

The U.S.-Mexican Border Crossing for Trucks: 20 Years After NAFTA



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Practical Effects of Non Tariff Barriers



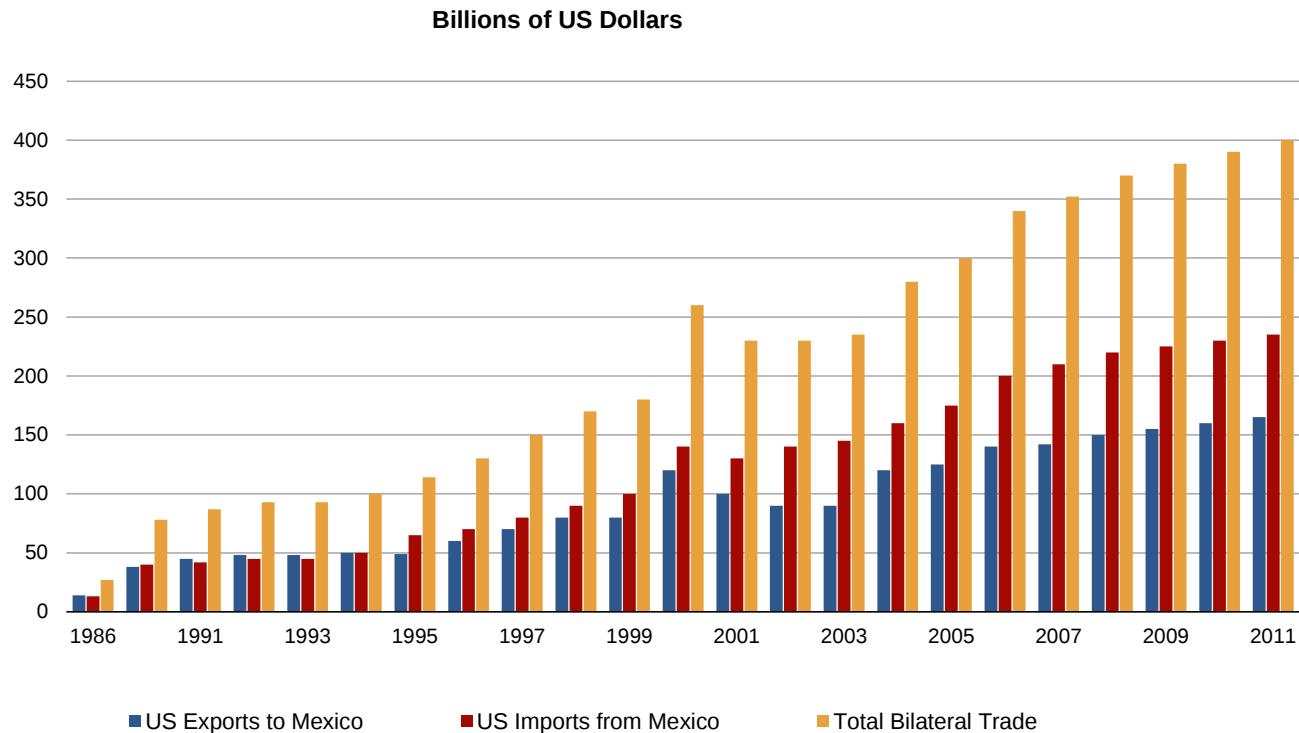
Organization of talk

- NAFTA borders:
 - U.S.-Mexico
 - U.S.-Canada
- Security after 9/11
- Homeland Security's CT-PAT
- Modeling institutional and security border frictions

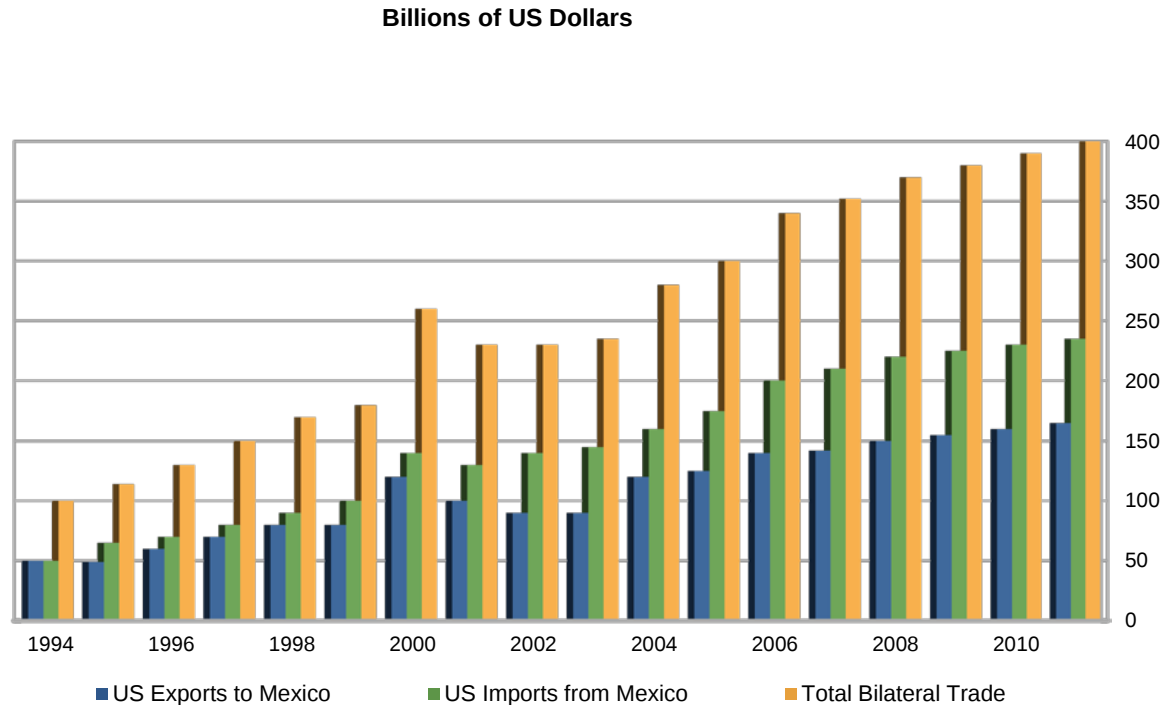
NAFTA



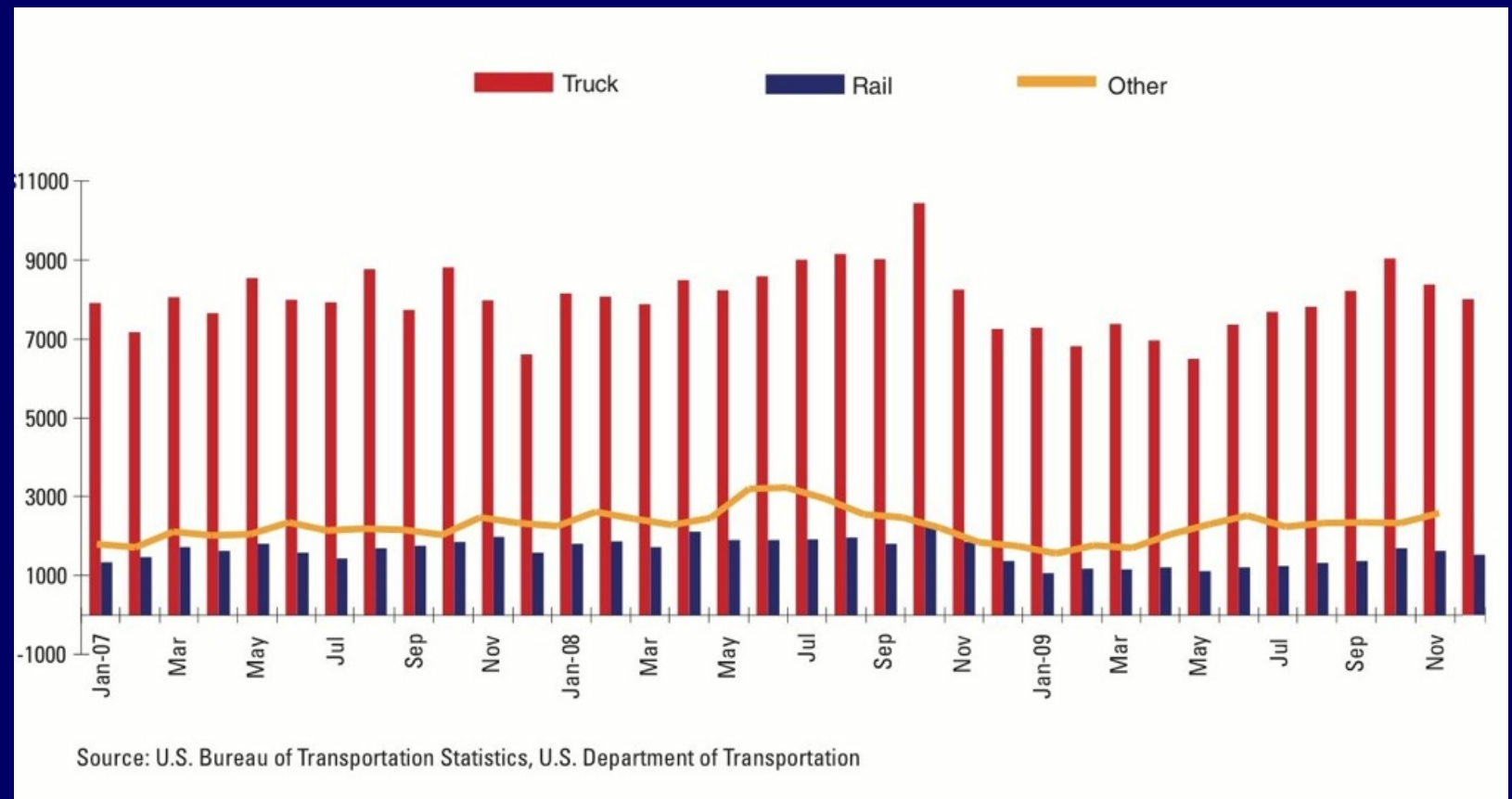
Bilateral Trade U.S.-Mexico



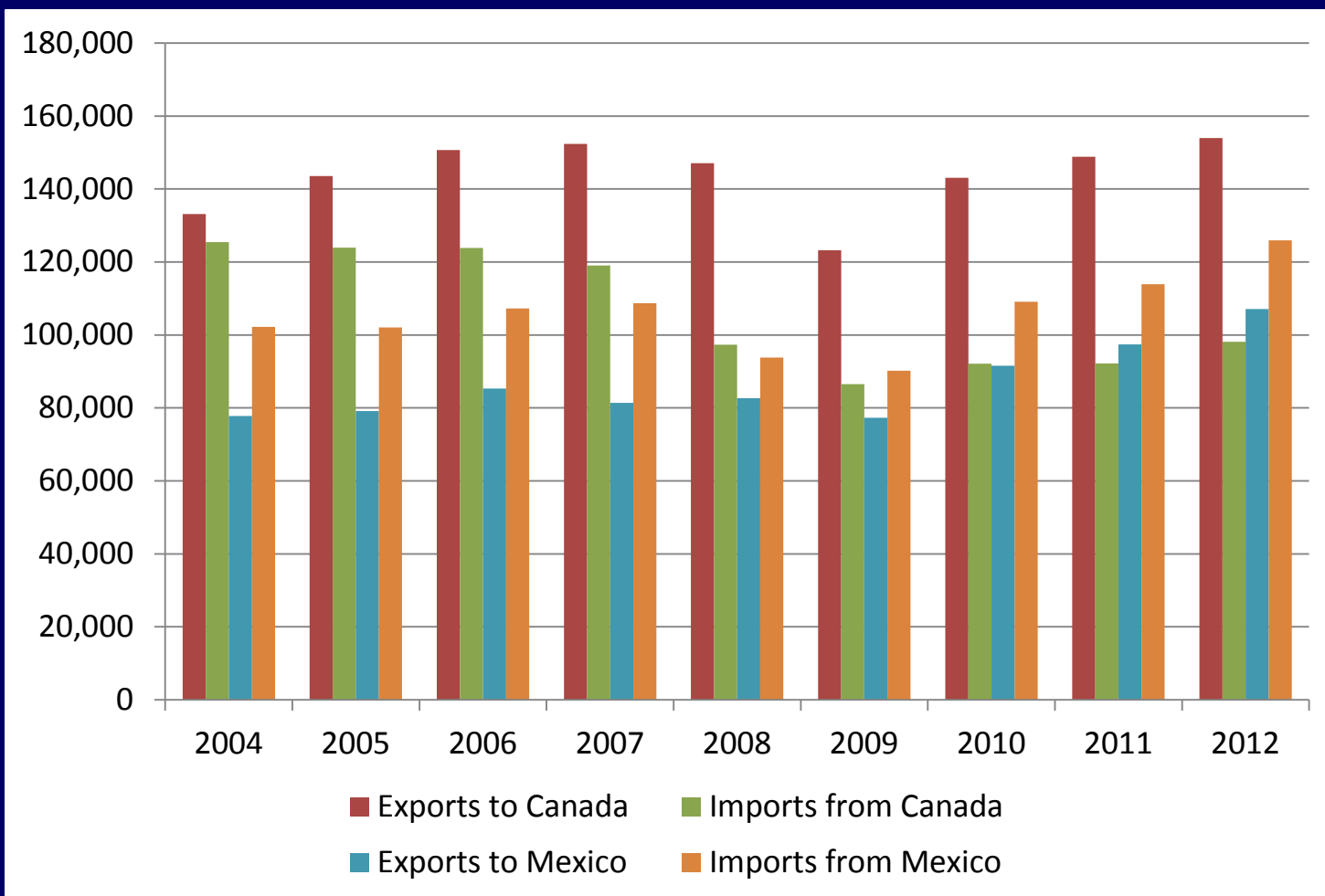
U.S.-Mexico Bilateral Trade during NAFTA



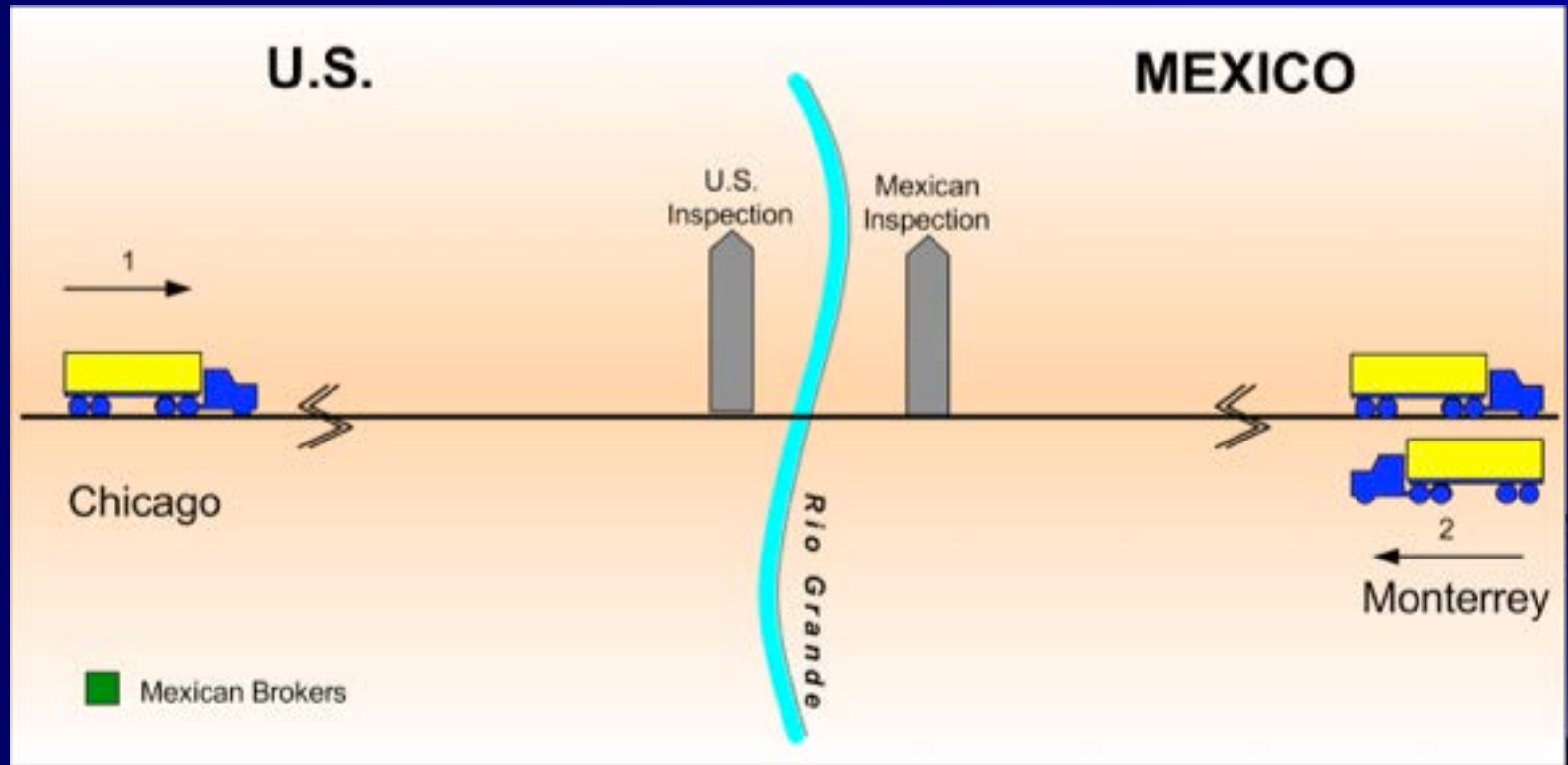
Surface Exports to Mexico 2007-2009 (Shipment Value in U.S. \$ Millions)



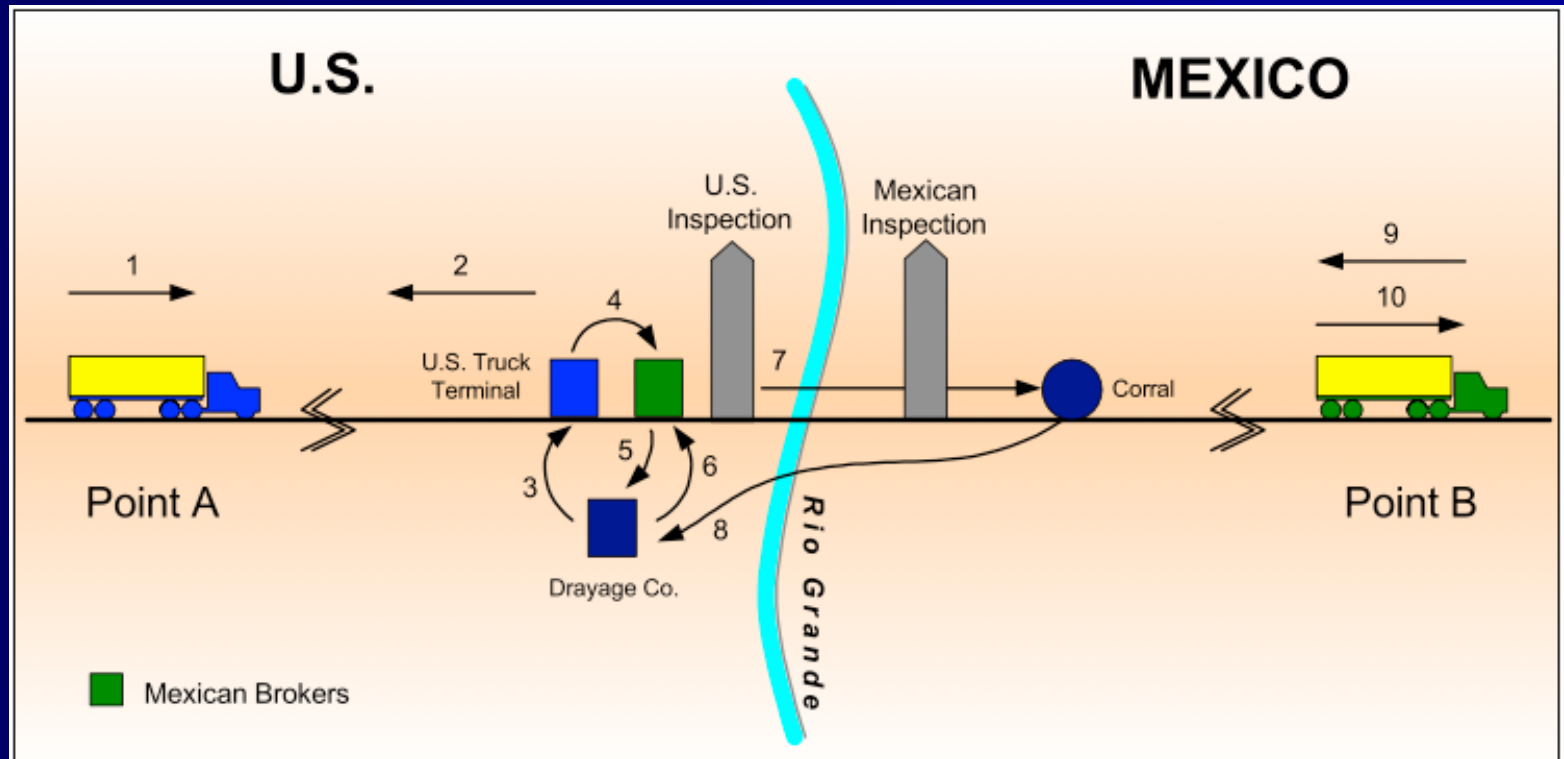
Truck trade with Canada and Mexico, 2004-2012 (million Jan. 2004 dollars)



NAFTA Border Crossing



Current Situation



Objectives

- Conceptual framework for understanding the economics of cross-border trucking problems:
- Determine the extent of inefficiencies at Laredo, the prominent border crossing
- Quantify times and costs
- Define and analyze factors that explain the difference between the economically efficient solution and reality
- Estimate the impact of border-related inefficiencies on trade flows and welfare

The Context U.S. - Mexican Border





Laredo, Texas



World Trade Bridge



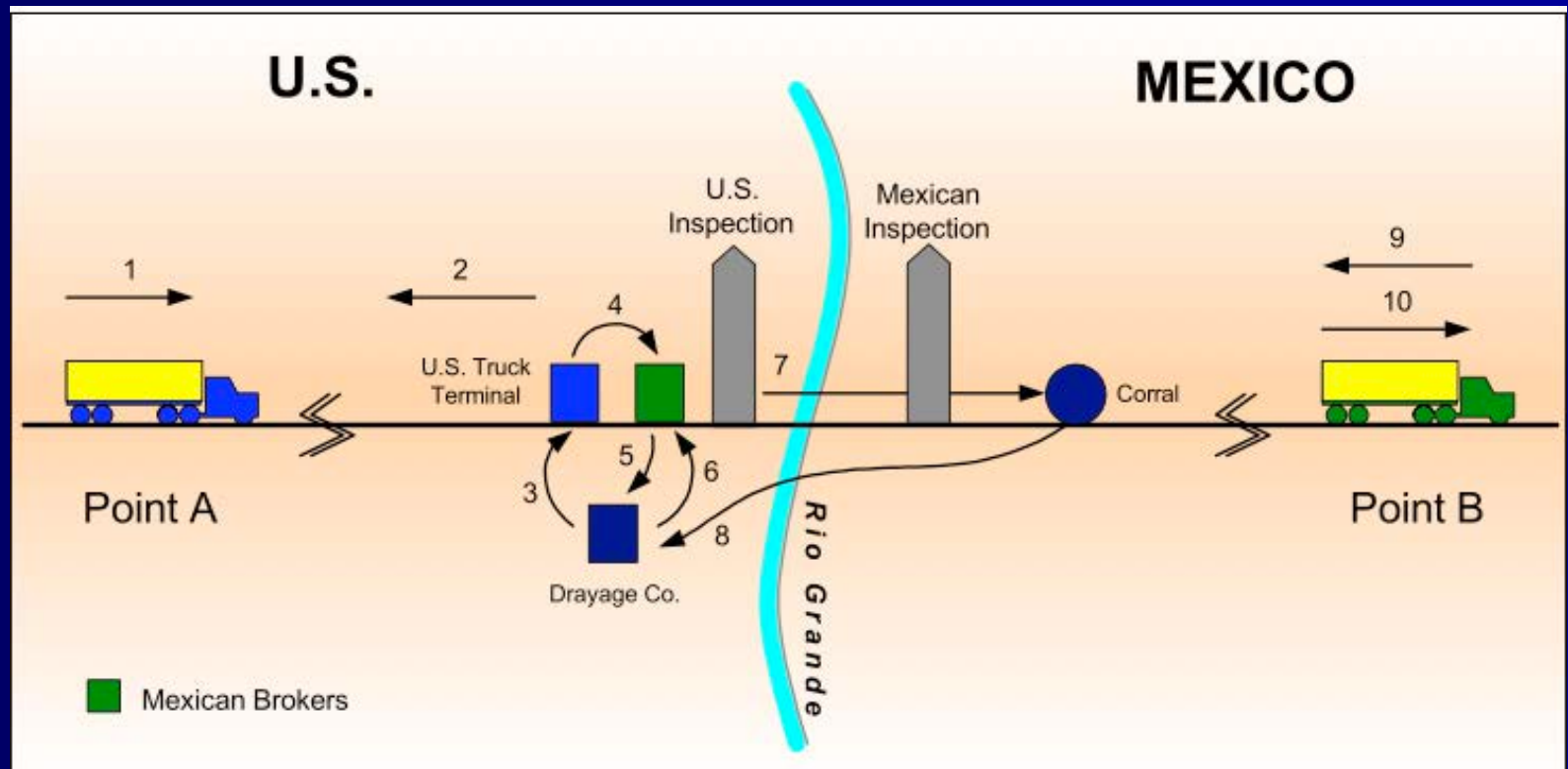
Value (U.S.\$) of Top Ten Commodities Transported from Mexico to the U.S. by Truck (2009)

Value (U.S. \$) of Top Ten Commodities Transported from Mexico to the U.S. by Truck (2009)		
85	Electrical machinery and equipment and parts thereof	\$42,216,608,267
84	Nuclear reactors, boilers, machinery & mechanical appliances	19,836,623,441
87	Vehicles, other than railway or tramway rolling stock	10,647,803,730
90	Optical, photographic, cinematographic, measuring, medical instruments	6,863,313,911
98	Special classification provisions	4,116,115,195
94	Furniture, bedding, mattress supports, cushions and similar stuffed furnishings	3,785,123,373
7	Edible vegetables and certain roots and tubes	3,130,569,686
8	Edible fruit and nuts; Peel of citrus fruit or melons	2,272,550,633
39	Plastics and articles thereof	2,029,558,486
71	Natural or cultured pearls, precious or semiprecious stones, precious metals; metals clad with precious metal, and articles thereof; imitation jewelry; coin	1,963,315,386
Top Ten Total by Truck		\$96,861,582,108
Total, All Commodities by Truck		\$117,787,364,033
Total, All Commodities, All Modes		\$176,537,048,132

Value (U.S. \$ of Top Ten Commodities Transported from U.S. to the Mexico by Truck (2009)

Value (U.S. \$) of Top Ten Commodities Transported from Mexico to the U.S. by Truck (2008)			
85	Electrical machinery and equipment and parts thereof	\$50,612,889,471	37.7%
84	Nuclear reactors, boilers, machinery & mechanical appliances	21,595,980,024	16.1%
87	Vehicles, other than railway or tramway rolling stock	11,080,647,279	8.3%
90	Optical, photographic, cinematographic, measuring, medical instruments	7,143,155,181	5.3%
94	Furniture, bedding, mattress supports, cushions and similar stuffed furnishings	4,958,989,364	3.7%
98	Special classification provisions	4,485,700,134	3.3%
7	Edible vegetables and certain roots and tubes	3,246,464,060	2.4%
73	Articles of iron and steel	2,503,156,759	1.9%
62	Articles of apparel and clothing accessories, not knitted or crocheted	2,244,881,213	1.7%
39	Plastics and articles thereof	2,154,240,298	1.6%
Top Ten Total by Truck		\$110,026,103,783	82.0%
Total, All Commodities by Truck		\$134,224,191,876	
Total, All Commodities, All Modes		\$215,914,854,328	

Current Situation



Geographic Distance vs. Economic Distance

- What drives economic distance?
 - Geographic distance ($\sim \$1.33/\text{mile}$)
 - Payments at the border ($\$300\text{—}\650 per truckload)
 - Delays at the border (2—5 days)
- Result: border frictions add thousands of miles of economic distance

Institutions that Benefit from Border Crossing Inefficiencies

- Mexican brokers
- The Laredo - Nuevo Laredo drayage industry
- U.S. banks that finance the construction of warehouses
- State and municipal governments on both sides who receive toll payments
- The Mexican states that receive a share of Customs tax collections
- The entire regional economy that provides jobs, goods and services

Canadian Border

- Much more efficient crossing
- No mechanism like Mexican brokers: shippers are bonded, guaranteeing payments for taxes or fees later
- (Mostly) shared language, cultural heritage, legal and political systems yield a more tightly integrated border
- 9/11, however, changed security

Customs-Trade Partnership Against Terrorism: C-TPAT

- System to improve security while minimizing border delays
- Voluntary private-public partnership

Goals of C-TPAT

- Stop terrorists and weapons
- Facilitate flow of legitimate trade
- Focus on higher-risk shipments
- Internalize principles of supply chain security
- Support other CBP initiatives (Free and Secure Trade, Smart Box, Container Security Initiative)

C-TPAT: Graduated Security for Shippers

- First applicant: no special benefits
- Tier 1
 - small reduction in inspections
 - front of line treatment
 - assigned a supply chain security specialist
 - invited to C-TPAT supply chain security conference
- Tier 2: Tier 1 benefits plus...
 - significant reduction in inspections
- Tier 3: Tier 2 benefits plus...
 - fewer inspections per year

Border Security and Delays between Canada and the United States

- Ontario Chamber of Commerce (2004):
 - Southbound delays 30-60 minutes
 - Northbound delays 10 min-4 hours
 - Estimate \$1,100/yr for Ontarians
- Nguyen and Wigle (2009):
 - Delays cost Canada 1.0-1.8% of welfare
- Georges, Mérette and Zhang (2011):
 - Model adds detailed FDI features
 - Post-9/11 measures cost Canada 2.3% welfare
 - Removing measures slightly reduces U.S. welfare (-0.11%)

Macroeconomic Effect of Border Crossing Inefficiencies

- GTAP model appropriate framework for analysis
- Micro effect of Laredo border inefficiencies apparently minimal: 1-2 percent money to brokers
- Time is a more important variable: Hummels estimates that each day saved in shipping is worth 0.8% ad valorem for manufactured goods. 2-5 days are equivalent to 1.6% - 4%

Our first approach: no security effects

- Time lost at the border is a deadweight loss
- Costs of Mexican brokers treated as a tariff (tms) or export tax (txs) on Mexican trade
- Policies applied to sectors where trucking dominates (food & ag, other prim. Prod'n, motor vehicles & parts, electronic equip., other mfg)

	<i>Variable shocked*</i>	
<i>Barrier</i>	<i>Southbound</i>	<i>Northbound</i>
Lost time	$\Delta \text{ams}(T, \text{US}, \text{Mex}) = +3\%$	$\Delta \text{ams}(T, \text{Mex}, \text{US}) = +0.25\%$
Brokerage frictions	$\Delta \text{tms}(T, \text{US}, \text{Mex}) = -2\%$	$\Delta \text{txs}(T, \text{Mex}, \text{US}) = -0.75\%$
* <i>T</i> is the set of commodities shipped predominantly by truck.		

Our new approach: proportionate frictions, add security

- Mexican frictions proportionate to otp's importance:

$$F(T, US, Mex) = \frac{vtwr(otp, T, US, Mex)}{\sum_M vtwr(M, T, US, Mex)}$$

- Security treated as lost time, assume U.S. entry twice as costly as Canadian or Mexican entry, apply to all goods trade
- Sensitivity analysis on ams shock: 1, 2, and 4 percent (0.5, 1 and 2 for Canada, Mexico)

Welfare (million \$2007)

Sim	Lost time	Broker friction	Security friction	USA	Mexico	Canada	World
1	Original	Original	None	2,362	3,461	-224	3,465
2	Proportionate	Proportionante	None	324	509	-29	573
3	Original	Original	Low	5,635	5,832	2,204	9,574
4	Original	Original	Mid	8,927	8,220	4,670	15,750
5	Original	Original	High	15,561	13,038	9,709	28,288

Results and Conclusions

- Mexican brokers cost Mexico \$3.5 billion, US \$2.4 billion (2007 dollars). 2003 study found \$1.8 billion and \$1.3 billion, respectively (1997 dollars).
- Security isn't free. Rough estimate of NAFTA-wide cost is \$8 billion - \$32 billion per year.
- Reducing frictions promotes better utilization of transport equipment, savings in other capital investments, infrastructure construction, maintenance, and pollution.

Remaining work

- Waiting on new shipper survey data
- Better parameterization of security frictions, by partner and direction of trade
- Better measures of proportion of GTAP sectoral trade by truck

Thank you! Questions?

