CROSS-BORDER TRANSPORTATION CENTRE

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THE BORDER AND THE ONTARIO ECONOMY

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AUTHOR'S PREFACE

In 2008 I took on a job with a long title: The Ontario Research Chair in Cross-Border Transportation Policy at the University of Windsor. My qualifications for this job were research expertise in the economic aspects of transportation and in Canada – US trade. Having lived and worked in both countries and crossed the border many times, I had also developed a great interest in the border. But interest and expertise are two different things.

Seeing myself described in the Windsor Star as an "expert" on the Canada-US border – and feeling a bit inadequate – I set out to become the expert I was expected to be. I quickly realized that there is relatively little to be learned about the border from refereed academic journals. "Border reports" published by think tanks, trade groups and chambers of commerce provided substantial insight, however. With the help of my research assistants, I sifted through a great deal of data and learned some useful things, many of which contradicted my expectations. Most importantly, I spoke to as many people as I could find with direct experience of how the border works and why it is important.

Three and a half years into this process, my expertise on the Canada-US border still seems incomplete. But I have learned a lot and I have done a great deal of thinking on the subject. My goal in this report is to impart as much as possible of what I have learned and concluded to a diverse and informed but non-specialist audience.

I have limited the scope of my report in two ways. First, I focus on the significance of the border to Ontario, rather than to all of Canada. Partly this is because I know more about Ontario, having lived much of my life here (and because the Government of Ontario was good enough to fund my chair.) More importantly, I think that Ontario's economic relationship with the US is quite different from those of other provinces. The second limitation in scope lies in my emphasis on the economic, as opposed to social, cultural or political dimensions of the border. My training is as an economic geographer, which means that I study the spatial configurations of economic systems, so I am most comfortable in the economic sphere. But since borders are political creations, my economic analysis cannot completely neglect the political side of things.

When I was considering my current job, I wondered if I would be satisfied with such a narrowly defined research topic as the Canada-US border. Now, I find the topic to be so broad and complicated that I may never get my head around it. My best hope is that this report will get others thinking about the border, because it means so much to every Ontarian, every day.

Acknowledgements:

A number of research assistants and associates at the Cross-Border Transportation Center made valuable contributions to this report. They include Charles Burke, Andrew Coates, Katharine Fisher and Alex Vucenovic. I also wish to thank Laurie Tannous for her comments and suggestion on an earlier draft. Finally, I wish to thank the Government of Ontario for funding my research chair at the University of Windsor.

1. INTRODUCTION

Canadians perceive the Canada-US border in various ways. Most Canadians will cross it at least once in their lives. For occasional crossers, it is a zone of intimidation. For many of us, it is the only place where we routinely come in contact with armed, uniformed law officers for whom we are objects of suspicion. On the way into the US we are questioned in ways that seem designed to trip us up. Some Canadians, especially those who were born in a select list of third countries, may even be subject to fingerprinting, which makes them feel like criminals. On our return to Canada, we are scrutinized to see if we are smuggling anything back with us. This makes us indignant, even when we are guilty. Combining all this with the bother of sitting in long queues and paying tolls, crossing the border is never a pleasant experience.

Many Canadians see the border as a political, cultural and legal divide – a line separating life, liberty and the pursuit of happiness from peace, order and good government. While it is an impediment to movement and commerce, the border is also a protective barrier behind which the fruits of our collective decision-making, ranging from government health insurance to gay marriage, can flourish. They may fear that making the border more permeable will somehow make us less Canadian.

For business people, the border may seem like a giant wall of red tape standing between them and their principal markets in the United States. When you are shipping goods, the border involves more than inspection lines. In an increasingly complex trade environment, there are forms to fill out, customs brokers to pay, regulations to abide by and a variety of scenarios to worry about. If a client in the States needs service, will your technical people be allowed to work across the border? If one of your employees is a recent immigrant, does he or she need a visa? Will an unpredictable border delay result in a late delivery and the loss of a contract? If you make the investments necessary to qualify for low-risk shipper status, will your goods really cross the border faster and more reliably? Your bottom line probably goes something like this. Suppose you are competing with a firm in Ohio to sell your product to a customer in Michigan. You may be able to match the competition in terms of quality, productivity, service, and price. But you have to do better than that because you have the border to deal with and the guy in Ohio doesn't.

This report addresses the border principally from the business perspective and its focus is on what the border means for Ontario's economy. The problems of occasional crossers are also important from this perspective, principally because they affect tourism. This is not to dismiss the concerns of those who see the border as a cultural and political prophylaxis, but a discussion of those concerns is outside the scope of this report. Of course, there are business interests who see the border as a line of defence against competition, but the prevailing argument here is that a permeable border is good for Ontario's economy and a "thick" border is bad because it causes production processes to stumble each time a good must cross the border.

Focusing on the Ontario economy, rather than the Canadian economy, is not meant to suggest that other provinces are not highly dependent on the border. Clearly, the economy of Alberta would suffer were it not possible to pipe oil and gas into the US. The Alberta and Ontario cross-border relationships, however, are quite different. Alberta has a conventional trade relationship with the US that may easily be explained in the language of comparative advantage. Ontario's trade, on the other hand, is driven by production processes that are integrated across the border, rather than the simple exchange of commodities and finished goods. This has implications, including the unique challenge of running supply chains across the border.

What is the border?

Geographers make a distinction between the words "boundary" and "border." A boundary is an abstract line that can be shown on a map, although it generally is not visible on the ground. It is a line on the geometric sense, in that it has a precise location and it does not take up space. A boundary is abstract, while a border is real. The border is made up of natural features and man-made structures that facilitate (highways, bridges, tunnels, ferries), prevent (fences, military installations), monitor (cameras, motion detectors) and control (border crossing facilities) movement of goods and people across the boundary. Some borders are military zones, but borders between friendly nations such as Canada and the US serve primarily peaceful functions such as customs and immigration control. Even between friendly nations, however, borders serve important security functions, by guarding against the movement of contraband smugglers, human smugglers, money launderers, and terrorists.

Officials of both countries need to execute a number of *border functions* that fall into three categories: customs, immigration control and security. Customs functions control the movement of goods, charging duties, imposing quotas and excluding goods that are prohibited for regulatory or other reasons. Immigration functions control the movement of people, whether they intend to cross the border temporarily or as permanent immigrants. Security functions involve detecting and preventing the cross-border movement of people and goods in violation of the law or with intent to violate the law. Customs, immigration and security functions overlap. For example, denying entry to a person who does not have appropriate documentation is an immigration function, but detecting the use of false documentation crosses into the area of security. Examining a shipment of chemicals to ensure that proper duties are being paid is a customs function, but examining the same shipment to ensure that it does not contain materials for use in a bomb is clearly a security function. Since these functions overlap they are often carried out by the same officials, and anything that retards one function retards the other two.

Airports constitute an increasingly important element of the border, even though they are generally not located at the boundary. In many countries, airports are the most common point of entry for personal travel and the source and destination of a large and growing share of international trade. Airports are a different kind of border because they generally do not mark the transition between two countries, but rather between one country and the rest of the world.

The Canada-US border

Despite the history of friendly relations between Canada and the United States, all three functions must still be executed at the Canada – US border. The fact that under NAFTA most Canadian and US made goods cross the border tariff free does not eliminate the customs function. Documentation must be provided to attest to the Canadian or American origin of tariff-free goods and duties must be collected on goods of third country origin.[1] Canada and the US have different immigration policies and existing trade agreements do not permit the free movement of labour, so all border crossers are subject to immigration inspection. While

[1] Kirgin and Matthieson (2008) note that the "rules of origin" documentation is so onerous that importers sometimes prefer to pay the most favored nation tariff on qualifying NAFTA goods (page 10).

there has not been military conflict between Canada and the US for almost two centuries, there have always been security issues, including the smuggling of drugs, firearms and other contraband and attempts at illegal immigration. Security concerns increased significantly over the past decade, first because of the capture of the "Millennium Bomber" at the Canada-US border in 1999 and then, more importantly, by the events of September 11, 2001. Although none of the September 11 terrorists entered the US through Canada, the Canada-US border has not been exempted from the general tightening of America's borders in reaction to the terrorist threat.

Executing border functions is costly for the Canadian and US border enforcement agencies, but it is also costly for border users, defined as people who cross the border or ship goods across the border. Costs are incurred in the form of delays in border queues; document preparation; the cost of fees, permits and visas; compliance with security regulations and participation in trusted traveller and shipper programs. The combination of border delays, customs administration, and security policies have raised the costs and complexities of trade, offsetting many of the benefits delivered by the North American Free Trade Agreement (NAFTA). Added to these conventional costs are the psychological costs of the border, which weigh most heavily on occasional crossers. An underlying theme of this report is that the Ontario economy depends on the movement of goods and people across the Canada-US border, therefore higher border-crossing costs are bad for the Ontario economy.

Organization of the report

The remainder of this report is organized as follows. Section 2 puts the border in context, explaining why it is so important to the Ontario economy, how it has been changing and how it relates to other trends affecting Canada-US trade, such as currency fluctuations and energy prices. Section 3 addresses the cost of the border, breaking it into components and reviewing empirical evidence of its magnitude. Section 4 describes trends in cross-border movements of goods and people, especially in the periods since 2001. Section 5 reviews policy options, with particular emphasis on the recently released *Canada-US Perimeter Security and Economic Competitiveness Action Plan*. Section 6 provides some concluding comments.

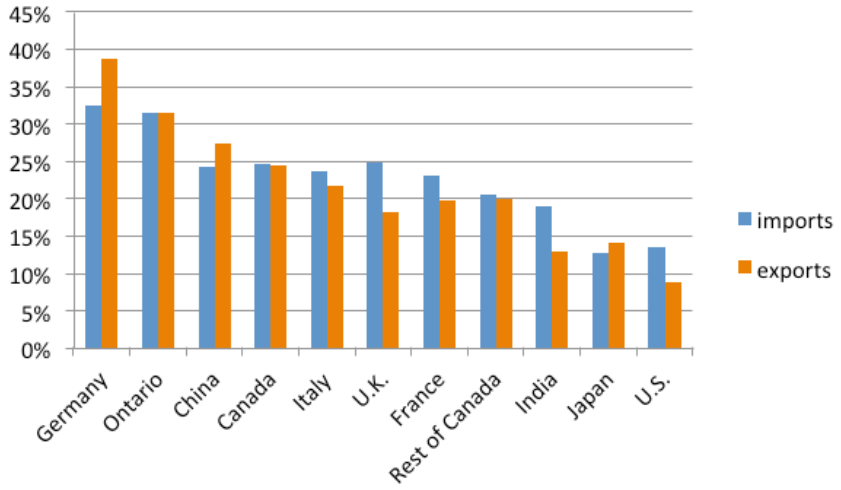
2. THE BORDER IN CONTEXT

Why is the border so important to Ontario? To begin to answer this question, consider the following five points about the Ontario economy:

Point 1: Ontario has a trade intensive economy.

If Ontario were a separate country, it would be one of the most trade intensive in the world. Figure 1 shows foreign imports and exports as proportions of GDP for Ontario and nine countries. Exports and imports each represent about 31% of the Ontario GDP. The same measures for all of Canada are just under 25%, and if you eliminate Ontario and calculate them for the rest of Canada, they are only about 20%.[2] Exports and imports make up much larger shares of Ontario's economy than of economies we often think of as "trade driven" such as China, India and Japan. Of the selected countries, only Germany – the export champion of the Western World – is more trade intensive than Ontario. Bear in mind, that this only counts foreign exports and imports. If exports and imports to and from other provinces are included, the values increase to near 50% for Ontario! Clearly Ontario's prosperity depends on its ability to move goods, services and people across its borders. This is a healthy indicator of openness in a global economy but it also highlights the performance of borders as a major policy concern.

FIGURE 1: IMPORTS AND EXPORTS AS PERCENTAGE OF GDP, 2010 [3]



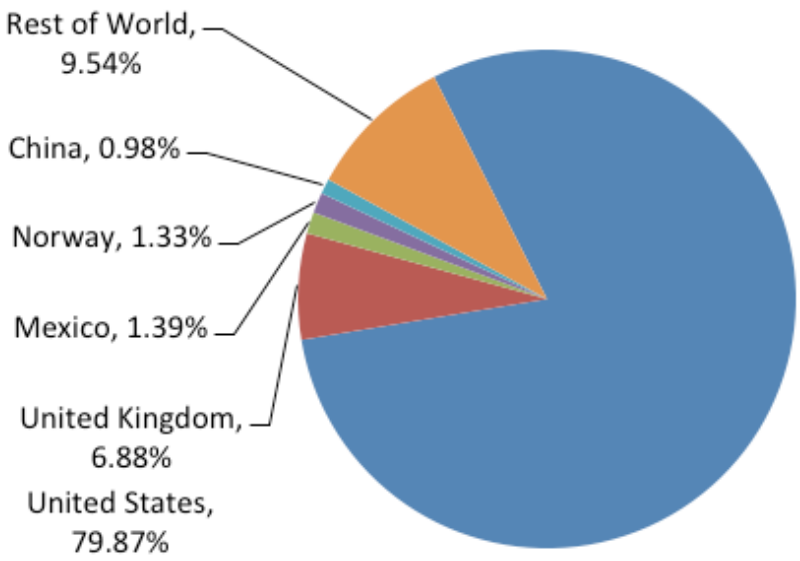
[2] A recent report by the Conference Board of Canada (2011) indicates that Canadian, and presumably also Ontario, export and imports data may be exaggerated by the fact that the same goods often cross the border two or more times at different stages in the production process – for example, a small part may cross the border once only to cross a second time embedded in a larger component and perhaps a third as a finished product. A value added approach, which avoids double counting, would give lower values, but would not change the basic observation that Ontario has a very trade intensive economy.

[3] National import and export values are from United Nations Statistics Division/Department of Economic and Social Affairs (2011) 2010 International Trade Statistics Yearbook, Volume II Trade by Commodity, Table A. National GDP values are from United Nations Statistical Division, National Accounts Main Aggregate Database, http://unstats.un.org/unsd/snaama/dnllist.asp (accessed: January 26, 2012).GDP and trade values for Ontario are from Statistics Canada. Table 384-0002 - Gross domestic product (GDP), expenditure-based, provincial economic accounts, annual (dollars), CANSIM (database). http://www5.statcan.gc.ca/cansim/a01?lang=eng (accessed: January 26, 2012)

Point 2: Ontario's international trade is highly focussed on the US.

Figure 2 shows Ontario's exports by country of destination. Almost 80% of Ontario's exports go to the United States. US bound exports are over 11 times higher than exports to the United Kingdom, which is the second highest destination. For better or worse (throughout history it has mostly been for better) the performance of the Ontario economy is tied to the performance of the US economy.

FIGURE 2: ONTARIO'S FOREIGN EXPORTS BY COUNTRY OF DESTINATION, 2010[4]



Point 3: Ontario's exports to the US are mostly of manufactured goods.

Figure 3 shows that 87% of Ontario's merchandise exports to the US are of manufactured goods, with over 35% in the automotive industry alone.

This puts the lie to the old notion that Canada's exports are mostly of resource products. It also has implication for the movement of goods across the border. Many imports and exports of manufactured goods represent links in cross-border supply chains. As I will explain in the next section, this kind of cross-border freight movement is especially demanding because it requires not only low transport costs but also high standards of speed and reliability.

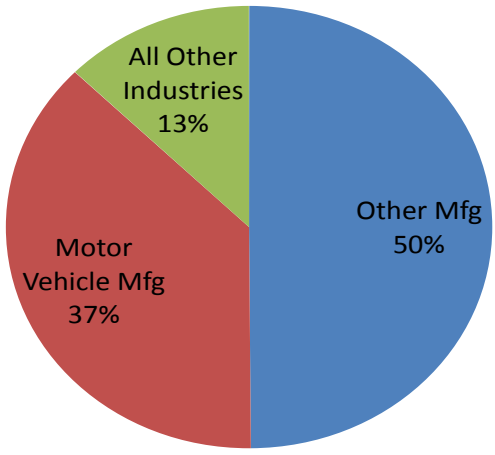


FIGURE 3: ONTARIO'S EXPORTS TO THE US BY INDUSTRY, 2010[5]

[4] Source: Statistics Canada & U.S. Census Bureau (U.S. Department of Commerce)

[5] Data Source: Statistics Canada & U.S. Census Bureau (U.S. Department of Commerce)

Point 4: Most of Ontario's exports of goods to the United States go by truck.

The dominance of the truck mode, as illustrated in Figure 4, implies that huge numbers of trucks and drivers must pass through highway crossings. These are generally the same crossings that carry tourists, cross-border commuters and others in passenger cars. Thus border crossings are magnets for highway traffic.

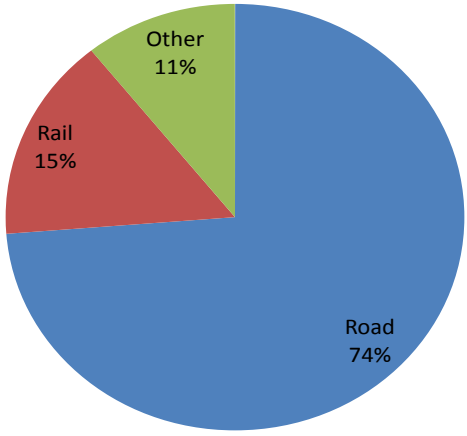
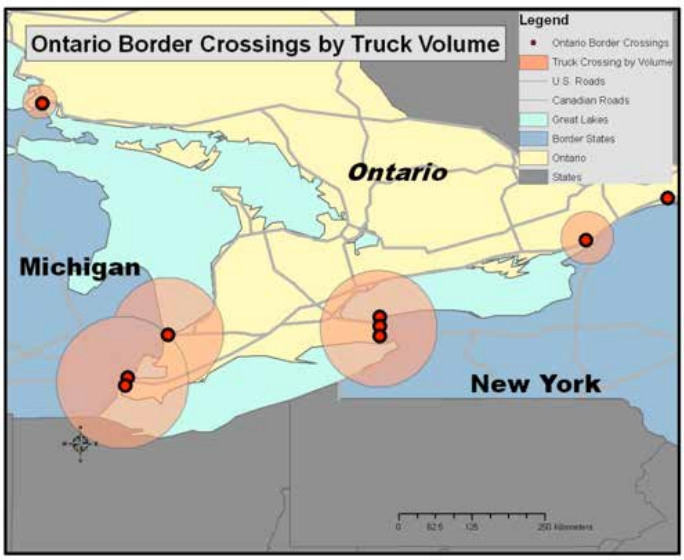


FIGURE 4 ONTARIO'S EXPORTS TO THE UNITED STATES BY MODE OF TRANSPORT, 2010[6]

Point 5: Ontario's exports by truck are focused on a small number of border crossings.

As the map (Figure 5) shows, this huge volume of truck movement is focused on just a handful of border crossings. With the exception of crossings in far western Ontario, all of these crossings are bridges or tunnels, many of which are quite old and none of which has more than three lanes each way. Why so few crossings? The industrial heartland of North America evolved at a time when water transportation was the cheapest freight option (as it still is for some bulk commodities such as iron ore.) The Great Lakes were the transportation corridor along which most industrial development took place. As transportation shifted, first to rail and then to road, the Lakes became obstacles to movement. Bridges and tunnels could only be built across the rivers connecting the Lakes. Thus, the lion's share of Ontario's exports and imports pass over four bridges and one tunnel across the St. Clair, Detroit and Niagara rivers.

FIGURE 5: MAJOR TRUCK CROSSINGS BETWEEN ONTARIO AND THE UNITED STATES



[6] Data Source: Transport Canada, adapted from Statistics Canada, International Trade database

What do these five points tell us? Taken together, points 1 and 2 suggest not so much that Ontario has a strong trade relationship with the US as that the Ontario economy is integrated into the US economy. "Integrated" means that Ontario is part of a larger North American economy that is based mostly in the United States. Ontario depends on the US, but the US also depends on Ontario. Canada is the largest destination for US exports and Ontario takes well over 50% of those exports.[7]

This does not mean that Ontario is in any sense the 51st state. Ontario has a host of cultural, legal and economic policies that are distinct from those of US states. It is loyal to a separate sovereign government with foreign, security and immigration policies that are distinct from US federal policies. Ontarians cherish those distinctions, but they come at a price. Despite the tariff-free treatment of most goods passing between Canada and the US, all goods must be subject to inspection and extensive paper work and all people involved in moving those goods are subject to immigration and security screening. This adds transaction costs to the sale of all Ontario-made goods in the US, placing Ontario's firms at a disadvantage relative to the US firms with which they compete.

The concentration of Ontario's exports in the manufacturing sector (point 3) is the outcome of a fascinating history of economic development that saw investment in Ontario factories by both Canadian and American industrialists during a period of tariff protection, followed by the integration of production systems during a period of trade liberalization. The result is not only shipments of finished manufactured products across the border but also of materials and components moving between Canadian and American factories in cross-border supply chains. This is one of the most important things to understand about the role of the border in Ontario's economy, so I will address it in detail below.

The fact that most exports move by truck (point 4) is consistent with the dominance of manufactured goods. Lower valued bulk commodity such as grain, ores, and coal are more likely to move by rail or marine modes, while high value goods such as manufactured and some perishable agricultural goods move by truck or air cargo. Rail may be an economical alternative for shipping manufactured goods if they are travelling long distances. (This is why assembled automobiles, which are often shipped over very long distances, are mostly shipped on trains.) But as it turns out, most cross-border shipments are relatively short, which reinforces the dominance of trucking. The critical role of trucking in exports gives us one more reason to worry about the condition and smooth functioning of Ontario's highway system. But it also means that we in Ontario should be very interested in the state of the US highway system, because we use it to deliver most of our exports to their final purchasers.

The limited number of border crossings between Ontario and the US (point 5) reminds us of how dependent we are on a few pieces of infrastructure. The Ambassador, Blue Water, Peace and Lewiston-Queenston bridges combined account for around 90% of Ontario's truck trade and almost 60% Ontario's total trade with the US. The term "critical infrastructure" is used lightly these days, but these four bridges are about as critical as infrastructure can be.[8] But it's not just the capacity and condition of the bridges that are important. Inspection plazas on either side of each bridge operated by US and Canadian border officials must complete the huge volume of customs, immigration and security functions, often in cramped spaces. Furthermore, the rail system, which is the second most important conveyer of Ontario's US trade, is almost as dependent as is the road system on a few tunnels and bridges at the Detroit, St Clair and Niagara Rivers.

[7] According to the U.S. Department of State (DOS) U.S. merchandise exports to Canada in 2010 were $249.1 billion comprised of motor vehicles and spare parts, industrial and electrical machinery, plastics, computers, chemicals, petroleum products and natural gas, and agricultural products

[8] The history and institutional structure of all major crossings is discussed in Tofflemire, 2011.

The message is simple. The Ontario economy cannot function without its cross-border transportation links with the United States. Those links are few in number, creating significant bottlenecks for cross-border freight and person movements. What if an accident, a failed safety inspection or a terrorist attack caused one of the major bridges to close for a period of weeks or months? Brief episodes, such as a snowstorm that cut off access to the Blue Water Bridge in 2010, illustrate that the remaining crossings cannot take up the slack without massive congestion. Because of dependence on cross-border supply chains, such an event would probably result in the closure of factories on both sides of the border, putting thousands out of work.

In many cases the infrastructure is inadequate. The Windsor-Detroit corridor is by far the most important trade conduit between Canada and the US. It's infrastructure includes 1) the Ambassador Bridge, which is over 80 years old, has only two lanes in each direction and has a private owner whose relationships with the governments of Ontario and Canada are strained, 2) a road tunnel that is too low to admit full sized trucks and 3) a rail tunnel that is too low to admit the latest generation of double-stacked container trains.

Despite this, I believe the greatest impediment to movement through the Windsor-Detroit corridor – or any other major crossing – is not the inadequacy of infrastructure but rather the huge burden of border functions that must be executed within the narrow confines of inspection plazas. When long queues of trucks and cars are seen at border crossings, it is generally not because the bridge or tunnel is too small, but rather because border officials are unable to clear people and goods as quickly as new cars and trucks are arriving. The popular perception that the governments of the US and Canada have done little to address this problem is simply not correct. But investments in new infrastructure, technology and personnel have been offset by new requirements for inspection and processing, many of which reflect the enhanced security regime instituted by the US after the attacks of September 11, 2001. Reduction in the length of queues in the past three years may convey a sense of complacency. As the North American economy recovers over the coming months and years, the severity of border delays is likely to increase.

So far I have emphasized merchandise trade, but trade in services is of ever increasing importance. Services account for 17% of Ontario's foreign exports in 2010. [9] Trade in services, ranging from tourism to producer services such as finance and consulting, depends on cross-border movement of thousands of people. Also, thousands of Canadians living in border areas such as Windsor and the Niagara Frontier commute to jobs in the US every day. Thus, delays and costs associated with cross-border movement of people are more than just irritants, they have significant economic impacts.

Cross-border integration

In the economic context, the term "integration" generally refers to the elimination of tariffs and other barriers to trade between two countries. Ontario's integration into the US economy goes considerably further than just the elimination of barriers, but rather extends to an intermingling of production systems. The best example is the automotive industry. It makes little sense to talk about Canadian cars as opposed to American cars, since all cars that are assembled in Canada contain many components produced in the US and most cars produced in the US contain components produced in Canada. (The Canadian automotive industry is highly concentrated in Ontario.) So the US and Ontario are not so much trading cars between them as producing cars together.

The roots of this integration can be found in the establishment of a Windsor assembly plant by Henry Ford in 1904. By the 1920s the other American car makers had also established plants in Ontario. These branch plants allowed them to work around Canadian tariffs on imported cars and also gave them access to other markets in

[9] Ontario provincial accounts, 2010.

the British Commonwealth under the Imperial Preference system. Canadian plants essentially duplicated the production systems of American assembly plants, but at a smaller scale. Naturally this was inefficient, but it led to the development of considerable industrial capacity in Ontario not only in automotive assembly, but also in parts production, tool making and steel.

By the 1960s, it was evident that a cross-border integration of production facilities, by which only a few models were produced in Canada and finished cars traded tariff-free, would be beneficial to all concerned. Furthermore, tariff-free trade in automotive components would make it possible for producers to specialize in production of one or a few components that could be delivered to assembly plants on both sides of the border. The Canada-US Automotive Products Trade Agreement of 1965 (commonly known as the Auto Pact) made all this possible.[10] Coming almost 30 years before the implementation of NAFTA, the Auto Pact gave rise to a higher degree of cross-border integration in automotive production than in any other industrial sector.

To understand how cross-border integration works, consider the case of Windsor, Ontario, which is billed as "Canada's Automotive Capital." Located across the river from Detroit, Windsor has over 10,000 people employed in automotive production.[11] The two largest private employers in town are a Chrysler assembly plant that is the sole global producer of the Dodge Caravan and the Chrysler Town and Country minivans and a Ford engine plant that produces high-tech V8 power engines for Ford F150 trucks and high end Mustangs. Every day, the Chrysler Group moves over 1300 component shipments; Chrysler ships over 2000 cars and trucks and makes over 1600 custom entries.[12] Most of the engines produced at Ford's plant across the border to large Ford assembly plants in Michigan and other states.

This illustrates two things. First, it makes no sense to refer to the Caravan as a Canadian minivan or to the F150 as an American truck. Both vehicles are produced jointly by the US and Canadian automotive industries. Second, the Ambassador Bridge is a crucial link in the cross-border supply chain that supports billions of dollars in annual production and thousands of jobs on both sides of the border. This is only a relatively small part of the automotive industrial complex that operates cross-border supply chains.

While all types of automotive production take place on both sides of the border, Ontario has developed a specialization in assembly plants. Figures 6a and 6b show that Ontario's automotive exports to the US are dominated by assembled vehicles, while imports are dominated by parts. (The figures also show a declining trend, to which I will return in Section 4). Top selling models such as the Chrysler 300, Ford Edge, Chevrolet Equinox, Honda Civic, Toyota Corolla and several others are assembled in Ontario. All are assembled for the North American market, with 80 to 90% of all finished vehicles going to export. All of the assembly plants rely on daily shipments from the US for many, if not most, of their components. Thus, they all rely on incredibly complex cross-border supply chains. Increasingly, they also rely on parts from Mexico, Europe and Asia, many of which may also be delivered across the Canada-US border. It is often quoted that the parts and components of an automobile can cross the border up to seven times. The Canadian International Council's 2008 report, A New Bridge for Old Allies, found that about one-third of Canada's exports to the U.S. are composed of goods which have been previously imported from the United States.

The automotive industry is the clearest example of integration across the border, but similar relationships are found in all manufacturing sectors and even in agriculture, where produce and even live animals cross the border every day as they move between farms and food processing facilities.

[10] The Auto Pact was not a free trade agreement so much as a managed trade agreement because it was applied only to North American producers already in business by 1965 and set minimum levels for Canadian production. Good reviews are found in Anastakis (2005) and Holmes (2004).

[11] This is a conservative estimate based on a database purchased from InfoCanada. While this is a large number, it represents a declining trend.

[12] Estimates based on conversations with Chrysler employees.

FIGURE 6A: ONTARIO'S AUTOMOTIVE EXPORTS TO THE US, 1992-2010[13]

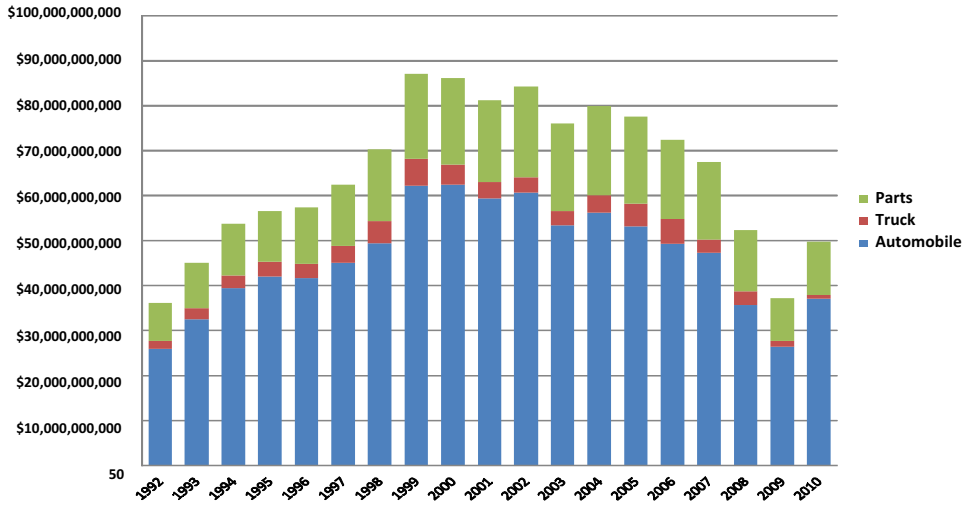
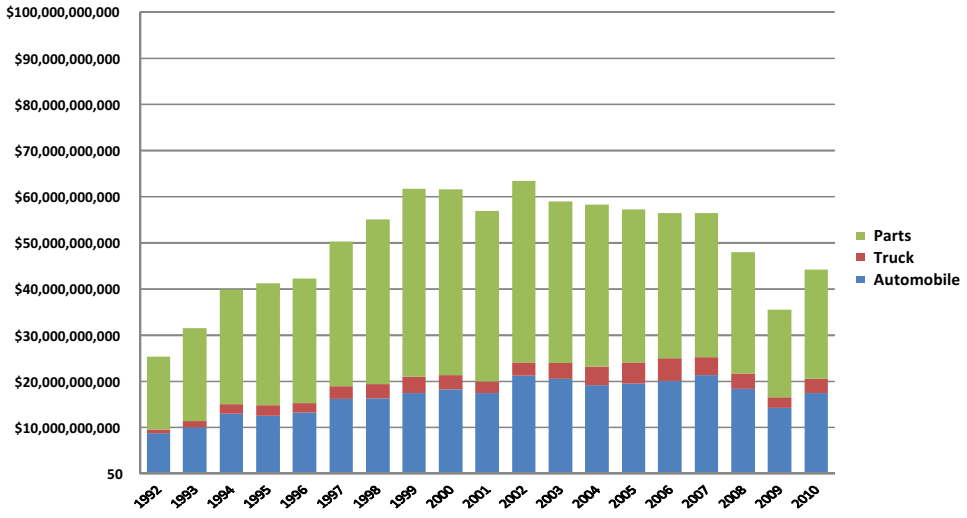


FIGURE 6B: ONTARIO'S AUTOMOTIVE EXPORTS FROM THE US, 1992-2010[14]



[13] Source: Industry Canada, Trade Data Online; http://www.ic.gc.ca

[14] Ibid.

The new security regime

The terrorist attacks on New York and Washington on September 11, 2001 led to a sea change in the operation of the Canada-US border. The near closure of the border in the days that followed led to massive backups of trucks along highways leading to major crossings. Tractor-trailer trucks clogged the streets of Windsor and other communities as drivers without lodging, food or even washroom services looked for somewhere to wait out the crisis. Thousands of business travellers and vacationers were stranded. In the weeks and months that followed, the worst of the queues cleared but cross-border movements of goods and people were still subject to long and unpredictable delays. A heightened security regime became the new normal at the Canada-US border.

Political pressure to tighten America's northern border was increased by suggestions – some coming from prominent US government officials – that one or more of the 9/11 terrorists had entered the US by way of Canada. While they were completely false, it is not surprising that many people believed them. The best known of a small number of foiled terrorist attacks against the US involved the "Millennium Bomber" Ahmed Ressam, who was captured entering the US from British Columbia in a vehicle loaded with the components of a bomb he intended to detonate at Los Angeles International Airport. This was just a year and a half before the 9/11 attacks.

I will not address the question of whether the US government overreacted in its new approach to security along the Canada-US border as it is beyond the scope of my expertise. But I can state three new realities that emerged in the aftermath of 9/11. The first is that security, with particular emphasis on terrorist threats, now outranks all other border functions from the US perspective. Even though Canada-US trade is mutually beneficial, Canadian calls to balance security and trade facilitation run counter to clearly-stated priorities of US agencies. The second is that many Americans see Canada with its multicultural society as one of the most likely points of entry for terrorists. For many, concerns about terrorism outweigh concerns about illegal immigration making the once-benign Canadian border seem more threatening than the Mexican border. The third reality is that where matters of homeland security are concerned, there is limited support for cooperation with foreign governments in the American political arena, even if the foreign government is an old and trusted ally.

Looking back at the period directly following 9/11, it is amazing how quickly institutional reactions took place. The US created the Department of Homeland Security (DHS) with a mission to "secure the nation from the many threats we face." [15] A variety of agencies were transferred to DHS from other executive departments or created from scratch. These include the two agencies with the greatest roles to play in along the Canada-US border: US Customs and Border Protection (CBP) and US Immigration and Customs Enforcement (ICE). CBP was created by combining the Customs Service (an agency of US Treasury Department) with components of other departments including Agriculture, Immigration and Naturalization and the Border Patrol. Its new location within DHS is consistent with a new emphasis on security. Other agencies included in DHS had important border functions including the US Coast Guard, whose mission includes patrolling boundary waters in the Great Lakes and the newly created US Transportation Security Agency (TSA), with particular responsibility for aviation security. This massive government reorganization was begun in 2002 and largely completed in 2003. In late 2003 Canada made a similar reorganization, combining Canada Customs with personnel from Citizenship and Immigration Canada and the Canada Food Inspection Agency to create the Canada Border Services Agency (CBSA) under the Minister of Public Safety. CBP and CBSA are now the main responsible agencies on the US and Canadian sides of the border.

Even swifter than the institutional changes was the initiation of discussions between Canada and the United States on border arrangement in the new security environment. Canadian

[15] From the DHS web site http://www.dhs.gov/xabout/, accessed on February 5, 2012.

Ambassador to the US Michael Kergin and Foreign Minister John Manley quickly initiated discussions with former Pennsylvania governor Tom Ridge, who had been called to Washington as a special assistant to the president on homeland security and would be the first director of DHS. The outcome was the Canada-US Smart Border Declaration, issued in December of 2001. It defined 30 action points under the four headings of secure flow of people, secure flow of goods, secure infrastructure and cooperation and information sharing.[16] The spirit of the declaration was to institute a risk-based approach to border security, essentially trying to identify low risk people and goods in advance so that scrutiny can be focussed where the risk is greatest. Some of the thirty points, such as the safe third country agreement for refugee and asylum seekers, were implemented while some others were not.

The rapid progress on Canada-US border management immediately following the 9/11 attacks seemed to lose momentum within a couple of years. This may have been due in part to the change in DHS administration from Director Ridge to Director Chertoff, a general reluctance within DHS to embrace the risk assessment approach,[17] and a shift to tri-partite negotiations including Mexico under the Security and Prosperity Partnership (SPP) initiative, which yielded little of substance. The Perimeter Security and Economic Competitiveness Action Plan released in December of 2011 therefore represents a return to active negotiation on the border following a period of slow progress.

The results of the new security regime for border users were initially longer waits at the border as each person and shipment was subjected to more intensive investigation. Gradually, new border crossing requirements were put in place, often as the result of US Congressional initiatives. For example, the US Trade Act of 2002 required trucks approaching the border to electronically transmit detailed information regarding the driver, carrier, shipper, receiver and a precise list of contents to CBP at least one hour before arriving for inspection. Longer advanced notification periods were required for rail, air and marine shipments. The Public Health, Security and Bioterrorism Preparedness Act of 2002 placed even more stringent advanced notification requirements on food shipments.

The most significant change in the Canada-US border from both practical and symbolic perspectives was the Western Hemisphere Travel Initiative (WHTI), which was mandated under the Intelligence Reform and Terrorism Prevention Act of 2004. WHTI required for the first time that people entering the United States from Canada must have either a passport or NEXUS card (a special border card, to be discussed later.) This was instituted for air travel in 2007 and for land border crossings in 2009. Not only could Canadians not enter the US without a passport, US citizens visiting Canada could not get back into the US without a passport. Besides the symbolic impact, this created practical problems because many Canadians and most Americans do not even hold passports. The impact of this change has been especially damaging on tourism.

The popular perception that the governments of Canada and the US have done little to alleviate border delays is wrong. Both CBP and CBSA have significantly increased the number of border inspectors since 2001 and new inspection lanes have been added to inspection plazas where possible. Improved technology for screening and identification has been implemented. Trusted traveller and trusted trader programs whereby individuals and firms are voluntarily subjected to background checks and security audits in return for faster border clearance have had some beneficial effects. Still, episodes of long border delays were still common at some crossings as recently as 2007. From 2008 to the present, the number of border crossers has decreased as a combined outcome of WHTI and the economic crisis. It is not clear whether long delays will return as the economy expands over the next few years.

[16] The thirty action points may be found at http://www.dfait-maeci.gc.ca/anti-terrorism/actionplan-en.asp, accessed on February 5, 2012.

[17] Quoted in Macleans on September 7, 2011, the first Minister of Public Safety and Emergency Preparedness Anne McLellan said that DHS officials retained a "zero-risk mentality."http://www2.macleans.ca/2011/09/07/security-trumps-trade-at-the-border/, Accessed February 5, 2012.

Complicating issues

Assessing the impacts of the enhanced security regime is complicated by a number of other changes affecting cross-border trade and travel that have occurred since 2001. These include changes in the Canada-US exchange rate, the fortunes of the North American automotive industry and trends in global commerce.

Exchange rates: In 2002 the Canadian dollar traded in a range of between 62 and 66 cents. By June of 2007 it reached a peak of $1.08US, before falling back to 78 cents in October of 2008. It climbed almost to its previous peak at about $1.06US in April of 2011 before settling back to a trading range at close to par. At the time of this writing (May, 2012) it was on the rise again.[18] The secular trend is therefore sharply higher, with trading ranges around 40% higher at present than in the first years of the 21st century. Of equal importance is the high level of volatility, with swings of 20% or more occurring within a couple of years.

Generally speaking an increase in the value of a country's currency has a negative effect on exports, as its goods and services become more expensive in foreign markets. It also makes it more expensive for foreign investors to buy or build plant and equipment. But these effects may be offset if the increased currency valuation reflects factors such as declining domestic prices or improvements in productivity or the quality of exports. Unfortunately, productivity growth has been relatively slow in Canada, which reinforces the negative impact of the dollar on exports. A rising Canadian dollar makes US goods and services cheaper in Canada, which could lead to increased imports. So a gradual rise in the Canadian dollar need not lead to a decrease in overall Canada-US trade, but rather to a change in the balance of imports and exports. (As we will see later, there is evidence of just such an impact.) The rising Canadian dollar has almost surely had a negative impact on tourism, as American vacationers no longer perceive that their money goes further in Canada.

Currency volatility may be a greater problem for Canada-US trade than the rising loonie. Consider the case of a manufacturer choosing whether to locate a production facility in Canada or the US. If, as is often the case, most of the market is in the US, the manufacturer is exposed to greater currency risk by locating in Canada. A project that looked profitable with a Canadian dollar valued at 80 cents might lose money with the currencies exchanging at par, unless there are offsetting wage reductions or productivity increases. Investors – whether foreign or domestic – hate risk, so the volatile currency can't help but retard investment in new capital geared principally for export.

Crisis in the automotive sector. Although there has been a lot of good news lately, the first decade of the 21st century was a dismal one for North American automotive industry. US sales of cars and trucks peaked at almost 18 million in 2000, but fell to about 16.5 million in 2007. With the economic crisis, sales collapsed to less than 11 million in 2009 and only recovered to 13 million by 2011.[19] Canadian sales followed a similar trend. The Detroit Three manufacturer's consistently lost market share through 2010, but reversed this trend in 2011. Increased assembly activity by the "new domestics" – Toyota and Honda in Canada, joined by Nissan, Subaru, Volkswagen and others in the US – was a bright spot, however.

The ups and downs of the automotive industry profoundly affect trends in Ontario's trade with the US. As Figure 3 shows, automotive accounts for 35% of exports. As Figure 6b shows, the trend in automotive exports from Ontario has been sharply declining since 1999. Thus we see a declining trend whose beginning roughly coincides with the onset of enhanced security, but which might have occurred anyway. (I'll dissect the automotive trade trends further in Section 4.)

[18] All currency values are from the Bank of Canada: http://www.bankofcanada.ca/rates/exchange/10-year-lookup/

[19] Data source is Wards Auto website: http://wardsauto.com/keydata/historical/UsaSa01summary

Global commerce: The past decade was also a period of rapid growth in global trade. For example, US imports of Chinese goods increased fourfold between 2000 and 2011 while imports of Canadian goods increased by only 37%[20] This does not mean that a significant proportion of Chinese import penetration came at the expense of Canada. Most imports from China have been in sectors where Canada does not have a significant export presence, such as apparel and consumer electronics. Gradually, however, China and other global competitors are impinging on traditional Canadian areas of specialization. For example, auto parts make up a small but rapidly growing share of America's Chinese imports. Perhaps the most profound example of rising global competition is the meteoric rise of imports of assembled vehicles from Korea.

Increasing global trade does not necessarily mean decreasing Canada-US trade. It just means that Canada's trade with the US represents a decreasing share of an increasing whole. But in this rapidly changing trade environment, there are too many factors at play to definitively blame a slowdown in Canada-US trade on a thickening of the border.

[20] Based on data from US Census Bureau: http://www.census.gov/foreign-trade/balance/c1220.html. The data are in nominal dollars, adjusting for inflation Canadian goods imports growth is in single digits (See Section 4.)

3. THE COST OF THE BORDER

A principal theme of this report is that the border imposes costs on the movement of goods and people that constitute a drag on Ontario's economy. In this section I will attempt to define categories of border costs and present available empirical evidence of their magnitudes.

Speaking very broadly, border costs are incurred by virtue of the border's existence. In other words, they are costs that would disappear if the border were to disappear. The fact that there are border costs does not mean that we would all necessarily be better off if the border were to disappear, however. There are also border benefits; for example the existence of the border allows Canada and the United States to make and enforce their own policies on things like firearms and immigration. I shall avoid what would be a highly abstract exercise of comparing border costs and benefits. Let it suffice to say that a reasonable objective is to preserve the political and social benefits of having a border while minimizing its economic costs.

A Typology of Border Costs

Border costs can be defined within three more specific categories::

1) border-specific costs, which are associated with border functions and generally are incurred directly at the border,
2) trade costs, which are incurred by individuals and firms by virtue of the fact that they are moving themselves or their goods between two countries, and may or may not be associated with border functions, and
3) general equilibrium costs, which accrue to the economy more broadly whenever cross-border commerce is retarded. These are not mutually exclusive categories. Border-specific costs are a subset of the broader set of trade costs. General equilibrium costs are an outcome of trade costs, as I will explain below.

Border Specific Costs: Delays in border queues for cars and trucks are the most familiar costs within this category. In some cases these delays may be due to inadequate infrastructure, but more frequently they occur because it is not possible for officials to execute all the required border functions as quickly as new cars and trucks arrive at the inspection plaza. Estimating delay costs is a standard procedure for transportation analysts. The number of hours spent in traffic or border queues is simply multiplied by an estimate of the value of time. But as I will explain below, the value of time may be extraordinarily high for goods in cross-border supply chains.

Tolls and fees also fit into this category. Most cross-border movements from Ontario are on bridges or tunnels, which charge tolls. A substantial number are by air, where airport fees are analogous to tolls. Border fees, some of which are charged to offset the costs of inspections, have been increasing over the past decade. The recently proposed fee of $5.50 per passenger entering the US by air is only the latest in a succession of new border fees imposed by the US on Canadian goods and people. Canadian residents requiring visas are also subject to substantial fees. Trucks, trains, planes and vessels entering the US must pay fees that are intended to offset the cost of inspections. APHIS fees (Animal Plant and Health Inspection Service) are charged on shipments coming into the US to offset the cost of inspections by the US Department of Agriculture. COBRA fees are charged to cover the government's cost of custom inspections and enforcements. Merchandise Processing

Fees are payable for every formal entry processed by U.S. Customs of non-NAFTA imported into the U.S. through Canada.[21]

Customs duties fall under the category of border-specific costs. Although they are not literally paid at the border, paperwork or electronic information indicating that they will be paid must be presented to border officials before goods are cleared. Even though most goods passing between Canada and the US are free of duty, customs administration costs, which include broker and consulting fees and export/import licensing costs, are incurred on all goods. While NAFTA is a free trade area, it is not a customs union. So all goods must be documented to determine their customs status. As we will see, this is one of the most significant categories of border costs.

Finally, the cost of compliance with trusted traveller and trusted trader programs is included in this category because they arise from the border security function. These programs, whereby individuals and firms are pre-defined as low risk, are discussed in some detail in section 5. The important thing to understand here is that travellers moving quickly through the Nexus lane and trucks receiving faster clearance in the FAST lane have not been completely relieved of border-specific costs. Rather they have incurred other costs, including the payment of fees and implementation of supply chain security measures, in order to receive preferential treatment at the border.

Trade costs: These costs occur whenever an economic transaction involves buyers and sellers residing on opposite sides of the border. Border-specific costs are a subset of trade costs, but there are many other costs that are not directly related to the act of border crossing. The effect of empty backhauls on cross-border trucking costs is an example. A for-hire trucker can offer a lower rate for carrying a load from point A to point B if it anticipates that it can find a load to carry back from point B to point A. That is why it often is cheaper to ship goods to a major city, where there are plenty of backhaul loads to be had, than to a small town, from which the truck will probably have to return empty. Even in a major city it may not always be possible to find a load heading to the truck's exact point of origin, but as long as there is a load that needs to move in the general vicinity of point A the truck can earn some revenue on its return trip.

For cross-border shipments, empty backhauls are very common because of the absence of cabotage rights under NAFTA. Cabotage refers to the movements of goods within one country by a truck or other conveyance registered in a another country. If a Canadian truck is hired to carry a load from London, Ontario to Chicago, it may pick up another load in Chicago and carry it back to any point in Canada. It may not, however, pick up a load in Chicago and carry it back to Toledo, Ohio, which would require just a brief diversion from its original route, because Canadian trucks do not have cabotage rights in the US. Similar restrictions hold for American trucks that make deliveries into Canada. The result is that cross-border shipments are more likely to involve empty backhauls, so carriers must charge more per kilometre than for domestic shipments.

Inconsistencies in product regulations also imply trade costs. Differences in labeling requirements provide an example. Canadian Club whiskey is subject to different label rules in the US and Canada: the bottles destined for Canadian markets must have bilingual labels while the bottles destined for the US must say "Imported" in large letters. This imposes a cost, not so much because the need to print separate labels but because of the cost of maintaining separate inventories of bottles.[22] Food and drugs bound for the US require different nutritional and content labeling than goods for the domestic market. Labeling requirements impose relatively small costs compared with the different technical, health and safety requirements on opposite sides of the border.

[21] There is a minimum $25 to a maximum $485 processing fee per Entry, regardless of whether duty is payable on the imported merchandise.

[22] There are numerous national requirements for the labeling and bottling of whiskey. For example, whiskey bound for Japan must be in clear bottles. (Information based on a tour of the Canadian Club Brand Centre in Windsor, ON.)

General Equilibrium Costs: One of the most enduring contributions of economic science is a rigorous argument that trade between two nations is mutually beneficial. Smith, Ricardo and other classical economists challenged the then-conventional wisdom that exports are good while imports are bad, explaining that when different nations specialize in producing the things for which they have some inherent efficiency advantage and then trade for the full range of things that they need or desire, everyone is better off than they would be in a world if national autarky. In the twentieth century economists formalized these ideas to show how benefits from trade arise from differences in national endowments of resources, labour and capital. More recently, the "new trade theory" demonstrates that even countries such as Canada and the US that have quite similar endowments can benefit from trade that creates scale economies and provides consumers with a greater variety of goods.[23] While there are some reasonable arguments for controlling certain forms of trade, the prevailing opinion that has underpinned the trade policies of Canada and most other countries in recent decades is that relatively open trade yields economic benefits. The international community, through the World Trade Organization, recognizes that in order for trade to deliver real economic growth, it must be "open, rule-based, predictable and non-discriminatory".[24]

If trade yields benefits, then anything that retards trade must impose costs. Unlike trade costs, which affect only imports and exports, these cost are felt throughout the economy. For example, any industry that must accept either a higher price or lower quality for its productive inputs because it is unable to import them becomes less efficient. Reductions in efficiency tend to be passed on from one industry to another in the form of higher costs. Since these costs are very broadly felt and affect equilibrium prices, they are called general equilibrium costs. Naturally, they are much more difficult to measure than border specific or other trade costs.

Empirical evidence

While there has been much concern over the cost of the border, the pool of empirical evidence is still quite limited. In what follows I will highlight what I consider some of the more reliable estimates of border costs.

Border delays: These are generally the first costs cited in most border discussions, not necessarily because they are the most important costs, but because they are the most visible manifestation of the "thickened" Canada-US border. Delays have been truly catastrophic only over a brief period following directly on the attacks of September 11, 2001. Thereafter they declined rapidly with the assignment of more border inspectors, but remain much higher than they had been in earlier years. The summer of 2007 saw a resurgence in delays to close to 2002 levels at some crossings, but by mid 2008 border traffic began to fall off as the economic crisis took hold and border wait times declined accordingly.

Most border delay data are estimates based on observations by CBSA, CBP, bridge and tunnel operators or others. A more precise form of data may be derived from the Global Positioning System (GPS) transponders that are now installed in many trucks and cars. These units can identify the precise time that a vehicle passes a predefined point. Defining one point on either side of the border crossing and recording the time that an individual vehicle passes each point provides a basis for precise measurement of border crossing times. Between 2006 and 2009, Transport Canada worked with a private firm that manages GPS data for trucking firms to assemble large samples of crossing times at major Ontario crossings. While these data have some shortcomings, I believe they provide the most accurate general assessment available

[23] See Krugman (1992). An excellent overview of the concepts underlying the new trade theory is found in Paul Krugman's Nobel Prize lecture, which may be viewed at http://www.nobelprize.org/nobel_prizes/economics/laureates/2008/krugman-lecture.html (accessed February 16, 2012)

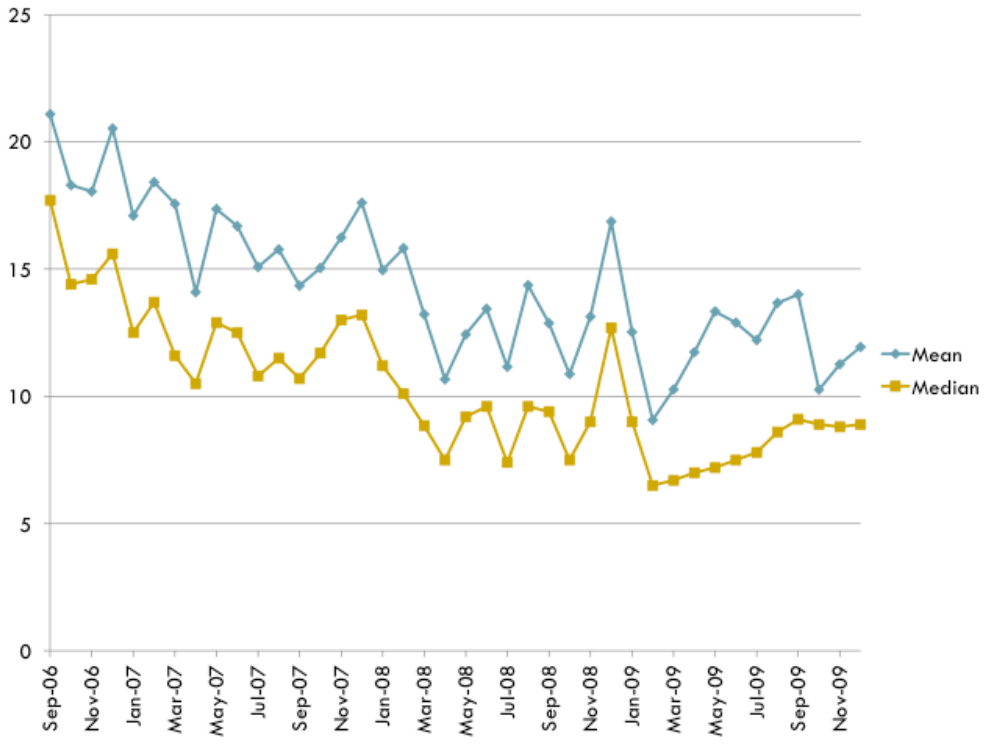
[24] From the World Trade Organization website, http://www.wto.org/english/thewto_e/coher_e/mdg_e/mdg_e.html

on crossing times for trucks.[25] Aggregate data derived from this effort for the four most important bridges over a twelve month period are presented in Table 1. Figure 7 shows the generally declining trend for the Ambassador Bridge over the period from September 2006 through December 2009.

TABLE 1: CROSSING TIMES AT FOUR MAJOR ONTARIO-US BRIDGES
JULY 2008 – JUNE 2009

	BRIDGE			
STATISTIC	AMBASSADOR	BLUE WATER	PEACE	LEWISTON-QUEENSTON
MEAN	11.3	13.8	13.2	10.8
MEDIAN	7.6	7.5	7.9	5.2
STANDARD DEV.	9.8	18.3	24.6	14.2
MIN	0.8	1.0	1.1	1.0
MAX	238.4	288.6	732.1	217.5
OBSERVATIONS	20,883	5,398	8,273	29,335

FIGURE 7 AVERAGE CROSSING TIMES IN MINUTES, AMBASSADOR BRIDGE TO THE US
SEPTEMBER 2006 – DECEMBER 2009



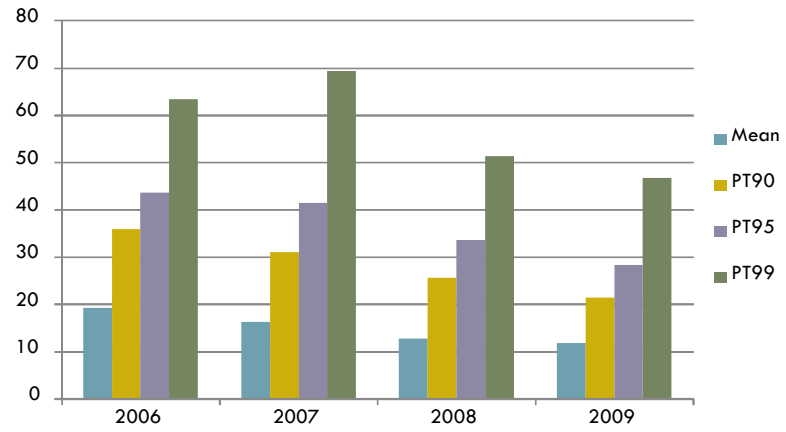
[25] The GPS data (along with a lot of useful advice) were provided by Tony Shallow of Transport Canada. Among the shortcomings, the sample is not necessarily representative since it comes from a single GPS service provider. Also the GPS measurement did not in all cases cover the entire length of the queues. Table 1 and Figure 7 are sourced from this data.

Some readers will find the average crossing times presented here to be lower than they expected. If crossing times are really in the range of 10 to 15 minutes, is delay a serious impediment to trade? Why do we keep hearing about border wait times measured in hours rather than minutes? There are a couple of important things to understand here. First, many of the stories about extreme border delays come from the weeks immediately following 9/11, when crossing times measured in hours were a reality. But more importantly, the low averages in these data mask a high degree of variability in crossing times. The fact that the standard deviation in crossing times is significantly higher than the mean indicates that there are many short crossings times in the data but also a much smaller number of much longer crossing times. So while you may on average be able to get across the border in 15 minutes or less, you cannot rely on getting across in such a short time. Not surprisingly, a large majority of firms involved in Canada-US supply chains report late shipments due to border issues.[26]

The distinction between the average crossing time and the variability around that average is important because many of the trucks crossing the border are moving components in just-in-time supply chains. Normally, the cost of a truck sitting in traffic may be estimated at about $75 per hour, which covers the cost of wasted labour and fuel and opportunity cost of tying up the truck. In a just-in-time system, however, a truck stuck in traffic can prevent the delivery of key components, thus shutting down a production line. For the automotive industry, estimated costs of production down time range as high as $13,000 per minute.[27] In such a risk-intolerant system, scheduling of trucks is often done on a worst-case scenario basis.

Figure 8 shows the result of an analysis conducted at the University of Windsor and based on the Transport Canada GPS data to estimate the planning time necessary to get goods across the border at the Ambassador Bridge with different levels of certainty.[28] In 2007, it took on average about 15 minutes to get a truck across the border. But to be 90% sure that the truck would not be late, you would have to budget about 30 minutes, and to be 99% sure you would have to budget an hour. 99% is a very high standard, but given the cost of causing a plant shutdown due to a late delivery, it is not outside the bounds of reason. Since buffer times tie up trucks almost as if they were stuck in traffic, a 30-minute buffer costs $37.50, which would generally be higher than the bridge toll.

FIGURE 8: PLANNING TIMES TO ENSURE 90, 95 AND 99% ON TIME DELIVERIES, AMBASSADOR BRIDGE TO THE US



[26] Statistics Canada, Logistics Service Industries Border Survey, 2010.

[27] See InterVISTAS Consulting (2009).

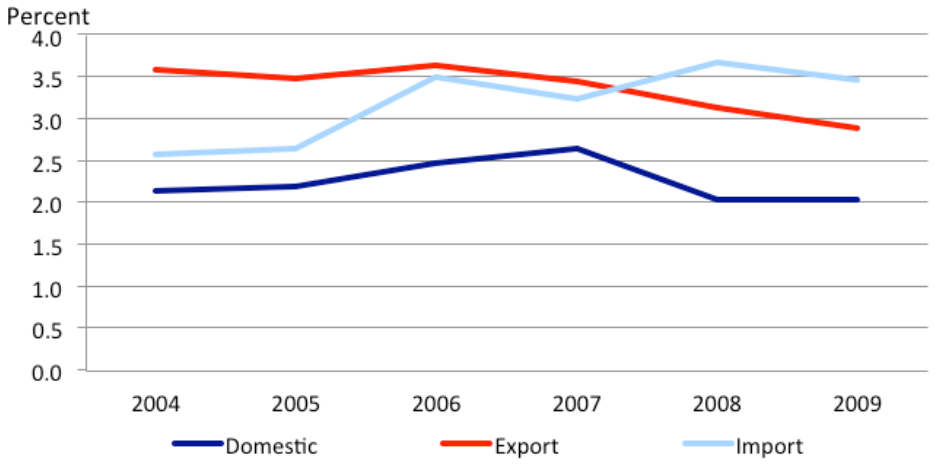
[28] Details are found in Anderson and Coates (2010).

The border increment in trucking cost: Given the dominant role of the trucking mode in Ontario's cross-border trade, a crucial question is how much do border costs affect the cost of trucking services? Border delays, the empty backhaul problem and the costs of complying with various security policies all contribute to a border increment, defined as the extra cost of a cross-border shipment over the cost of a domestic shipment of a comparable load and distance. Until recently, however, there has been very little information on the magnitude of this increment.

A recent study by Statistics Canada[29] addresses this information gap directly by estimating trucking costs for Canadian domestic shipments, exports to the US and imports from the US. Figure 9 shows the cost of trucking on an ad valorem basis (as a percent of the value of the goods being shipped) from 2004 to 2009. Costs for both exports and imports are significantly higher than costs for domestic loads. In 2004, costs for exports are more than 65% higher than domestic costs. This increment falls to about 40% by 2009. For imports, the trend in the increment is reversed, starting at about 20% in 2004 and rising to about 75% in 2009. This reversal probably reflects Ontario's falling exports. At the beginning of the period exports were significantly higher than imports, so they were effected more significantly by the empty backhaul problem. By 2009 this situation had reversed. (These trends are addressed in more detail in section 4.)

The study includes statistical tests to verify that the increments were not simply the outcome of differences in the lengths of trip or types of goods being carried across the domestic, import and export categories. It also uses statistical methods to separate out a fixed component (attributable to border-specific costs) and a per-kilometer component (attributable in part to empty backhauls.) The bottom line is that goods crossing the border must pay a premium equal to between .5% and 1% of their value – in other words, the effect of the border on trucking costs is equivalent to an ad valorem tariff of between .5% and 1%. Since this estimate is based on the amount carriers charge to shippers rather than on the actual costs, there is the possibility that the true costs is somewhat higher, but that carriers absorb part of it. It is also important to recognize that this estimate includes only the costs of transportation. As we will see, there are other elements of border cost that are equally important.

FIGURE 9: AD VALOREM TRUCKING COST BY YEAR AND TRADE TYPE, 2004-2009



Source: Statistics Canada, Trucking Commodity Origin Destination Survey, 2004 to 2009; Bureau of Transportation Statistics, TransBorder Freight Database, 2004 to 2009; and Bureau of Transportation Statistics, Commodity Flow Survey , 2007.

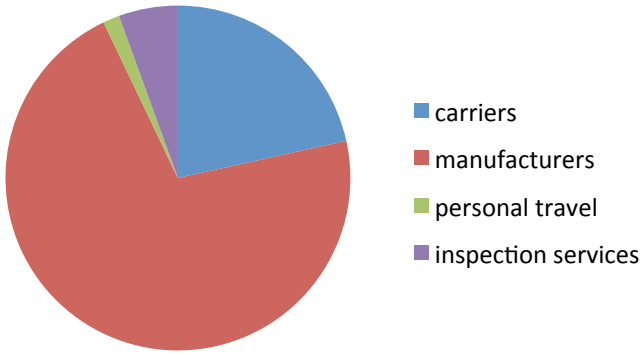
[29] I brought this question to Mark Brown, Chief of Regional and Urban Analysis in the Economic Analysis Division of Statistics Canada. He developed a statistical framework for analysis and made the estimates presented in the text based on individual shipment files. Details can be found in Anderson and Brown (2012), which will be released shortly.

Taylor el al (2004) Study: The most comprehensive study of the costs associated with Canada-US border was done by John Taylor and his colleagues and students at Wayne State University in Detroit, Michigan.[30] Taylor gathered data from a variety of sources and conducted a large number of stake holder interviews in an attempt to get the broadest possible view of the border costs. While this study is now somewhat dated, it is extremely revealing. Overall, border costs were found to be equivalent to an *ad valorem* tariff of 2.7% for all trade combined and 4% for trade moved by truck. (This is consistent with the generally held view that rail incurs lower border costs than trucking because it involves a much larger volume of shipment in a single set of entry documents, involves fewer employees and therefore fewer immigration issues, and is less affected by border congestion.)

The border costs are broken down according to whose activities bear the direct cost (incidence) in figure 10a. Here only about 20% of costs fall on the activities of carriers and almost three quarters fall on manufacturers. This means that the estimate of .5 to 1% ad valorem cost in the Statistics Canada study is roughly consistent with the 4% cost estimated by Taylor. Figure 10b disaggregates the border-related costs incurred by manufacturers. Strikingly, almost one half of the manufacturer's costs – or roughly one third of the total cost – may be attributed to customs administration.[31] There have been significant technological advances in customs administration since this study was done, so it is likely that its share in total costs has declined somewhat. It is interesting to note that in a recent survey conducted by Statistics Canada, responding firms rated "overall paperwork" which includes but is not limited to customs administration, as the most important border challenge.[32] The prominent role of customs administration cost has a number of implications. For one thing it indicates that the absence of a customs union under NAFTA has a large impact on trade costs. A customs union would not eliminate the cost of customs administration but it would certainly reduce it. In the absence of a customs union, initiatives to modernize and coordinate customs administration may be among the most effective of policy options.

Another major cost category for manufacturers identified in the Taylor study is sourcing. This is the cost incurred by manufacturers when they are compelled to use domestic inputs that are more expensive than imported inputs because of the cost of the border. Within the tripartite definition of border costs, this comes under general equilibrium cost. It captures only a small part of those costs, however, because it does not account for the way that efficiency losses from individual firms are spread throughout the economy.

FIGURE 10A INCIDENCE OF BORDER COST (TAYLOR, ROBIDEAUX AND JACKSON, 2004)

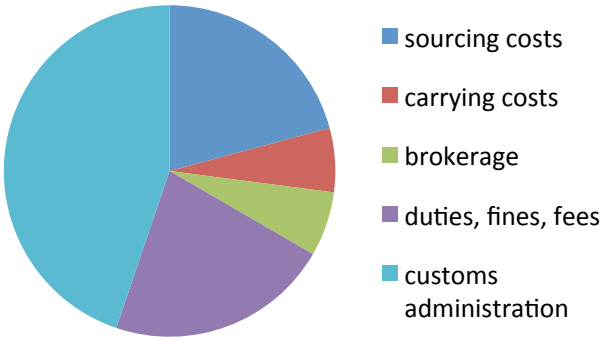


[30] Taylor, Robideaux and Jackson, 2004

[31] The costs of customs compliance can include internal costs such as software (e.g. Denied Party Screening, Tariff Classification software), the hiring of experts, internal training, procurement of services for customs brokers, freight forwarders, customs consultants, the cost of supply chain disruptions, and Non-compliance costs (e.g. CBP/CBSA fines and penalties).

[32] Statistics Canada, Canada-US Border Survey (CUBS), released 2010

FIGURE 10B BREAKDOWN OF MANUFACTURER'S BORDER COSTS (TAYLOR, ROBIDEAUX AND JACKSON, 2004)



CGE Models: A more comprehensive treatment of general equilibrium costs is found in the recent work of Trien Nguyen of the University of Waterloo and Randall Wigle of Wilfrid Laurier University.[33] They have developed a computable general equilibrium (CGE) model of Canada and it regions that can be used to simulate the effect of exogenous influences such a taxes and other policies on levels of economic welfare. Since the model incorporates Canada-US trade flows, they were able to simulate the result of a 1% increase in border delay cost. In a result that seemed to surprise even the authors, their model indicated that this would result in a 1% overall loss in Canadian economic welfare. Ontario, which is more highly integrated with the US economy, would suffer an even greater impact (see table 2). Contrary to the argument that a reduction in Canada-US trade would be offset by increased interprovincial trade, their model suggests that interprovincial trade would actually decline due to the drop in aggregate production.

TABLE 2: EFFECT OF A 1% INCREASE IN BORDER DELAY COST ON GOODS AND SERVICES (NGUYEN AND WIGLE, 2011)

	% CHANGE IN		
REGION	WELFARE	INTERNATIONAL TRADE	INTER-PROVINCIAL TRADE
ATLANTIC	-0.9	-5.3	-1.4
QUÉBEC	-0.9	-2.0	-0.2
ONTARIO	-1.3	-5.1	-0.2
PRAIRIES	-0.8	-1.4	-0.5
BRITISH COLUMBIA	-0.6	-1.6	-0.5
CANADA	-1.0	-3.6	-0.4

Results like this should be interpreted with care. A model is not reality. By definition, models involve simplifying assumptions that might bias their results. Furthermore, the static nature of the CGE model makes it ill suited for predicting the effect of a specific change in border cost over a particular interval of time. But models like this have significant value in that they can take a proposition that makes sense in the context of economic theory – in this case that increasing border costs would reduce production in Canada and Ontario – and make the best possible estimate of the magnitude of the effect. In this case the model's estimate could be high or low by 50% and the message would be the same – the magnitude of the effect is very large.[34]

[33] Nguyen and Wigle (2011). A similar analysis is found in Nguyen and Wigle (2009).

[34] A very recent study using a CGE model developed at the University of Ottawa finds that large economic benefits could be derived by the elimination of border impediments that have been imposed since 9/11. Georges, Merette and Zhang (2012).

Risk as a border cost: So far in this section, cost has been defined as a kind of friction that retards cross-border movement. Perhaps the most worrisome costs arise, however, from the prospect of interruptions in cross-border transportation services at one or more crossings. This could occur from a terrorist attack, but it could also occur from something more likely such as a major accident or chemical spill that would take a bridge out of service for more than a few hours. Furthermore, while there is no reason to doubt the condition of any of the bridges, a failed safety inspection could shut down a bridge for weeks or even months. Such an outcome would be more than an inconvenience, it could potentially shut down supply chains and throw thousands of people out of work for an extended period. While the vulnerability of the Ontario economy to such an event is widely recognized, it is not clear that we are less vulnerable now than we were ten years ago.

The cross-border transportation network that Ontario shares with the states of New York and Michigan is a textbook example of a low-resilience system.[35] Resilience is defined as the ability of a system to maintain a high level of function after an event that damages or disables some of its elements and to recover quickly to its pre-event level of service. The chief characteristics that make a system resilient are redundancy and flexibility (Sheffi, 2005.) For a transportation system, redundancy refers to having a variety of different ways to get from one point to another on the infrastructure network. Because there are very few bridges and tunnels, losing one can have catastrophic consequences on system performance. You can always find an alternative bridge, but it is likely to add many kilometres to each trip and when one bridge becomes unavailable the remaining bridges quickly become highly congested. Flexibility refers to the ability to re-task elements of the system to fill in for lost infrastructure, such as the case of using marine transport or rail transport to replace the service of a lost bridge. While this can be done to some extent at the St. Clair, Detroit and Niagara Rivers there is relatively little spare capacity to be re-tasked.

Assessing the costs of extreme events on non-resilient systems is difficult. The cost of losing a bridge for a long time would be huge, probably in the billions, but this must be balanced against the fact that such an event is quite improbable. In theory, an expected cost can be estimated by multiplying the event cost by the probability of the event. But what is the probability of terrorist attack on a particular bridge? We don't know because we don't have a history of terrorist attacks on which to base an estimate. In the absence of hard analysis that can be used to weigh costs against benefits, the costs associated with the vulnerabilities of the cross-border infrastructure probably don't get the emphasis they deserve in policy formulation (I will return to this issue in Section 5).

[35] A discussion of resilience in transportation systems can be found in Anderson, Maoh and Burke (2011).

4. TRENDS ON THE CROSS-BORDER MOVEMENT OF GOODS AND PEOPLE

The evidence presented in the previous section indicates that the costs of moving goods and people across the Canada-US border are significant, that those costs have almost certainly increased since the attacks of September 11, 2001. The evidence on whether cost continue to climb is less clear. Certainly some costs, such as delay costs, have been going down while the continued proliferation of fees and inspections cause other costs to increase.

This section addresses the question of whether border costs are influencing levels of cross-border activity. It starts by reviewing trends in cross-border vehicle movements and Ontario-US trade. We will see some significant trends that roughly coincide with the onset of the enhanced border security regime following 2001. Given the complicating factors discussed in Section 2, however, we must be careful about inferring causal relationships. Econometric analysis reviewed below paints a somewhat blurred picture of the relationship between cross border trends and events of 9/11.

Border crossing trends: Since most Ontario-US trade moves by truck, the volume of truck movements is an important indicator. Figure 11 shows total truck entries to Canada at Ontario crossings broken down into Canadian and US registered trucks. Note that in all years the number of Canadian trucks is higher. This in part reflects the Ontario's trade surplus with the US, but more importantly the fact that Canadian carriers are more likely to specialize in cross-border shipment. Crossings increase almost continuously from the 1970's to a peak in the year 2000. They then plateau with some fluctuations before beginning a steady decline in 2005. Significant recovery occurs between 2009 and 2010.

The significant decline in truck crossings does not have an obvious explanation, since it begins several years after 9/11 and several years before the onset of the economic crisis in late 2008. It is not the outcome of a mode shift, as tonnes of rail cargo shipped from Ontario to the US also declined in the 2000s.[36] As we will see below, the decline in the dollar value of Ontario-US trade has been far less precipitous than the decline in truck crossings. This suggests one possible explanation: the average value of goods per truckload is increasing, so fewer trucks are required to carry a given dollar volume of trade. [37]

[36] CANSIM Table 404-0021 Rail transportation, origin and destination of commodities, annual (tonnes)

[37] US data indicates that the value per kilogram of goods shipped transborder by truck increased by over 40% between 1997 and 2010. US Department of Transportation, Bureau if Transportation Statistics, Transborder Freight Data.

FIGURE 11: TRUCKS ENTERING CANADA AT ONTARIO CROSSINGS 1972 – 2010[38]

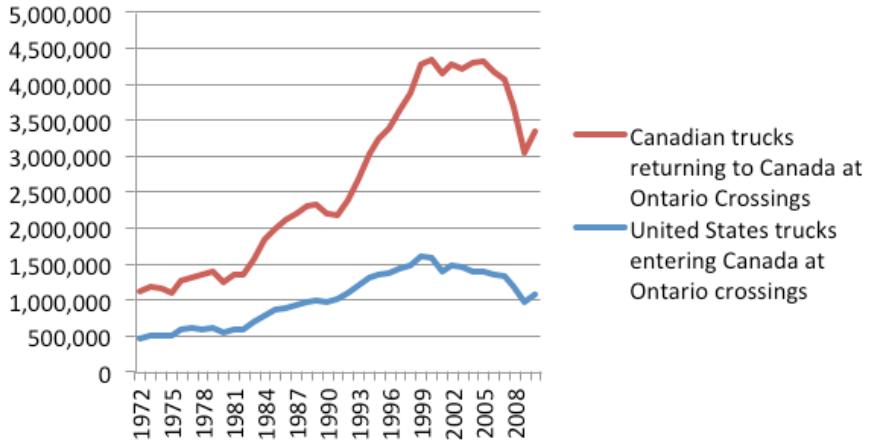


FIGURE 12: AUTOMOBILES ENTERING CANADA AT ONTARIO CROSSINGS 1972 - 2010[39]

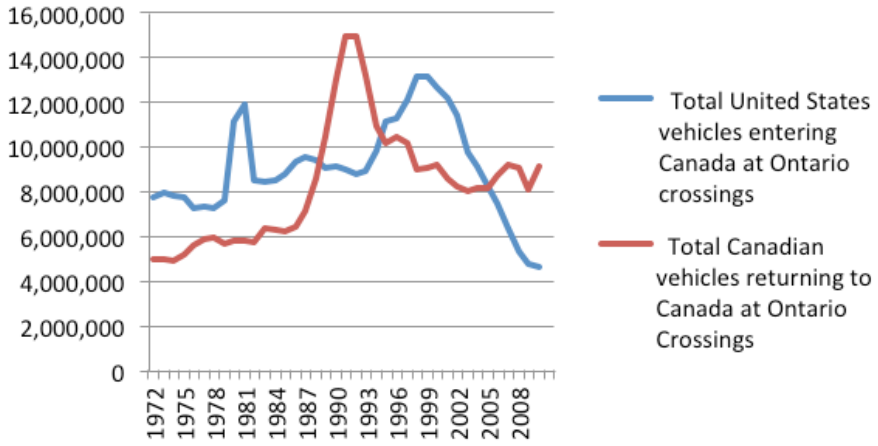


Figure 12 shows automobile crossings for the same period, broken down into crossings by Canadian and US registered cars. In this case, the general decline coincides almost precisely with the attacks of 9/11. The general decline, however, is overwhelmingly driven by fewer entries by US cars. Crossings by Canadian cars reach a peak in the early 90's, decline rapidly and then level off in the 2000s. The explanation for the difference between behaviour of Americans and Canadians probably lies in the rapid appreciation of the Canadian dollar since 2001. The last time that the loonie was at such high values was in the late 80's and early 90's, when there was a pronounced spike in crossings by Canadian cars. The fact that no such spike occurred in the 2000s may suggest that the beneficial effect of the strong dollar on cross-border shopping was offset by the dampening effect of the "thickened" border.[40] For Americans, the effect of their weak currency reinforced the deterrent of border delays. Whatever the reason, US automobile crossings into Ontario fell below the levels of the 1970s.

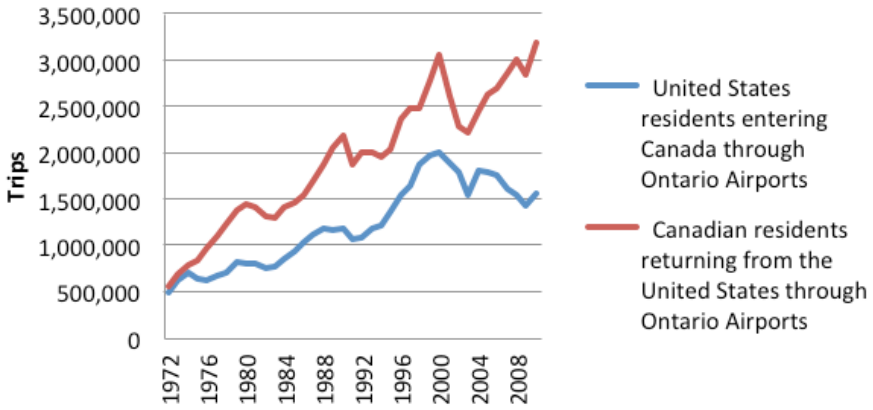
[38] CANSIM Table 427-0002 International Travel Survey: Frontier Counts

[39] Ibid.

[40] A discussion of these trends is found in Roy (2007).

Air travel between the US and Ontario grew slightly because rapid growth in the number of Canadian travelers more than offset a decline in the number of American travelers (Figure 13). Both series show a rapid decline from 2001 followed by a recovery, but the number of air travellers never regained it 2000 peak. The decline in American travellers by both automobile and air does not bode well for Ontario's tourism industry. In fact, over the last 10 years Canada and the US have suffered significant declines in cross border tourism.[41]

FIGURE 13: AIR TRAVELLERS ENTERING CANADA THROUGH ONTARIO AIRPORTS[42]



Trade trends: Figures 14a and 14b show Canada's imports from and exports to the US broken into components for Ontario and the rest of Canada. Total imports drop after 2001 and then recover up to 2008. 2009 and 2010 values reflect the recession and recovery. Ontario's imports never recover after 2001, however. Their share in total Canadian imports drops from about three quarters of the Canadian total to about two thirds. These figures are in current dollars, so adjusting for inflation would show a decline in Ontario's imports.

Turning to Figure 14b, Canadian exports to the US also declined following 2001 before recovering to a new peak in 2008. Ontario's exports, however, declined by 12% between 2000 and 2008, even before adjusting for inflation. Ontario's share of total exports fell from about 53% in 2000 to about 43% in 2008 of the Canadian total.

[40] A discussion of these trends is found in Roy (2007).

[41] Canada lost 21 million American same day visitors over the last decade. In 2009, overnight travel from the United States to Canada hit a 24-year low with the mid-year implementation of the WHTI. From a high of 16 million in 2002, the overnight market has fallen 27% to 11.7 million visitors in 2010(Tourism Industry Association of Canada and the U.S. Travel Association Joint Brief to Beyond the Border Working Group, May 2011)

[42] CANSIM Table 427-0001.

FIGURE 14A: CANADA AND ONTARIO IMPORTS FROM THE US, 1992-2010 (BILLIONS OF CURRENT CANADIAN DOLLARS)[43]

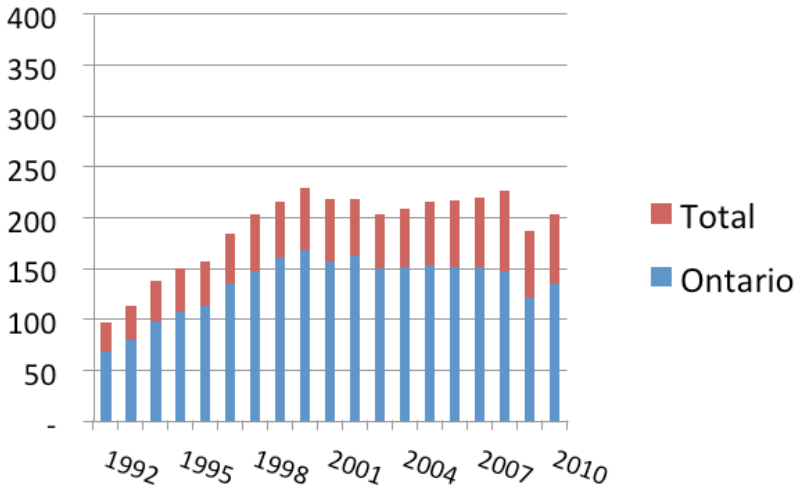
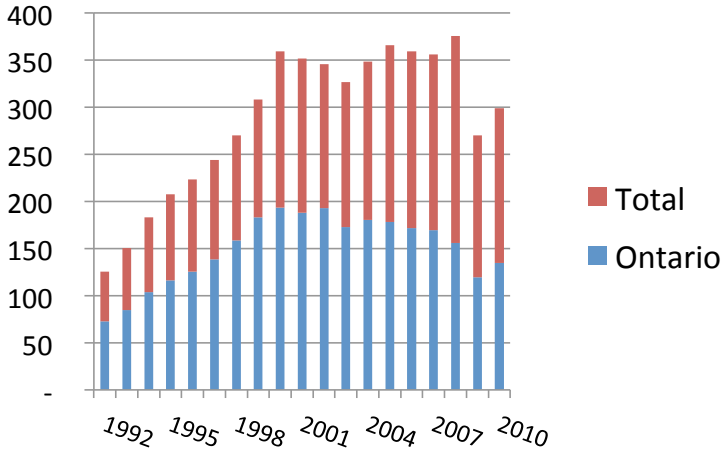


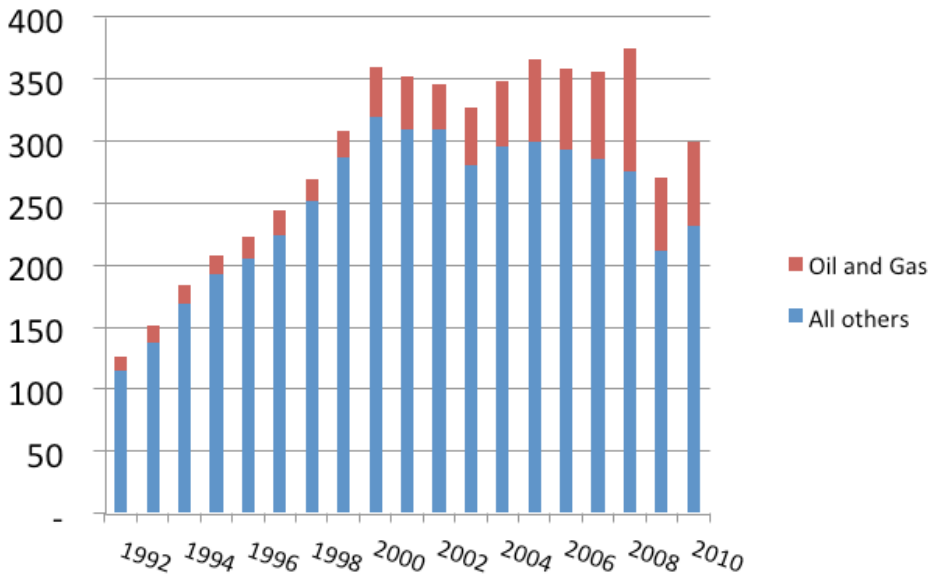
FIGURE 14B: CANADA AND ONTARIO EXPORTS TO THE US, 1992-2010 (BILLIONS OF CURRENT CANADIAN DOLLARS)



Export figures should be viewed in the context of increasing role of oil and gas in the Canada-US trade relationship. Figure 15 separates Canadian exports to the US into oil and gas and all others. Were it not for the growing value of oil and gas exports, total Canadian exports would have dropped from 2004 to 2008 almost as rapidly as did Ontario's exports. Clearly oil and gas exports are taking up the slack in what is an otherwise declining picture of Canadian exports to the US. Also, year to year fluctuations can be misleading because of the volatility of oil and gas prices. At least part of the surge in oil and gas exports in 2008 is due to a run up in the price, rather than the volume, of shipments in that year.

[43] The data in Figures 14a, 14b, 15, and 16 are from the Industry Canada's Trade Data Online: http://www.ic.gc.ca/eic/site/tdo-dcd.nsf/eng/Home(accessed February 13, 2011.)

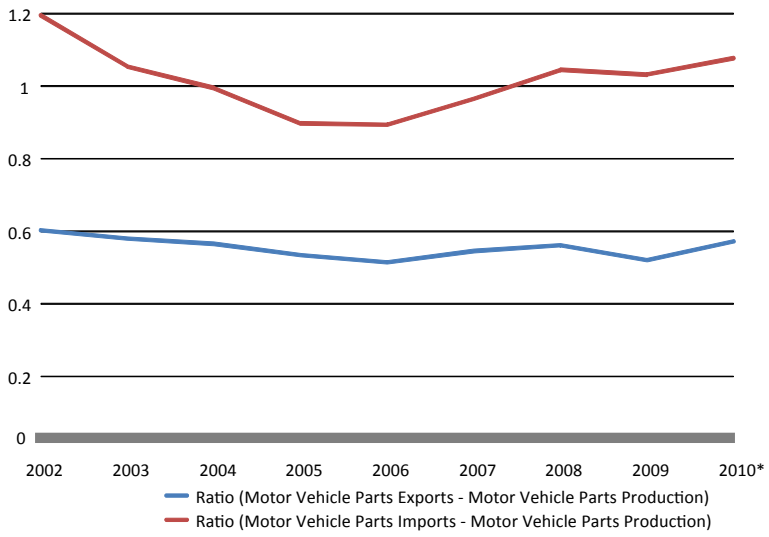
FIGURE 15: CANADA'S EXPORTS OF OIL AND GAS AND ALL OTHER COMMODITIES TO THE US, 1992-2010



Impact of 9/11 on trends: The data for both personal travel and trade indicate a general decline in cross-border activities for Ontario. In the case of trade, the declines coincide quite well with the attacks of 9/11, which triggered the enhanced border security regime. But we must be careful not to attribute these trends to border costs too quickly because other factors were at play. Specifically, the three complicating issues introduced in Section 2 – the rising and unstable Canadian dollar, the crisis in the automotive industry, and the rise of global commerce – may have had equal or even greater effects on the trends. For example, the trend for US personal trips to Ontario to drop while cross-border trips by Ontarians to the US were flat or rising is consistent with the rise of the Canadian dollar, as is the fact that Ontario's exports to the US dropped while it's imports from the US were flat.

A similar pattern of exports declining more rapidly than imports is seen in figures 6a and 6b for Ontario's automotive industry. What is not clear from this, however, is whether the level of integration between automotive production in Ontario and in the US has declined. A possible scenario is that border problems under the enhanced security regime since 9/11 would encourage automakers to reduce dependence on cross-border shipment by moving to separate Canadian and US supply chains. Evidence that this has not occurred is provided by Figure 16, which shows the ratio of auto parts imports and exports to production in Canada over the period from 2002-2010. (Unfortunately the series does not go all the way back to 9/11, but it is unlikely that any major change in the structure of sourcing could have occurred between late 2001 and 2002.) If Canada-US automotive supply chains had been breaking down, we would see significant drops in both of these ratios. The ratio of parts imports to production in fact declines significantly between 2005 and 2006, but recovers nearly to its original level by 2010. The ratio of imports to production remains stable over the entire period. There is therefore no evidence in major shift away from cross-border supply chains.

FIGURE 16: RATIOS OF IMPORTS AND EXPORTS TO CANADIAN AUTOMOTIVE PARTS PRODUCTION, 2002-2010



*2010 Forecast by % GDP

Ultimately, the only way to determine whether the enhanced security regime after 9/11 has had a major negative effect on cross-border activity is through the use of multivariate statistical analysis, whereby the impact of one factor may be measured while controlling for other complicating factors. Unfortunately, two major studies that attempt to do this for Canada-US trade arrive at opposite conclusions. Globerman and Storer (2009) estimated an econometric model of Canadian quarterly exports to the United States over a period from 1988 to 2005 that controls for exchange rates and fluctuations in US GDP, while isolating a time trend that begins in the fourth quarter of 2001. They concluded that the border security developments after 9/11 reduced Canadian exports by about 10% in the short run and as much as 37% in the long run. This implies that had it not been for the border changes triggered by 9/11, Canadian exports to the US would have continued their increasing trends throughout the 2000s despite the increasing value of the Canadian dollar.

However, Michael Burt (2009) of the Conference Board of Canada conducted a similar study and found scant evidence that the post 9/11 security regime reduced Canadian exports significantly. Such disagreement across econometric studies is not unusual, as results can be very sensitive to small differences in data and mathematical specification.[44] But given the disagreements in the results of these two peer-reviewed studies, evidence on how the enhanced security regime has affected Canada-US trade remains mixed.

Even if the effect of enhanced border security on trade has been negligible, that does not mean it has had no deleterious effect on Ontario's economy. Surveys have shown that many Canadian firms are too dependent on trade with the US to isolate themselves in the domestic economy in response to increasing border costs. They therefore choose to "muddle through," absorbing increased costs or passing them on to their customers.[45] Thus, increased border costs are a drag on the entire economy. In the long run, this makes Ontario's firms less profitable and less competitive.

[43] Burt's specification differs from the Globerman and Storer study in a number of ways: he estimated exports for specific ports and specific commodity groups instead of in aggregate, he used real instead of nominal dollar values and he used an index of industrial production instead of GDP as a measure of US economic activity. Globerman and Storer, however, have shown that their results are relatively insensitive to the latter two differences, so the main difference seems to be Burts disaggregate approach.

[43] For example, see MacPherson et al (2006).

5. POLICY OPTIONS

It is in the economic interest of Ontario and all of Canada to reduce the cost of moving goods and people across the border. But it is probably not constructive to plead for policies that "balance" security with trade facilitation. The US Department of Homeland Security states repeatedly and very explicitly that its first priority is to prevent terrorists and their weapons from entering US territory.[46] In light of this, the best strategy is to focus on policy options that simultaneously improve security and facilitate trade. This will seem to some like an impossible requirement, but I believe that a number of policies – including trusted trader programs and the introduction of scanning technologies – do just that.

Policy options can be organized under three categories. The first is *making the border more efficient*, which includes things that can be done by CBP or CBSA staff at the primary or secondary inspection stage in order to speed up clearance, customs enforcement and immigration screening without sacrificing security. The second is *moving functions away from the border crossing*, which means doing things someplace other than at the border so that people and goods may be cleared more quickly once they get there. Finally, options that fall under the *perimeter approach* involve eliminating the need for border functions through harmonization of policy or other forms of cooperation.

Making the border more efficient. Every time a vehicle approaches the primary inspection line, an investigation has to take place to determine whether the documentation for individuals and freight is in order and whether the people or goods in the vehicle present a sufficient threat to warrant referral to secondary inspection. At secondary inspection, further background checks are executed and vehicles and loads are physically examined. Thus a variety of investigative procedures must take place at the border inspection plaza and preferably in a short time interval.

A variety of technologies have recently become available to make these processes faster and cheaper. For example, Radio Frequency Identification (RFID) chips embedded in US passports and passport cards, Nexus and FAST cards and enhanced drivers licenses can convey information about people crossing the border more quickly than a set of preliminary questions, allowing the border guard to get started with his or her risk assessment more quickly. Biometric technologies, ranging from enhanced photos to iris scans, are gradually being integrated into border documents and inspection routines.

There is a significant amount of public resistance to the application of biometric technologies at the border. This probably arises from the perception that procedures such as finger printing have historically been reserved for people suspected of criminal activities. But the purpose of most biometric identification technologies is simply to make a strong connection between a person and his or her identifying documentation. The photograph on a driver's licence is there to prevent someone other than the person to whom the licence was issued from using it. While most photo IDs are checked "by eyeball," technology is now available to match a person's face to a high quality photo with greater certainty. Even greater certainty can be achieved by using finger prints or iris scans that can be checked via digital technology.

For freight loads, faster border clearance may be accomplished by a combination of scanning and

[46] See for example Goal 1 (page 13) of the US Customs and Border Protection Strategic Plan, 2009-2014.

information technologies. Scanning technologies make it possible to examine vehicles for possible contraband without opening them and removing the contents. For example the VACIS (Vehicle And Cargo Inspection System) technology uses gamma rays to examine the contents of a truck trailer or marine/rail container. While a VACIS image is not good enough to identify the contents precisely, it can distinguish between different classes of materials (metal vs wood), ensure that containers are not loaded when they are reported as empty, and spot stowaways. The use of VACIS scanning allows for non intrusive exams to occur with a lower impact and less delays as compared to a complete de-vanning. Rail shipments from Canada to the US at major Ontario crossings are now subject to 100% VACIS scanning, while only a small proportion of trucks are scanned. Other scanners are routinely used at the border to identify radiological materials. It is still necessary in a small percentage of cases to unpack a trailer or container and examine its contents, but the availability of scanning technology makes this less common.

Computer systems that automate customs administration such as the US ACE (Automated Commercial Environment) and Canada's E-Manifest also contribute to making the border more efficient. In general, systems that eliminate paperwork and replace it with electronic communication, bar codes or similar technologies can speed up commercial vehicle clearance.

Naturally, more and better infrastructure is critical to making the border more efficient. As I have already noted, it is not the capacity of bridges that account for most backups but the inability of inspection procedures to keep up with the traffic flow. However, resumed growth in Canada-US trade would bring some crossings beyond capacity within the next decade and there is currently insufficient capacity to take up the slack if a bridge goes out of service. Expansion of inspection plazas is a critical need at the Peace Bridge and Ambassador Bridge, where there is insufficient space for secondary inspection. Furthermore, new crossings for both road and rail are needed to provide redundancy, especially at the critical Detroit River frontier. As I will discuss below, making more lanes available is complementary to the success of trusted trader and trusted travellers programs.

Moving functions away from the border crossing. Under the conventional model of border management a large number of investigative procedures must take place within the constrained space of the inspection plaza. They are constrained not only in space but also in time, since they must occur when the vehicle arrives at the border. This leads inevitably to congestion. A general strategy is therefore to relocate border functions in both space and time, so that when the vehicle arrives the investigation has already taken place.

As an example, trucks are now required to electronically submit a full manifest with information about the shipper, receiver and carrier an hour before they reach the border. This is an inconvenience, especially for trucks leaving Windsor or St. Catharines that may have to be held at their point of origin to avoid reaching the border too soon. But it allows border officials to run software that makes a risk assessment for each truck based on the advance information. If the truck is identified as low risk it will be released quickly at the border. In the absence of advance documentation, border guards would be forced to make risk assessments "on the fly" for each truck that approaches the border. The result of this system has been a reduction in the number of secondary inspections.[47]

A more comprehensive approach to moving functions away from the border is embodied in the "trusted traveller" and "trusted trader" programs that are operated cooperatively by the US and Canadian government. Under these programs, individuals and firms undergo background checks and, in the case of firms, upgrade their private security systems in order to earn a low-risk designation, which results in preferential treatment at the border. Essentially this means that much of the scrutiny that would normally be done at the border has been done in advance and security has been assessed at the firm's facilities rather than at the primary inspection line.

[47] I have no data to support this, but it has been expressed to me by a variety of people involved in cross-border trucking.

The NEXUS trusted traveller program allows individuals to use special lanes and get faster clearance with fewer referrals to secondary inspection if they are willing to pay a modest fee and subject themselves to a criminal background check.

Trusted trader programs are a bit more complicated. Any commercial shipment involves a number of parties: a shipper (exporter), a carrier, a vehicle driver or pilot, a receiver (importer), the original manufacturer of the goods, the supplier and sometimes a third party logistics firm. In order for a shipment to be designated as low-risk, CBP and CBSA require information on all parties. Not only are background checks required on all parties, but they must all demonstrate that they practice sufficiently strict supply chain security to ensure that contraband or stowaways do not end up in their containers or trailers. The two governments operate separate but similar certification programs: C-TPAT (Customs – Trade Partners Against Terrorism) for shipments entering the US and PIP (Partners in Protection) for shipments entering Canada. At the crossings, trucks with the appropriate certifications are allowed to use the FAST (Free and Secure Trade) lanes. (Discussions are currently underway to better align the PIP and C-TPAT programs by standardizing procedures and policies and ultimately instituting a common application process.)

Participation in trusted trader programs is expensive, not so much because of certification fees but because upgrades to security systems are often required. Periodic audits are done to ensure that security standards are maintained, and failure can result in decertification. Since most large firms already practice a high level of supply chain security and because there are scale economies in developing security systems, participation is generally less expensive on a per-shipment basis for large firms than for small firms. An unintended consequence of trusted trader programs is therefore to put small firms at a competitive disadvantage in cross-border trade.

Infrastructure additions that increase the number of highway crossing lanes are highly complementary to the NEXUS and FAST programs. For example, the Ambassador Bridge has only two lanes in each direction, so trucks qualifying for the FAST lane may still be stuck in queues with non-qualifying trucks until they reach the far side of the span. The addition of the planned down-river crossing (commonly called the DRIC Bridge) will increase this to five, making it possible to designate one lane to FAST qualified trucks and one to NEXUS qualified cars, while still leaving three lanes each way for general traffic.[48] Of course this will require some measure of coordination between the two bridges. The Niagara Falls Bridge Commission, which operates three bridges across the Niagara River, currently has designated NEXUS and FAST lanes.

Another approach to moving functions away from the border is based in the argument that inspection plazas are not necessarily the best place to thwart the illegal movement of goods, money and people. Engaging in more intelligence gathering and law enforcement activity against drug smugglers, human smugglers and terrorist groups is a more productive use of resources than ever more stringent border checks. By focusing attention away from the border, this approach should reduce the likelihood that legitimate travellers and traders will be delayed, intimidated or otherwise inconvenienced. Effective law enforcement and intelligence gathering requires a high level of coordination between US and Canadian agencies. Integrated Border Enforcement Teams (IBETs), in which RCMP and CBSA officers work in teams with CBP, ICE and US Coast Guard officers, are the most prominent example of this approach. Another is the Canada-US Shiprider program, whereby boundary waters are patrolled by boats crewed by mixed crews of Canadian and US officers, so they can make inspections and arrests on either side of the marine border. There is a general trend toward greater information sharing between Canadian and US law enforcement and intelligence agencies. (As we will see, information sharing is the subject of considerable controversy.)

[48] For more discussion of trusted trader programs see Anderson (2010) and Bradbury (2010).

The Perimeter Approach. The term "perimeter" is used in a rather broad sense in Canada-US border discussions, so some definition is in order. For two or more contiguous states in a free-trade area or other type of alliance, the perimeter is made up of all elements of their borders that separate them from the rest of the world rather than from each other. So for Canada and the US, the perimeter includes the border between the US and Mexico and the coasts around both countries. From a practical perspective, all international airports in Canada and the US are part of the perimeter, since they are actually the most common points of entry to the shared Canada-US space. The perimeter approach, taken to the extreme, means that border functions are executed only at points of entry on the perimeter, and not along the Canada-US border.[49] (It is important to note, however, that the term "perimeter security" is frequently used in less literal sense to encompass a range of procedures and technologies that make border inspections more efficient, but do not eliminate them.[50])

The standard model of a strict perimeter approach to border management is the Schengen Area, which is a group of European states (26 EU states plus Switzerland, but excluding the UK and Ireland) within which all border controls and inspections have been eliminated. The perimeter consists of land borders between Schengen and non-Schengen states, such as Finland/Russia, Poland/Ukraine and Greece/Turkey, and the coastlines of Scandinavia, Western Europe and Southern Europe. International airports also function as perimeter portals. Once a person passes through the perimeter, he or she can travel to any Schengen area state without further border checks. The same applies to freight shipments. It is important to understand that in the Schengen area border functions are not shifted from one place to another. So long as the movement is between two Schengen states, the border functions are eliminated. When we talk about the perimeter approach in the literal sense, we should therefore refer to the elimination of functions at the Canada-US border rather than to their reform or relocation. This is not to say that customs, immigration and security functions are no longer needed, but rather that they will be concentrated at points on the perimeter. But how is this possible? The answer is simple: through policy harmonization.

A frequently heard comment these days is "if the Europeans, who fought two world wars in the twentieth century, can get rid of their borders, why can't Canada and the US, who have enjoyed almost two centuries of peace, do the same?" There are actually a lot of good reasons why they can't. They all relate to the challenges of policy harmonization between Canada and the US. For one thing, unlike the EU states, Canada and the US are not joined in a customs union – in other words they have not harmonized their external tariff and non-tariff barriers. As goods entering the US and Canada from third countries are subject to different tariff rates, technical standards and other policy difference such as the US embargo on goods from Cuba, border checks are necessary. Then why can't Canada and the US establish a customs union? The reason this would be so difficult is that tariff rates are often set in support of cherished policies. For example, Canada sets tariffs of over 200% on dairy products to protect its supply management system. The US does something similar for sugar. Few politicians want to take on the entrenched interest that benefit from these policies.[51]

There are many other areas of policy harmonization that would be difficult to achieve but necessary for a full-blown perimeter approach. Visa harmonization was one of the last and most difficult tasks leading up to the elimination of border checks in Europe. Significant differences exist between Canadian

[49] Noble (2005) provides an excellent introduction to the emergence and decline of the perimeter concept in North American policy discussions.

[50] For example, the Canadian / American Border Trade Alliance, a group that has played a highly constructive role in the development of border policy, uses the term "perimeter security" in this broader sense. See www.canambta.org.

[51] Kirgin and Matthieson suggest that a customs union is not feasible in the current political climate.

and US visa policy. Perhaps firearms policy would be the most difficult to harmonize. The fact that the US is much larger than Canada makes the challenges of policy harmonization all the more difficult. Whether it is true or not, the Canadian public is apt to feel its freedom of choice is being sacrificed to the more powerful American interests.

All this does not mean that a perimeter approach cannot be applied on the Canada-US border, only that it cannot go as far as the European model anytime soon. While the goal of eliminating the border is distant and perhaps not even desirable, there may be opportunities to eliminate individual border functions by policy harmonization, thus reducing the volume of inspections necessary. For example, harmonization of agricultural and health inspections to the point where no duplicate inspections are necessary at the border is a reasonable goal to work toward. As I will discuss below, the recent Canada-US action plan emphasizes creation of a security perimeter, in part through harmonization of security policy.

The policy elements discussed so far all related to ports of entry (POEs) where legal movements of goods and people take place. One of the greatest challenges on the Canada-US border is the fact that there are thousands of kilometres of unfenced border between the POEs. The fact that most of this border space is beyond even the "situational awareness"[52] of government agencies is an issue of increasing concern in the US. While CBP has stated clearly that it has no intention of building a Canada-US border fence,[53] the use of unmanned aerial vehicles (UAVs, popularly called drones) over the western border and the installation of monitoring towers are among its strategies for controlling the border between POIs. This has been called a "militarization" of the border, but it reflects a legitimate need to control the problems of drug and human smuggling.

In developing policy it is important to recognize that not all border crossings have the same principle mission and therefore face the same problems. Sands (2009) points out that the issues faced at a major trade and industrial crossing such as the Detroit River are not the same as those faced at rural crossings or at the Blaine – Peace Arch crossing between Washington and British Columbia, where most of the traffic is in discretionary personal trips. He therefore advocates the development of regional border committees with significant input into operations at their local borders. This type of devolution will be difficult to implement however, given the exclusively federal nature of border functions.

Perimeter Security and Economic Competitiveness Action Plan

In late 2010, Prime Minister Harper and President Obama appointed two committees to devise plans for addressing impediments to Canada-US trade. This represented something of a restart in border discussions, and most importantly a shift to a bilateral approach to border issues as opposed to the trilateral approach of the SPP. The first committee, the Beyond the Border Working Group, addressed issues related to the border, while the second, the Regulatory Cooperation Council, addressed regulatory inconsistencies between Canada and the US. Both committees reported out on December 4, 2011.[54] I will focus on the former, but the latter is of equal importance in removing barriers to greater economic integration.

The report of the Beyond the Border group is called *Perimeter Security and Economic Competitiveness Action Plan*. (I might quibble with this title, since most of its recommendations don't fit under my definition of the "perimeter approach.") This document has three important characteristics. First, it is a highly operational

[52] Defined as a situation where the probability of detection of illegal crossings is high, even if the capability for interdiction is low (GAO, 2010.)

[53] USCBP (2009).

[54] The reports of both committees (Government of Canada, 2011a,b) may be downloaded at http://actionplan.gc.ca/eng/feature.asp?pageId=357&featureId=30

plan, rather than a grand vision. It does not define an ideal border of the future, but rather concentrates on how to improve existing circumstances. Second, it sets very short time lines. Each point in the action plan sets dates by which specific things will be accomplished. The year 2016 is mentioned only once in the document, all other dates are 2015 or earlier. Finally, most of its recommendations can be implemented without new legislation in Canada or the United States.

Some may criticize the *Action Plan* for lacking vision, but I believe its practical, short-term approach was both deliberate and appropriate. Given the recent proliferation of national fiscal plans that envision budgetary stability by sometime in the 2030s, it is refreshing to see a plan that is meant to be implemented by dates when most of us still expect to be alive. Furthermore, despite the majority government in Canada, passing legislation in the US is now very difficult, so it is better not to make plans that depend on it. By 2015, it will be possible to make an assessment of whether the plan's implementation has been successful. If it is to be a failure, we will know it by then.

The plan addresses many of the concerns that have been addressed by business groups in the US and Canada over the past decade.[55] These include:

- Improvements and greater coordination in trusted traveller and trader programs.
- Making it easier for people to cross the border for business services such as maintenance and repair.
- A "single window" approach whereby importers can enter all information necessary to get a shipment across the border to one place and in a common format.

While there is no commitment on reducing border fees, there will be an independent assessment of the economic impacts of those fees. Similarly, while there is no commitment to reducing wait times, there will at least be a better system to monitor them.

Air travel and cargo are emphasized in the Action Plan. Mutual recognition of air cargo security programs is scheduled for 2012, while mutual recognition of cargo screening systems will be accomplished by 2015. This comes at a cost for Canadian airports, however, since they will have to install TSA approved scanning equipment. Mutual recognition should be especially beneficial for smaller Canadian airports that will be better able to provide cargo service to the US and direct or connecting passenger service to US destinations.

An ambitious goal of the *Action Plan* is to increase the level of cooperation between CBP and CBSA. One aspect of this is a common entry-exit system whereby the agencies will share information on entrants. For example, CBP can track the exit status of earlier entrants by knowing when and where they entered Canada. Canada and the US will conclude a broad agreement allowing CBP officers to operate in Canada and CBSA officers to operate in the US. (CBP officers already conduct inspections at some Canadian airports.) Following this CBSA will begin conducting inspections of all cars and trucks bound for Canada at a facility in Massena, NY, and CBP plans to establish a preclearance centre for trucks at an as yet undetermined Canadian location. (This is not a trivial goal. Extended discussions to establish a CBP facility on the Canadian side of the Peace Bridge ended in failure.[56])Common inspection standards for shipments from third countries will make it possible to eliminate duplicate inspections, for example, for goods that arrive at a Canadian port and will be delivered by road or rail to a US destination. This is called the principle of "cleared once, accepted twice."

Information sharing is one of the most important themes of the *Action Plan*. This goes beyond sharing information on goods and people crossing the border. For example, Canada will notify the US when people on US watch lists enter its territory and will share information of people who are denied entry to Canada. Biographic and biometric databases

[55] See, for example, Canadian Chamber of Commerce (2009).

[56] See GAO (2008).

will be broadly shared. There are repeated acknowledgements that sharing must take place within the bounds of each county's laws. Also, a joint statement of Canada-US privacy principles is to be issued in 2012. Still, information sharing provisions are likely to be the most controversial elements of *Action Plan*.

On the infrastructure side, a joint border infrastructure plan will be developed to coordinate construction on either side. There is a list of crossing facilities with priority for expansion or improvement. There will also be cross-border emergency traffic management plans. The first regional infrastructure resilience assessment to determine the ability of the border to function under various contingencies will be conducted at the Maine – New Brunswick border.

There are a couple of topics that are noteworthy by their absence in the Action Plan. One is the development and installation of new technology. There are provisions for expanding the use of existing technologies and for sharing biometric data, but not for technological innovations. This reflects the short-term orientation of the plan, but there is a need for an additional plan to address technological innovations. The second is to improve the experience of the occasional border crossers. There is clear evidence that individual traveller crossings have fallen more quickly than cross-border trade, but border policy remains focused on trade and business travelers.[57] A greater emphasis on occasional travelers is important, both because they support the tourism industry and because providing benefits to the millions of the people in both countries who cross the border only occasional will help garner popular support for border initiatives.

Public Concerns over Policy

There are a number of aspects of border policy that raise legitimate issues regarding human rights and Canadian policy autonomy. For example, trusted traveller / trader programs and various forms of border screening are based in the idea of risk assessment. Rather than conduct full investigations on all individuals and loads, the idea is the single out those that are "high risk" and focus scrutiny on them. This approach meets the twin goals of enforcing security and facilitating free movement. On average, it makes everyone's crossing faster, while reducing the risk of an illegal act occurring. If, however, you are one of those designated as high risk, it makes your life considerably more difficult. Most people would agree that if someone is so designated because of past criminal acts, then is appropriate that he or she should suffer some inconvenience. But what if the high risk designation is beyond the individual's control?

In fact, people are discriminated against all the time for things that are beyond their control. Young males pay higher rates of auto insurance and people with a history of heart disease are often denied life insurance. But when the risk factor is based in something like religion or ethnicity, the problem crosses into the realm of human rights. It may not be the case that officials discriminate on the basis of race or religion in issuing NEXUS cards or FAST cards, but things on which they must discriminate often correlate highly with race and religion. For example, a NEXUS card may be denied on grounds that background checks cannot be provided for people born in some countries. So new Canadians, especially those coming from low-income countries, may not be able to qualify. It has been suggested that this amounts to conferring different classes of citizenship to people based on risk factors that are beyond their control.[58] But how do we resolve this problem without subjecting everyone to the same high level of scrutiny? This is an important question that should be part of a public debate about the use of risk assessment in general and border policy more specifically.

Information sharing is another controversial issue related to border policy. The security perimeter model described in the Action Plan would "create a shared responsibility between Canada and the United States concerning those

[57] This argument is made in Burke (2010).

[58] An excellent discussion of these issues is found in Gilbert (2008).

entering the perimeter" (page 9.) This implies that Canada would share information with the US regarding activities within its territory, even if none of people involved attempted to cross the border. Many Canadians are reluctant to give such information to American officials, especially in light of the Maher Arar case. Conversely, given the reluctance of CBP, ICE and other US agencies to share information even with each other,[59] it is unclear that full sharing of information with Canadian officials is possible. People in both countries may be reluctant to trust a foreign government to hold sensitive information about themselves secure from hackers and identity thieves. The joint Canada-US statement of privacy principles that is still forthcoming must provide significant reassurances that shared information will not be used inappropriately

Concerns about the use of biometrics and the "militarization" of the border through use of UAVs and other security devices are exaggerated in my view. But it is incumbent on the governments of both countries to provide information on how and why these technologies are being used and how any information gathered by them is being protected. Having attended many conferences and workshops about the border over the past four years, I have seen very little interchange between people whose main concern is clearing travellers and goods by whatever means is most efficient and people who are most concerned with the possible violations of rights arising from stringent border security. We may never reach full consensus on border policy, but we should at least ensure that decision makers hear all relevant perspectives. Thus, while I am reluctant to call for even more symposia and workshops, I think a more comprehensive debate on border security is needed.

[59] This problem is described in GAO (2010).

6. CONCLUDING COMMENTS

The Ontario economy is highly dependent on trade with the US, so the performance of the border is a topic of critical policy concern. The importance of the border issue is reinforced by the fact that so much of Ontario's trade is of goods in cross-border supply chains that are relatively intolerant of delays, uncertainties and other costs. Because almost three quarters of this trade moves in trucks, it depends on a small number of major bridges. The enhanced border security regime in the aftermath of the attacks of September 11, 2001 has added to scale and complexity of the border issue.

Not only do the day-to-day costs of the border represent a competitive disadvantage for Ontario firms in the integrated Canada-US economy, but the threat of interruption due to a terrorist attack or other extreme event imperils production systems throughout the province. The lack of redundancy in road and rail crossings is therefore a major policy concern.

The following are some directions for policy development based on my research over the past three years. They are not intended as a road map to a "new border" so much as a set of summary points about what is important and what is realistic. Their main purpose is to stimulate policy debate.

- For the foreseeable future, progress on the performance of the border is not likely to come from some sweeping agreement, such as the establishment of a Schengen-style perimeter or even the establishment of a customs union. There are many incremental steps that can be taken in cooperation with the US that, taken together, can significantly improve the performance of the border.
- The goal should be for Canadian and US agencies to execute border functions in a cooperative manner rather than in isolation. The Canada-US border should be viewed as a necessary institution to be managed cooperatively – and ideally jointly – by two friendly governments. The recent Action Plan is a step in the right direction.
- While cross-border delays and the intensity of security checks are the most visible frictions at the border, less visible things such as customs administration and the range of information that must be provided to various agencies of both governments pose equal, if not greater, costs. Efforts at both the elimination of unnecessary documentation and the modernization of systems for submitting necessary information are among the most important elements of border policy.
- All planning on the border should focus not only on the reduction of day-to-day costs but also on mitigating the potential impacts of an interruption at one or more crossings. This includes the development of joint Canada-US contingency plans for a range of emergency scenarios. Ultimately, the surest way to make the border more resilient is to provide greater redundancy. This reinforces the need to go forward with the planned second bridge across the Detroit River.
- There is potential for much greater application of technologies that can both speed up and intensify security checks. This includes biometric technology to better relate people to their documentation and a variety of scanning technologies

that can detect contraband in non-invasive ways. The Government of Canada should engage the United States in a bi-national effort on technology development and implementation. The new bridge planned for the Detroit River provides an opportunity to create the most technologically advanced border crossing in the world.

- Both greater Canada-US cooperation on security and the application of biometric and other technologies raise serious questions regarding privacy and human rights. Debates on these issues need to be brought from the periphery of border discussions into the main stream. Ignoring these issues is not appropriate in a democratic society, nor is it prudent given the potential for public opinion to turn against border policies that are seen as threatening.
- Over the past decade, border policy developments have focused on the movement of freight and business travellers at the expense of the occasional traveller. But the most significant negative impact of the "thicker" border appears to have been on occasional personal travel. I believe the most troublesome piece of information presented in this report is the fact that fewer American's cross into Ontario now than in the 1970s. Not only is this bad for the tourism industry, but it is bad for the relationship between Canada and the United States. A bi-national program to address the reluctance of occasional traveller to cross the border is needed.
- Increased oil and gas exports from Canada to the United States are of great benefit to both countries. But they tend to conceal the fact that exports of many other types of goods are in decline. Over-dependence on exports of oil and gas has its dangers, such as the potential impact of another oil glut on Canada's economy. Since oil and gas move by pipeline, they face a different set of cross-border issues than other goods. The growing importance of oil and gas should not lead to a neglect of the problems associated by cross-border movements by road, rail and air.

Finally, I would caution against over-estimating the impact of border problems on Ontario's relationship with the US economy or the expectation that resolving border issues will, by itself, trigger a new period of growth in trade and other forms of cross-border interaction. Other factors, such as they high and unstable level of the Canadian dollar, are just as important if not more so. All of these factors should be viewed collectively as part of a policy program to reduce impediments to interaction between firms and households in Ontario and the United States. And this should be complementary to policy efforts that seek to diversify Ontario's economic base through greater linkages to other countries.

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