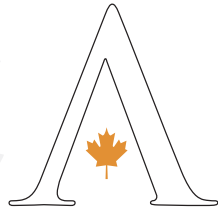
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September, 2003

CANADA



CANADA IN ASIA

IN

INDIA

CANADA-INDIA TRADE

Retrospect and Prospects

ACRONYMS



CIDA	_____	Canadian International Development Agency
CIS	_____	Commonwealth of Independent States
DFAIT	_____	Department of Foreign Affairs and International Trade
DGCIS	_____	Directorate General of Commercial Intelligence and Statistics
EC	_____	European Community
FTA	_____	Free Trade Agreement
GATT	_____	General Agreement on Tariffs and Trade
HS	_____	Harmonized Commodity Description and Coding System
IMF	_____	International Monetary Fund
ISIC	_____	International Standard Industrial Classification
OECD	_____	Organization for Economic Cooperation and Development
OPEC	_____	Organization of Petroleum Exporting Countries
PMP	_____	Phased Manufacturing Programmes
RBI	_____	Reserve Bank of India
RCA	_____	Revealed Comparative Advantage
RXA	_____	Revealed Export Advantage
SITC	_____	Standard International Trade Classification
UAE	_____	United Arab Emirates
US	_____	United States
USSR	_____	Union of Soviet Socialist Republics
WTO	_____	World Trade Organization



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EXECUTIVE SUMMARY



- 1 This report provides a comprehensive review of the Canada-India merchandise trading relationship for the period 1985-2000, with specific emphasis on Canadian exports to India. We examine the nature of Canada-India merchandise trade, identifying sectors in which Canada has a comparative advantage and prospects for increasing Canada's exports to India.

GROWTH OF CANADIAN EXPORTS TO INDIA

- 2 We compared the growth of Canadian exports to India with Canada's export growth to 18 other emerging markets. At 6.2% per year, we find Canada's export growth to India was statistically lower than export growth to many emerging markets.

STRUCTURE OF CANADIAN EXPORTS TO INDIA

- 3 The structure of Canadian exports to India has changed only slightly over the past 15 years. At the 1-digit SITC level, Raw Materials still account for about one-third of exports to India. The major growth areas included Food and Live Animals and Manufactured Goods, contributing over 57% and 28% respectively, to the growth of Canadian exports to India. The only area of negative growth was the Animal and Vegetable Oils industry contributing -36% to Canadian export growth. It is significant to note that the share of Raw Materials in Canada's exports to India was almost twice the share of this product category in Canadian exports to other emerging markets.
- 4 Although Canadian exports to India are characterized as being largely comprised of raw materials, at the industry level (3-digit SITC), exports to India are not more concentrated than to other emerging markets. In fact, over the past 15 years, Canadian exports to India were less concentrated than exports to both China and Indonesia. Among OECD countries, Canadian exports to India were less concentrated than exports to India by other 'commodity' exporters such as Australia and New Zealand.

VOLATILITY OF CANADIAN EXPORTS TO INDIA

- 5 Canadian exports to India tended to be as volatile as exports to other emerging markets over the 1985-2000 period. The source of this volatility is concentrated in 20 sectors that accounted for roughly two-thirds of Canada's exports to India. India ranks relatively high, 4th out of 16 emerging markets, with respect to how much these top-20 sectors contributed to export volatility.
- 6 We developed a new model to explain the causes of Canadian export instability to India. Based on panel regression estimates on 18 sectors for the 1993-1999 period, we find that export concentration and changes in Indian tariffs have an impact on Canadian export stability. Export diversification strategies of the Government of Canada together with on-going liberalization of the Indian economy will likely result in reduced volatility in Canadian exports to India.
 - On average, we find a 1% increase in concentration results in a 0.25% increase in export instability. Our results vary across sectors with instability in the Paper Products and Transport Equipment sectors showing large and significant responses to increases in export concentration (between 3.9%-6.4%).
 - We also find that as Indian tariffs decline by 1%, Canadian export growth accelerates by 3%. Further, a 1% decline in Indian tariffs also results in a 2.9% decrease in volatility of Canadian exports.

DISCREPANCIES IN CANADA-INDIA TRADE AND TRANSSHIPMENT

- 7 There appears to be a high degree of under-reporting of Indian exports to Canada. Over the 1990-2001 period, we found that on average 27% of Indian exports to Canada were under-reported. We found that most of the top-25 products (at the 4-digit HS level) exported by India to Canada were under-reported. The magnitude of under-reporting was extremely high in the case of various apparel products including: Linen, T-Shirts/Singlets, Women's and Girls Nightwear, and non-retail Cotton.

-
- 8 In terms of Canada's exports to India, we do not see any consistent pattern of under- or over-reporting at the aggregate level. Over the period 1990-2001, the average discrepancy between Indian import statistics and Canadian export statistics was +5.6% — Indian importers on average showed imports from Canada to be more than export figures shown in Canadian trade statistics. We also observe high *under-reporting* in manufactured products such as Optical Fiber/ Lenses, Flat Rolled Products of Iron/Non-alloy Steel, Apparatus for Medical Use, and Electrical Apparatus for Telephonic Use. Many of these sectors were priority sectors in DFAIT's *South Asia Trade Action Plan*.
- 9 This under-reporting of Canadian exports to India likely does not include the transshipment of goods through hub ports. Using a new methodology, we estimate that transshipped products may account for an additional 15% of Canadian exports to India to the tune of C\$ 100 million. These products make their way to India mainly through the United States (75%), Singapore (12%), and Hong Kong (9%).

CANADA'S COMPARATIVE ADVANTAGE IN INDIA

- 10 For the 1985-2000 period, we used three measures of Revealed Export Advantage (RXA) to assess Canada's export potential and to gauge Canada's comparative advantage in India relative to other OECD countries. Using our first measure (RXA-1), Canada's export advantage appears to lie in 32 industries (at the 3-digit SITC level). Many of these industries are traditional areas of Canadian exports to India such as pulp and wastepaper, paper and paperboard, manufactured fertilizers, and sulphur/iron pyrites.
- 11 Using another measure (RXA-3), there are several additional industries where Canada exhibits a revealed export advantage, primarily in the infrastructure and

power sectors. These include: rotating electric plants, internal combustion piston engines, machinery & equipment for particular industries, electric power machinery, and steam generators.

- 12 Using RXA-1, we found 25 industries exhibit a "moderate" disadvantage for Canadian exports to India (relative to OECD countries). Some of these sectors could be considered allied sectors to those included in DFAIT's *South Asia Trade Action Plan*. They included: wood manufactures, optical instruments, telecommunications equipment, railway vehicles and associated equipment, and equipment for distributing electricity.
- 13 Using RXA-3, we also compared Canada's performance relative to other OECD competitors in five industries: pulp and wastepaper, paper and paperboard, power generating machinery, civil engineering & contractors' equipment, and telecommunications equipment. With the exception of telecommunications equipment, Canada has a comparative advantage over its OECD competitors. However, in the power and infrastructure industries, Canada's competitive position declined substantially over the past decade.

POLICY RECOMMENDATIONS

A: Policy Makers Should Stay Away from Explicit Export Growth Targets

Canada's export growth to a market like India is significantly lower than to many other emerging markets with large middle classes. If we take the 6.2% per year growth achieved by Canadian exports over the past 15 years as a reasonable estimate of future growth prospects, Canadian exports to India would *double* in about 11 years. It is quite obvious, therefore, that the stated goal of doubling trade with India by 2003 — as was made by various Canadian Ministers — will not be achieved even in the short to medium term.

The policy implication here is that while setting export growth targets may help focus government energies,

underlying incentive structures for the private sector remain unchanged. A more appropriate strategy would be to set longer-term targets that are explicitly linked to India-specific initiatives and are mindful of the underlying structure of Canadian exports to India.

B: Priority Sectors in the *South Asia Trade Action Plan* are Well Placed

We find that the priority sectors outlined in successive *South Asia Trade Action Plans* target industries where Canada has reasonable prospects for export growth in the medium- to long- term. Sectors such as mining and minerals, electricity; and various transport industries (primarily railways) show some comparative advantages over the past 15 years.

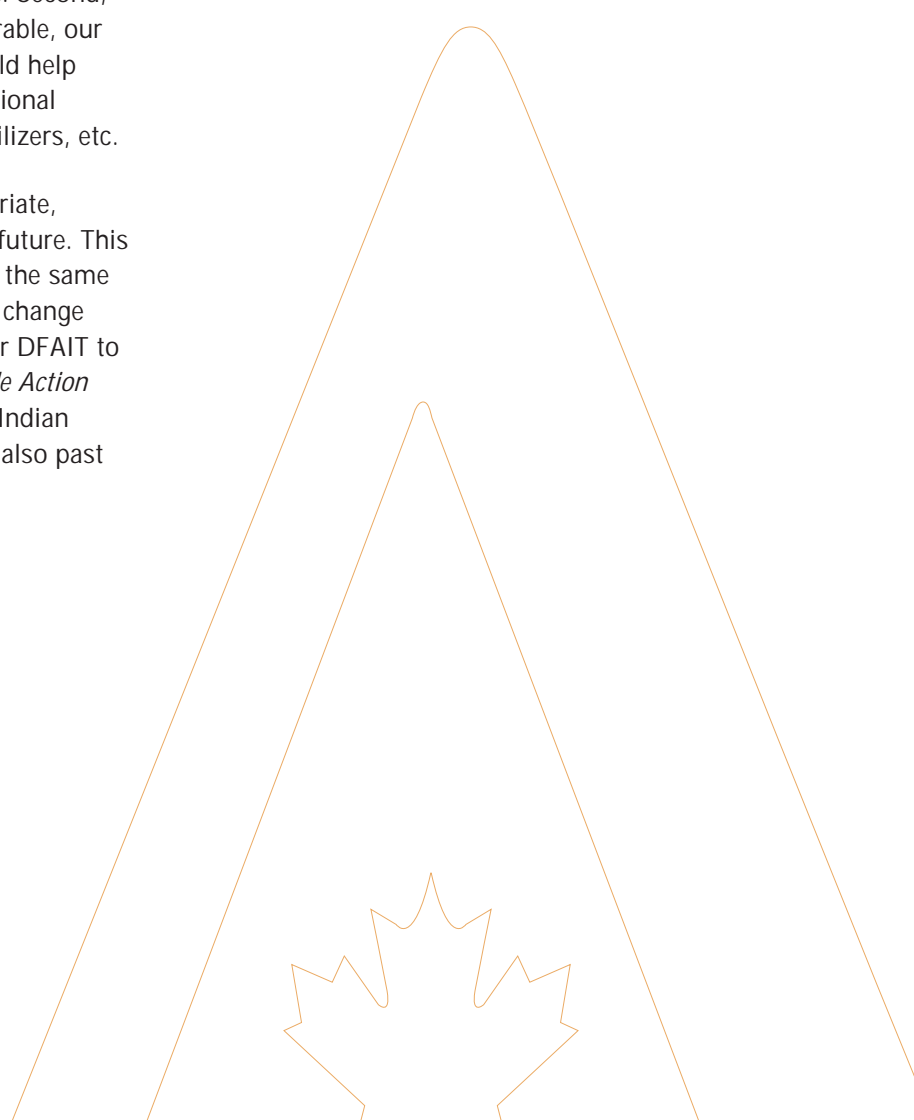
The policy implication of this finding is that DFAIT should not alter the priority sector “model” as far as India is concerned. This is due to two reasons. First, most priority sectors have shown some comparative advantages over the past 15 years. Their selection was based on an in-depth analysis of not only Canadian expertise but also Indian market conditions. Second, to the extent that export volatility is undesirable, our analysis shows that the priority sectors could help diversify Canadian exports away from traditional sectors such as paper and paperboard, fertilizers, etc.

While the priority sector “model” is appropriate, specific sectors may need to change in the future. This is because comparative advantages are not the same in all priority sectors and these advantages change over time. It will, therefore, be important for DFAIT to make necessary adjustments to future *Trade Action Plans*, based on an assessment of not only Indian market conditions in particular sectors but also past Canadian performance.

C: Canada-India Trade Statistics Need to be Reconciled

Our analysis shows that there are significant discrepancies between reported trade statistics of the two countries. To a certain extent, discrepancies will always arise because of conceptual and definitional differences between import and export statistics. However, it is important to know why such discrepancies might occur due to other systematic reasons like export under-invoicing or transshipment of goods through third countries.

While our analysis does not constitute a reconciliation exercise, it is clear that such a detailed exercise is needed. India is now one of only 12 countries of priority for Canada. Knowing the exact nature and composition of Canada-India trade would not only help future trade relations but also provide valuable guidance to Canada’s trade promotion strategies in India.



INTRODUCTION

HISTORICAL PERSPECTIVES ON CANADA-INDIA TRADE

1

1.1 THE EARLY YEARS (1950-1973)

Few of Canada's bilateral relations with major countries of the world have seen such peaks or troughs as those with India. The Canada-India relationship began on a solid footing in the 1950s with the desire by both countries to develop a new and dynamic Commonwealth that encompassed a diverse group of former colonies of the British Empire.

While India's colonial experience is significantly different from Canada's, historically both countries specialized in resource-based products that were exported to the United Kingdom in exchange for manufactured goods.¹ One important impact of this colonial past was that bilateral trade between Canada and India largely consisted of specialty products that increased only slowly with income growth in each country. In Canada's case, this resulted in exports of products like paper and pulp, sulphur, and edible oils while tea and spices formed an important part of Indian exports to Canada. In 1950, total two-way trade between Canada and India amounted to C\$68 million or about 1% of Canada's total two-way trade in that year.²

As part of its Commonwealth foreign policy thrust, Canada was also a supporter and contributor to the Colombo Plan. This development cooperation relationship would evolve to an important component of Canada-India relations with India becoming one of the largest recipients of Canadian development assistance over four decades (C\$3.2 billion from 1951-2000).³ Canada's international aid program would also have an impact on the structure of Canadian exports to India, with the Canadian International Development Agency (CIDA) acting as an important conduit for Canadian firms in providing goods and services in several sectors including power, transportation, environmental technologies, and agriculture.

During this period, two-way trade between the two countries increased steadily. In the early 1970s, imports from Canada averaged 5.4% of India's total imports. Canada became the fifth-largest exporter to India after the United States, United Kingdom, Japan, and Germany (see Table 1).⁴

TABLE 1: Market Share of Selected Exporting Countries to India, 1950-2000

As a % of Indian Imports					
Country	1950-51	1970-71	1980-81	1990-91	2000-01
USA	18.3	27.7	12.1	11.5	9.2
Russia & CIS	3.5	6.5	8.1	3.4	2.9
Japan	1.5	5.1	6.0	7.2	6.1
United Kingdom	20.8	7.8	5.8	9.8	7.3
(West) Germany	n/a	6.5	5.5	7.3	4.5
France	1.7	1.3	2.2	3.3	2.2
Australia	5.1	2.3	n/a	3.0	2.5
Canada	3.4	7.2	2.6	1.3	0.8
Italy	2.5	1.8	1.9	2.1	2.3

Source: Market share data for 1950-51 to 1980-81 from Rai et al. (1989): pp. 50-51. Market share data for 1990-91 and 2000-01 from Statistics Canada, *World Trade Analyzer*, 2002.

1.2 GOING NUCLEAR AND GOING GLOBAL (1974-1990)

1.2.1 The Tumultuous Seventies

The first major disruption in foreign policy and aid relations occurred after the Pokhran nuclear explosion of 1974. That year turned out to be a watershed year in trade relations as well — beginning a long, steady decline in the importance of the two countries as trading partners. Canada's share of the Indian market decreased over time — 2.6% in 1980-81 to 1.3% in 1990-91. Its rank in the Indian market also fell — 12th in the early 1980s to 19th in the early 1990s.

While the cooling in diplomatic and aid relations may have been one factor contributing to the long-term decline of Canada's market share in India, its direct impact was likely limited to only a few specialized sectors such as arms-related exports. The evolution of the global economy, combined with continued protectionist trade policies of the two countries in sectors of emerging comparative advantage of the other were likely more important factors contributing to this decline.

In Canada's case, the 1970s marked a decade of economic turmoil. The first OPEC oil shock of 1973 led to a serious deterioration of Canada's terms of trade and resulted in a decline in Canada's market share of world trade — not just exports to India. During the decade, Canada's share of world trade declined by about two-fifths from 5.4% in 1971 to 3.4% in 1981.⁵

The 1970s were also characterized by increased Canadian protectionism in areas of evolving comparative advantage for India. In 1976, tighter US and European Community (EC) quotas on textiles led to a rapid increase in textile imports into Canada. The Canadian reaction was to impose a global quota on all textile imports under GATT article XIX which quickly gave way to bilateral restraint arrangements with about 35 textile exporting countries, including India.⁶

On the Indian side, the 1970s marked the continuation of India's import substitution policies. Indian tariff and non-tariff barriers continued to be among the highest in the world. They ranged from between two-and-half and five times developing country averages — especially in sectors like Non-Ferrous Metals, Mineral Ores, Agricultural Raw Materials, and Food — sectors of export interest to Canada (see Table 2 for a comparison of India's tariff structure in the early 1990s with those of other developing countries). These import substitution policies resulted in a steady decline in India's share in world exports — from 1.8% in 1950 to 0.4% in 1980.⁷

Besides trade barriers, India's international import priorities continued to shift toward the USSR and Eastern Block countries — that were more than willing to supply technology-intensive goods with rupee-based repayment options.⁸ This was particularly important given the Indian experience with unreliable Western suppliers during the Sino-Indian border conflict of 1962 and the wars with Pakistan in 1965 and 1971.⁹

TABLE 2: Indian Import Charges, Tariffs and Para-tariffs, 1990-94 (in %)

	Weighted Average Import Charges ^a	SECTORAL AVERAGE TOTAL IMPORT CHARGES (UNWEIGHTED) ^a								
		Agric.			Non			Iron & Steel	Mach. & Equip.	Other
		Food	Raw Materials	Mineral Ores	Mineral Fuels	Ferrous Metals	Chemicals			
India	76.6	85.4	80.5	88.9	50.1	100.2	104.8	101.2	87.6	102.8
China	30.6	44.8	26.0	15.6	15.8	15.8	25.2	13.7	30.0	54.1
Brazil	16.7	13.3	8.1	2.4	3.3	7.6	13.0	13.2	21.6	18.5
Low-Income Asia ^b	47.7	59.4	41.9	36.5	33.6	45.9	48.9	50.3	48.0	68.5
Middle-Income Asia ^b	20.9	24.6	15.9	9.4	14.5	14.8	16.7	12.6	20.3	30.3
Developing Countries ^b	25.3	34.0	22.2	18.5	18.3	21.3	21.4	20.6	23.3	38.1

^a: Based on available MFN tariffs or applied rates and additional fiscal and other import charges. ^b: Classification of country groups are based on Global Economic Prospects and Developing Countries, 1995. Total sample includes 80 developing countries.
Source: Ng, Francis (1997), *A Profile of Tariffs, Para-Tariffs, Non-Tariff Measures, and Economic Growth*.

1.2.2 The Globalizing Eighties

If the seventies were characterized by economic turmoil, the eighties and early nineties saw the emergence of globalization and knowledge-based production as the pre-eminent drivers behind international trade. The two oil shocks of the 1970s and the global recession of the early 1980s weeded out many inefficient firms and caused the remaining firms to place a premium on the use of technology. Large firms hitherto focused in national markets saw that it was more profitable to source inputs globally and seek new markets overseas, partly due to the lowering of barriers in successive trade rounds. Innovations in maritime transportation, telecommunication, and international banking also allowed firms to disaggregate production with various elements of the supply chain placed in the most efficient locations around the globe.

To be sure, Canada's role in global trade also changed substantially. As a commodity producer, the low income elasticities of demand for its products combined with the relatively high cost of production resulted in a 14% decline of Canada's terms of trade between 1980-1990.¹⁰ Canadian trade policy energies, therefore, were dedicated largely to securing its most important overseas market—the United States, first through a bilateral FTA (the Canada-US FTA, 1989) and then a regional trade agreement (the North American FTA, 1994). This increased integration proved to be the entry point for Canada into the global economy — integration, vertical specialization, intra-industry trade, and knowledge-based production now became the mantra for Canadian industry and government.

On the Indian side, however, it seems that the types of trade and industrial policies needed to induce economic growth in a globalizing world were absent. Some intermittent efforts were made to liberalize trade in the mid- to late- 1980s. For example, the Longer Term Fiscal Policy announced in 1985 envisaged an eventual removal of import licences from all imports except consumer goods. It also proposed the simplification of the complex tariff structure.¹¹ However, by the late 1980s, Indian industry was globally uncompetitive, its trade and industrial policies were structurally rigid, and the Indian economy was one of the most restrictive in the world (see Table 2). Some salient features needing urgent reform included:¹²

- Quantitative controls on imports and exports through a positive list of products;
- Restrictions in entry and growth of firms through: (1) capacity licensing; (2) monopoly control; (3) small-scale industry reservations; and (4) reservations for the public sector;
- Foreign Direct Investment restrictions through local content requirements on a number of engineering and electronic industries through Phased Manufacturing Programmes (PMPs); and
- Full and partial price controls in products of Canada's comparative advantage, including: coal, fertilizers, nonferrous metals, paper and newsprint, and wheat.

1.3 EMERGING INDIA AND CANADA'S RESPONSE (1991-PRESENT)

1.3.1 From Crisis to Confidence

The major thrust toward globalizing the Indian economy happened only after its balance of payments crisis of 1991. As a result of structural rigidities and continued fiscal and current account deficits of the 1980s, the Indian economy came to a standstill. International reserves plummeted to only 14 days' worth of imports. India entered into a standby arrangement with the International Monetary Fund (IMF) for US\$2.3 billion over a two-year period and started the long process of economic liberalization.

At the end of the two years, it seemed that the balance of payments crisis was under control. The clearest indication of this was that the Indian government no longer felt the need to access the IMF's Extended Structural Adjustment Facility. However, there appears to have been a sea-change in the policy stance of Indian politicians. More than anything, July 1991 likely shattered their confidence in an economic system based on excessive regulation and its ability to meet India's development aspirations in a globalizing world.

The trade-related reforms undertaken during this period were far-reaching. They included a wholesale reduction in tariffs and simplification of the tariff regime,¹³ a massive liberalization in import licensing and its procedures — previously the mainstay of India's restrictive import policies,¹⁴ and wide-ranging deregulation of restrictions on the entry and growth of firms through capacity licensing, monopoly control, and reservations for the public sector.

Notwithstanding the negative Canadian reaction to India's second round of nuclear tests in 1998, there is a broad recognition both within and outside the Government of Canada that the Canada-India economic relationship is on the threshold of a new beginning. The Canadian commercial response to India's liberalization came early and remained consistent, despite strained diplomatic relations.¹⁵ Some important events over the past decade were:

- 1994: Minister of International Trade (Roy MacLaren) led a trade mission to India accompanied by 40 business people from the engineering, electronics, telecommunications, and transportation sectors.
- 1995: Secretary of State for Asia-Pacific (Raymond Chan) led 44 business people on yet another trade mission to India.
- 1995: As a result of extensive consultations with provincial governments and the business community, DFAIT published its first India trade "action plan": *Focus India — Building a Canada-India Trade and Economic Strategy*. This plan provided analysis of sectors in which there was a good fit between Indian requirements and Canadian comparative advantages — like telecommunications, power generation, and environment.
- 1996: Team Canada Mission, led by Prime Minister Jean Chrétien, included seven provincial premiers, two federal cabinet ministers, about 300 business people, and 204 companies.
- 1998: *Focus India* evolved into DFAIT's *India Trade Action Plan* that was rolled into subsequent *South Asia Trade Action Plans*. Priority sectors remained broadly similar.
- 2002-Present: A steady stream of Canadian Ministers visited India with the stated objective of *doubling* trade with India by 2003. These included, among others: Deputy Prime Minister and Finance Minister John Manley (January 2002), International Trade Minister Pierre Pettigrew (April 2002), and Natural Resources Minister Herb Dhaliwal (January and November 2002).

Against this background of what appears to be increased Canadian interest in India is the reality of the past performance of Canadian exports to India. Between 1999 and 2001, Canadian exports to India averaged 0.12% of Canada's total exports. A decade

earlier (1989 - 1991), Canadian exports to India averaged 0.2% of Canada's total exports.¹⁶ In percentage terms, therefore, Canadian exports to India dropped by about two-fifths over the decade of the 1990s.

1.4 RESEARCH OBJECTIVES AND OUTLINE

What are the causes of this relatively poor export performance? Answering this question is one important objective of this study. To achieve it, we first look at the broad trends in Canadian exports to India over the past 15 years. In Chapter 2, we compare Canada's export performance to India with other emerging markets. In Chapter 3, we study for the first time, the issue of inaccuracies in the reporting of Canada-India trade statistics with the goal of estimating the extent to which mis-reporting and transshipment may result in under-reporting of Canada-India trade.

The second important objective of our research is to assess the extent to which DFAIT's priority sectors in its various *South Asia Trade Action Plans* are based on Canadian comparative advantages. How have these priority sectors performed in the past in India? What are the prospects for increased Canadian exports to India (in the priority sectors)? We explore these questions in Chapter 4. We provide policy recommendations in Chapter 5.

Most of the trade data used in this study is from the 2002 edition of the *World Trade Analyzer* — a trade database that allows access to data for 192 countries for up to 16 years (1985-2000) at the 4-digit Standard International Trade Classification (SITC) level. It is created from data reported by member countries to the United Nations Statistical Office and compiled by Statistics Canada. The econometric regressions in Chapter 2 are based on data obtained from the World Bank's *Trade and Production Database 2002* which contains trade, production and tariff data for 67 developing and developed countries over the 1976-1999 period at the 3- and 4-digit International Standard Industrial Classification (ISIC) levels.

CANADIAN EXPORTS TO INDIA: A REVIEW

2

Canada's *South Asia Trade Action Plan* outlines a number of sectors of priority for Canadian exports to India. These sectors, together with a stated target of doubling Canada-India trade by 2003, give some direction to Canadian export and trade promotion activities in India.

However, the key question that must be asked is whether growth in the priority and other sectors can be attained at a sufficiently high rate to achieve such targets. Further, from an exporter's perspective, there are other emerging markets that provide opportunities for Canadian firms. Does India provide a potential that is similar to the potential currently existing in other emerging markets (like China or Brazil)? Another feature of Canadian exports to India (and other emerging markets) is their high degree of volatility. What are the factors that cause this volatility? Do sectoral price changes in India and Canada matter to export growth and volatility? We explore such questions in this chapter.

2.1 GROWTH OF CANADIAN EXPORTS TO INDIA

Between 1985 and 2000, the average annual growth rate of Canadian exports to India was 6.2%. This growth in exports to India was more than two percentage points *lower* than the export-weighted growth in Canadian exports to a group of 18 other emerging markets.¹⁷ Moreover, as we see in Table 3, if we took simple averages, the annual growth of Canadian exports to the group of 18 emerging markets averaged 13.5% — more than twice the average export growth to India.¹⁸ In fact, for the group of emerging markets considered, the growth rate of Canadian exports to India was the second from the bottom after Russia.

Is Canadian export growth to India significantly lower than export growth to other emerging markets? The short answer to this question is— it depends on the measure used. As we show in Annex A, on a trade-weighted basis, the growth in Canadian exports to India

TABLE 3:

Growth of Canadian Exports to India vs. Other Emerging Markets, 1985-2000^a

Country	Annual Average Export Growth Rate (%)	Export Growth 3-year End-point ^b (%)
Poland	28.5	73.0
Philippines	26.5	16.4
Czech Republic	24.9	14.5
Peru	20.5	10.3
Argentina	19.5	27.3
Mexico	19.1	50.1
Hungary	18.1	19.3
China	13.5	5.9
Venezuela	12.6	4.4
Thailand	8.8	5.3
Turkey	8.7	-0.3
Indonesia	8.6	5.2
Malaysia	8.5	7.0
Colombia	7.9	5.4
Egypt	7.3	0.0
South Africa	7.1	4.3
Brazil	6.6	7.8
India	6.2	0.2
Russia	-3.4	-5.1
Emerging Market		
Simple Average (excluding India)	13.5	13.9
Export-weighted Emerging Market Average (excluding India) ^c	8.5	8.1

Source: Statistics Canada, *World Trade Analyzer*, 2002.

a: Growth figures are calculated using US dollars.

b: The 3-year end-point export growth is the average percentage change in export levels between the 3-year periods — 1998-2000 and 1985-1987, that is:

$$\frac{1}{16} \left(\sum_{1998}^{2000} Exports_t - \sum_{1985}^{1987} Exports_t \right) / \left(\sum_{1985}^{1987} Exports_t \right)$$

c: The Export-weighted Emerging Market Average is the average annual export growth rate/end-point export growth for the 18 emerging markets taken together.

was not statistically lower than the growth in Canadian exports to other emerging markets. However, if we take simple averages across time and countries, annual export growth to India was significantly lower than export growth to other emerging markets.

The interpretation taken is important because it would condition the Government of Canada's export promotion strategies for India. If, for example, one views Canadian export performance in India as being no different from Canadian export performance in other emerging markets, then the government response can look at ways in which existing programs (such as export promotion or financing programs) that have been successful in other countries may be applied to the Indian context.

On the other hand, if one views Canadian export performance in India as continuing to lag behind leading emerging markets, it raises a different set of questions on the causes of this poor performance — including the effectiveness of existing export

promotion programs in India relative to other markets and the potential impact of Indian trade policies on Canadian export growth.

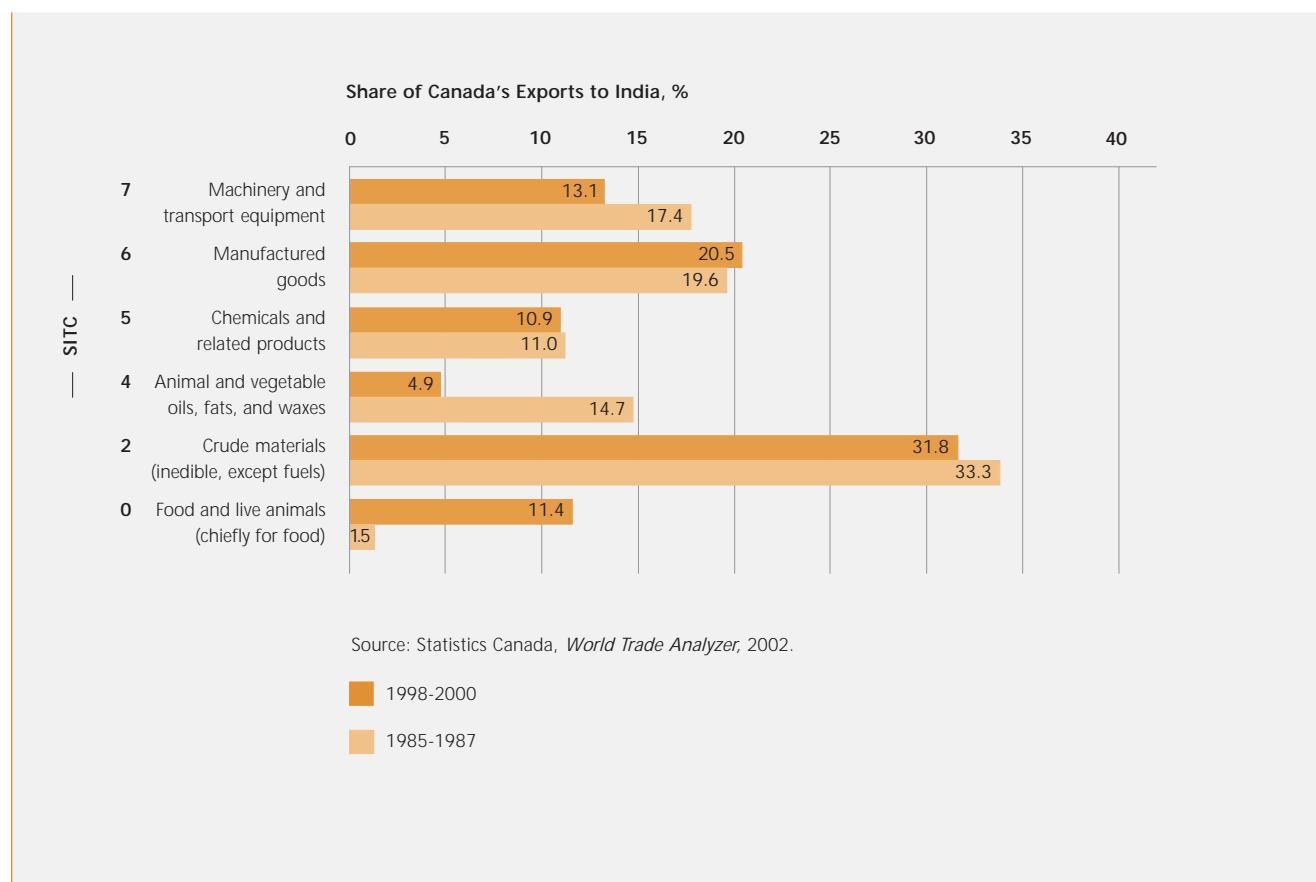
2.2 STRUCTURE OF CANADIAN EXPORTS TO INDIA

In order to understand the nature of Canada's exports to India, we drill down a little deeper to compare the structure of Canada's exports to India and other emerging markets. In looking at this structure, we take three-year averages so as to abstract from the annual volatility in Canada-India trade.

2.2.1 Broad Trends: 1985-2000

In broad terms, the profile of Canada's exports to India has changed only slightly in the past 15 years. Figure 1 shows that the Raw Materials industry (SITC-2) still accounts for about one-third of Canadian exports to India. Manufactured Goods (SITC-6) account for 20% of Canadian exports to India while Machinery and Transport Equipment (SITC-7) now account for 13% of Canadian exports to India.

FIGURE 1: Broad Structure of Canadian Exports to India, 1985-2000



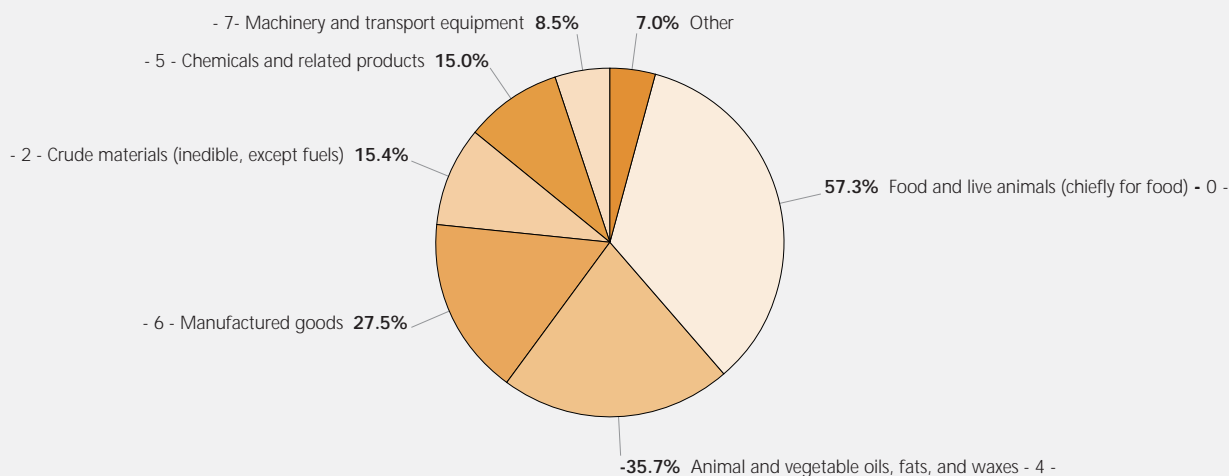
In terms of broad growth areas, in Figure 2 we see that the Food and Live Animals industry (SITC-0) was the most important growth area for Canadian exports to India, accounting for 57% of overall growth over the past 15 years. The next biggest contributor to export growth was Manufactured Goods (SITC-6) that accounted for about 28% of overall export growth. The largest and only negative hit on exports came from the Animal and Vegetable Oils industry (SITC-4) — accounting for -36% of overall export growth in the past 15 years. It is significant to note that export growth in the Machinery and Transport industry (SITC-7) only accounted for 8% of the overall growth in Canadian exports to India for the 1985-2000 period.

Contrasting the structure of Canadian exports to India with Canadian exports to other emerging markets reveals some interesting trends. As we see in Figure 3, the share of Raw Material exports (SITC-2) to India was almost twice the share of Canadian exports in this category to other emerging markets (compare Figures 1 & 3). This

would lead to the conclusion that Canadian exports to India are more concentrated in the commodities area— something often cited by India trade analysts. However, the share of Manufactured Goods exports (SITC-6) to India was almost 60% higher than in other emerging markets over the past 16 years. We therefore reserve judgment on the concentration of Canadian exports to India relative to other emerging markets to the more systematic analysis of section 2.2.2 below.

As we see in Figure 3 (page 14), the Food and Live Animals industry saw its share of Canadian exports to emerging markets drop to 15% in 1998-2000 from 38% in 1985-87 (a 60% decline). In contrast, the share of Canadian exports to India in this sector *increased* more than six-fold. Similarly, the share of Canadian exports of Machinery and Transport Equipment to other emerging markets increased from 22% to 37% (an increase of 70%). In contrast, this sector saw its export share decline by 25% when it comes to the Indian market.

FIGURE 2: Sectoral Contribution of Growth in Canadian Exports to India, 1985-2000



Note: Sectoral contribution to Growth in Canadian Exports to India for the period 1985-2000 calculated as follows:

- 1 For year t, the percentage change in export values (in US \$) between t and t+1 is calculated;
- 2 This figure is multiplied by the export weight of that sector in year t;
- 3 The average over 15 years for all sectors is then calculated;
- 4 The sectoral averages are then divided by the overall average for 15 years (i.e. 6.2%) to obtain sectoral contributions to growth.

Source: Statistics Canada, *World Trade Analyzer*, 2002.

FIGURE 3: Broad Structure of Canadian Exports to Emerging Markets, 1985-2000

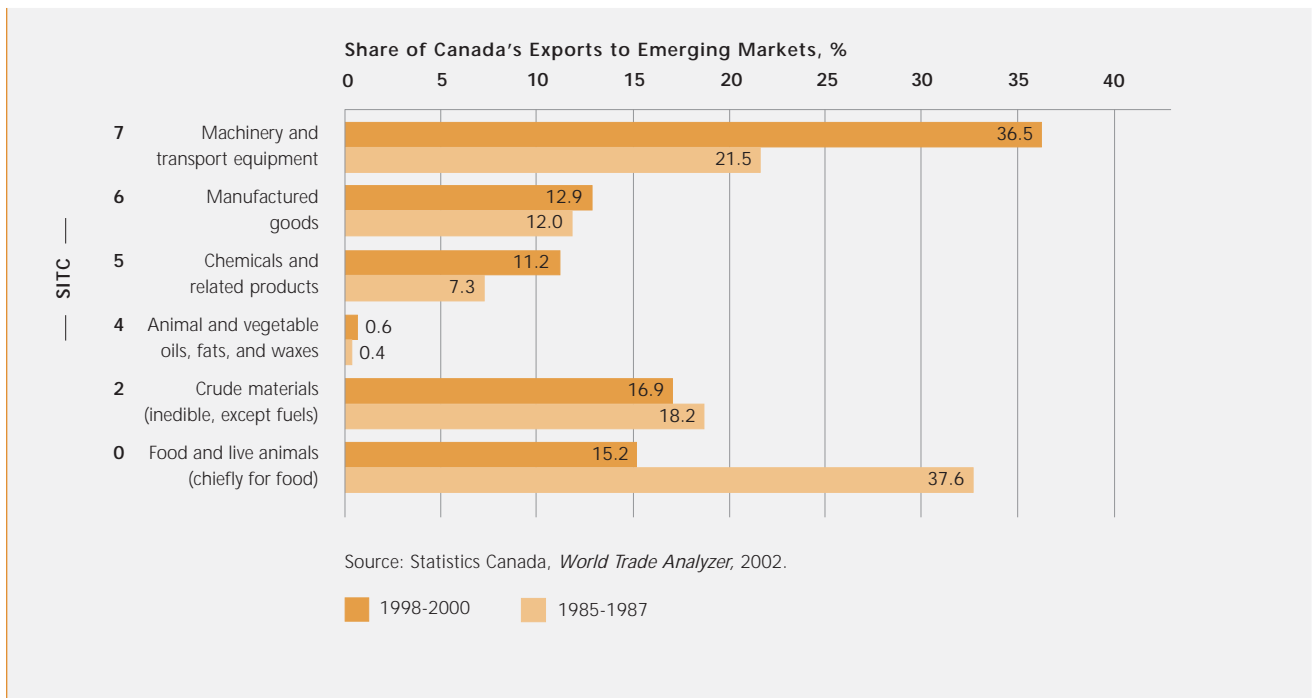


FIGURE 4:

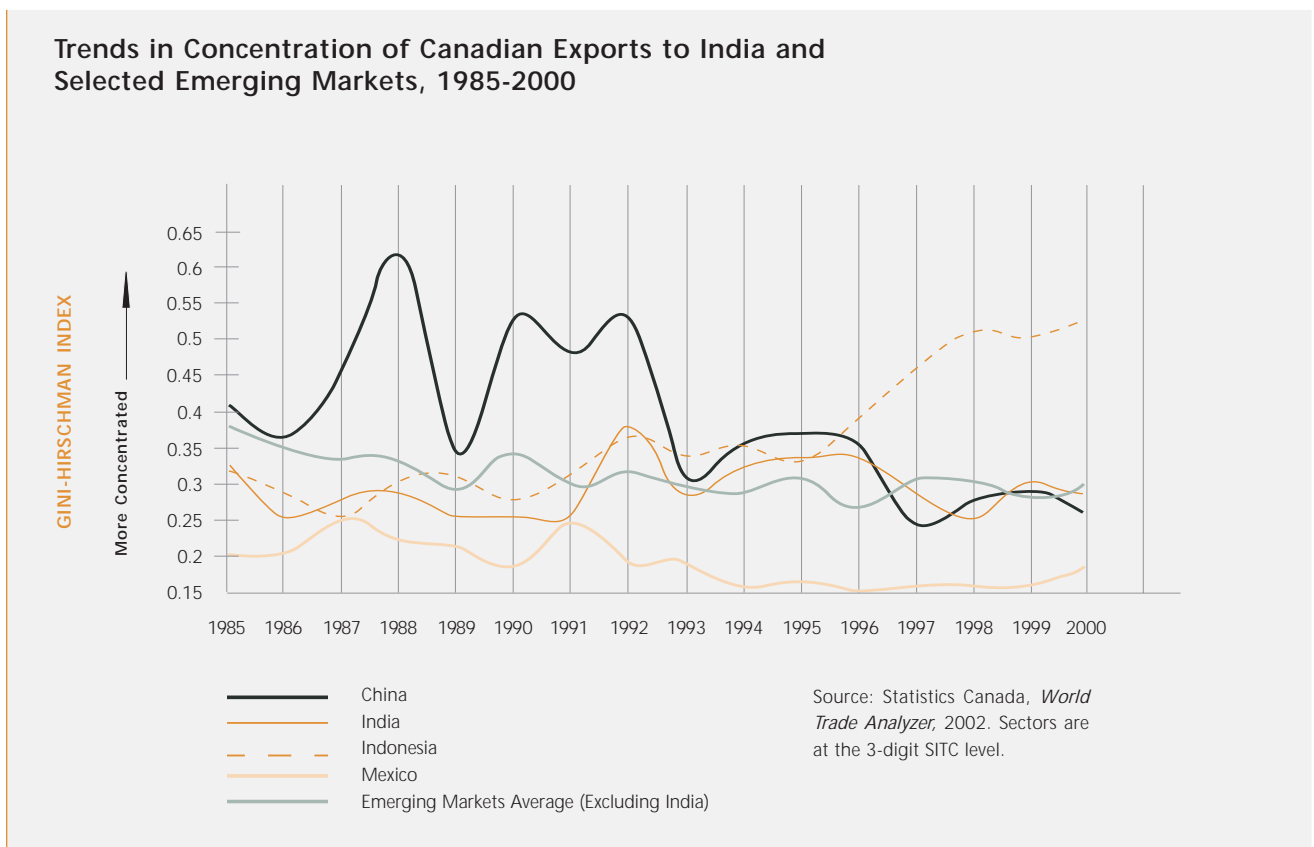
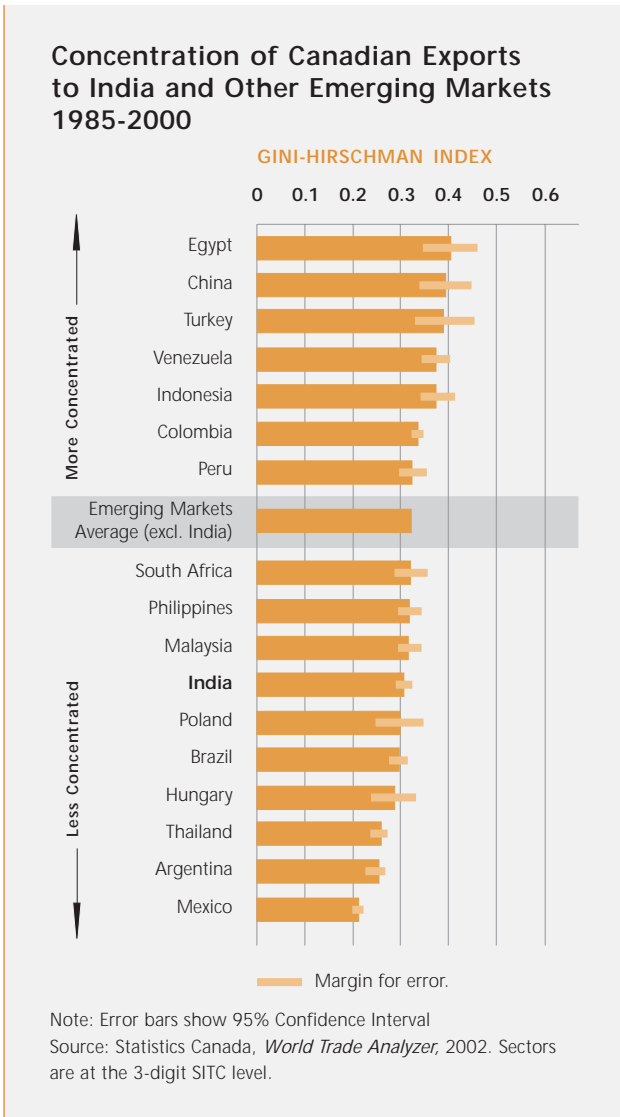


FIGURE 5:



with higher values of the index representing greater sectoral concentration. As we can see from Figure 5, compared to the emerging market average, exports to India are slightly less concentrated (although not statistically so). This result is in line with the picture painted in Figures 1 & 3 which showed that the decline in export shares of the Food and Live Animals industry (SITC-0) for emerging markets was made up by the increase in export shares of the Machinery and Transport Equipment industry (SITC-7). In India's case, there were no large structural shifts in Canadian exports over the last 15 years.

Looking at the trends in concentration through time, we do not see any strong secular change (see Figure 4). Again, this is in line with our previous observation that while export shares declined in some sectors (like Food), this relative decline is more than compensated by increased exports in other sectors (like Machinery). In other words, for both India and other emerging markets, while some sectors now account for a greater share of Canadian exports, the overall concentration of Canadian exports has remained more or less the same.

One surprising result was that Canadian exports to India tended to be *less* concentrated than exports to China (see Figure 4 & 5). This result is statistically significant at the 1% level.²⁰ Looking at this result more closely, we found that it was due more to the highly concentrated nature of Canadian exports to China in the 1985-1992 period. Between 1993 and 2000, Canadian exports to China started to become more diversified — in line with the broad structural changes taking place in the Canada-China export relationship (see Figure 4).

2.2.2 Concentration of Canadian Exports to India

As mentioned above, a common refrain made by India trade analysts is that Canadian exports to India tend to be concentrated in a few (mostly raw materials) sectors. This is given as a common reason for both the relatively poor performance of Canadian exports to India and their volatility.

We decided to see how India fares relative to other emerging markets in terms of overall concentration of Canadian exports. We use the Gini-Hirschman index of sectoral concentration (at the 3-digit SITC level) — a common measure used in the international trade literature.¹⁹ The Gini-Hirschman index ranges from 0-1

Finally, we wanted to look at how Canada compares to other OECD countries when it comes to the concentration of exports to India. We found some very interesting results. As we see in Figure 6, when using the Gini-Hirschman index, Canadian exports on average were statistically *less* concentrated (at the 1% level) compared to some well-known “commodity exporters” like Australia and New Zealand. It is significant to note that using the Gini-Hirschman index, Canadian exports to India were statistically *less* concentrated (at the 1% level) than exports to India from even the United Kingdom — a trading partner with long historical ties to India. However, exports to India from most other G7

countries including Italy, United States, Germany, and Japan were statistically less concentrated (at the 1% level) than Canadian exports.

2.3 VOLATILITY OF CANADIAN EXPORTS TO INDIA

Another trend that is often cited by India trade analysts is that Canadian exports to India tend to be volatile. Average export growth rates to India hide some very large occasional fluctuations. In 1992, for example, Canadian exports to India grew by 104% followed by a sharp decline of 56% in 1993.

Is this volatility any different from Canada’s export performance in other emerging markets?

If all years in the 1985-2000 period are included, Canadian exports to India are statistically *more* volatile than exports to other emerging markets (export-weighted).²¹ However, if 1992 is excluded, exports to India are just as volatile as exports to other emerging markets (see Annex A, Table A2).

In terms of the sectoral sources of this volatility, we found that Canadian export growth to India is “top” and “bottom” heavy. The top-10 and bottom-10 contributors to export *change* accounted for more than 110% of the average export change in the last 15 years.²² Comparing India with 16 other emerging markets showed that India ranked fourth in terms of

FIGURE 6:

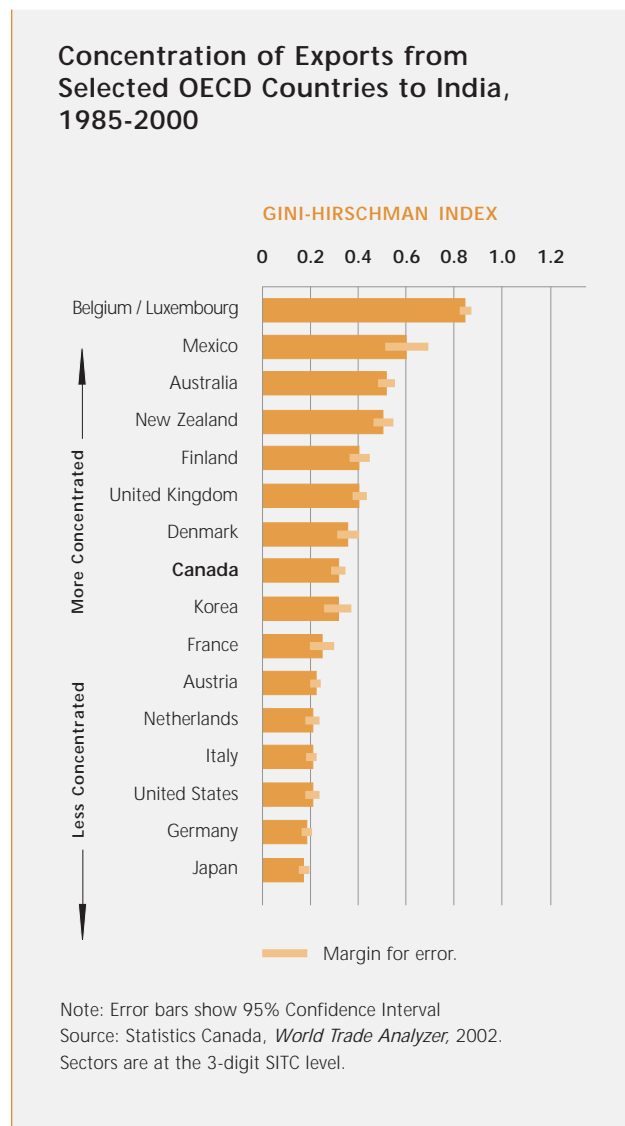
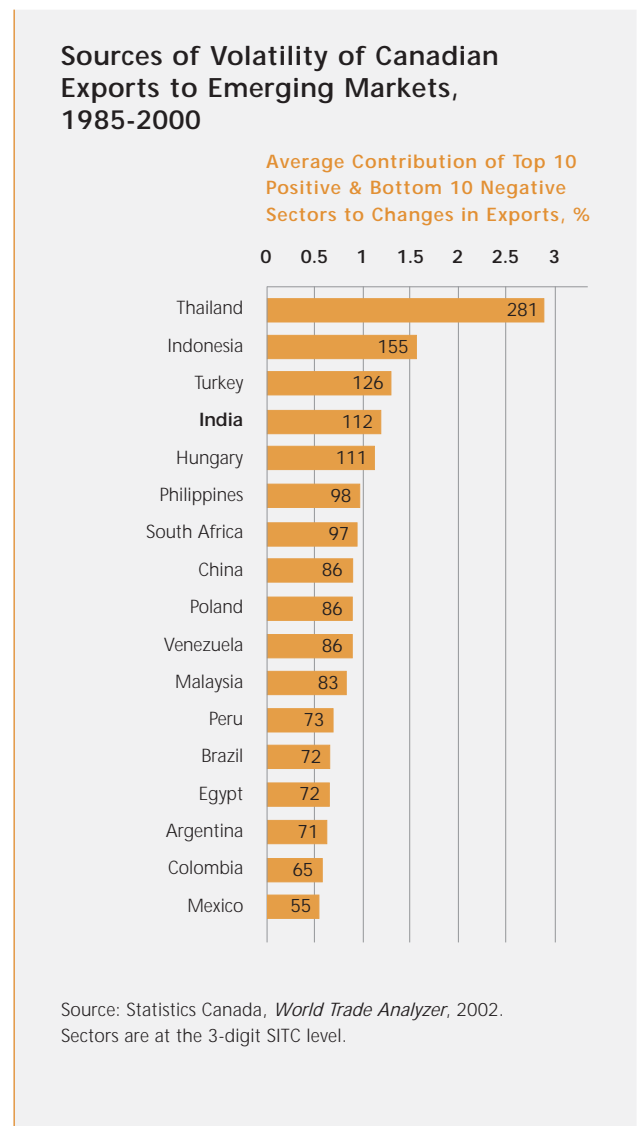


FIGURE 7:



how much these 20 sectors contributed to annual export change (See Figure 7).

These 20 sectors also represented roughly two-thirds of Canadian exports to India. They include mostly traditional areas of Canadian exports to India but some sectors considered to be “emerging” and “high-growth” sectors also appear on this list. As shown in Table 4, “traditional” sectors such as Paper & Paper Board, Pulp & Waste Paper, and Manufactured Fertilizers were among the top-10 or bottom-10 contributors to export change in almost every year in the past 15 years. It is also important to note that, as a group, sectors classified as “Machinery and Transport Equipment” (SITC-7) on average contributed to 37% of the export change in Canadian exports to India over the past 15 years.

To summarize, we can say that the sources of volatility in Canadian exports to India are focused in 20 sectors that also make up a large part of Canada’s exports to India. However, Canadian exports to India, in general, are no more volatile than Canadian exports to other emerging markets.

2.4 CAUSES OF EXPORT VOLATILITY IN VARIOUS SECTORS

The sectoral analysis described above raises another important policy question: What causes exports to India in certain sectors to be more volatile than in others? India trade analysts frequently cite “price fluctuations” as the most important reason for these sectoral differences. Presumably, there are other reasons why certain sectors might perform differently.

These could include demand conditions in India in that sector, levels and changes in Indian trade restrictions, and the concentration of Canadian exports.

Knowing which factors have an impact and by how much can help guide policy-making vis-à-vis an emerging market like India. While there is an established literature on the causes and consequences of export volatility, the literature tends to focus on exports of developing countries. To our knowledge, no such analysis exists for a developed market like Canada.

Examining the Canadian case more closely is useful for two reasons. First, Canada (like Australia and New Zealand) is considered to be a “commodity” exporter with exports dominated by traditional agricultural, mineral, and semi-processed manufactured products. These products are subject to wide fluctuations in international prices. This is more so the case for Canadian exports to emerging markets. Examining the causes of export instability to such high-growth emerging markets as Brazil, China, and India is therefore an important policy question.

The second reason for examining the causes of export volatility is that the commodity-dependence view described above has led to trade promotion strategies of federal and provincial governments in Canada that tend to focus on diversifying exports to “value-added” products such as ICTs, Machinery and Transport Equipment, Power Generation, etc. Underlying such diversification strategies is the view that “value-added” products have more stable demand and supply conditions than traditionally exported

TABLE 4: Selected Most Volatile Sectors and Export Shares, 1986-2000

Sector	# of Years in Top-10 or Bottom-10 Growth Contributors	Average Export Share 1986-2000 (%)
641 Paper & paper board	15	15.5
251 Pulp & waste paper	13	13.2
562 Manufactured fertilizers	13	7.6
274 Sulphur and unroasted iron pyrites	13	5.5
423 Fixed vegetable oils	10	5.1
792 Aircraft equipment & parts	10	2.2
764 Telecommunications equipment & parts	5	1.3

Source: Calculations from Statistics Canada, *World Trade Analyzer*, 2002.

products. They also help create jobs domestically and allow exporters to price their products (due to greater product differentiation). Therefore, it is thought that export growth in these sectors is likely to be more stable. Testing whether this is really the case for Canada can help to condition current government trade promotion programs.

2.4.1 Model Summary and Results

In Annex B, we derive a model to estimate sector-specific impacts of different factors on the volatility of Canadian exports to India. In our model, Canadian export volatility depends on four factors:

- 1 Sectoral concentration of Canadian exports to India;
- 2 Changes in Indian government policies (proxied by changes in Indian tariff rates);
- 3 Changes in Indian wholesale prices in the exported sectors; and
- 4 Changes in the Canada-India exchange rate.

We run panel regressions covering the period 1993-1999 for 18 manufacturing sectors at the 3-digit ISIC level (for data sources see Annex B). We experiment with different model specifications (fixed and random effects) including with other independent variables such as Indian and Canadian labour productivity and sectoral price changes in India and Canada. In general, our coefficient estimates are consistent in magnitude and direction across these numerous specifications and of the correct sign — indicating robust results. Further, the Hausmann specification test rejects the null hypothesis that the

fixed and random effects coefficients are similar. This indicates that the random effects model is appropriate to use in the present context.

As we see in Table 5A, the overall panel regression estimates show that export concentration and changes in Indian tariffs have an impact on Canadian export growth (see columns 1 and 2). On average, we find that a 1% increase in concentration results in a 1.8% *increase* in export growth to India. This result varies across sectors with export growth in the Paper Products (ISIC 341) and Transport Equipment (ISIC 384) sectors showing large and significant responses to export concentration (between 2.4%-4.1%).

Export concentration also has an impact on export instability (as measured by deviations from trend growth). Overall, we find that a 1% increase in concentration results in a 0.25% increase in export instability (see Table 5B). Here again, results vary across sectors with instability in the paper and transport equipment sectors showing large and significant responses to changes in export concentration (between 3.9%-6.4%).

The sign of the coefficient on Indian tariff changes is also in the expected direction. Overall, we find that as Indian tariffs decline by 1%, Canadian export growth accelerates by 3%. Further, a 1% decline in Indian tariffs also results in a 2.9% decrease in volatility of Canadian exports as measured by deviations from trend export growth.

WE USE PANEL REGRESSION TECHNIQUES (FIXED AND RANDOM EFFECTS) TO ESTIMATE DIFFERENT VERSIONS OF THE FOLLOWING ECONOMETRIC EQUATIONS:

$$(1) \quad \Delta y_t^*(j) = \zeta_1(j) + \zeta_2 \frac{y_t(j)}{y_t} + \zeta_3 \Delta g(j)_t^d + \zeta_4 \Delta [\varrho_{jt}(j)/\varrho_{jt}] + \zeta_5 \Delta e_f + \kappa_{jt}$$

Expected Signs: +/- - + +

$$(2) \quad \Delta y_t(j) = \zeta_1 + \zeta_2 t(j) + \zeta_3 \frac{y_t(j)}{y_t} + \zeta_4 \Delta g(j)_t^d + \zeta_5 \Delta [\varrho_{jt}(j)/\varrho_{jt}] + \zeta_6 \Delta e_f + \kappa_{jt}$$

Expected Signs: +/- + - + +

$\Delta y_t^*(j)$ and $\Delta y_t(j)$ are the export growth rate and deviations from trend export growth from Canada to India in industry j ;

$t(j)$ are time trends in industry j;

$\frac{y_t(j)}{y_t}$ is the export share of industry j in total Canadian exports to India;

$\Delta g(j)_t^d$ are percentage changes in Indian tariff rates;

$\Delta [\varrho_{jt}(j)/\varrho_{jt}]$ are percentages changes in relative wholesale prices in India; and

Δe_f is the change in the Canada-India exchange rate.

Finally, our analysis shows that relative price changes in various sectors and changes in exchange rates do not have any systematic impact on either overall export growth or volatility. We did not observe any significant sectoral trends.

The results cited above should be viewed as hypothesis generating rather than hypothesis testing. The similarity in magnitude and direction of our coefficient estimates confirm our previous analysis that export growth to India tends to be highly volatile. Further, the robustness and consistency of our coefficients on export concentration and tariff changes across specifications provides us with

some confidence in the elasticity estimates highlighted above. At the same time, our regressions are based on data for a short period of time (1993-1999). Based on this limited data, we do not find any systematic link between relative price changes and Canadian export growth/instability in sectors that are known to be price sensitive. These sectors include industrial chemicals (i.e. fertilizers), non-ferrous metals (zinc, nickel), iron and steel, etc. Therefore, rather than conclude that there is no significant link between prices and export growth/instability, our results can be seen as the first systematic attempt at explaining such links as it applies to Canada-India trade.

TABLE 5A: Panel Regression Estimates (Dependent Variable: Export Growth)¹

Independent Variables	Fixed Effects (1)	Random Effects (2)	Selected Random Effects [Slopes] (3)	
			341	384
Export Concentration	1.820 ⁺ (0.008)	1.783 ⁺ (0.007)	2.444 ⁺ (0.001)	4.098 ⁺ (0.010)
India Tariffs	-3.012* (0.073)	-3.029* (0.066)	-184.400 ⁺ (0.001)	INS
Relative Prices: India	-0.612 (0.794)	-0.676 (0.771)	30.321 ⁺ (0.007)	INS
Exchange Rate	-4.944 (0.179)	-4.966 (0.172)	INS	INS
Selected Random Effects Components (Constants)				
341 Paper	—	-8.791 ⁺ (0.007)	-4.243** (0.023)	—
342 Printing	—	1.727** (0.035)	—	—
351 Industrial Chemicals	—	-2.183** (0.048)	—	—
382 Nonelectric Machinery	—	-1.772* (0.071)	—	—
384 Transport Equipment	—	0.726 (0.360)	—	INS

¹ Elasticities at means. P-values in parenthesis. * 10% significance. ** 5% significance. + 1% significance. INS=insignificant.

TABLE 5B: Panel Regression Estimates (Dependent Variable: Deviation from Trend Export Growth)¹

Independent Variables	Fixed Effects (1)	Random Effects (2)	Selected Random Effects [Slopes] (3)	
			341	384
Trend Growth	0.783 ⁺ (0.000)	0.788 ⁺ (0.000)	INS	INS
Export Concentration	0.260 ⁺ (0.008)	0.254 ⁺ (0.007)	3.997** (0.017)	6.420** (0.052)
India Tariffs	-2.880* (0.094)	-2.916* (0.084)	-222.400 ⁺ (0.009)	INS
Relative Prices: India	-0.474 (0.843)	-0.563 (0.811)	50.357** (0.057)	INS
Exchange Rate	-5.120 (0.170)	-5.123 (0.164)	INS	INS
Selected Random Effects Components (Constants)				
341 Paper	—	-8.796 ⁺ (0.008)	INS	—
342 Printing	—	1.697** (0.040)	—	—
351 Indust. Chemicals	—	-2.174** (0.050)	—	—
382 Nonelectric Machinery	—	-1.743* (0.079)	—	—
384 Transport Equipment	—	0.701 (0.381)	—	INS

¹ Elasticities at means. P-values in parenthesis. * 10% significance. ** 5% significance. + 1% significance. INS=insignificant.

Case Study 1

Volatility in Canadian Exports of Fertilizers to India (1998-2000)

Manufactured Fertilizers (SITC 562) form an important component of Canadian exports to India. During the 1985-2000 period, this industry represented almost 8% of Canadian exports to that country. Moreover, export growth in this industry is quite volatile — it occurs in the list of most volatile export industries in 13 out of the last 15 years (see Table 4). In the mid- to late-1990s, export growth of fertilizers to India ranged from -84% (1996) to +376% in 1999.

As we see in this case study, price fluctuations are not the only factors affecting Canadian exports in this sector. Other factors like domestic capacity, government intervention, competition from other countries, even the weather, are important factors.

India's domestic capacity matters for Canadian exports. . .

The domestic production of fertilizer in India is inadequate to meet the country's consumption requirements. While nitrogenous and phosphatic fertilizers are manufactured domestically, India is entirely dependent on imports of potassic fertilizer. Canadian exporters have stepped in to meet the gap. For the past 15 years, the average market share of Canadian potassic fertilizer exporters in the Indian market was about 20%.

. . . As do Indian government policies.

India's fertilizer production is not internationally competitive and is sustained by high tariffs and subsidies under the Retention Price Scheme mechanism. For example, the price of urea (a nitrogenous fertilizer), is controlled by the government and also involves a heavy subsidy. Subsidies on indigenous diammonium phosphate also help to keep the Indian phosphatic fertilizer industry competitive. While Canada is not a large exporter of phosphatic fertilizers, in the past 15 years, only 1% of Canadian exports of fertilizers to India have been nitrogenous, compared to 22% of Canadian fertilizer exports to the world. Clearly, Indian government policies have the effect of altering revealed comparative advantages for Canada in the Indian market.

Even the monsoons play a role. . .

Fluctuations in imports of fertilizer into India partly arise from varying amounts of rainfall. For example, the volume of Indian imports of fertilizers increased by 30% in 1999. This is because India enjoyed two continuous years of above-average rainfall — causing consumption and imports to remain high. Canadian exports of fertilizer to India also increased — 129% in 1998 and 376% in 1999. In 2000, however, consumption declined on account of a drought in many parts of the country. The actual rainfall, compared with

normal levels, during the year 2000 was 92% leading to a decline in agricultural output. Consequently, India's overall imports of fertilizer also declined by 49% in 2000.

. . . Canada's competitors in India matter as well

Russia, the United States, and Middle Eastern countries are among the important sources of fertilizer imports for India. Relative to Canada, these countries are cost competitive because of cheap inputs such as natural gas and lower freight costs. However, in the late 1990s, Canadian exports of potassic fertilizer have become increasingly cost-competitive. In 1994, for example, the typical shipment of Muriate of Potash (free on board) from Vancouver was priced at a premium of 10% and 45% above imports from the United States or CIS countries. By 2001, Canadian exports of Muriate of Potash was priced on par with United States exports and at a premium of 21% above imports from CIS countries.



DISCREPANCIES IN CANADA-INDIA TRADE

3

Canadian government officials have long recognized that trade between Canada and developing countries tends to be under-reported. Two issues are most often cited — reporting discrepancies and transshipment of goods. Reporting discrepancies are particularly relevant for Canada-India trade given the level and scope of India's restrictions on trade and capital flows. These tend to create sizeable rewards for evasion. Further, according to Indian government estimates, 60%-70% of India's international trade is shipped through foreign ports — Colombo, Hong Kong, Singapore, Dubai, etc.²³ Therefore, transshipment of Canadian exports (and Indian imports) through third countries may also be an important source of under-reporting India's trade with Canada.

In this chapter, we analyze the major factors that could lead to discrepancies in Canada-India trade figures. Our main objective is to provide broad estimates of the level of discrepancies in Indian and Canadian trade statistics.

3.1 MIS-REPORTING IN CANADA-INDIA TRADE

Falsification of international trade documents is considered one of the least risky techniques for moving capital across borders. Evasion takes several forms including black markets, faked invoicing, smuggling, illegal transshipments and other illegal activities. Export under-invoicing and import over-invoicing are widely used mechanisms for capital flight. In the case of exports, an invoice understating actual receipts is presented to the domestic authorities while foreign exchange earnings are being converted into domestic currency, the remaining foreign exchange earnings are retained abroad. In the case of imports, an invoice overstating the value of imported commodities is presented to the domestic authorities for converting domestic currency into foreign exchange. The importers retain the difference between the value stated on the invoice and the actual cost of imports.

Under-invoicing of exports and over-invoicing of imports may also be used as means of optimizing tax

payments and laundering of illegally obtained money. For example, units of multinational firms use transfer pricing to sell inputs at “non-arm's-length” prices to book profits in the jurisdiction with the lowest profit tax rates. Smuggling and import under-invoicing for the purposes of tariff evasion are hidden through non-flight uses of foreign exchange.

Several studies have tried to estimate the extent of faked invoicing implicit in official Indian trade statistics. Two basic methodologies can be identified in the construction of these estimates. The first (and less common) method to assess mis-invoicing in Indian trade data uses global prices to uncover the extent of abnormal pricing in India's trade with industrial countries like Canada.²⁴ The second method, which we use in this study, involves the comparison of partner country trade statistics and is based on the International Monetary Fund's *Direction of Trade Statistics*. Estimates of mis-invoicing are constructed by comparing the trade flows reported by India with those reported by industrial countries.

3.1.1 Some Limitations of Official Indian Trade Statistics

The Directorate General of Commercial Intelligence and Statistics (DGCIS), Ministry of Commerce is the central agency responsible for the collection and compilation of Indian merchandise trade statistics. Data on exports relate to free on board (fob) values and imports relate to cost, insurance and freight (cif) values. The current system of classification which has been in use since 1987, known as the Indian Trade Classification, is an extended version of the International Classification System — the Harmonized Commodity Description and Coding System (HS) produced by the Customs Co-operation Council, Brussels.

The DGCIS provides detailed data on the quantity and value of imports and exports at the disaggregated 8-digit level based on customs clearance at major ports in the country. The Reserve Bank of India (RBI), also

independently compiles trade statistics based on the merchandise transactions taking place through banking channels. However, the RBI data is available only in value terms at the aggregate level.

There exists a discrepancy between the two official sources of trade data accounted primarily by the difference in the timing at which data is recorded by the two agencies. Differences in coverage and valuation also contribute to the observed discrepancy in the two data sets. During the 1990s, the gap in the exports recorded by the two agencies is roughly stable at around 2% of the DGCIS values with the RBI consistently recording higher values for exports. The gap is higher in the case of imports, ranging from 7.5% of DGCIS values in 1991-92 to 25.3% in 1994-95, again with RBI recording consistently higher values vis-à-vis the DGCIS. This discrepancy on the import side is partly due to the fact that defence imports are missing from the DGCIS records but have a place in the RBI estimates.

We use the DGCIS data for analysis in the remainder of this chapter. Annual trade data from DGCIS is reported on a fiscal-year basis. In order to facilitate comparison with Canadian trade statistics (which are recorded on a calendar year basis), quarterly (and/or monthly) publications of the DGCIS were used to generate calendar-year trade data for India. Before comparing the India-Canada trade statistics, the DGCIS data was checked for internal consistency. As argued by Rozanski and Yeats (1994), developing country data suffers from major limitations wherein total trade figures are frequently found to be inconsistent with trade data for component products and also with the sum of trade reported with individual partner countries. Both these types of discrepancies were found to be comparatively minor in the case of Indian trade data during the 1990s.

3.1.2 Overall Estimates of Trade Mis-invoicing Between India and Canada

Tables 6 and 7 provide overall estimates of the discrepancies in export and import invoicing in Canada-India trade for the period 1990-2001. As we can see, Indian exports to Canada are consistently under-invoiced. The average discrepancy for the 12-year period was 27% of Indian exports to Canada.

Using the International Monetary Fund's *Direction of Trade Statistics*, we also looked at trends in export

under-invoicing between India and other industrial countries. During the 1990s, as a percentage of Indian exports, under-invoicing fell to around 6% in 1992 from 12% in 1990. However, under-invoicing increased to 15% in 1993 and has tended to stay at this level. Indian exports to Canada followed a similar path — declining sharply in the early 1990s and increasing subsequently. One interesting finding of our analysis is that as a share of Indian exports, relative to other industrial countries, under-invoicing of exports tends to be more than twice as large in Canada's case.

On the import side, a comparison with industrial country data reveals consistent net *under-invoicing* of Indian imports. The under-invoicing ranged from -2.4% in 1992 to -32% in 1995. However, mis-invoicing in Indian imports from Canada does not reveal a consistent pattern. Over the period 1990-2001, the average discrepancy between Indian import statistics and Canadian export statistics was +5.6% — with mis-invoicing ranging from -7.25% in 1991 to +19% in 1996 (i.e., over-invoicing). That is, Indian importers on average showed imports from Canada to be *more* than export figures shown in Canadian trade statistics. This average of 5.6% is well within normal bounds of measurement error. We, therefore, do not find a consistent pattern that would lead us to suggest that Canadian merchandise exports to India have been under-reported in the last decade. As we show below, however, this figure may not take into account the transshipment of Canadian products through hub ports.

3.1.3 Sectoral Sources of Trade Mis-invoicing Between Canada and India

In Tables 8 and 9, we provide mis-invoicing estimates for the top-10 traded products between the two countries (at the 4-digit HS level).²⁵ On the export side, Indian exports to Canada are under-invoiced for most of the top-10 (and top-25) products. For the top-25 products, the magnitude of under-invoicing is found to be high in the case of various apparel products including: Linen (6302); T-Shirts/Singlets etc. (6109), Women's and Girls Nightwear (6108), and Non-retail Cotton (5205).

While overall exports from Canada to India do not seem to show any consistent pattern, *under-invoicing* was found to be relatively high for the top 25 products.

TABLE 6: Discrepancy in Export Invoicing Between India and Canada (US\$ million)

Year	India's Exports to Canada as Reported by India (f.o.b.)	Canada's Imports from India as Reported by Canada (f.o.b.)	Discrepancy (under-invoicing)	Discrepancy as % of Indian Exports to Canada	Discrepancy as % of Indian Exports to Industrial Countries
1990	160.13	194.18	-34.05	-21.26	-12.25
1991	175.40	209.45	-34.05	-19.41	-9.64
1992	209.99	231.97	-21.98	-10.47	-5.64
1993	209.74	277.87	-68.14	-32.49	-15.21
1994	257.62	335.85	-78.23	-30.37	-15.31
1995	297.54	394.39	-96.85	-32.55	-12.12
1996	327.58	442.68	-115.10	-35.14	-10.80
1997	414.17	536.81	-122.64	-29.61	-15.16
1998	457.72	605.91	-148.19	-32.38	—
1999	561.48	685.01	-123.54	-22.00	—
2000	644.24	829.58	-185.34	-28.77	—
2001	570.50	745.85	-175.34	-30.74	—

Source: Indian figures from Monthly Statistics of Foreign Trade of India (Vol.1) & Statistics of Foreign Trade of India by Countries, Various Issues, DGCIIS. Canadian figures obtained from Trade Data Online, Strategis (<http://strategis.ic.gc.ca>). Other Industrial Country figures from *Direction of Trade Statistics*, IMF.

TABLE 7: Discrepancy in Import Invoicing Between India and Canada (US\$ million)

Year	India's Imports from Canada as Reported by India (c.i.f.)	Canada's Exports to India as Reported by Canada (c.i.f.)*	Discrepancy (under-invoicing)	Discrepancy as % of Indian Imports from Canada	Discrepancy as % of Indian Imports from Industrial Countries*
1990	315.11	302.76	+12.35	+3.92	-8.56
1991	261.33	280.27	-18.94	-7.25	-23.55
1992	427.92	481.86	-53.94	+12.60	-2.40
1993	226.70	240.38	-13.68	-6.03	-20.08
1994	251.25	230.51	+20.74	+8.25	-23.01
1995	348.45	352.83	-4.38	-1.26	-31.89
1996	351.21	284.52	+66.69	+18.99	-25.20
1997	427.13	389.96	+37.17	+8.70	-12.81
1998	369.23	311.18	+58.05	+15.72	—
1999	359.02	336.62	+22.40	+6.24	—
2000	400.98	405.15	-4.17	-1.04	—
2001	511.21	466.16	+45.05	+8.81	—

Source: Indian figures from Monthly Statistics of Foreign Trade of India (Vol.1) & Statistics of Foreign Trade of India by Countries, Various Issues, DGCIIS. Canadian figures obtained from Trade Data Online, Strategis (<http://strategis.ic.gc.ca>). Other Industrial Country figures from *Direction of Trade Statistics*, IMF.

* Exports adjusted to account for cost insurance & freight by a factor of 1.1

TABLE 8: Discrepancy Between India's Exports and Canada's Imports**As % of India's Reported Exports**

Product Groups	Share of Canada's Imports from India					
	2001 (%)	1997	1998	1999	2000	2001
6109 T-Shirts, singlets etc.	5.20	-45.26	-31.98	-34.76	-31.83	-27.42
7102 Diamonds	4.10	-14.76	-15.45	-56.93	-65.67	-83.84
6108 Womens/girls nightwear	3.70	-228.42	-189.27	-134.34	-79.11	-41.34
5205 Cotton (>85%) yarn - Non-retail	3.40	-9.60	-41.88	-14.71	-49.41	-54.05
6204 Women's/girls' suits, ensembles, jackets	3.20	-0.50	-4.56	-0.68	15.06	21.62
6105 Men's/boys shirts - Knitted	3.20	-8.61	23.88	51.16	11.98	33.62
6205 Men's/boys shirts - Woven	2.60	35.70	24.11	2.64	15.59	9.62
6302 Linen	2.60	-10095.90	-7240.17	-5839.12	-2606.72	-1553.42
6206 Women's/girls' blouses, shirts etc.	2.20	14.64	13.74	-0.31	29.67	8.22
0306 Crustaceans - Live, fresh, chilled etc.	1.80	-34.63	-62.20	-12.73	-34.90	-48.71

Source: Indian figures from Statistics of Foreign Trade of India by Countries, Various Issues, DGCIIS. Canadian figures obtained from Trade Data Online, Strategis (<http://strategis.ic.gc.ca>).

TABLE 9: Discrepancy Between India's Imports and Canada's Exports**As % of India's Reported Imports**

Product Groups (HS-4)	Share of Canada's Exports to India					
	2001 (%)	1997	1998	1999	2000	2001
0713 Leguminous vegetables - Dried and shelled	29.70	32.82	-72.55	-154.82	-412.63	-2.33
4801 Newsprint - In rolls or sheets	14.70	7.36	44.95	18.65	33.28	15.94
9001 Optical fibers; contact & unmounted lenses etc.	7.60	-7087.27	-27671.11	-432.70	-34218.45	-4.83
8544 Insulated wire, cable etc.	6.60	94.08	82.18	58.08	87.40	-21.68
3104 Mineral or chemical fertilizers, potassic	6.50	70.70	-23.38	9.00	-33.05	-32.92
2524 Asbestos	4.50	-57.42	-3.71	-35.77	-46.56	-39.13
4703 Chemical woodpulp - Soda or sulphate	4.30	-40.15	-76.35	-51.75	-72.75	-25.00
4705 Semi-chemical wood pulp	4.10	-117.48	-106.10	-225.05	-388.96	-489.99
2603 Copper ores and concentrates	2.50	100.00	100.00	—	-120.65	-89.52
4702 Chemical woodpulp - Dissolving grades	1.00	-63.65	47.01	62.74	68.21	74.40

Source: Indian figures from Statistics of Foreign Trade of India by Countries, Various Issues, DGCIIS. Canadian figures obtained from Trade Data Online, Strategis (<http://strategis.ic.gc.ca>).

Under-invoicing was especially high for processed and semi-processed products including: Optical fiber/ lenses (9001); Semi-chemical Wood Pulp (4705), Flat rolled products of iron/non-alloy Steel (7210), Apparatus for Medical use (9022), Machinery for Working Rubber or Plastic (8477), Turbo jet, Propellers and other Gas Turbines (8411), and Electrical Apparatus for Telephonic Line use (8517). It should be noted that many of these sectors are priority sectors for DFAIT and are part of its *South Asia Trade Action Plan*.

3.2 TRANSSHIPMENT OF CANADIAN EXPORTS TO INDIA

The above analysis of mis-reporting between Canadian and Indian trade statistics may not fully take into account the legal and illegal transshipment of goods. Approximately two-thirds of total containers carrying import/export cargo to and from India are transshipped at foreign ports. In the case of large trading partners, goods are shipped by surface transport to a large port within the jurisdiction of the exporting country and from there directly to destination countries. However, in the case of Canadian exports to

India (and Asia), the common route is to transport products to larger ports within continental North America, Europe, and Asia for transshipment. Simply put, looking at Canadian export statistics and documenting differences with Indian import statistics will not capture transshipment of products destined to India through hub ports.

Table 10 shows trade routes from Canada to Asian destinations used by Maersk Sealand — one of the largest shipping companies in the world. As we can see, movement of goods from Canada to India typically takes longer and has an extra foreign port of call — usually in the Middle East (Dubai), East Asia (Tanjung Pelepas in the case of Maersk Sealand), or South Asia (Colombo). A shipment from Montreal to Calcutta at a distance of 9,900 nautical miles takes 57 days with transshipment occurring at 3 ports outside of North America — Rotterdam, Dubai, and Colombo. A shipment covering the same distance from Montreal to Bangkok takes 45% less time (only 31 days) and involves 1 foreign transshipment point outside of North America.

TABLE 10: Trade Routes from Canada to India and Other Asian Countries*

Origin Canada	Transshipment Point #1	Transshipment Point #2	Transshipment Point #3	Transshipment Point #4	Final Destination India	Transit Time	Distance Nautical Miles
Vancouver	Tacoma (Road)	Tanjung Pelepas (Sea)	Colombo (Sea)	Nhava-Sheva (Sea)	Mumbai (Road)	42	9,511
Toronto	Montreal (Rail)	Rotterdam (Sea)	Nhava-Sheva (Sea)	—	Mumbai (Road)	45	8,513
Toronto	Montreal (Rail)	Rotterdam (Sea)	Jabel Ali, Dubai (Sea)	Colombo (Sea)	Chennai (Sea)	50	9,513
Montreal	Rotterdam (Sea)	Jabel Ali, Dubai (Sea)	Colombo (Sea)	—	Calcutta (Sea)	57	9,890
Vancouver	Tacoma (Truck)	Yokohama (Sea)	—	—	Shanghai (Sea)	19	5,091
Toronto	Vancouver (Rail)	Tacoma (Road)	Yokohama (Sea)	—	Shanghai (Sea)	24	6,908
Toronto	Vancouver (Rail)	Tacoma (Road)	Tanjung Pelepas (Sea)	—	Ho Chi Minh City (Sea)	33	8,480
Montreal	Vancouver (Rail)	Tacoma (Road)	Kaohsiung, Taiwan (Sea)	Laem Chabang, Thailand (Sea)	Bangkok, Thailand (Rail)	31	9,904

* Mode of shipment from previous origin in paranthesis.
Transit times are in days and are indicative only. Distance is in nautical miles.
Source: Maersk Sealand.

The greater number of transshipment points involved in moving goods from Canada to India complicates measurement of the real extent of Canadian exports to India for two reasons. The first (and more important) reason is what we call the “Reporting Effect”. For bulk cargo, while ships may call upon 2-3 intermediary ports en route to India, the bill of lading for such cargo tends to record the country of origin and final destination fairly accurately. This is because, very little transformation or repackaging of bulk commodities can occur en route. However, exporters of semi-processed and manufactured products will often report a consolidator in the intermediary port as the final destination. The consolidator will then transfer the shipment to local shipping agents for the onward journey to India.

As we see in Table 10, relative to other Asian countries, this can become an especially complicating factor for

Canadian exports to India because there are 2-3 intermediary countries, depending on the trade route taken. This factor could result in under-reporting of Canadian semi-processed and manufactured exports to India and would not appear in either Canadian or Indian trade statistics highlighted above. These indirect exports would, however, appear as re-exports in the trade statistics of most intermediary countries.

The “Valuation Effect” is the second reason why multiple transshipment points complicates measurement of Canadian exports to India. Under this effect, the value of goods increases when going through an intermediary as a result of value added transformations or a simple price mark-up. For example, a shipment originating from Montreal could see mark-ups at each port in transit (Rotterdam, Dubai, and Colombo) en route to Calcutta. If the shipment was properly recorded as a re-export to India, its value recorded at Calcutta would be higher than

TABLE 11: Transshipment Estimates of Canadian Exports to India, 2001 (C\$ millions)

	PROPORTIONAL TRANSSHIPMENTS				ADJUSTMENTS			NET TRANS-SHIPMENT
	Primary Point (1)	Secondary Points (2)			Raw Material Re-Exports ^a (3)	Re-export Mark-up ^b @15% (4)	Insurance & Freight ^c @10% (5)	1+2+3+4+5
		UAE	Singapore	Hong Kong				
United States ^d	100	—	—	—	—	-15.0	-10.0	75.0
	—	2.5	—	—	—	-0.4	-0.2	1.8
	—	—	8.3	—	—	-1.2	-0.8	6.2
	—	—	—	1.9	—	-0.3	-0.2	1.4
Singapore ^e	8.3	—	—	—	-0.4	-1.2	-0.8	5.9
Hong Kong ^f	10.4	—	—	—	-0.5	-1.6	-1.0	7.3
UAE ^g	3.2	—	—	—	-0.4	-0.4	-0.3	2.1
Total								100
% of recorded Canadian exports to India								15

a: Raw Materials accounted for 12% and 5% of UAE and Singapore re-exports, respectively. We were unable to obtain comparable raw material re-export figures for Hong Kong. We therefore use Singapore figures for Hong Kong.
b: Re-export mark-up calculated at each transshipment point net of raw material re-exports (with the exception of re-exports from the United States).
c: Insurance & Freight factor calculated after including re-export mark-up.
d: US figures based on imputed re-export statistics (See Annex C for details).
e: India's share of non-oil Singapore re-exports was 2.7% in 2002 (or C\$ 2.306 billion). Singapore imports from Canada in 2001 were 0.36% of total Singapore imports.
f: India's share of Hong Kong re-exports was 0.67% in 2001 (or C\$ 1.768 billion). Hong Kong's imports from Canada in 2001 were 0.59% of total Hong Kong imports.
g: India's share of UAE re-exports was 4.8% in 2001 (or C\$ 526 billion). UAE imports from Canada in 2001 were 0.6% of total UAE imports. Columns (1) – (5) may not add up to Net Transshipment figure due to rounding.

domestic Canadian exports, even after taking into account the normal insurance and freight costs. This valuation factor would tend to *overestimate* the value of semi-processed and manufactured exports from Canada to India.

3.2.1 Estimates of Export Transshipment from Canada to India

Based on some simplifying assumptions, we develop a methodology to estimate the amount of export transshipment occurring from Canada to India for 2001 (see Annex C for methodological notes). Our methodology uses the “proportional transshipment” assumption to calculate the value of Canadian products likely to be transshipped to India. This assumption essentially presumes that Canadian imports into major hub countries like Dubai, Singapore, and Hong Kong are likely to be transshipped to India in the same proportion as India’s share of re-exports from these hubs.

It should be noted that our methodology yields only broad estimates of the total amount of indirect exports from Canada to India attributable to transshipment. It does not constitute a reconciliation exercise. Further, the trade routes used ignore other likely transshipment points that may play a role in Canadian exports to India. However, if we did take into account the most likely routes (Rotterdam-Dubai and Singapore/Hong Kong-Colombo), the figures presented in Table 11 would likely be adjusted upward by between 1%-5%.

As we see in Table 11, under reasonable assumptions (no raw material re-exports recorded in US trade statistics, low re-export mark-ups of 15%), transshipments to India likely accounted for C\$ 100 million in exports — or 15% of recorded Canadian exports to India in 2001. By far, the largest source of this transshipment is the Canada-United States-India route representing 75% of Canadian transshipped exports to India. Other important transshipment points are Singapore (12% of Canadian transshipped exports to India), and Hong Kong (9%).

It should be noted that while the C\$ 100 million figure is large, it does not significantly alter either Canada’s aggregate market share in India relative to most industrialized countries or enhance India’s ranking as an important market for Canadian exports. Therefore, the broad conclusions of Chapter 2 on Canada’s

relative export performance in India will change only slightly if we were to include these transshipment figures. Nonetheless, because processed and semi-processed exports tend to be transshipped more often, a more detailed reconciliation exercise (at the product level) is warranted in order to shed light on issues such as the concentration of Canadian exports to India and the market share of Canadian exports in value-added product categories.



CANADA'S COMPARATIVE ADVANTAGE IN INDIA

4

Measuring Canada's comparative advantage in the Indian market is an important policy issue. Comparative advantage measures give policy makers an indication of the past performance of Canadian exports. This should, in principle, condition future Canadian export priorities. Here, we hope to provide some guidance by testing whether or not Canada does, indeed, have a comparative advantage in the priority sectors identified in DFAIT's *South Asia Trade Action Plan*.

Another reason for evaluating Canada's comparative advantage is that it would help policy makers evaluate Canada's competitiveness relative to its major rivals. If Canada is losing ground to competitors in a large and growing market such as India — either in traditional or priority sectors — this should be a source of concern since many surveys have found that building trade relationships in India is a long-term endeavour.²⁶ Future competitiveness in the Indian market may depend crucially on what is done today to promote exports and investment in India. Knowing the sectors where Canada has a distinct edge over its competitors can help set appropriate priorities.

It is important to mention two caveats before embarking on our analysis. Comparative advantage indicators evaluate observed trade patterns that can be distorted by government policies and interventions. This is particularly important in the Indian context with high average tariff rates, non-tariff barriers, and subsidies. To a certain extent, we mitigate against this by comparing Canada with the rest of the world and its major competitors in the Indian market. Everything else being equal, barriers faced by Canada would be similar to those faced by its competitor countries. By the same token, exporters from competing countries may be heavily subsidized by their governments. This could cause sectoral comparative advantage measures to be distorted. Our analysis abstracts from such issues.

The second important caveat is that while past comparative advantage measures offer an indication of

fundamental export structures, they can only serve as "rules of thumb" for future comparative advantages. This is because international trade is a dynamic process with unpredictable twists and turns caused by a variety of factors — economic and sectoral growth patterns, productivity trends, exchange rate changes, government policies, exporter priorities, etc. We have no way of predicting these changes in the medium- to long- term.

4.1 MEASURING COMPARATIVE ADVANTAGE

A number of measures of Revealed Comparative Advantage (RCA) are used to help assess a country's export potential. The original RCA index, formulated by Balassa (1965), measures the share of a country's exports of a particular product relative to the share of world exports of that product. Here, we modify this index to make it Canada-India specific and to gauge Canada's comparative advantages relative to OECD countries.

Because we have only export data available to us, our first index of Revealed Export Advantage (RXA-1) is defined as the share of Canada's exports to India in a sector j (at the 3-digit SITC level) divided by the share of OECD (excluding Canada) exports to India in that sector. We also use RXA-1 to look at Canada's comparative advantage in specific sectors relative to particular OECD countries that are commonly viewed as being our competitors in India. These countries are: Australia, France, Germany, Italy, Japan, Republic of Korea, United Kingdom, and the United States. When making these comparisons between Canada and competitor countries, we use three-year moving averages to emphasize structural shifts rather than cyclical fluctuations. Mathematically, the RXA-1 can be written as:

$$RXA-1_{CANADA,j} = \left\langle \frac{Exports_{CANADA,j} / TotalExports_{CANADA}}{Exports_{OECD,j} / TotalExports_{OECD}} \right\rangle_{India}$$

For $RXA-1 > 1$, we conclude that Canada has a revealed export advantage relative to its OECD competitors in the Indian market. For $RXA-1 < 1$, we conclude that Canada has a revealed export disadvantage relative to

its OECD competitors in the Indian market.

Making conclusions based on just one measure may not yield consistent and robust results. We therefore use two other measures (RXA-2 and RXA-3) to provide confirmation of the sectors in which Canada shows a comparative advantage in India (see Annex D for details). Our RXA-2 measure looks at the share of Canadian exports in OECD (excluding Canada) exports to India for a given sector, j . Mathematically:²⁷

$$RXA-2_{CANADA,j} = \left(\frac{Exports_{CANADA,j}}{Exports_{OECD,j}} \right)_{India}$$

The rank correlation between RXA-1 and RXA-2 is high at 0.98— suggesting that sectors in which Canada shows a revealed export advantage (as measured by RXA-1) are also sectors in which Canada's share of OECD exports to India is high (as measured by RXA-2). Because this high rank correlation is calculated over an extended period of time (15 years), we can say that Canada consistently shows an export advantage/disadvantage in particular sectors over its OECD competitors.

There are a number of drawbacks to using the RXA-1 and RXA-2 indicators on their own. One important limitation is that these indexes may not capture information on whether the revealed export advantages in India are based on world/Indian demand trends or Canadian export strengths based on export competitiveness. This is especially true given that India is a relatively small market for Canadian exports. Therefore, we complement RXA-1 and RXA-2 with a third measure (RXA-3) that more accurately separates demand and competitiveness factors. As such, RXA-3 measures dynamic export advantages and provides a useful check on conclusions based solely on RXA-1 and RXA-2 measures (see Annex D for details). Mathematically (below):

$$RXA-3_{CANADA,j} = \underbrace{(r_j^{INDIA} - r_j^{WORLD}) \cdot Exports_{CANADA,j}^{INDIA}}_{MarketDemandFactor} + \underbrace{(\Delta Exports_{CANADA,j}^{INDIA} - r_j^{INDIA} \cdot Exports_{CANADA,j}^{INDIA})}_{CompetitivenessFactor}$$

where r_j^{INDIA} is the percentage change in world exports of product j to India;

r_j^{WORLD} is the percentage change in world exports of product j

Sectors with RXA-3 greater than (less than) zero give us an indication of those sectors in which Canada has an export advantage (disadvantage) in India.

As mentioned above, the major advantage of using a measure like RXA-3 is that it provides greater insight into whether revealed export advantage is due to demand conditions in India or competitiveness factors related to Canadian exports. Two cases would be particularly interesting to policy makers (for more cases see Annex D):

1 Competitiveness Factor > 0, Market Factor > 0:

This case refers to growing sectors in India (relative to the world average) and for which Canadian exports to India grew rapidly (relative to the world average). They should be of particular interest to Canadian policy makers since they reflect not only Canadian competitiveness but also strong Indian demand for Canadian products.

2 Competitiveness Factor < 0, Demand Factor > 0:

This case refers to those sectors in which Indian demand was relatively high while Canadian competitiveness in the Indian market was relatively low. While they reflect areas of potential export growth, the main obstacle in these sectors would be the relatively low Canadian comparative advantages. If (Competitiveness Factor + Demand Factor) < 0, then we can say that strong Indian demand was not sufficient to counteract low Canadian competitiveness.

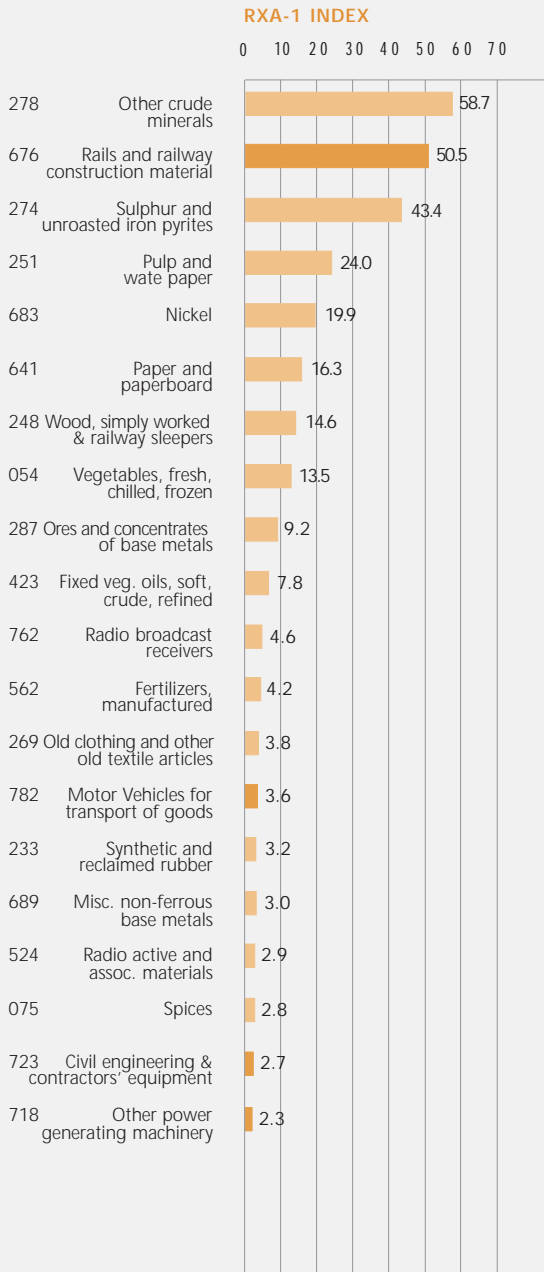
4.2 HOW DOES CANADA STACK UP?

4.2.1 The Canadian Advantage

Annex Table D2 shows selected results of our analysis using the RXA-1 and RXA-2 measures. Using the RXA-1 measure, for 182 industries at the 3-digit SITC level, Canada's Revealed Export Advantage appears to lie in 32 industries (i.e., industries for which RXA-1>1). Many traditional Canadian exports to India are on this list.

FIGURE 8:

Top 20 Sectors with Relative Export Advantage: Canada & OECD, 1985-2000



■ Sectors could be associated with priority sectors in DFAIT's South Asia Trade Action Plan.

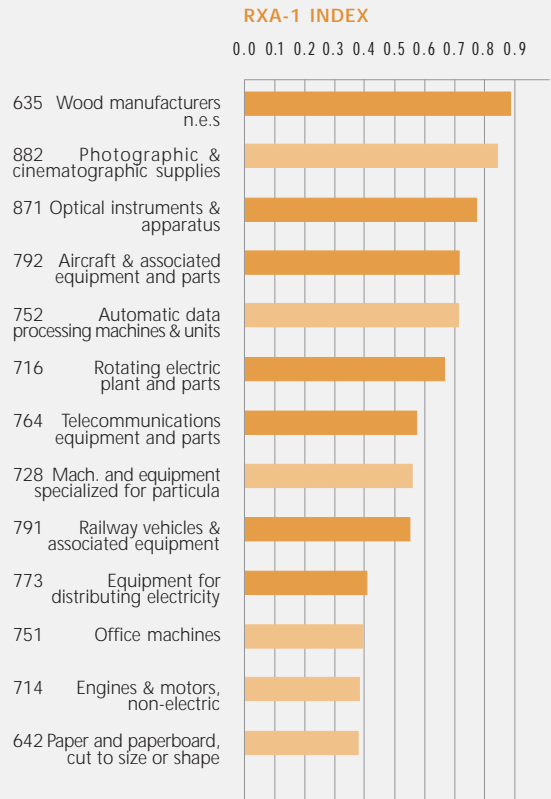
Source: Statistics Canada, *World Trade Analyzer*, 2002. Sectors are at the 3-digit SITC level.

These include: Pulp and Wastepaper (SITC-251), Paper and Paperboard (641), Manufactured Fertilizers (562), Sulphur and Unroasted Iron Pyrites (274), Nickel (683), and Zinc (686). Of these 32 sectors, 10 fell under the SITC-2 "Crude Materials" category and a further seven were "low" value added SITC-6 "Manufactured goods classified by Material" category. Our RXA-2 measure essentially shows similar results.

Using the RXA-3 index, we find a few more industries where Canada shows a revealed export advantage (relative to world exports rather than OECD exports)—

FIGURE 9:

Selected Sectors with "Moderate" Export Disadvantage: Canada & OECD, 1985-2000



■ Sectors could be associated with priority sectors in DFAIT's South Asia Trade Action Plan.

Source: Statistics Canada, *World Trade Analyzer*, 2002. Sectors are at the 3-digit SITC level.

chiefly in the infrastructure and power industries (see shaded sectors in Annex Table D3). These include: Internal Combustion Piston Engines & Parts (713), Machinery & equipment specialized for particular industries (728), Electric Power Machinery (771), and Steam and other Vapour Generators (711).

How does this Canadian advantage match up with the priority sectors identified in DFAIT's *South Asia Trade Action Plan*? It is clear that the Mining and Minerals priority of the *South Asia Trade Action Plan* is well placed. Here, Canada shows a substantial export advantage over its OECD competitors and can build on its long-term market penetration with value-added services such as geomatics and mine development. This strategy by DFAIT and Natural Resources Canada appears to be well thought out.

The Electrical Generation, Transmission, and Distribution priority in the *South Asia Trade Action Plan* also appears to be well placed. Two caveats need to be made here. First, we do not obtain consistent results between our RXA-1 and RXA-3 indexes for many industries in this sector. This could be because the RXA-1 index measures comparative advantages relative to OECD exporters while RXA-3 index measures comparative advantages relative to world exports to India. Second, while Canadian exports are competitive relative to world averages in these industries, there are many OECD countries that show a significant comparative advantage over Canada in this sector.

4.2.2 Areas of Potential Canadian Export Growth in the Medium- to Long-term

We found 25 industries for which there was only a "moderate" disadvantage for Canadian exports to India.²⁸ As we see in Figure 9, many of these sectors could be associated with the priority sectors included in DFAIT's *South Asia Trade Action Plan*. These industries are: Wood Manufactures (SITC 635), Optical Instruments and Apparatus (871), Telecommunications Equipment (764), Railway Vehicles & Associated Equipment (791), and Equipment for Distributing Electricity (773).

It is important here to distinguish between revealed export disadvantages due to market conditions in India and Canadian export competitiveness. It will also be important to provide some indication of evolving export advantages over the late 1990s to provide some

indication of momentum in various sectors. For Wood Manufactures (SITC 635) and Optical Instruments and Apparatus (871) (shaded in Annex Table D3), we found no clear signals to indicate that Canadian uncompetitiveness contributed to the export disadvantage.²⁹ For the Railway Vehicles & Associated Equipment (791), and Equipment for Distributing Electricity (773), both Canadian competitiveness and Indian market demand appear to contribute to export disadvantages. Only in the case of Telecommunications Equipment (764) did we find a clear case of Canadian uncompetitiveness contributing more to export disadvantages than Indian market conditions.

Therefore, for these industries it is clear that the priorities laid out by DFAIT can bear fruit in the medium- to longer- term as the Indian market continues to grow and barriers in these sectors are reduced.

4.2.3 The Canadian Disadvantage

As we see in Annex Table D2, 90 out of the 182 industries studied showed a "large" revealed export disadvantage for Canada.³⁰ Sixteen industries showed what we term an "absolute" Canadian disadvantage in the Indian market. These are industries in which there were *zero* Canadian exports to India recorded in any of the last 16 years while other OECD countries were able to export products in these industries. Most of these industries can be described as "marginal" and should not be of major concern to policy makers. The possible exceptions may be Butter (SITC 023) and Cheese (SITC 024) where Australia and New Zealand exported small quantities to India. With the exception of Cheese, none of these 16 industries were included in the priority sectors identified in the *South Asia Trade Action Plan*.

Three more industries allied to sectors identified in the *South Asia Trade Action Plan* can be considered to show a "large" export disadvantage by the RXA-1 measure. These were: Steam Turbines (SITC 712) and Steam Boilers (SITC 711) in the Power Generation sector and Alcoholic Beverages (SITC 112) in the Agriculture and Food Products sector. Also significant is the Medicinal and Pharmaceutical Products sector (SITC 541) that, while not in the *South Asia Trade Action Plan*, is viewed by industry and government as an emerging area of Canada's knowledge-based export growth. With the exception of SITC 711, these sectors also showed a negative competitiveness factor on the RXA-3 index.

Case Study 2

Canada's comparative advantages in specific sectors

The comparisons between Canada and the OECD provide only a static picture of competitiveness in various industries. In setting priorities for export promotion, it is important for policy makers to know the dynamic aspects of Canada's comparative advantages in India. These aspects include: a picture of Canada's competitors in particular sectors and a knowledge of whether the source of this advantage is due more to demand conditions in India or competitiveness issues of Canadian exporters.

To provide a picture of Canada's dynamic export advantages in India, we apply a modified version of our RXA-1 index to a sub-set of OECD countries commonly viewed as being Canada's competitors in India. These countries are: Australia, France, Germany, Italy, Japan, Republic of Korea, the United Kingdom, and the United States.³¹ We compare this with our broader RXA-3 measure (which looks at all countries) to hone in on those sectors that show consistent and robust indicators of Canadian export competitiveness in the Indian market.

Pulp and Wastepaper (SITC 251): *Figure 10A shows that in this important industry Canada has a strong comparative advantage using the RXA-1 indicator. Among the sub-set of OECD countries considered, Canada's closest competitor was the United States with Canada's RXA-1 index ranging between 3 and 9. As we see in Annex table D3, the RXA-3 index also shows a robust increase for this industry in the 1998-2000 period. However, most of this gain appears to be more due to positive Indian demand conditions. Canadian competitiveness in this industry appears to have declined over the past 15 years.*

Paper and Paperboard (SITC 641): *Like Pulp and Wastepaper, this industry also shows a strong Canadian comparative advantage using the RXA-1 indicator. Our closest OECD competitors are the United Kingdom, France, and Germany. However, using the RXA-3 index, this appears to be a declining industry as far as the Indian market is concerned with both the market demand and the competitiveness components showing sharp negative values over the long term. Moreover, the decline in Canadian competitiveness in this sector far outpaced the decline in Indian demand conditions.*

Power Generating Machinery and Parts (SITC 718): *This industry can be considered to be a priority sector in the South Asia Trade Action Plan. Both the RXA-1 and RXA-3 indexes show a Canadian advantage in this industry. The RXA-3 index shows that while Canadian competitiveness in this industry matters, Indian demand conditions*

are relatively strong. Further, while the average RXA-1 index was high, Canada appears to be losing its comparative advantage to other countries since the beginning of the 1990s (see Figure 10B). Canada's closest competitors in India among the sub-set of OECD countries considered are Japan, France, Germany, and Italy. Relative to all four countries, the RXA-1 index declined substantially over the past decade, although there were signs of a modest pick-up in the 1998-2000 period.

Civil Engineering & Contractors, Plant and Equipment (SITC 723): *This industry can also be considered a priority sector and the picture here is similar to the Power Generating Machinery and Parts industry.³² While the RXA-1 index does show a Canadian advantage in this industry, as we see in Figure 10C, Canada was losing significant comparative advantage to our main competitors — Japan, France, Germany, and Italy. The RXA-3 measure confirms this with Canadian competitiveness taking away from strong Indian demand conditions in this sector.*

Telecommunications Equipment (SITC 764): *This industry has received considerable attention by the Canadian government and is also included as a priority sector in the South Asia Trade Action Plan. Both the RXA-1 and RXA-3 measures show a comparative disadvantage for Canada. However, it must be noted that Canada has been holding its own against some very large and competitive suppliers of telecommunications equipment to India with major gains in the recent past (see Figure 10D and Annex Table D3). While the RXA-1 index still registers a value of less than 1 in this sector when compared to major telecommunications suppliers like France, the United States, and the Republic of Korea, Canada has generally done well compared to other well-known technology exporters including the United Kingdom, Japan, and Italy.*

FIGURE 10A: SITC 251 Pulp and Wastepaper (Canada's RXA-1, 1986-2000)

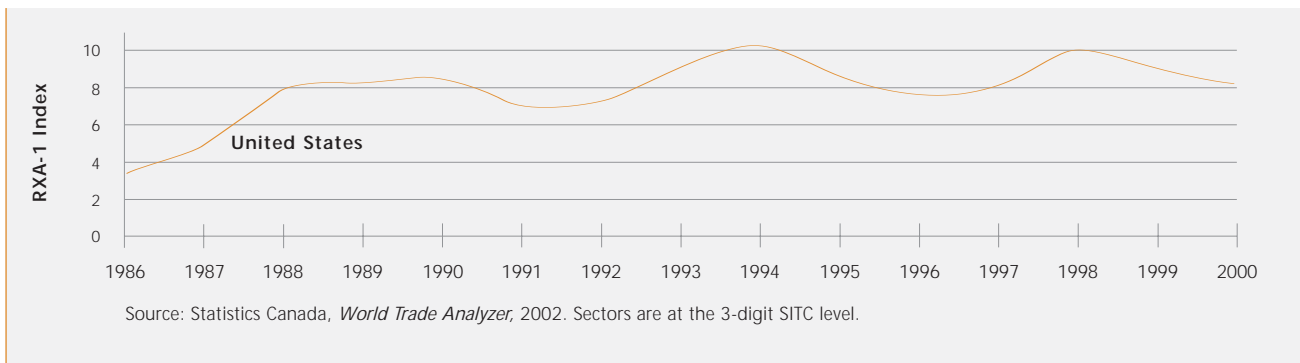


FIGURE 10B: SITC 718 Power Generating Machinery & Parts (Canada's RXA-1, 1986-2000)

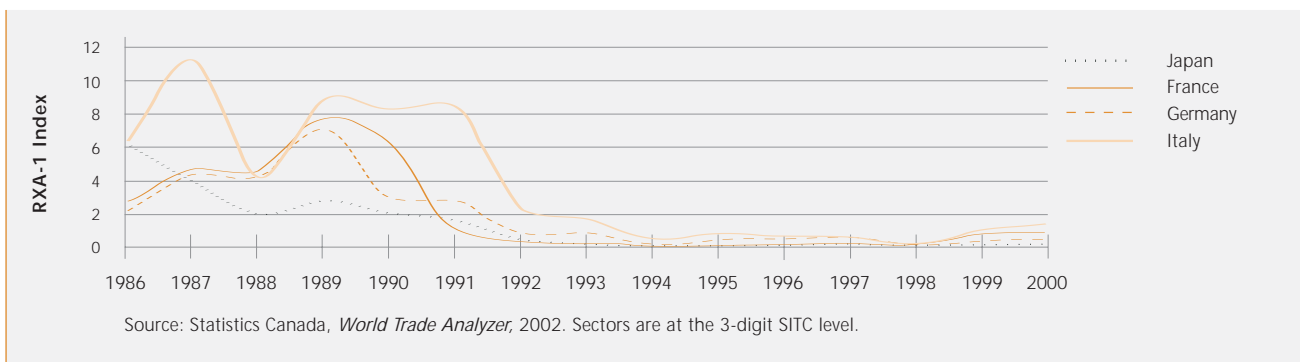


FIGURE 10C: SITC 723 Civil Engineering Contractors and Plant Equipment (Canada's RXA-1, 1986-2000)

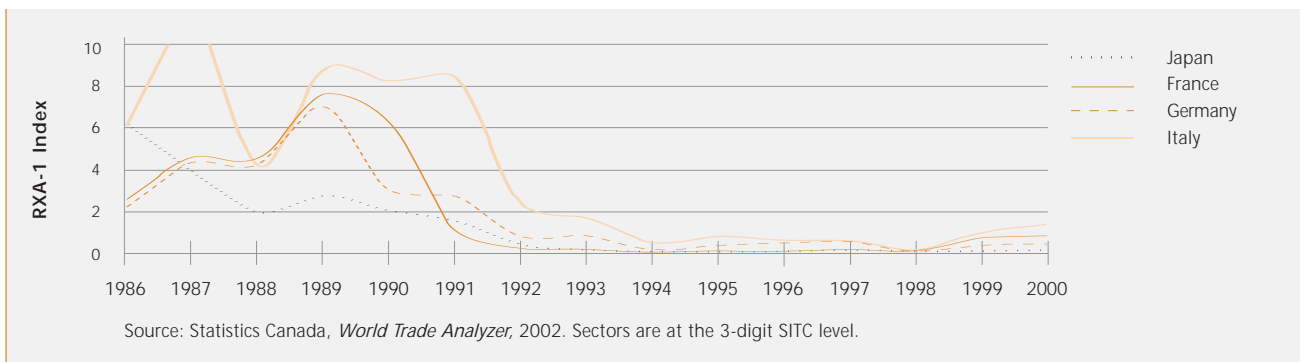
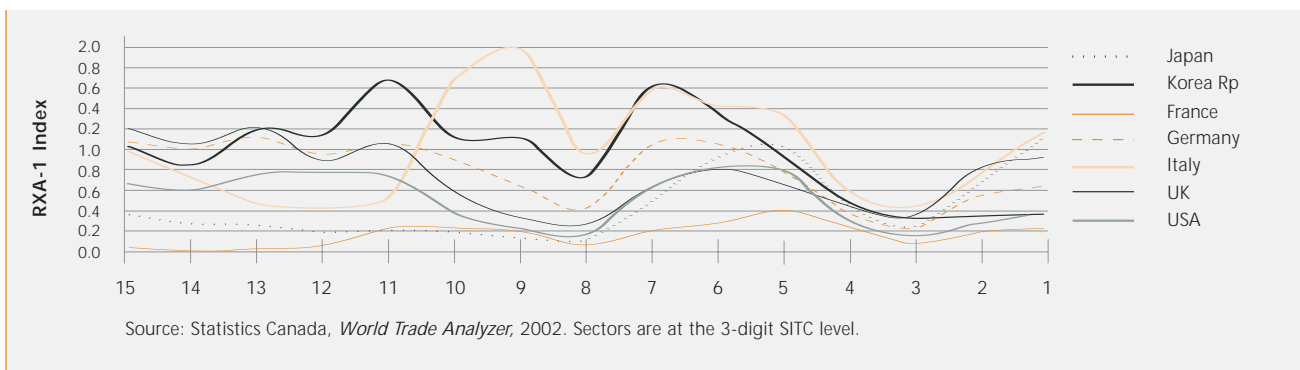


FIGURE 10D: SITC 723 Telecommunications Equipment & Parts (Canada's RXA-1, 1986-2000)



POLICY IMPLICATIONS AND CONCLUSIONS

5

This study confirms some accepted ideas on the Canada-India trading relationship and confounds others. Our analysis of the nature of Canadian exports to India has three key policy implications:

A: Policy Makers Should Stay Away From Explicit Export Growth Targets

While not statistically lower than the trade-weighted emerging market average, Canada's export growth to a large market like India is significantly lower than its exports to many emerging markets with large middle classes. If we take the 6.2% average annual growth achieved by Canadian exports over the past 15 years as a reasonable estimate of future growth prospects, Canadian exports to India would *double* in about 11 years. It is quite obvious, therefore, that stated goals of doubling trade with India by 2003 — as was made recently by various Canadian Ministers — will not be achieved even in the short- to medium- term. Indeed, 2002 exports to India were 7.3% lower than their 2001 levels [see Statistics Canada (2002b)].

Two important findings about the nature of Canadian exports to India support this view of short- to medium-term export growth prospects. First, the structure of Canadian exports to India has remained essentially constant, with the raw materials industry still accounting for about one-third of Canadian exports. Any massive expansion of Canadian exports would require this structure to change significantly and for exports to diversify. Even after taking into account the under-reporting likely in the transshipment of processed and semi-processed exports, we do not expect this to happen in the short- to medium-term. Second, our analysis of the sources of Canada's revealed export advantage in India shows that, compared to other OECD countries, Canada's strong export advantages are in 32 industries — primarily in the traditional "Crude Materials" sector. Again, it is quite unlikely that these established comparative advantages will change in the near future or are likely to be overtaken by unreported exports through transshipment hubs.

B: Priority Sectors in the *South Asia Trade Action Plan* are Well Placed

Broadly speaking, we find that the priority sectors outlined in successive *South Asia Trade Action Plans* target industries where Canada has some comparative advantage in India or has reasonable prospects for export growth. Sectors such as mining and minerals; electrical generation, transmission, and distribution; and various transport industries show some comparative advantages over the past 15 years.

Two caveats need to be expressed about this broad finding. First, there are always industries and product categories that are the exception to the rule. In our analysis, we highlighted the telecommunications equipment industry where Canadian uncompetitiveness (rather than Indian demand) contributed to Canada's export disadvantage in India. Other industries that showed a "large" export disadvantage include: cheese, alcoholic beverages, steam turbines, steam boilers, and medicinal and pharmaceutical industries. Arguably, all of these sectors could be considered as priority sectors of Canadian exports to India.

The second caveat is the dynamic trends in export advantages. As an example, we highlighted the cases of the power generating machinery, and civil engineering contractors and equipment industries. In these two sectors, Canada showed a large export advantage compared to most OECD competitors in the late 1980s and early 1990s. However, this advantage was eroded significantly in the mid- to late-1990s. The sources of this erosion could be both Canadian competitiveness and Indian demand conditions.

The policy implication of this finding is that while the "priority sector" model works for Canadian exports to India and is generally based on Canadian export strengths, comparative advantages may not be the same in all priority sectors and these advantages can change over time. It will, therefore, be important for policy makers to make necessary adjustments to the

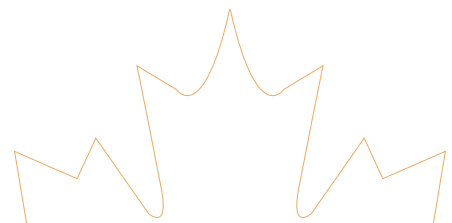
Trade Action Plans, based on an assessment of not only past Canadian performance but also Indian market conditions in particular sectors.

C: Canada-India Trade Statistics Need to be Reconciled

Our analysis shows that there are discrepancies between reported trade statistics of the two countries. To a certain extent, discrepancies will always arise because of conceptual and definitional differences between import and export statistics. However, it is important to know why such discrepancies might occur due to other systemic reasons like export under-invoicing or transshipment of goods through third countries.

Our preliminary analysis shows that Indian exports to Canada are consistently under-invoiced. The average discrepancy for the 12-year period 1990-2001 was 27% of Indian exports to Canada with most of the top-25 Indian exports being under-invoiced. While we do not find a similar aggregate trend for Canadian exports to India, for many of Canada's top-25 exports, under-invoicing was prevalent. Part of this under-invoicing is clearly due to the transshipment of products. Based on reasonable assumptions, we show that transshipment of products through hub ports could account for C\$ 100 million in unreported annual exports to India.

While our analysis does not constitute a reconciliation exercise, it is clear that such a detailed exercise is needed. To the extent that India is now one of twelve countries of priority for Canada, knowing the exact nature and composition of Canada-India trade would not only help future trade relations but also provide valuable guidance to Canada's trade promotion strategies in India.



ANNEX A

STATISTICAL ANALYSIS



Did Canadian Exports to India grow at a slower rate than Canadian Exports to other Emerging Markets?

Between 1985 and 2000, the average annual growth rate of Canadian exports to India was 6.2%. This growth in exports to India was more than 2 percentage points lower than the export-weighted growth and more than 7 points lower than the simple average export growth to the group of 18 other emerging markets considered in this study.

As we see in Table A1, compared to export-weighted growth experience in emerging markets as a whole, the growth rates of Canadian exports to India are not statistically lower. This is true even when we exclude exceptional years like 1992 and 1993 from our sample.

TABLE A1:

Did Canadian Exports to India Grow at a Slower Rate than to Other Emerging Markets?					
Null:	Export Growth is Equal				
Alternative:	Export Growth (Emerging Markets) > Export Growth (India)				
Assumptions:	<ol style="list-style-type: none"> 1 Export growth (g) for country, i is independently and identically drawn from its populations. 2 $g_i \sim N(\mu, \sigma^2)$, i.e., populations are normally distributed with the same mean and variance. 3 This population distribution does not change across countries and through time. 				
T-TEST: TWO-SAMPLES					
	Mean Growth Rate	Variance	df	t-stat	P(T≤t)
All Years (1985–2000), Assuming Unequal Variances					
Emerging Markets (excluding India)	8.45	363.76	20	0.20	0.23
India	6.15	1,568.67			
All Years (Excluding 1992), Assuming Equal Variances					
Emerging Markets (excluding India)	8.61	391.37	26	0.99	0.17
India	-0.87	893.62			
Null:	Export Growth is Equal				
Alternative:	Export Growth (Emerging Markets) > Export Growth (India)				
Assumptions:	<ol style="list-style-type: none"> 1 Export growth (g) for country, i is independently and identically drawn from its populations. 2 $g_i \sim N(\mu, \sigma^2)$, i.e., populations are normally distributed with country-specific means and variances. 3 This distribution does not change through time for any given country. 				
T-TEST: LINEAR COMBINATIONS OF MEANS, INDEPENDENT GROUPS					
	Mean Growth Rate	Variance	df	t-stat	P(T≤t)
All Years (1985–2000), Assuming Unequal Variances Across Countries					
All Emerging Markets (less India), L	7.37	0.0784	252	2.633	0.005

Are Canadian Exports to India more volatile than Exports to other Emerging Markets?

There are some very large occasional fluctuations in Canada's exports to India. In 1992, for example, Canadian exports to India grew by 104% followed by a decline of 56% in 1993. But are these fluctuations any different from fluctuations in Canadian exports to other emerging markets? How much more volatile are exports to India if we exclude 1992 and/or 1993?

As we see in Table A2, for the entire sample (1985-2000), Canadian exports to India are indeed statistically more volatile than Canadian exports to other emerging markets (trade-weighted). However, if we exclude 1992 or both 1992 and 1993, we find that exports to India are statistically just as volatile as Canadian exports to other emerging markets.

TABLE A2:

Are Canadian Exports to India More Volatile than Exports to Other Emerging Markets?

Null: Variances of Export Growth are Equal

Alternative: Variance of Export Growth (India) > Variance of Export Growth (Emerging Markets)

- Assumptions:**
- 1 Export growth (g_i) for country, i is independently and identically drawn from its populations.
 - 2 $g_i \sim N(\mu, \sigma^2)$, i.e., populations are normally distributed with the same mean and variance.
 - 3 This population distribution does not change across countries and through time.

F-TEST TWO-SAMPLES FOR VARIANCES

	Mean Growth Rate	Variance	df	F-stat	P(F≤f)
All Years (1985–2000)					
Emerging Markets (excluding India)	8.45	363.76	14	0.23	0.00
India	6.15	1,568.67	14		
All Years (Excluding 1992 & 1993)					
Emerging Markets (excluding India)	10.14	388.39	12	0.56	0.16
India	3.37	695.62	12		
All Years (Excluding 1992)					
Emerging Markets (excluding India)	8.61	391.37	13	0.44	0.075
India	-0.87	893.62	13		

ANNEX B

CAUSES OF INSTABILITY IN CANADIAN EXPORTS TO INDIA



Measures of Export Instability and Their Determinants: Literature Review

There is an established literature on the causes and consequences of export instability. However, the literature tends to focus on instability of exports of developing countries and to our knowledge, no such analysis exists for a developed market like Canada.

The literature on the measures and determinants of export instability is well established. Earlier studies [see Coppock (1962), Erb and Shiavo-Campo (1969) and Massell (1970)] show no significant link between export instability and its alleged determinants. Among these determinants the most debated tends to be commodity and geographic concentration of exports. Other variables include: the ratio of food and raw materials to total exports, per capita incomes of exporting countries, openness of an economy, and export shares in world trade, etc.

These earlier studies had two important limitations. First, as Love (1985) points out, they used cross-country regression analysis with some measure of export instability as the dependent variable. This cross-country analysis implicitly assumes a unique relationship between a given explanatory variable and the degree of export instability across countries. For some important variables like commodity concentration, greater concentration may not necessarily be associated with greater instability of exports to individual countries.

We can illustrate this point using Canadian data. As we can see in Figure 4, while Canadian exports to China were more concentrated over time than exports to India, supply and demand conditions caused Canadian exports to India to be more volatile than exports to China.³² Clearly export concentration as an explanatory variable did not behave similarly for China and India.

To overcome such limitations, Love (1985) and Tegegne (2000) use time series analysis on an individual country basis. Using this approach, both studies show that export concentration does indeed have an effect on export instability.

However, from a policy maker's perspective, one important disadvantage of such time series analyses is that it cannot go beyond rather aggregated measures of determinants of export instability for any given country (the degrees of freedom just won't allow for it!). For example, among the other determinants looked at by Love (1985), the "share of agricultural products in total earnings," "the share of raw materials in total earnings," and "openness of the economy" are used as explanatory variables. Such variables provide very little information to policy makers who often develop export promotion and trade policy stances at sectoral levels.

A second weakness of the early cross-country regression analyses (and indeed the newer time series work) was the lack of a clear distinction between supply and demand factors affecting export instability. For example, Massell (1970) interpreted the positive and significant coefficient for commodity concentration as a demand-side factor affecting export instability. However, as Wong (1986) points out, such a positive and significant coefficient may also be caused by supply fluctuations.

To use a Canadian example, in 1992 Canadian wheat exports to India surged to US\$ 135 million. As a result, exports became more concentrated with the Gini-Hirschman Index increasing from 0.27 in 1991 to 0.39 in 1992. This may very well have been due to a surge in the Indian demand for wheat in that year but other supply factors like Canadian food aid sales or export credits may have accounted for the increase as well.

To a certain extent, this confusion between supply and demand considerations is because all studies reviewed almost

invariably start off with an estimable econometric equation without developing the theoretical model. We develop a new rational expectations model to separate the various supply and demand factors affecting export instability and build upon the works by Lucas (1973), Iscan and Osberg (1998), Iscan and Osberg (1997), Charette (1985), Love (1985), Wong (1986), and Stanley and Bunnag (2001). By using panel regression techniques, we are able to develop a richer empirical model that looks at the supply and demand conditions driving Canadian exports to emerging markets and apply the model to Canadian exports to India.

Two unresolved and potentially important measurement-related issues in the literature remain. The first revolves around the measurement of export concentration. Tuong and Yeats (1976) argued that Gini-type concentration indices not only tend to be volatile but also give different country rankings, depending on the SITC level used. They therefore suggest their “Full Information Index” that combines data at various SITC levels.³³ Lawson and Thanassoulas (1981) critique this approach and show that the SITC level at which Gini-type coefficients are calculated do not matter. Lawson and Thanassoulas (1981) also show that there was no difference in the predictive power in cross-country regressions that used Gini-type concentration indices and the Full Information Index proposed by Tuong and Yeats.

Using time series analysis, Love (1986) shows that the type of concentration measure used matters to export instability, with measures that are highly correlated showing different results for a group of 36 developing countries. The subsequent literature, however, continues to use Gini-type coefficients with the Gini-Hirschman index being the most popular measure of export concentration. In this study, we estimate our panel regressions using both the export shares of different sectors as a more direct measure of concentration at the sectoral level.

Measurement of export instability is the second area where the literature provides little guidance. The variance of export growth is the simplest measure of instability but because export volumes and values have increased in the past, the most common measures of export instability are deviations from a trend in export earnings growth. Various corrections for trend appear in the literature including moving averages, linear, and exponential trends. The literature has shown a preference for the exponential trend correction on the grounds that governments set their priorities based on growth rates. However, there is no a priori reason to think that diversification strategies would be based on past growth rates. Indeed, DFAIT’s South Asia Trade Action Plan (and numerous market intelligence reports) refer to the future potential growth of the Indian market rather than past export performance. In our estimations, in the interest of simplicity, we use deviations from a linear trend as our dependent variable.

The Model

Consider the export allocation problem of a firm, i operating in sector j and seeking to maximize output through sales in the domestic and foreign markets.

Let $P(j) = [c_1, \dots, c_n; o(j)]$ be the vector of input prices (c_1, \dots, c_n) and output price $(o(j))$ experienced by the firm in the domestic market where its product is freely traded.

Let $e_f \cdot (Q_f(j))$ be the output price experienced by the firm in a foreign market, f where e is the exchange rate in domestic currency units per foreign currency units.

$E_t^i[P(j) | I(j)]$ is the expected price in the domestic market subject to the domestic information set $[I(j)]$ available to the firm and $E_t^i[e_f \cdot (Q_f(j)) | I_f(j)]$ is the expected price in the foreign market subject to the information set on the foreign market $[I_f(j)]$. If $y_t^i(j)$ is the output chosen by the firm, then the profit maximization problem faced is given by:

$$\text{Max}_y \left[E_t^i(o(j) | I(j)) + E_t^i(e_f \cdot (Q_f(j)) | I_f(j)) \right] \cdot y_t^i(j)$$

Subject to: $F[y_t^i(j)] \leq 0$ where $F[y_t^i(j)]$ is a transformation function that is convex and additive.

The solution to the above maximization problem gives a supply correspondence for the individual firm that is some function of expected prices for its product in the home and various foreign markets. If the home and foreign industries are perfectly competitive, no firm would have additional information that would cause its expectations to differ from other firms.

That is $E_t^i[o(j) | I(j)] = E_t^v[o(j) | I(j)]$ and $E_t^i[Q_f(j) | I_f(j)] = E_t^v[Q_f(j) | I_f(j)]$ for all $i \neq v$. Let industry supply be given by: $y_t^s(j) = \sum_i y_t^i(j)$.

Therefore, the supply for industry j is given by:

$$(1) \quad y_t^s(j) = \Psi \left\{ E_t [P(j)/P] + E_t [e_f \cdot (Q_f(j))/Q] \right\}$$

where P and Q are overall price levels in the home and foreign markets respectively.

Now, following much of the export instability and output-inflation tradeoff literature, the industry supply function may be decomposed into trend and cyclical components. The trend component $[y_t^T(j)]$ consists of secular industry supply trends caused by such factors as population and trend economic growth in the home and foreign markets and is captured by a trend line. The cyclical component $[y_{tf}^C(j)]$ consists of the share of industry exports (to reflect export comparative advantages) and a relative price component that aggregates expectations of perfectly competitive firms across the industry. Therefore industry supply is given by:

$$(2) \quad y_t^s(j) = y_t^T(j) + y_{tf}^C(j) \\ = \zeta + \eta t_f(j) + \psi \frac{y_{tf}(j)}{y_{tf}} + v_1 E_t \{P(j)/P\} + v_2 E_t \left\{ e_f \cdot (Q_f(j)/Q_f) \right\}$$

where β, ρ, γ , are constants with $\gamma_1 > 0$ and $\gamma_2 > 0$; and $y_{tf}(j)/y_t$ is the share of industry exports in overall exports in country f . Equation (2) tells us that if firms expect relative prices in the home and foreign markets for their products to increase, then total industry supply will also increase.

Following Lucas (1973), we postulate an industry demand function consisting of a relative price component and an exogenous demand shift component (such as policy changes in the foreign market) that could result in increased demand for the industry's output by domestic and foreign consumers. Our demand function takes the form:

$$(3) \quad y_t^d(j) = \xi_1 E_t \{P(j)/P\} + \xi_2 E_t \left\{ e_f \cdot (Q_f(j)/Q_f) \right\} + g_{tf}^d$$

where ξ is a constant with $\xi_1 < 0, \xi_2 < 0$; and g are various exogenous foreign market governments' policies that affect import demand.

Now, let prices in a particular industry in the home market, $P_t(j)$ be distributed around a general price level P_t with a deviation $z_t(j) \sim N(0, \sigma^2)$. Also, let industry prices in the foreign market be distributed around a general price level Q_t

with a deviation $a_t(j) \sim N(0, \psi^2)$. Finally, the general price level in the home market is itself distributed with a mean \bar{P}_t and variance σ_j^2 (because firms do not know what this general price level is). Internationally, producers form price expectations for their products around a mean international price \bar{Q}_t and variance σ_Q^2 . Therefore,

$$P_t(j) = P_t + z_t(j) \qquad Q_{tf}(j) = Q_t + a_t(j)$$

$$\text{with } P_t(j) \sim N(\bar{P}_t, \sigma_j^2); z_t(j) \sim N(0, \vartheta^2) \qquad Q_{tf}(j) \sim N(\bar{Q}_t, \sigma_Q^2); a_t(j) \sim N(0, \psi^2)$$

We assume that potential exporters and potential importers in the home and foreign markets form expectations of relative prices according to a weighted average scheme that takes into account both relative domestic and international demand and supply shocks. Therefore, from the exporter's perspective:

$$(4) \qquad v_1 E_t \{P(j)/P\} + v_2 E_t \{e_f \cdot (Q_f(j)/Q_f)\} = v_1 \chi_j \frac{P_t(j)}{P_t} + v_2 (1 - \chi_j) e_f \cdot \frac{Q_{tf}(j)}{Q_{tf}}$$

$$\text{where } \theta_j = \tau^2 / (\tau^2 + \sigma_j^2)$$

And from the importer's perspective,

$$(5) \qquad \bullet_1 E_t \{P(j)/P\} + \bullet_2 E_t \{e_f \cdot (Q_f(j)/Q_f)\} = \bullet_1 (1 - \rho_j) \frac{P_t(j)}{P_t} + \bullet_2 \rho_j e_f \cdot \frac{Q_{tf}(j)}{Q_{tf}}$$

$$\text{where } \kappa_j = \psi^2 / (\psi^2 + \sigma_Q^2)$$

To understand the model more fully, we demonstrate three out of four cases that drive firms' decisions to export to foreign markets and/or produce for the domestic market:

TABLE B1: Behaviour of Exporters for Domestic vs. International Sales

	$\tau^2 = 0$	$\tau^2 > 0$
$\psi^2 = 0$	CASE I	CASE II
$\psi^2 > 0$	CASE III	CASE IV

CASE I ($\tau^2 = 0, \psi^2 = 0$)

In this case (when there is no variation in expectations around general price levels either in domestic or foreign markets) the domestic producer's expectations are formed solely by relative prices in international markets. Further, the foreign importer's expectations are formed solely by relative prices in the home producer's market. That is:

$$(4a) \qquad v_1 E_t \{P(j)/P\} + v_2 E_t \{e_f \cdot (Q_f(j)/Q_f)\} = v_2 e_f \cdot \frac{Q_{tf}(j)}{Q_{tf}}$$

$$(5a) \qquad \bullet_1 E_t \{P(j)/P\} + \bullet_2 E_t \{e_f \cdot (Q_f(j)/Q_f)\} = \bullet_1 \frac{P_t(j)}{P_t}$$

Putting Eq.(4a) into supply function (2) and Eq.(5a) into the demand function (3), equating supply and demand, and resubstituting for relative prices, we get:

$$y_t^s(j) = \bullet_1 \frac{P_t(j)}{P_t} + g_{tf}^d$$

That is, under no differences in price expectations, the decision to supply to the foreign market will depend on demand shift components such as changes in government policies and relative prices in the domestic market.

CASE II ($\tau^2 = >0$, $\psi^2 = 0$)

In this case (when there is no variation in expectations around general price levels in foreign markets) the domestic producer's expectations are formed by relative prices in both domestic and international markets. Further, as in CASE I, the foreign importer's expectations are formed solely by relative prices in the home producer's market. That is:

$$(4b) \quad v_1 E_t \{P(j)/P\} + v_2 E_t \{e_f \cdot (Q_f(j)/Q_f)\} = v_1 \chi_j \frac{P_t(j)}{P_t} + v_2 (1 - \chi_j) e_f \cdot \frac{Q_{ft}(j)}{Q_{ft}}$$

$$(5b) \quad \bullet_1 E_t \{P(j)/P\} + \bullet_2 E_t \{e_f \cdot (Q_f(j)/Q_f)\} = \bullet_1 \frac{P_t(j)}{P_t}$$

The supply correspondence in this case is given by:

$$y_t^s(j) = \frac{\bullet_1}{\bullet_1 - v_1 \chi_j} \left[\zeta + \eta t + \psi \frac{y_{ft}^s(j)}{y_{ft}} + v_2 (1 - \chi_j) e_f \cdot \frac{Q_{ft}(j)}{Q_{ft}} \right] - \frac{v_1 \chi_j}{\bullet_1 - v_1 \chi_j} g_{ft}^d$$

Here, the exporter's supply decisions will be based on three factors — relative prices in the foreign market, domestic supply shocks in their own sectors, and importers' perceptions of these supply shocks. If $\theta_j \rightarrow 0$, i.e., the supply shocks are small, exporter supply will be a function solely of international relative prices together with trend variables. Therefore, in the absence of domestic shocks, exogenous foreign demand shift variables do not matter to producers.

CASE IV ($\tau^2 > 0$, $\psi^2 > 0$)

In this case the domestic (foreign) producer's (importers') expectations are formed by relative prices in both domestic and international markets. Relative domestic prices are given by:

$$(6) \quad \frac{P_t(j)}{P_t} = \frac{\left\{ \left[g_t^d - \zeta - \eta t \right] - \psi \frac{y_{ft}^s(j)}{y_{ft}} + \bullet_2 \rho_j - v_2 (1 - \chi_j) e_f \cdot \left[Q_{ft}(j) / Q_{ft} \right] \right\}}{v_1 \chi_j - \bullet_1 (1 - \rho_j)}$$

Now, substituting Eq(6) into Eq(4) and putting into the supply correspondence (2), we get:

$$(7) \quad y_t^s(j) = (1 + \Phi) \left(\zeta + \eta t + \psi \frac{y_t(j)}{y_t} \right) + \Phi g_t^d + v_2 (1 - \chi_j) (1 + \Phi (\bullet_2 \rho_j - v_2)) \cdot e_f \cdot \frac{Q_{ft}(j)}{Q_{ft}}$$

where $\Phi = \frac{v_1 \chi_j}{v_1 \chi_j - \bullet_1 (1 - \rho_j)}$ and $0 < \Phi < 1$.

From Eq. (7), we can see that $\bullet_2 \rho_j - v_2 < 0$ implying that the impact of international relative price changes on supply will depend on the magnitude of supply shocks (denoted by κ_φ), foreign demand responses of these shocks (ξ_2), and exporters responses to relative prices (γ_2).

Taking the log first difference of Eq.(7) and applying only to the Canada-India case, we get a fairly parsimonious estimable econometric equation for export growth (and export growth instability) as follows:

$$(8a) \quad \Delta y_t^*(j) = \zeta_1(j) + \zeta_2 \psi \frac{y_t(j)}{y_t} + \zeta_3 \Delta g_t(j)^d + \zeta_4 \Delta \left[Q_{ft}(j) / Q_{ft} \right] + \zeta_5 \Delta e_f + \kappa_{jt}$$

$$(8b) \quad \Delta y_t(j) = \zeta_1 + \zeta_2 t(j) + \zeta_3 \psi \frac{y_t(j)}{y_t} + \zeta_4 \Delta g_t(j)^d + \zeta_5 \Delta \left[Q_{ft}(j) / Q_{ft} \right] + \zeta_5 \Delta e_f + \kappa_{jt}$$

Eqs (8) lend themselves to the usual panel regression estimation techniques reported in the text.

The Data

The tariff and export data for our econometric regressions are from the World Bank's Trade and Production Database 2002 which contains trade, production and tariff data for 67 developing and developed countries over the 1976-1999 period at the 3- and 4-digit ISIC (Rev. 2) levels. Due to data limitations, our study of Canada-India trade covers the period 1993-1999 for 18 manufacturing sectors at the 3-digit ISIC level.

Indian tariff data was only available for the years 1990, 1992, 1997, and 1999. Because Indian tariffs have been declining during the study period, in order to find tariff rates during intervening years, we take the average difference in tariffs between two available years and apply this difference to each successive year. For example, in 1992 and 1997 average Indian tariffs in the Footwear Sector (ISIC 324) were 65% and 40%, respectively. The difference of 25% was applied to each intervening year to get tariff rates of 60% for 1993, 55% for 1994 and so on. Changes in tariffs were calculated as normal percentage changes.

The Indian industry price indices are based on information provided by the Office of the Economic Advisor in India, a division of the Ministry of Commerce and Industry. The data available cover the period 1993-2002, with 1993-1994 as the base year.

The 18 manufacturing sectors along with the ISIC descriptions used in this study are: Food Products (ISIC 311), Textiles (321), Leather Products (323), Footwear (324), Wood Products (331), Paper and Paper Products (341), Printing and Publishing (342), Industrial Chemicals (351), Rubber Products (355), Plastic Products (356), Pottery, China, Earthenware (361), Other Non-metallic Mineral Products (369), Iron and Steel (371), Non-ferrous Metals (372), Fabricated Metal Products (381), Machinery Except Electrical (382), Machinery Electric (383), and Transport Equipment (384).



ANNEX C

TRANSSHIPMENT OF CANADIAN EXPORTS TO INDIA



Based on some simplifying assumptions, we developed a methodology to estimate the amount of export transshipment occurring from Canada to India for 2001. These figures would not be captured in Canadian or Indian statistics. The methodology is as follows:

- 1 We assume Canadian exports to India can take two basic shipping routes — western and eastern.

Possible western routes are:

- Canada-Singapore-India
- Canada-Hong Kong-India
- Canada-United States-India
- Canada-United States-Singapore-India
- Canada-United States-Hong Kong-India

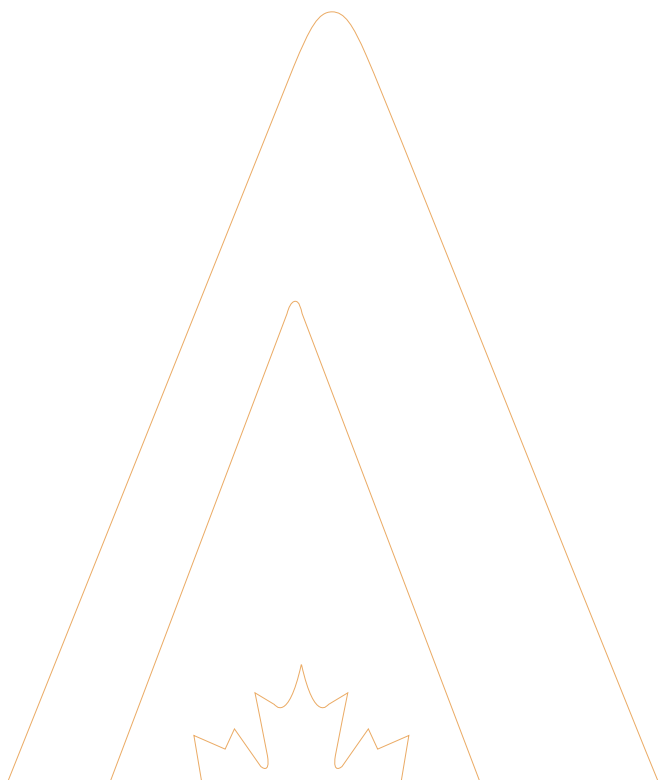
Possible eastern shipping routes are:

- Canada-UAE-India
- Canada-United States-UAE-India

- 2 For each transshipment point outside of North America, we use what we call the “proportional transshipment assumption” to account for unrecorded Canadian exports to India. For example, for the Canada-UAE-India route, in 2001 Canadian imports accounted for 0.6% of total UAE imports. During this year, UAE re-exports to India accounted for 4.8% of total UAE re-exports (approximately worth C\$ 526 million). Using the proportional transshipment assumption, we assume that 0.6% (i.e., Canada’s share of UAE imports) of these re-exports from UAE to India are attributable to Canada. This gives us a figure of C\$ 3.2 million. The proportional transshipment assumption simply presumes that Canadian exports to major hubs like Dubai or Singapore are likely to be transshipped in the same proportion as Canada’s share of these hubs’ imports.⁴
- 3 It has long been recognized that Canada’s exports to Asia are also likely transshipped through ports in the United States. We experimented with two methods that allow us to impute the amount of Canadian exports to the United States that are likely to be transshipped to India. Both of these methods yield similar results. The first method uses older information on “in-transit cargo” that has been discontinued by the US Bureau of Census since 1997. Using this data, for the 1994-96 period, an average of 5.8% of US imports from Canada were destined outside of the United States (excluding Canada). For 2001, therefore, we assumed that 5.8% of Canadian exports to the United States were intended for transshipment to third countries — or C\$ 18.9 billion in Canadian exports to the United States.⁵

Our second method involves recent published US Census bureau data on re-exports. In 2001, re-exports of the US accounted for 8.9% of total US exports — or roughly C\$ 100.7 billion (valued on a free alongside ship basis). Canada’s share of US imports and exports was 19.1% and 19.8% respectively. Using the proportional transshipment assumption, we impute US re-exports to third countries attributable to Canadian origin goods to be the average of these two figures — 19.45%. This amounts to C\$ 19.6 billion.⁶ We use this higher value in the figures highlighted in the text. Under the proportional transshipment assumption, for the Canada-United States-India trade route, US exports to India accounted for about 0.51% of total US exports (including Canada). In this case, we obtain a transshipment figure of C\$ 100 million (0.51% x 19.6 billion).

- 4 *Figures obtained from step 2 are revised downward to take into account three factors: the likely content of transshipped products, insurance and freight, and transshipment mark-ups. For bulk cargo, while ships may call upon 2-3 intermediary ports en route to India, the bill of lading for such cargo tends to record the country of origin and final destination fairly accurately. This is because, very little transformation or repackaging of bulk commodities can occur en route. We do not make this adjustment for cargo en route to India through the US because of the extensive information sharing of trade statistics between the two countries that is likely to capture any double counting of raw material exports. We define bulk commodities to be those that occur in Sections I-V of the HS system. For example, for the Canada-UAE-India route, bulk commodities accounted for about 12% of UAE re-exports. We therefore adjust our C\$ 3.2 million total re-export figure downward by 12%. It should be noted that 29% of Canadian exports to the UAE were recorded in Sections I-V of the HS system. This method, therefore, may not entirely eliminate transshipment of raw-material exports from Canada to India.*
- 5 *The final adjustment made takes into account re-export markups, insurance, and freight costs. Re-export mark-ups are the difference between the import unit value and the re-export unit value for a commodity as a percentage of import unit value. We reviewed a number of studies on the likely range for these mark-ups. While no Canada-specific studies exist, a number of surveys and studies are available on mark-ups for Hong Kong re-exports. These studies put the range of the mark-up between roughly 15%-25% for re-exports from industrialized countries through Hong Kong [see Sung (1991), Lardy (1994), Fung (1996), Fung and Lau (1996), West (1995), Feenstra et al. (1998), and Yao (1999)]. Using these mark-up values, we adjust all re-export figures to India from the transshipment point downward by 15%. For insurance and freight, we adjust these re-export figures (inclusive of markups) of the transshipment point downward by the standard factor of 10%.*



ANNEX D

REVEALED EXPORT ADVANTAGE MEASURES



We use three measures of Revealed Export Advantage (RXA). RXA-1 is fairly common in the literature and is widely understood to measure patterns of export specialization for any economy relative to world or “competitor” countries.

$$RXA-1_{CANADA,j} = \left\langle \frac{Exports_{CANADA,j} / TotalExports_{CANADA}}{Exports_{OECD,j} / TotalExports_{OECD}} \right\rangle_{India}$$

Our RXA-2 measure looks at the share of Canadian exports in OECD (excluding Canada) exports to India for a given sector, j. Mathematically:

$$RXA-2_{CANADA,j} = \left\langle \frac{Exports_{CANADA,j}}{Exports_{OECD,j}} \right\rangle_{India}$$

As mentioned in Section 4.1, neither RXA-1 nor RXA-2 differentiate between improving (deteriorating) demand conditions or improving (deteriorating) supply conditions based on Canadian export competitiveness in the Indian market. To take this into account, we develop the RXA-3 measure based on Leamer and Stern (1970) and Asian Development Bank (2002).

We modify Leamer and Stern’s constant market share approach slightly by applying it to all sectors of Canadian exports to a particular market (India). Canadian export growth can be divided into three sources: (1) growth due to a general increase in world demand for exports (World Demand Factor); (2) growth due to specializing in specific market destinations (Market Demand Factor); and (3) a residual representing gains in export value from increasing share in global markets (Competitiveness Factor) [see ADB (2002: pp.10)]. If:

- $V_{j,t}^i$ is Canada’s exports of product j to country i in period t;
- $V_{j,t+1}^i$ is Canada’s exports of product j to country i in period t+1;
- r_j^i is the percentage change in world exports of product j to country i from period t to t+1;
- r is the percentage change in total world exports from period t to t+1.

Then:

$$\sum_i \sum_j (V_{j,t+1}^i - V_{j,t}^i) = \underbrace{r \sum_i \sum_j V_{j,t}^i}_{WorldDemandFactor} + \underbrace{\sum_i \sum_j (r_j^i - r) \cdot V_{j,t}^i}_{MarketDemandFactor} + \underbrace{\sum_i \sum_j (V_{j,t+1}^i - V_{j,t}^i - r_j^i \cdot V_{j,t}^i)}_{CompetitivenessFactor}$$

Looking at only Canadian exports to India in particular sectors j, we get:

$$V_{j,t+1}^{INDIA} - V_{j,t}^{INDIA} = \underbrace{r_j^{WORLD} \cdot V_{j,t}^{INDIA}}_{WorldDemandFactor} + \underbrace{(r_j^{INDIA} - r_j^{WORLD}) \cdot V_{j,t}^{INDIA}}_{MarketDemandFactor} + \underbrace{(V_{j,t+1}^{INDIA} - V_{j,t}^{INDIA} - r_j^{INDIA} \cdot V_{j,t}^{INDIA})}_{CompetitivenessFactor}$$

Abstracting from the World Demand Factor component, we get our RXA-3 measure used in Chapter 4. Explicitly:

$$RXA-3_{CANADA,j} = \underbrace{(r_j^{INDIA} - r_j^{WORLD}) \cdot Exports_{CANADA,j}^{INDIA}}_{MarketDemandFactor} + \underbrace{(\Delta Exports_{CANADA,j}^{INDIA} - r_j^{INDIA} \cdot Exports_{CANADA,j}^{INDIA})}_{CompetitivenessFactor}$$

where r_j^{INDIA} is the percentage change in world exports of product j to India;
 r_j^{WORLD} is the percentage change in world exports of product j ;
 $Exports_{CANADA,j}^{INDIA}$ is the value of Canadian exports to India of product j ;

To understand the behaviour of RXA-3 and its relationship with RXA-1, we look at various conditions under which different values of RXA-3 can be obtained. As we see in Table D1, there are four scenarios yielding different interpretations of RXA-3 and tests for consistency between RXA-1 and RXA-3. Conditions (1) and (2) appeal directly to notions of comparative advantages and should have a correlation with RXA-1. Conditions (3) and (4) and their corollaries provide interesting information to policy makers on the dynamic aspects of Canadian competitiveness in India.

- 1 **Competitiveness Factor > 0, Market Demand Factor > 0:** This scenario refers to sectors in which Indian demand conditions are above the world average and for which Canadian exports to India increased by more than exports (to India) from other countries. These sectors should be positively correlated to those that show an $RXA-1 \gg 1$. They should also be of particular interest to Canadian policy makers since they reflect not only Canadian competitiveness but also strong Indian demand for Canadian products.
- 2 **Competitiveness Factor < 0, Market Demand Factor < 0:** This scenario refers to sectors in which Indian demand conditions were below the world average and for which Canadian exports to India declined by more than exports (to India) from other countries. These sectors should be positively correlated to those that show an $RXA-1 \ll 1$. They are also important to Canadian policy makers since they would reflect declining export sectors (on both competitiveness and demand grounds).

TABLE D1: RXA-3 Properties

Market Demand Factor	Competitiveness Factor	
	>0	<0
>0	(1)	(3)
<0	(4)	(2)

- 3 **Competitiveness Factor < 0, Market Demand Factor > 0:** This case relates to those sectors in which Indian demand conditions were high while Canadian competitiveness in the Indian market was relatively low. While they reflect areas of potential export growth, the main obstacle in these sectors would be the relatively low Canadian comparative advantage.
 - a. If $(Competitiveness + Demand Factor) < 0$, then we can say that strong Indian demand was not sufficient to counteract low Canadian competitiveness.
- 4 **Competitiveness Factor > 0, Market Demand Factor < 0:** This case relates to those sectors in which Indian demand conditions were low while Canadian competitiveness in the Indian market was high. It provides indications of declining export sectors in which Canadian firms are, nonetheless, competitive.
 - a. If $(Competitiveness + Demand Factor) > 0$, then we can say that despite weak Indian demand conditions, Canadian competitiveness was sufficiently large to allow Canada to increase its market share in India.

TABLE D2: Canada's Revealed Export Advantages and Disadvantages in India, 1985-2000

(RXA-1 and RXA-2 Indicators, Selected Industries):				
	INDUSTRY DESCRIPTION	RXA-1	INDUSTRY DESCRIPTION	RXA-2
RANK EXPORT ADVANTAGE INDUSTRIES				
1.	278 Other crude minerals	58.66	278 Other crude minerals	1.08
2.	676 Rails and railway track construction material	50.45	676 Rails and railway track construction material	0.84
3.	274 Sulphur and unroasted iron pyrites	43.36	274 Sulphur and unroasted iron pyrites	0.80
4.	251 Pulp and waste paper	24.02	251 Pulp and waste paper	0.46
5.	683 Nickel	19.88	683 Nickel	0.37
6.	641 Paper and paperboard	16.26	641 Paper and paperboard	0.31
7.	248 Wood, simply worked, and railway sleepers of wood	14.61	248 Wood, simply worked, and railway sleepers of wood	0.25
8.	054 Vegetables, fresh, chilled, frozen or simply preserved; tubers and other vegetable products	13.46	054 Vegetables, fresh, chilled, frozen or simply preserved; tubers and other vegetable products	0.23
9.	287 Ores and concentrates of base metals, n.e.s.	9.16	287 Ores and concentrates of base metals, n.e.s.	0.18
10.	423 Fixed vegetable oils, soft, crude, refined	7.81	423 Fixed vegetable oils, soft, crude, refined	0.15
11.	762 Radio-broadcast receivers	4.58	562 Fertilizers, manufactured	0.08
12.	562 Fertilizers, manufactured	4.22	762 Radio-broadcast receivers	0.08
13.	269 Old clothing and other old textile articles	3.80	782 Motor vehicles for transport of goods, materials	0.07
14.	782 Motor vehicles for transport of goods, materials	3.56	269 Old clothing and other old textile articles	0.07
15.	233 Synthetic and reclaimed rubber	3.23	233 Synthetic and Reclaimed rubber	0.06
16.	689 Miscellaneous non-ferrous base metals	3.04	689 Miscellaneous non-ferrous base metals	0.06
17.	524 Radioactive and associated materials	2.93	723 Civil engineering & contractors plant & equipment	0.05
18.	075 Spices	2.77	524 Radioactive and associated materials	0.05
19.	723 Civil engineering & contractors plant & equipment	2.73	693 Wire products and fencing grills	0.05
20.	718 Other power generating machinery and parts	2.33	718 Other power generating machinery and parts	0.05
21.	693 Wire products and fencing grills	2.20	335 Residual petroleum products, n.e.s. & related materials	0.04
22.	288 Non-ferrous base metal waste and scrap, n.e.s.	2.05	075 Spices	0.04
23.	335 Residual petroleum products, n.e.s. & related material	1.94	288 Non-ferrous base metal waste and scrap, n.e.s.	0.04
24.	686 Zinc	1.84	686 Zinc	0.03
25.	842 Outer garments, men's, of textile fabrics	1.58	842 Outer garments, men's, of textile fabrics	0.03
26.	774 Electric apparatus for medical purposes	1.58	774 Electric apparatus for medical purposes	0.03
27.	247 Other wood in the rough or roughly squared	1.49	247 Other wood in the rough or roughly squared	0.03
28.	771 Electric power machinery and parts thereof	1.44	771 Electric power machinery and parts thereof	0.03
29.	282 Waste/scrap metal of iron, steel	1.39	282 Waste/scrap metal of iron, steel	0.03
30.	812 Sanitary, plumbing, heating, lighting fixtures	1.15	583 Polymerization and copolymerization products	0.02
31.	634 Veneers, plywood, improved or reconstituted	1.07	812 Sanitary, plumbing, heating, lighting fixture	0.02
32.	851 Footwear	1.03	061 Sugar and honey	0.02
"MODERATE" EXPORT DISADVANTAGE INDUSTRIES				
33.	583 Polymerization and copolymerization products	0.98	634 Veneers, plywood, improved or reconstituted	0.02
34.	061 Sugar and honey	0.93	699 Manufactures of base metal, n.e.s.	0.02
35.	635 Wood manufactures, n.e.s.	0.89	851 Footwear	0.02
36.	882 Photographic & cinematographic supplies	0.85	635 Wood manufactures, n.e.s.	0.02
37.	699 Manufactures of base metal, n.e.s.	0.84	792 Aircraft & associated equipment and parts	0.02
38.	682 Copper	0.82	744 Mechanical handling equipment and parts	0.02
39.	871 Optical instruments and apparatus	0.78	882 Photographic & cinematographic supplies	0.01
40.	744 Mechanical handling equipment and parts	0.76	931 Special transactions & commodities not classified according to kind	0.01
41.	931 Special transactions & commodities not classified according to kind	0.74	682 Copper	0.01
42.	792 Aircraft & associated equipment and parts	0.71	752 Automatic data processing machines & units	0.01
43.	266 Synthetic fibers suitable for spinning	0.71	691 Structures & parts of structures; iron, steel, aluminum	0.01
44.	752 Automatic data processing machines & units	0.70	685 Lead	0.01
45.	625 Rubber tires, tire cases, etc. for wheels	0.67	716 Rotating electric plant and parts	0.01
46.	716 Rotating electric plant and parts	0.66	266 Synthetic fibers suitable for spinning	0.01
47.	424 Other fixed vegetable oils, fluid or solid	0.66	871 Optical instruments and apparatus	0.01
48.	663 Mineral manufactures, n.e.s.	0.64	625 Rubber tires, tire cases, etc. for wheels	0.01

INDUSTRY DESCRIPTION		RXA-1	INDUSTRY DESCRIPTION		RXA-2
RANK "MODERATE" EXPORT DISADVANTAGE (continued)					
49.	691 Structures & parts of structures; iron, steel, aluminum	0.63	663	Mineral manufactures, n.e.s	0.01
50.	098 Edible products and preparations n.e.s.	0.63	742	Pumps for liquids, liquid elevators and parts	0.01
51.	685 Lead	0.61	791	Railway vehicles & associated equipment	0.01
52.	742 Pumps for liquids, liquid elevators and parts	0.57	764	Telecommunications equipment and parts	0.01
53.	764 Telecommunications equipment and parts	0.57	728	Mach. & equipment specialized for particular industries	0.01
54.	728 Machinery & equipment specialized for particular industries	0.56	098	Edible products and preparations n.e.s.	0.01
55.	791 Railway vehicles & associated equipment	0.55	424	Other fixed vegetable oils, fluid or solid	0.01
56.	894 Baby carriages, toys, games and sporting goods	0.51	674	Universals, plates and sheets, of iron or steel	0.01
57.	674 Universals, plates and sheets, of iron or steel	0.50	894	Baby carriages, toys, games and sporting goods	0.01
"MODERATE" - "LARGE" EXPORT DISADVANTAGE INDUSTRIES					
58.	892 Printed matter	0.47	673	Iron and steel bars, rods, angles, shapes, etc.	0.01
59.	883 Cinematograph film, exposed-developed, etc.	0.46	694	Nails, screws, nuts, bolts etc. of iron, steel, copper or aluminum	0.01
60.	898 Musical instruments, parts and accessories	0.45	892	Printed matter	0.01
61.	694 Nails, screws, nuts, bolts etc. of iron, steel, copper or aluminum	0.45	899	Other miscellaneous manufactured articles	0.01
62.	659 Floor coverings, etc.	0.44	898	Musical instruments, parts and accessories	0.01
63.	899 Other miscellaneous manufactured articles	0.43	659	Floor coverings, etc.	0.01
64.	679 Iron & steel castings, forgings & stampings	0.43	773	Equipment for distributing electricity	0.01
65.	673 Iron and steel bars, rods, angles, shapes, etc.	0.42	883	Cinematograph film, exposed-developed, etc.	0.01
66.	773 Equipment for distributing electricity	0.41	642	Paper and paperboard, cut to size or shape	0.01
67.	751 Office machines	0.40	874	Measuring, checking, analyzing instruments	0.01
68.	874 Measuring, checking, analyzing instruments	0.39	751	Office machines	0.01
69.	714 Engines & motors, non-electric	0.37	679	Iron & steel castings, forgings & stampings	0.01
70.	642 Paper and paperboard, cut to size or shape	0.37	714	Engines & motors, non-electric	0.01
71.	778 Electrical machinery and apparatus, n.e.s.	0.35	022	Milk and cream	0.01
72.	511 Hydrocarbons n.e.s. & their derivatives	0.33	678	Tubes, pipes and fittings, of iron or steel	0.01
73.	022 Milk and cream	0.32	713	Internal combustion piston engines & parts	0.01
74.	522 Inorganic chemical elements	0.31	522	Inorganic chemical elements	0.01
75.	725 Paper & pulp mill machinery	0.30	778	Electrical machinery and apparatus, n.e.s.	0.01
76.	893 Articles of materials n.e.s. of plastics	0.30	277	Natural abrasives, n.e.s.	0.01
77.	872 Medical instruments and appliances	0.29	511	Hydrocarbons n.e.s. & their derivatives	0.01
78.	657 Special textile fabrics and related products	0.29	725	Paper & pulp mill machinery	0.01
79.	678 Tubes, pipes and fittings, of iron or steel	0.29	872	Medical instruments and appliances	0.01
80.	713 Internal combustion piston engines & parts	0.28	848	Articles of apparel & clothing accessories	0.01
81.	721 Agricultural machinery and parts	0.27	893	Articles of materials n.e.s. of plastics	0.01
82.	741 Heating & cooling equipment and parts	0.27	657	Special textile fabrics and related products	0.01
83.	848 Articles of apparel & clothing accessories	0.27	741	Heating & cooling equipment and parts	0.01
84.	654 Textile fabrics, woven, other than cotton/man-made fibers	0.26	695	Tools for use in hand or in machines	0.00
85.	661 Lime, cement, and fabricated construction materials	0.25	721	Agricultural machinery and parts	0.00
86.	695 Tools for use in hand or in machines	0.25	784	Parts & accessories for tractors, motor cars, and motor vehicles, trucks, public transport vehicles, and road motor vehicles	0.00
87.	212 Furskins, raw	0.23	661	Lime, cement, and fabricated construction materials	0.00
88.	277 Natural abrasives, n.e.s.	0.23	212	Furskins, raw	0.00
89.	726 Printing & bookbinding machinery and parts	0.22	776	Thermionic, cold & photo-cathode valves and tubes	0.00
90.	784 Parts & accessories for tractors, motor cars, and motor vehicles, trucks, public transport vehicles, and road motor vehicles	0.22	654	Textile fabrics, woven, other than cotton/man-made	0.00
91.	776 Thermionic, cold & photo-cathode valves and tubes	0.22	745	Other non-electrical machinery tools and apparatus	0.00
92.	745 Other non-electrical machinery tools & apparatus	0.22	651	Textile yarn	0.00
93.	523 Other inorganic chemicals	0.21	737	Metal working machinery and parts	0.00
94.	761 Television receivers	0.20	726	Printing & bookbinding machinery and parts	0.00
95.	736 Machine tools for working metal	0.20	722	Tractors fitted or not with power take-off	0.00

INDUSTRY DESCRIPTION		RXA-1	INDUSTRY DESCRIPTION	RXA-2
RANK	"LARGE" EXPORT DISADVANTAGE INDUSTRIES			
96.	651 Textile yarn	0.19	523 Other inorganic chemicals	0.00
97.	821 Furniture and parts thereof	0.19	656 Tulle, lace, embroidery, ribbons, etc.	0.00
98.	772 Electric appliances such as switches, relays, fuses, etc.	0.19	736 Machine tools for working metal	0.00
99.	737 Metal working machinery and parts	0.19	761 Television receivers	0.00
100.	656 Tulle, lace, embroidery, ribbons, etc.	0.19	775 Household type, electrical & non-electrical equipment	0.00
101.	598 Miscellaneous chemical products, n.e.s.	0.18	772 Electric appliances such as switches, relays, fuses, etc.	0.00
102.	621 Materials of rubber (eg, pastes, plates, sheets, rods, tubes, etc.)	0.18	598 Miscellaneous chemical products, n.e.s.	0.00
103.	775 Household type, electrical & non-electrical equipment	0.18	749 Non-electric parts and accessories of machinery, n.e.s.	0.00
104.	749 Non-electric parts and accessories of machinery, n.e.s.	0.18	621 Materials of rubber (eg, pastes, plates, sheets, rods, tubes, etc.)	0.00
105.	712 Steam turbines & other vapour turbines and parts thereof	0.17	628 Articles of rubber, n.e.s.	0.00
106.	711 Steam & other vapour generating boilers, super-heated water boilers, etc.	0.17	821 Furniture and parts thereof	0.00
107.	722 Tractors fitted or not with power take-off	0.17	541 Medicinal and pharmaceutical products	
108.	611 Leather	0.16	711 Steam & other vapour generating boilers, super-heated water boilers, etc.	0.00
109.	541 Medicinal and pharmaceutical products	0.16	881 Photographic apparatus and equipment, n.e.s	0.00
110.	584 Regenerated cellulose: cellulose nitrate, etc.	0.16	712 Steam turbines & other vapour turbines and parts thereof	0.00
111.	081 Feeding stuff for animals (not including unmilled cereals)	0.16	516 Other organic chemicals	0.00
112.	628 Articles of rubber, n.e.s.	0.16	584 Regenerated cellulose: cellulose nitrate, etc.	0.00
113.	662 Clay construction materials & refractory construction materials	0.15	611 Leather	0.00
114.	516 Other organic chemicals	0.15	662 Clay construction materials & refractory construction materials	0.00
115.	881 Photographic apparatus and equipment, n.e.s.	0.14	512 Alcohols, phenols, phenol-alcohols, & their derivatives	0.00
116.	322 Coal, lignite and peat	0.14	081 Feeding stuff for animals (not including unmilled cereals)	0.00
117.	582 Artificial Resins and other Plastic Materials	0.13	112 Alcoholic beverages	0.00
118.	512 Alcohols, phenols, phenol-alcohols, & their derivatives	0.13	582 Artificial resins and other plastic materials	0.00
119.	696 Cutlery	0.12	322 Coal, lignite and peat	0.00
120.	211 Hides and skins (except furskins), raw	0.11	743 Pumps & compressors, fans & blowers, centrifuges, etc.	0.00
121.	743 Pumps & compressors, fans & blowers, centrifuges, etc.	0.11	696 Cutlery	0.00
122.	112 Alcoholic beverages	0.10	211 Hides and skins (except furskins), raw	0.00
123.	896 Works of art, collectors pieces & antiques	0.09	684 Aluminium	0.00
124.	847 Clothing accessories of textile fabrics	0.09	672 Ingots and other primary forms, of iron ore	0.00
125.	684 Aluminium	0.09	897 Jewellery, goldsmiths and other articles of precious or semiprecious metals	0.00
126.	672 Ingots and other primary forms, of iron ore	0.08	896 Works of art, collectors pieces & antiques	0.00
127.	665 Glassware	0.07	759 Parts of and accessories suitable for use with office machines	0.00
128.	759 Parts of and accessories suitable for use with office machines	0.07	847 Clothing accessories of textile fabrics	0.00
129.	897 Jewellery, goldsmiths and other articles of precious or semiprecious metals	0.07	665 Glassware	0.00
130.	554 Soap, cleansing, and polishing preparations	0.07	554 Soap, cleansing and polishing preparations	0.00
131.	724 Textile & leather machinery and parts	0.07	786 Trailers & other vehicles, not motorized	0.00
132.	652 Cotton fabrics, woven	0.07	724 Textile & leather machinery and parts	0.00
133.	515 Organo-inorganic and heterocyclic compounds and their salts	0.07	515 Organo-inorganic and heterocyclic compounds and their salts	0.00
134.	786 Trailers & other vehicles, not motorized	0.06	553 Perfumery, cosmetics and toilet preparation	0.00
135.	553 Perfumery, cosmetics and toilet preparation	0.06	692 Metal containers for storage and transport	0.00
136.	658 Made-up articles, wholly/chiefly of textile materials, n.e.s.	0.06	652 Cotton fabrics, woven	0.00

INDUSTRY DESCRIPTION		RXA-1	INDUSTRY DESCRIPTION	RXA-2
RANK	"LARGE" EXPORT DISADVANTAGE (continued)			
137.	533 Pigments, paints, varnishes & related materials	0.06	533 Pigments, paints, varnishes & related materials	0.00
138.	727 Food processing machines and parts	0.06	658 Made-up articles, wholly/chiefly of textile materials, n.e.s.	0.00
139.	692 Metal containers for storage and transport	0.06	514 Nitrogen-function compounds	0.00
140.	514 Nitrogen-function compounds	0.06	727 Food processing machines and parts	0.00
141.	592 Starches, inulin & wheat gluten	0.05	592 Starches, inulin & wheat gluten	0.00
142.	653 Fabrics, woven, of man-made fibers	0.04	291 Crude animal materials, n.e.s.	0.00
143.	291 Crude animal materials, n.e.s.	0.04	653 Fabrics, woven, of man-made fibers	0.00
144.	697 Household equipment of base metal, n.e.s.	0.03	677 Iron and steel rails and railway track construction material	0.00
145.	677 Iron and steel rails and railway track construction material	0.03	697 Household equipment of base metal, n.e.s.	0.00
146.	551 Essential oils, perfume and flavour materials	0.03	551 Essential oils, perfume and flavour materials	0.00
147.	292 Crude vegetable materials, n.e.s.	0.02	334 Petroleum products, refined	0.00
148.	612 Manufactures of leather or composition leather, n.e.s.	0.02	612 Manufactures of leather / of composition leather, n.e.s.	0.00
149.	273 Stone, sand and gravel	0.02	292 Crude vegetable materials, n.e.s.	0.00
150.	334 Petroleum products, refined	0.02	273 Stone, sand and gravel	0.00
151.	513 Carboxylic acids & their anhydrides, halide	0.01	971 Gold, non-monetary	0.00
152.	781 Passenger motor cars, for transport of passengers	0.01	513 Carboxylic acids & their anhydrides, halide	0.00
153.	971 Gold, non-monetary	0.01	781 Passenger motor cars, for transport of passengers	0.00
154.	844 Under garments of textile fabrics	0.01	895 Office and stationery supplies, n.e.s.	0.00
155.	895 Office and stationery supplies, n.e.s.	0.01	591 Disinfectants, insecticides, fungicides, etc. for retail sale	0.00
156.	591 Disinfectants, insecticides, fungicides, etc. for retail sale	0.01	844 Under garments of textile fabrics	0.00
157.	951 Armoured fighting vehicles	0.01	951 Armoured fighting vehicles	0.00
158.	885 Watches and clocks	0.01	885 Watches and clocks	0.00
159.	048 Cereal preparations & preparations of flour of fruits or vegetables	0.01	655 Knitted or crocheted fabrics	0.00
160.	671 Pig iron, spiegeleisen, sponge iron, iron or steel granules, powders	0.01	048 Cereal preparations & preparations of flour of fruits or vegetables	0.00
161.	655 Knitted or crocheted fabrics	0.01	671 Pig iron, spiegeleisen, sponge iron, iron or steel granules, powders	0.00
162.	884 Optical goods, n.e.s.	0.01	884 Optical goods, n.e.s.	0.00
163.	793 Ships, boats and floating structures	0.00	793 Ships, boats and floating structures	0.00
164.	681 Silver, platinum & other platinum group metals	0.00	681 Silver, platinum & other platinum group metals	0.00
165.	268 Wool and other animal hair	0.00	667 Pearls, precious & semi-precious stones, unworked or worked	0.00
166.	667 Pearls, precious & semi-precious stones, unworked or worked	0.00	268 Wool and other animal hair	0.00
167.	023 Butter	0.00	023 Butter	0.00
168.	024 Cheese and curd	0.00	024 Cheese and curd	0.00
169.	057 Fruit & nuts (not including oil nuts), fresh or dried	0.00	058 Fruit, preserved, and fruit preparations (excluding fruit juices)	0.00
170.	058 Fruit, preserved, and fruit preparations (excluding fruit juices)	0.00	057 Fruit & nuts (not including oil nuts), fresh or dried	0.00
171.	122 Tobacco manufactured	0.00	122 Tobacco manufactured	0.00
172.	232 Natural rubber latex; natural rubber	0.00	232 Natural rubber latex; natural rubber	0.00
173.	244 Cork, natural, raw & waste (including natural cork in blocks or sheets)	0.00	244 Cork, natural, raw & waste (including natural cork in blocks or sheets)	0.00
174.	265 Vegetable textile fibers and waste of such fibers	0.00	265 Vegetable textile fibers and waste of such	0.00
175.	323 Briquettes; coke and semi-coke of coal, lignite, etc.	0.00	323 Briquettes; coke and semi-coke of coal, lignite, etc.	0.00
176.	341 Gas, natural and manufactured	0.00	341 Gas, natural and manufactured	0.00
177.	411 Animal oils and fats	0.00	411 Animal oils and fats	0.00
178.	431 Animal & vegetable oils and fats, processed	0.00	431 Animal & vegetable oils and fats, processed	0.00
179.	613 Furskins, tanned, dressed, pieces, cuttings, assembled/unassembled	0.00	613 Furskins, tanned, dressed, pieces, cuttings, assembled/unassembled	0.00
180.	666 Pottery	0.00	666 Pottery	0.00
181.	785 Motorcycles, motor scooters, invalid carriages, etc.	0.00	785 Motorcycles, motor scooters, invalid carriages, etc.	0.00
182.	941 Animals, live, n.e.s., including zoo animals	0.00	941 Animals, live, n.e.s., including zoo animals	0.00

Note: n.e.s. = not elsewhere specified

TABLE D3: Canada's Revealed Export Advantages and Disadvantages in India, 1986-2000

(RXA-3 Indicator, Selected Industries)		Average (1986-2000)	Average (1986-1997)	Average (1998-2000)	Market Demand ^a	Competitiveness ^a
562	Fertilizers, manufactured	38.35	-11.31	236.96	++	+
054	Vegetables, fresh, chilled, frozen or simply preserved; tubers and other vegetable products	37.84	-2.38	198.74	+	++
676	Rails and railway track construction material	34.27	40.76	8.33	++	+
282	Waste and scrap metal of iron or steel	14.94	17.71	3.88	++	+
728	Machinery & equipment specialized for particular industries	11.21	12.77	5.00	++	+
674	Universals, plates and sheets, of iron or steel	10.66	8.71	18.43	++	+
716	Rotating electric plant and parts	10.54	8.98	16.77	+	++
583	Polymerization and copolymerization products	7.88	10.48	-2.50	++	+
251	Pulp and waste paper	6.77	1.70	27.06	++	-
233	Synthetic and Reclaimed rubber	4.53	3.35	9.22	-	++
718	Other power generating machinery and parts	4.22	4.69	2.35	++	+
713	Internal combustion piston engines & parts	3.77	4.69	0.12	++	+
269	Old clothing and other old textile articles	2.58	3.43	-0.79	+	++
699	Manufactures of base metal, n.e.s.	2.12	3.09	-1.78	++	-
871	Optical instruments and apparatus	1.94	-0.02	9.75	+	++
678	Tubes, pipes and fittings, of iron or steel	1.73	1.94	0.90	+	++
322	Coal, lignite and peat	1.53	-1.79	14.82	-	++
771	Electric power machinery and parts thereof	1.47	2.52	-2.71	++	-
689	Miscellaneous non-ferrous base metals	1.39	3.62	-7.52	+	++
673	Iron and steel bars, rods, angles, shapes, etc.	1.38	1.67	0.22	++	+
749	Non-electric parts and accessories of machinery, n.e.s.	1.37	0.55	4.62	+	++
685	Lead	1.27	1.58	0.03	+	++
714	Engines & motors, non-electric	1.04	3.40	-8.44	++	-
899	Other miscellaneous manufactured articles	0.72	0.07	3.31	-	++
711	Steam & other vapour generating boilers, super-heated water boilers, etc.	0.70	0.87	0.00	++	+
776	Thermionic, cold & photo-cathode valves and tubes	0.57	1.07	-1.45	++	-
743	Pumps & compressors, fans & blowers, centrifuges, etc.	0.48	0.51	0.37	++	-
247	Other wood in the rough or roughly squared	0.47	-0.04	2.54	+	++
635	Wood manufactures, n.e.s.	0.42	0.41	0.49	+	++
793	Ships, boats and floating structures	0.35	0.44	0.00	++	+
745	Other non-electrical machinery tools and apparatus	0.34	0.57	-0.61	++	+
778	Electrical machinery and apparatus, n.e.s.	0.28	0.13	0.91	-	++
514	Nitrogen-function compounds	0.27	0.10	0.95	-	++
726	Printing & bookbinding machinery and parts	0.27	0.46	-0.49	++	+
736	Machine tools for working metal	0.26	0.54	-0.89	++	-
582	Artificial Resins and other Plastic Materials	0.23	0.63	-1.38	-	++
642	Paper and paperboard, cut to size or shape	0.19	0.25	-0.06	++	+
001	Live animals chiefly for food	0.14	0.17	0.03	+	++
786	Trailers & other vehicles, not motorized	0.13	0.17	0.00	++	+
659	Floor coverings	0.13	0.15	0.05	+	++
652	Cotton fabrics, woven	0.12	-0.01	0.65	+	++
081	Feeding stuff for animals (not including unmilled cereals)	0.10	0.06	0.28	+	++
651	Textile yarn	0.08	0.20	-0.40	++	-
533	Pigments, paints, varnishes & related materials	0.08	-0.17	1.07	-	++
263	Cotton	0.08	0.00	0.39	++	+
211	Hides and skins (except furskins), raw	0.08	0.08	0.08	-	++

	Average (1986-2000)	Average (1986-1997)	Average (1998-2000)	Market Demand ^a	Competitiveness ^a
048 Cereal preparations & preparations of flour of fruits or vegetables	0.07	0.00	0.37	+	++
684 Aluminium	0.07	0.21	-0.50	++	-
722 Tractors fitted or not with power take-off	0.07	0.09	0.00	++	+
712 Steam turbines & other vapour turbines and parts thereof	0.07	0.05	0.13	++	-
725 Paper & pulp mill machinery	0.07	-0.19	1.08	+	++
667 Pearls, precious & semi-precious stones, unworked or worked	0.06	-0.03	0.42	++	-
554 Soap, cleansing and polishing preparations	0.05	-0.01	0.31	+	++
692 Metal containers for storage and transport	0.05	0.05	0.06	++	+
653 Fabrics, woven, of man-made fibers	0.04	-0.01	0.25	-	++
513 Carboxylic acids, & their anhydrides, halide	0.04	0.05	0.01	++	-
515 Organo-inorganic and heterocyclic compounds and their salts	0.04	0.27	-0.86	-	++
897 Jewellery, goldsmiths and other articles of precious or semiprecious metals	0.04	-0.10	0.58	-	++
759 Parts of and accessories suitable for use with office machines	0.03	0.15	-0.43	+	++
075 Spices	0.03	-0.03	0.29	+	++
847 Clothing accessories of textile fabrics	0.03	0.00	0.15	0	++
292 Crude vegetable materials, n.e.s.	0.03	-0.02	0.19	-	++
721 Agricultural machinery and parts	0.02	0.01	0.07	++	-
885 Watches and clocks	0.02	0.00	0.11	-	++
697 Household equipment of base metal, n.e.s.	0.02	0.00	0.07	+	++
273 Stone, sand and gravel	0.01	0.00	0.06	++	+
844 Under garments of textile fabrics	0.01	0.00	0.03	0	++
895 Office and stationery supplies, n.e.s.	0.01	0.01	0.01	+	++
681 Silver, platinum & other platinum group metals	0.00	0.01	0.00	+	++
883 Cinematograph film, exposed-developed, etc.	0.00	0.01	0.00	++	+
098 Edible products and preparations n.e.s.	0.00	-0.03	0.13	-	+
266 Synthetic fibers suitable for spinning	0.00	-0.84	3.36	-	+
677 Iron and steel rails and railway track construction material	0.00	0.06	-0.24	+	-
111 Non alcoholic beverages, n.e.s.	0.00	0.00	0.00	+	-
884 Optical goods, n.e.s.	0.00	0.00	0.00	+	-
845 Outer garments and other articles, knitted	0.00	0.00	0.00	-	-
612 Manufactures of leather or composition leather, n.e.s.	0.00	-0.01	0.02	+	--
591 Disinfectants, insecticides, fungicides, etc. for retail sale	0.00	0.00	0.00	+	--
291 Crude animal materials, n.e.s.	0.00	0.00	0.00	-	--
655 Knitted or crocheted fabrics	0.00	0.01	-0.04	-	+
851 Footwear	0.00	-0.04	0.13	+	--
658 Made-up articles, wholly/chiefly of textile materials, n.e.s.	0.00	0.04	-0.18	--	-
592 Starches, inulin & wheat gluten	-0.01	0.00	-0.02	-	--
551 Essential oils, perfume and flavour materials	-0.01	0.03	-0.14	+	--
656 Tulle, lace, embroidery, ribbons, etc.	-0.01	-0.02	0.00	-	--
268 Wool and other animal hair	-0.02	-0.02	0.00	--	-
212 Furskins, raw	-0.02	-0.01	-0.06	-	--
671 Pig iron, spiegeleisen, sponge iron, iron or steel granules, powders	-0.02	-0.03	0.00	-	--
842 Outer garments, men's, of textile fabrics	-0.03	-0.37	1.36	--	+
553 Perfumery, cosmetics and toilet preparation	-0.03	0.02	-0.24	--	-
679 Iron & steel castings, forgings & stampings	-0.04	0.15	-0.76	-	--
882 Photographic & cinematographic supplies	-0.04	1.41	-5.82	+	--

	Average (1986-2000)	Average (1986-1997)	Average (1998-2000)	Market Demand ^a	Competitiveness ^a
654 Textile fabrics, woven, other than cotton/man-made fibers	-0.04	-0.02	-0.11	-	--
696 Cutlery	-0.05	-0.06	0.00	-	--
971 Gold, non-monetary	-0.05	-0.06	0.00	--	-
634 Veneers improved or reconstituted	-0.05	-0.09	0.10	--	+
424 Other fixed vegetable oils, fluid or solid	-0.05	-0.07	0.00	+	--
727 Food processing machines and parts	-0.06	-0.09	0.06	--	-
511 Hydrocarbons n.e.s. & their derivatives	-0.06	5.83	-23.61	+	--
848 Articles of apparel & clothing accessories	-0.07	-0.09	0.00	-	--
112 Alcoholic beverages	-0.08	-0.10	0.00	-	--
846 Under garments, knitted or crocheted	-0.09	0.02	-0.51	-	--
781 Passenger motor cars for transport of passengers	-0.10	0.01	-0.52	-	--
523 Other inorganic chemicals	-0.11	-0.01	-0.52	+	--
665 Glassware	-0.11	0.01	-0.60	-	--
584 Regenerated cellulose, cellulose nitrate, etc.	-0.12	-0.04	-0.43	-	--
694 Nails, screws, nuts, bolts etc. of iron, steel, copper or aluminum	-0.12	0.04	-0.75	-	--
248 Wood, simply worked, and railway sleepers of wood	-0.12	0.06	-0.85	--	+
931 Special transactions & commodities not classified according to kind	-0.13	-2.44	9.11	+	--
682 Copper	-0.13	-2.76	10.39	+	--
737 Metal working machinery and parts	-0.13	-0.13	-0.16	-	--
625 Rubber tires, tire cases, etc. for wheels	-0.14	-0.16	-0.08	+	--
611 Leather	-0.14	-0.38	0.80	--	-
662 Clay construction materials & refractory construction materials	-0.14	-0.18	0.00	-	--
516 Other organic chemicals	-0.14	0.02	-0.79	+	-
628 Articles of rubber, n.e.s.	-0.14	-0.11	-0.27	-	--
672 Ingots and other primary forms, of iron ore	-0.15	-0.20	0.04	--	-
881 Photographic apparatus and equipment, n.e.s	-0.15	-0.18	-0.04	-	--
821 Furniture and parts thereof	-0.17	-0.10	-0.45	--	-
657 Special textile fabrics and related products	-0.17	0.32	-2.13	+	--
772 Electric appliances such as switches, relays, fuses, etc.	-0.19	0.36	-2.38	+	--
761 Television receivers	-0.20	0.10	-1.36	-	--
022 Milk and cream	-0.20	-0.77	2.07	-	--
784 Parts & accessories for tractors, motor cars, and motor vehicles, trucks, public transport vehicles, and road motor vehicles	-0.21	-0.18	-0.34	+	--
775 Household type, electrical & non-electrical equipment	-0.21	-0.21	-0.23	-	--
896 Works of art, collectors pieces & antiques	-0.22	-0.28	0.00	-	--
782 Motor vehicles for transport of goods, materials	-0.23	-0.31	0.09	+	--
742 Pumps for liquids, liquid elevators and parts	-0.23	0.94	-4.94	+	--
693 Wire products and fencing grills	-0.26	-0.28	-0.19	+	--
621 Materials of rubber (eg, pastes, plates, sheets, rods, tubes, etc.)	-0.28	-0.32	-0.11	-	--
894 Baby carriages, toys, games and sporting goods	-0.29	-0.16	-0.82	-	--
695 Tools for use in hand or in machines	-0.30	-0.25	-0.51	+	-
661 Lime, cement, and fabricated construction materials	-0.31	0.15	-2.17	-	--
334 Petroleum products, refined	-0.31	-0.28	-0.46	-	--
951 Armoured fighting vehicles	-0.34	-0.43	0.00	-	--
874 Measuring, checking, analysing instruments	-0.36	-0.21	-0.92	+	--
893 Articles of materials n.e.s. of plastics	-0.37	-0.32	-0.58	-	--
724 Textile & leather machinery and parts	-0.37	-0.51	0.16	+	--
892 Printed matter	-0.40	3.04	-14.16	-	--
598 Miscellaneous chemical products, n.e.s.	-0.43	0.79	-5.28	-	--

	Average (1986-2000)	Average (1986-1997)	Average (1998-2000)	Market Demand ^a	Competitiveness ^a
512 Alcohols, phenols, phenol-alcohols & their derivatives	-0.45	-0.57	0.03	-	--
762 Radio-broadcast receivers	-0.51	-0.64	0.00	-	--
751 Office machines	-0.53	0.28	-3.78	--	+
774 Electric apparatus for medical purposes	-0.54	0.84	-6.03	-	+
663 Mineral manufactures, n.e.s	-0.71	-0.62	-1.04	-	--
277 Natural abrasives, n.e.s	-0.81	-1.01	0.00	--	-
741 Heating & cooling equipment and parts	-0.88	-1.89	3.13	--	-
872 Medical instruments and appliances	-0.89	-0.07	-4.18	+	--
812 Sanitary, plumbing, heating, & lighting fixtures	-1.08	-1.35	0.03	-	--
541 Medicinal and pharmaceutical products	-1.11	-1.63	0.98	+	--
773 Equipment for distributing electricity	-1.32	-1.75	0.39	-	--
764 Telecommunications equipment and parts	-1.46	-5.85	16.09	+	--
898 Musical instruments, parts and accessories	-2.16	-2.41	-1.17	--	-
522 Inorganic chemical elements	-2.51	-3.52	1.50	-	--
686 Zinc	-4.14	-4.09	-4.33	+	-
723 Civil engineering & contractors plant and equipment	-4.22	-5.46	0.75	+	--
744 Mechanical handling equipment and parts	-4.22	-4.65	-2.52	-	--
335 Residual petroleum products, n.e.s.& related material	-4.27	-5.34	0.00	-	--
791 Railway vehicles & associated equipment	-4.29	-6.20	3.36	-	--
752 Automatic data processing machines & units	-4.84	-4.82	-4.93	--	-
288 Non-ferrous base metal waste and scrap, n.e.s.	-5.60	-3.78	-12.87	-	--
278 Other crude minerals	-7.10	-10.39	6.06	-	--
287 Ores and concentrates of base metals, n.e.s.	-7.62	-2.87	-26.63	--	-
423 Fixed vegetable oils, soft, crude, refined	-9.27	12.51	-96.41	+	--
061 Sugar and honey	-11.24	-13.80	-0.97	-	--
641 Paper and paperboard	-11.57	-16.51	8.19	-	--
691 Structures & parts of structures; iron, steel, aluminum	-13.11	-16.48	0.35	-	--
524 Radioactive and associated materials	-13.33	-17.00	1.38	--	-
683 Nickel	-14.08	-1.81	-63.15	-	--
792 Aircraft & associated equipment and parts	-73.36	-114.16	89.84	--	-
274 Sulphur and unroasted iron pyrites	-103.49	-126.18	-12.76	-	--

a: The first sign in the pair ("++" or "--") represents the growth/decline in the market demand or competitiveness component.
The second sign in the pair (such as "++" or "--") represents cases in which the Market Demand or Competitiveness Factor was greater than (or less than) the Competitiveness or Market Demand factor.

NOTES



- 1 See Alam, Syed N. (1985). "Canada-India Trade: A Market Share Analysis": pp. 45.
- 2 Canada-India two-way trade figure from Wadhva, C. D. (1994). "Strengthening Indo-Canadian Trade and other Economic Relations in the 1990's" pp. 83. Total Canadian trade figures from: Statistics Canada (1983). *Historical Statistics of Canada*. F.H. Leacy (Ed.). Series No. G381-385.
- 3 See Canadian International Development Agency. (2001): Appendix B, pp. 7.
- 4 See Magun, Sunder (1997). "Shifts in the Structure of Trade between Canada and India: An Empirical Analysis": pp. 85.
- 5 See Hart (2002): pp. 283.
- 6 See Hart (2002): pp. 317.
- 7 See Rai et al. (1989): pp. 38.
- 8 See Rai et al. (1989): pp. 46.
- 9 In 1950-51, imports from the USSR into India represented 3.5% of total Indian imports (about the same as Canada's). By 1980-81, the USSR's market share in India had increased to 8.1%—second only to the United States, surpassing traditional exporters such as the United Kingdom, and three times Canadian exports to India [see Rai et al. (1989): pp. 50-51].
- 10 Calculations from International Monetary Fund (2001). *International Financial Statistics Yearbook 2001*. pp. 147.
- 11 See Chadha (2001): pp. 18.
- 12 See Chadha et al. (2001): pp. 14-17 for more details.
- 13 India's applied MFN rate has fallen in the last decade to 32.3% in 2001-02 [see WTO (2002): pp. viii]. The government also announced recently that it plans to simplify the tariff regime to two tiers—10% for raw materials and intermediates, and 20% for final products.
- 14 The import licensing regime was largely maintained under GATT Article XVII:B (Balance of Payment restrictions). This has largely been abolished. In July 1991, for example, 4,000 out of 5,021 HS 6-digit tariff lines were subject to import licences [see Chadha et al. (2001): pp. 24]. By February 2002, India had notified the WTO of removal of all such restrictions [see WTO (2002): pp. 38].
- 15 Some of the discussion in this section is based on Delvoie, Louis A. (1998).
- 16 Calculations on export figures from International Monetary Fund (IMF). *Direction of Trade Statistics Yearbook 1995 & 2002*.
- 17 It is important to define an appropriate comparison group for Canada-India trade. While many groupings exist (for example South Asia, Low Income Countries, developing countries, etc.) and they are all arbitrary, we have chosen a modified list of 18 countries from *The Economist* magazine's Emerging Market Economies as the relevant reference group. The "Emerging Markets" in this study consist of: Argentina, Brazil, China, Colombia, Czech Republic, Egypt, Hungary, Indonesia, Malaysia, Mexico, Peru, Philippines, Poland, Russia, South Africa, Thailand, Turkey, and Venezuela. We have excluded such high-income countries as Hong Kong, Singapore, South Korea, Taiwan, Israel, and Chile.

The *World Trade Analyzer* by Statistics Canada only records entries for the former USSR and former Czechoslovakia prior to 1993. To maintain consistency, we take Russia's average share of Canadian exports going to the countries now comprising the Commonwealth of Independent States (CIS) for 1993 - 2000 (which was 72%) and assign this share to USSR before 1993. No such disaggregation is available for the Czech Republic and Slovakia prior to 1993. We therefore use figures for Czechoslovakia before 1993 and the Czech Republic after 1993. In 2000, the Czech Republic accounted for only 0.5% of Canada's total exports to the 18 emerging markets considered. Therefore, the impact of this splicing on growth rates is likely to be marginal.
- 18 This is because of some very high export growth figures to Poland (29%), Philippines (27%), the Czech Republic (25%), Peru (21%), and Argentina (20%).
- 19 The formula for the Gini-Hirschman Index is:

$$GH = \sqrt{\sum_{j=1}^n \left(\frac{X_{jt}}{X_t} \right)^2}$$

where X_{jt} is the value of exports of commodity j in year t and X_t is the total exports in that year. The Gini-Hirschman index ranges from 0-1 with higher values of the index representing greater sectoral concentration.

- 20 We used two-sample comparison of means t-test assuming unequal variances. One-tailed t-statistic was 3.24 with a p-value of 0.00215.
- 21 This difference in volatility is statistically significant at the 5% level. See Annex A for details.
- 22 We calculated this figure by dividing the change in any given year for a particular sector by the absolute value of the overall change in exports to India for that year to distinguish between positive and negative contributions to export change. We then added the absolute values of this share of the top-10 (positive) and bottom-10 (negative) contributors to growth and averaged the shares over 15 years. Because the denominator is the absolute value of export change, figures will not add up to 100%.
- 23 See testimony by Secretary Ministry of Shipping to the Lok Sabha Committee on Estimates at: <http://alfa.nic.in/CommitteeR/Estimates/9th/chapter4.html>
- 24 In this “global pricing” method the price of India’s imports from, say Canada, are compared to the average import prices of similar products imported from Canada by the rest of the world. Similarly, comparisons can be made of India’s export prices to Canada to the average export prices of similar products exported to Canada from all other countries in the world [see Zdanowicz et al (1995) for a US-India trade example].
- 25 We looked at these sectoral trends from 1993 onwards for the top-25 traded products. Only data for the last five years are shown.
- 26 See APFC (2002). *Canada’s Business Image in India Survey Report*.
- 27 RXA-2 is calculated as a three-year moving average with any given year (except 2000) referring to the middle year of a set of three. Therefore, 1986 is the moving average for 1985-1987. The year 2000 is the average of 1999 and 2000.
- 28 We define “moderate” export disadvantage industries to be those where Canadian exports would have to increase by, at most, 2-fold (or OECD exports would have to decline by, at most, 2-fold) and/or those sectors whose standard deviations were large enough for them to show an RXA-1 index value greater than 1.
- 29 For these two industries, we obtain slightly inconsistent results between the RXA-1 and RXA-3 measures— the former showing export disadvantage with the latter showing export advantage.
- 30 We define “large” export disadvantage industries as those in which Canadian exports would have to increase more than 5-fold (or OECD exports would have to decline more than 5-fold) in order for Canada to show a revealed export advantage in India.
- 31 In what is to follow, we take moving averages of the RXA-1 index to avoid the volatility in annual export figures.
- 32 This picture is true for many other Power-related sectors including Equipment for Distributing Electricity (SITC 773), and Rotating Electric Generators (716).
- 33 The variance of Canadian export growth to India was 20% higher than the variance of Canadian export growth to China for the 1986-2000 period.
- 34 Tuong and Yeats’ Full Information Index had three levels of data:
- $$F = 100 \left[\sum_{i=0}^9 \sum_{j=0}^9 \sum_{k=1}^9 x_i x_{ij} x_{ijk} \right]^{\frac{1}{3}}$$
- where x_i , x_{ij} , x_{ijk} are the shares of the one, two, and three digit SITC shipments in total trade.
- 35 Re-export and other trade statistics were obtained from the US Bureau of Census (various exhibits): <http://www.census.gov/foreign-trade/Press-Release/2001pr/aip/>

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