

Transaction costs in the
transportation sector and
infrastructure in North America:
exploring harmonization of
standards

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Abstract

Since the implementation of the North American Free Trade Agreement (NAFTA) in 1994, trade between the three North American countries has almost tripled. However, there are substantial impediments for the efficient freight movement between the three countries. Major obstacles derive from transaction costs which reduce and sometimes eliminate the benefits gained from the removal of tariffs resulting from NAFTA. The paper analyzes North American truck, rail and maritime trade and transportation characteristics and operations that serve as the foundation to identify and quantify transaction costs caused by the lack of harmonized transportation regulations and infrastructure disparities. The research describes opportunities to reduce or eliminate costs along with a strategy to implement actions to reduce transaction costs in the transportation sector. An implementation plan for these actions is recommended with some examples of good practices that have taken place in Mexico.

Introduction

Since the implementation of the North American Free Trade Agreement (NAFTA) in 1994, trade between the three North American countries has almost tripled. However, even though trade volumes have increased dramatically, there are substantial impediments for the efficient freight movement between the three countries. Major obstacles derive from transaction costs which reduce and sometimes eliminate the benefits gained from the removal of tariffs resulting from NAFTA. Transaction costs in this document are defined as those not associated with direct transportation costs such as freight rates, but those that arise from complying with security, safety and customs procedures, delays at border crossings and those associated with additional handling of freight due to lack of a harmonized transportation system in North America. These transaction costs increase prices for traded goods and affect the demand for goods produced in the three countries.

Even though transaction costs caused by regulatory divergences and inadequate transportation infrastructure are evident, very little has been done to quantify and address them. Some case-specific analyzes exist for particular border crossings, but no studies have been found that address these issues at the North American level. This is precisely the issue which will be developed in this document. The objectives of the study are to analyze current trade characteristics and transportation practices in North America to identify issues that lead to transaction costs; perform a preliminary quantification of these transaction costs, and suggest a plan to reduce costs and increase Mexican competitiveness.

Trade in North America is dominated by land modes of transport (truck and rail), and by ocean. These three modes of transport account for more than 85 percent of the total trade in the region, and experience the largest share of regulatory issues and infrastructure disparities. International trade by air is only 4 percent of the value of NAFTA freight and less than 1 percent of the weight. There are no regulatory issues in the air freight sector that impede the development of this mode of transport in North America. Hence the analysis in this study will focus on land and sea transport.

The first section of this paper analyzes North American truck, rail and maritime trade and transportation characteristics and operations. This serves as the foundation to identify and quantify transaction costs caused by the lack of harmonized transportation regulations and infrastructure disparities in North America, which is presented in the second part of the paper. The third section describes opportunities to reduce or eliminate costs along with a strategy to implement actions to reduce transaction costs in the transportation sector. An implementation plan for these actions is recommended with some examples of good practices that have taken place in Mexico are included in the last section of the paper.

I. North American trade and transportation infrastructure characteristics

1. North American trade characteristics

With the implementation of the North American Free Trade Agreement (NAFTA) in 1994 a new period of change in the North American trade and transportation sectors began. North American trade since the inception of NAFTA can be characterized in three very distinctive phases. The initial one, from 1994 through 2000, showed a remarkable growth in trilateral trade. In this first stage of the treaty, the value of United States (U.S.) goods trade with Canada and Mexico by truck and rail transport modes grew from 299 billion dollars¹ in 1994 to 523 billion dollars in 2000, representing an average annual growth of 9.8 percent. In the second phase of the treaty, between the years 2000 and 2005, the average annual growth rate of U.S. goods traded with Canada and Mexico by surface modes decelerated to an annual 3 percent, reaching 607 billion dollars in 2005 (see figure 1).²

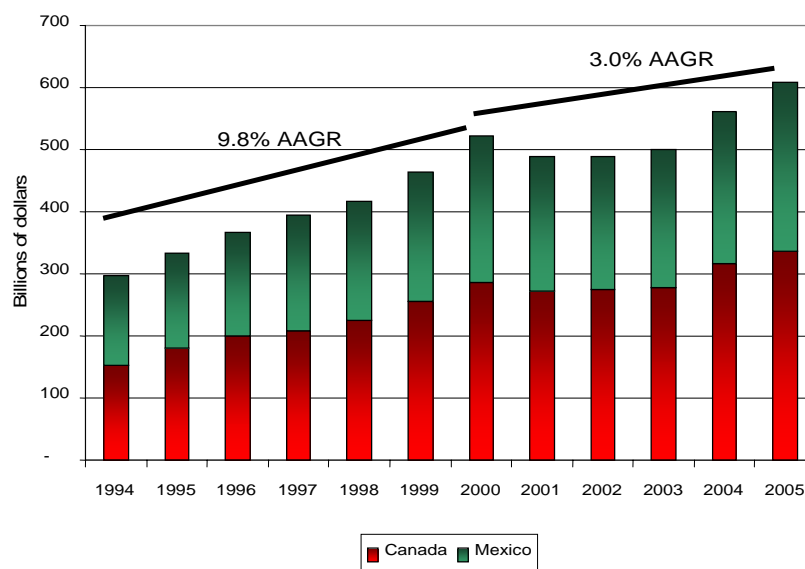
By the mid 2000 decade, a third stage of NAFTA was starting, but with great uncertainty on the direction it would take. The lack of

¹ All dollars mentioned in the paper are U.S. dollars.

² U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Transborder Freight Data.

harmonized standards in transportation regulations and great differences in transportation infrastructure development along with security and safety concerns in the U.S. have added another layer of complexity to North American trade movements that increase transaction costs. These issues, in addition to China's development as an export power, will undoubtedly bring changes in the way trade and transportation is handled in the North American continent.

Figure 1
TOTAL U.S. TRADE WITH CANADA AND MEXICO BY TRUCK AND RAIL, 1994-2005



AAGR = Average Annual Growth Rate.

Source: U.S. Department of Transportation, Bureau of Transportation Statistics.

U.S.-Mexico merchandise trade by truck and rail grew at a much faster pace than trade between the U.S. and Canada between 1994 and 2005. U.S.-Mexico trade grew at an average annual rate of 9.4 percent compared to 5.3 percent of the U.S.-Canada trade.

North American trade by truck and rail accounts for nearly 80 percent of the total merchandise trade in the region. Truck is the dominant mode of transport in North America with three quarters of the international merchandise trade by land between the U.S. and Mexico as well as between the U.S. and Canada done in this mode. Even though U.S.-Mexico trade by rail experienced an average annual growth rate of 10.7 percent in the 11-year period between 1994 and 2005, the overall growth for truck and rail movements between the three countries was 6.7 percent, on average (figure 2).

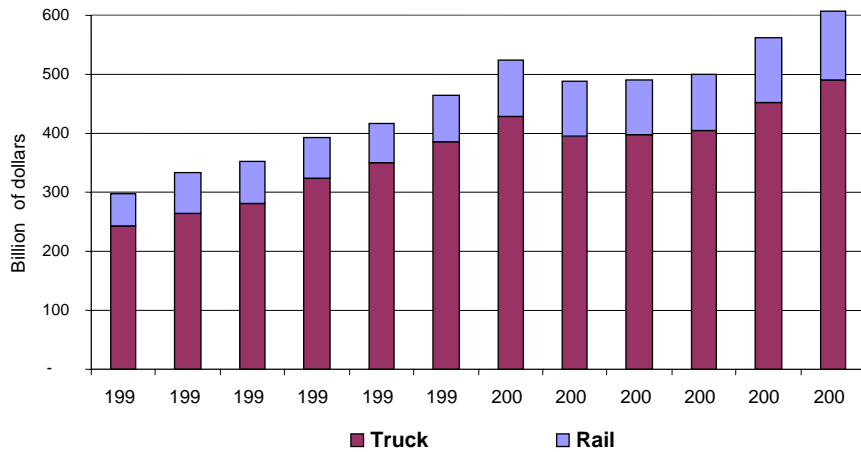
With over 75 commercial land ports of entry along the U.S.-Canadian border and 25 along the U.S.-Mexican border, cross-border trade in North America is concentrated in a relatively small number of land ports of entry. In 2005, approximately half of the total truck and rail traffic in North America was handled by three land ports of entry—Detroit, Michigan; Laredo, Texas; and Buffalo, New York (figure 3).³

At the U.S.-Canadian border, more than three quarters of the surface trade is handled by only 5 land ports of entry – Detroit, Buffalo, Port Huron, Champlain and Blaine; while at the U.S.-

³ U.S. Department of Transportation, Bureau of Transportation Statistics, America's Freight Transportation Gateways.

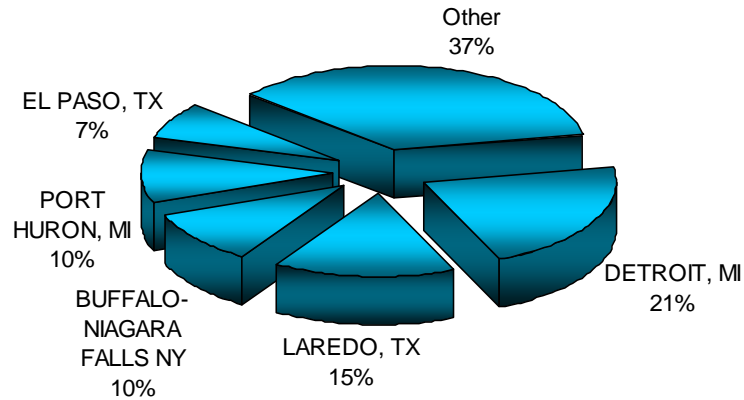
Mexican border only 4 ports of entry handled 77 percent of the total land trade - Laredo, El Paso, Otay Mesa (Tijuana/San Ysidro) and Pharr (figures 4 and 5).

Figure 2
TRUCK AND RAIL TRADE IN NORTH AMERICA, 1994-2005



Source: U.S. Department of Transportation, Bureau of Transportation Statistics.

Figure 3
NORTH AMERICAN TRADE BY LAND PORTS OF ENTRY BY VALUE



Source: U.S. Department of Transportation, Bureau of Transportation Statistics, America's Freight Transportation Gateways, 2005.

North American land trade is concentrated in a small number of commodities. Four commodity categories represent 80 percent of the total truck and rail merchandise trade by value between the three North American countries. The commodity categories that represent the bulk of the North American land trade are:

- Vehicle parts and accessories
- Machinery and mechanical appliances, including parts
- Electrical machinery
- Plastics and particles thereof

Figure 4
U.S.-CANADA MAJOR PORTS OF ENTRY BY VALUE OF TRADE

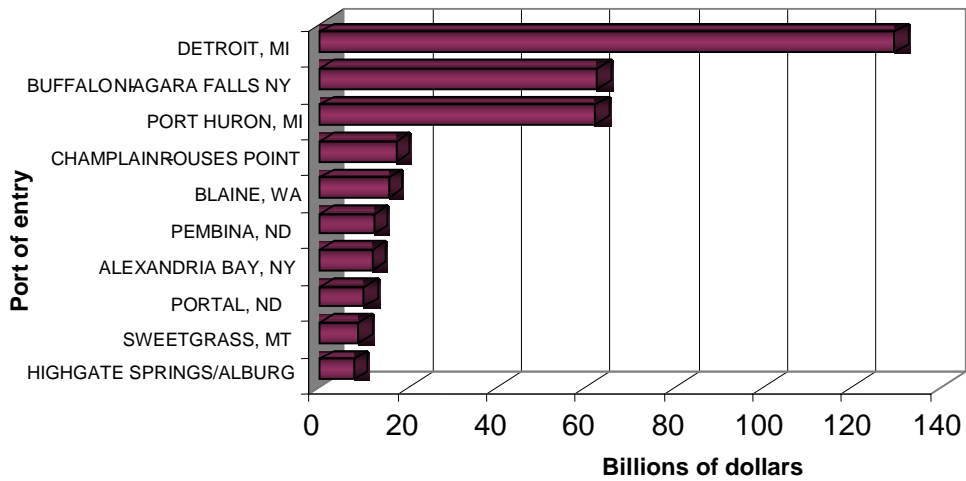
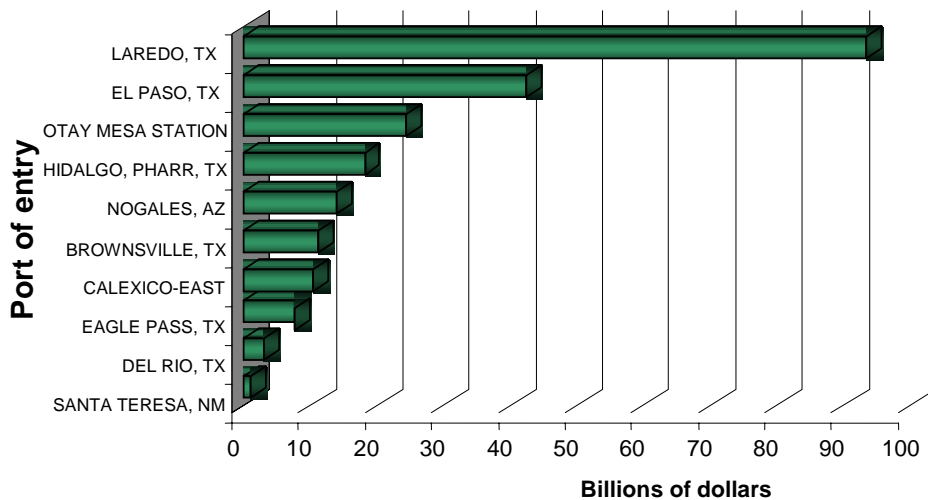


Figure 5
U.S.-MEXICO MAJOR PORTS OF ENTRY BY VALUE OF TRADE



U.S.-Canadian land trade is concentrated in the top two main commodity categories - vehicles and machinery, which are closely related to the automobile industry. Wood represents the third largest U.S. import from Canada. Table 1 presents the top 10 commodity categories traded by land between the U.S. and Canada in 2005.

U.S.-Mexico trade is concentrated in three commodity categories—electrical machinery, machinery and appliances, and vehicles parts and accessories. Table 2 presents the top 10 commodity categories by value that were traded in 2005 between Mexico and the U.S.

Table 1
2005 UNITED STATES-CANADA TRADE TOP 10 COMMODITY CATEGORIES
(Billions of dollars)

	United States exports to Canada	\$	United States imports from Canada	\$
1	Vehicles, parts & accessories (87) ^a	40.88	Vehicles, parts & accessories (87)	61.67
2	Machinery and parts (84)	32.37	Machinery and parts (84)	18.10
3	Electrical machinery equipment (85)	15.77	Wood & articles of wood (44)	13.81
4	Plastics & articles thereof (39)	9.08	Plastics & articles thereof (39)	10.45
5	Iron and Steel (72)	4.56	Paper & paperboard articles(48)	10.09
6	Measuring & testing instruments (90)	4.27	Electrical machinery (85)	8.45
7	Paper & paperboard articles (48)	4.19	Special classification provisions (98) ^a	7.66
8	Articles of iron or steel (73)	4.10	Aluminium & articles thereof (76)	6.74
9	Rubber and articles thereof (40)	2.97	Furniture & prefabricated buildings (94)	5.73
10	Furniture & prefabricated buildings (94)	2.88	Articles of iron or steel (73)	4.37

Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Transborder Freight Data.

^a Number in parenthesis represents the commodity category code in the Harmonized Schedule (HS) for internationally traded commodities.

^b "Special classification provisions" is primarily made up of U.S. goods exported and returned without having been improved in value or condition for imports and an estimated low value shipments for exports.

Table 2
2005 UNITED STATES-MEXICO TRADE TOP 10 COMMODITY CATEGORIES
(Billions of dollars)

	United States exports to Mexico	\$	United States imports from Mexico	\$
1	Electrical machinery equipment (85) ^a	21.06	Electrical machinery equipment (85)	38.50
2	Machinery and parts (84)	17.96	Vehicles, parts & accessories (87)	24.42
3	Vehicles, parts & accessories (87)	10.95	Machinery and parts (84)	20.21
4	Plastics & Articles thereof (39)	9.21	Measuring & testing instruments (90)	6.09
5	Measuring & testing instruments (90)	3.17	Furniture, Bedding, Cushions (94)	5.22
6	Paper & paperboard articles (48)	2.39	Special classification provisions (98) ^a	4.11
7	Articles of iron or steel (73)	2.32	Not knitted or crocheted apparel (62)	3.44
8	Aluminium & Articles Thereof (76)	1.76	Edible vegetables (7)	2.56
9	Iron and Steel (72)	1.72	Plastics & Articles Thereof (39)	2.31
10	Meat (2)	1.55	Articles of iron or steel (73)	2.30

Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Transborder Freight Data.

^a Number in parenthesis represents the commodity category code in the Harmonized Schedule (HS) for internationally traded commodities.

^b "Special classification provisions" is primarily made up of U.S. goods exported and returned without having been improved in value or condition for imports and an estimated low value shipments for exports.

While trade value does not necessarily correspond to trucks or railcars, the statistics show that the amount of surface trade between the three North American countries is considerable and is growing at a very high rate. At the U.S.-Canada border there were over 6.7 million truck crossings into the United States in 2005, and over 5 million at the U.S.-Mexico border. In 2005, more than 1.9 million rail containers crossed from Canada into the U.S. and about 730,000 from Mexico (table 3).

North American land trade is concentrated on very few ports of entry at both, the U.S.-Canada and U.S.-Mexico borders. Concentration is also observed on the transportation mode where truck is the dominant mode. These two different types of concentration create high congestion levels at international truck crossings that produce uncertainty, unreliability and higher costs for international shippers in North America, especially at the Mexican / U.S. border.

Table 3
NUMBER OF TRUCKS AND RAIL CONTAINERS INTO THE U.S. FROM CANADA AND MEXICO ^a

U.S. Border	2001	2002	2003	2004	2005 ^b
Trucks from Canada	6 776 909	6 915 973	6 728 228	6 903 882	6 703 226
Trucks from Mexico	4 304 959	4 426 593	4 238 045	4 503 688	5 028 709
Rail Containers from Canada b/	1 779 345	1 827 384	1 868 245	1 950 909	1 940 666
Rail Containers from Mexico	582 361	601 987	607 370	675 305	728 559

Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from the Department of Homeland Security, Customs and Border Protection, Office of Management Reporting.

^a Rail Container include loaded and empty.

^b 2005 Border Crossing Data are preliminary.

2. North American transportation infrastructure characteristics

Transportation supply is determined by the characteristics of road and rail networks, land ports of entry and maritime ports, as well as the vehicle fleet makeup. As mentioned earlier, truck traffic is the most significant mode of transporting goods in North America, and the roadway infrastructure characteristics at each country establish the efficiency of the truck transportation system. This section presents a brief overview of the road and truck transportation system in each of the three countries in North America.

a) Road networks

i) Roadway network in the United States

The U.S. National Highway System (NHS) was developed by the U.S. Department of Transportation (DOT) in cooperation with the states, local officials, and metropolitan planning organizations (MPOs).⁴

The NHS High Priority Corridors were designated with the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) these corridors are specific routes or general corridors that have been designated in Federal transportation legislation as high priority corridors on the NHS. The ISTEA designated 21 corridors originally and subsequent legislation added additional corridors, reaching 80 in total by the end of 2005.

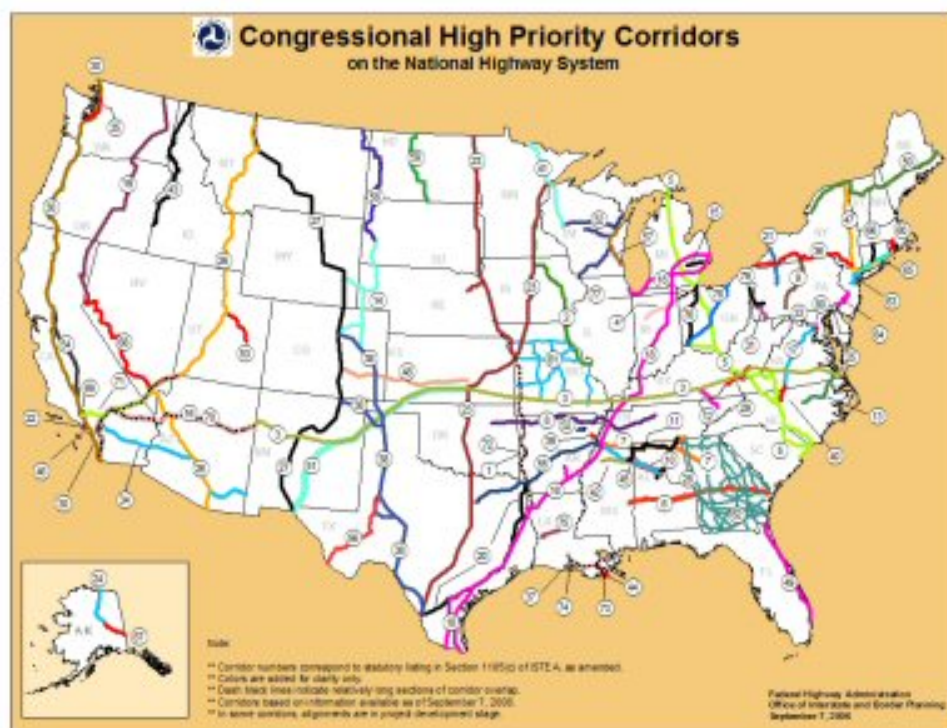
The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) was signed on August 10, 2005, and it authorizes the Federal surface transportation programs for highways, highway safety, and transit for the 5-year period 2005-2009. Various sections for SAFETEA-LU provide funds for the high priority corridors. Figure 6 presents a map of the High Priority Corridors in the U.S.

⁴ United States Department of Transportation-Federal Highway Administration (FHWA) (<http://www.fhwa.dot.gov/hep10/nhs/>).

ii) Roadway network in Mexico

The Mexican national road network includes Federal, Regional and Rural Networks. 14 Priority Corridors connect the main industrial areas with ports and border crossings extend for 12,000 miles (19,254 kilometers) and comprise forty percent of the Federal Network. Thirty percent of the total corridor length is made of toll-roads and are usually four-lane and two-lane highways with good geometric and structural specifications.⁵ Figure 7 shows the 14 priority corridors that the Mexican Transportation Ministry (SCT) is planning to develop over the 2006-2012 presidential period.

Figure 6
U.S. NHS HIGH PRIORITY CORRIDORS



Source: United States Department of Transportation - Federal Highway Administration.
Corridor numbers correspond to Statutory listing in Section 1105(c) of ISTEA.

iii) Roadway network in Canada

The provinces, territories, and municipal authorities are responsible for the provision, maintenance, and operational control of the vast majority of roads and highways in Canada. Federal government involvement in roadway infrastructure is limited to ownership of a small number of miles of road (e.g., in National Parks), financial contributions to other levels of government (not a regularized or legislatively required program), border crossings facilities, and some research and development.

Canada's Council of Ministers is responsible for transportation and highway safety, and has designated part of the Canadian roadway network as the National Highway System. Roads in this network are sometimes referred to as the "primary highway system of national significance".⁶

⁵ Secretaría de Comunicaciones y Transportes, Dirección General de Desarrollo Carretero (<http://dc.sct.gob.mx/>).

⁶ Transport Canada, Transportation in Canada 2005, Ottawa 2005.

Different than in the United States, Canada’s National Highway System has neither legal status nor any committed financial support. In practical terms, the Canadian NHS is simply a set of roads about which there is general intergovernmental agreement that they are “primary” and of “national significance.” On the financial side, Canada does not have an equivalent of the U.S. Highway Trust Fund. Instead, highway-generated taxes go into general revenues for subsequent distribution, providing no formal financial backing or commitment for the Canadian NHS. Figure 8 shows the Canadian NHS in relation to the U.S. NHS.

Figure 7
MEXICO 2006-2012 HIGH PRIORITY CORRIDORS



Source: Secretaría de Comunicaciones y Transportes (SCT).

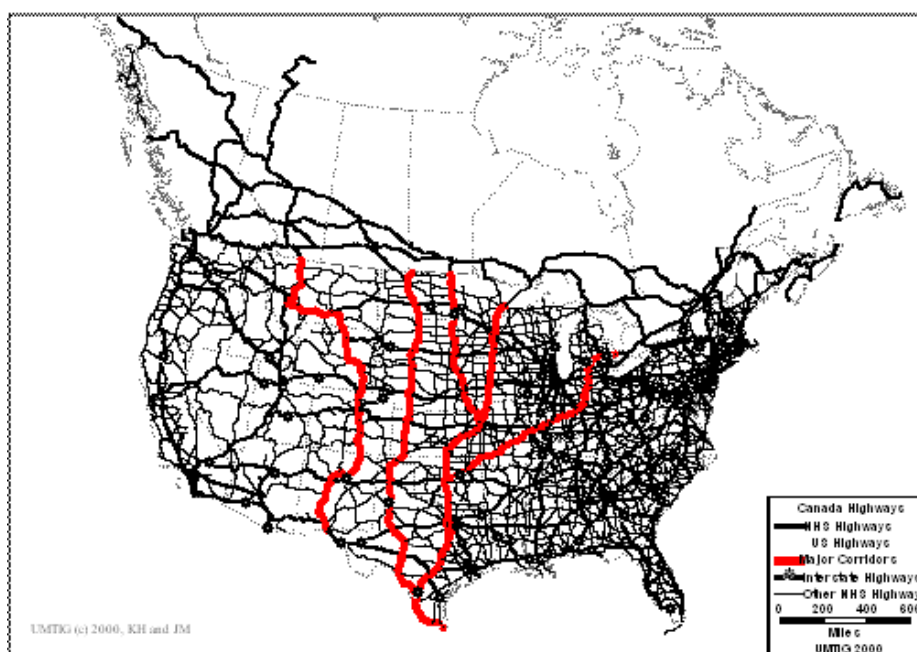
The Canadian and U.S. NHS systems and the Mexican Federal Network provide good road coverage of North America. The trade corridors run mainly in the North-South direction, particularly in Mexico where the East-West corridors are still under development. Changes in trade patterns, with more freight coming from the Far East might accelerate the development of improved road transportation linking the ports on the Pacific Coast with the rest of the countries.

The roadway system on all three North American countries continues to grow. Mexico has experienced the highest growth in the past 10 years (22%), followed by Canada (12%) and the U.S. (3%). Even though Mexico has the highest growth rate in terms of roadway construction, it still lags behind its NAFTA partners.

Highway density factors provide a good way of measuring and comparing roadway infrastructure. As expected, Canada has the lowest highway density on a surface area basis since its climatic and geographic characteristics tend to concentrate the population, and therefore highways, on a small section of the country. Mexico has the lowest density in terms of miles of highway per population. Interestingly, the population-based highway density factors for the U.S. have decreased in the last ten years. This phenomenon coupled with the increase in vehicle-miles-traveled (VMT) per capita might explain why congestion is becoming more and more common throughout the U.S.

Figure 8

CANADA AND U.S. NATIONAL HIGHWAY SYSTEMS



Source: U.S. National Highway Planning Network and University of Manitoba Transport Information Group.

Table 4 presents the basic roadway performance measures for all three North American countries. Mexico has the lower highway density but has significantly increased its extension to overcome the lag, while Canada has the lowest highway density on a surface basis. In order to reach a similar roadway development than the U.S, in terms of kilometers per capita, Mexico would require doubling the length of its road network.

Table 4
NORTH AMERICA HIGHWAY DENSITY EVOLUTION

Hierarchies	Canada			Mexico			United States		
	1995	2000	2005	1995	2000	2005	1995	2000	2005
Main road system (km)	NA	103 000	115 000	91 054	101 798	110 922	694 000	699 000	714 760
Highway Density (km/1 000km ²)	NA	11.3	12.6	46.5	52.0	56.6	75.8	76.2	77.9

Source: North American Transportation Statistics Database, available at <http://nats.sct.gob.mx>

iv) Motor carrier characteristics

As most of the merchandise trade in North America is performed by truck, this industry has a significant role in the region’s economy. The goods shipped by for-hire carriers, private carriers, and owner-operators that make up the trucking industry in the three North American countries, range from raw materials, to components, and final products.

The characteristics of the trucking industry in North America could be classified as follows:

- **For-hire motor carriers.** Carriers that haul freight for others for compensation, offering either truckload (TL) or less-than-truckload (LTL) services, or a mix of the two.

- **Owner-operators.** Carriers that operate as small independent for-hire truckers. They own and drive their own trucks, hauling trailers for other carriers or directly for a shipper.
- **Private trucking** includes companies that primarily haul their own freight but occasionally haul goods for others for compensation. It is not covered by the for-hire segment. Because these trucks are operated by someone working for an industry other than for-hire trucking, the value of their services is difficult to estimate.

The trucking industry in the U.S. is substantially larger than in the other two North American countries. Table 5 presents a summary of the truck carrier characteristics.

Table 5
NORTH AMERICAN TRUCK CARRIER CHARACTERISTICS

Carrier type	Mexico ^a	United States ^b	Canada ^c
Commercial freight vehicles (Number of units)			
For-hire	120 926	NA	166 000
Owner-operator	147 799	NA	125 000
Private trucking	21 222	NA	234 000
Other	NA	NA	72 000
Total	28 ,947	5 416 100	598 000
Carrier companies			
For-hire	10 977	NA	10 000
Owner-operator	94 000	NA	36 000
Private trucking	6 710	NA	NA

^a Source: Estadística Básica del Autotransporte Federal. Secretaría de Comunicaciones y Transportes (http://portal.sct.gob.mx/SctPortal/appmanager/Portal/Sct?_nfpb=true&_pageLabel=P46007).

^b Source: National Transportation Statistics 2006. Bureau of Transportation Statistics. U.S. Department of Transportation (http://www.bts.gov/publications/national_transportation_statistics/html/table_01_21.html).

^c Source: Transportation in Canada 2005. Transport Canada. (http://www.tc.gc.ca/pol/en/Report/anre2005/7E_e.htm).

The U.S. trucking industry is the largest in all three North American countries with over five million units. Mexico has the smallest truck carrier industry in North America in terms of number of units and it also dominated by owner-operator companies that usually have older vehicles as it is difficult for them to access credit. These factors make Mexico's truck fleet not only the smallest but also the oldest fleet in North America.

The average age of trucks in Mexico is 16 years and this brings inefficiencies into the Mexican trucking sector. Older vehicles cost more to operate and maintain, and produce higher emissions than the newer vehicles. The large amount of owner-operators in Mexico makes it difficult for this type of "one-man-shop" operations to access lines of credit and other capital sources to renovate the fleet as large corporations do in the U.S. and Canada.

II. Current land and maritime operations

1. NAFTA truck regulations

NAFTA provisions on cross-border trucking specified that restrictions on the movement of Mexican trucks beyond a narrow commercial zone extending 3 to 20 miles into the United States were to be phased out between 1995 and 2000. Enactment of this timetable was postponed by the U.S. Congress in 1995. The United States alleged that the inability of Mexico's regulation regime to adequately ensure the safety of its commercial drivers and carriers would pose a safety risk to the U.S. public.

Consequently, the moratorium on long-haul trucking across the U.S.-Mexico border was upheld. This situation has persisted for the past decade due to ongoing litigation and disputes regarding Mexican truck safety, emissions, and inspections. Driver-related concerns included inadequate training for the safe operation of Mexican trucks on U.S. roads, the undercutting of U.S. driver wages, long operating hours, proficiency in English, and the ability to maintain adequate records, such as logbooks. Equipment concerns were related to truck maintenance, the impact of overloaded trucks on U.S. roads, and the age of trucks and associated emissions impacts.

In a unanimous ruling on June 8, 2004, the Supreme Court found in *Department of Transportation et al. v. Public Citizen et al.* that the USDOT lacks the authority to ban Mexican trucks and cannot

override President Bush's decision under NAFTA to lift a long-standing moratorium on their access. As a result, the USDOT is not required to study the trucks' impact on U.S. air quality, as environmentalists and a host of allied states had argued.

In recent years, many of the issues that prevented implementation of the NAFTA trucking provisions have been addressed. One outstanding hurdle is the establishment of an agreement between the United States and Mexico with respect to U.S. motor carrier safety inspections to be conducted inside Mexico.

This lack of harmonization at the U.S.-Mexican border not allowing U.S. or Mexican tractors to circulate beyond the commercial zone of the neighboring country has made the use of the drayage or transfer trucks to flourish along the border. It is important to clarify that most of the trailers or "boxes" that are hauled by Mexican tractors are allowed to cross and travel beyond the 20-mile U.S. border commercial zone. The Mexican tractors or power units are the ones that are not allowed to travel internally in the U.S. Most of the Mexican large truck carrier firms and manufacturers that use a private truck fleet have newer tractor equipment that would comply with the U.S. safety requirements to enter into the American territory. However, as noted earlier, these firms are only a small portion of the total Mexican tractor fleet that is composed of small owner-operator companies. The following section describes the truck border crossing process.

2. Mexico–U.S. commercial vehicle border crossing process

Import of goods into the United States via truck is complicated because it involves a large number of public and private stakeholders in the process. Shippers are required to file shipment data with both Mexican and U.S. agencies, preparing paper and electronic forms, and as mentioned earlier use a drayage or transfer to move the goods from one country to the other. The following process details the preparation required before the shipment reaches the international port at the Mexican border:

a) The shipper sends information to the Mexican and U.S. customs brokers for preparation of export/import paper documents and electronically filing of the required information with the U.S. and Mexican customs authorities and other public agencies. Included in this information are details about the shipment, conveyance, and driver that appear on two key documents: the Mexican export document (Pedimento) and the U.S. Inward Cargo Manifest.

b) If the shipment originates in the interior of Mexico, the long-haul trucking firm picks up the shipment and transports it to the customs broker or freight forwarder yard on the Mexican side of the border. Then a tractor and driver (drayage) that have the required documentation to cross the border pick up the trailer.

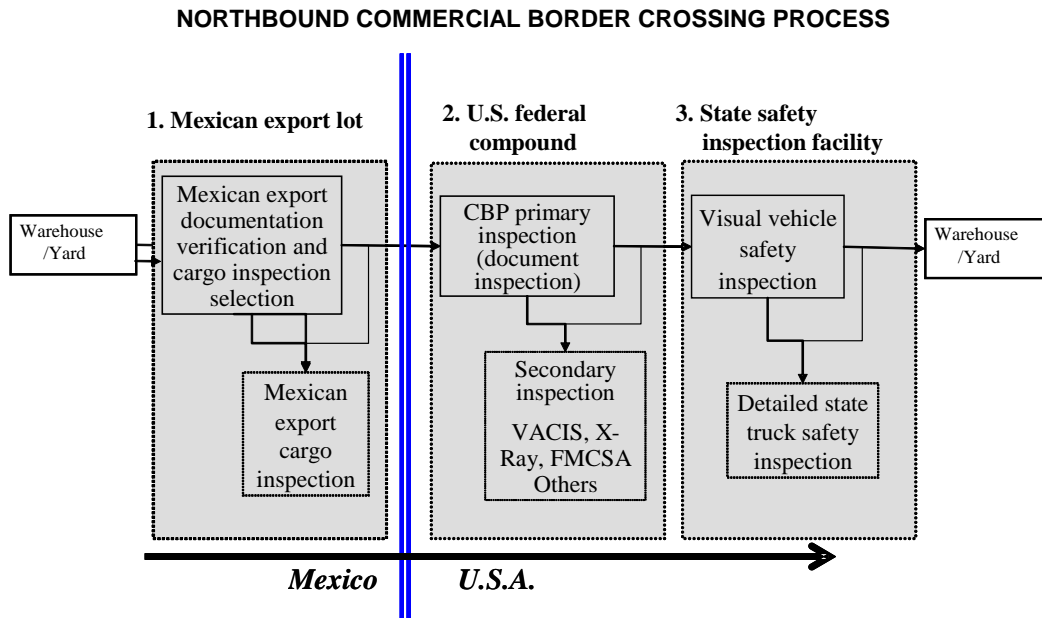
c) If the shipment originates at the assembly plant (most likely a maquiladora plant) in the Mexican border region, the drayage truck picks up the loaded trailer and the required documentation to proceed toward the international port.

Once the shipment with the authorized driver and truck are at the international port, the process follows the three main physical areas:

- Mexican export lot;
- U.S. federal compound, and
- State safety inspection facility.

A description of the main activities that take place in the northbound border crossing process is presented in the following sections and illustrated in figure 9.

Figure 9



a) Mexican export lot

The drayage driver with the required documentation proceeds into the Mexican export customs compound. Then Mexican Customs (Administración General de Aduana) conducts inspections consisting of a physical review of the cargo of randomly selected outbound freight prior to its export for audit and interdiction purposes. Those that are not selected proceed to the exit gate, cross the border, and continue on to the U.S. port of entry (POE).

b) U.S. federal compound

At the primary inspection booth, the driver of the truck presents identification (proof of citizenship or a valid visa or laser card), a copy of the Inward Cargo Manifest, and the commercial invoice to the processing agent. The U.S. Customs and Border Protection (CBP) inspector at the primary inspection booth, using a computer terminal, cross-checks the basic information about the driver, vehicle, and load with information sent previously by the U.S. customs broker, then makes a decision to refer the truck, driver, or load for a more detailed secondary inspection of any or all of these elements or releases the truck to the exit gate.

A secondary inspection includes any inspection that the driver, freight, or conveyance undergoes between the primary inspection and the exit gate of the U.S. federal compound. These inspections are usually conducted by personnel from CBP, and can be done by physically inspecting the conveyance and the cargo, or by using non-intrusive inspection equipment (such as x-ray). Within the compound, the U.S. Department of Transportation (USDOT), Federal Motor Carrier Safety Administration (FMCSA), and the Food and Drug Administration (FDA) have personnel and facilities to perform inspections when required.

c) State safety inspection facility

In the majority of the POEs, the stations are located adjacent to the federal compounds. State police personnel interview drivers and inspect conveyances to determine whether they are in compliance with U.S. safety standards and regulations. When the initial visual inspection finds any violation, the truck proceeds to a more detailed inspection at a special facility.

After leaving the state inspection facility, the driver typically drives to the freight forwarder or customs broker yard to drop off the trailer for later pickup by a long-haul tractor bound for the final destination.

3. Truck border crossing impacts

On top of the additional costs created by the drayage or transfer system caused by the inability of Mexican tractors to cross the border beyond the commercial zone, the inspection process adds another layer of inefficiencies to trucks entering the U.S. from Mexico. The time required for a shipment to make the complete trip from the yard or the manufacturing plant in Mexico to the exit of the state inspection facility depends on the number of secondary inspections required, as well as the number of inspection booths in service and traffic volume at that specific time of the day. There is duplication on the vehicle safety inspection, as U.S. federal and state agencies perform some level of inspection of every truck that crosses from Mexico into the U.S.

All shipments in and out of Mexico require a Mexico Customs Broker, which is a private third-party business, hired to carry out customs-related services such as: goods classification, inspection and counting; acquiring, preparing and transmitting documents or data; maintaining and reporting records; duty and tax collection and payment; and obtaining drayage services to physically move goods across the border.

The requirement of using a Mexico Customs Broker by Mexican law makes importing goods by truck into Mexico different from any other of the North American cross-border truck movements. A Mexican licensed customs broker must submit the customs declaration and must have a power of attorney from the importer. The customs broker is liable for any error concerning the application of the proper customs procedure, the tariff classification of the goods, the correct payment of duties and taxes and the strict compliance with non-tariff barriers.

Truck imports into Mexico not only require the use of a drayage tractor to carry the trailer across the border, but also the Mexico custom broker most likely would require to classify the shipment, inspect and count the items in the shipment to prepare the required documentation.

The U.S.-Canada truck border crossing process is relatively straightforward compared to the one at the U.S. southern border. No drayage is required for U.S.-Canada shipments as Canadian tractors are allowed in the U.S. beyond the commercial zone and Canadian and U.S. customs brokers do not require to physically inspect the cargo, as they are not liable for any potential errors on the import/export declaration. The other element that simplifies the crossing for Canadian trucks into the U.S. is that truck safety inspection is not required at a separate location with additional waiting time as it is done at the U.S.-Mexico border.

4. Security programs

Among the recent initiatives from the U.S. government to increase security and facilitate legitimate trade at commercial POEs is the Free and Secure Trade (FAST) program implemented by CBP. The objective of FAST is to incentivate supply chain security by offering expedite clearance to carriers and importers enrolled in the C-TPAT.⁷

The Customs-Trade Partnership Against Terrorism (C-TPAT) is a joint government-business initiative to build cooperative relationships that strengthen the overall supply chain-importers,

⁷ U.S. Bureau of Customs and Border Protection. U.S./Mexico FAST Program (http://www.cbp.gov/xp/cgov/import/commercial_enforcement/ctpat/fast/us_mexico/).

carriers, brokers, warehouse operators, and manufacturers and border security. C-TPAT recognizes that Customs can provide the highest level of security only through close cooperation with the ultimate owners of the supply chain. Through this initiative, Customs is asking businesses to ensure the integrity of their security practices and communicate their security guidelines to their business partners within the supply chain.⁸

The U.S. Customs and Border Protection Trade Act requires advance transmission of electronic cargo information, requiring information for FAST shipments to be received 30 minutes prior to the shipment reaching the United States. Non-FAST shipments require one-hour notification. CBP is implementing the Automated Customs Environment (ACE) e-Manifest for trucks, which enables carriers to submit electronic truck manifests to CBP prior to a truck's arrival at a United States land border crossing.

The filing of manifests electronically offers the trade community increased efficiency by saving valuable time at the border, reducing processing time, and offering online tracking status of trips. In addition, CBP officers are provided with consolidated information that will help them expedite legitimate trade while keeping United States borders secure.⁹

The e-Manifest is being deployed at the U.S.-Mexico and U.S. Canadian borders, and after successfully transmitting an e-manifest, carriers or their agents should prepare and provide the driver either a copy of the Inward Cargo Manifest or a cover sheet printed on plain paper.

FAST allows CBP agents to instantly identify designated low-risk commercial vehicles, drivers, and cargo that are compliant with C-TPAT's guidelines. As these shipments approach a FAST lane at a commercial crossing, a wireless radio frequency identification (RFID) reader recognizes the unique identification number encoded on both the truck's windshield sticker tag and the driver's identity card. It associates this information with import, carrier, and driver information previously submitted to the system electronically. At the inspection booth, the inspector confirms that the shipment has met all clearance requirements, including confirmation that the driver matches the digital image and biographical information that was pre-filed.

Non-FAST-enrolled commercial vehicles with traditional paper documentation take longer to process, and they are more likely to experience secondary inspections sometimes even requiring unloading the truck for detailed inspection.

FAST lanes have been implemented at most of the U.S.-Canada and U.S.-Mexico commercial border crossings. The operation and usage varies by port of entry, with some ports of entry register larger proportion of FAST shipments than others. The ones with a low number of FAST shipments are those with a large proportion of shipments from the interior, where a non-C-TPAT certified carrier brings the cargo from origin to the point where the drayage vehicle picks it up for crossing at the border. In order to classify as a FAST shipment, the carrier, driver, shipper and receiver have to be FAST certified, however, very few Mexican long-haul carriers are C-TPAT certified.

5. Truck size and weight regulations in Mexico, U.S. and Canada

The Mexican truck size and weight regulations are defined according to the geometric and structural characteristics of the local roads. There are two main sources of regulations, the Weight and Dimensions Regulations (2002) which contains general road vehicles classifications and the *Norma*

⁸ U.S. Bureau of Customs and Border Protection. U.S. Department of Homeland Security. C-TPAT Fact Sheet and Frequently Asked Questions (http://www.cbp.gov/xp/cgov/import/commercial_enforcement/ctpat/fact_sheet.xml).

⁹ U.S. Customs and Border Protection, "Ace Toolkit" (<http://www.cbp.gov/xp/cgov/toolbox/about/modernization/ace/toolkit/>).

Oficial Mexicana NOM-012-SCT-1999 (at the beginning of 2007 under re-approval process) which contains the federal regulations on weight and dimensions and establishes with more detail what it is written in the Weight and Dimensions Regulations.

The current regulation specifies that commercial vehicles that move on Federal highways must comply simultaneously with two requirements:

- a) The maximum weight per axle rule, and
- b) Not exceed the allowable Gross Vehicle Weight (GVW), in case the sum of weight per axle exceeds the limit set by the bridge formula.

The axle weight limit and the gross vehicle weight limit are defined based on the type of vehicle and the roadway classification.

As for the truck dimensions, the maximum width and height for commercial vehicles in Mexico is 8.5 ft and 13.9 ft, respectively. These limits are applied in all road types. The maximum authorized length depends on the road classification and the vehicle type. Table 5 presents the maximum weight and size values for Mexican trucks.

The U.S. Federal government establishes truck weight and size limits for the Interstate Highway System. The remaining portion of the highway network is being regulated by individual states. As a result, weight and size limits vary around the country.¹⁰

Federal commercial vehicle maximum standards on the U.S Interstate Highway System are 20,000 lbs for a single axle, 34,000 lbs for a tandem axle, and 80,000 lbs for the GVW. In 1975, the bridge formula was introduced to reduce the risk of damage to highway bridges. The formula may reduce the GVW depending on the weight and spatial arrangement of the axles in the vehicle (10).

The vehicle size limits in the U.S. are applied to the Interstate Highway System, and also to those highways which are capable of safely handling larger commercial motor vehicles. The total length of this National Network system is about 200,000 miles.

Under this regulation, overall vehicle length, trailer length, vehicle width, and vehicle height are regulated (10). Table 5 shows weight and dimension limits for the Interstate Highway System.

In Canada, provinces and territories are responsible for establishing truck weight and dimension limits on all roads within their jurisdiction (except federally owned roads in national parks, national defense installations, among others). The 1998 Memorandum of Understanding (MOU) establishes that all provinces have to accept vehicles which comply with a set of national weight and dimension standards for travel on a system of provincial highways designated by each province. Those provinces which have higher standards usually allow the use of their limits.

The MOU, also known as the Road and Transportation Association of Canada (RTAC) regulation, sets maximum truck weight values for most of the main highways. In spite of that, every province has adopted these regulations to a different extent. The MOU also establishes truck dimension regulations for most of the major Canadian highways. The maximum values are presented in table 6.

The three North American countries present significant differences in truck weight and size regulations, maximum values, and probably most important, each country has a different methodology to calculate the maximum limits. These differences can be observed even within each of the North America countries' boundaries and represent a large obstacle in any standardization process.

¹⁰ Commercial Vehicle Size and Weight Program. Federal Highway Administration (<http://ops.fhwa.dot.gov/freight/sw/overview/index.htm>).

In order to harmonize truck regulation in North America it would be necessary to agree to changes in at least two of the three countries. Given that the U.S. trucking industry is the largest, harmonization could result from Canada and Mexico adopting current U.S. standards. However this seems unlikely since, Mexico and Canada currently allow the operation of larger and/or heavier vehicles than those allowed in the U.S. Mexico was in the process of implementing changes to the regulation that existed at the beginning of 2007 so as to reduce the maximum gross vehicle weight. However, the private sector industry was simultaneously asking to increase the allowed truck weights, arguing lower operation costs. If the gross vehicles weight limits were increased, pavement damage would also increase, rising considerably maintenance and conservation costs for the Mexican roadway infrastructure that is in inferior condition than the Canadian and U.S. systems.

Table 6
MAXIMUM TRUCK WEIGHT AND SIZE VALUES FOR MEXICO, U.S. AND CANADA

Item	Mexico (Highways type ET, A, and B)	U.S. interstate system	Canada (MOU)
Axle Wt. (lb)			
Steering	14 320	20 000	12 125
Single	22 030	20 000	20 062
Tandem	39 650	34 000	37 478
Tridem	49 570	BFB	46 297 – 52 910
GVW (lb)	Up to 166 449	80 000	Up to 137 789
Width (ft)	8.5	8.5	8.53
Height (ft)	13.9	14	13.6
Max Length (ft)			
Single Unit Truck	Up to 45.9	45	41
Semi trailer	Up to 52	59	53
Trailer	NR	NR	NR
Double-trailers	NR	2 x 28.5	NR
Truck and Trailer	Up to 101.6	65	75
Tractor-semi-trailer	Up to 75.46	NR	75
Tractor-Double- Trailer	Up to 101.6	NR	82

Notes:

BFP = Bridge Formula B.

NR = Not regulated.

6. North American rail operations

Freight railroads operations in North America are important to the region's economic development. Railroads in Canada the U.S. and Mexico form a seamless integrated system that provides an efficient, cost-effective freight service. North American railroads operate over 173,000 miles of track, and earn 42 billion in annual revenues. North America rail cross border traffic has increased substantially in recent years due to efficiencies gained after rail privatization in Mexico and new North American marketing and operation alliances that have resulted in the integration of the railroad system.

Mexico's rail privatization program has been relatively successful. The Mexican railroad system was divided into several franchises that were auctioned off as a 50-year concession for the right to operate and maintain the specified trackage. The two Mexican concessionaires that link Mexico to the U.S. and eventually to Canada by rail are northeast concession operated by Kansas City Southern Railroad-Mexico (KCS-M), now fully owned by the Kansas City Southern Railroad;

and Ferrocarril Mexicano or Ferromex that operates the northwestern concession and has 26% participation from the Union Pacific Railroad.

KCS-M links Laredo and Brownsville at the U.S.-Mexico border with central Mexico, the Gulf Coast at Tampico and Veracruz and the Pacific Coast at the Port of Lazaro Cardenas. Ferromex serves Eagle Pass, Presidio and El Paso on the Texas – Mexico border and provides direct access from these border ports to the Guadalajara and Central Mexico regions, as well as the ports of Altamira on the Gulf Coast and Manzanillo and Topolobampo on the Pacific Coast.

Rail border crossing process, especially intermodal shipments at the U.S. Mexico border has been streamlined and it has proved to be very efficient, diverting some freight from truck to rail. U.S.-Mexico in-bond rail movements are not required to stop at the border for inspection, final customs inspection could be performed at in-land terminals where customs officials and brokers perform the importing processes. One inefficient operation practice that still occurs at the U.S. – Mexico rail crossings is the change of crews in the middle of the bridge. This practice reduces system velocity, aggravates urban congestion and creates unnecessary exposure to security risks. Changing crews at the border also triggers a series of time-consuming mechanical inspections on the bridge. Between the U.S. and Canada, crews are not changed at the border. The same principle should be applied to the southern border.

The definition of trackage and hauling rights and interline service rates between Mexican rail concessionaires is creating inefficiencies that increase the cost of moving freight on the Mexican rail system. Under the Mexican railroad services law and regulations, these rates should have been agreed upon in writing among the rail concessionaires. However, as of May 2007, no agreement has been reached and the SCT is planning to modify the law to finalize the settlement of these issues. Shipments that involve more than one railroad or “interline” are penalized by this lack of agreement as they are required to pay either for additional distance using a more circuitous route on one single railroad or delays and billing issues when the interchange is done in an uncoordinated manner.

7. North American maritime trade

Water trade in North America is relatively small compared to the truck and rail movements. In 2005, the total value of trade by water between Mexico and Canada with the United States was 49.5 billion that represents 8 percent of the amount transported by truck and rail. Mineral fuels and oil is the main commodity category that is traded by water in North America, representing more than 85 percent of the total value of North American water trade (figures 10 and 11).

North American water trade is concentrated in oil products due to the limitations for intercoastal movement of cargo by cabotage¹¹ rules in the three countries – U.S. Jones Act, the Coasting Trade Act in Canada and Mexican Maritime Law (*Ley de Navegación*). The Jones Act reserves the shipping cabotage traffic to U.S. built and registered ships that are predominantly owned and crewed by U.S. nationals. Laws in the other two countries have similar limitations.

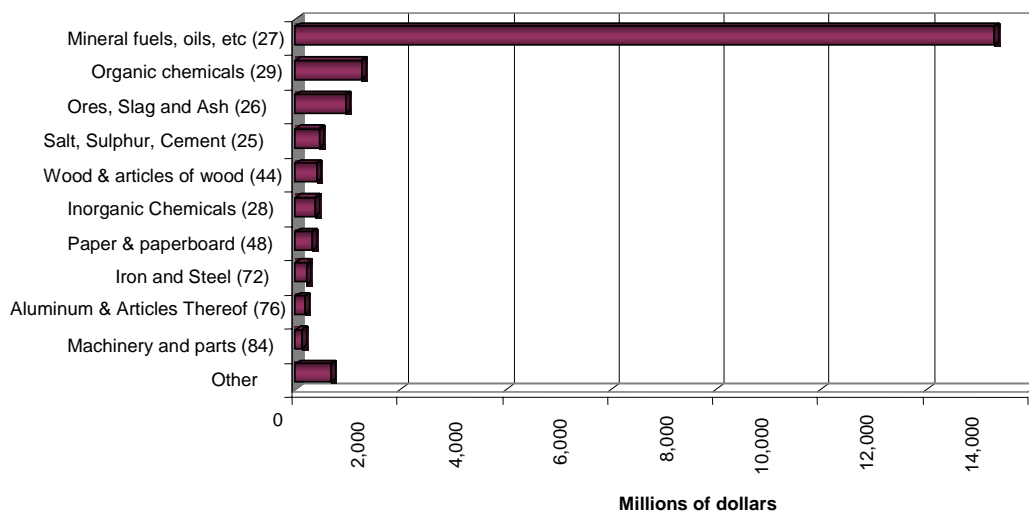
Several studies have analyzed the potential of short-sea-shipping in various corridors in North America as means to reduce congestion in road and rail networks. In 2003 the three North American countries agreed to share information and experiences¹² but only as an institutional forum level, while the critical regulatory issues to promote the use of maritime transportation between the three countries have not been addressed. An analysis of opportunities and issues developed by Brooks, Frost and Hodgson (2006) et al concludes that in order to implement short-sea-shipping in

¹¹ Cabotage is defined as the transport of goods between two points in the same country.

¹² Memorandum of Cooperation on Sharing Short Sea Shipping Information and Experience between the transportation authorities of Canada, México and the United States of America. The Maritime Administration (MARAD), 2003.

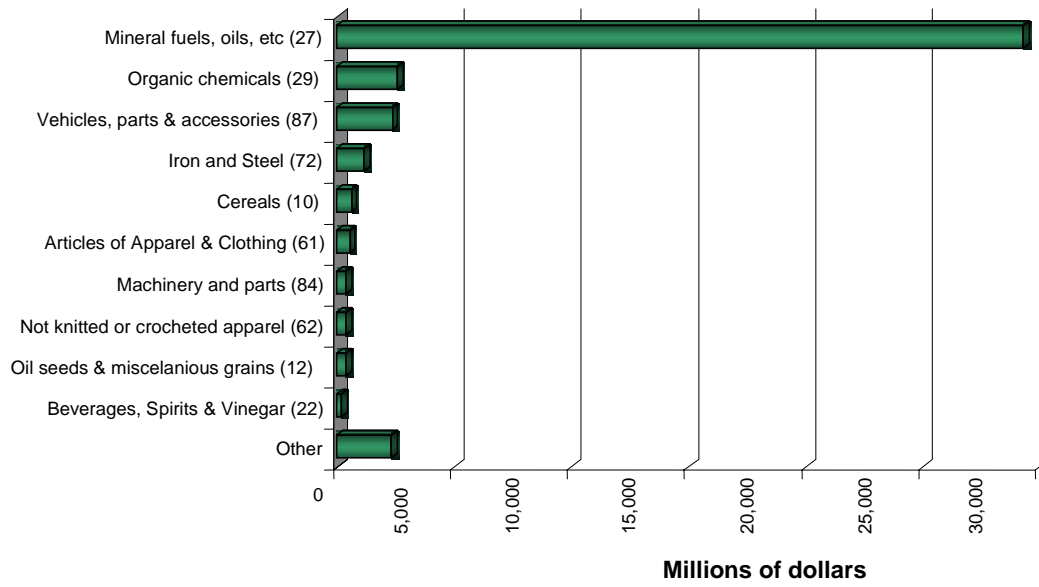
North American there is a “need for expanded, more substantive, cooperation between Canada and its NAFTA partners, particularly the US, sufficient to achieve tangible progress in moving towards a harmonized marine transportation regulatory framework within the free trade area, including cabotage arrangements, harbor maintenance tax, customs’ processing, and advanced notification and documentation requirements”.

Figure 10
U.S. WATER TRADE WITH CANADA BY COMMODITY



Source: U.S. Department of Transportation, Bureau of Transportation Statistics.

Figure 11
U.S. WATER TRADE WITH MEXICO BY COMMODITY



Source: U.S. Department of Transportation, Bureau of Transportation Statistics.

III. Costs, opportunities and potential benefits

As mentioned in the Introduction, transaction costs stem from regulatory and infrastructure issues that add costs to the international movement of goods. Quantifying these transaction costs is difficult given the wide range of issues that affect international trade and transportation in North America. An effort to illustrate the magnitude of transaction costs in the transportation sector includes the following categories:

1. Border security and delay costs

Transport Canada partially funded an analysis of the impact of the U.S. security measures on the Canadian trucking industry.¹³ These costs were estimated based on responses from a sample of the for-hire carriers in Canada and it ranged between 179 million and 406 million dollars. These figures represent about 4% of the total Canadian for-hire, long-distance trucking industry transborder expenses (table 7).

In 2003 a research study led by Taylor and Jackson (2003) concluded that the present border management system and trade policies are costing the U.S. and Canadian economies an estimated 7.52 to 13.20 billion, with a most likely cost estimate of 10.3 billion.

¹³ DAMF Consultants Inc., L-P Tardif & Associates Inc., The Cumulative Impact of U.S. Import Compliance Programs at the Canada/U.S. Land Border on the Canadian Trucking Industry, Transport Canada, May 2005.

These figures relate to specific costs to carriers and manufacturers resulting from border transit times and uncertainty, other border related costs borne by manufacturers and carriers for duties, broker fees, customs administration, and inspection. The estimate represents 2.70 percent of U.S.-Canada merchandise trade, amounting to 382 billion in 2001. The total border costs related to trucking were estimated at 9.45 billion, after adjusting out the non-truck related costs.

Table 7
COST IMPACT SUMMARY FOR CANADIAN TRUCKING INDUSTRY

Cost impact item	Annual minimum (millions of dollars)	Annual maximum (millions of dollars)
Truck delay	231.0	433.0
Driver compliance	3.4	6.8
C-TPAT compliance	5.0	10.0
Computer systems	2.5	5.0
Administration	14.0	28.0
Cost impact sub-total	255.9	482.8
Less: Border surcharges	77.0	77.0
Net cost impact	178.9	405.8

Source: DAMF Consultants Inc., L-P Tardif & Associates Inc., The Cumulative Impact of U.S. Import Compliance Programs at the Canada/U.S. Land Border on the Canadian Trucking Industry, Transport Canada, May 2005.

In 2000 the Mexican Department of Transportation (Secretaría de Comunicaciones y Transportes—SCT) estimated the total delay costs along the U.S.-Mexico border, at 77.4 million in 1999 dollars.¹⁴ It is difficult to differentiate costs produced by border security regulations and those caused by inadequate infrastructure or lack of coordination. Especially as security regulations continue to evolve as new technology developments are implemented. Therefore even if the cross border regulatory issues are solved, the security-related costs will continue to impact merchandise trade in North America.

Between 2001 and 2002 the Texas Transportation Institute led a bi-national study at the U.S. - Mexico border to develop the methodology required to estimate the costs derived from coordination issues for truck crossings at this international border. The binational study concluded that there are several coordination problems that could be solved in a relatively short period of time with low investment, benefiting the trade community in Mexico and the U.S. Issues like coordinating hours of operation at ports of entry between U.S. and Mexican authorities, or sharing of information among key stakeholders would be relatively easy to implement. A formal coordination mechanism between public and private sector; state and federal agencies in the U.S. and Mexico and within each country is required to implement alternative solutions to reduce transactions costs caused by lack of harmonization and coordination. The use of technology and information systems to facilitate trade has proven more effective and efficient than building additional costly infrastructure that requires a lengthy approval process, particularly when federal agencies from more than one country are involved.

Benefits from increased coordination at border crossings are evident with the current rail border crossing process. The private sector (mainly auto-industry shippers) working with customs authorities in the U.S. and its neighboring countries have developed a process in which shipments do not need to stop at the border for inspection as they are cleared at destination.

¹⁴ Secretaría de Comunicaciones y Transportes (SCT), Impacto del Incremento del Tráfico de Carga Generado por el Comercio Exterior sobre la Infraestructura de la Frontera Norte, Informe Final, 2000.

Another example of coordination benefits could be found at the Nogales land port of entry where transportation safety and customs inspectors work together at one booth (super booth) where the information is processed in an efficient way, reducing border delay.

2. Truck NAFTA provisions costs

One of the implications of not allowing Mexican trucks to circulate beyond the U.S.–Mexico Commercial Zone is the need to use drayage trucks to cross cargo between the two countries. Even if the environmental cost caused by the older fleet of trucks that is used for drayage services is ignored, a simple estimate of border operations' the direct cost to the industry is in the range of 250 to 350 million dollars per year, assuming that between 30 and 50 percent of the cross-border trips are done by empty vehicles and the average drayage cost is 100 dollars per drayage trip.¹⁵

Truck cabotage is another barrier to a harmonized North American transportation system. Even if the border was to be open for Mexican trucks, existing cabotage rules would limit the benefits that the opening of the border would have. Mexican and U.S. carriers operating in the respective neighboring countries would need to have a secure return load to haul back to the border in order to make efficient use of the tractor. Very few U.S. and Mexican trucking firms have already established alliances that would allow them to secure return loads, therefore even if the border was to be opened, very few U.S. or Mexican trucking firms would venture into the new operations.

Impacts of the implementation of NAFTA truck provisions at the U.S. southern border will be gradual, as few U.S. and Mexican motor carriers are prepared and willing to provide service in the neighboring country. If and when the truck border crossing process is simplified and becomes more efficient, motor carriers will be encouraged to eliminate the drayage and travel beyond the commercial zone to deliver and pick up loads. This will reduce substantially the number of unnecessary trips that currently are being done to reposition equipment.

Benefits of a more efficient truck border crossing process go beyond the reduction of transaction costs, as the impact resulting from a newer truck fleet making long-haul trips, shorter crossing time and fewer trips on the environment are substantial on both sides of the border.

3. Mexican customs broker practices costs

Customs brokers' practices create delays at the border, particularly for cargo moving to the interior of Mexico. The U.S. Transportation Department estimates that cargo headed for the Mexican interior spends three to five days in a border warehouse before being released to continue its southbound journey. Rail shipments are usually cleared at destination therefore there is no need for a detailed inspection by the custom broker at the border. In 2005 the value of Mexican imports by truck from the U.S. was approximately 83 billion. The inventory carrying cost of holding that merchandise for a couple of days at the border due to customs brokers' practices would be approximately 100 million.¹⁶ This is a conservative estimate, as the costs for processing the merchandise by the customs brokers is not included in the calculation.

¹⁵ Estimate by the author based on field information from several ports of entry at the U.S.-Mexico border.

¹⁶ 16th Annual State of Logistics Report, Council of Supply Chain Management Professionals. The industry accepted average annual inventory carrying cost rate is estimated at 20 percent of the average annual inventory.

The Mexican government implemented a program for “Certified Importers” (Empresas Certificadas)¹⁷ for companies that qualify by importing more than 600 million pesos per year. Some of the benefits that importers have by becoming “Certified” when crossing the border into Mexico include:

- Lower number of inspections and time required when inspected
- Special hours of operation at border crossing, when required
- Use of the “express lane” when available (similar to the U.S. FAST lane)

The program is restricted to relatively large importers and the transportation company that is used for importing has to be also certified. This type of programs would need to be implemented on a larger scale to produce a visible benefit and reduce international trade transaction costs at land ports of entry. However, it is a good starting point that allows segregation of certain commercial flows at the border, reducing congestion and inspection costs by dedicating resources to the scrutiny of “less-known” shipments. Mexican Customs is working with the World Customs Organization to implement trade facilitation strategies. One strategy is to use modern technology and information to identify high risk shipments, and another strategy includes the establishment of partnerships with the private sector to increase supply chain security.

4. Truck size and weight regulations costs

The impact of the lack of a harmonized truck weight and size regulations in North America are difficult to quantify. In Mexico and Canada where higher weight limits are allowed, shippers usually load trucks to match the maximum admissible in the U.S., when shipping into this country. Motor carriers that perform domestic and international services in these two countries need to have separate trailer fleets to serve each market separately, with the costs implications of not having a standard North American tractor and trailer fleet. A harmonized truck weigh structure in North American would benefit the motor carrier industry with standardized vehicle fleet throughout the continent.

5. Maritime cabotage costs

In 2002 the United States International Trade Commission (USITC) found that the economic cost of the Jones Act was as much as 656 million for 1999 United States International Trade Commission (USITC, 1999). However, there has not been any analysis to try to estimate the impact of maritime cabotage restrictions in North America. The implementation of a NAFTA flag would not only have an impact on the maritime industry by reducing costs in some trade lanes that would benefit from short-sea-shipping operations, but by making water transport more efficient, this mode would attract some international traffic that currently is moved by land modes, congesting ports of entry at international borders.

¹⁷ Empresas Certificadas- Article 100-A and 100-B of Mexican Customs Law (Artículo 100-A, 100-B, de la Ley Aduanera, Capítulo 2.8 de las Reglas de Carácter General en Materia de Comercio Exterior para 2006) (http://www.aduanas.sat.gob.mx/aduana_mexico/2007/Descargas/Guia_Importacion/GI03_06.pdf).

IV. Conclusions and implementation plan

Michael Hart in his 2006 commentary (Hart 2006) related to Canada-U.S. regulatory cooperation suggests that “As a first step, the two governments should change the current practice of discretionary cooperation at the federal level to a mandatory process of information exchange, consultation, and even coordination. The aim should be to advance a jointly agreed mandate to improve regulatory outcomes, eliminate duplication and redundancy, reduce regulatory differences between the two countries, and effect a North American approach to regulation. Much of this mandatory cooperation can be implemented on the basis of existing institutions and be focused on priority sectors”.

This approach could serve as the basis for implementing a plan to increase cooperation to reduce regulatory differences between not only U.S. and Canada but between the three North American countries. An initial phase of the plan could deal with U.S.-Canada and U.S.-Mexico transportation issues separately, as most of them are different, except for the short-sea-shipping issue in which the implementation of a NAFTA flag should be analyzed.

The institutional framework to implement specific actions already exists. In the transportation sector, the U.S.-Mexico Joint Working Committee (JWC) and the U.S.-Canada Transportation Border Working Group (TBWG) led by the U.S. Federal Highway Administration, have analyzed land-border related issues, however the

overall impact of trade and transportation transaction costs has not been addressed and the magnitude of the potential benefits has not been transmitted to the appropriate stakeholders so that a coordinated action could be implemented.

The binational coordination analysis performed at the U.S. - Mexico border (16) provided a list of issues and alternative solutions to improve the truck border crossing process. Systematic research is needed to analyze the economic costs and trade effects of inconsistent regulations and infrastructure developments. The analysis should not only be focused on border issues but all aspects of the international supply chain, from origin to destination. The result of such analysis will provide a road map with specific coordination actions to tackle high priority issues, identifying stakeholders involved in the solution and the expected benefit of the implementation.

Actions that have been implemented at the local level have proven to be efficient and low cost. For example, vehicle safety training courses offered by U.S. inspectors to Mexican carriers helped drivers understand U.S. regulations and critical aspects that are inspected when a Mexican truck enters the U.S.. This type of interventions should be implemented on a formal way to reduce delay and hence transaction costs in cross-border trucking.

The key stakeholder in the North American international trade and transportation environment is U.S. Customs and Border Protection (CBP), as this agency controls a large portion of the international trade process in North America. CBP is in the process of implementing the Automated Commercial Environment (ACE) trade processing system, which is designed to consolidate and automate border processing to significantly enhance border security and foster the U.S. economic security through lawful international trade and travel.¹⁸ The ACE system will among other things, expedite legitimate trade by providing CBP with tools to efficiently process imports/exports and move goods quickly across the border, and provide an information-sharing platform for trade data throughout the government via the International Trade Data System (ITDS). Through the ITDS, more than 80 targeted government agencies will be integrated throughout the full rollout of ACE.

The implementation of ACE does not foresee sharing information with “non-targeted government agencies”, outside the U.S., however it provides a good opportunity to analyze the possibility of expanding it to a North American system that could lead to the elimination of duplication and redundancy in international procedures in North America. These efforts could be linked with the World Customs Organization’s work to implement a framework of standards to enhance the security and facilitation of the global supply chain, as well as economic security.¹⁹

The Security and Prosperity Partnership (SPP) could be the overarching vehicle through which a new framework is created to establish and implement a plan for investing in infrastructure and technology, not only at the ports of entry but also at land corridors leading to such ports, targeting trilateral resources towards improving existing pre-clearance programs at border ports of entry, and analyzing transportation regulatory differences in North America. The SPP could coordinate with the U.S.-Mexico JWC and U.S.-Canada TBWG for border and corridor related issues, and regulatory cooperation could be addressed under the existing NAFTA Land Transportation Standards Subcommittee.

Mexico’s 2006-2012 presidential administration requires improving the country’s competitiveness and it has expressed that investments in transportation infrastructure will be a priority to reduce transaction costs related to international trade. This provides an excellent opportunity to develop a strategy to reduce transportation and logistics transaction costs in Mexico, especially with its export-dependent economy next door to the large U.S. market.

¹⁸ U.S. Customs and Border Protection, “Ace Toolkit” (<http://www.cbp.gov/xp/cgov/toolbox/about/modernization/ace/toolkit/>).

¹⁹ World Customs Organization, Framework of Standards to Secure and Facilitate Global Trade, June 2005.

Mexico could gain the most by implementing specific regulatory changes in the transportation and trade sectors. The following policy recommendations are all inter-related and should be implemented in coordination to maximize their benefits.

1. NAFTA trucking provisions

Negotiations to implement NAFTA trucking provisions should be accelerated to reach an agreement with the U.S. so that Mexican tractors and drivers are allowed to circulate beyond the border commercial zone. This change in current operations will be gradual as Mexican carriers would need to organize return trips and it is expected that in the beginning trips will be to/from northern Mexico to/from the U.S. Border States. This regulatory change will make the use of drayage or transfers trucks less efficient with substantial cost savings and decreasing border congestion. This could be the first step towards a seamless U.S.-Mexico border for truck movements that would benefit the whole North American transportation system. However, the opening of the border should be complemented with policies that could make the Mexican transportation companies become more efficient and competitive. Access to financial credit in similar conditions to the one that the U.S. motor carrier industry has would benefit the Mexican companies by allowing them to renew the tractor and trailer fleets.

2. Truck size and weight regulations

The Mexican trucking industry requires a clear definition from the government regarding the truck size and weight rules and regulations. Once the long-term rules are defined, the industry would be in a position to develop asset management plans and make the required investment to renew truck fleet. This should be accompanied by adequate financial mechanisms to allow not only large trucking firms but also medium and small truck carriers have access to procuring adequate assets to compete with U.S. firms.

3. Customs modernization

Mexican customs system should continue working towards greater modernization so as to reduce transaction costs of importing and exporting goods, as well as toward greater security. The use of technology to track and trace shipments throughout the supply chain should be incorporated into the new system allowing for fewer inspections or in-land clearance at designated facilities. The WTO and UNCTAD have supported the establishment of national trade and transportation facilitations committees.²⁰ Mexican Customs could adopt new technologies, not only for tracking and tracing, but also to upgrade its information and communications technologies used in new trade facilitation applications such as the electronic “Single Window”.

4. Road infrastructure development

Innovative financing schemes are being implemented in Mexico to accelerate the construction and improvements of the highway system. However, the urban road network leading to land ports of entry requires substantial investment to minimize the interference of heavy vehicles with the passenger vehicles. Heavy trucks are destroying access roads to major border cities and this road conditions increase truck operation costs in what is called the “last mile”. The current road

²⁰ United Nations Conference on Trade and Development, Trade and Logistics Branch, Transport Newsletter No. 34.

construction programs should incorporate by-pass roads at major urban areas that would reduce operation costs and could increase safety and security standards for truck transportation.

5. Rail movements

In order to improve the movement of rail transportation in Mexico, two policy issues need to be addressed. The first one is an agreement between the rail concessionaires on trackage rights and interline connections. This issue has not been resolved and discouraged some shippers from using the railroad system. The other issue is at the border crossing where changing crews create a series of problems that could be solved with a change in operation practices. Even though the Mexican railroad system is operating better, there is still room for improvement with these two policy changes that the Mexican government needs to address in the near future.

6. Maritime transport

Cabotage rules would need to be modified and the prospects of a “NAFTA Flag” should be analyzed to improve the potential of implementing a more efficient North American Short Sea Shipping system. This is an issue that needs to be addressed by all three North American countries. However, the Mexican government could start analyzing the potential impacts of modifying current cabotage rules.

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