2014

Implications of Trade Trends Upon Canada-US Border Infrastructure

Border Policy Research Institute

BORDER POLICY RESEARCH INSTITUTE
WESTERN WASHINGTON UNIVERSITY

BORDER POLICY BRIEF | FALL 2014

Implications of Trade Trends Upon Canada – U.S. Border Infrastructure

Volume 9, No. 4 Fall 2014 Web Address: www.wwu.edu/bpri

Figure 1. Proportion of Total U.S. Foreign Trade Associated with Major Trade Partners (1990—2013)[1]

U.S. Imports
(% originating in country)

	1990	2000	2013
Canada	18.4	18.8	14.6
Japan	18.2	12.1	6.1
Mexico	6.1	11.2	12.4
China	3.1	8.2	19.4
Germany	5.7	4.8	5.1
RoW*	48.5	44.9	42.4
Total	100.0	100.0	100.0

U.S. Exports
(% destined to country)

	1990	2000	2013
Canada	21.1	22.6	19.0
Japan	12.4	8.4	4.1
Mexico	7.2	14.3	14.3
China	1.2	2.1	7.7
Germany	4.8	3.8	3.0
RoW*	53.3	48.8	51.9
Total	100.0	100.0	100.0

**Rest of World*

Introduction. The transportation and inspection agencies that build and operate border infrastructure are engaged in a constant process of facility planning, wrestling with decisions about where to invest limited resources. The *existing* situation at a facility is obviously influential—e.g., traffic volumes in excess of a facility's capacity; subpar workplace conditions; excessive maintenance costs for a decrepit facility. But equally important is the need to consider *future* conditions, such as the traffic forecast. This article discusses the volume of trade forecasted to occur at eight major ports-of-entry (POEs) along the Canada – U.S. border. The article draws from BPRI Research Report No. 21 by Steven Globerman, Ph.D., and Paul Storer, Ph.D. In their report they identify historical trends in the volume and composition of Canada – U.S. trade and then show how expected future trends might impact the relative growth in trade volumes at major POEs. Their emphasis is freight flows crossing the Canada – U.S. border by truck, rail and pipeline in the coming decade, all from the perspective of the U.S.

Major Historical Trends. Figure 1 highlights the manner in which nations have risen and fallen in importance as a U.S. trade partner over the past two decades. Canada has historically been the largest partner, but in relative terms this bilateral relationship has become less important in recent years, particularly so for U.S. imports. A major decline in the importance of Japan is evident, while Mexico and China have grown rapidly in importance with respect to both exports and imports. In fact, China and Mexico are the *only* major trade partners that have grown in importance over time, and that growth is particularly remarkable with respect to imports: the two nations accounted for 31.8 percent of U.S. imports in 2013, up from 9.2 percent in 1990. Significant declines were experienced by the other listed partners, including the bundled "rest of world."

Figure 2. Canada's Share (%) of U.S. Trade, by Commodity[2]

U.S. Imports		2-Digit HTS	U.S. Exports	
1990	2013	Commodity Category	1990	2013
15.3	28.8	27 Mineral fuels	17.6	16.6
35.2	22.4	87 Motor vehicles & parts	55.6	38.6
11.3	6.5	84 Machinery	21.6	21.2
7.9	2.6	85 Electrical machinery	21.6	16.2
22.0	24.0	39 Plastics & plastic articles	23.5	21.4

Commodity Trends. Figure 2 shows trend data for the five commodities that are most heavily traded between Canada and the U.S. For example, the figure shows that Canada was the source of 11.3 percent of total U.S. imports of category HTS 84 (machinery) in 1990, but in 2013 Canada accounted for just 6.5 percent of U.S. imports—i.e., Canada's importance shrank over time. Generally, Canada's importance declined for all commodities shown in the figure except for U.S. imports of plastics and mineral fuels. Also, with respect to categories associated with heavy manufacturing (HTS 84, 85, 87), the decline in U.S. *imports* was larger than that of *exports*. Because the likelihood of the continuation of a given trend is dependent upon the forces at work in specific economic sectors, a case-by-case discussion of the trends associated with some of the top commodities is provided. Globerman and Storer expect that these trends will persist throughout the coming decade.

» HTS 27 (mineral fuels). The U.S. has historically imported crude oil and natural gas from Canada, predominantly by pipeline. In turn, the U.S. has exported refined products to Canada by truck and rail. The development of the Alberta oil sands explains most of Canada's past increase in share of U.S. imports, but surging production of U.S. shale oil and gas is likely to temper (or reverse) the rate of growth of imports. U.S. exports of refined products were steady in the past, but there is the possibility of increased crude exports as U.S. shale oil is directed toward Canadian refineries in the east.

» HTS 87 (motor vehicles & parts). The decline in Canada's share of U.S. trade (both imports and exports) coincides with an increase in Mexico's share. Mexico grew in importance as a partner in the auto manufacturing process, and much U.S. production has moved to the southeastern states. China has grown as a U.S. export market. A reversal of these trends is unlikely.

» HTS 84 (machinery) & HTS 85 (electrical machinery). Demand for machinery is dependent upon the fate of market sectors that use machinery, and two major sectors have above-average prospects: construction might enjoy a modest expansion as the U.S. housing market recovers, and the oil/gas extraction sector is anticipated to expand. This overall expansion is applicable to both U.S. imports and exports of HTS 84, as well as exports of HTS 85. Imports of HTS 85 from Canada are unlikely to revive, because much Canadian production capacity has relocated to Mexico.

» HTS 44 (wood & wood products) & HTS 48 (paper & paper products). Canada has in the past been a source of both raw and dimensional lumber and of value-added wood and paper products. The prospect of an increase in U.S. lumber imports is tied to the fate of the U.S. housing market, which is likely to enjoy a modest expansion. With respect to value-added wood products, China grew as a U.S. import source at the expense of Canada, and a reversal is unlikely, given relative labor costs. With respect to paper, Canada is a major source of U.S. newsprint, but the use of newsprint is in decline as digital publishing becomes more prevalent.

» HTS 39 (plastics) & HTS 31 (fertilizers). Natural gas is a major feedstock in the production of both plastic and fertilizer. The growing supply of natural gas in North America should lead to lower costs of production for both commodities, which in turn should lead to expanded trade. Asian income growth will also drive the demand for fertilizer, as North American farms boost exports to Asia.

» HTS 90 (instruments). This category includes instruments used in diverse contexts, such as chip fabrication, medicine, and shale oil extraction and processing. There is potential for strong growth in demand for instruments, given the prospects within the medical and the oil/gas extraction sectors. The U.S. meets over half of Canadian import demand, so U.S. exports will be above average.

» HTS 71 (precious metals, gems). The market for jewelry is linked to age demographics, because older people spend a larger share of income on jewelry. As the proportion of older Americans and Canadians expands, the market for HTS 71 will grow at an above-average rate.

Flow Forecasts for Major POEs. Figure 3 reveals the relationship between eight major POEs and their associated commodity flows. These eight major POEs together handle 86 percent (by value) of Canada – U.S. trade, with the remaining 14 percent dispersed among more than 100 other crossings. For each POE, the percentage of trade handled by the port (in 2013, for U.S. imports and exports separately) is shown in the row immediately beneath the port's name. Note the disparity in size

Figure 3. Volume, Composition & Forecast of Trade at 8 Largest POEs

Of the total Canada – U.S. trade stream in 2013:

the % consisting of the given commodity[3]

the % traversing the given POE[4]

Im	Ex	HTS Category	#8 International Falls, MN Rail, truck, pipe (Im)		#7 Alexandria Bay, NY Truck only		#6 Champlain-Rouses Pt, NY Truck, rail		#5 Blaine, WA Truck, rail		#4 Pembina, ND Truck, rail, pipe (Ex)		#3 Buffalo-Niagara Falls, NY Truck, rail, pipe		#2 Port Huron, MI Truck, rail, pipe		#1 Detroit, MI Truck, rail, pipe (Ex)	
			4%	2%	3%	3%	6%	4%	4%	6%	5%	8%	17%	19%	19%	18%	27%	28%
			Im	Ex	Im	Ex	Im	Ex	Im	Ex	Im	Ex	Im	Ex	Im	Ex	Im	Ex
		Column subtotals >	80.3	61.0	54.7	49.7	52.2	49.5	48.6	48.4	52.0	69.9	59.8	56.8	67.9	56.0	70.3	67.1
16.8	17.3	87 Motor vehicles & parts		5.4		9.3	7.4	9.5		10.8	7.4	12.1	30.0	19.4	29.5	14.1	49.7	29.0
6.0	15.2	84 Machinery			4.5	14.1	5.1	13.8	8.6	15.7	10.9	22.3	6.0	13.5	7.4	15.5	10.1	16.8
2.4	9.0	85 Electrical machinery			4.1	5.4		6.8		7.8		6.0	2.6	7.5		9.0	2.7	10.1
33.0	8.3	27 Mineral fuels	25.1	18.2			13.9		6.8	5.8	10.5	22.6	12.9	7.6	15.5	5.2		
3.2	4.4	39 Plastics & articles	14.4	7.6	5.9	6.7		6.3	5.5	4.2		3.7	4.5	5.0	5.4	7.9	3.3	4.5
2.3	1.7	71 Precious metals, gems			23.1	6.1	14.1	9.4					3.8					
0.9	3.2	90 Instruments						3.8										3.2
2.0	2.2	88 Aircraft & parts							6.1									
2.4	0.8	44 Wood & articles	15.3						14.8									
2.0	1.7	48 Paper & paperboard			7.2		5.6		6.9									
1.5	2.0	72 Iron & steel															2.1	3.5
1.2	1.8	94 Furniture, prefab bldgs															2.5	
1.1	1.3	30 Pharmaceuticals												3.7				
1.4	1.4	29 Organic chemicals		6.6							4.3				3.7	4.2		
2.1	1.0	76 Aluminum & articles			9.9	8.1	6.2								6.4			
1.2	2.6	73 Iron & steel articles		15.5								3.3						
1.2	0.3	31 Fertilizers	12.3								11.5							
0.6	0.2	15 Fats & oils	4.1								7.4							
0.1	1.1	8 Fruit & nuts								4.1								
0.6	1.6	38 Misc. chemicals		7.7														
0.7	0.1	47 Wood pulp	9.3															
82.7	77.3	< Column subtotals																

% of trade stream at given POE that consists of given commodity[5]

Forecasted relative growth in trade:

= below average = average = above average

even within this group of eight—Detroit, the #1 port, handles over one-quarter of all Canada – U.S. trade, a volume more than seven times larger than International Falls, the #8 port. The figure also identifies the transport modes that exist at a given POE, listed in order of importance.

Figure 3 provides data regarding 21 HTS categories that accounted for most of Canada – U.S. trade in 2013. The relative proportions of each HTS category within the overall trade stream are shown in the left two columns. For example, HTS 85 accounted for 9.0 percent of all U.S. exports to Canada. Together, the 21 categories accounted for roughly 80 percent of both U.S. imports and exports (*left columns, bottom*). The colored shading in the left columns is based upon earlier discussion and is used to show whether trade growth for a given commodity (for imports and exports, separately) will be below-average, average, or above-average, with reference to a backdrop of forecasted national GDP growth. For each shaded cell in the left columns, corresponding coloring is used further to the right within the given row—e.g., U.S. *exports* of HTS 85 are expected to be above average (green shading of cell at left), so each *export-volume* value shown elsewhere in that row is printed in green.

Figure 3 is designed to reveal the association between commodities and POEs. For each of the top six HTS categories handled at each POE (imports and exports, separately), the percentage of the trade stream that is comprised of the given commodity is shown. Also shown just above the rows of HTS-specific data are "column subtotal" values for each POE—e.g., in the rightmost column are the percentages associated with the top six (by value) commodities exported to Canada through Detroit, and those six commodities account for 67.1 percent of the *total* export stream through Detroit. Storer and Globerman evaluate these POE-specific commodity streams in order to reach an overall conclusion regarding the relative future growth rate of trade (and thus the likelihood of the need for significant trade-driven infrastructure investments) at each POE.

» *Detroit, Port Huron, and Buffalo-Niagara.* Below average. By a substantial margin, these are the three largest POEs, and the goods flow at each is heavily weighted toward the auto manufacturing sector. Over a ten-year horizon, the continued ramp-down of that sector is expected to outweigh positive effects in growth sectors such as machinery and plastics. At Detroit, the New International Trade Crossing toll bridge is soon to be built. The historical decline in traffic volumes at the existing bridge, coupled with the forecast presented here, might partially explain why investing public funds in a new bridge has been a lower priority for the U.S. government than for the Canadian.

» *Alexandria Bay and Champlain-Rouses Pt.* Above average. These two POEs share a similar pattern, with growth in several export sectors expected to outweigh the decline of the motor-vehicle sector. HTS 71 (precious metals, gems) is an expected growth sector, but given the presumed high ratio of value-to-truckload, the impact of this sector upon traffic volumes is in question—further study would be useful. Finally, rail-borne exports of HTS 27 (mineral fuels) could ramp up at Champlain to support the transport of U.S. crude oil to Canadian refineries in the east.

» *International Falls.* Above average. The rail mode accounts for over 95 percent of both exports and imports at this POE, so the commodity mix consists of bulk-goods categories. Several of the major categories are expected to grow, while only two are expected to decline.

» *Pembina.* Above average. For *imports* at Pembina (the smaller trade stream at that POE), the rail mode is significant, so bulk goods are present and two such categories are expected to grow (HTS 84, 31). Exports, the larger trade stream, include several growth sectors. Although HTS 27 (mineral fuels) exports are carried mainly by pipeline, the other sectors of export growth are carried by truck and are sizable enough to offset the decline in the auto manufacturing sector.

» *Blaine.* Average. Although HTS 44 (wood & articles) is generally forecasted as a growth sector, beetle damage to western Canadian forests is anticipated to constrain wood imports at Blaine. Weighing other anticipated sectors of growth and of decline, overall growth is anticipated to be average.

Afterword. Against the backdrop of a long-term decline in Canada's relative importance as a U.S. trade partner, and in light of sector-specific global and continental trends described earlier, capacity constraints, particularly at the largest POEs, may be less severe over the next decade than policy-makers currently anticipate. An emphasis upon more flexible use of existing infrastructure (e.g., timeslot assignments, or congestion-based tolling) might merit greater emphasis. While this article discusses only the eight largest POEs, Globerman and Storer's full report includes a brief analysis of 29 small- and medium-sized POEs. The full report also defends the validity of a methodology based upon the *nominal-dollar value* of trade in light of factors such as exchange-rate fluctuations, inflation, changes in the prices of commodities, and variations in the ratio of value-to-weight. The interested reader is referred to the full report.

Endnotes. All citations refer to BPRI Research Report No. 21 by Steven Globerman and Paul Storer, published January 2015. Titled "An Assessment of Future Bilateral Trade Flows and Their Implications for U.S. Border Infrastructure Investment," the report can be retrieved at: www.wwu.edu/bpri/files/2014_Globerman_Storer_Report_21.pdf

1. Globerman and Storer, Tables 2 and 3.
2. Ibid., Tables 6 through 18.
3. Ibid., Tables 4, 5, 19, and 20.
4. Ibid., Tables 21 and 22.
5. Ibid., Tables 23 and 24.