



Agriculture and
Agri-Food Canada


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Analysis of Canadian Agri-Food Trade

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Canada 

Executive Summary

World trade has increased over the last decade; however, during this time, agricultural trade has only seen modest increases. This overall trend did not affect Canada, which experienced gains of over 92 per cent in its agri-food exports. Even with new markets for Canadian agri-food exports, such as Mexico, exports still continued to consolidate in the United States, which absorbed over two-thirds of Canada's agricultural shipments in 2002. Simultaneously with this consolidation to the United States, dispersion of Canadian agri-food exports *within* the country and a greater breadth of goods exported helped to offset some of the ramifications of consolidation.

Over the past decade, Canada has significantly increased its exports of meat and prepared grains, vegetables, and processed cocoa products. At the same time, small decreases in the grain trade occurred. These overall trends have shifted Canada's exports further to processed goods over bulk with the ratio rising from 64 per cent in 1993 to 79 per cent in 2002.

On the surface, Canada's agri-food and seafood trade balance remained high at over \$9 billion in both 1997 and 2002. In real dollars, however, Canada's trade balance fell by \$847 million over the period.¹ This is due to Canada's shift towards greater imports, as real imports rose by 6.2 per cent annually while real exports rose only 3.6 per cent annually.²

1. Levels of World Trade

World merchandise trade over the last decade (1993-2002) averaged increases of approximately 5.4 per cent per annum.³ By 2002, total global imports exceeded \$6.5 trillion (USD), up from \$3.8 trillion (USD) in 1993. The adoption of the North American Free Trade Agreement (NAFTA), further integration of the European market, and continuing talks at the World Trade Organization (WTO) are noticeable examples of increased trade liberalization that have contributed to the

¹ Real GDP is calculated by holding prices constant (here the prices are for the year 1997) and then calculating real GDP for future years based on changing quantities but frozen prices. Real GDP provides a more appropriate method for comparison between years that nullifies the effects of price inflation. It is, however, only a tool for comparison between years.

² All values in Canadian dollars, unless otherwise noted.

³ IMF Statistics.

sustained increases of world merchandise trade. Furthermore, the greater inclusion of large, developing economies, such as China, into these trading organizations has also fuelled trade growth.

The large growth rates seen in general merchandise trade, however, are not present in global agricultural trade. Over the eleven-year period 1990-2001, the agri-food trade values averaged an annual growth rate of only 2.6 per cent.⁴ This value is considered low because inflation hovered in this range. In 1990, global exports of agricultural products stood at \$414.6 billion (USD); by 2001, the value reached \$547.5 billion (USD).

As a percentage of total trade, agricultural and agri-food products composed 12.2 per cent in 1990, but fell to only 9.1 per cent of global trade in 2001. It can therefore be seen that while nominal levels of agricultural trade are growing, relative values are falling.

By value, the largest agri-food commodity classification traded is fish and seafood. Meat and its derivatives are second largest. Meat comprised approximately 8.3 per cent of global trade in 2002, up from 7.7 per cent in 1998. Of the meat traded, beef constitutes 33.8 per cent, pork 29.0 per cent, and poultry 18.3 per cent. While the value of pork traded increased by 23.5 per cent between 1998 and 2002, the traded value of beef increased by only 0.3 per cent. This is most likely due to the substitution of pork for beef in light of the effects of the BSE and foot-and-mouth crises in Europe over this period. The changes in the composition of demand may only be a temporary distortion and could return to pre-crisis levels once international confidence is rebuilt in bovine food security.

Table 1 GLOBAL AGRI-FOOD AND SEAFOOD TRADE BY PRODUCT, 1998-02			
	2002 Value	Share	Change (%)
OVERALL	478.198	100.00	-0.62
Fish and crustaceans	46.605	9.75	9.35
Meat and edible meat offal	39.458	8.25	6.70
Beverages and spirits	38.460	8.04	14.35
Edible fruit and nuts	32.919	6.88	1.21
Cereals	29.202	6.11	-13.76
Dairy, eggs and honey	25.625	5.36	3.67
Edible vegetables, roots & tubers	22.487	4.70	2.96
Food industry residues and waste	21.788	4.56	1.95
Oilseeds	21.498	4.50	-1.06
Animal & vegetable oils & fats	20.431	4.27	-9.68

Source: Global Trade Statistics (imports). Value is in billions of US dollars.

⁴ WTO.

Beverages were the third most valuable traded agri-food commodity. Of this, over 85 per cent was comprised of alcoholic beverages, namely wine with a 36 per cent share. Natural and sweetened waters accounted for the remaining share.

One of the largest declines over between 1998 and 2002 was the trade in cereals. Primarily leading this decline were rice and barely crops. Wheat, the largest cereal by trade volume, also showed significant declines. Part of this can be explained by declining unit values for crops such as durum wheat and corn.

2. Changes in Composition of World Demand

While many large and well-established products had lacklustre growth rates, some lower-profile products had significant increases in world demand. Most of the commodities with large trade increases were primary goods, such as pineapples and cocoa powder.

Although accounting for only a one or two percentage point share of world agri-food trade each, high-value goods, such as wine, present significant trading opportunities as consumers shift preferences towards more refined agri-food goods. Overall, 81.4 per cent of global imports in 2002 were processed goods, up from 80.7 per cent in 1999.

	2002 Value	Change(%)
OVERALL	478.198	-0.62
Cocoa powder	0.753	101.11
Pineapples	0.862	75.83
Honey	0.672	40.91
Natural waters	1.713	29.95
Yogurt	0.901	28.62
Soybeans	11.778	20.93
Beer made from malt	5.467	19.46
Bread, cakes & pastry	8.664	16.78
Mink furskins	0.817	12.11
Dog and cat food	3.945	9.90

Source: Global Trade Statistics. Value is billions of US\$

This trend indicates that countries are shifting away from immediately exporting bulk goods and instead refining and processing the product domestically. This raises the value added before exporting to the world market.

Many processed foods showed large increases in spite of the overall downward trend in agricultural trade over 1998-2002.⁵ The increases seen in beer and refined grain products (bread, etc.), for example, are signs of increasing global affluence. Processed goods are very income

⁵ Global Trade Atlas

sensitive compared to bulk goods and thus rising global incomes should further the growth of this market segment.

3. Global Markets and Competition

Over the past decade, the emergence of developing countries, such as China, India, and Mexico, has lessened the influence of the traditional industrialized countries in the agri-food sector. Of traditional Canadian export competitors, both the European Union and the United States have lost some of their relative dominance. In 1990, European dominance of global imports amounted to over 64 per cent of world trade; by 2001, their share had dropped to only 53 per cent. On the other hand, the Americans' share increased. A full examination of import and export shares is described in table 3.

Import Share of Global Trade (%)		Export Share of Global Trade (%)			
	1990	2001		1990	2001
Intra-EU	47.1	39.7	Intra-EU	42.4	39.0
Extra-EU	17.5	13.5	Extra-EU	10.9	10.6
US	9.0	11.5	US	14.3	12.8
Japan	11.4	9.6	Canada	5.4	6.1
China	1.8	3.4	Brazil	2.4	3.4

Source: World Trade Organization

Much like exports, the relative import requirements of the top industrial countries have fallen, as developing countries' demand has outstripped developed countries' due to both rising population levels and increased affluence. With the exception of the United States, other industrialized economies, such as the EU and Japan, have lost considerable market influence in the agricultural import market.

Although developing countries' shares still represent small overall levels of world agricultural trade, their increased presence on the international stage provides opportunities for new and increased export markets. Furthermore, the inclusion of developing countries in institutions such as the World Trade Organization should further increase trade volumes with these countries.

Import Share of Global Trade (%)		Export Share of Global Trade (%)			
	1990	2001		1990	2001
China	1.8	3.4	Brazil	2.4	3.4
Mexico	1.2	2.2	China	2.4	3.0
Indonesia	0.5	0.9	Mexico	0.8	1.7
Malaysia	0.5	0.8	Chile	0.7	1.3
Thailand	0.7	0.8	India	0.8	1.2

Source: World Trade Organization

As evidenced in table 4, there have been large increases in the exporting capability of select developing countries. Brazil, Mexico and Chile have greatly increased their presence in export markets. As technology continues to precipitate, their production capabilities should steadily increase. Although still small players, these countries pose significant competition to the dominance of industrialized nations in agri-food exports.

Developing countries' rising influence is more pronounced in global agri-food export than import markets. With greater openness to world markets, countries such as China and Mexico have demonstrated greater willingness to trade. These markets provide significant opportunities for industrialized nations both with traditional exports of bulk goods but also with higher-value and differentiated products.

The growth in food demand of Asian countries is standard to any poor but highly dynamic economy. Over the period 1995-2002, real GDP increased 28.5 per cent in the United States; GDP in Asia grew more than 54 per cent.⁶ These divergent growth rates can be used to partially explain the increased relative demand of Asia. Income elasticities of food also play a significant role. Income elasticity of food measures the responsiveness of changes in income to changes in the consumption of food. A value of 0.1 indicates that for every ten per cent increase in income, food purchases will increase by one per cent.

The United States' income elasticity of food is one of the lowest in the world at 0.103. The average for Asian countries was 0.346.⁷ Using these numbers the increase in expenditures on food products can be calculated. Real food expenditures in the United States were projected to increase 2.9 per cent between 1995 and 2002. For Asia, on the other hand, real food expenditures across the region were expected to jump 18.7 per cent.

This disparity between Asia and the United States illuminates where major agri-food and seafood growth was at the end of the century. Using projections from 2003 through 2010, real US GDP is expected to grow 26.4 per cent while Asian growth should remain extremely strong with overall real gains of 58.1 per cent.⁸ It is standard that as incomes rise, income elasticities of food become smaller as people spend

⁶ *International Macroeconomic Data Set*, USDA

⁷ *International Food Consumption Patterns*, USDA. Because of data limitations in the compilation of this index, this value was derived by taking a weighted average of available countries. Countries such as China and India have been excluded.

⁸ *International Macroeconomic Data Set*, USDA

decreasing amounts of additional income on food consumption. Even so, Asia's income elasticity of food will be well above the United States' and, coupled with much stronger real GDP growth, will be a large and growing market for agri-food and seafood products.

4. Canada's Agri-food Exports

Canada's agri-food and seafood exports are very high against other industrialized countries, as measured relative to GDP. As a share of total trade flows, however, Canada's agri-food and seafood trade values are below the average (7.5 per cent), at 6.7 per cent in 2000.

Overall nominal Canadian agri-food and seafood exports stood at \$30.5 billion in 2002, up from \$25.5 billion in 1997. Between 1997 and 2002, this translates into an annual real rate of growth of 3.6 per cent.⁹ Canada's nominal imports stood at \$22.7 billion in 2002 and \$16.4 billion in 1997. Overall, this accounted for an annual real increase of 6.2 per cent. Canada's real trade balance in agri-food and seafood products, therefore, decreased by \$847 million in the years 1997-2002.

Broken down by product group, the ten-year period shows considerable growth in some areas, as demonstrated in table 5. The sector with the largest growth by value was the export of meat and meat offal. Between 1993 and 2002, the category showed an almost \$3 billion increase. Mitigating the overall large increases, however, was a small increase in the value of cereals exported. What had been Canada's main export in 1993, had stagnant performance for the next decade.

As social and legal norms changed with regards to the acceptance of tobacco products, Canada's agricultural sector adapted. In 1993, tobacco products and their substitutes accounted for 5.1 per cent of Canada's agri-food and seafood exports. Within ten years, however, this crop contracted by 76.5 per cent and accounted for less than 0.7 per cent of Canadian agri-food exports in 2002. Given the overall large increases in the rest of the agri-food sector, overall trade was not severely affected.

⁹ Statistics Canada

Table 5		CANADIAN AGRI-FOOD AND SEAFOOD EXPORTS BY PRODUCT				
1993			2002		Change	
	Value	Share		Value	Share	%
OVERALL	15,896.6	100.0		30,544.4	100.0	92.1
Grains, bulk or cereals	3,534.1	22.2	Meat & edible meat offal	4,378.8	14.3	230.5
Fish and crustaceans	2,297.3	14.5	Fish and crustaceans	4,139.2	13.6	80.2
Live animals	1,396.1	8.8	Grains, bulk or cereals	3,672.3	12.0	3.9
Meat & edible meat offal	1,325.0	8.3	Live animals	2,497.9	8.2	88.5
Oilseeds	1,290.7	8.1	Oilseeds	1,956.0	6.4	51.5
Beverages and spirits	878.7	5.5	Prep. grains & pasta	1,828.4	6.0	331.6
Tobacco and substitutes	815.0	5.1	Edible vegetables, roots, pulses	1,697.6	5.6	227.2
Edible vegetables, roots, pulses	518.8	3.3	Beverages and spirits	1,412.8	4.6	60.8
Food industry residues & waste	449.2	2.8	Preparations of vegetable, fruit & nuts	1,116.7	3.7	355.2
Prep. grains & pasta	423.6	2.7	Misc. edible preparations	1,034.2	3.4	207.4

Source: STATISTICS CANADA.

Over the ten-year period, the growth of processed agricultural products over traditional primary goods drove the overall gains in agri-food exports. Goods such as grain products and pasta, vegetable and fruit preparations, and cocoa-based commodities all saw growth greater than 200 per cent. This shift of production from an emphasis on primary to processed goods provides Canada with an opportunity to derive greater gains from exports by profiting from the increased value added.

Disaggregating only agri-food exports into bulk and processed, the results show that the growth of processed foods greatly outstripped bulk foods. Over the period 1993-2002, values of the entire processed goods sector more than doubled while bulk exports effectively remained stagnant. This shift towards increasing value added within Canada has helped to diversify Canada's export mix. Furthermore, processed goods are less price-sensitive than bulk goods. The longer manufacturing process, coupled with numerous inputs, smoothes out fluctuations in weather, political changes, and raw commodity prices. That Canada is moving in this direction should provide greater stability to the industry. The level of processing is outlined in table 6.

	1993	1997	2002	1993-2002
	Value	Value	Value	Growth (%)
Bulk	4,780.1	8,732.0	5,536.0	15.8
Processed	8,557.8	13,770.0	20,338.5	137.7
% Processed	64.2	61.2	78.6	

Source: STATISTICS CANADA. Note: Millions of Canadian dollars.

The shift to an export mix that favoured processed goods over bulk goods was only accomplished in the late 1980s for Canada. Canada's processed export share is lower than the global ratio but ahead of the Americans'.

5. Canada's Principal Export Markets

For overall agri-food and seafood trade, the United States is Canada's largest export market. Proximity (and thus low transportation costs), common legal and social customs, and the establishment of a free trade area have all contributed to the United States' dominance of Canada's exports. In 2002, the United States increased its share of Canada's exports, now accounting for over two-thirds of agri-food and seafood trade flows out of Canada. A detailed examination of intra-industry trade appears in the appendix.

Canada's exports are highly concentrated in only a few countries. By 2002, approximately 80 per cent of Canadian exports were delivered to only three countries. When compared to 1993, when the top three countries accounted for 72 per cent, the trend towards the consolidation of exports to only a handful of countries is risky. As witnessed with the BSE crisis of 2003, such heavy dependence on one country can have disastrous effects on selected industries. Assessing the benefits and liabilities of the United States' dominance of Canadian trade flows may be cause for review.

	1993		2002		
	Value	Share	Value	Share	
USA	8,776.2	55.2	USA	20,632.2	67.5
Japan	2,195.8	13.8	Japan	2,882.4	9.4
China	475.6	3.0	Mexico	772.0	2.5
S. Korea	405.2	2.5	China	512.0	1.7
Belgium	265.3	1.7	Belgium	376.8	1.2
UK	255.4	1.6	Algeria	359.5	1.2
Brazil	249.4	1.6	UK	332.8	1.1
Mexico	237.5	1.5	S. Korea	294.5	1.0
Algeria	171.3	1.1	Hong Kong	259.4	0.8

France	170.6	1.1	Taiwan	206.0	0.7
Above Total	13,202.6	83.1		26,627.6	87.1

Source: STATISTICS CANADA. Note: Millions of Canadian Dollars.

The large share of exports ending in the United States may present problems from a broad perspective. If the border closes because of security concerns or there are political differences, for example, Canadian exporters could be adversely affected. From an economic standpoint, however, the trend is not as alarming.

While the absolute and relative quantity of exports to the United States has been undoubtedly increasing, the composition of goods exports has also diversified. In 1993, the top five categories of agri-food and seafood exports to the United States accounted for 58.0 per cent of the total. By 2002, that value had decreased to 54.9 per cent, indicating that a wider range of goods is simultaneously being exported.¹⁰

Additionally, Canada exported at least \$50 million worth of agri-food and seafood goods in 59 different categories to the United States in 2002.¹¹ In comparison, Canada exported that much in only 12 categories to the EU, 6 to Japan, and 4 to Mexico. This measure suggests also that, although overall trade flows are increasing to the United States, their composition is much broader and thus better protected.

Furthermore, a disaggregation of trade flows between Canada and the United States yields some interesting results. Breaking down exports by state, there has been a shift away from the traditional markets that Canadian producers have used. States such as Illinois and Pennsylvania have seen large increases in Canadian exports, while Massachusetts, with only 6.4 million inhabitants, comprises a disproportionately large share.

¹⁰ STATISTICS CANADA. Based on the top five categories of 2-digit HS codes.

¹¹ The groupings were 4-digit HS codes. Source: STATISTICS CANADA.

Table 8 LEADING CANADIAN AGRI-FOOD AND SEAFOOD EXPORTS BY STATE					
1993			2002		
	Value	Share		Value	Share
New York	1,296.4	8.2	Massachusetts	1,837.4	6.0
Massachusetts	900.8	5.7	New York	1,794.7	5.9
Washington	841.3	5.3	California	1,669.6	5.5
California	478.4	3.0	Illinois	1,279.5	4.2
Michigan	425.2	2.7	Washington	1,194.5	3.9
Minnesota	396.4	2.5	Pennsylvania	1,189.7	3.9
Illinois	377.5	2.4	New Jersey	858.1	2.8
Pennsylvania	339.9	2.1	Michigan	749.6	2.5
New Jersey	304.2	1.9	Ohio	715.3	2.3
Ohio	259.8	1.6	Minnesota	659.7	2.2
Above Total	5,619.9	35.4		11,948.1	39.2

Source: STATISTICS CANADA. Note: Value is millions of Canadian dollars and share is of global Canadian exports.

Interestingly, the relative market share of so-called 'border states' has been lessened. In 1993, 42.2 per cent of Canadian agri-food and seafood exports to the United States went to American border states (i.e., those states that share a land border with Canada: Washington, Idaho, Montana, North Dakota, Minnesota, Michigan, New York, Vermont, New Hampshire, Maine, and Alaska). Border states comprise only 16.3 per cent of the American population. By 2002, border states received only 29.6 per cent, indicating that there has been a greater dispersion of Canadian goods within the United States and therefore a greater alignment of goods with population centres.

Within table 7, there are notable shifts in the relevance of certain countries regarding the purchase of Canada's agri-food and seafood exports. Japan, for example, has remained Canada's second most important market in spite of losing both relative market share and nominal value purchased. This decline, however, does not necessarily indicate that Canadian agri-food exporters have done poorly in this market. Table 9 demonstrates how Canada fared relative to foreign import demand.

Table 9 DISTRIBUTION OF CANADIAN AGRI-FOOD & SEAFOOD EXPORTS				
	Share of Canadian Exports		Canadian Share of Imports	
	1997	2002	1997	2002
United States	52.00	67.55	19.96	23.06
Japan	12.11	9.42	4.96	5.69
Mexico	1.77	2.53	5.12	6.14
China	2.68	1.69	4.87	3.76
United Kingdom	1.30	1.09	1.21	1.03
South Korea	1.83	0.96	3.24	2.29
Hong Kong	1.48	0.86	3.50	3.21
Taiwan	0.68	0.69	2.23	3.03

Source: World Trade Atlas. Ordered by rank in 2002 of share of Canadian exports.

In Japan's case, their import numbers present a qualification to a cursory examination of Canada's export shares. Although Japan's share of Canadian exports has decreased, Canada's share of Japanese imports has increased. Over this period, Japan has been plagued by a deep and prolonged recession. Taking the recession into consideration, Canadian agri-food and seafood producers have done well to have increased their market share in Japan in a declining agri-food and seafood market.

China, to a greater extent than Japan, has lessened its relative value of imports from Canada. Between 1993 and 2002, there were no major trading impediments; in fact, over that period China joined the WTO. Unlike Japan, however, China's overall economy boomed. China's global imports of agri-food and seafood products increased by 27 per cent between 1997 and 2002. With one-fifth of the world's population, China is a key export market. The significant loss of import market share in such a large and promising market remains a challenge for Canada's trade pattern.

Table 10	SELECTED CANADIAN AGRIFOOD AND SEAFOOD EXPORTS BY COUNTRY					
	1993		1997		2002	
	Value	Share	Value	Share	Value	Share
Mexico	237.5	1.5	451.9	1.8	772.0	2.5
Chile	53.1	0.3	92.0	0.4	59.5	0.2
Israel	28.9	0.2	6.5	0.03	13.0	0.04

Source: STATISTICS CANADA. Value is in millions of Canadian dollars. Share is of Canadian exports.

The three countries with whom Canada has signed free trade agreements over the last decade are Mexico in 1994 and Chile and Israel in 1997. The results since implementation have had dichotomous results with respect to Canadian exports. Table 10 displays the results. Mexico has greatly increased its share of Canadian agri-food and seafood exports; simultaneously, Canada has increased its share of Mexican agri-food and seafood imports. These numbers demonstrate that the implementation of NAFTA certainly did not harm the overall Canadian agri-food market.

The effects of the free trade agreements signed with Chile and Israel five years after the implementation date have yet to materialize in the agri-food sector. In fact, Chile's share of Canadian exports has declined. Furthermore, between 1997 and 2002, Canada's share of Chilean agri-food and seafood imports fell from 5.3 per cent to 3.4 per

cent and Canada's share of Israel's imports fell from 0.7 to 0.6.¹² It is possible that the benefits of these free trade agreements may not have materialized immediately because of time-delayed tariff-removal schedules. Given that relative shares have not remained constant over this period, this indicates that the benefits of these agreements have yet to appear in the agri-food and seafood market.

6. Canada's Top Export Markets by Commodity

1993		2002	
	Share		Share
USA	72.42	USA	66.65
Japan	15.96	Japan	16.31
France	2.34	Mexico	5.59
Russia	1.76	South Korea	1.99
Mexico	1.67	Australia	1.64
Italy	0.65	Russia	1.41
Cuba	0.63	Taiwan	0.78
Hong Kong	0.60	China	0.70
Switzerland	0.56	France	0.69
Australia	0.47	Cuba	0.58

Source: STATISTICS CANADA

their patterns of demand.

Canada's three top export commodities in 2002 – meat, fish and seafood, and grains – have shown considerable change in the composition of demand. While the United States has remained the largest importer, secondary importers have had significant changes in

The export of meat has changed its focus away mainly from developed European countries to developing countries in Asia. The fall of Canadian exports to these countries may indicate that these once-lucrative markets may still be accessible, but have been overshadowed by developing countries and have had access blocked by non-tariff barriers.

The development of the Canadian fish and seafood export market is very similar to the meat market. The emerging Asian countries are replacing the traditional

1993		2002	
	Share		Share
United States	55.61	United States	67.96
Japan	27.38	Japan	13.27
France	2.07	China	4.95
Denmark	1.64	Denmark	1.83
Germany	1.60	France	1.37
Hong Kong	1.57	Hong Kong	1.35
Portugal	1.23	South Korea	1.12
Taiwan	1.21	Thailand	0.93
Dominican Rep.	0.79	United Kingdom	0.91
Netherlands	0.72	Belgium	0.76

Source: STATISTICS CANADA

¹² Chilean data from World Trade Atlas, Israeli data from Global Trade Atlas (1998-2002).

European markets. Chinese imports of Canadian fish and seafood rose more than fifteen-fold over the decade. Much like overall trade, however, those growth numbers must be tempered. Over the period, Canadian exports of seafood maintained a constant market share of Chinese imports. Therefore, Canadian exports were only following the rise of Chinese buying power.

On the other hand, Canadian exports of grains are very different from trade in meat and seafood. First, exports of grains have effectively remained stagnant in nominal terms. Second, it is apparent

Table 13 CANADIAN GRAIN EXPORTS BY COUNTRY			
1993		2002	
	Share		Share
United States	15.85	United States	22.02
China	12.65	Japan	9.94
Japan	12.35	Algeria	8.77
South Korea	9.19	Mexico	5.70
Brazil	6.59	Venezuela	4.78
Algeria	3.79	Morocco	4.07
Saudi Arabia	3.56	Indonesia	3.77
Indonesia	3.41	Colombia	3.27
Mexico	2.95	Tunisia	3.19
Iran	2.88	Philippines	2.95

Source: STATISTICS CANADA

that the United States' dominance is considerably less in grain imports than either meat or seafood. Third, the countries that import Canadian grain are, on the whole, neither European countries nor emerging Asian economies. Primarily, they are composed of developing countries from around the globe. Moreover, many these countries have little capacity, either because of climate or population density, to domestically produce such crops. With the eastward expansion of the European Union, increased global production of these crops will most likely occur as technology is diffused and subsidy levels change. This will put greater competitive pressures on Canadian grain exporters.

7. Trends and Opportunities for Canadian Agri-Food Exports

As discussed in previous sections, there are certain commodities that have experienced significant global growth over the last decade. Some of the growth of these products, however, cannot be captured by Canadian exports because of climate patterns and growing conditions. These include cocoa powder and pineapples.

Table 14	SELECTED CANADIAN AGRI-FOOD AND SEAFOOD EXPORTS		
	1993 Value	2002 Value	Growth 1993-2002
OVERALL	15,896.7	30,544.5	92.1%
Tomatoes, fresh	8.3	274.2	3183.9%
Milk and cream, not reduced or sweetened	0.3	8.3	2423.4%
Margarine & like preparations	2.4	42.1	1664.7%
Poultry	13.1	124.3	851.1%
Sauces and condiments	35.1	285.9	715.4%
Shrimps and prawns, prepared	14.0	110.2	689.1%
Honey	15.1	87.9	483.2%
Crab, frozen	154.2	757.4	391.4%
Chocolate & food with cocoa	219.2	826.7	277.2%
Bread, pastry, and cakes	280.1	1,037.5	270.3%

Source: STATISTICS CANADA. Value is millions of Canadian dollars.

As demonstrated in the above table, select primary goods such as tomatoes, poultry and honey have had very high growth rates. On the whole, however, these products had small values. The largest dollar gains came from the prepared foods, such as bread, chocolate products, and condiments. The increased values of seafood products exported are due primarily to increases in quantity and not increases in price. Quantities of exported shrimps and prawns and crab increased by 576.4 per cent and 336.7 per cent, respectively over the period.

On the list above, there are three products that have not been mentioned that are popular in the agricultural trade literature. These three are pet food, bottled water, and wine. These goods are popular because demand for pet food and bottled water is expected to grow rapidly while Canadian production and quality of wine, a high-value product, has increased substantially.

Pet food exports have seen sustained increases in the last decade. It is a high-value product where year-to-year consumption is relatively stable. Further, pet ownership in many emerging markets is growing. Whereas global quantity exported has increased over 1993-2001 by 75.0 per cent, Canadian exports have increased 96.4 per cent. Moreover, the value of world pet food exports has only increased by 53.8 per cent over the same period while Canadian exported value grew almost 110 per cent.¹³

Having the largest amount of fresh water in the world, it is no surprise that Canada has led growth in the export of unsweetened

¹³ FAO Statistics

waters and ices. Over the period 1993 to 2001, the value of global exports increased by 93.6 per cent, while Canadian exports rose by 227.4 per cent. But the price that Canada can command for its water exports has been falling. At the same time, quantity exports increased by 83.5 per cent for global exports while Canadian quantity had growth of 486.1 per cent.¹⁴ Thus, while nominal prices for water in general are rising globally, the price at which Canada can export its water has been declining over the last decade.

Canada's export performance in wine has exploded in the last decade. Unlike other agri-food products where crops can almost be changed almost yearly, the establishment of a vineyard and all the processing equipment is a long and laborious process. Thus, the sustained increases that Canada has witnessed should propel future production. Whereas the world value of exported wine increased by 61.1 per cent between 1993 and 2001, Canadian exports more than quadrupled, rising 351.9 per cent. In this market, Canada is still an extremely small player. As at 2001, Canadian wine exports composed only 0.07 per cent of world wine trade. There is, therefore, much room in the international market for Canadian vintners to expand production and export.¹⁵

¹⁴ FAO Statistics

¹⁵ FAO Statistics

APPENDIX: Intra-industry Trade

Intra-industry trade is an important aspect in the trade of processed agri-food products. Defined, it is trade between two countries in the *same* good. This type of trade is the antithesis of classical economics, which saw trade occurring only because of differences in natural endowments, technology and relative skill levels of workers. In that model, all of one commodity would be made by one country and thus only one country would export for each good. Ricardo's comparative advantage still holds for trade between industrialized and industrializing countries, as those indicators are anything but convergent.

For trade between industrialized countries, however, where the values of capital-to-labour, technology and resources are close, the existence of intra-industry trade, along with inter-industry trade, provides interesting analysis. The existence of intra-industry trade can be explained primarily by economies of scale, diversity of consumer preferences and market structure. Because of this, consumer choices can be expanded while prices simultaneously drop.

An examination of intra-industry trade necessarily excludes bulk goods in favour of processed goods. Exploring the trade of homogenous goods (such as grain) provides little information and would primarily be based on land, climate and labour. Therefore, processed foods are a more robust instrument. One method of determining intra-industry trade is via the Grubel-Lloyd Index.¹⁶ This index measures the percentage of total trade that is intra-industry. A value of one indicates that exports perfectly equal imports and a value of zero indicates that there is only one-way trade in that product.

Table 15	CANADA-US INTRAINDUSTRY AGRIFOOD TRADE OF PROCESSED FOOD	
	1993-95	2000-02
Meat of bovine animals, fresh or chilled	0.933	0.331
Meat of swine, fresh chilled or frozen	0.143	0.282
Bread, pastry and cakes (w/o cocoa)	0.942	0.758
Chocolate and preparations with cocoa	0.769	0.559
Spirits and liqueurs	0.122	0.289
Plants, live	0.989	0.543
Beer, made from malt	0.192	0.272
Malt extract and flour prep. with <40% cocoa	0.769	0.987

¹⁶ The equation is $1 - \frac{|X - M|}{X + M}$. Data has been averaged over 3-year periods to smooth out year-to-year fluctuations.

Tomatoes, fresh or chilled	0.222	0.764
Water, non-sweetened	0.045	0.145

Source: STATISTICS CANADA (Consumer goods). Note: Items are top ten relevant categories of Canadian exports to the United States by value.

As seen in table 15¹⁷, there are considerable differences both among goods and between years. Trade data inherently have fluctuations, though fluctuations are less with processed products compared to bulk commodities. Overall, agri-food production is more prone to weather patterns than other industries. The United States was therefore chosen because of their dominance in Canadian trade and their relatively similar climate, geography and tastes.

Intra-industry trade of beef had significant reductions between 1993 and 2002 as Canada's net exports of beef rose sharply. There were similar drops for live plants. The data indicate that there is a general tendency away from extreme values of either perfect equality or one-way trade. Overall, intra-industry trade appears to be rising with the United States, which benefits both producers and consumers.

¹⁷ The USDA (1996) suggests aggregation at the 4-digit SITC level. For comparable data, 6-digit HS codes were used.