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How Thick Is the Border?

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.	not available for any reference period
..	not available for a specific reference period
...	not applicable
0	true zero or a value rounded to zero
0^s	value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
^{p}	preliminary
^{r}	revised
x	suppressed to meet the confidentiality requirements of the *Statistics Act*
^{E}	use with caution
F	too unreliable to be published
*	significantly different from reference category ($p < 0.05$)

How Thick Is the Border?

By Mark Brown

This article in the *Economic Insights* series examines how much crossing the border adds to the cost of moving goods by truck. It quantifies the cost of border delays, border-related compliance costs, and other costs associated with moving goods to and from Canada's main trading partner. It is based on the paper *Trucking Across the Border: The Relative Cost of Cross-border and Domestic Trucking, 2004 to 2009*, by William Anderson and Mark Brown.

Border-related costs can affect the ability of Canadian businesses to compete in the U.S. market. Most of the trade between Canada and the United States is carried by truck.[1] This note provides a first-ever estimate of the magnitude and sources of these costs.

Ad valorem trucking costs

Chart 1 presents *ad valorem* trucking costs—the price charged to shippers measured as a percentage of the value of the goods being shipped—for domestic shipments as well as exports and imports. For domestic trade, *ad valorem* trucking costs ranged between 2.1% and 2.6% over the 2004-to-2009 period. This level was below that of exports and imports. *Ad valorem* rates for exports fell from 3.6% to 2.9%, while rates for imports rose from 2.6% to 3.5%.

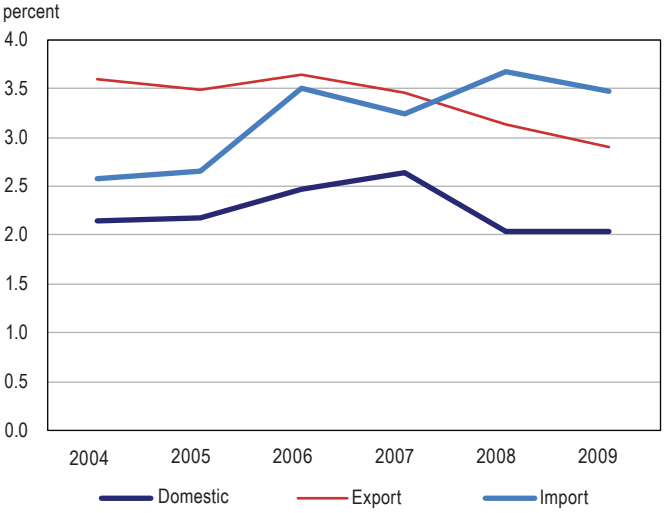
Trucking costs tariff-equivalent

Ad valorem rates depend on the distance over which the goods are shipped and the value of the goods being shipped, which vary between domestic and cross-border shipments. The *ad valorem* costs shown in Chart 1 are adjusted to take into account the differing commodity composition of domestic and cross-border trade and variation in the distance over which goods are shipped.

The difference between adjusted domestic and export and import *ad valorem* costs can be interpreted as a transportation-system-related tariff on cross-border trade. That is, it is the additional cost associated with moving goods to and from the U.S. that are passed on to purchasers of trucking services.

At the start of the 2004-to-2009 period, the tariff-equivalent was 0.9% on exports and 0.4% on imports. Over the period, the *ad valorem* tariff-equivalent on exports and imports followed different trends, reversing positions by the end of the period (see Chart 2).

Chart 1
***Ad valorem* transportation costs associated with domestic trade and exports and imports to and from the U.S. by truck, 2004 to 2009**



Sources: Authors' calculations from: Statistics Canada, Trucking Commodity Origin and Destination Survey, 2004 to 2009; and U.S Bureau of Transportation Statistics, North American Transborder Freight Data, 2004 to 2009, and Commodity Flow Survey, 2007..

While these tariff-equivalents may seem small, they represent a significant addition to overall transportation costs. For instance, in 2004, it cost 31% more to ship goods to the U.S. than would be the case if the same goods were shipped the same distance within Canada. In that year, it cost 18% more to import

1. U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Transborder Freight Data (2011). http://www.bts.gov/programs/international/transborder/TBDR_QA.html (accessed May 10, 2011).

goods from the U.S. than to ship domestically on an *ad valorem* basis. By the end of the period, this relationship had reversed. The reversal occurred when there was an increasing unbalance of truck-borne trade in favour of the U.S. In 2009, it cost 15% more to export but 28% more to import than to ship the same goods domestically.

Line-haul versus fixed tariff-equivalent costs

At issue is not only the magnitude of the additional costs of moving goods across the border, but also the sources of these additional costs: higher fixed costs and/or higher line-haul costs per shipment. Each speaks to different aspects of the regulatory environment that influences the cost of cross-border trade.

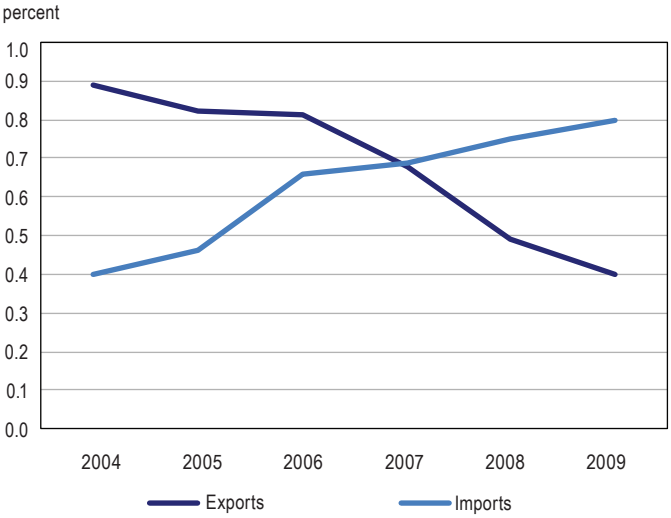
Delays at the border and other border compliance costs (e.g., participation in 'trusted trader' programs[2]) add to the fixed costs per shipment incurred by trucking firms, which also include facilities cost, insurance, and terminal (loading and unloading) costs.

For exports, the fixed-cost component of the tariff-equivalent remains essentially the same over the period, at about 0.5% of the value of the goods shipped (Table 1). The majority of the *ad valorem* cost of crossing the border stems from fixed costs, which are associated with the cost of delays at the border and border regulation compliance costs.

For imports, the fixed-cost component was much smaller, reflecting both a lower level of fixed costs for imports and a higher value per shipment, at least early in the period (see Table 1). Fixed costs on imports rose over the period, however.

Line-haul costs vary with distance and include driver costs, fuel costs, and vehicle depreciation and maintenance. They also depend on whether a trucking firm is able to obtain a return load, or backhaul. If carriers are unable to find a backhaul, they may raise their rates for the fronthaul portion of the journey.

Chart 2
Tariff-equivalent cost of exporting and importing goods by truck, 2004 to 2009



Sources: Authors' calculations from: Statistics Canada, Trucking Commodity Origin and Destination Survey, 2004 to 2009; and U.S. Bureau of Transportation Statistics, North American Transborder Freight Data, 2004 to 2009, and Commodity Flow Survey, 2007.

The odds of obtaining a backhaul depend on the balance of truck-borne trade. In 2004, the value of truck-borne trade between Canada and the United States was balanced, but by 2009 exports were only 79% of the value of imports.[3] As a result, the problem of obtaining a backhaul may have switched if it is now easier to find loads back to Canada than loads to the U.S.

The odds of obtaining a backhaul are also influenced by regulations that prohibit Canadian-based drivers from transporting goods between two points in the U.S. (cabotage rights). Canadian firms are, therefore, unable to accept shipments between U.S. points along their route back to Canada, potentially increasing the unpaid (deadhead) portion of their journey home.

Table 1
***Ad valorem* tariff-equivalents on exports and imports — Fixed and line-haul cost components, 2004 to 2009**

	Exports			Imports		
	Fixed cost	Line-haul cost	Total	Fixed cost	Line-haul cost	Total
	percent					
2004	0.49	0.40	0.89	0.11	0.29	0.40
2005	0.48	0.34	0.82	0.12	0.34	0.46
2006	0.56	0.26	0.81	0.18	0.48	0.66
2007	0.53	0.16	0.68	0.19	0.50	0.69
2008	0.48	0.01	0.49	0.21	0.53	0.75
2009	0.47	-0.07	0.40	0.24	0.57	0.80

Source: Authors' calculations from: Statistics Canada, Trucking Commodity Origin and Destination Survey, 2004 to 2009; and U.S. Bureau of Transportation Statistics, North American Transborder Freight Data, 2004 to 2009, and Commodity Flow Survey, 2007.

2. Trusted-trader programs such as the U.S. Customs-Trade Partnership Against Terrorism (C-TPAT) exchange more rapid clearance at the border with participants agreeing to invest in facilities, equipment, and staff devoted to improved supply chain security.
3. U.S. Bureau of Transportation Statistics, North American Transborder Freight Data, 2004 and 2009.

The line-haul cost portion of the tariff-equivalent on exports to the U.S. is presented in Table 1. It declined throughout the period, such that by 2008 line-haul costs for exports and domestic shipments were essentially the same. For imports, the opposite occurred. Line-haul costs rose through the period. The divergent trends in line-haul costs per kilometre for exports and imports are consistent with a change in the trade balance where the 'empty backhaul' problem had switched from affecting primarily exports to imports. That is, carriers may have switched from charging higher rates on exports (because they are less likely to obtain a load back to Canada) to charging higher rates on imports (because they are less likely to obtain a load to the U.S.).

Conclusion

It costs more to ship goods by truck across the border than to ship the equivalent goods by truck domestically. Cross-border trade costs more because of higher fixed costs per shipment, which is consistent with the costs of border delays and border-related compliance costs being passed on from trucking firms to their customers. It also costs more because of higher line-haul costs, which have trended upwards for imports and downwards for exports as the balance of truck-borne trade has shifted in favour of the U.S.

This article in the *Economic Insights* series is based on Economic Analysis Division research on the impact of trade on the Canadian economy. For more information, please see:

Anderson, W.P., and W.M. Brown. 2012. *Trucking Across the Border: The Relative Cost of Cross-border and Domestic Trucking, 2004 to 2009*. Statistics Canada Catalogue no. 11F0027M. Ottawa, Ontario. Economic Analysis Research Paper Series. No. 081.

Taylor, J., D.R. Robideaux, and G.C. Jackson. 2004. "U.S.-Canada Transportation and Logistics: Border Impacts and Costs, Causes and Possible Solutions." *Transportation Journal*. Vol. 43. No. 4. p. 5–21.