

Trends in Canada's Merchandise Trade

Richard Dion, Research Department

- *Over the post-war period, Canada has become more and more integrated with the world economy through an increase in its export orientation, heavier reliance on imported intermediate inputs, and more exposure to foreign competition in its domestic markets. These trends have become more accentuated in the last decade under the impetus of the Free Trade Agreement and the diffusion of information and communication technologies.*
- *Although comparative advantage continues to drive a very significant portion of Canada's trade, the importance of two-way trade in similar products has been gradually increasing, prompted by economies of scale, product differentiation, and vertical specialization of production. The rapidly growing importance of office machines and telecommunications equipment in both exports and imports has fuelled two-way trade.*
- *Regional integration on all continents has become a significant factor in trade. For Canada, this has meant a greater concentration of Canadian exports with the United States over the last decade or so. At the same time, Canada has lost considerable ground in the fastest-growing markets, notably the emerging East Asian economies, partly because it offers these markets products for which demand has been increasing more slowly than average.*

For several decades, world trade has expanded faster than world output, and major trends have become apparent. Trade in similar goods between countries has risen.

The production chain has been sliced up as more intermediate inputs cross borders before final processing. The concentration of trade within regional blocs has increased significantly. And, finally, the share of trade in office machines and telecommunications equipment in aggregate world trade has expanded rapidly. This article quantifies important aspects of Canada's trade performance in light of these international trends. Most of the data used for this purpose stop before 1998 and, therefore, do not reflect the impact of the Asian crisis. In all likelihood, this crisis, which has been unwinding for some time now, should turn out to have no more than a temporary effect on the broad trends described in this article.

The literature on trade is rich in acronyms to designate organizations and trading arrangements. These acronyms are defined in Box 1.

The Expansion of Trade

Over the post-war period, Canadian merchandise trade has grown considerably faster than either total GDP or the gross output of goods in the economy (Chart 1)—a trend displayed, to varying degrees, by other highly industrialized countries and by the rest of the world (Feenstra 1998). Reductions in formal barriers to trade have contributed significantly to this trend, partly through a decrease in the price of tradable goods in terms of non-tradable goods and services. This decrease reflects not only the direct, static effect of tariff reduction on the price of traded goods but also its dynamic effects through the intensified competition and propagation of technological progress that an increased volume of trade induces. Eight rounds of multilateral trade negotiations through the

Box 1: Organizations and Trading Arrangements

ANDEAN:

Customs union of Bolivia, Colombia, Ecuador, Peru, and Venezuela

ASEAN:

Association of Southeast Asian Nations, a free-trade area comprising Brunei, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam

EU:

European Union, comprising the countries of the European Community (a common market) and members of the European Free Trade Association: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom

FTA:

Canada-U.S. Free Trade Agreement

GATT:

General Agreement on Tariffs and Trade

Generalized System of Preferences:

Granted developing countries tariff preferences in the markets of developed countries for their exports of manufactured and semi-manufactured goods

MERCOSUR:

Partial customs union of Argentina, Brazil, Paraguay, and Uruguay

NAFTA:

North American Free Trade Agreement, including Canada, the United States, and Mexico

WTO:

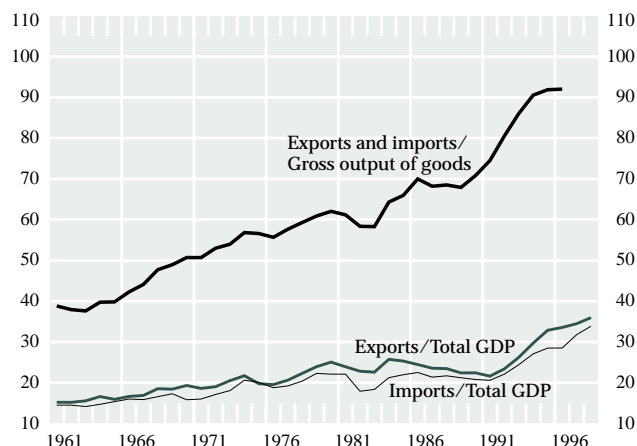
World Trade Organization, the GATT's successor

Chart 1

Merchandise Trade as a Percentage of Output

(In current dollars)

Per cent



GATT have lowered tariff rates on manufactured goods in industrial countries from about 40 per cent in the immediate post-war period (Lane 1998) to less

than 10 per cent in the late 1960s, and to less than 4 per cent once the Uruguay Round is fully implemented (WTO 1998a).¹ These negotiations have also worked towards reducing quantitative restrictions on trade, which, nevertheless, tended to proliferate and make trade far less free than suggested by the decline in tariffs.²

While these multilateral efforts were underway, more and more regional blocs of countries entered into preferential trading arrangements like those of the European Community and the FTA/NAFTA. By reducing intra-regional barriers, these arrangements have stimulated trade among member countries, possibly to the detriment of trade with non-member countries.

1. These averages mask the fact that tariffs remain very high for some products. Even so, for the advanced economies, the proportion of imported industrial goods facing tariffs above 15 per cent was expected to decline from 7 to 5 per cent as a result of the Uruguay Round (Fieleke 1995).

2. Most significant have been the restrictions on the volume of trade in textiles and clothing under the Multifibre Arrangement (MFA), which are scheduled to be phased out by the end of 2004 as per the Agreement on Textiles and Clothing, which entered into force on 1 January 1995 (WTO 1998a).

Finally, while the Generalized System of Preferences has, since 1969, allowed developing countries to benefit from preferential tariff reduction in the markets of developed countries, many developing, emerging, and transitional economies have unilaterally brought down trade barriers since the mid-1980s (IMF 1999).

Trade liberalization has encouraged firms to exploit economies of scale at the plant level, thereby pushing them to specialize production. As increasingly affluent industrial and emerging economies have shown preferences for a greater variety of products, brand-specific economies of scale have led to a significant increase in two-way trade in the same product categories (Helpman 1998). The growth in trade that followed the formation of the European Community was of this type (Krugman 1995). In her detailed analysis of trade between individual U.S. states and Canada, however, Little (1996) found that, in the early years of the FTA, U.S.-Canadian trade expanded according to underlying comparative advantage.³

Technological advances have reduced both transportation costs and delivery times and have also increased the speed and bandwidth of communications. According to the World Trade Organization (WTO), “the unit costs of sea freight have declined by almost 70 per cent in real terms in the last 10 to 15 years. Unit costs of air freight have fallen by 3-4 per cent per year over the same period” (WTO 1998a, 35). As a result, the relative cost of trading goods has been pushed down, and the range of profitable outlets or sources of supply has been extended. Not only has this stimulated trade in finished goods, it has also promoted specialization by stage of production, which boosts international trade even more since intermediate inputs may cross borders several times during the manufacturing process. *The Economist* (Lane 1998, 5) reports the case of a child’s pinwheel, “consisting of plastic sails pinned to a stick, [that] is made in three different countries. The plastic is produced in the United States and cut to shape in China. The toy is then assembled in Mexico and shipped to LA for distribution.” According to the WTO (1998a), trade in components and parts has been growing significantly faster than trade in finished products, contributing to a rising share of two-way trade in total world trade.

3. In other words, an increasing share of each country’s bilateral trade reflected net exports of products that are intensive in the resources that each country has in abundance relative to the other.

Technological progress and the resulting productivity gains have also directly affected the relative price of many tradable goods, prompting a very significant increase in worldwide demand and trade among countries. For example, the pronounced decline in the relative prices of computers and electronic equipment has stimulated consumption, imports, and exports of these products and their parts. The value of world trade in office machines and telecommunications equipment climbed to 13 per cent of total merchandise trade and 17 per cent of trade in manufactured goods in 1997 (WTO 1998b). As noted earlier, there is a dynamic aspect to this technological stimulus, since trade itself disseminates technological progress.

Measures of openness to trade and specialization by stage of production reveal that Canadian industries have shared in the trends described above. In this article, four ratios are used to measure the notion of openness to trade: the share of an industry’s exports in its gross output; the share of an industry’s imported intermediate inputs in its gross output, which captures its exposure on the cost side of its balance sheet; the share of an industry’s competing imports in the domestic markets for its core products; and net trade exposure, defined as a combination of the other three measures:

$$(\text{exports/gross output}) - (\text{imported inputs/gross output}) + (\text{competing imports/domestic market}).$$

The intuition behind this last measure appears perhaps most clearly in the case of an exchange rate depreciation.⁴ Those industries with a high export orientation or that face strong foreign competition in their domestic markets would stand to benefit the most from the resulting decline in their export prices or their domestic costs in terms of foreign currency. However, if they also rely heavily on imported inputs, their production costs would rise and their net gain from the depreciation might be quite small. Hence, their net trade exposure to exchange rate movements may be minimal. Finally, this article presents a measure of vertical specialization of production, which provides an estimate of the fraction of an industry’s trade that is accounted for by inputs that are imported and then embodied in exports (Feenstra 1998). This

4. Campa and Goldberg (1997) proposed the alternative concept of net external orientation, defined as the difference between an industry’s export ratio and its imported input ratio.

measure reflects a country's degree of specialization in particular stages of the production chain.

Box 2 provides details on the construction of these five measures, and Table 1 shows their values at three points in time: 1965 (just before the effects of the Canada-U.S. Auto Pact were felt), 1988 (the year before the Canada-U.S. Free Trade Agreement was launched), and 1996 (the last year for which input-output data are available). Chart 2 shows these measures for the manufacturing sector from 1961 to 1996.

The estimated measures indicate that openness to trade, and therefore the range of tradable goods, clearly extends beyond the manufacturing sector to the primary industries. In this respect, mining, crude oil and natural gas, and quarries score higher than most manufacturing industries. However, primary industries have not significantly increased their trade

exposure in the last 40 years, and being at the first stage of the production process, their vertical specialization has remained low. Openness to trade varies considerably across manufacturing industries. Currently, it is relatively high in high-tech industries such as machinery, electrical and electronic products, and other manufacturing. It is relatively low in food, beverages, tobacco, printing and publishing, and refined petroleum products.

A striking feature of the data is the general increase in trade exposure and vertical specialization across manufacturing industries over time, especially since the late 1980s.

Table 1

Measures of Openness to Trade and Vertical Specialization for Canadian Industries

	Primary industries ¹	Manufacturing			
		All	Resource-based ²	Highly protected ³	High-tech ⁴
Exports/Gross output					
1965	0.343	0.161	0.273	0.042	0.160
1988	0.327	0.365	0.359	0.135	0.453
1996	0.377	0.533	0.480	0.415	0.765
Imported inputs/Gross output					
1965	0.027	0.100	0.092	0.119	0.096
1988	0.047	0.160	0.105	0.176	0.186
1996	0.062	0.231	0.175	0.260	0.274
Imports/Domestic market					
1965	0.168	0.200	0.128	0.184	0.448
1988	0.154	0.334	0.168	0.367	0.662
1996	0.206	0.441	0.258	0.532	0.812
Net trade exposure					
1965	0.484	0.261	0.310	0.108	0.512
1988	0.434	0.539	0.421	0.326	0.929
1996	0.520	0.743	0.562	0.687	1.303
Vertical specialization					
1965	0.052	0.131	0.148	0.063	0.136
1988	0.086	0.240	0.174	0.164	0.300
1996	0.113	0.349	0.274	0.351	0.453

Data source: Statistics Canada. Input/output data in current dollars.

1. Agriculture, fishing and trapping, forestry, mining, crude oil and natural gas, and quarries.
2. Wood, paper, primary metals, non-metallic minerals, refined oil products, and chemicals.
3. Leather, primary textiles, textile products, and clothing.
4. Machinery, electrical and electronic products, and other manufacturing.

A striking feature of the data is the general increase in trade exposure and vertical specialization across manufacturing industries over time, especially since the late 1980s. Over this last period, there seems to have been an unusually rapid expansion in the array of competitors, suppliers, and market opportunities in Canada and in the rest of the world. The FTA/NAFTA has been a major factor in boosting Canada's trade with the United States in products that originally faced significant tariffs in both countries.⁵ Indeed, two-way trade and vertical specialization have risen especially quickly in industries such as leather, textiles, and clothing,⁶ which were stringently protected. The shift in the orientation of their production towards exports has been particularly remarkable. As noted by Treffer (1999), however, most of Canada's increased trade in manufacturing products during the

5. Treffer (1999) estimates that in the manufacturing industries that faced the largest tariff cuts, these cuts explain almost all of the increased trade with the United States and the increased U.S. share of Canadian trade over the period 1989-96. Grether and Olarreaga (1998) show that the share of preferential trade in total trade for the NAFTA countries increased substantially between 1988-92 and 1993-97. In their study, preferential trade includes only those imports within the NAFTA that face a Most Favored Nation (MFN) tariff exceeding 3 per cent. If the MFN tariff is below 3 per cent, then incentives to incur the costs of satisfying rules of origin, and therefore benefit from preferential treatment, disappear.

6. For a discussion of recent changes in the textile industry, see Kowaluk (1998).

Box 2: Measures of Openness to Trade and Vertical Specialization

Openness to trade

This article uses input-output data from Statistics Canada to measure three sources of exposure to foreign influences through international trade. The first source is export orientation, measured for industry j as the ratio of exports (X_{ij}) to gross output (O_{ij}) for its products i :

$$X_j/O_j = \sum_i^{n_j^o} X_{ij} / \sum_i^{n_j^o} O_{ij}.$$

Data on exports are available by product, but not by industry. Therefore, X_{ij} must be approximated by the following relationship:

$$X_{ij} \approx O_{ij} \cdot (X_i/O_i),$$

where X_i and O_i represent the total exports and gross output of product i in the economy.

The second source of exposure is the share of imported inputs in gross output, which measures the exposure of industry j on the cost side of its balance sheet:

$$M_j^I/O_j = \sum_i^{n_j^I} M_{ij}^I / \sum_i^{n_j^I} O_{ij}.$$

Again, data on imports are not available by industry, therefore, M_{ij}^I is approximated by the following relationship:

$$M_{ij}^I \approx I_{ij} \cdot (M_i/C_i),$$

where I_{ij} represents use of input i by industry j , while C_i and M_i are, respectively, the consumption and imports of product i in the economy.

Consumption of product i is defined as

$$C_i = O_i - II_i - X_i + M_i,$$

where II_i refers to the changes in inventories of product i .

The third dimension of external exposure relates to foreign penetration of the domestic market. This is estimated as the imports of the core products of industry j by all the industries other than j itself and by final users (if applicable) as a proportion of the domestic markets for (or consumption of) the k_j^o core products of industry j (C_i^j):

$$M_j^C/C_j = \sum_i^{k_j^o} (M_i - M_{ij}) / \sum_i^{k_j^o} C_i^j.$$

Vertical specialization

Vertical specialization is an approximate measure of the fraction of an industry's trade that is accounted for by inputs that are imported and then embodied in exports.¹ On the import side, the value of this trade is measured by the product of imported intermediate inputs and the proportion of gross output that is exported. On the export side, it is measured by the product of exports and the fraction of gross output accounted for by imported intermediate inputs. In this article, vertical specialization is the ratio of the sum of these two identical terms to the sum of exports and imported intermediate inputs:

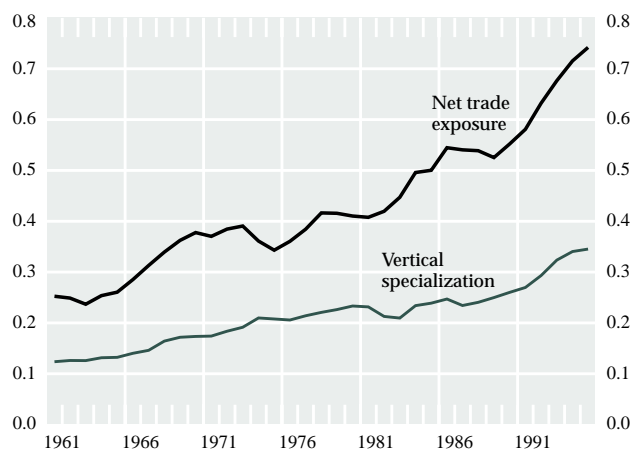
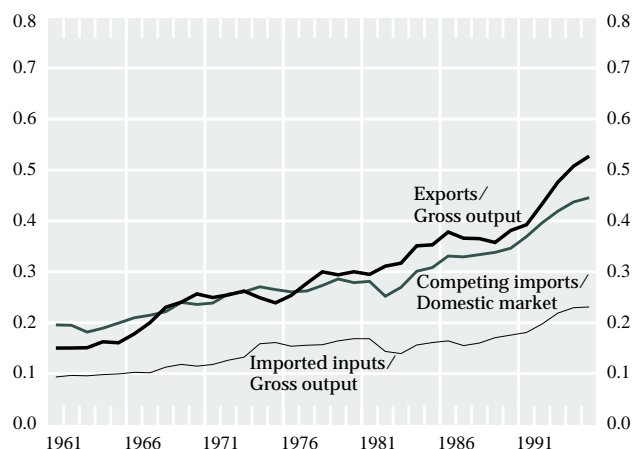
$$VS_j = [2 \cdot (X_j/O_j) \cdot M_j^I] / (X_j + M_j^I).$$

1. This is the measure that Feenstra (1998) attributes to David Hummels, Dana Rapoport, and Kei-Mu Yi in their unpublished paper, "Globalisation and the Changing Nature of World Trade." University of Chicago, Federal Reserve Bank of New York, and Rice University. December 1997.

Chart 2

External Orientation in Canadian Manufacturing: 1961–96

(In current dollars)



1989–96 period was in industries that had low or non-existent tariffs in 1988. The electrical and electronic products industry, for example, sharply increased its external orientation even though most of its products, including office machines and electronic parts, were subject to very low tariffs to start with. This suggests that the FTA/NAFTA has not been the sole factor contributing to the increase in Canada’s openness to trade since the late 1980s. The relatively rapid spread of information and communications technologies over this period has stimulated trade directly, as discussed earlier, and indirectly by facilitating the information flows, transactions, and technologies that enhance cross-border trade.

Given the relative sizes of the Canadian and U.S. economies, the ratio of merchandise trade (exports plus imports) to GDP is much higher in Canada than in the United States. When bilateral Canada-U.S. trade is excluded, however, the ratio shows that both economies are about equally open to the rest of the world: in both countries, extra-regional trade accounted for only 15 per cent of GDP in 1997, compared with 20 per cent for the European Union (Chart 3).

The Composition of Trade

One noteworthy aspect of world trade in the last few decades has been the rising importance of two-way trade in similar products, termed *intra-industry trade* (IIT). Canada has shared in this worldwide trend (Table 2). From 1970 to 1987, the rise in estimated indexes of IIT, which measure the relative importance

One noteworthy aspect of world trade in the last few decades has been the rising importance of two-way trade in similar products, termed intra-industry trade. Canada has shared in this worldwide trend.

Chart 3

Merchandise Trade as a Percentage of GDP

(In current dollars)

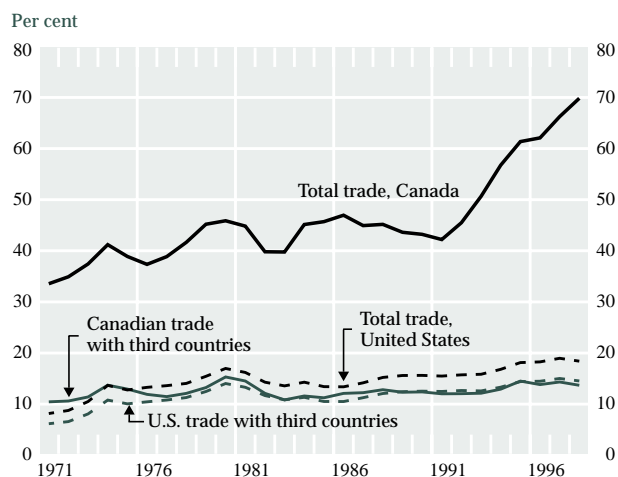


Table 2
Indexes of Intra-Industry Trade

	1970	1987
Canada	0.624	0.716
United States	0.551	0.610
Germany	0.597	0.664
France	0.781	0.838
United Kingdom	0.643	0.800
Italy	0.610	0.639
Japan	0.328	0.280
South Korea	0.194	0.422
Hong Kong	0.428	0.713
Singapore	0.442	0.718
Brazil	0.191	0.455

Source: Stone and Lee (1995).

of intra-industry trade in total trade, was moderate for highly developed countries but rather sharp for several emerging economies.

Two elements shape the composition of a country's international trade: comparative advantage, based on relative factor endowments, and two-way trade in similar products, driven by economies of scale and product differentiation. Two-way trade also reflects trade in components and parts, based on vertical specialization of production. At the commodity level, the relative importance of factor endowments in determining trade can be assessed using an index of two-way trade, which takes a value of zero when comparative advantage completely dominates trade and a value of one when trade is purely two-way.⁷ This index rests on the assumption that a trade surplus reveals comparative advantage. In this article, it applies to fairly comprehensive product categories and, as a result, overestimates the degree of two-way trade in truly similar products (Table 3).⁸ Moreover, broad movements in the exchange rate and commodity prices, as well as the cyclical position of Canada relative to its trading partners, influence the size and

7. The index is defined as $1 - \frac{|x_i - m_i|}{x_i + m_i}$, where x_i and m_i are exports and imports of commodity i . This type of index was initially employed extensively by Bela Balassa to capture "revealed comparative advantage." See, for example, Balassa and Noland (1989).

8. For instance, the index for chemicals covers products as different as bulk inorganic chemicals and pharmaceutical products, and the indexes for the machinery and equipment categories cover finished products as well as parts and components. For a given product category, the likelihood that net exports will turn out to be large relative to total trade is greater if this category is narrow than if it is comprehensive. Therefore, one can expect the index of two-way trade to be lower for a narrow product category than for a comprehensive one.

distribution of trade balances across products in any particular year and therefore the comparative evolution of the indexes of two-way trade. The use of such indexes, nevertheless, allows rough comparisons to be made over time and across products with respect to the relative importance of comparative advantage in shaping trade.

Comparative advantage completely dominates trade in forestry products (wood, pulp and paper), with little variation over the years. In this case, both exports and imports rise in relation to total GDP, with imports being very low and the surplus very large at all times. Trade in agricultural and fish products appears to be largely two-way when measured at the aggregate level, but to a considerable extent, specialization in

Table 3
Composition of Trade and Indexes of Two-Way Trade

	Average growth rate: 1986-98		Share in total trade: By commodity		Index of two-way trade	
	Exports/ Total GDP	Imports/ Total GDP	1986	1998	1986	1998
Agriculture and fishing	2.5	2.8	7.9	7.1	0.80	0.81
Forestry	1.3	2.9	8.1	6.3	0.11	0.13
Energy	2.0	-0.01	7.0	5.4	0.68 ¹	0.56 ¹
Coal	-4.8	-1.1	1.0	0.4	0.68	0.89
Crude oil	1.6	1.0	2.8	2.2	0.84	0.80
Oil products	0.1	-1.4	1.6	1.1	0.86	0.73
Natural gas	6.3	-	1.1	1.5	0.00	0.00
Industrial goods and materials	2.2	4.2	20.5	19.6	0.77 ¹	0.82 ¹
Textiles	11.5	1.8	1.1	1.2	0.32	0.71
Metals	0.02	1.0	9.8	6.7	0.70	0.76
Non-metallic minerals	-2.5	2.2	1.8	1.1	0.76	0.96
Metal fabricated products	8.9	9.3	1.1	2.1	0.76	0.74
Chemicals	4.7	6.6	5.1	6.5	0.99	0.90
Machinery and equipment	7.1	5.5	22.3	29.9	0.70 ¹	0.77 ¹
Industrial machinery	6.5	3.8	5.8	6.6	0.62	0.76
Telecommunications equipment	8.5	7.7	3.4	5.6	0.72	0.77
Office machines	7.7	6.3	2.8	4.1	0.65	0.72
Aircraft and parts	5.5	3.7	2.7	3.1	0.95	0.85
Other equipment and tools	8.8	6.2	4.7	7.1	0.66	0.79
Automotive products	3.0	1.4	28.0	24.0	0.77 ¹	0.68 ¹
Motor vehicles	3.3	0.3	16.2	13.8	0.82	0.66
Motor vehicle parts	2.3	2.3	11.7	10.2	0.71	0.71
Other goods	9.2	4.5	6.3	7.8	0.35	0.53

Data source: Statistics Canada. Based on data in current dollars.

1. Weighted average of the sub-indexes.

this area is conditioned by climate and soil. Thus, by comparative advantage, Canada exports grains and canola and imports coffee and citrus fruits. Both exports and imports have, nevertheless, risen in relation to total GDP since the mid-1980s, in part to fill new niches for specialized processed products as tastes become more varied both in Canada and abroad.

Trade in energy products stems from relatively abundant resources in Canada, but it has a significant two-way component that partly reflects transportation costs. Western Canada exports oil to the United States, and Eastern Canada imports oil from overseas. Alberta and British Columbia export coal to steel mills in Japan and South Korea, and integrated steel mills and thermal power stations in Ontario import coal from the United States. In contrast, trade in natural gas and electricity is virtually one-way. Exports of natural gas have escalated in relation to GDP as development of new fields, combined with expansion in pipeline capacity, has been geared towards gaining an increasing share of the growing U.S. market. Electricity exports depend on excess capacity both in the production and transportation of electricity. Capacity expansion has traditionally been aimed at accommodating expected growth in domestic demand in the long run. With exports rising much faster than imports in the last decade, Canada's trade surplus in energy has increased, revealing gains in comparative advantage.

Scale economies, product specialization, and vertical specialization of production appear to exert an important influence on trade in industrial goods and materials, machinery and equipment, and automotive products. The proportion of two-way trade in industrial goods has risen significantly, on balance, since the mid-1980s, although with considerable diversity at a more disaggregated level. For example, two-way trade in textiles has surged because sharply rising exports have increasingly balanced imports. Moreover, comparative advantage still dominates trade in specific industrial materials: exports of aluminum have climbed relative to GDP as comparatively low electricity costs have induced a large increase in production capacity. In the machinery and equipment category, two-way trade has intensified markedly, partly because of burgeoning trade in components and parts. On the other hand, thanks partly to exports of highly successful products, trade in aircraft and parts and in motor vehicles has become less two-way since the mid-1980s.

Table 4 reveals another major trend that Canada shares with the rest of the world: the rapidly growing importance of office machines and telecommunications equipment in both exports and imports. The burgeoning trade in these products, which are highly differentiated and subject to vertical specialization across borders, has fuelled growth in two-way trade around the world.⁹ When based on trade volumes that reflect quality improvements over time, the gain in the share of these high-tech products has been so large in Canada over the last decade or so that, as a result, most other product categories have seen their volume share decline, with automotive and forest products experiencing the largest decreases.

Table 4

Share of Office Machines and Telecommunications Equipment in Total Trade (per cent)

	Exports		Imports	
	1990	1997	1990	1997
Canada	4.4	6.2	9.0	11.2
United States	13.1	17.3	12.3	16.9
Japan	23.3	22.6	4.8	12.4
E.U. (15)	6.2	8.7	8.2	11.0
South Korea	22.1	24.9	11.1	14.4
Hong Kong	15.6	20.0	14.5	22.2
Taiwan	21.0	32.5	13.6	20.0

Source: WTO (1998b). Based on data in nominal U.S. dollars.

Regional Dimensions of Trade

The last decade has witnessed an increasing concentration of trade within regions as a result of preferential agreements such as the NAFTA (Table 5). The European Union, where intra-regional trade was already very important, has been a major exception as trade with other regions, especially Asia and Central/Eastern Europe, has grown more rapidly than trade within the union (WTO 1998b). Where intra-regional trade was fairly modest initially, as in the MERCOSUR and ANDEAN arrangements, its share of total trade has risen considerably.

In the last 10 years, regional integration in North America, combined with the relatively robust expansion of the U.S. economy, has contributed to a rise in

9. For a review of the electrical and electronic products industry in Canada, see Vincent (1998).

Table 5

Merchandise Trade in Selected Regional Integration Arrangements

	Share in total exports or imports (%)	
	1990	1997
E.U. (15)		
Intra-exports	64.9	60.8
Intra-imports	63.0	62.0
NAFTA (3)		
Intra-exports	42.7	49.0
Intra-imports	34.4	39.9
ASEAN (9)		
Intra-exports	18.9	23.6
Intra-imports	14.9	18.6
MERCOSUR (4)		
Intra-exports	8.9	24.4
Intra-imports	14.5	20.5
ANDEAN (5)		
Intra-exports	4.3	11.4
Intra-imports	7.5	13.9

Source: WTO (1998b). Based on data in nominal U.S. dollars.

the U.S. share of Canadian trade. This has been matched by marked declines in the shares of Canadian trade with Japan, other East Asian countries, and the European Union (Chart 4). Even after correcting for differences in the growth of foreign markets, the U.S. share of Canadian exports shows an upward trend, as indicated by an index of trade intensity, which increased to 5.2 in 1996–97 from 4.4 in 1988–89 (Table 6). This index, which compares Canada's share of U.S. imports to Canada's share of world imports,¹⁰ rose over this period, partly because of the Canada-U.S. Free Trade Agreement. By the late 1990s, Canadian exports to the United States were about five times greater than if they had been proportional to the share of the United States in world imports. The high value of the index underscores the importance of distance in shaping trade patterns, a conclusion strongly supported by “gravity models” of bilateral trade¹¹ and reinforced by the fact that Canada-U.S. trade involves mainly the northern U.S. states (Little

10. The index corresponds to $I_{ij} = (X_{ij}/M_j)/(X_i/M_w)$, where X_{ij} refers to exports of country i to country j , X_i to total exports of country i , M_j to total imports of country j , and M_w to world imports (Yeats 1998).

11. Gravity models attempt to explain bilateral trade with such variables as the GDPs of countries and the distance between countries (Krugman 1995).

1996).¹² In contrast, the index of trade intensity with Japan has stagnated over the last decade or so, and the indexes for the European Union, the key East Asian partners among the emerging economies, and the rest of the world have fallen significantly. The very low index for the European Union largely reflects the dominance of intra-regional trade for both its member countries and for Canada. Indeed, when intra-E.U. imports and Canadian exports to the United States are excluded from the calculation, this index exceeds one and rises during the 1990s.

The share of Canadian exports in world imports has hovered around 4 per cent since the early 1970s, reaching a trough of 3.4 per cent during the economic slowdown of the early 1990s in North America and

Regional integration in North America . . . has contributed to a rise in the U.S. share of Canadian trade.

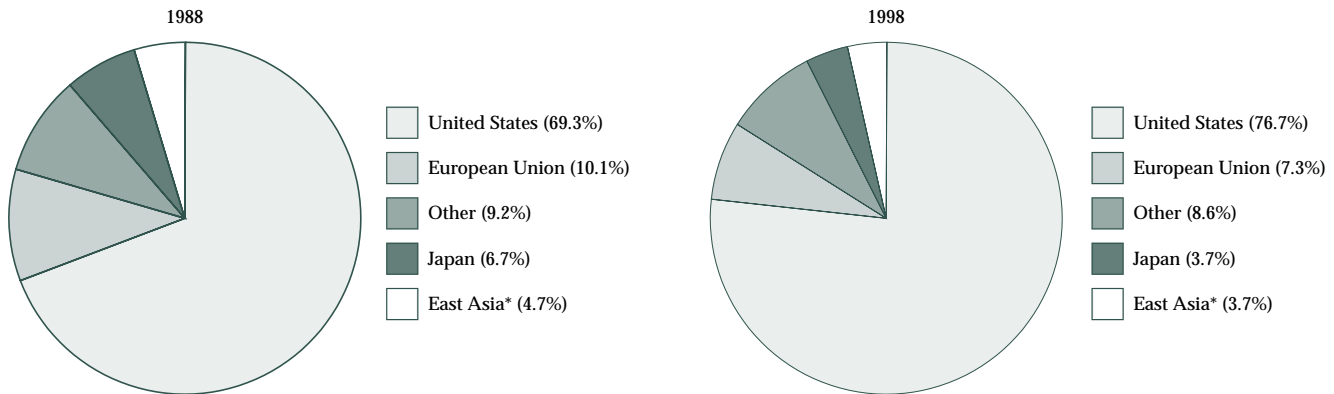
subsequently stabilizing at about 3.7 per cent (Chart 5). Canada's share of U.S. imports rose modestly between 1988 and 1998, but U.S. imports grew more slowly than world imports, on balance. Moreover, Canada lost considerable ground in the two markets that experienced the strongest expansion before the Asian crisis: the major East Asian emerging economies and the “rest of the world” (Table 6). Canada's share of the relatively slow-growth markets of Japan and the European Union also shrank significantly over this period. Canadian exports to the European Union fell even in relation to E.U. imports from non-E.U. regions.

To put these developments in perspective, it is useful to consider how the exports of other advanced countries fared relative to world imports. Between 1988–89 and 1996–97, the United States and the European Union saw their export shares of world imports decline more than Canada's share, in both absolute and relative terms. The counterpart to these losses

12. Interprovincial trade in Canada seems to depend on a lot more than distances, formal barriers to trade, or economic size. Based on a gravity model of 1988 trade flows, McCallum (1995) shows that a typical Canadian province trades 22 times more with other provinces than with U.S. states of similar size and at similar distances.

Chart 4

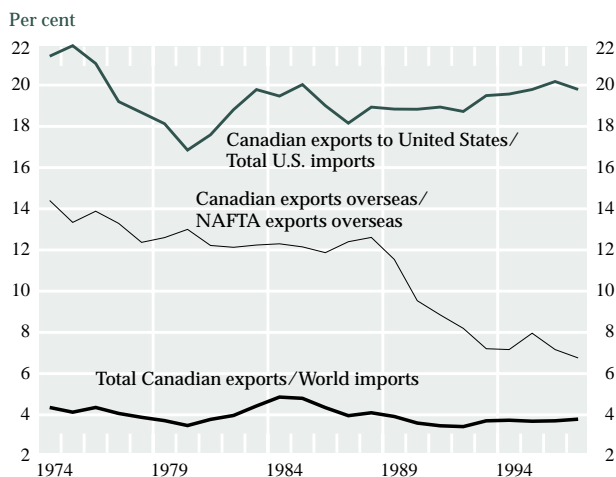
Regional Distribution of Canadian Trade



* East Asia (4): China, South Korea, Hong Kong, and Taiwan

Chart 5

Shares of Canadian Exports



came largely in the form of strong gains by emerging Asian economies. When intra-NAFTA and intra-E.U. trade is excluded from these calculations, Canada's share in world markets slipped proportionately more than those of the United States and the European Union, although in absolute terms it fell no more than did the U.S. share.

Comparative advantage drives much of Canada's trade with regions other than the United States. The typical pattern involves exports of mainly resource-based products, while imports are concentrated in machinery and equipment and consumer goods (Table 7). World markets for resource-based exports have grown at a slower rate than average over the 1990s (Table 8), whether measured in terms of value or volume.¹³ This points to one reason why Canada has lost ground in regions other than the United States: in these areas, Canada sells mainly products for which demand has been increasing less rapidly than average. From the late 1980s onwards, Canadian exports overseas fell considerably relative to U.S. or NAFTA exports overseas (Chart 5), partly because they included proportionately fewer products in the fast-growing machinery and equipment category. Over the 1995-97 period, for example, machinery and equipment accounted for 18 per cent of Canadian exports compared with 45 per cent of U.S. exports overseas. Furthermore, the composition of exports of machinery and equipment to overseas markets appears to have been far less favourable to Canada than to the United States: between 1995 and 1997, for instance, the

13. Over the 1990-97 period, world export volumes of agricultural and mining products, which include energy products, increased at an average annual rate of 4.5 per cent, while those of manufactured goods rose at an average annual rate of 7.0 per cent (WTO 1998b).

Table 6

Canada's Market Shares and Bilateral Trade Intensity

	1980-81	1988-89	1996-97
Canadian exports to U.S. / Total U.S. imports	16.5	17.6	19.9
Total U.S. imports / World imports	13.7	16.1	15.6
Index of trade intensity with the United States	4.5	4.4	5.2
Canadian exports to Japan / Total Japanese imports	2.6	3.7	2.1
Total Japanese imports / World imports	7.3	6.7	6.3
Index of trade intensity with Japan	2.0	1.7	1.7
Canadian exports to E.U. (15) / Total E.U. (15) imports	1.0	0.8	0.5
Canadian exports to E.U. (15) / E.U. (15) extra-region. imports	2.3	2.0	1.4
Total E.U. (15) imports / World imports	41.2	43.5	35.7
Index of trade intensity with the E.U. (15)	0.3	0.2	0.1
Index of extra-region. trade intensity with the E.U. (15)	1.2	1.2	1.5
Canadian exports to EA (4) / Total EA (4) imports ¹	1.9	1.9	1.0
Total EA (4) imports / World imports	3.5	7.8	10.9
Index of trade intensity with the EA (4)	0.5	0.5	0.3
Canadian exports to ROW / Total ROW imports ²	2.0	1.7	0.7
Total ROW imports / World imports	34.2	25.8	31.6
Index of trade intensity with ROW	0.6	0.4	0.2
Canadian exports / World imports	3.6	4.0	3.8
U.S. exports / World imports	11.7	12.8	11.9
E.U. (15) exports / World imports	37.4	42.6	37.8
Canadian exports to non-NAFTA / Total NAFTA exports to non-NAFTA	12.6	12.1	7.0
Canadian exports to non-NAFTA / World extra-reg. imports ³	1.9	1.7	0.9
U.S. exports to non-NAFTA / World extra-reg. imports	12.5	12.4	11.6
E.U. (15) exports to non-E.U. (15) / World extra-reg. imports	21.2	23.8	20.9

Source: IMF (1998). Based on data in nominal U.S. dollars.

1. East Asia (4): China, South Korea, Hong Kong, and Taiwan, the four most important trading partners of Canada among the emerging economies of East Asia.

2. ROW: All the destinations other than the United States, Japan, the European Union (15), and East Asia (4).

3. World imports less intra-NAFTA and intra-E.U. (15) imports.

Table 7

Canadian Merchandise Trade by Product and Major Trading Partners, 1995-97 (per cent share)

	United States		Japan		European Union (15)		East Asia (2) ¹		Other	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
Agricultural products	11.9	6.9	59.4	0.6	31.2	7.6	38.6	3.2	30.5	13.5
Energy	11.7	1.6	11.7	0.0	2.5	8.5	7.3	0.2	2.5	17.1
Raw materials and industrial goods	24.5	24.9	21.2	9.9	34.4	29.5	31.7	16.4	32.1	18.6
Machinery and equipment	17.4	30.6	3.0	52.1	23.9	36.4	16.8	36.5	23.1	30.6
Automotive products	28.3	25.9	1.4	28.2	2.3	6.8	4.0	2.6	8.1	8.2
Other consumer goods	6.2	10.1	3.2	9.1	5.8	11.1	1.8	41.1	3.8	12.1
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: WTO (1998b). Based on data in nominal U.S. dollars.

1. China and South Korea.

Table 8

World Merchandise Exports by Product

	Share (%)	
	1990	1997
Agricultural products	12.2	10.9
Energy	10.5	8.2
Raw materials and industrial goods	29.4	29.2
Machinery and equipment	26.4	30.3
Automotive products	9.4	9.3
Other consumer goods	12.1	12.1

Source: WTO (1998b). Based on data in nominal U.S. dollars.

Canadian share of such exports from North America dropped from 3.9 per cent to 3.0 per cent. Part of Canada's apparent difficulty in making inroads into the overseas markets for machinery and equipment may stem from a lack of innovative products to offer and a comparatively undeveloped network of overseas affiliates. However, this does not take into account the fact that Canada exports machinery and equipment to overseas markets via the United States by supplying parts and components to U.S. producers.

Canada has lost ground in regions other than the United States . . . [where it] sells mainly products for which demand has been increasing less rapidly than average.

Canada's exports to the United States reflect two-way trade in end products as much as a comparative advantage in raw materials. The bulk of Canadian exports of machinery and equipment goes to the United States. The relatively rapid expansion of the U.S. market for machinery and equipment, notwithstanding Canada's loss of ground in that particular market to overseas countries, has contributed to the rise in Canada's share of total U.S. imports in the last decade or so.

Conclusion

This article has shown how Canada's international trade has followed the major trends seen in world trade over several decades. Canada has become progressively more integrated in the world economy through a rise in its export orientation, heavier

reliance on imported intermediate inputs, and increased exposure to foreign competition in its domestic markets. This increased openness has shown up most clearly in the strong expansion of its trade with the United States. Although comparative advantage continues to drive a very significant portion of Canadian trade, the importance of two-way trade has gradually increased, prompted by economies of scale, product differentiation, and vertical specialization of production. The rapidly growing importance of office machines and telecommunications equipment in both exports and imports has fuelled two-way trade.

While regional integration on all continents has contributed to a greater concentration of Canadian exports with the United States, the growth of U.S. imports was slower than that of imports worldwide, at least before the Asian crisis erupted. At the same time, Canada lost considerable ground in the fastest-growing markets, notably the emerging East Asian economies, because in these markets, Canada mainly sells products for which demand is increasing more slowly than average.

With Canada's growing exposure to world trade, there is increasing potential for movements in the exchange rate to affect net exports and domestic output. With a growing portion of Canada's aggregate trade consisting of end products and parts, movements in world commodity prices will likely have less direct influence on Canada's terms of trade, at any given exchange rate. In principle, the increasing trade exposure might also cause exchange rate movements to have a greater impact on domestic prices. So far, there has been little evidence of larger pass-through effects, possibly for two reasons. First, the expanding array of foreign competitors and suppliers may have put downward pressure on the prices of tradable goods. Second, "pricing to market," the tendency of exporters to absorb exchange rate variations into their profit margins rather than into their export prices, may have become more prevalent.

Literature Cited

- Balassa, B. and M. Noland. 1989. "The Changing Comparative Advantage of Japan and the United States." *Journal of the Japanese and International Economy* 3: 174-88.
- Campa, J. and L. S. Goldberg. 1997. "The Evolving External Orientation of Manufacturing: A Profile of Four Countries." *Economic Policy Review*. Federal Reserve Bank of New York (July): 53-81.
- Feenstra, R. C. 1998. "Integration of Trade and Disintegration of Production in the Global Economy." *The Journal of Economic Perspectives* 12 (Fall): 31-50.
- Fieleke, N. S. 1995. "The Uruguay Round of Trade Negotiations: An Overview." *New England Economic Review*. Federal Reserve Bank of Boston (May/June): 3-14.
- Grether, J.-M. and M. Olarreaga. 1998. "Preferential and Non-Preferential Trade Flows in World Trade." World Trade Organization. Staff Working Paper ERAD-98-10 (September).
- Helpman, E. 1998. "The Structure of Foreign Trade." National Bureau of Economic Research Working Paper 6752.
- International Monetary Fund. 1999. "Trends and Issues in the Global Trading System." *World Economic Outlook* (October): 127-135.
- . *Direction of Trade Statistics Yearbook*. Various issues.
- Kowaluk, R. 1998. *Growth Perseveres in the Canadian Primary Textile Industry*. Statistics Canada. Catalogue No. 34-250-XIE.
- Krugman, P. 1995. "Growing World Trade: Causes and Consequences." *Brookings Papers on Economic Activity* 1: 327-62.
- Lane, P. 1998. "A Survey of World Trade." *The Economist* (October 3-9): 1-38.
- Little, J. S. 1996. "U.S. Regional Trade with Canada during the Transition to Free Trade." *New England Economic Review*. Federal Reserve Bank of Boston (Jan./Feb.): 3-21.
- McCallum, J. 1995. "National Borders Matter: Canada-U.S. Regional Trade Patterns." *American Economic Review* 85: 615-23.
- Rose, A. K. 1991. "Why has trade grown faster than income?" *Canadian Journal of Economics* 24: 417-27.
- Stone, J. A. and H.-H. Lee. 1995. "Determinants of Intra-Industry Trade: A Longitudinal, Cross-Country Analysis." *Weltwirtschaftliches Archiv* 131: 67-85.
- Trefler, D. 1999. "The Long and Short of the Canada-U.S. Free Trade Agreement." Paper prepared for the Micro-Economic Policy Analysis Division, Industry Canada. Mimeo. (June).
- Vincent, L. 1998. "Electrical and Electronic Products Industries Adapt to a Changing Environment." Statistics Canada. Catalogue No. 43-250-XIE.
- World Trade Organization. 1998a. "Globalization and trade." *Annual Report 1998*: 31-68.
- . 1998b. "International Trade Statistics." *Annual Report 1998*.
- Yeats, A. J. 1998. "Does Mercosur's Trade Performance Raise Concerns about the Effects of Regional Trade Arrangements?" *The World Bank Economic Review* 12: 1-28.