MARÍA DEL PILAR LONDOÑO

Institutional Arrangements that Affect Free Trade Agreements:

Economic Rationality Versus Interest Groups

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Economische afspraken die vrijhandelszones beïnvloeden:
economische rationaliteit versus belangengroeperingen

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María del Pilar Londoño
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Promotoren:
Prof. dr. H. E. Haralambides
Prof. dr. J. F. Francois

Overige leden:
Prof. dr. G.A. van der Knaap
Prof. dr. J. Spronk
Prof. dr. R. Dekker
Prof. dr. H.G. van Dissel

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In memory of Charles L. Wright

Preface

There is a French saying: “gratitude is the heart’s memory”. My heart is full of gratitude to all the people and organizations that contributed to this research. I want to express my gratitude to my parents from whom I learned the principles of international trade. They owned a high couture clothing business for women in Colombia, South America that required a big amount of imported machinery and components from Europe and the United States. Those years were before today’s international trade agreements; hence, the import processes were very complicated and expensive in an environment where the fashion industry requires timely delivery; that principle itself is timeless. My parents were good at promoting Colombian products to substitute imports. Their product was fit for a queen. During my university years in Colombia I wrote a case study about my family business. I later learned that other universities in the country were using it as a tool to teach business strategy. Thanks to all the professors who taught me how to present the case, and then used it to help them teach about constraints to trade.

The idea of doing the PhD came from my husband Paul Kent, a PhD economist well known in the international port community. I have enjoyed working with him in different port projects around the world; he is an impressive, bright, and insightful consultant with a vision for port efficiency and its impact on international trade. Too bad that maritime transportation was not NAFTA’s main mode of transportation, but Paul’s background opened the door for me to explore a new territory: the cross-border economics. Paul not only has given me his unconditional love and encouragement through all these years of work in three countries, but also contributed with his thoughts, guidance, and countless hours of review and editing. Surely the completion of my dissertation will make him feel like he has finally retired!

Very few doctoral students are given the opportunity for some of the world’s leading specialists to be engaged in their research efforts. Paul introduced me to one of them, Professor Haralambides, a renowned maritime industry expert. Professor Haralambides enthusiastically welcomed the idea of research on the emerging interest in border crossing

economics and opened for me the doors at Erasmus University to complete the research. I want to express to him my gratitude for being my promotor, for much time and effort expended on my behalf, and the useful advice and encouragement during my graduate studies. I also want to thank my co-promotor Professor Joe Francois, a leading expert in international trade analysis, for his contribution: he encouraged me to think about the macroeconomic effect of the analysis of border-crossing inefficiencies in the trade flows; this became a new challenge in the research. Finally, I also thank Mr. Michael Hathaway, Esq., a leading trade negotiator and NAFTA Arbitral Panel Member in the Dispute of Cross-Border Trucking Services, for his comments and insight into the border crossing problems; his advice and experience in international trade law enabled me to understand the legal complexities of border crossings.

I am extremely grateful to Dr. Alan Fox from the U.S. International Trade Commission (USITC) for tutoring me and helping me to apply the General Trade Analysis Project (GTAP) model. I am indebted to him and his organization for such tangible items as time, office space, equipment, and library facilities, and for equally important intangibles such as extensive discussions and helpful comments. I owe many thanks also to Robert Ehinger, former Executive Director of International Trade Data Systems (ITDS) and his staff for their enthusiastic support during the months of data collection in Washington, Laredo and Nuevo Laredo and on numerous other occasions. Additionally, Professor James Giermanski, perhaps the U.S.'s leading specialist on issues of inefficiency at the U.S./Mexico border, walked me through the process in Laredo and Nuevo Laredo and shared with me his works and experience on the subject.

At the risk of omitting some names, I would like to express special thanks to the following: Dr. Kevin Horn for his review and comments on the thesis, Dr. Guillermo Perry, Chief Economist for the Latin American Office of the World Bank, who considered the analysis of non-tariff barriers fascinating; Dr. Daniel Lederman from the World Bank who invited me to write a paper on the same subject for their study of Lessons from NAFTA to CAFTA.

I am deeply appreciative of my daughter Marie-Claire, now ten years old, who was born during the course of this work; she matured along with the progress of my research, and in her own way contributed with her sketches of drawings on the drafts of my thesis. I thank all my friends in Colombia, the United States, and Europe who have been so supportive of my work. And also to my Jesuit friends, I thank them for their wisdom and grace, which motivated me to do the best work for the major glory of God and the economic benefit of the less privileged in the world, with the hope that free trade agreements will help the poor out of their plight.

Finally, in loving memory of Charles Wright, to whom I also dedicate this thesis. Charles was a dear friend and served as my tutor; he took on the burden of answering my many questions with remarkable kindness and contagious joy, and taught me to think logically about a seemingly illogical cross border environment. Charles took his notion of transport efficiency to heart, reviewing and editing my drafts while sitting on a subway car on his way to work. Charles was a prominent PhD transport economist, university professor for many years, and Senior Transport Economist at the Interamerican Development Bank. It was a privilege to have known Charles through all the years of my work.

The responsibility for the opinions expressed and any remaining errors rests exclusively with the author.

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1 Introduction

The real world is anything but seamless: it remains separated by oceans, rivers and deserts, by cultural and language differences, and by national boundaries that continue to impose substantial practical obstacles to trade even when there are no formal trade barriers.
-Fujita, Krugman and Venables

1.1 The Problem

This research examines the economics of border crossing of goods transported by truck between the United States and Mexico from the aspects of theoretical efficiency and institutional barriers to achieving such efficiency.

In a formal sense, the North American Free Trade Agreement (NAFTA) expanded trade links between Canada, Mexico and the United States, eliminated all non-tariff barriers, and established rules guaranteeing the permanent access of domestic products to the North American markets.

The agreement recognizes and encourages the large and growing trade among the three countries. The trade between United States and Mexico increased from $ 27 billion in 1982 to an estimated $ 239 billion in 2000 (December 2000 U.S. Department of Commerce statistics). Trucking is the primary form of transportation in the trade between the two countries, representing over 70 percent of the freight bill and 70 percent of the merchandise traded by value. Trucking is one of the most disputed elements of the agreement. NAFTA did not specify how trade should be administered by the Government agencies of the NAFTA countries. The implicit assumption was that it would take only one truck and minimum time to go from point A in the United States to point B in Mexico and vice-versa.

In reality, however, it takes two days to go from Chicago to Laredo, a 1600 mile trip, while to cross the border from Laredo, Texas, to New Laredo just across the Rio Grande in Mexico, it takes from three to five days and at least four pieces of equipment (trucks and trailers) and three or four drivers, to cross the Rio Grande river with a loaded truck. Obviously, there is a large gap between NAFTA's underlying assumption and reality.

More than one-half of the value of all U.S. exports to Mexico and one-third of all imports from Mexico pass through Laredo alone, whose trade volume has grown by $3 billion annually since 1990 (Nolle 2000). Laredo's proximity to major highways gives motor carriers quick access to Mexico's industrial triangle of Monterrey, Guadalajara, and Mexico City. Laredo handles more freight than any U.S. Mexico crossing in terms of value, volume and number of entries.

Customs officials report that Laredo, Texas, the principal crossing point for long-haul trade between the two countries, has more than 10,000 trucks crossings daily, while Orreneus, Phillips and Blackburn (2001) place the figure at 15,000, carrying 40 percent of U.S.-Mexico overland merchandise trade by volume and 50 percent by value.

Later chapters show that a complex border crossing system exists at Laredo, despite NAFTA, creating delays, extra costs, congestion, pollution that have effectively become non-tariff barriers to trade. The present border system entails inefficiencies that have extended from the 1980's to the new millennium. They include time-consuming hurdles that take the form of long standing practices of governments, transportation interests, customs brokers and other businesses.

1.2 Contribution

This thesis examines the topic of transportation and border crossing in international trade using the joint framework of economic analysis, public choice theory and behavioral economic theories that include institutional arrangements. The analysis provides insight into the characteristics of the underlying economic, social, and political situation, along

with the likely effects of alternative strategies for dealing with the changes in the cross-border transport system.

This thesis researches the actual delays, costs and inefficiencies that exist at the Laredo border crossing, and explores the reasons of why they exist and what theory apply. It measures impacts, show causes, rooted in local microeconomic interest, with ramification in the political system of two countries. It provides the theoretical explanation based in public choice and behavioral economics, areas in which not much work have been done, and almost none with concrete examples. This thesis presents a theory that explains the causes, as well as quantifying the microeconomic impact.

The inefficiencies present at the Laredo Border Crossing have a secondary impact on overall trade more difficult to measure because many other variables affect overall trade. To measure the net impact of the border related inefficiencies on the trade flows between the United States and Mexico the GTAP model is applied due to its capability to provide an elaborate and realistic representation of the economy, including relationships among all sectors, agents and other economies.

As Hummels (2001) asserts in its paper:

> "non tariff barriers of various sorts and structural impediments are less obvious and perhaps more interesting, but also much more difficult to directly measure. As consequence, researchers rely primarily on indirect methods: positing a model of bilateral trade flows and correlating flows with proxy variables meant to represent trade barriers."

The novelty of this research is that it identifies, analyzes the institutional and legal barriers that impede the economic efficiency of border crossing, and studies the theories of economic behavior and political choice that are applied to explain this economic reality. Then the GTAP model is applied to quantify the macro-economic effect of the border related inefficiencies.

1.3 Methodology

1.3.1 Objectives

The general objective of this research is to provide a conceptual framework for understanding the economics of cross border trucking problems in the trade between the United States and Mexico, a pre-requisite to achieving free trade among these two NAFTA countries.

The specific objectives are to:

1) determine if there are substantial inefficiencies in the border crossing process, and quantify their times and costs at the most important crossing at the two Laredos;
2) if (1) holds, quantify the benefits of an efficient border crossing by truck in terms of:
    a) how improvements in border crossing procedures will affect trucking times and costs;
    b) the impact in the trucking industry and type of operation;
    c) the competitiveness of trucking, against rail;
3) if (1) holds, define and analyze the factors that explain the differences between the economically efficient solution and the reality found at the Laredo/Nuevo Laredo border crossing.
4) formal presentation of the implications of border related trade barriers on the trade between the United States and Mexico.

To achieve objectives (1) and (2), I examined the cross-border problem using an institutional analysis cost model that assigns times and costs to each activity phase of the cross-border operation. I identify the various bottlenecks with the model and quantify their component costs to the truck transportation service. I then use the least cost solution as a standard of comparison for simulating short-run improvements. These include: decreased congestion time; improved custom inspections; and enhancements in cross-border transport operations. I then use the model to simulate major institutional modifications based on an

"intermediate" and "high" estimate of growth rates for trade between United States and Mexico. The simulated changes include: congestion time improvement; efficient Government inspections; and improvement of cross-border operations (interlining, interchanging).

To achieve the third objective, the institutional analysis, I identify the major players, their interests, and the legal framework in the context of theories on the differences between "rational" expectations and real economic behavior. I analyze the pertinent economic theory. Traditional microeconomic theory assumes that, in the absence of substantial economies of scale, competition among economic agents will lead to increased efficiency and cost minimization. The persistence over many years of massive inefficiencies in an otherwise competitive environment composed of numerous well-informed brokers and trucking firms can only be explained by legal, quasi-legal and other institutional or behavioral barriers to free trade. I thus review the literature on public choice theory in the Buchanan-Tullock tradition and the behavioral economics theory typified by the recent work by Hugh Schwartz.

To achieve objective (4) after presenting the microeconomic impact of the inefficiencies of border crossing I present the secondary impact on overall trade. For this section I review the literature on border economies and border effects within the NAFTA countries, focusing on models for measuring the effects of imposing import duty on trade. Then The General Trade Analysis Project (GTAP) model is used to introduce the border crossing inefficiencies as an imposed import duty to see what the effects are in the trade between United States and Mexico. The following scenarios are investigated: a) the Mexican tariff on U.S. and Canadian products is increased by the measured friction of border crossing inefficiencies (money paid by shippers for charges for non-essential border crossing services; and b) an iceberg tariff to account for the value of time it takes to cross the border. Then the experiment involves simultaneously removing both (a) and (b). The experiment reports the impact on welfare (EV) as well as trade relative trade flows.

1.3.2 Hypothesized Model of Border Crossing

The conceptual framework for conducting this investigation was the hypothetical model of border crossing assumed by the North American Free Trade Agreement (NAFTA).

1.3.3 Hypotheses

This research examines the economics of border crossing of goods transported by truck between the United States and Mexico from the aspects of theoretical efficiency and institutional barriers to achieving such efficiency.

The working hypothesis is that an efficient border crossing, with other factors, promotes free trade. In other words, a border crossing is an independent variable that directly affects the dependent variable free trade. The motive for free trade is to create wealth; free trade expands economic markets and interaction, which in turn leads to more wealth through greater specialization, competition, and more efficient combinations of factors of production. This lowers total costs of production and distribution, along with the costs of all associated services, research and development.

However, an efficient border crossing is not simply an independent variable, but a necessary condition for free trade to occur.

To investigate the hypothesis of the existence of the efficient border crossing that NAFTA drafters assumed, I studied the border crossing and conceptualized it as a dependent variable for this thesis.

As the research progressed, I focused on the characteristics that showed them to be the key elements of a seamless border. As seen in Chapter 2, the trucking industry is the most important element of the conceptual border crossing due to the importance of this mode in the transportation of trade between United States and Mexico. Trucking represents 75 percent of the freight bill, 70 percent of the tonnage, and 80 percent of the value of the trade between United States and Mexico. Therefore, I focused on applying the concept of

border crossing to the trucking industry. Thus, the dependent variable becomes border crossing for trucks.

The research focuses on the most important border crossing for trucks that transport traditional trade. This port of entry is Laredo, Texas, and its sister city, Nuevo Laredo, in Mexico. Laredo handles more freight than any other U.S.-Mexican crossing in terms of value, volume, and number of entries.

What, conceptually, are the key elements that would lead to an efficient border for trucks? In other words, what are the independent variables that affect this dependent variable?

Seamless border +other conditions -----Free Trade -----Wealth

A seamless border crossing is a function of:

A: Adequate infrastructure to serve demand for transport: bridges, access roads, governmental inspection facilities, commercial infrastructure

B: Lack of institutional constraints

C: Homogeneous government systems

D: Cultural understanding: social, political and business

A+B+C+D--------- Seamless border

Thus, my working hypothesis is that an efficient border crossing promotes trade, or

Trade = F (costs of border crossing, other variables).

By accepting this as my working hypothesis, I am able to test the following null hypothesis against its alternative:

H_o : Formal NAFTA provisions have led to an efficient border crossing.

H_a : NAFTA provisions have not led to an efficient border crossing.

H_o, efficient conditions in the border crossing environment, require only one truck and at most a 4 hour delay at the border to go from point A in the United States to point B in Mexico or vice-versa. As shown in Chapter 4, however, it takes two days to go from Chicago to Laredo, a 1,600 mile trip, while to cross the border from Laredo, Texas, to New

Laredo just across the Rio Grande in Mexico, takes from three to five days and at least four pieces of equipment and three drivers. Obviously, there is a large gap between NAFTA's formal provisions and reality. The quantitative evidence rejects H_o and accepts H_a (Chapter 4).

These independent variables required me to collect the following types of data: (1) distinctive features of the U.S.-Mexican border; (2) the impact of NAFTA on the border crossing situation; (3) the problem context (the geographical region, the trends of trade, the principal commodities, the trade corridors); (4) the U.S. and Mexican trucking industries; (5) border crossing infrastructure; (6) the traditional trade and border crossing flow process; (7) costs of border crossing; and (8) institutional factors.

The next section explains how I collected and analyzed these data.

1.3.4 Research Instruments

1.3.4.1 Literature Review

The first part of the research consisted of a literature review of demand for transportation and general background theory about principles of transport economics. Subsequently, my review focused on demand for transportation in the trade between the United States and Mexico. As the predominance of trucking became evident in transport between the United States and Mexico, the corresponding literature became both scarce and difficult to obtain. I reviewed various journals of transportation, newspapers, articles, and specialized trade journals,[1] but located only a few pertinent items. Cross-border trucking became the most interesting problem to investigate, when I verified that this was a largely unexplored area that was attractive for original research and one that would require considerable field research and collection of some key primary data.

[1] A partial list of the journals consulted is: *Traffic World, The Economist, The Journal of Commerce, The Wall Street Journal, American Shipper, Transportation Journal, and Logistics online Magazine.*

The study of the European context of cross-border initiatives was relevant with respect to the basic hypothesis of this research as general background. These studies do not explicitly consider the role of transport in international trade; they implicitly consider that it is one of the elements subject to local initiatives, or the municipalities on each side of a land border. The study of regional trading blocs in Europe and North America confirmed the key variables of the hypothesis.

The study of NAFTA and its implications for the trucking industry and border crossings became an important tool to define the hypothesis of the study and the model of border crossing.

To quantify the macro-economic impact of the costs surveyed in the trade flows it was necessary to review econometric models to introduce the border crossing inefficiencies as an imposed duty on trade.

1.3.4.2 Statistical Data

I reviewed the statistical data on trade, corridors of trade, main products of trade, and main modes of transportation. I obtained this data from government agencies, through publications and from electronic data bases. I collected the statistics of daily truck crossings directly from the customs officials at the Laredo bridges.

1.3.4.3 Interview Data: The Context

I faced a number of difficulties when collecting information for this study due to the economic and political interests involved in cross-border activities: (i) access to relevant key officials; (ii) access to internal data regarding the border crossing problem; (iii) access to memorandums and internal studies; and (iv) access to correspondence and quantitative data.

It was relatively easy to identify whom to interview, which were the key officials of the groups and organizations listed later in this chapter. It was difficult to get access to them. The most difficult problem in gathering data from key officials was setting up interviews,

because many representatives have little to gain from an interview and have bureaucratic and political reasons for avoiding it.

First, officials have to protect the interests of the organizations they represent and tend to view interviewers with suspicion. They are concerned about protecting their budgets, staffs, and other critical resources from potential criticism. Representatives of private firms fear that prospective interviewers claiming to be researchers or students are in reality either consultants or members of client or competing firms who aim to obtain privileged information for their own economic gain.

Finally, there is a third issue that revolves around the desire to keep potentially controversial information at arm's length. This seems counterintuitive, but makes political sense. The Department Of Transportation (DOT), for example, signs a significant number of contracts with consulting firms to gather information, in part as a mechanism to distance itself from the most politically sensitive issues that are also potentially the most damaging issues. For example, when I asked DOT for information about the Laredo border crossing, they referred me to a consultant who had done extensive studies. I then called the consultant, who did not trust my condition as a student. Fortunately, at that time I had a meeting with an old friend from another governmental organization from my days as an international trade official. He helped me obtain studies (including those of the uncooperative consultant) and memos, and set up meetings with key persons.

When combined, these factors create significant difficulties in gaining access to key officials. The problems can reinforce each other, so the researcher can break the log jam only through persistence and contacts within these organizations.

As explained below, quantitative data came almost exclusively from written sources. Interviews were useful in locating these sources. Their primary use, however, was in revealing institutional barriers to efficiency and the "territorial defenses" of bureaucracies and private interest groups.

The face- to-face interaction was an important data collection tool, useful in locating sources of information and discovering what people think about key issues, particularly with regard to maintaining the status quo or seeking change, and indications of their economic interests.

I began each interview with a set of standard key questions related to the principal variables being studied. This was useful for comparing and evaluating answers across cases and respondents. Triangulation was used to corroborate information.

Since quantitative information was almost always obtained from written sources, I used the second, open-ended part of the interview, to gain insight and information about institutional factors and the economic interests and political pressures involved.

There were often conflicting views, representing conflicting economic interests. The border-crossing process involves key actors and organizations. I interviewed representatives from these sectors, and was usually able to talk separately to both senior officials and technical or field officers and to people outside the organization that knew the organization (such as ex-employees), and outside individuals such as academics or consultants that are knowledgeable because of their own research.

1.3.4.4 Interview Data: Sources and Use

I verified the information about infrastructure by obtaining and analyzing maps and making site visits to the different processing sites, parking areas, routes, and bridges. The information about infrastructure, cultural factors, and the institutional constraints present at the U.S.-Mexican border crossings was obtained through interviews I conducted with members of private and public organizations involved in the border crossing problem, and in discussions I conducted with working groups. I was able to confirm the institutional constraints at the border crossing itself that were identified in the interviews through several sources and by observation of the practices that resulted. For example, the statements of Mexican customs brokers and American trucking representatives described the same steps for processing the paperwork and shuffling the equipment and goods back

and forth. I was able to objectively calculate the consequences in terms of delays and costs based on driver's logs, dates and times on bills of lading, interviews, observations "in sitio." I was able to document other institutional factors in legal texts, such as the NAFTA legislation and the transcripts of the hearings in the U.S. Congress.

I found the "cultural" factors hardest to document with any "hard" data. In any case, they are used only as general background and are not required for verification of any of the data, the hypothesis, or conclusions in this study.

The organizations interviewed included:

Washington D.C.

American Trucking Association
Booz-Allen and Hamilton Inc. (consultants for the border crossing project)
George Mason University
George Washington University
Georgetown University
Interamerican Development Bank, (IDB)
International Trade Data System (ITDS), U.S. International Trade Administration
Mexican Customs
Mexican Embassy, Economic Office
National Ports and Waterways Institute
U.S. Customs Service
U.S. Department of Transportation
U.S. Department of Commerce
U.S. International Trade Commission
World Bank

Laredo (Texas)

International Trade Data Systems (ITDS)
Mexican brokers association

Mexican Customs
Texas A&M International University
U.S. Customs
U.S. and Mexican rail industry
U.S. and Mexican trucking industry

The International Trade Data System (ITDS) and the United States International Trade Commission (USITC) gave important support in the development of this research. ITDS's endorsement of my research opened doors for meetings with people that otherwise would not have participated and enabled me to obtain information from primary sources on the topics discussed in the following paragraphs. USITC gave me access, guidance and assistance to the application of the GTAP model, necessary to quantify the macro-economic effect of the data collected.

The subject of border crossings on the U.S.-Mexican border is a difficult one, due to the economic interests and the politics involved. People are reluctant to give names or even be listed as sources of information. The interviews were directed to specific subjects: (1) NAFTA and its implications on the trucking industry; (2) the socio-political background of the border; (3) the trade flow and the border crossing processes; (4) the bottlenecks in the border crossing process, including infrastructure and businesses practices ; (5) the costs of the border crossing; and (6) simulations of border crossing improvements. The interviews were done in an open form, focusing on the subject of the discussion previously agreed to by phone or in a previous meeting. Some interviews were in English; Spanish was used when the person or persons interviewed were Spanish-speaking and no persons were present that spoke only English.

Most of the people that participated in the interviews were candid in their answers; others were very diplomatic, or vague, reflecting their business or political position. The "vagueness" was related to two basic concerns: (i) information about their costs and pricing that might be useful to their competitors or clients; and (ii) rent-seeking behavior as related to political influence. I was able to overcome limitation (i) by agreeing to use only

aggregate data so that individual firms would not lose confidential data to potential competitors or clients with whom they negotiate (see section 2.5 below).

The mechanics of how people wield their political influence and what their psychological motivations are pertain to disciplines such as political science and psychology and are outside the scope of this research. However, the "vagueness" or "diplomatic" answers alerted me to areas where concrete economic interests are at stake and economic theory is relevant (Buchanan and Tullock 1963; Schwartz 1998). The three central areas are: (i) the U.S. trucking interest in limiting access of Mexican drivers and trucks in the U.S. market, and the parallel restrictions on U.S. operations in Mexico; (ii) the network of personal and political influence that maintains Mexican brokers, drayage firms, and other intermediaries in business; and (iii) the secondary effects that (ii) has on the economy of border towns and their political representatives.

The U.S. interest groups phrased their concerns in terms of "public safety," while Mexicans referred to "legal provisions" or nationalistic interests.

1.3.5 Original Documents

I faced difficulties in obtaining copies of original documentation from both government agencies and private firms. Official organizations are reluctant to release documents that question their policies or actions. Such information can be - and often is - used by actors in the national governments back in Washington or Mexico City when budget cuts, personnel cuts, or other politically generated reasons for government "efficiency" or dispensing of favors arise. Private firms fear the information will be useful to their competitors and clients, and documentation, particularly quantitative information, is considered classified by negotiators, truckers, shippers, and brokers. All of these actors have vested interest in limiting access of outside parties to this information to maintain or gain an edge when conducting negotiations. For this study, the documentations has three basic forms: (i) quantitative: numerical information concerning billing, invoices, time logs, border crossing logs, and container contents, etc.; (ii) correspondence: memorandums, e-mails, telephone

logs, briefing papers, and slides from limited-access conferences, point papers, and non-official papers; and (iii) internal assessments: internal studies of problem areas, copies of contractor studies with limited internal distribution and briefings of internal assessments.

I obtained original documents during my field research trip to the two Laredos, such as the paper with the model that Smith-Giermanski (1997) developed to quantify the costs of southbound border crossing for the automotive industry in 1995. I expanded the model by analyzing the times involved in each step of the border crossing system. Times reveal inefficiencies clearly, unambiguously, while costs can fluctuate with seasonal factors or appear small in relation to a high-value shipment. Also, lengthy delays and uncertainties can hurt "just-in-time" processes and other time-sensitive trade. Since the times are crucial for the current research, I further adapted and updated the Giermanski-Smith model to analyze the times and costs involved in the transportation of manufactures across the border. I applied the new model using a hypothetical example of a shipment from Chicago in the United States to Monterrey in Mexico.

The quantitative information on "costs and times" of border crossing was obtained through interviews with shippers, truckers, ITDS members, and transport consultants. I verified this information by examining invoices obtained from the Mexican brokers by Texas A&M University. I was allowed to consult this material with the understanding that individual data that referred to specific invoices or brokers are confidential information between the truckers and the Mexican brokers. Furthermore, these data change according to the time of the year (there are cycles of higher costs, for example, near Christmas). I used this data to calculate low and high cost ranges, indicative of the approximate costs paid by the shipper, who passes them on to the final consumer. There are no official printed rates of border crossing services; they change from trucker to trucker and from broker to broker, and are confidential between brokers and truckers. The cost numbers used in my quantitative model are estimates that illustrate the problems faced by the border crossing system. They are important to test the hypothesis of the excessively high cost of the border crossing. The data on the time delays and equipment and driver use at the border crossing provide a more objective data test of the inefficiencies.

I obtained the information about the Laredo border crossing infrastructure by interviewing the Director of ITDS and consultants of Booz, Allen and Hamilton for the ITDS border crossing project. I corroborated the information through my interviews with the bridge managers and personal observation of the Laredo-Nuevo Laredo bridges #1 and #2 and by examining maps of the area.

1.4 The Thesis

This thesis is organized as follows. Chapter 2 presents the context of the research by outlining earlier work on transferred arrangements in Europe, and North America. The key factors at the core of all these developments are identified, along with the main areas of debate, which allowed me to build the central hypothesis that this research tests. That chapter also analyzes the environment of the US-Mexican border crossing, describing its elements, such as the geographical region, the trade flows, and the characteristics of the trucking industry in both countries. The objectives of NAFTA are analyzed and compared with the reality of the border crossing.

Chapter 3 presents in more detail the Laredo border crossing, the prominent one in trade volume and value, the volume and nature of movements, the infrastructure, and the trade flow process.

Chapter 4 reviews the models and approaches available to quantify border crossing costs and formulates an economic model for the analysis of truck transportation and border crossings at Laredo. Costs and times are quantified for each activity of the actual cross-border operation described in Chapter 3. The specific causes of the delays and high costs in the border crossing are identified along with their consequences. Both benefits and costs are examined to explain the relatively high level and the longevity of excessive costs and delays found at the border crossing at Laredo. This chapter shows that the traditional economic models and transportation theories do not explain the longevity of the inefficient border crossing. Institutional and behavioral approaches are then presented to explain the

anomalies between the economic rationality versus the specific interests and decisions identified in the border crossing at Laredo.

Border Crossing inefficiencies have a secondary impact on overall trade that is more difficult to measure because many other variables affect overall trade. To measure the impact of these inefficiencies on the trade between the United States and Mexico I review the literature on border economies and border effects within NAFTA countries focusing on econometric models for measuring the effects of imposing import duty on trade. Then one of these models, the General Trade Analysis Project (GTAP) model, is used to introduce the border crossing inefficiencies as an imposed import duty to see what the effects are in the trade between United States and Mexico. The following scenarios are investigated: a) the Mexican tariff on U.S. and Canadian products is increased by the measured friction of border crossing inefficiencies (money paid by shippers for charges for non-essential border crossing services; and b) an iceberg tariff to account for the value of time it takes to cross the border. Then the experiment involves simultaneously removing both (a) and (b). The experiment reports the impact on welfare (EV) as well as trade relative trade flows.

Chapter 5 develops solution scenarios for the border crossing problem, including: the implementation of NAFTA; moving the Mexican brokers from the U.S. side to the Mexican side of the border; leasing; multi-modal transport; and the use of the International Trade Data System, ITDS. Quantitative analysis of the results is presented using the model solution. An economic interpretation of the sub-problems is given and the implications are discussed with respect to the overall strategy for transportation, recognizing the probable competition of the rail transportation. Chapter 5 also presents the projects for improving the border crossing infrastructure, highways, railroads and government agencies related to the inspection process.

Chapter 6 examines the effort to solve the border crossing by constructing new infrastructure at Laredo: the World Trade Bridge with access roads and inspecting booths at the Laredo crossing point. This Chapter describes the new bridge and discuss the principal characteristics of the Laredo border crossing problem, the interest groups, their

objectives, and how they interact. This Chapter compares the operations near the Laredo bridge on the U.S. southern border with those near the Ambassador bridge on the U.S. northern border to show the institutional differences in the two border crossing systems and how they impact the costs and timeliness of trade. Chapter 7 summarizes the findings, presents the conclusions, and explores some of the implications of the research.

2 Context of the Study

2.1 Introduction

This chapter contextualizes the research by outlining the previous work on transfer arrangements on border crossings in Europe and North America. The key factors in all these developments are identified, along with the main areas of debate, allowing me to build the central hypothesis that this research tests. This chapter also analyzes the environment of the U.S.-Mexican border crossing, describing its elements, such as the geographical region, the trade flows, and the characteristics of the trucking industry in both countries. The objectives of NAFTA and its impact on the situation are analyzed and compared with the reality of the most important border crossing, the one at Laredo, in the context of the economics of U.S.- Mexican trade and transportation. Later chapters investigate the scale, nature, cost and implications of the Laredo bottleneck. These events lead to the identification of who gains and who loses, and to the question of why economic inefficiencies persist over long time periods.

The U.S.-Mexican border crossing economics are different from the U.S.-Canadian crossings or other crossings in the European Union. The following section reviews the literature on border crossings and some aspects of the European Union and the U.S.-Canadian border before returning to the U.S.-Mexican case.

2.2 Previous Work on Border Crossing in Europe

Europe seems to be the continent where regional trading arrangements are the most advanced, both in terms of formal agreements and the level of intra-regional trade. Most of this trade can be explained by the EC members' size, level of development, proximity, and common borders (Frankel 1997, p.78). The European Union accounts for 30 percent of the world gross product, evaluated at recent exchange rates (Frankel, 1997, p. 37).

European countries speak different languages than their neighbors and this creates a problem in trade and in the process of political integration. Frankel (1997, p. 119) estimates that if the European Union attained the same degree of political and border integration as the United States and Canada, trade among the European countries would increase dramatically (as much as 21-fold).

Koeing (April 2000) presents the case of Poland, adding a border crossing for trucking to shorten transit times and ease delays at the congested border with Germany, between the Polish town of Gubin and the German town of Guben. A step backward, at least for the German and Dutch motor carriers, is a new Polish government requirement that freight and customs documents be in Polish. "This requirement is likely to lead to longer backups at the border crossings," (Koeing 2000, p. 1) as truckers with documents in German or English are turned away or referred to a translator.

During the last decade, the European Commission has promoted the interaction between border crossing regions in Europe. Andrew Church and Peter Reid have done extensive work about cross-border co-operation, institutionalization, and political space across the English Channel. These papers explore the significance of cross-border strategies for the development and restructuring of the role of local governments in institutional arrangements and territories.

Church and Reid (April 1999, pp.643-655) view the financial support of the European Commission (EC) as partly responsible for the growth of transfrontier initiatives involving regional and local authorities on the internal and external boundaries of the European Union. These transfrontier initiatives are equivalent to an informal policy for border regions in Europe. Even though the financial support is limited, it is politically significant (Williams, 1996). European Union assistance for Central Europe has also supported border crossing programs in Poland and Hungary aimed to restructure the economies of these countries.

Church and Reid provide the conceptual elements of the "new institutionalist" perspective to examine the broader effects of transfrontier regions on political space and institutionalization, taking elements from regional and urban development analysis in Europe (Amin and Thrift, 1994; Healey et al., 1995; Grabher and Stark, 1996). Local and regional authorities play a major role in the evolution of these transfrontier initiatives.

The meanings and characteristics of institutions are recognized in general terms as the formal and informal practices that govern and regulate social, political, and economic life (O'Riordan and Jordan, 1996).

Transfrontier initiatives are a minor element of government structures, composed of numerous actors, practices, and bureaucratic organizations that contribute to the development of political institutions (March and Olsen, 1984). Cross-border co-operation is part of an ongoing process of institutionalization that results in the continual restructuring of organizational forms.

From the European Commission's perspective, cross-border initiatives are one of the programs designed to promote integration, but the actual outcomes of these initiatives are not easy to pin down (Brown, 1998).

Local authorities become involved with transfrontier initiatives to get funding, information, promotion, cultural and education exchange. These activities enhance the private sector and its political positioning in relation to other tiers of government. Cross-border initiatives also may help authorities in politically marginalized areas, helping the process of integration. Integration has political, social, cultural and physical dimensions, and may be an uneven process (Church and Reid, 1996, p. 644).

Some cross-border projects have over-emphasized infrastructure and the physical environment, such as the Dutch-German border (Scott, 1996). In Scandinavia the transfrontier projects often concentrate on major infrastructure projects that promote economic development but are a problem for the environment (Vartiainen, 1994).

Previous studies have identified political problems of cross-border initiatives such as accountability shortcomings, political asynchronicity, and conflict between different scales of government (Church and Reid, 1998, p. 644).

The terms "institutional thickness" and "territorial embeddedness" are used by the institutionalists to asses the way individual organizations and networks contribute to the process of regional and urban change (Amin and Thrift, 1994).

The term "Institutional thickness" is not defined in the literature, but I assume it is the cohesion that reflects the relationships between old and new structures as institutional legacies create frictions for newly emerging entities. In certain cases, institutional thickness can have negative implications for economic growth as old organizations resist change and contribute to institutional over-capacity, while new structures can be used to disrupt economic stability (Amin and Thrift, 1994). Often, institutional thickness can be related to territorial embeddedness so that "institutions act to stabilize a range of collective economic practices in a particular territory", and territorialities provide a place-centeredness that facilitates production and regulation in an increasingly globalized economy (Amin and Thrift, 1994, p. 16) .

The components of institutional thickness and territorial embeddedness are not always easy to identify, but in general they involve the use of complex networks and alliances to influence the local outcomes of global-local interactions. Thrift, 1994, identified four elements of institutional thickness: 1) copresence; 2) trust relations; 3) common enterprise; and 4) uneven distribution of power. Other studies add a fifth element: organizational fluidity and dynamism. Grabher and Stark (1997) argue that variety and diversity are essential for successful economic development since a large 'genetic pool' of new organizational forms allows a broad range of alternatives and a risk reduction.

Church and Reid's empirical analysis assesses cross-border initiatives in terms of four issues: (1) the nature and integrity of co-operation; (2) the positioning strategies and power relations between co-operating participants; (3) the contribution to organizational diversity;

and (4) the interaction of new organizational features and political spaces with existing structures and territorialities.

Their case study areas are in southern England and northern France and involve local authorities with few ethnic links, except the historical and cultural connections between parts of southwest England and Bretagne. While cross-Channel trade and transport links are extensively developed, the Channel still represents a relatively significant barrier in EU terms to the development of a well integrated transfrontier economic space. Church and Reid explore the implications of cross-border initiatives for political space and institutionalization in a part of Europe where coherent transfrontier spaces and shared ethnic politics are not strongly developed, despite the growing links between the regions on either side of this sea border.

Church and Reid arrive at mixed conclusions. The Transmanche region has developed over ten years a relative degree of stability; by contrast, the Arc Manche, which includes authorities along the coast of northern France and southern England, faces problems in establishing initial structures. There are similar mixed conclusions in terms of the role of local governance in institutional arrangements. The most effective cases show authorities reconciling certain competitive differences. As the cross-border initiatives mature, they involve cooperation between local government, business and educational entities. The most optimistic conclusion is that cross-border initiatives can lead to a growing co-operative capacity and contribute to longer- term institutional thickness. However, problematic aspects of institutional relations may limit the influence of the cross-border initiatives.

The analysis of the territorial characteristics of cross-border initiatives also produces mixed conclusions. Cross-border spaces are flexible, "imaginary spaces" envisioned by politicians. A positive interpretation of the flexible territorial characteristics of cross-border initiatives indicates a will to adopt less bounded strategies in the development of territorial embeddedness that allow the local government a wider institutional scope to

intervene in economic globalization and transnational reordering of political space being promoted by the EC.

In an earlier paper Church and Reid (Vol.29.3, p. 297-316), analyze the function of the local and regional state in the process of regional economic change. Castells and Hall (1994) argue that cities and regions are the "new economic actors." Despite having less power than national governments, regional and urban agencies have a greater response capacity to generate targeted development projects. Hirst and Thompson (1992) analyze the potential problems of the political institutionalization of regions in Europe since they may lead to political opportunism and the strengthening of the power bases of existing regional elites.

The new cross-border initiatives in Europe are of particular theoretical interest since they represent a new, or at least, different scale of regulation. The EU sees cross-border co-operation as a pre-cursor to European integration. Cross-border co-operation is part of a well established tradition between France, Germany, and Switzerland where in the early 1990s a number of local and regional authorities formed the Maas Rhine Euroregion (Dankbaar *et al.,*1994).

Several studies highlight what Capellin (1992) calls the "ambiguous effects" of border regions. For example, the removal of customs barriers can lead to either the concentration or the dispersal of economic activity (Maillot, 1990; Capellin, 1992.) The economic benefits of removing customs barriers occur in one of two ways: (1) peripherality may be reduced; or (2) comparative advantage can be strengthened (Balassa, 1989). In the Alps Maritimes border between France and Italy, economic changes resulted in political and co-operative ventures that reduced cross-border friction (Minghi,1991).

The emergence of transfrontier initiatives across the Channel highlights the problems and advantages of co-operation. Within individual authorities, the commitment of limited public funds to international co-operation may conflict with the more local concerns of elected councilors.

Some problems can have beneficial outcomes. Existing regional elites in Europe seek to gain from political institutionalization of regions, but co-operative initiatives allow urban and local authorities in nations with a weak or virtually non-existent tier of regional government to construct alliances and develop a role at the regional level.

Church and Reid (1998, p. 305) conclude that, politically, Euro-sceptics argue that international initiatives could lead to a detachment of local government from the more immediate local needs of their electorates. By contrast, federalists argue that local needs can only be properly be fulfilled by action on European scale.

2.3 Border Crossing Between The United States and Canada

2.3.1 Introduction

The total length of the U.S.-Canadian boundary is 5,525 miles. There are 28 major land entry ports at the border, 13 in the northwestern United States and 15 in the northeast, at which bulk commodities are processed. In total there are about 130 land ports on entry on the U.S.-Canadian border.

Canada is the United States' largest trading partner, currently accounting for about 20 percent of U.S. total merchandise trade with the world. In 1999 Canada exported US$270 billion to the United States, importing US$164 billion (Di Sanza, December 15, 1999) .

The largest concentration of trade with Canada is in the Great Lakes area, including Wisconsin, Michigan, Ohio, Indiana, and Illinois. This region alone accounted for 39 percent of the value of U.S. imports from Canada and 36 percent of the value of U.S. exports in 1998. Much of this is accounted for by the high value automobile trade between Michigan and Ontario. The second largest regional concentration of trade is in the mid-Atlantic area, which includes New York, New Jersey, and Pennsylvania.

Di Sanza (1999) presentation showed that in terms of value, most cargo transported between the United States and Canada travels by highway (70 percent in 1999) or rail. On this northern border, the eastern ports of entry in Michigan and New England handle about 80 percent of cross-border traffic. Of the remaining 20 percent of traffic, the Washington ports of entry handle most of northwestern cross-border trade and highway traffic volume.

Most trade flow patterns between the United States and Canada are intra-regional in nature. The communities on both sides of the northern border have developed regional economies that are truly binational. There are high levels of cross-border commuting, shopping, and movement of goods and services to support these binational regional economies. These movements are best accommodated by regional transportation systems.

2.3.2 Previous Studies on the U.S. Canadian Border

In 1991, previous to the negotiations of NAFTA, the Intermodal Surface Transportation Efficiency Act (ISTEA), Public Law 102-240, directed the Secretary of Transportation to conduct studies relating to the movements on international trade between the United States, Canada and Mexico (U.S. Department of Transportation). The complaints of lengthy delays and backups of trucks and cars at international border crossings were the principal motivation of the study. Trade among the three North American nations had increased significantly since 1984, threatening to outstrip the ability of the nations' transportation systems to handle additional traffic.

The principal findings of the study were: (1) volumes of trade and traffic would continue to increase among the three North American countries at rates significantly higher than average national growth rates; (2) U.S.-Canadian trade processed through border ports of entry in the western region would increase by 16 to 24 percent in the following 10 years; (3) the facilities at the border crossings, principally bridges, tunnels and Federal inspection agency structures (the U. S. Customs Service, the U.S. Immigration and Naturalization Service, the U.S. Department of Agriculture and their Mexican and Canadian counterparts), were adequate; (4) arterials leading to and from border crossing sites were under stress and inadequate to handle significantly greater amounts of cross-border traffic; (5) a significant

proportion of the delays at border crossings were attributed to the volume of trade, complexities of inspection requirements, and poor traffic management and cargo-clearance procedures; (6) inadequate or incomplete paperwork accompanying cross-border shipments was common and caused delays; (7) inspection agency staffing shortages caused excessive waiting time; (8) traffic at most crossings was typically concentrated during peak hours, and border facilities often were idle for long periods during off-peak hours; and (9) policies and practices of the three governments often contributed to congestion at the border, e.g., inspection agencies on either side of the border worked different hours.

The study recommended creating multi-task forces composed of Federal, state, and local government agencies and the private sector to address congestion at border crossings. They were to exam problems in general and, at specific crossings, identify critical border initiatives and to aggressively promote new technologies and other non-capital-intensive methods of facilitating the movement of cargo through major border crossings. The study also recommended a more efficient use of border facilities to spread traffic over more hours of the day.

2.3.3 Features of the U.S.- Canadian Border

The similarities of culture, language, race, economic development, and capital have helped create a sense of trust between Canada and the United States. The trading environment is comfortable, and United States and Canada have a trusting relationship for border crossing inspections, with a post-audit approach. The United States and Canada consider each other as equal partners. They have 150 years experience of doing business successfully and have created institutions and systems to deal with them (Ehinger and Nolle, 1999). Isolated cases of friction do occur from time to time, but as the exceptions that confirm the rule.

Canadian and the United States are a good example of two geographical units that share such links as common language that clearly boost their bilateral trade. When two units share a common cultural heritage or legal system, their trade will be enhanced (Frankel 1997, p.117).

Positive aspects of U.S.-Canada trade include the ease of doing business within the same legal system, an integrated media, cultural proximity, and liberalized trade relations between Canada and the United States. The Canadian federation of provinces and the American federation of states provide possible models for the European Union. The very high effects of political union in the Canadian-U.S. case tell us that trade among European countries would increase dramatically if the European Union attained the same degree of political integration that Canada and the United States have each achieved within their borders. European countries still speak different languages than their neighbors. The European Union has a very long way to go before attaining that degree of integration. The formation of the common market may turn out to be a relatively small step by comparison (Frankel, 1997, pp. 118-119).

2.3.4 The Main Crossing Points in the Canada-U.S. Border

The main crossing points in the Canada- U.S. border are the Ambassador Bridge between Detroit (Michigan) and Windsor (Ontario) and the Peace Bridge between Buffalo New York) and Forth Erie (Ontario). Most Canadians live within 100 miles from the U.S. border where the industries and population are located.

At these northbound cross points there are lines of trucks (less than one mile) and delays (less than 3 hours) due to the very large volumes of trade. These are never as bad as in the U.S.-Mexican border. Almost 40 percent of U.S. total imports come from Canada. They share, besides culture and language, a similar system to process things.

The Ambassador bridge has 2 lanes in each direction; the Peace bridge has 3 lanes total, the middle lane is switched according to the volume of trade (south or northbound). These are older bridges than the Colombia bridge and the World Trade bridge at the southern U.S. border.

In U.S.-Canada Customs operate 24 hours/day. Canadian drivers are allowed to drive in the United States and U.S. drivers are allowed in Canada. The drivers' salaries are similar in both countries. There is a toll to cross the bridge (U.S.$15-30).

The Ambassador Bridge has 8,000 trucks/day in each direction; the Peace Bridge has 3,000 trucks/day in each direction.

2.4 Border Crossing Between the United States and Mexico

2.4.1 Introduction

This section presents the characteristics of the U.S.-Mexican trade border and explores the key factors that distinguish it from the U.S.-Canadian border. It analyzes the environment of the U.S.-Mexican border crossing, describing its elements, such as the geographical region, the trade flows, and the characteristics of the tracking industry in both countries. The objectives of NAFTA and its impact on the situation are compared with the reality of the border crossing at Laredo. In this context, this research investigates the economics of U.S.- Mexican trade transportation crossing the border at Laredo, Later chapters look at the scale, nature, cost and implications of the Laredo bottleneck identifying who gains, and who loses, and why inefficiencies have persisted for so long.

2.4.2 Features of the U.S.- Mexican Border

The literature reviewed above examined specific border trade between the United States and Canada, and among the European Community countries. This analysis is applicable only in a generic sense to the subject of this theses, the U.S. - Mexican border crossing. The U.S.-Mexican case is unique since interdependency covers virtually every aspect of the sociopolitical and economic spectrum while the cultures, economic and social policies, and regulatory frameworks are diverse, which is not characteristic of the previously studied border-specific cases. This diversity presents serious challenges to Mexican and U.S. negotiators in their efforts to harmonize the trade facilitation policies across the borders. Furthermore, I will show that the convergence (a key element of institutional thickness) found in the U.S.-Canadian border crossings has not occurred in the U.S.-Mexican case, requiring additional economic theory to elucidate the causes of the cross- border problem.

The U.S.-Mexican case also differs from the European context by having the world's longest border between an industrial country and a developing one. There is some limited cultural and economic integration between the two countries. The population of the U.S. border states is 10 percent Mexican ancestry and shares some of Mexico's cultural values and attributes.

Mexico is a very important trade partner of the United states. The entire population of Canada is the same as that of Mexico City (25 million people). The total population of Mexico is 100 million people, with 50 percent under 25 years of age. In ten years most of this younger generation will be entering the labor market and demanding goods and services (Vallejo, R.1999). Both countries would therefore also benefit substantially from optimizing efficiencies in transport movements and associated logistics of cross-border trade.

There is a cultural difference in the relationship between the United States and Canada and the relationship between the United States and Mexico. The U.S.-Canadian relationship is based on a similarity of economic development, language, legal tradition, culture, and race.

The U.S.-Mexican border features sharp differences in all these factors. In addition, Mexico is a major source country for drugs smuggled into the United States along with illegal aliens. There is an ethnic and race issue, with brown skinned Spanish-speaking people predominating on one side of the border and white English-speaking people predominating on the other. Because the differences of culture, language, and race, a war in which Mexico lost half its territory to the United States, and other armed conflicts, there is little trust between the two countries.

The elements of culture affect the economic performance of the U.S. northern and southern borders. Even though the three countries have the same North American Free Trade Agreement, the characteristics of the problems on the northern border differ from those in the south. There is little literature on the topic and, even in conference and discussions, the mention of cultural factors is often hesitant and quasi-apologetic (Gereffi and Wyman,

1991, p. 362). Gereffi and Wyman argue that one reason for the reluctance to talk about culture is fear of appearing racist. They refer to the need for "empathy" and "trust in people" for economic growth. These are important elements in the border crossing environment, present in the U.S.-Canada case but absent on the U.S. Mexican border.

This chapter describes the institutional environment of the border crossing, the geographical region, the trade flows, the characteristics of the trucking industry in both countries, and the infrastructure. I then analyze the objectives of NAFTA and compare with the reality of the border crossing, identifying the specific causes of the delays and high costs. I conclude the chapter by posing the question of why the real costs and delays are so high and why swift actions are not taken to reduce them.

2.4.3 Geographical Region

Geography should be part of trade theory. As surprising as it sounds, most international economists until quite recently ignored distance and other geographical factors as determinants of trade (Frankel 1997, p.37).

The U.S.-Mexican boundary is of 1,933 miles, separates four U.S. states (California, Arizona, New Mexico, and Texas) from six Mexican states (Baja California, Sonora, Chihuahua, Coahuila, Nuevo Leon, and Tamaulipas), as shown in Figure 2.1.

From an economic point of view, trade between the two countries nearly tripled in value between 1982 and 1992, from about US$27 billion to US$76 billion. Since then, growth has been even more remarkable, tripling again from the $76 billion figure to an estimated US$220 billion by 1999 (Table 2.1) despite the slowdown of the Mexican economy (Hall 1998).

There is a high degree of economic interdependency between the two countries: Mexico exports about 80 percent of its trade value to the United States, while Mexico is the world's largest importer of U.S. products after Canada, exceeding Japan and the European Community. Each side of the border benefits from the economic activities on the other

Figure 2.1: U.S./Mexico Gateways and Border Crossing Stations
Highway and Rail

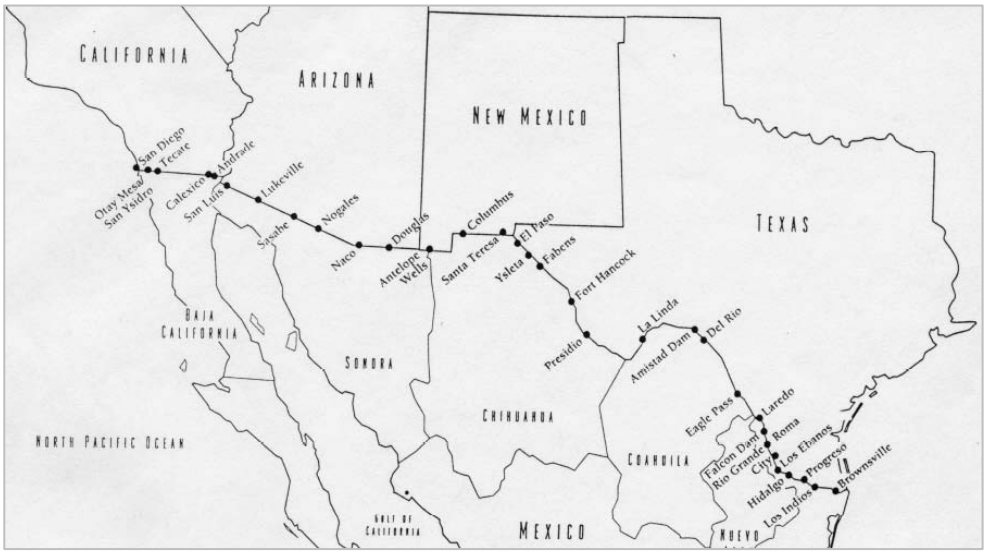


Table 2.1: Mexico-U.S. trade. 1987-1999 (billions of U.S. dollars)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
U.S. - Mexico	14.6	20.6	25.0	28.3	33.3	40.6	41.6	50.8	46.3	56.8	71.4	78.8	105.0
Mexico - U.S.	20.3	23.3	27.2	30.2	31.1	35.2	39.9	49.5	62.8	74.3	85.9	94.6	110.0
Total	34.9	43.9	52.2	58.5	64.4	75.8	81.5	100.3	109.1	131.1	157.3	173.4	215

Source: U.S. Department of Commerce

side. Conversely, both countries would also benefit from improving the efficiency of transport movements and associated logistics of cross-border trade.

Eighty percent of the tonnage and 85 percent of the value of the cross-border trade is moved by truck. Handling this trade are 10 principal crossing points along the border states of Texas (Brownsville, McAllen, Hidalgo, Laredo, Eagle Pass, Del Rio, El Paso), California (Otay Mesa, Calexico) and Arizona (Nogales) (Best 1992, Nov. 16, pp. 32-33). The busiest border crossing cities are Laredo, El Paso, and Otay Mesa. The busiest port of entry for commercial trucks is Laredo.

2.4.4 Trends of the Mexico-U.S. Trade

International trade moves between centers of manufacturing production and consumption. In theory, production centers are located where economies of scale, raw materials, and the availability of technology can produce goods at the least possible cost and the highest rate of return (Magee, 1968).

The Mexican centers of production, the consumption of intermediate goods and consumption of consumer goods define the origins and destinations for the majority of trade which flows between the United States and Mexico. The consumption of

intermediate goods at manufacturing centers, especially the maquiladoras[2], plays an important role in the U.S.-Mexico trade flow and creates an additional complexity in the definition of origin and destination.

The United States is the most important commercial trading partner for Mexican exports, representing nearly 80 percent of Mexico's total foreign trade (Table 2.2). For U.S. exports, Mexico ranks as its second highest trading partner as shown in Table 2.3.

The United States maintains a more diversified trade clientele than Mexico. Its top four trading partner countries represent only 47 percent of total U.S. exports by value. The United States remains Canada's and Mexico's largest trading partner. Canada is the United States largest trading partner. Canada is the third-largest market for Mexican goods.

The rapid growth of U.S.-Mexican trade started in 1986, when Mexico reduced its tariffs and joined the General Agreement on Tariffs and Trade (GATT). This growth has continued with the implementation of NAFTA. Table 2.1 above showed Mexico-U.S. trade figures from 1987 to 1999 in millions of dollars. A point of inflexion occurred in 1995 when the value of U.S. imports from Mexico exceeded U.S. exports to that country, mainly due to the 50 percent devaluation of the Mexican peso in December 1994.

The devaluation of the peso had a dramatic effect on the flow of goods into and out of Mexico. The reduction in imports was immediate as Mexican consumers responded to the loss of purchasing power. An expansion of exports was noticeable but gradual, mitigated somewhat by high interest costs. Trend analysis of these conditions reflects an important disruption in trade flows that makes reaching long-term conclusions difficult. Figure 2.2

[2] Maquiladoras are manufacturing plants located in Mexico that make products primarily with U.S. components; they are sold mainly to the U.S. market. A large percentage are automotive products, electrical components, and consumer goods. The Maquiladora program started as an informal agreement in 1966, and was so successful that in 1971 was formalized into law as the Border Industrialization Program (BIP).

Table 2.2: Mexican Import-Export, 1999 (millions of dollars)

Country Region	% of Total
Total	100
United States	88
Canada	2
Europe	8
Japan	3

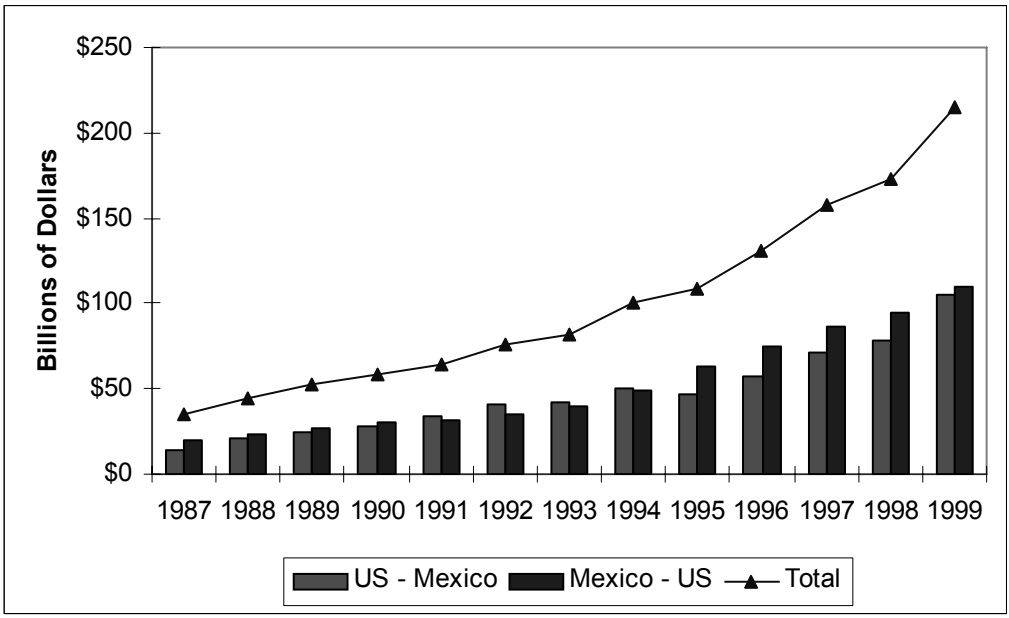
Source: Secretaria de Comercio y Fomento Industrial (Secofi)

Table 2.3: U.S. Import-Export, 1999 (millions of dollars)

Country	% of Total
Total	100
Canada	20
Mexico	11
Japan	6
Germany	4

Source: U.S. Department of Commerce

Figure 2.2: Trade Flow Trend Mexico-United States, 1987-1999



Source: U.S. Department of Commerce

shows the Mexico-United States trade flow trend during the years 1987-1999, indicating that U.S.-Mexican trade increased steadily over the seven years following GATT accords and preceding the implementation of NAFTA. In 1994, two-way trade embarked on a new, higher trend line that was stalled in 1995 by economic difficulties in Mexico. Bilateral trade growth again resumed in 1996 from 100 billion U.S. dollars to 210 billion in 1999 and 240 in 2001.

2.4.5 Principal Commodities

I will analyze the most important products by category since imports and exports are performed under different customs regulations. Based on total trade between the United

States and Mexico (imports and exports) under the Mexican "final"[3] category, the most important products are mineral fuels, vehicles, nuclear reactors and boilers, and electric appliances and machinery. In the "temporary"[4] category, the most important products are vehicles, nuclear reactors and boilers, optical instruments, and imports with special classifications. Of the total freight by weight moving southbound across the Mexican-U.S. border, 31 percent enters through Nuevo Laredo. The main products moving southbound through Laredo are machines (with 39 percent of the market share), nuclear reactors and boilers (with 67 percent), automobiles and automotive parts. Laredo was the busiest district with 86 percent of the total trade flow in 1999. For plastics, Laredo was again the district with the largest percentage of the total (53 percent in 1999). Most optical instrument products pass through Laredo, which maintained a 52 percent market share in 1999. The district of Laredo handles the largest percentage of paper and cardboard products and this trade increased through 1999.

The northbound flow of machines, electronics, and electrical equipment is concentrated in Laredo, with a 32 percent share of the market in 1999. Laredo handles the largest share of vehicles and auto parts movements, with a 72 percent share of the market value traded by borderland in 1999. Laredo also handled the largest share of the nuclear reactors and boilers with 55 percent of the total trade in 1999. Laredo and El Paso dominated the border wide trade of optical, medical and photographic equipment products with 48 percent and 31 percent shares of total dollar trade in 1999.

2.4.6 Freight Weight (Tons)

The U.S. data have no consistent information on trade flows by weight between the United States and Mexico. There are, however, some data on quantities of particular goods shipped. In most cases, the quantity is expressed in tons or kilograms; in some cases, the quantity is reported in barrels, number of animals, dozens, or various other units.

[3] Products consumed in the country of destination from traditional trade.

[4] Products that enter temporarily the country of destination that have further value added and are then re-exported to the country of origin, such as maquiladora imports.

Mexican customs record freight weight for part of its international trade. However, there is no control or verification of the figures reported and in many cases this information is not recorded at all (Binational Border Transportation Planning and Programming Process, 1997, p. 37).

Northbound Freight Movements by Weight

From 1995 freight weight estimations, not including the product category "mineral oils and combustion products that include oil", 33 percent (18 million tons) moved northbound overland across the Mexico-U.S. border. The main Mexican export commodities by share of volume are presented in Figure 2.3. Only 1995 data are available, but interviews with NAFTA experts at the Mexican Embassy indicate that the situation is similar for 2000.

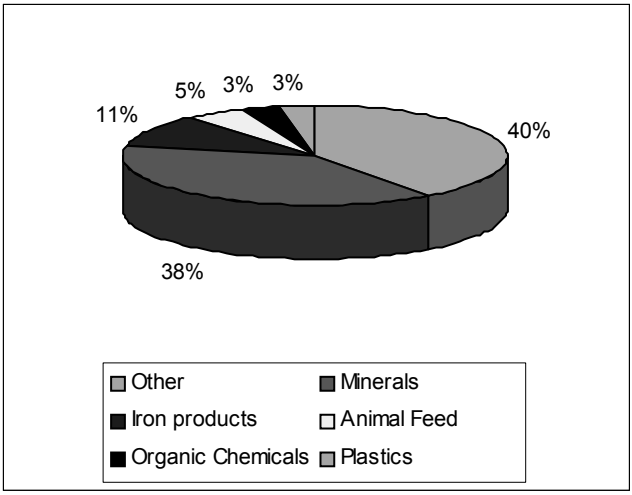
The average value per ton of Mexican exports for 1995 was $222 per ton for freight exported through ports, and $2,978 per ton for freight moved across the land border (Binational Border Transportation Planning and Programming Preaches, Task 8, p.37). These values reflect the economies of transporting low value to-weight for bulk commodities sent by ship versus high value-to-weight products sent by truck, air, and intermodal rail.

The customs offices at the Mexican-U.S. border that handle the most freight (in tons) are: Nuevo Laredo with 38 percent; Matamoros with 14 percent; Ciudad Juarez and Nogales with 13 percent each; and Tijuana with 10 percent. These crossings account for 78 percent of the total.

Southbound Freight Movements by Weight

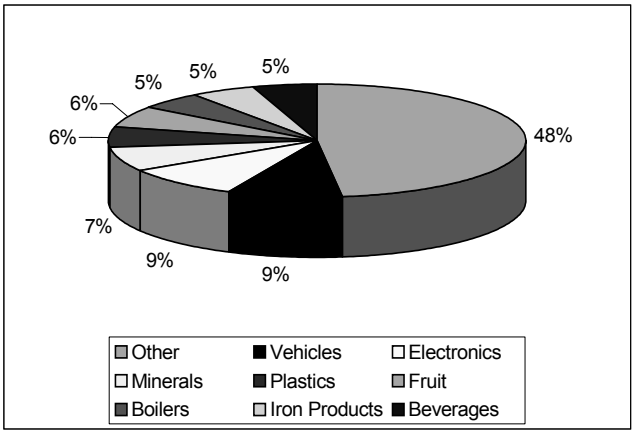
In 1999 Mexican freight imports totaled an estimated 100 million tons. Of this total (36 million tons), 47 percent crossed the Mexican-U.S. land border. Figure 2.4 presents the principal Mexican export commodities transported by land as a percentage of total volume.

Figure 2.3: Principal U.S. Export Commodities by Product Type, 1999



Source: La Empresa estimated based on SECOFI data

Figure 2.4: Principal Mexican Export Commodities Transported by Land



Source: La Empresa estimates based on SECOFI data

2.4.7 Truck as the Main Transportation Mode by Value

Truck is the primary form of transportation in the trade between the United States and Mexico, with roughly 85 percent of this freight by value, currently estimated at $200 billion annually (Hall, 1998). Customs reports that at Laredo, Texas, alone, approximately 5,200 trucks cross northbound daily, carrying 45 percent of the value of Mexico's exports; and 4,800 trucks cross southbound Laredo, carrying 64 percent of U.S. exports to Mexico. Approximately 2.5 million trucks crossed at Laredo during the year 1999.

Due to the overriding importance of trucking, this mode is the focus of this research, although trains are recognized as competitors, especially in serving the distant southern Mexican regions with 7 percent of the market by value. Other modes of transportation, such as air, water, and pipelines share the remaining 8 percent of the market for trade between the two countries, and are also excluded. These modes together represent only 15 percent of movements by value between the two countries. Except for air, they consist primarily of bulk items whose value to weight ratios are very low.

Although the dominant mode of transportation, cross- border trucking faces a number of problems. National interests, interest groups, the necessity of customs clearance, government inspections, and Mexico's less developed transportation system and logistics management practices can disrupt service and cause excessive handling, time delays, and added costs. In a survey of Fortune 500 companies, logistics was identified as the area where the greatest opportunities existed for making trade with Mexico more efficient (Bonney, 1992, pp.48/3-48/4).

The North American Free Trade Agreement (NAFTA) specifically addresses a number of cross-border trucking issues, such as foreign ownership, foreign carrier market access, and harmonization of safety standards. As shown in later chapters, reality still lags far behind the NAFTA formalities.

Regardless of the political outcome of NAFTA, trade with Mexico will continue to increase and truck transportation will dominate the transport of high value commodities. The roadway (truck) mode is the most important in all cases, varying only with the existence of railroads at the crossings facilities and the direction of flow (import or export).

2.4.8 The U.S. Truck Industry Profile

Approximately 60 million trucks were licensed in the United States in 1997. The estimated average age of the U.S. fleet is 5 years (Rojas 1999). For-hire trucking accounts for only 16 percent of all trucks used primarily for freight hauling. Most trucking is not done by the for-hire trucking industry but by non-transport companies that provide their own trucking.

Until 1980, for- hire trucking was regulated by federal and state governments. Regulation took the form of limitations on routes and commodities that motor carriers could serve and the rates charged. For-hire trucking was deregulated in two steps. The Motor Carrier Act of 1980 permitted free entry into the interstate industry and allowed rate competition. In 1994, the second step eliminated intrastate regulation and removed rate-filing requirements carried over from the regulatory era. Motor carriers are now free to carry what they wish anywhere in the United States and to charge whatever they can negotiate with each customer. Rates are now secret. Manufacturers and distributors have much larger fleets than the for-hire industry and have been freed to look for freight to help them balance in-bound and out-bound shipments. Deregulation has blurred the distinction between the for-hire industry and other operators of trucking fleets.

Deregulation was directly responsible for the bankruptcy of a majority of the 20 largest trucking firms and new bankruptcies continue today. Other carriers emerged to carry the freight previously handled by the bankrupt carriers. These new firms use sophisticated data management techniques to match truckload shipments. By refusing less-than truckload shipments, hiring non-union labor, and ensuring return loads (back hauls), these new operations achieve exceptional productivity levels. These firms do not need to assemble truckloads of freight from individual shippers each with only a few hundred or thousand pounds of freight. They avoid the expense of building and maintaining terminals and have

low labor costs. Some previously regulated (and still heavily unionized) firms survive by serving the less-than truckload market. Their numbers are shrinking, however, as bankruptcies continue. The less-than-truckload industry is more concentrated than under regulation.

Three firms now carry more than half of the less-than truckload freight: Yellow Freight, Consolidated Freight Ways, and Roadway Express. None of these firms is large by the standards of the rest of American industry. Yellow Freight's revenues are smaller than those of any major U.S. railroad or airline. The ten largest railroads and airlines carry almost all the traffic of those modes. However, the ten largest truck fleets account for only a small fraction of trucks.

Trucking accounts for more transport than all other forms of surface freight transport in the United States . Three times as much is spent on intercity trucking as on railroad, water, and oil pipeline transport combined. Measured in employment, the comparison of trucking to other modes of surface transport is even more extreme.

Despite the financial upheaval in for-hire trucking after deregulation in 1980, there were no major shifts either between the for-hire and the private trucking sectors or between trucks and other forms of surface transportation. The explanation is that most users of truck transport cannot easily switch to other modes in response to minor price changes.

Trucking is the basic means of moving high value goods in the United States. Railroads, water transport, and pipelines are important for carrying bulk commodities , but most domestic manufactured commodities are moved by motor carriers. International trade flows between the United States and Mexico are heavily concentrated in manufactures, and almost all this traffic moves by truck.

U.S. trucks and drivers are generally barred from operating in Mexico. Only under very limited circumstances are U.S. trucks allowed in Mexico, and even then they can rarely return with loads. Mexican short-haul carriers (drayage firms) shuttle trailers across the

border, bridging the logistics gap between the U.S. truckers in the north and Mexican long-haul truckers in the south. An informal agreement between the cities of Laredo and Nuevo Laredo allows tractors from either side to deliver loads, but the trailers must return empty.

2.4.9 Mexican Truck Industry Profile

The Mexican trucking industry is not as modern or well equipped as U.S. trucking (on average) but is acquiring new vehicles. Sixty percent of the 250,000 trucks operating in Mexico are five years old or more (Kellmann International Forwarders, January 11,1999). Three thousand trucks were purchased during 1998 through the National Trucking Chamber (Canacar), with an additional 3,000 trucks purchased with direct factory financing. Similar numbers of trucks are being purchased this year. This means that only the 2.4 percent of the Mexican truck fleet is less than 2 years old. Of the total numbers of trucks in Mexico, 60 percent are run by Mexican companies, with the rest of the fleet made up of owner-operators, according to Canacar data. The truck technology of the drayage companies is a different story. These trucks are smaller, older, and present a safety issue.

Many Mexican truckers do not have office telephones, much less mobile radios. By some estimates, the Mexican trucking industry needs up to $ 1.5 billion in capital, a large amount for this sector, but interest rates run as high as 30 percent/year and loans are difficult to obtain.

Especially in southern and central Mexico, the Mexican infrastructure is inadequate for trade expansion, and the Mexican highways and trucking infrastructure cannot support modern long-haul trucking.

U.S.-Mexican motor carrier partnerships have been slow to develop. The Mexican trucking industry was deregulated in July 1989. However, it provides somewhat spotty service on the longer hauls between the border and production facilities in the south.

The shortcomings of Mexican trucking, especially on the longer hauls to central and Southern Mexico, offer an opportunity for railroads. The best rail carload and intermodal

services can now compete with motor carriers on service quality and reliability, and rail retains a definite cost advantage. The opportunity seems particularly attractive for intermodal service.

2.4.10 Border Crossing Infrastructure

Border crossing facilities are the physical structures at or near a border that are dedicated to enforcement of processes by which people enter the country, and by which goods are imported and exported. Broker services, the preparation of documents and coordination between shippers, carriers and receivers of goods, and collection of tolls may also be accommodated in border crossing facilities.

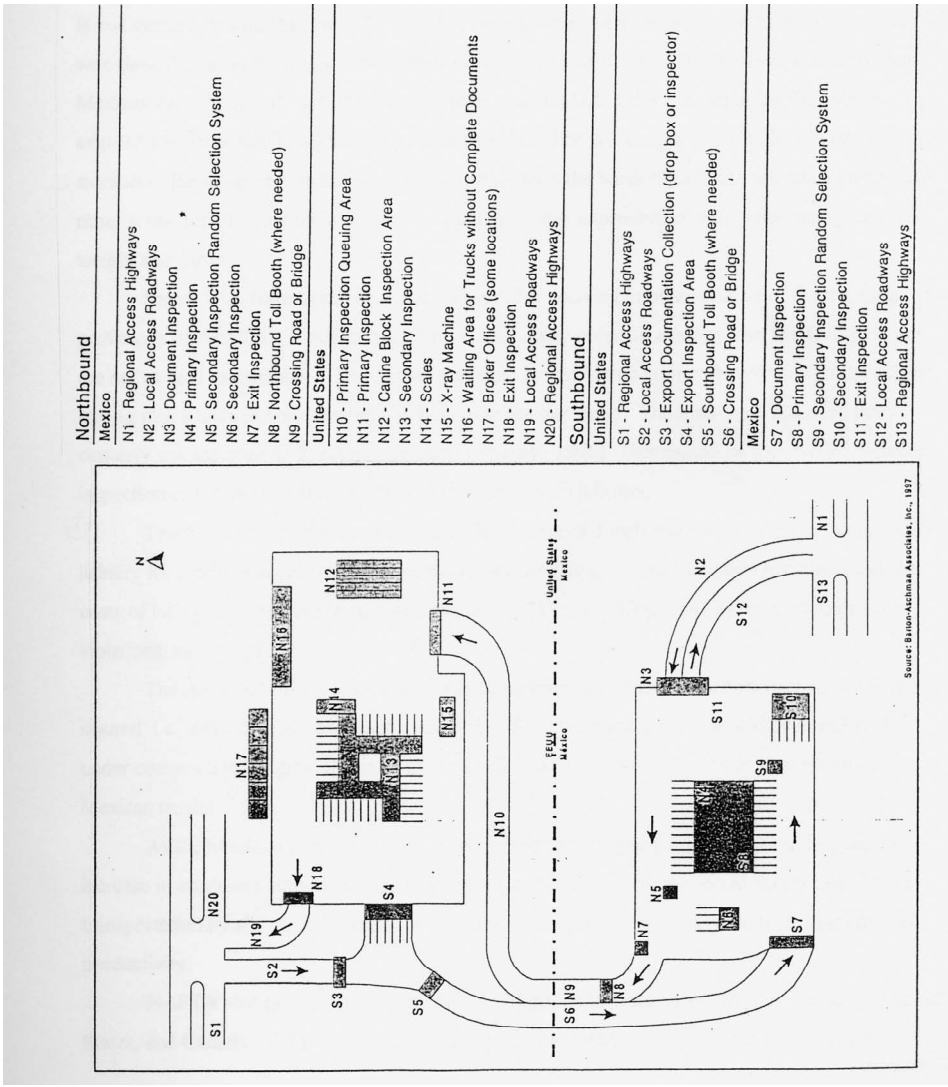
Figure 2.5 shows the generic layout of U.S. and Mexican border crossing stations. In general, three broad physical areas at border crossings are dedicated to international trade, comprised of facilities for: (1) approaching the inspection facility; (2) accommodating legal enforcement (regulatory and inspection functions); and (3) leaving the inspection facility.

Government agencies are responsible for the inspection processes and the enforcement of laws and regulations. These agencies include the: U.S. Customs Service (Customs); U.S. Immigration and Naturalization Service (INS); U.S. Department of Agriculture, Plants and Animal Products (USDA/APHIS); Food and Drug Administration (FDA); and Border Patrol. Each agency is responsible for different aspects of the immigration and import-export laws and regulations. For example, U.S. Customs is responsible for enforcing laws covering inspection of most manufactured products, certain drugs are the responsibility of the FDA, and certain agricultural and live animal products are the responsibility of the Department of Agriculture. The Border Patrol Mission focuses on enforcing immigration laws along the border. All of these agencies are collectively known as the Federal Inspection Services.

Border crossing facilities are located at land crossings (rail, highway) and other ports of entry that service persons and goods transported by marine, air, and intermodal modes of

Figure 2.5

Generic Layout of U.S. and Mexican Border Crossing Stations



travel. The facilities include the border crossing station, accommodations for inspection of immigration and cargo documentation, in-depth inspection of cargoes, collection of tolls and tariffs, and other enforcement needs.

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U.S. decisions about the location of international bridges and land crossings to Mexico are governed by an approval process under the jurisdiction of the Department of State by the authority of the International Bridges Act of 1972. U.S.-Mexican proposals are handled by an interagency committee chaired by the U.S.-Mexico Border Affairs Coordinator. The Interagency committee on Bridges and Bridge Crossings has representatives from 10 federal agencies who participate in the decision process. These agencies are: the General Services Administration (GSA); Customs; INS; Federal Highway Administration (FHWA); Federal Railroad Administration; the Coast Guard; the International Boundary and Water Commission; FDA; the Department of Commerce; and the USDA. When the interagency

committee meets with its Mexican counterparts, the entity is known as the Binational Committee on Bridges and Border Crossings. State and local agencies and private sector entities participate, as they are typically the proposers of bridges and land crossings.

At some ports of entry, three or more entities may be responsible for the property or the facilities. However, responsibility for the border crossing inspection processes remains with the federal inspection agencies.

2.4.11 The Traditional Trade Flow Process

Appendix A presents the 21 steps of the traditional trade flow process, southbound and northbound. The model presented in Chapter 4 quantifies the times and costs involved in the border crossing process.

2.5 NAFTA

This section describes the aspects of NAFTA that affect truck transportation and border crossings.

NAFTA took effect on January 1, 1994. The stated six primary objectives are: (1) eliminate barriers to cross-border trade in goods and services; (2) increase cross-border investment; (3) develop legal frameworks that protect cross-border investment; (4) establish rules guaranteeing the permanent access of domestic products to the North American markets; (5) obtain the greatest advantages from the complementary elements of all three North American economies; and (6) create procedures for implementing and administering NAFTA and set up fair and equitable mechanism to resolve controversies (Gooley 12/1/1998, pp.1-2).

NAFTA removed significant investment barriers, ensured basic protection for NAFTA investors, and provided a mechanism for the settlement of disputes between NAFTA investors and NAFTA countries.

Trucking and non tariff barriers were not adequately addressed by NAFTA (Moore, 2000). Trucking became one of the most disputed elements since NAFTA did not specify how trade would be administered by the government agencies of the three NAFTA countries (Ehinger, 1998).

2.5.1 NAFTA Implications in the Transportation Industry

Prior to NAFTA, Mexican-owned trucks had legal access only to what used to be called the ICC50-mile zone, that is, they could transit anywhere within 50 miles north of the U.S.-Mexico international border (Kohn 2001)

According to NAFTA, all countries will issue licenses for buses and trucks and allow commercial operators to offer services in the transborder market. The geographic limits of operation were to be phased over time. Implementation of this provision is behind schedule.

U.S. Secretary of Transportation Federico Peña suspended unilaterally the rules whose implementation was to start at the beginning of 1996. This virtually assured that the rules will never be implemented in their original form. This action was viewed as a result of election-year pressure by organized labor. NAFTA requires only that Mexican carriers operating in the United States meet all U.S. rules and requirements, which angered the American Trucking Associations (ATA). The ATA argues that, although few of its members plan to operate in Mexico, the failure to open the border has held back advancements in other areas, for example the negotiation of new package-express rules and harmonizing size and weight standards.

Safety fears have been alleged as a reason for delaying implementation of the trucking provisions of NAFTA. Mexican trucks are considerably older on average than the U.S. fleet and are not as well maintained. The counter argument is that Mexican firms have renewed their fleets, buying new trucks in considerable numbers over the last years. The long- haul Mexican fleet certainly can meet the U.S. safety standards (Ehinger, 1998). This

should be a matter of technical inspection of individual vehicles rather than a blanket prohibition.

While agreeing that safety regulations were important, Mexico challenged the blanket ban before a NAFTA arbitral panel.

This issue occurs since trucking may be under-priced with respect to safety, although legal liability for trucking accidents provides incentives for safe practices. Liability insurance and the costs of hiring safe drivers are built into the price of U.S. trucking services (even though many violations still occur).

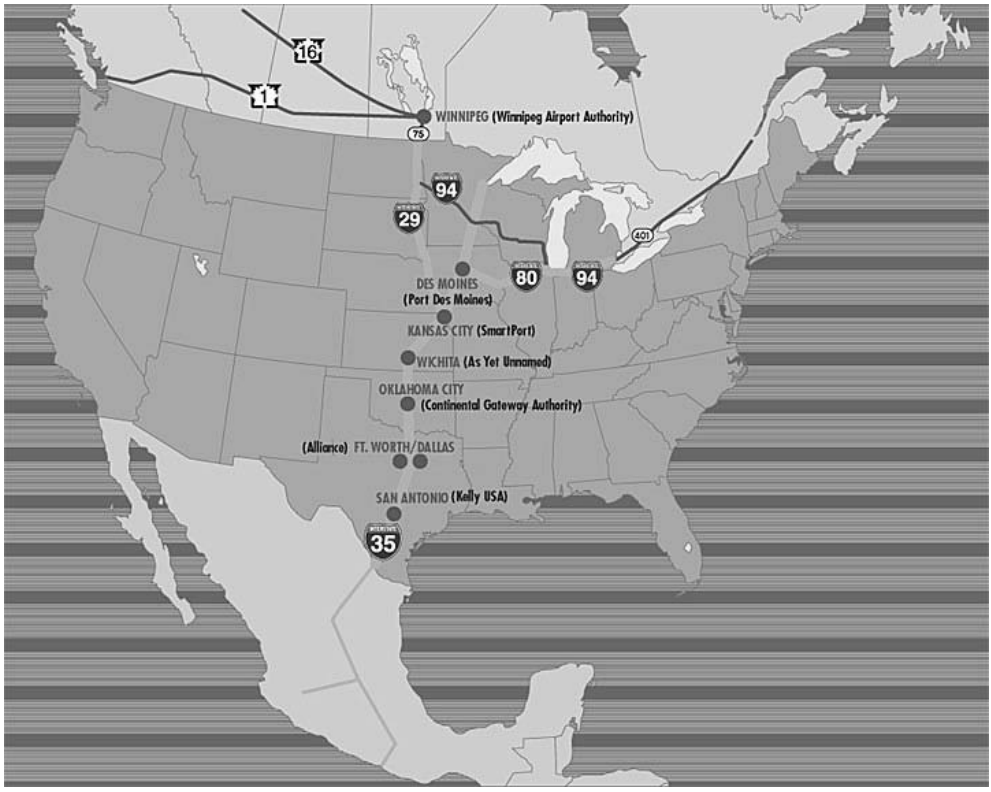
The ATA and others have voiced their concerns that Mexican carriers may not be properly insured, i.e., the incentives are insufficient and U.S. carriers and drivers would be at risk and under compensated. Again, this is an argument for requiring insurance rather than prohibiting Mexican trucks. As the Mexican economy fully recovers from the monetary crisis of 1995, the general increase in economic activity has increased transport demand.

The projected future demand for transportation by all industrial sectors will require transport firms to increase their fleets or their productivity.

NAFTA also gradually changes the type of goods flowing to and from Mexico, the United States, and Canada. Tariff reductions are being implemented gradually and may eventually provide free market access to thousands of product types. These tariff charges will in turn change export and import relationships (direction of volumes and product flow). The effects of NAFTA will be greatest in the regions of the member countries currently linked by commercial flows, particularly the border zones and the major metropolitan areas having a focus of international trade.

Figure 2.6 shows the dominant NAFTA Superhighway System Primary Trucking Routes.

Figure 2.6: The NAFTA Superhighway System Primary Trucking Routes



2.5.2 NAFTA Arbitral Panel Regarding Cross Border Trucking Services

As result of the dispute between Mexico and the United States regarding trucking cross-border operations, Mexico brought a NAFTA dispute against United States. The United States initiated consultations on Mexican restrictions, but did not pursue a NAFTA dispute. The parties' views are summarized in paragraphs 2-11. Mexico's argument was that the United States has violated NAFTA by failing: (1) to phase out U.S. restrictions on cross-border trucking services and (2) by prohibiting Mexican investment in the U.S. trucking

industry. Mexico charged that the U.S. action in maintaining the moratorium violated its obligations under NAFTA. Mexico also asserted that the U.S. was motivated, not by safety concerns, but by political considerations relating to opposition by organized labor in the United States to the implementation of NAFTA's cross-border trucking obligations.

Mexico asserted that by refusing to consider applications for operating authority for all Mexican Owned service providers, while considering them for U.S. owned providers, violated the national treatment provisions of the Services Chapter.

The United States argued that Mexico does not maintain the same rigorous safety standards as the regulatory systems in the United States and Canada and, because of that, the Mexican trucking service providers were not "in like circumstances" with those of the United States. NAFTA's obligation is to provide less favorable treatment to service providers. The other parties "in like circumstances" with domestic providers. The United States also rejected Mexico's contention that the failure to implement action with regard to cross-border trucking services and investment had political motivation. The issue, in the view of the United States, was rather, "whether Mexico met its burden of proving a violation by the United States of its NAFTA obligations".

The panel's Findings and Determinations unanimously determined that the U.S.'s blanket refusal to review and consider for approval any Mexican-owned carrier applications for authority to provide cross-border trucking services breached U.S. obligations. The panel also unanimously determined that the United States breached its obligations to permit Mexican nationals to invest in enterprises in the United States that provide truck transportation of international cargo within the United States.

The panel recommended that the United States take appropriate steps to bring its practices with respect to cross-border trucking services and investment into compliance with its obligations under the applicable provisions of NAFTA. The panel discussed two issues during the briefing: (1) cross border point to point service and, (2) ability to invest in U.S. service providers (Hathaway 2001). The complaint was about Mexican owned service

providers. The United States extended a blanket refusal to process their applications to operate in the United States. Exemption from this moratorium was made for the U.S.-owned companies operating in Mexico. Most of these companies operate from Mexico near the border. In addition, a small number of Mexican owned providers were "grandfathered", that is, allowed to continue providing cross-border trucking services after the moratorium's initiation. Two other types of Mexican providers were permitted: 1) transit through the United States to Canada, and 2) drayage to NAFTA "commercial zones". All of these providers were subjected to U.S. safety requirements.

The U.S. Department of Transportation developed special requirements to ensure safety by those companies. In addition to safety requirements, they have to have trucks produced in the United States, or imported into the United States. This meant the trucks had met U.S. safety requirements.

The question for the panel was whether the United States was consistent with the NAFTA in its blanket refusal to consider Mexican applications for operating authority. NAFTA explicitly authorizes each party to establish its own "level of protection" for matters such as health and safety. However, it may not create unnecessary burdens on trade. Further, a party to achieve the same "level of protection" concerning imports, may provide differential treatment to imports. The parties recognized that some instances may require equivalent foreign "certification" by domestic, or an accepted local inspector, like a foreign airline.

The United States argued that the circumstances for the Mexican safety system across the border were different. In effect, the U.S. argued that despite the burden it imposed, the moratorium was necessary to ensure safety. The United States refused to review applications for Mexican providers. To be NAFTA consistent trucking safety must be considered one of the situations where the importing country could require that the exporting country's safety procedures ensure the level of protection provided by safety procedures of the importing country.

The panel considered that since there are grand-fathered Mexican carriers that have been allowed to operate in the United States since before the moratorium, and over 100 U.S. owned Mexican carriers, the panel noted that the treatment may be differential in order not to be discriminatory. In light of the fact that the panel's decision did not say it was an automatic right to provide cross border services. There is no limitation on the "level of protection".

The panel did not decide the "regulatory measures" to achieve the same level of protection. It is up to each country to define its measures. Fair process should be used in determining what regulatory measures should be applied to Mexican services.

The heart of the matter is the level of protection and there is much discretion in it.
The political picture has changed in the United States and Mexico under Presidents Bush and Fox. Before the terrorist events of 11 September 2001 there were indications that both presidents would comply with the panel's decision. The Teamster's Union in the United States gave their support to candidate Gore. President Bush is free from the pressures of this interest group to open the U.S. market to Mexican-truck companies. Fox has expressed his aim to bring Mexico closer to the United States; one way is reducing the institutional obstacles to border crossing.

The dispute settlement panel under NAFTA ruled against the facto U.S. ban in January 2001. Since then, the Bush administration has worked to open the border to Mexican long-haul trucking. Bush's plan was first delayed for months by Congress, which made DOT re-write its rules to include a host of safety requirements mandated by legislation. That took the process up to November, when DOT finalized its rules. After this, Bush lifted the ban on Mexican trucks as DOT issued the rules on handling applications from Mexican trucking firms for authority to make long-haul trips into the United States. The January 2003 decision by the U.S. Court of Appeals for the Ninth Circuit prevents DOT from making any grants of operating authority under those rules until it has performed an environmental impact statement (EIS). Not decision has been made yet on whether to

appeal the ruling. That process would take a couple of months. The U.S. also has the option not to appeal, or to petition for certiorari to the Supreme Court (Inside U.S. Trade).

Mexico must now re-evaluate its response to the continued ban on cross-border trucking, which could include demanding compensation from the U.S., retaliating with trade sanctions or imposing additional restrictions on truck traffic from the U.S.

DOT has received applications from 168 Mexican firms for long-haul operating authority. Those operations may be processed, but may not be approved until the EIS is completed. The EIS would likely take between six months and two years.

2.5.3 Implications in the Border Crossing Operation

The NAFTA includes the provision of a uniform border transfer system that is supposed to eliminate excessive and non-standard documentation and the wide variation in crossing conventions along the border.

Restrictions on border crossing truck operations create greater truck congestion. The current arrangement requires one or two transfers into terminals on each side of the border. Nearly half of the truck movements coming north are empties being transferred (Hall, 12/18/1997).

In general terms, NAFTA has directly impacted the border transportation system at the ports of entry. There has been an increase in commodity flow between both countries. In 1995, this increased flow was largely northbound and consisted of consumable goods due to the peso devaluation. Over time, a more important flow is materializing that involves industries that take advantage of the unique benefits of both countries' production processes, creating a bi-directional flow or raw materials, intermediate, and final goods.

In theory, a reduction in tariffs should facilitate more expeditious customs process at the ports of entry. However, NAFTA does not eliminate concerns about health, illegal migration, transport of illicit drugs, or national security (U.S. Department of Transportation,

May 1998. p. 76). In fact, a complex border crossing system exists despite NAFTA and creates delays and extra costs that can be considered non tariff barriers to trade. As I make evident in later chapters, the trucking provisions of NAFTA are a good example of what Jagdish Bhagwati calls the Law of Constant Protection: "The evidence of increased non-tariff barriers and administered protection just as tariffs had been reduced to a new low suggests the intriguing possibility that there may be a Law of Constant Protection: If you reduce one type of protection, another variety simply pops up elsewhere" (Mansfield, 1995, p.14).

2.5.4 Effects of the North American Trade Agreement

Initially, implementation of NAFTA increased the Mexican trade deficit as producers and consumers acquired more, lower cost, goods from the United States. The exchange rate changes and the economic adjustments of 1995 altered the behavior of the foreign trade. Bilateral trade in the first year following the implementation of NAFTA was fairly balanced.

The rate of growth of the maquila industry at the border is nearly the same 10 percent as for the rest of the Mexican manufacturing industry. Since the beginning of NAFTA in 1994, 50 percent of all U.S. exports to Mexico have been free of Mexican tariffs. NAFTA's phase-out of non-tariff barriers also benefited U.S. companies. For example, for the first time in 50 years, in October 1994, Mexico approved the establishment of wholly owned U.S. financial affiliates. These included such major U.S. banks as Chemical Bank, Bank of America, Chase Manhattan, and Nations Bank.

The opportunities for U.S. sales in Mexico are strong, particularly in infrastructure development, which needs significant investment. Companies providing infrastructure-related products and services have opportunities in telecommunications, port privatization, highway construction, railroad services, and water projects.

NAFTA will continue to provide U.S. companies advantages in the post-devaluation Mexican market. Preferential duty treatment of U.S. goods under NAFTA and its

proximity to Mexico gives U.S. companies an edge over European or Japanese firms whose products are often the principal source of competition.

In sum, many aspects of NAFTA are proceeding on schedule and are achieving their intended objectives. However, as I will show more fully below, other aspects, such as trucking are proceeding slowly, if at all. The reasons have to do with conflicting economic interest, which are reflected in the politics and institutional arrangements in Mexico and the United States, as analyzed below.

2.6 Identification of the Problem: Truck Transportation and Border Crossing Under Institutional Constraints

2.6.1 Introduction

The previous sections of this chapter presented the context of border crossings by outlining the existing literature on border crossing arrangements and the distinctive features of the U.S. Mexican case. This section presents a conceptual framework for economic analysis of truck transportation and border crossings, applied to the present border crossing system at the U.S.-Mexican border. It analyzes the bottlenecks and institutions that affect the role of customs and other government and private organizations that participate in the border crossing process. This lays the groundwork for my analysis of the social and institutional nature of the barriers applied to the border crossing system present at Laredo, presented in Chapter 3, and allows me to quantify the costs of border crossings presented in Chapter 4.

2.6.2 Cross Border Problems

International cross-border movements present challenges to transportation. Border crossings create delays in transportation and add uncertainty to transport, increasing the time consumed with customs clearance, federal inspections, traffic congestion, and other operating procedures and making total transit times highly variable.

The trade literature identifies significant transport problems in U.S.-Mexican trade. A study of problems encountered by 29 U.S. motor carriers involved in Mexican trade in

1992 found that, in general, the carriers were only moderately satisfied with the transportation performance of the Mexican carriers with whom they interlined or interchanged (Valdes and Crum, 1994, pp. 5-20). Key problem areas included transit time and drop off service dependability, equipment compatibility, and carrier information systems. The U.S. carriers also expressed only moderate satisfaction with the Mexican freight forwarders and drayage companies involved in the border crossing process. Carriers also indicated the importance of several border crossing selection criteria, including traffic congestion, cooperation of customs employees, documentation process, and border inspections. Border crossings present a challenge to all firms operating across the U.S.-Mexican border. U.S. carriers view Mexican roadways and the performance of drayage operators as less of a problem than the elements of the Mexican customs clearance process. The interviews I conducted for this dissertation support the studies findings and indicate that the situation remains unchanged since 1992.

The trade literature identifies four groups of operational problems and obstacles confronted by U.S. trucking firms: (1) problems with carrier operations; (2) equipment problems; (3) problems with Mexico's logistics infrastructure; and (4) delays at the border. Additionally, the ATA contends that the restrictions on foreign ownership of Mexican motor carriers create significant problems, leading some U.S. firms to seek a "second best" solution of alliances or partnerships between U.S. and Mexican carriers. A brief discussion of these problems follows.

There are restrictions on foreign carrier operations in Mexico: only Mexican tractors and drivers are permitted to operate within the boundaries of Mexico. This necessitates an interline or interchange between the participating U.S. and Mexican trucking firms. An interline entails the trans-loading of freight between the two motor carriers at the border. An interchange involves the exchange of trailers at the border. Thus, unlike most U.S. domestic truck transport markets, at least two carriers must participate. Similar processes occur for Mexican shippers moving cargo into the United States.

Freight forwarders are frequently utilized to facilitate the interline or interchange. In most cases, the customs broker with whom the Mexican motor carrier is working manages the freight forwarding operation in the United States, along with the drayage company that takes the trailer through customs and across the border (American Trucking Associations, Inc., 1992, pp. 17-18).

The need to trans-load or interchange freight at the border and to utilize various other parties to facilitate the border crossing creates problems besides the obvious one of interrupted transport. The chances of damage rise with increased handling of the freight, a problem compounded by the difficulty of determining liability when a claim arises. Insurance coverage for door-to-door cross border service through one insurance carrier has traditionally not been available.[5] Additionally, asset utilization, an important productivity goal is reduced when U.S. carriers interchange with Mexican carriers, and vice-versa.

Another operational problem is the equipment. Even though Mexico has bought new trucks in considerable numbers for the long-haul service in recent years, the average age of the Mexican truck fleet is much older than that of the U.S. fleet. Most U.S. carriers operate 1.5 to 2 trailers for every tractor on average; the ratio in Mexico is 0.5 trailers per tractor (American Trucking Associations, Inc., 1992, p. 10 and 12). The shortage of trailers has resulted in instances of Mexican carriers using U.S. trailers to make other deliveries in Mexico (*ibid* p.18). Such cases have an adverse impact on equipment turnaround time and, thus, asset utilization for the U.S. carrier.

Transit times in Mexico are usually poor because carriers are driven more by convenience than by shipper-customer needs (Harrington 1992, pp. 3, 19, 35). As a result, service is very undependable. For example, a U.S. shipper notes that service from its plant to one of

[5] This may change as there is at least one prospective joint venture to offer warehouse-to-warehouse coverage for shipments crossing the U.S.-Mexico border. The proposed insurance would be all risk coverage with uniform terms and conditions that are good in both countries. Under the all risk insurance, the problem of determining fault will not exist. See, Hall, Kevin G., "Mexican, U.S. insurers plan 'seamless' cargo coverage," *The Journal of Commerce,* July 17, 1993, p. 10A. The all risk insurance is already available.

its Mexican customers can range from four days to fourteen days. Shorter and more dependable transit times are required to improve equipment utilization for interchanging U.S. carriers.

Also, incompatible equipment standards have created operating problems for U.S. carriers. The 53-foot trailer is prevalent in the U.S., but it is not permitted on the Mexican highway system, where the 48-foot trailer is standard equipment (Strah, 1992, pp.3 and 5).

The lack of a well developed Mexican logistic infrastructure also presents operational problems. Less-than-truckload (LTL) shipments face unique obstacles in cross-border trade. There is no breakbulk terminal system in Mexico other than that provided by U.S.-based carriers. There is virtually no warehousing and little expertise in handling large volume distribution. Mexican ownership restrictions make it impossible for U.S. shippers and carriers to provide such infrastructure or service.

Delays at the border are a serious problem. Traffic congestion at the busiest crossing points cause delays ranging from several hours to several days. Traffic congestion slows transportation, and increases the variability of transit time.

A Federal Highway Administration study of U.S.-Mexico border crossings indicates that delays may be reduced more effectively and at lower cost by addressing institutional problems than by large capital investments in infrastructure (Hall 1993, p. 1A and 8A).

Valdes and Crum (1994, pp. 5-20) identified the most serious problems encountered by U.S. motor carriers in cross-border trade. Their survey of U.S. and Mexican motor carriers investigated several alleged problems described in the transportation trade literature. U.S. carriers were asked to indicate the criteria employed in the selection of their Mexican trucking partners. Mexican carrier cooperation, dependability, and financial stability were rated as the most important criteria. Equipment condition, scheduling flexibility, and geographic coverage were second in importance. Special services and distribution and consolidation services were considered the least important criteria. They were also asked

about the satisfaction with interchange and interline operations. The only absolute dissatisfaction is with the "timeliness of equipment return," which covers both equipment condition upon return and reimbursement for damage to equipment. The overall satisfaction with equipment exchange is moderate at best. The U.S. carriers' satisfaction with "geographic coverage" has the best rating, but they are only moderately satisfied with the Mexican carriers' service. The carriers that expressed the highest levels of satisfaction towards their Mexican partners' service use no more than three Mexican trucking firms. But there are cases of low satisfaction among U.S. carriers that use a like number of partners.

The study finds a gap in service between U.S. and Mexican trucking services, with the Mexican carriers falling short. (It is possible that a survey of Mexican carriers' opinion of U.S. carriers would yield a similar opinion.)

The trade literature identifies the following key problems in the U.S. and Mexican truck transport services: (1) restriction on foreign ownership of Mexican motor carriers; (2) delays and damage in equipment return; (3) incompatibility and poor condition of some Mexican equipment; (4) lack of freight insurance coverage in Mexico; (5) unbalanced flows with lack of backhaul opportunities; (6) poor communications facilities of Mexican carriers; (7) problems at the border crossings; and (8) the U.S. Secretary of Transportation's unilateral suspension of the NAFTA rules allowing Mexican carriers for cross-border operations from the six border states in Mexico to the four border states in the United States. U.S. firms were supposed to gain parallel access to cross-border shipments to and from the six border states in Mexico (Appendix B).

2.6.3 Consequences

The present border crossing system problem result from: (1) prohibition of Mexican carriers in the United States and vice-versa; (2) restrictions imposed by the Mexican laws and rules and tolerated by the United States, coupled with the U.S. abrogation of part of the accords; (3) problems with data and the lack of a coordinated customs system between

Mexico and the United States; (4) inadequate infrastructure; and (5) cultural differences, including business practices.

Under the formal provisions of NAFTA, the border crossing should be seamless, clear and efficient. This means one truck and one driver could take cargo from point A in the United States to point B in Mexico, as shown in Figure 2.7. In theory, NAFTA assures a seamless border for the movement of trade between the Canada, Mexico, and the United States. To implement this ideal, standardized information should be agreed on by these countries, and the trucking companies or their agents should provide this information to customs' and other government officials in advance of each truck's arrival at the border. In this way, the government officials could make their risk assessments and decisions on examination of the products, so merchandise, upon arrival at the border, could be released or examined based on the pre-arrival information. Something approximating this ideal situation occurs on the U.S.-Canadian border.

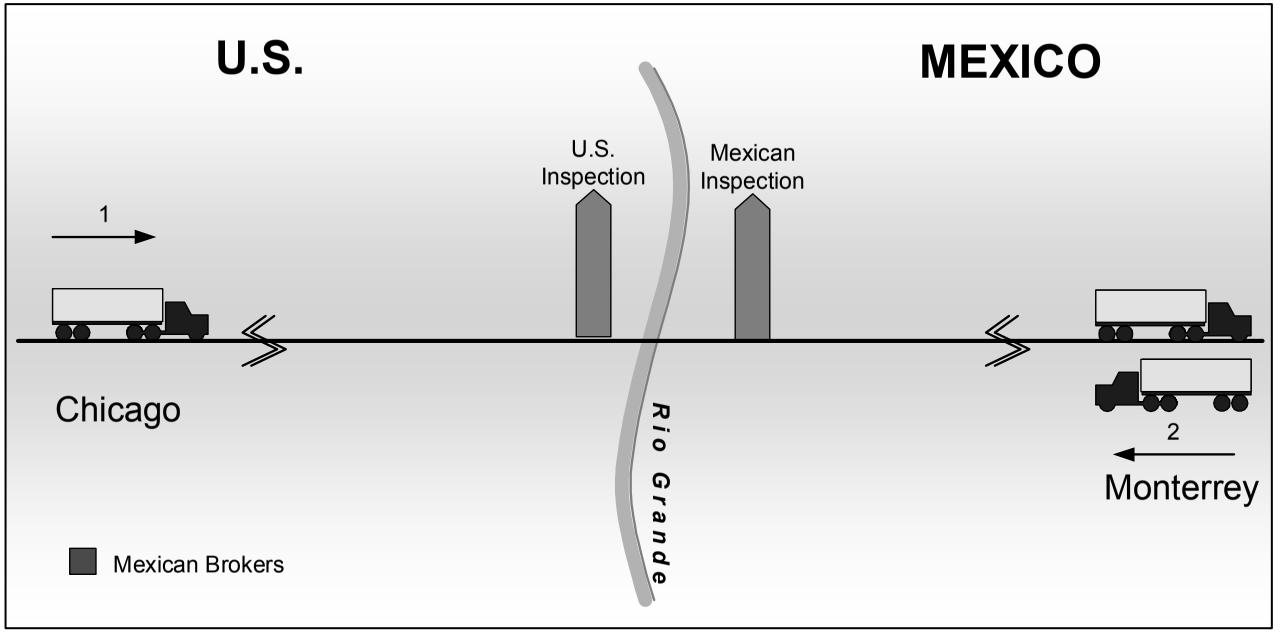
The process starts when the truck arrives at the government inspection facility. On the United States side, most of these decisions result in quick release of the merchandise and later verification of the information. This occurs because the United States and Canada require each shipper to be covered by a bond or insurance policy that guarantees payments of any taxes and fees. Mexico does not have such a system of bonds and insurance and requires payment of taxes and fees before the merchandise is allowed into the country.

The trust between the United States and Canada frees the U.S. officials from providing effective enforcement and control with Canada, relying instead on a post-entry audit approach. Thus, trade transportation between Canada and the United States represents a good example of seamless border, as envisioned by NAFTA.

Between the United States and Mexico such trust is absent and the current U.S.-Mexico border crossing differs from the optimal condition envisioned by NAFTA. It takes at minimum seven movements, at least three pieces of equipment, and three drivers to get from point A to point B (Figure 2.8).

Figure 2.7

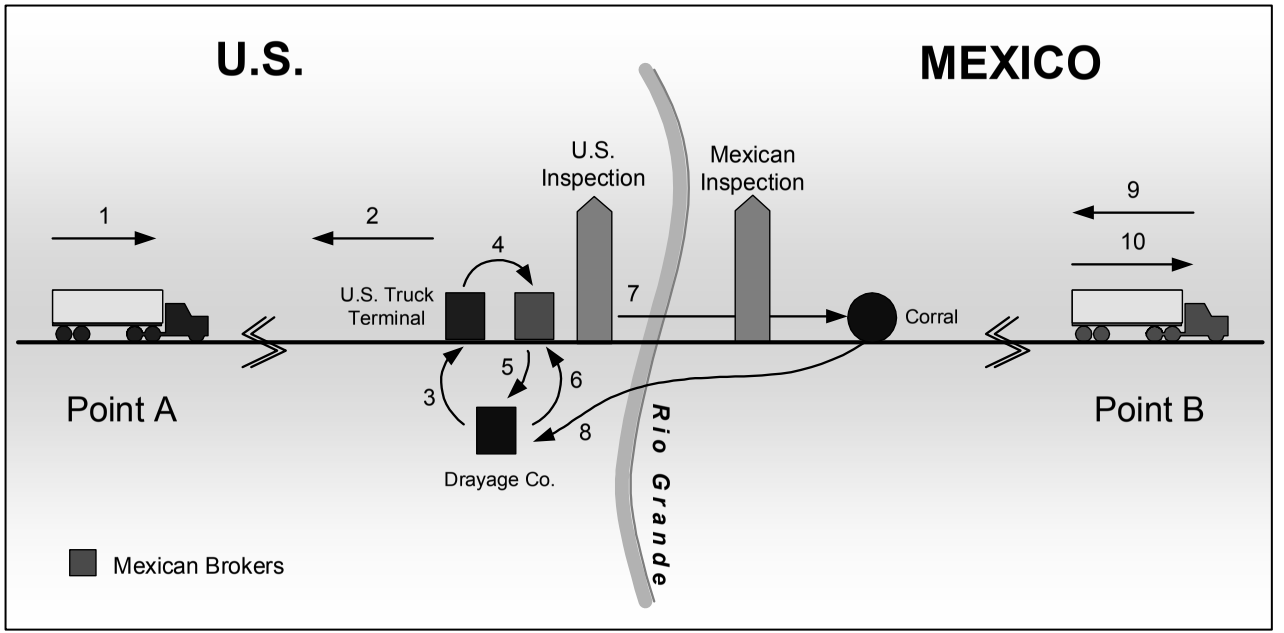
The Optimal Border Crossing Condition Under NAFTA



Source: Author

Figure 2.8

Current Condition



Source: Author.

The present system results in economic gains for: (I) Mexican brokers who provide services of warehousing, inspection, and classification, on the U.S. side of the border; (ii) the Laredo/Nuevo Laredo drayage industry; (iii) U.S. bankers that finance the construction of warehouses; (iv) the state and municipal governments on both sides of the border who receive extra toll payments; (v) the Mexican states that receive a share of Customs tax collections and import duties; and (vi) the entire regional economy that provides goods and services to the above economic agents.

Despite the importance of transportation and border crossings in international trade, traditional studies on transportation, economics and international trade do not satisfactorily explain the border crossing problem. Church and Reid studied the characteristics of trans-border initiatives in Europe, concerned with the social, economic and policy decision-making processes. These do not include detailed analysis or comment on transport, but they give an overview of the intricate nature of the border crossing activity (Reid 2000).

Economists traditionally use rational financial and economic calculations and theoretical foundations that assume rational decisions. The economist's purely rational analysis of problems, however, may not be the way most human beings think or solve their problems . Individual economic agents acting in their own rational interest may not be guided by an "invisible hand" to produce a socially optimum economic result (or the invisible hand may be handcuffed by vested interests and economic regulation). The border crossing presents obvious inefficiencies that have persisted since 1994 and now extend into the new millennium.

3 The Laredo Crossing Point

3.1 Introduction

According to the U.S. Department of Commerce, the Laredo cross point accounts for 40 percent of U.S.-Mexico overland merchandise trade by weight and 50 percent by value. Total merchandise to and from Mexico passing through Laredo during 2000 totaled more than $110 billion. Laredo's proximity to major highways gives motor carriers quick access to Mexico's industrial triangle of Monterrey, Guadalajara, and Mexico City. Laredo handles more freight than all U.S.- Mexico cross-border combined in terms of value, volume and number of entries (Figure 3.1). Laredo has more than 10,000 truck crossings/day.

This chapter shows that the border crossing process at Laredo is neither simple nor transparent; rather, it is complex and some groups benefit from it while others pay extra costs and delays. In Laredo, trucking is a major industry that benefits the entire community. This chapter presents the trade volume, value and nature of movements, the infrastructure and the flow process at Laredo.

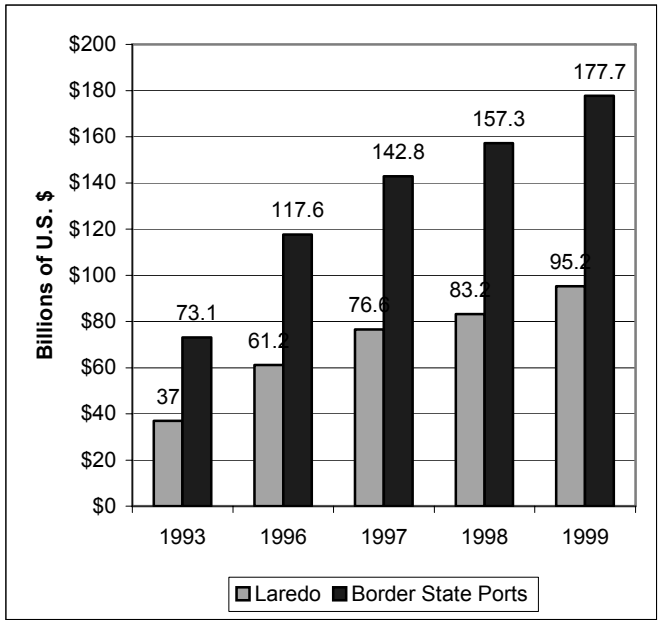
3.2 The Problem Context

The Laredo Cross point has a complex physical and institutional environment. This section describes the physical elements of this border crossing.

3.2.1 The Geographical Region

The border crossing at Laredo, Texas in the United States and Nuevo Laredo, Nuevo Leon, in Mexico (Figure 3.2) carries a greater percentage of surface trade among the United States, Canada and Mexico than any other U.S. interstate highway.

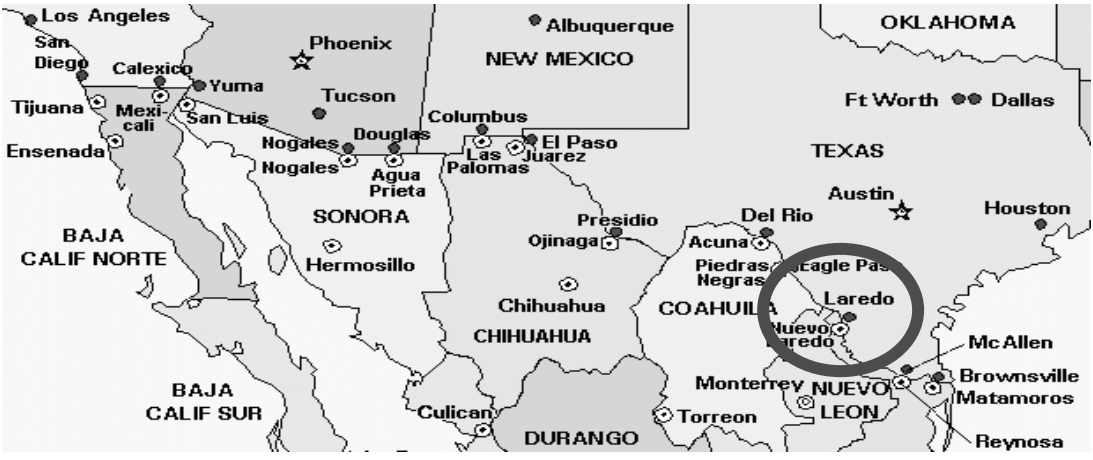
Figure 3.1: Total Merchandise Trade to and from Mexico Passing through Border State Ports



Note: Border State Ports include: Port Arthur, Laredo, El Paso, San Diego, Nogales, Los Angeles, San Francisco, Houston and Dallas/Fort /Worth.

Source: US DOC, MISER and Secofi-NAFTA

Figure 3.2: Geographical Region of the Laredo Cross Point



NAFTA has boosted the importance of this point of entry. Since it came into effect, trade between Mexico and the United States has grown from $85 billion in 1993 to $240 billion in 2001 (Department of Commerce); exports from Texas represent 47 percent of this trade, ranking Mexico as the largest importer of goods from Texas.

The dominant trade flow of U.S. exports through Laredo is to Central Mexico, Mexico City, Guadalajara, and Monterrey. These transportation runs are long and likely to be full truckloads. Traditional trade bound to and from the heart of Mexico is primarily shipped through Laredo, in Texas, and Nuevo Laredo, in Tamaulipas. The dominant U.S. export shipments are sent from the eastern United States to southeastern border crossings. Laredo handles almost as much international trade as all the other ports of entry. According to customs reports, by value, 64.4 percent of all trans-surface southbound trade moves through Laredo, along with 45 percent of the northbound trade. Of the total freight by weight moving southbound across the Mexican-U.S. border, 31 percent enters through Nuevo Laredo.

The trade through Laredo differs from that of other border regions. Although there are significant shipments to and from maquiladora factories adjacent to southern Texas, the majority of shipments through Laredo are bound to or sent from cities in the interior of Mexico, such as Mexico City, Guadalajara, and Monterrey. Mexico has four major transportation corridors: the Pacific, Chihuahua, Central and Gulf Coast. The Central Trade Corridor is the most important one, extending from Mexico City north to San Luis Potosí, Saltillo, Monterrey, and finally to Nuevo Laredo/Laredo, Texas.

The most common products are consumer goods, destined for the dominant concentrations of population. Intermediate goods are also found at centers of manufacturing. These centers of production and consumption define the origins and destinations for most trade flows between the United States and Mexico. The consumption of intermediate goods at manufacturing centers, especially the maquiladoras, plays an important role in the U.S.-

Mexican trade flow. Their main trade flows are located at other border crossings. The maquiladora trade flow is relatively low in Laredo and will not be studied here.

3.2.3 Principal Commodities

The main products moving southbound through Laredo are machines (with 39 percent of the market share), nuclear reactors and boilers (with 67 percent), and automobiles and automotive parts (with 86 percent of the total flow in 1999). For plastics, Laredo was again the district with the largest percentage of the total (53 percent in 1999). Most optical instrument products pass through Laredo, which captured 62 percent of the total cross-border market in 1990 and still held a 52 percent market share in 1999. Laredo handles the largest percentage of paper and cardboard products and this trade increased through 1999.

Among the main products the United States exports to Mexico are electronic and electric equipment, transportation equipment; industrial machinery and computers, chemicals and allied products, rubber and plastic products; petroleum and coal and textile mill products.

The northbound flow of machines, electronics, and electrical equipment is concentrated in Laredo, with a 32 percent share of the market in 1999. Laredo handles the largest share of vehicles and auto parts movements with a 72 percent share of the market value traded across the border in 1999.

3.3 Specific Causes of the Laredo Crossing Point Problem

Delays are the most obvious problem in border crossing at Laredo, leading to congestion and higher costs. The increasingly heavy truck traffic underscores the power of the North American Free Trade Agreement and trade has helped make traffic backups on both sides of the border routine. In Laredo, however, traffic problems are heightened by U.S. and Mexican restrictions on trucks and the shipping process.

Interstate Highway 35 forms a “river of trade” across the heartland of the North American continent. This corridor carries a greater percentage of surface trade among the United States, Canada and Mexico than any other U.S. Interstate Highway. Over 74% of all goods by value traded between the United States and Mexico traverse Texas on I-35. At Laredo, Texas, five-mile lines of trucks are common on Interstate 35, waiting to cross the murky Rio Grande into Mexico. For some, the crossing will take several hours, for others, several days.

The daily average crossings for March 1999 are: Laredo Northbound 2400 trucks; Columbia Northbound 2800. Southbound volumes are about 95% of northbound flows. Congestion is intensified by the transport activity around Laredo’s 1,000 warehouses, with more being built. I-35 goes through the city of Laredo, and the warehouses are within the city limits, so that congestion is produced by international trade, urban trucking, and private cars, as shown in Figure 3.3. Table 3.1 shows the average distribution of loaded and empty trucks, and of tractors without trailers and the total for March, 1999 (Kramer, 1999) . Southbound traffic congestion peaks in the afternoon hours; from 12-5 p.m.

Table 3.1: March 99 Truck Volumes - Northbound

	Laredo Bridge #1	**Columbia Solidarity**
Loaded	30,000	40,000
Empties	10,000	20,00
Tractors w/o Trailers	25,000	15,000
Total	65,000	75,000

Daily averages

Laredo Northbound - 2400 trucks

Columbia Northbound - 2800trucks

Figure 3.3: Congestion at Laredo Bridge, Southbound[6]

[6] Source: Giermanski, 1999.

Data from the city of Laredo bridge system, compiled by Texas A&M International University, shows that the average of loaded trucks crossing southbound Laredo during the years 1989-1995 was 66 percent, and unloaded 34 percent. In 1998 the average of empty crossings had increased to 46 percent (Giermanski, 1999). As mentioned earlier, empty back hauls are a consequence of institutional constraints that create the drayage market and do not allow U.S. carriers to return from Mexico with cargo.

Chapter 1, the methodology, conceptually defines the key elements that would lead to an efficient cross border for trucks as follows:

A: Adequate infrastructure to serve demand for transport: bridges, access roads, governmental inspection facilities, commercial infrastructure

B: Lack of institutional constraints

C: Homogeneous government systems

D: Cultural understanding: social, political, and business aspects

The following section analyzes these elements and their characteristics at the Laredo Cross point to determine the specific causes of the problem.

3.3.1 Infrastructure

Laredo, Texas, the most dominant port on the southern U.S. border, is connected to the U.S. Interstate Highway system of motorways through I-35 with San Antonio and Dallas; I-30 linking Dallas and Little Rock; I-40 linking Little Rock, Memphis, and Nashville; I-65 linking Nashville with Louisville, KY; I-71 linking Louisville to Cincinnati; and I-75 linking Cincinnati, Dayton, Toledo, and Detroit.

Laredo, Texas, is a city at the end of the U.S. Interstate 35 highway, which is the only access road to the Laredo Bridges #1 and #2 that connect downtown Laredo and Nuevo Laredo, Mexico. Long lines of trucks park on the Interstate waiting to cross the bridge along with buses and automobiles. Adding to the problem is the urban bus and automobile traffic.

Until September 2000 two bridges used to connect downtown Laredo to Mexico: the Colombia Solidarity Bridge located in Nuevo Leon; and Laredo Bridge #2, located in Tamaulipas. These bridges handled more cargo by volume, value, and number of entries than all other U.S. Mexican crossings combined (Ehinger 1999). However, Laredo ranks below some U.S.-Canadian crossings. In fact, Buffalo and Detroit each handle more freight and value than the entire U.S. Mexican border (Nolle and Kramer, 1999).

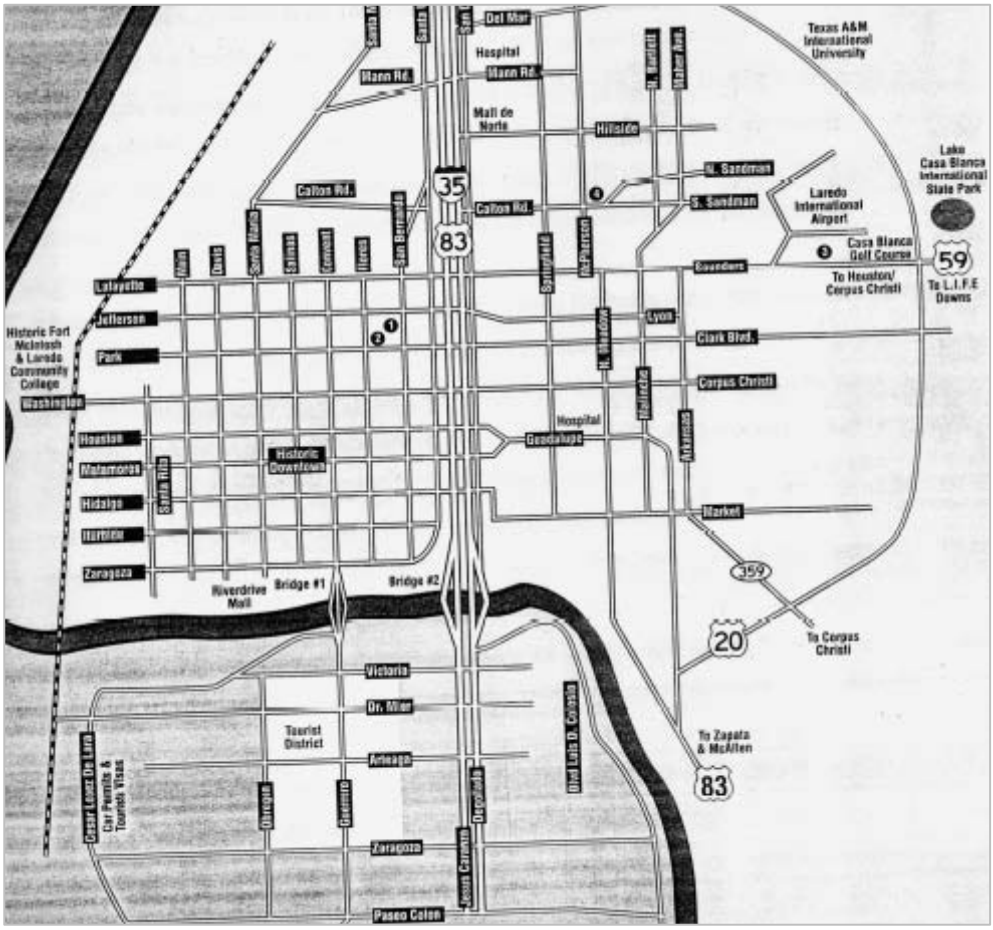
Figure 3.4 shows the Laredo/Nuevo Laredo crossing point and transportation system. Bridge #1 handled mostly vehicles and non commercial traffic. Only empty trucks or drayage cross through this bridge northbound.

Bridge #2, also called the Lincoln - Juarez bridge, handled most of the southbound commercial traffic until September 2000. This bridge, is old, has two lanes in each direction and was build not for today's volume of traffic. I-35 provides the only access to the bridge and it frequently became a parking lot for trucks waiting to cross southbound. The bridge is in Tamaulipas and the state government has economic interest in keeping the revenue generated by the toll bridge, and also receives, under the Mexican system, part of the Customs collections.

Texas' third bridge, the Colombia Solidarity bridge, connects Texas with the State of Nuevo León in Mexico. This bridge was build in 1990 and has four lanes in each direction with a capacity to handle 8000 trucks a day. To take this bridge, the trucks have to exit I-35 in the north of Laredo and take I472 Road (also called Mines Road) which has two lanes, is 15 miles long and is in very bad shape. On the Mexican side of the crossing border is a very bad road that connects Columbia Bridge in Nuevo León with the Mexican highway I-85 in Tamaulipas; I-85 connects Tamaulipas with Monterrey, Mexico D.F. and the principal industrial cities in Mexico. A fourth bridge, the World Trade Bridge, built at Laredo was opened in September 2000 in an attempt to solve institutional problems with new infrastructure, as it is analyzed in Chapter 6.

Figure 3.4

Laredo/Nuevo Laredo Crossing Point and Transportation System[7]



[7] Source: Laredo Convention &Visitors Bureau.

Phillips, Cook and Cisneros (2001) documented the increased demand on infrastructure in the Laredo region. Phillips looked at strains on roads and bridges and suggested that before more money is invested in transportation infrastructure, border policies and procedures need to be closely scrutinized to ensure that the current infrastructure is used efficiently. Border traffic imposes costs, since the early 1990's Texas -Mexico border has increased dramatically, especially in Laredo, which has seen truck crossings rise 116 percent from 1.3 million in 1993 to 2.8 million in 1999, and overall vehicle crossings increase 21 percent, from 14.1 million in 1993 to 17,1 million in 1999. With the influx of traffic passing through the border come infrastructure and social costs. From 1993 through 2000, the Texas Department of Transportation (TXDOT) spent $388 million on roads and highways in Laredo and is projecting to spend another $298 million from 2001 through 2005.

3.3.2 Institutional

The legal and institutional restrictions and procedures on the import system, imposed by Mexico and tolerated by the United States, are a major contributor to the backups and the expensive and slow border crossing process.

The bottlenecks on southbound I-35 are due less to inadequate roads than to the way goods are transported across the border:

> *Southbound trucks must stop before crossing the border to have their cargo inspected and appraised by Mexican customs brokers. Mexico does not allow U.S. citizens to forward freight into Mexico. So, U.S. truckers must unload their cargo at Laredo warehouses. Then the Mexican freight forwarders shuttle it across the border, where it is usually transferred again to a Mexican long-haul trucker* (Giermanski 1996).

Shipping by land from the United States to Mexico is a unique process due to the practices of: (1) Mexican customs brokers on the southern border of the United States; and (2) the drayage industry at the border. At the core of the problem is the Mexican customs mind set and the support and obsolete international commercial procedures by some border cities and businessmen that lead to a complex border environment.

3.3.2.1 The Mexican Customs Broker

> *Unlike U.S. brokers, the Mexican Customs broker is legally responsible and liable for the content of shipments across the border. Therefore, the process used by the Mexican customs brokers is more rigorous. The broker typically receives both the export declaration and bill of lading in advance of the truck's arrival at their facility. With this information, the broker begins the preparation of the Mexican "Pedimentos" required for cargo entering into Mexico. If the shipper is a frequent customer of the Mexican customs broker, minimal or no inspection may be undertaken. However, if the shipper is unknown to the broker or is an infrequent customer, a thorough inspection may be required to verify the contents and/or for classification purposes. When an inspection is required, the U.S. shipper may incur fees for the unloading and reloading the truck and for storage of the vehicle or trailer during the inspection* (Barton-Ashman Associates 1996, pp.14 and 17).

Mexican brokers are powerful family-owned businesses passed from generation to generation. Brokers are licensed by the individual States, so a broker licensed in New Leon, cannot operate in Tamaulipas. The brokers specialize in products. Some brokers work textiles; others work for chemicals; others for automotive products; and still others for electrical goods. The Mexican government has opened up the process somewhat and is licensing more brokers, so competition is increasing among them (Kramer 1999).

The Mexican Brokers Association is a powerful and wealthy institution. The Association is controlled by 10 families who operate on both sides of the border, are influential in politics, and make generous contributions to the political parties and the politicians. They have a vested interest in keeping the border crossing inefficient (Ehinger 1999). There are companies that have developed their own trucking transportation system and have their "apoderado". Apoderados are legally licensed and empowered to perform broker services for certain businesses. The companies that have their own apoderado can avoid working with drayage and the Mexican brokers at Laredo. Their trucks can go to the United States and Mexico without having to wait for drayage (Nolle and Kramer 1998).

Mexican brokers are institutions by themselves. They usually operate on both sides of the border. They are lucrative businesses that generate revenue for the cities where they operate, through the taxes they pay and the employment they generate.

The structure of the Mexican broker business is based on the Mexican family concept whose members help each other and intervene accordingly. This has an impact upon the efficiency of the system as viewed from the U.S. perspective. Things in Mexico operate accordingly to what is "convenient" for the family that owns the broker business rather than what is efficient from an abstract point of view of overall economic efficiency (Ehinger 1999).

Dr. Giermanski (1995), in his article "Texas to Mexico: a Border to Avoid", describes the unfair practices by the Mexican brokers on the south border and compares them with NAFTA's provisions to allow pure reciprocity between the United States and Canada with respect to freight forwarding by defining an appropriate business visitor to include a person who forwards international goods:

> *With respect to temporary entry into the territory of the United States, Canadian customs brokers performing brokerage duties relating to the export of goods from the territory of the United States to or Through the Territory of Canada.*
>
> *With respect to temporary entry into the territory of Canada, United States customs brokers performing brokerage duties relating to the export of goods from the territory of Canada to or through the territory of the United States.* (NAFTA, Vol. I, p.16-11).

This opens the possibility that a Canadian may enter into the United States and forward freight from the United States into Canada, and a U.S. citizen may enter Canada to forward freight into the United States.

3.3.2.2 The Drayage Industry

The drayage industry is composed of small trucking firms that simply shuttle, transfer, or ferry goods across the border. Giermanski (1997) points out that the absolute advantage of Mexican brokers allows them to influence the drayage industry, contributing directly to the congestion, delays, and expense in border crossings:

> *The U.S. Interstate Commerce Commission (ICC) limited commercial Mexican traffic to just the U.S. border within an officially designated commercial zone in*

> *the United States. Mexico limited U.S. truckers to the border frontier zone of Mexico. Given that the cargo is restricted to delivery in the commercial zones in the United States where it is under the control of the Mexican broker, the broker may then decide which drayage firm will transfer the cargo into Mexico and when that transfer is to take place. Mexican influence over the U.S. drayage motor carriers is, therefore, established, allowing the Mexican brokers, themselves, to form drayage firms and partnerships with drayage firms to increase their share of the profits. These business practices also permit the Mexican broker's influence to spill forth into border-city politics. As a result, border cities acquiesce into supporting the practices of drayage firms, which fosters the carriage of cargo in one direction only. The return trip to the country of origin is without cargo and in some cases without even an empty trailer. Consequently, more trucks can be used and more fees collected because of more trucks!* (Giermanski, 1996, pp. 6-7)

A gentlemen's agreement between Mexico and the United States permits U.S. drayage companies to haul trailers southbound and Mexican drayage companies to haul trailers northbound. Many U.S. companies have decided to brake the monopoly of the "drayage industry" by crossing the border with their own trucks, avoiding third-party drayage.

Another gentlemen's agreement grew out of an actual written informal "bilateral understanding" between the state of Texas and the Mexican state of Tamaulipas and informal "paired city understandings" between Texas and the Mexican states of Chihuahua and Coahuila (Texas Transportation Commission Minute Order 106436, November 30, 1995). This understanding was about reciprocal registration and taxation on commercial motor vehicles. In effect, if Mexico did not require registration or taxes on commercial vehicles, Texas would not either. However, the title of this agreement (paired-city agreement) was used in trying to defend a business practice that developed on its own where one side did not carry goods back, so the other side would have jobs transferring cargo and vice-versa.

In May 1997, the Texas Bill 370 eventually signed into law put in effect of 1 September 1997 "superseded" any paired city agreement. The original paired city agreements were unconstitutional in the first place. For a state to enter into an agreement with a foreign power, it needs the consent of the U.S. Congress. Obviously, Texas did not have that consent, which was the basis for voiding it in the State Government. This is an example of

perverse "institutional thickening," where "local initiatives" conspire to place restrictions on trade.

Giermanski (1996) explains how this problem appeared after Mexico joined the General Agreement on Tariffs and Trade (GATT). Previously, Mexican importers retained a customs broker and paid duties within three days, avoiding government storage charges at government-controlled locations. However, the Mexican government lost control of the process and was unable to collect all duties. Within a few years of joining the GATT, the problem had grown to the point that the Mexican government changed the system. Under the new system, duties are collected prior to entry into Mexico, eliminating the government's responsibilities with storage and the lost revenue. Given that only licensed Mexican brokers could process goods coming into Mexico, the broker business naturally shifted to the U.S. side for goods shipped by land. This control was strengthened by eliminating U.S. businessmen from competing with the Mexican broker who was now operating in the United States as a U.S. freight forwarder.[8]

Further, as the responsibility for storage shifted from Mexico to the United States, warehousing flourished on the U.S. side of the border. Mexican brokers operating in the

[8] On October 22, 1986, as a result of the *Surface Freight Forwarder Deregulation Act of 1985,* surface freight forwarders were deregulated except for the forwarding of household goods. Freight forwarder is defined by the Interstate Commerce Commission (ICC) as: "...a person holding itself out to the general public (other than as an express, pipeline, rail, sleeping car, motor or water carrier) to provide transportation of property for compensation and in the ordinary course of its business

a) assembles and consolidates or provides for assembly and consolidating shipments and performs or provides for break-bulk and distribution operations of the shipments;

b) assumes responsibility for the transportation from place of receipt to place of destination; and

c) uses for any part of the transportation a carrier subject to the jurisdiction of the Interstate Commerce Commission under subchapter I, II, III of chapter 105 of this title regulated by the ICC."

Along the southern border of the United States the term "forwarding agent" is often used instead of freight forwarder. While both, however, perform duties as defined by the ICC, the forwarding agent is often an exclusive agent for the Mexican customs broker and, therefore, does not forward freight around the world as many freight forwarders do. The forwarding agent's work, then, is merely the clearing of goods for entry into Mexico and arranging transport for the border crossing.

United States got loans from U.S. banks to build the warehouses, paying interest and maintaining large deposits in these banks from the lucrative charges for storing international cargo in their warehouses. Mexican brokers in the United States have no outside competition, giving them almost absolute control over releasing of goods for entry into Mexico and rates for transportation on the border crossing into Mexico.

3.3.3 Homogeneous Government Systems

Another deficiency in U.S.-Mexican border-crossing is the lack of automated government systems integrated among government agencies and the business community in each country and between the two countries. These include an integrated, harmonized customs system: data problems often cause delays at the border crossing, and problems are created by other government agencies that deal with different aspects of trade and transport, such as the Department of Transportation, Immigration, and the Agriculture Department.

Mexican Customs' practices require that export goods transported from the United States to Mexico by land be subject to tariff or duty before they enter Mexico. The process of clearing goods into Mexico involves a series of functions, such as appraisal, classification, inspection, and inventory, which take place on the U.S. side of the border. The importers must act in accord with the requirements of a licensed Mexican broker and their exclusive forwarding agents, and obtain the two primary documents for clearing goods into Mexico, the pedimento and the commercial invoice, which must contain the broker's letterhead and his identifying number. In this manner, the privilege of using the Mexican broker's number and letterhead comes at the price of reciprocal business.

The proponents of NAFTA have not challenged this practice although no reciprocity is involved. In fact, Mexico does not allow U.S. brokers to operate as freight forwarders or forwarding agents within the territory of Mexico. No U.S. citizen is allowed to forward freight from Mexico into the United States as specified in NAFTA:

> *A shipper's export declaration must be processed by a Mexican national licensed as customs broker (agente de aduanas) or by the representative (apoderado aduanal) employed by the exporter and authorized by the Secretaría de Hacienda*

y Crédito Publico for this purpose. (U.S. Government Printing Office 1993, Vol. II, p. 44)

From the viewpoint of the overall economic efficiency that underpins NAFTA, there is no rationale for the United States to allow Mexican brokers to come to the United States and create such a bizarre and expensive system of south-bound movements at the border.

3.3.4 Cultural Features Including Business Practices

The U.S.- Mexican border case is unique since interdependency covers virtually every aspect of the sociopolitical and economic spectrum, while the cultures, economic and social policies, and regulatory frameworks are diverse. This diversity presents serious challenges to Mexican and U.S. negotiators in their efforts to harmonize the trade facilitation policies across the borders.

The cultural differences on the U.S.-Mexican border include language, with Spanish-speaking people in Mexico and the predominately English-speaking people in the United States. Mexico is a source country for drugs entering the United States, along with illegal aliens, and there is a race issue. The Mexican economy is less developed than the United States. Due to the differences in culture, language, and race, there is little trust between the United States and Mexico, resulting in institutional frictions between the two countries.

The culture also influences the business practices. The bridges are open from 7 a.m. to 7 p.m. from Mondays to Saturdays. On Sundays, trucks cross only under requested operation and reimbursable expense, meaning that those who request the opening of the bridge have to pay for the associated personnel and operational expenses (Nolle, 1999). Congestion is also caused by the common practice of brokers to process groups of trucks and then simultaneously release them to cross the border. Since customs officials cannot anticipate these releases, this operational practice overloads the inspection facilities. As mentioned before, businesses in Mexico are oriented towards what is convenient to the parties involved, rather than what is efficient from the logistic point of view.

3.4 Consequences

These factors show that the present border crossing system is the result of: (1) prohibition of Mexican carriers in the United States and vice-versa; (2) restrictions imposed by the Mexican laws and rules and tolerated by the United States; (3) problems with data and the lack of a coordinated government inspection systems (which include Customs Service, Department of Transportation, Department of Agriculture, Immigration and Naturalization Service, Drug Enforcement Administration) between Mexico and the United States; (4) limited infrastructure; (5) cultural differences which include among others business practices.

The present system results in economic gains for: (I) Mexican brokers who provide services of warehousing, inspection, and classification, on the U.S. side of the border; (ii) the Laredo/Nuevo Laredo drayage industry; (iii) U.S. bankers that finance the construction of warehouses; (iv) the state and municipal governments on both sides of the border who receive extra toll payments; (v) the Mexican states that receive a share of Customs tax collections and import duties; and (vi) the entire regional economy that provides goods and services to the above economic agents.

The U.S.-Mexican border landscape at the Laredo crossing point is very different from the European and the U.S.-Canadian context. Under the formal provisions of NAFTA, the border crossing should be seamless, clear and efficient. This would mean one truck with one driver from point A in the United States to point B in Mexico and vice-versa (see Figure 2.7). In theory, NAFTA assures a seamless border for the movement of trade between the Canada, Mexico, and the United States. To implement this ideal, standardized information should be agreed on by these countries and presented by the trucking companies or their agents to customs and other government officials in advance of each truck's arrival at the border. In this way, the government officials could make their risk assessments and decisions to examine the products, so merchandise, upon arrival at the border, could be released immediately released or examined based on the pre-arrival information.

On the U.S.-Canadian border, most of these decisions result in quick release of the merchandise and later verification of the information. This is possible because the United States and Canada require each shipper to be covered by a bond or insurance policy that guarantees payments of any taxes and fees. On the U.S-Mexican border, however, the southbound process starts only when the truck arrives at the government inspection facility. Mexico does not have a system of bonds and insurance and requires payment of taxes and fees before the merchandise is allowed into the country.

Further, there are the cultural differences. There is trust between the United States and Canada. The U.S. government does not attempt to provide ex-ante enforcement and control with Canada, relying instead on a post-entry audit approach. This is adequate for the collection of duties and taxes but is not adequate to meet health, safety, transportation, and environmental issues (Nolle 1999).

Thus, trade transportation between Canada and the United States represents a good example of seamless border, as envisioned by NAFTA and is an example of institutional thickness in Church and Reid's terminology.

With Mexico such trust is absent and the current U.S.-Mexico border crossing differs from the optimal condition envisioned by NAFTA. It takes at minimum seven movements, at least three pieces of equipment, and three drivers to get from point A in the United States to point B in Mexico (see Figure 2.8).

Congestion on the Laredo border crossing is an industry by itself. It is in the economic interest of the Laredo community to keep the system that produces the congestion. It has its own political-economic system, congestion induced by institutional means. The rent-seeking economic agents find ways to avoid and protect the clutter.

The consequences of this system are paid in the form of extra costs by the shipper. These costs are transferred to the importer who transfers the cost to the consumer, who pays for

the inefficiency. As the southbound crossing is more complex, it is more expensive, and the Mexican consumer pays for everything.

For the trade community, data problems add to those already described to make the current international trade processing even more complex and costly. Traders are required to send data and/or paper forms to a multitude of government agencies. Much of this data is redundant. Traders are often unable to determine agency data requirements for an import or export transaction and are confounded with incompatible data definitions and exchange methods. With the increasing volumes of trade, border crossings are congested and dealing with greater volumes than their capacity to process them efficiently.

The Laredo cross point presents obvious inefficiencies that have persisted since 1994 and now extend into the new millennium. In Chapter 4, I quantify the costs added by these inefficiencies and present a theory of personal and institutional behavior to explain the gap between economic rationality and reality. Chapter 5 presents scenarios of improvements, including that of the optimal condition of a seamless border, and focuses on empirical evidence regarding the intriguing institutional question of why the inefficiencies have persisted over a long period despite a legal framework (NAFTA) based on economic rationality.

4 Times and Costs of Border Crossing at Laredo

Distance and national borders both still matter
- Frankel

4.1 Introduction

This chapter reviews some models and approaches for quantifying border crossing costs and formulates an economic model for the analysis of truck transportation and border crossings at Laredo. It quantifies costs and times for each activity of the actual cross-border operation described in Chapter 2. It then presents a theoretical framework for analyzing the institutional-behavioral questions related to the differences between the optimal costs and those currently found at the border crossing. The last section of this chapter presents the implications of the border related inefficiencies on the trade flows between the United States and Mexico.

4.2 Economic Aspects of Border Crossing

This section develops the underlying theory of border crossing under restricted conditions.

Border crossings occur when the owners of a commodity expect to profit by selling it in a different country. "The *raison d'etre* of market exchange is the expectation of mutual gains." (Buchanan and Tullock 1963, p. 103).

When the commodities exchanged are transported by truck, at least one border must be crossed. Figure 2.7 represents border crossing flows between 2 homogeneous regions (e.g., trade between Canada and the United States). In this example, the time and costs approximate the theoretical minimum because the border crossing system is homogeneous for truck costs, truck services, infrastructure, and institutional procedures (customs,

information, inspections.) This example assumes the truck can transit directly from point A in one country to point B in the other. The movement of the commodity from point A to point B requires one truck and one driver, and after delivery the truck can return from point B with a commodity exported to point A. Under this scenario, capital equipment and labor are used efficiently and the delay due to border crossing inspection and customs procedures is minimum because government policies are coordinated and restrictions are minimized. This situation represents the case of a border crossing as seamless as a border crossing can be.

At the Laredo border crossing, in spite of NAFTA, the border crossing system represents a completely different scenario (Figure 2.8). In this example, the movement of a commodity from Chicago to Monterrey takes 10 movements with at least four pieces of equipment and three different drivers. This border crossing is very congested; trucks have to stop many times; the trailer has to be connected to a drayage truck or be unloaded and reloaded to another trailer to be pulled by a drayage truck across the border; inspections take place on both sides of the border, performed by Mexican brokers and Customs officials; then, finally, the trailer is connected again to a truck owned by the company of the country of the final destination. Each of these steps represent delays and extra costs for the border crossing. They increase congestion and inflate costs.

4.3 Costs in the Trucking Industry

Transport costs for international trade are on average higher than for domestic trade. Smith and Giermanski (1997, p. 5) describe the cost structure of the trucking industry in the United States as characterized by an extremely high level of variable costs and a relatively low level of fixed costs. Depending on the type of motor carrier, variable costs range from 70 to 90 percent of total costs, while fixed costs are 10 to 30 percent (Coyle, Bardi, and Cavianto 1994)

Typically, fixed costs include interest payments on the vehicles, depreciation, and/or interest on other capital expenditure items, such as garages and terminals. Items such as insurance and vehicle licensing and insurance of the cargo may be considered either fixed or variable, depending on the firm. If the vehicle is insured on an annual basis, the costs are fixed; if it is insured on a per-trip basis, then the costs are variable. Cargo is insured on a per-trip basis and thus a variable cost.

Kenneth D. Boyer (1997) gives a rule of thumb that in the United States it costs one dollar per mile to drive a standard 18-wheel, 80,000-pound truck. Of this dollar, approximately 40 cents go to the driver, 20 cents are spent on fuel, and the remaining 40 cents are spent on depreciation, licensing, interest on the tractor and trailer, tires, maintenance, and other miscellaneous items. Trucking costs are closely associated with mileage and are far more linear with distance than are costs of railroads, water carriers, or even airlines (Boyer 1997, pp. 58-59).

Inflation-adjusted trucking costs in the United States have decreased with deregulation over the last two decades, due to : (1) decreased real prices of fuel; (2) increased competition; (3) lower wages of drivers (between 1980 and 1995, wages paid to over-the-road drivers fell in both real and nominal terms, since 1995 shortages of drivers have reversed this trend); (4) improvement in operating efficiency with electronic data exchange and the development of a system of freight brokers, firms have found return loads for their trucks, reducing the amount of time that trucks move empty hauls; and (5) increased intermodal long-haul transportation of truck trailers. Truckload trucking companies now move trainloads of trailers between the Midwest and the West Coast. This economizes on drivers, who are concentrated on short-distance movements. These intermodal hauls allow trucking to take advantage of the improvement in service costs and reliability that followed railroad deregulation in 1980 (the Staggers Act).

The Mexican trucking industry is characterized by higher fixed costs of equipment, insurance, and interest on the vehicles and other capital expenditure items. This increases the costs per mile by 25-40 percent, making the typical cost in Mexico $1.25-$1.40 per

mile to drive a standard 18-wheel, 80,000-pound truck, based on an average long-haul trip to Mexico City, Guadalajara, and Merida (Kevin 1999).

A trucking company can minimize its shipping costs by controlling the variable costs per shipment: (1) using the most direct transportation route, thus reducing costs related to mileage; (2) restricting the daily number of hours an individual driver may work, to avoid paying overtime, and (3) avoiding, where possible, tolls, extra border-crossing fees, and storage and insurance costs.

4.4 Summary of the Border Crossing Problem

The Laredo border crossing problem has the following characteristics:

1) legal institutional restrictions and procedures imposed by Mexico and tolerated by the United States, along with a U.S. limitation on operations by Mexican truckers in the United States, tolerated by Mexico;

2) excessive stops, interrupting the transport flows and making the cargo more susceptible to damage, loss, and tampering, and generating pollution (pollution from diesel engines comes mainly from acceleration and working under heavy loads);

3) lack of a coordinated system and data requirements for border crossing;

4) border crossing infrastructure limitations, such as insufficient access roads to the crossing bridges; leading to high levels of congestion;

5) the limited capacity of some inspection areas, aggravating congestion;

6) businesses practices that lead to peak hours for border crossing, with truck arrivals for some hours that are 40 to 120 percent above the daily average;

7) the border crossing services of the drayage industry intensify congestion by doubling the number of vehicles crossing the bridges and by using local streets.

8) lack of sufficient Government funds to add the personnel required to provide inspections 24 hours/day;

9) lack of leadership in the private sector and by politicians to promote the change for a more efficient border crossing system; and

10) the cultural environment on the U.S.- Mexican border, characterized by language and race differences, distrust, and acceptance of bureaucracy.

The following section reviews the literature that address some of these characteristics.

4.5 Literature on the Characteristics of the Border Crossing Problem and Transportation Cost Models

4.5.1 Introduction

The role of transportation in theoretical models of international trade has received little attention, despite its conceptual and empirical importance. In particular, the cross-border problem has been little studied. No single model covers the specific characteristics of the Laredo crossing point. Thus, I had to adapt the economic literature and models of transportation and international trade to analyze and quantify the times and costs of the border crossing.

In the following section I summarize the Laredo cross point problems and review some literature transportation cost models developed to date.

4.5.2 F.R. Casas: International Trade with Produced Transport Services

F.R. Casas (1983, pp.89-107) states that

> *In contrast to the extensive literature on tariffs and trade, the empirical literature on the impact of transportation on international trade has also suffered from the absence of a clear and simple theoretical framework within which transport related problems can be analyzed.*

Kindleberger (1962) estimated the importance of the costs of transportation of international trade flows, suggesting an adjustment factor of 5 percent in intra-European trade and 10 percent in intercontinental trade. Sampson (1978) found that freight and insurance costs as a percentage of the f.o.b. prices from the European Economic Community exports to the United States in 1974 ranged from a low of 6.6 percent for the United Kingdom to a high of 9.6 percent for Italy, averaging 8.2 percent. However, there are considerable variations across commodity groups and among countries. Prewo (1978) calculated transport costs as a percentage of f.o.b. value of exports. They varied across eight Latin American countries from a low of 5 percent for Uruguay's exports of complex manufactures to a high of 214 percent for Venezuela's exports of primary products.

Samuelson (1954) was among the earliest economists to introduce transport into a simple general equilibrium model of international trade. Samuelson was primarily interested in the question of the effects of transport costs on the terms of trade in the context of the transfer problem. Mundell (1957) uses the crucial assumption by quoting Samuelson (1954, p.268):

> *To carry each good across the ocean you must pay some of the good itself. Rather than set up elaborate models of a merchant marine, invisible items, etc., we can achieve our purpose by assuming that just as only a fraction of ice exported reaches its destination as unmelted ice, so will...fraction of a country's exports...reach the other country as imports.*

In 1970, Herberg departed from the Samuelson and Mundell assumptions by considering the transport service distinct from the two traded goods and supplied by either country. He assumed the technology in the transport sector linearly homogenous in labor and capital.

Rather than leaving market forces determine the supplier of transport services, Herberg assumed that each country transports its own imports. Unlike in Herbergs' model, Mexico, however, has legislative constraints on trading with the United States and in Mexico, labor is less expensive and capital is more expensive than in the United States. The capital intensity of the U.S. transport sector is relatively higher than the capital intensity of the Mexican transport sector. These countries provide a different level of quality of transportation services. Herberg also assumes that all the transport services supplied by each country involve moving products in one direction only. The assumption presents a conceptual difficulty, recognized by Herberg (1970, p. 579), that

> *seems to be acceptable if we think of transport media carrying for technical reasons goods in one direction only as, e.g., pipe lines. It is far less satisfactory with regard to media making round trips as, e.g., ships, lorries, freight trains; it would imply that they are not used efficiently since they would be empty on every outward journey.*

The 1976 Falvey model differs from the Herberg model by allowing costs of production to determine the supplier of transport services rather than arbitrarily assigning the production burden between the two countries. Falvey assumes that the transport technology is identical for the two graded goods: for any given factor price-ratio, the capital-labor ratio in transporting the two goods is the same, but the quantity of transportation services necessary to carry one unit of each traded good may differ for the two products.

Casas (1983, p.107) integrates transport costs into the conventional general equilibrium model of international trade.

The chronological summary of the major contributions on this issue are:

1) Samuelson and Mundell draw attention to the role of supply and demand conditions in the markets for traded goods in determining the division of the burden of supplying transportation and the consequent welfare losses and gains for the two trading countries.

2) Herberg underscores the idea that transport directly absorbs resources and shows the role of the transport technology in determining equilibrium commodity prices.

3) Falvey emphasizes the role of technology in the transport sector in determining the origin of the resources used in carrying traded commodities.

4) The joint production model suggests that the resources used in transportation may and in general will originate in both trading countries, with technology and market conditions determining each country's contribution.

None of these models, however, are well adapted to locating the bottlenecks of the border crossing system between two countries. None of them consider institutional factors, such as customs and regulatory practices, coupled with the effects of different levels of development, capital/labor ratios, cultures, or infrastructure capacities. Further, the models cannot be used to quantify the impact of different pricing schemes based on the improvement in the border crossing procedures.

In the remaining sections of this chapter, I develop an economic model to incorporate the cost and characteristics of the Laredo border crossing system to study the economic consequences of different improvement scenarios.

4.5.3 Regional Trading Blocs in the World Economic System

Frankel's theoretical and empirical analysis of regional trading blocs (1996), argues that geography should be part of trade theory:

> *As surprising as it sounds, most international economists until quite recently ignored distance and other geographical factors as determinants of trade. Most trade models have until recently had one thing in common: they treated countries as disembodied entities that lacked a physical location in geographical space. We will see that one cannot get very far into an empirical analysis of bilateral trade - this is, an analysis of trade between pairs of countries- without recognizing the strong, inhibiting effect of distance on trade.* (Frankel, 1996, p.37).

Paul Krugman (1991c, 1995b, 1996) addresses this question, stating that, until recently, the standard theories of trade were based on the assumptions of perfect competition and constant returns on scale. It is difficult to analyze many geographic influences with such models.

Frankel presents three reasons to care about the role of distance and geography: (i) distance leads to agglomeration, so that history can affect what goods are produced in a given region or country. The computer industry in the Silicon Valley in California, for example, resulted in regional agglomeration, although the tendency toward concentration originally began with a single chance event; (ii) distance between a pair of countries is a natural determinant of the volume of trade between them; and (iii) countries located close together constitute a natural trading bloc, so that a reduction in trade barriers between them can more easily be economically beneficial than for distant countries.

Frankel defines three kinds of costs of doing business at a distance:

(1) Shipping costs: although transportation costs are obvious, how to measure them is not. In general, U.S. Customs data show that transport costs for international trade exceed the cost of duties (Amjadi, Winters, and Yeats, 1995, pp. 475-477);

(2) Time elapsed in transporting, which includes interest charges, perishability, and adaptability to changing conditions; and

(3) cultural unfamiliarity. Linnemann (1996) called this category "psychic distance," having in mind that familiarity with another country's laws, institutions, habits, and languages is an important part of marketing.

Frankel discusses the effects of distance and adjacency. One has only to think of the Mexican maquiladora strip along the U.S. border, or the large amount of intermediate products and consumer goods that go back and forth across the Canadian border, to see the relevance of adjacency, as distinguished from beyond distance. The Netherlands is close to France and Korea to Japan, but without the common border the effect is not the same. When common borders are held constant, the estimated coefficient on the distance variable decreases. Frankel and Romer (1996) reported the possible interactive effects of the

common-border variable and remark that small adjacent countries are may be more highly integrated than predicted by the simple sum of their size and common border effects.

Bhagwati (1992, 1993a) is suspicious of the claim that proximity is an important determinant of trade, citing the example of India and Pakistan. He is equally skeptical of the notion of natural trading blocs. Bhagwati asserts that the high level of intraregional trade in Europe must be the result of free trade areas (FTAs) and other preferential trade arrangements that are already in place. Frankel (1997, pp. 115-148) extends his empirical analysis of trading blocs to the effects of political alliances and enmities. The trade between India and Pakistan has been impeded by their historical animosity.

Frankel's analysis of regional trading blocs is important to the analysis of the Laredo crossing point problem. The inclusion of the geographical location and distance help to understand the volumes of trade that cross this border. Because of the adjacent geographical location, the United States and Mexico are a natural trading bloc. The costs of distance, however, are not easy to measure. It is even more difficult to calculate the times elapsed in transporting and processing, or the added costs of the cultural unfamiliarity between the United States and Mexico. These are the equivalent of adding thousands of miles to the distance of crossing the U.S southern border in terms of the extra time and costs that the process implies.

4.5.4 How Wide is the Border?

Engel and Rogers (1996) argue that similar goods sold in different locations have different prices. A good at a certain location and the same good at a different location are different economic objects. Only when costs are borne to transport wheat from Chicago to Minneapolis will the miller in Minneapolis consider the Chicago wheat equivalent to the Minneapolis wheat.

Recent evidence suggests failures of the law of one price are significant, and play a dominant role in the behavior of real exchange rates.

Engel and Rogers use data for 9 Canadian cities and 14 in the United States. The basic hypothesis is that the volatility of the price of similar goods between cities should be positively related to the distance between those cities; but holding distance constant, volatility should be higher between 2 cities separated by the national border.

The basic empirical results show that both distance and the border are significant in explaining price dispersion across locations. They provide a measure of how important the border is relative to distance - the width of the border.

Nominal price stickiness appears to account for a large portion of the border effect, but most of the effect is left unexplained.

Price Dispersion among Locations: The failure of prices of similar goods to equalize between sites is a sign that the markets are not completely integrated.

Geographical separation of markets provides one reason that the price of similar goods might vary across locations. Recent work in international trade by Krugman (1991) and Frankel at al. (1995) suggests that much of the pattern of international trade can be explained by geographical considerations. Countries are more likely to trade with neighbors because transportation costs are lower. Transportation costs may also be an explanation for the failure of the law of one price. With the "iceberg" transportation costs of Krugman and others, price is not necessarily equalized with the price in location. The transportation cost should depend positively on the distance between locations, so that the range of variation depends on that distance.

However, price variation of similar goods over time might be higher if the cities lie across national borders holding distance constant. The markup may be different across locations, and may vary with exchange rates. The marketing services are likely to be labor-intensive. To the extent that the two national labor markets are more separated than are local labor markets within a country, there would be more variation in cross- border prices than in

within-country prices. There might also be direct costs to crossing borders because of tariffs and other trade restrictions.

Goods sold in the United States might have sticky prices in U.S. dollar terms, and goods sold in Canada might have sticky prices in Canadian dollar terms. The nominal exchange rate is, in fact, highly variable. For their purposes, it is natural to choose the United States and Canada as the countries to study. First, the countries share a border. Also, trade has been relatively free between the two countries. If the border matters, it is unlikely that it matters because of trade restrictions. In fact both countries are mostly English-speaking and have similar cultural and political traditions suggest that there is likely to be more cross-border migration than between most countries.

They argue that the volatility of the prices of similar goods sold in different locations is related to the distance between the locations and other explanatory variables, including a dummy variable for whether the cities are in different countries. The volatility of prices between U.S. city pairs is generally slightly higher than that between Canadian city pairs, but cross-border city pairs have much higher volatility. However, cross-border city pairs are farther apart, on average.

Distance has a positive effect on price dispersion in all regressions. The border dummy is positive and significant in all cases. They also split the sample at January 1990, when the Canadian-U.S. Free Trade Agreement went into effect. If trade barriers are an important reason why the border variable is economically significant in explaining price dispersion, one could expect that the magnitude of this variable would decline after 1989. They found a slight tendency in the opposite direction. The estimated border coefficients were usually larger in the post-1989 period.

How important are Distance and the Border? Their calculations based on the regression tables indicate that crossing the border adds substantially to volatility. If they use the upper end of the confidence interval as the measure of the impact of distance, then crossing the border is equivalent to 1780 miles of distance between cities.

Why Does the Border Matter so Much? Crossing the border adds significantly to price dispersion. They tried a direct test for trade barriers and found that the size of the border was not diminished when the free trade agreement between the two countries went into effect. This, of course, does not rule out the possibility that informal trade barriers account for the price dispersion. One of the reasons why distance matters for intercity price dispersion is that more distant cities have less- integrated labor markets.

The major message of the empirical results is that both distance and the border matter for relative price variability. The literature on price has emphasized that when markets are segmented, price discrimination can occur. Their findings suggest that there is more than standard price- discrimination behavior involved in cross-border price movements. They found that distance between markets influence prices of nearby competitors. Despite the relative openness of the U.S.-Canadian border, the markets are still segmented.

Engels and Rogers do not analyze such reasons as price discrimination by corporations across national borders and in markets of different sizes. For example, pharmaceutical companies charge such high prices in the United States that elderly U.S. residents who live near Canada charter buses to buy their medicines in Canada.

4.5.5 Transport Economics

Button (1993) analyzes traffic congestion in cities, where there are regular peaks in commuter travel and seasonal peaks. Transport infrastructure, although flexible in the long run, has a finite capacity at any given period of time. Due to the infrastructure limitations, congestion occurs and is an external cost of transport.

Congestion imposes costs on the road user in terms of wasted time and fuel (the pure congestion cost). The stopping and starting it entails also worsens air pollution (diesel engines pollute primarily when accelerating which occurs with high frequency in stop-and-go traffic), which is a particular problem in Laredo.

A rough estimate of fuel used by the drayage industry assumes the following: one mile of travel equal one gallon of fuel consumption; 7.5 miles is the average queue of trucks waiting to cross northbound; the daily average of trucks crossing northbound at Laredo Bridge #2 is 2400. Thus 18,000 gallons of fuel are consumed daily northbound. Given that approximately 50 percent of these trips are unnecessary because they were without cargo, over 9000 gallons are burned and pollutants emitted without generating any needed transport. Additionally, with tractors traveling through the cities and not counted in the actual crossings, much more is wasted, adding costs to the product and the environment (Wright, 2000).

Button suggests that the economic costs of road congestion can be calculated using the engineering concept of the speed-flow relationship. This applies to urban traffic, but the speed-flow relationship is different in an international trade border crossing environment. In the Laredo case, the queues of truck traffic waiting to cross are miles long. Some drivers take a few hours to cross the bridge; others take days.

The speed flow relationship provides a key supply-side input for the analysis. The density function, the number of vehicles on a road at any one time, is a key to this analysis.

However, Button's basic model includes a linear road, no junctions, homogeneous traffic and equally skillful drivers. This model addresses some of the characteristics of the Laredo border crossing problem but not all of them. Other traffic engineering models include junctions and traffic lights, but none account for the bizarre situation at the Laredo border crossing. The situation at Laredo presents a more complicated environment. The congestion here is due not only to the limited capacity of the infrastructure (I-35 is the only access road to the bridge) but to the imposition of the drayage service, which increases congestion by adding unnecessarily crossings without cargo. If the drayage industry were eliminated, an important portion of the congestion problem would disappear. Another cause of congestion at Laredo also differs from the typical case of urban congestion - the international trade institutional restrictions on border crossing. Trucks loaded with

commodities have to stop for different inspections along the road on both sides of the border, intensifying the congestion.

In sum, the available congestion and capacity models do not account for the complexity of the Laredo case.

Button (2000) observes that infrastructure is just part of a chain of requirements for the transportation of international trade. Bridges and roads are important but infrastructure is not the issue. The institutional issues are far more important to resolve than the infrastructure (bridges, roads, inspection booths, ports, etc.). He sees the constraints on borders as mainly legal and institutional aspects, the documentation process and cultural issues. The physical constraints are less important.

Button (2000) says that the amounts of money made at border crossings is astronomical. Border areas are not very attractive places but they are very profitable. Just as a dam in a river takes energy out of the system, borders extract money and time from international trade flows.

According to Button there are similar interest groups at border crossings in Europe, Asia, and South America, just like those in Mexico; even the police has been involved in making money.

In Europe, change came about for the first time in 1951 with the Paris Treaty, starting to remove all those barriers that are negative to everyone. In 1957, with the Common Market, some more progress was made, but 1992 marked the real start of removing trade barriers in Europe. Button asserts that removing trade and customs barriers would increase trade in Europe by about 40 percent (Button 2000 b).

4.5.6 Border Crossing Problems as Non Tariff Barriers (NTBs)

The border crossing problem can also be analyzed from the perspective of non-tariff barriers. Mansfield and Busch (1995, pp. 1-34) present a model in which

> *Nontariff barriers are expected to be most pervasive when deteriorating macroeconomic conditions (such is the case of the Mexican Economy where a drastic devaluation was introduced at the end of 1995) give rise to demands for protection by pressure groups, a country is sufficiently large to give policy makers incentives to impose protection, and domestic institutions enhance the ability of public officials to act on these incentives. The findings indicate that the incidence of nontariff barriers tends to be greatest when the preferences of pressure groups and policy makers converge.*

Mansfield and Busch discuss the concept of societal approaches to trade policy, focusing on the effects of demands for protection by pressure groups. The impact of these groups on policy depends on their ability to organize to articulate their demands and gain electoral influence. Societal approaches attribute little importance to policy makers and political institutions in explaining trade policy. Ikenberry, Lake, and Mastanduno (1988, pp. 7-8) state that societal theories view the state as "essentially passive; it acts as disinterested referee for competing groups, and supplies policies to satisfy the demands of successful domestic players"

In their model, Mansfield and Busch introduce unemployment and the real exchange rate as contributors to demands for protection. High levels of unemployment are likely to yield demands for protection because workers displaced by imports find it progressively more difficult to obtain alternative employment.

The statist approach to trade policy criticizes the societal approach for systematically underestimating the effects of the State's interests in trade policy and domestic institutions (Goldstein, 1988, pp. 179-218). Ikenberry, Lake, and Mastanduno (1988, pp. 219-243) note that these analyses presume that the preferences of public officials

> *are partially, if not wholly, distinct from the parochial concerns of either societal groups or particular government institutions and are tied to conceptions of the 'national interest' or the maximization of some social welfare function.*

Many studies conclude that the ability of policy makers to advance the national interest depends in large measure on the extent to which political institutions render them susceptible to demands by pressure groups and other non-state actors. These arguments

are highly relevant to the present research. The purpose of NAFTA is the elimination of tariffs and non-tariff barriers to facilitate trade between Canada, Mexico, and the United States. In reality, as the tariffs have been reduced, non-tariff barriers have appeared in the form of a complicated and expensive border crossing system on the Mexico-U.S. border. The economic gains for the participants in the system are an incentive to exercise pressure on policy makers to impose protection. As noted above, macroeconomic conditions in Mexico have been problematic for several years, and conditions give rise to demands for protection by pressure groups, in addition to the effects of the devaluation of December 1995 which reduced substantially the Mexican imports from the United States.

Pressure groups have influenced policy makers on both countries. The U.S. teamsters union has lobbied U.S. policy makers to keep the border closed to Mexican firms despite the commitments of NAFTA, fearing that lower paid Mexican drivers will take jobs from U.S. drivers. The Mexican brokers also exercise their power to maintain the bizarre but profitable Mexican Customs practices.

The ability of policy makers to advance the NAFTA goals has been frustrated by the demands for protection by pressure groups.

The statist theory does not explain the border crossing. NAFTA exists to facilitate trade for economic growth, but in reality it does not, since NAFTA coexists with bizarre international trade practices.

The relationship between tariffs and non-tariff barriers (NTBs)

Some economists state that NTBs are often used to protect industries that have lost tariff protection due to successive rounds of the GATT. Jagdish Bhagwati refers to this dynamic as "the Law of Constant Protection" mentioned earlier in Chapter 1. The results of NAFTA support this position: as tariffs have been reduced, non-tariff barriers have appeared in the form of bizarre international trade practices that impede, rather than facilitate, trade.

Studies of foreign economic policy have found that protection is most pervasive in states characterized by vehement demands for protection articulated by well organized groups and state institutions that fail to insulate policy makers from the brunt of these demands. At Laredo, the different interest groups in both countries have been successful in protecting a system that impedes free trade, and the policy makers have failed to advance the interest of NAFTA, which advocates free trade.

Economists recognize the inherent difficulty to measure NTBs. This is one explanation for the lack of literature on the analysis of border crossing in international trade.

4.5.7 The Calculus of Consent

Buchanan and Tullock (1962) analyze the rules for collective choice and individual behavior that are at the core of the analysis of this research. They assume that individuals are motivated by utility-maximizing considerations and that, when an opportunity for mutual gain exists, "trade" will take place. This assumption is one of the foundations on which economic theory is constructed.

Their review of behavioral assumptions implicit in orthodox economic theory serves as an introduction to the central question of this thesis: What principles can provide meaningful theorems concerning the behavior of human beings as they participate in collective and private activity?

Buchanan and Tullock assume that human behavior is based on the same basic values that motivate individuals, but these values can be interpreted in a different way in economic and political activity. The economic argument requires the acceptance of a skeptical or pessimistic view of human nature. Self- interest, broadly conceived, is a strong motivating force in all human activity. Insofar as possible, institutions and legal constraints should be developed to order the pursuit of private gain in such a way as to make it consistent with, rather than contrary to, the attainment of the objectives of the group as a whole.

Buchanan and Tullock refer to individual rationality in social choice. A useful theory of human action, be it positive or normative in content and purpose, must postulate some rationality on the part of decision-making units. Choices must not only be directed toward achieving some objective or goal; the decision-making units must also take such action as will assure the attainment of the goal.

Applying Buchanan and Tullock's analysis to NAFTA and the Laredo border crossing, for two countries to agree on an international trade agreement, each must expect to be "better off" or at least "no worse off".

"Better off" and "worse off" are defined in terms of revealed preferences in the political process. If all parties to an agreement expect to improve their individual positions, decision- making costs arise since a bargaining range will exist. Recognizing this, each individual will seek to secure the maximum gains possible for himself while minimizing the net gains to his partners in the agreement.

Vilfredo Pareto developed a criterion now widely employed by modern welfare economists in determining whether or not a given situation or a change is "efficient" or "optimal". If, in a given situation, it is impossible to make any change without making some individual in the group worse off, the situation is defined as Pareto-optimal or Pareto-efficient. In other words, a Paretian P-point is a position from which no change can be made without harming at least one individual in the group. The presence of external costs is equivalent to the existence of "mutual gains from trade", which can be secured to the advantage of all parties.

Buchanan and Tullock analyze the ethics of trade, assuming that the terms of trade will determine the division of the total benefits among the participating parties. Since this division is essentially a distributional question, the whole problem of "fair shares" arises, a problem that can only be discussed in terms of ethical norms.

In ordinary exchange no ethical question arises concerning the decision of the individual to *engage in trade,* regardless of whether or not he possesses independent power to influence the terms of trade. Moreover, an ethical issue is posed by this sort of behavior. Not only is the individual presumed to secure some benefit by entering into trade, but he benefits the other parties in the contract. On almost any set of ethical norms, trade is an activity accepted as fully consistent with the moral standards of the community.

Buchanan and Tullock refer to pressure groups, special interest, and the constitution, defining the reason for the existence of such groups as their ability to promote and to further, through the political-choice process, the particular functional interests represented. The emergence of such groups to positions of dominant importance during the last half century has been one of the most significant developments in the American political scene. This fact has understandably weakened the predominance of the traditional model of democratic choice-making institutions. The behavioral premise that calls for the legislator to follow a selfless pursuit of the "public interest" or the "general welfare," as something independent of and apart from private economic interest, is severely threatened. In recent years the role of the pressure or special-interest group in democratic political process has come to be more widely accepted as inevitable, if not "desirable."

Most attempts to examine the role of pressure groups have bogged down in their efforts to define the "public interest." If this cannot be defined, it is impossible to determine, even conceptually, the extent to which the activity of special-groups either advances or retards progress toward the "general welfare." Analysis is impossible without a well-defined criterion. One approach recognizes that definitive meaning can be attached to "social welfare" or the "public interest" only if a social-welfare function is fully described. This function conceptually orders all possible states of society, and unambiguously allows for the selection of the "best" or from a restricted set of available alternatives, the relatively "best." In this construction, the "public interest" is what the individual says it is. "Social welfare" or the "public interest" exists, for the individual, as something apart from and independent of special group interests, but the usefulness of this approach disappears on issues on which individual evaluations of alternatives differ.

The Pareto criterion for assessing changes views "better" only those changes that are approved unanimously. Any change that secures unanimous support is clearly "desirable," and such a change is "in the public interest."

The modern argument for efficiency or optimality is based on the concepts of costless transactions and hypothetical compensation, so that a change is optimal if total gains exceed total losses, that is, if the winners could compensate the losers and still have net benefits from the change.

If the political process is conceived as one means through which individuals co-operate to attain mutual advantage, conceptually, all persons can be made "better off" by any change that produces sufficient "improvement" for mutual advantage to be possible.

Regarding pressure groups and big government, a simple and acceptable hypothesis is that interest-group activity, measured in terms of organizational costs, is a direct function of the "profits" expected from the political process by functional groups. The organized pressure group thus arises because differential advantages are expected through the political process, and in turn, differential advantages for particular groups are produced because of the existence of organized activity. The pressure group will rapidly become a part of the political decision-making process. The ultimate "equilibrium" will be reached only when all groups have become fully organized.

An analysis of the ethics of pressure-group activity requires acceptance of special-interest or pressure-group activity as an inherent and predictable part of modern democratic processes. This activity is a predictable outcome of the fundamental behavioral assumptions and the real world confirms the assumptions. Scientific progress in the analysis of politics cannot be made until this widespread activity is fully incorporated in the analytical models. The analyst need not accept or reject the activity as morally "good" conduct on the part of the practitioners. The economist assumes that the individual maximizes his own utility. The student of the political-choice process should likewise consider the pressure or interest group as an essential building block in political science.

The analysis integrates the political and economical problems of social organization. Constitutional democracy, in its modern sense, was born as a twin of the market economy. With the philosophers of the Enlightenment, this research shares the faith that man can rationally organize his own society, that existing organization can always be perfected, and that nothing in the social order should remain exempt from rational, critical and intelligent discussion. Man's reason is the slave of his passions, and recognizing this about himself, man can organize his own association with his fellows in such a manner that the mutual benefits from social interdependence can be maximized.

One application of this theory to the border crossing case is the bargaining range exercised by the U.S. Teamsters' Union in the form of lobbying to keep the border closed to Mexican trucks to avoid the competition of less expensive drivers. For NAFTA, opening the border for free trade was one of the commitments of the agreement. The Clinton Administration supported NAFTA, albeit somewhat late and without great enthusiasm. The treaty was bitterly opposed by third-party candidate Ross Perot. Current Democratic candidate Al Gore effectively defended NAFTA in a televised debate against Perot.

However, Democratic party leaders like Gore and Clinton risked alienating labor unions and other groups that were traditional supporters of the Democratic party, but ones that can "gone soft" when they feel their interests threatened. The Clinton Administration was thus ambivalent on NAFTA, supporting the idea but avoiding actions that would result in more complete or effective implementation.

The argument used by the politicians in the U.S. to keep to border closed to Mexican trucks is the safety issue. This is questionable because Mexicans firms are getting considerable numbers of new trucks that meet U.S. safety standards. The explanation is the pressure exercised by the U.S. Teamster's Union to avoid competition of Mexican drivers that charge less and could get a portion of the U.S. market. This is a struggle for the shares of a fixed-sized pie.

Questioning the bizarre practices of the Mexican brokers operating on the U.S. side of the border, the Texas Attorney General considered opening an anti-trust case but has not done so. Second, the United States Department of Justice became aware of the problem as a result of a brief presented in 1993, one month before President Clinton signed NAFTA. Justice chose not to do anything that would disrupt NAFTA (Appendices C and D present the letters from the Offices of the Attorney General and the Trade Representative). This inertia is caused by the conflicting interests of bureaucrats and politicians, along with the regional interests of U.S. banks and cities along the border.

4.5.8 Rationality Gone Awry? Decision-Making Inconsistent with Economic and Financial Theory

Schwartz (1998) argues that researchers in economics have traditionally used models to study and explain a given problem. They assume rational decisions and complete knowledge but very often these assumptions are contradicted by actual behavior. Shwartz believes that behavioral approaches will modify and complement, but not alter, the traditional logic of financial and economic analysis and normative models provide an inadequate basis for describing and explaining actual decision-making behavior. Behavioral economics and finance represent a more systematic effort to improve orthodox economics. This applies to policy recommendations at both the micro-and macroeconomic levels.

Schwartz presents a behavioral approach for the analysis of economic and financial decision making. Producers, and those who succeed -the survivors- possess maximizing objectives and respond to incentives and risk in what financial and economic disciplines regard as a rational manner. Achieving full maximization at times is a consequence of learning and successful adaptation. Yet, quite aside from the objectives, the capacity to *implement* goals such as maximization often falls short of what is assumed.

The inclination of many economists and financial analysts to continue to use models that presume high degrees of rationality reflects what has been termed a conservative, status quo bias, rather than an exercise in rational behavior on the part of the model builders.

The behavioral group seeks to *supplement* the traditional normative models with others that replace optimization assumptions with behavioral assumptions that reflect the quasi-rationality of the "best practice" employed by survivors, and to determine the direction and degree of bias from optimization involved in the use of such often successful, but not fully rational behavior. Second, behavioral economists and financial analysts hope to provide evidence that will help management experts determine better ways to reduce the gap between the near rationality of best practice and the still more approximate rules of thumb employed by most economic agents in many transactions. Third, some of the behavioral groups also hope that their studies will help reduce the margin between the sophisticated best practice of survivors and full optimization (all the while recognizing that in most cases it will never be possible, or cost efficient, to close the gap completely).

An application of behavioral economics and behavioral finance are the assumptions of the Mexican economy in the models and projections of NAFTA. Leading experts in international economics, such as Rudiger Dornbusch, estimated that Mexico's peso was over valuated by 15, to 25 percent in late 1994, but the manner in which the devaluation was handled (and perhaps other factors) led to concerns that brought dramatic fluctuations and a devaluation that soon reached 50 percent. That was far in excess of all estimates of what had been required. Although it facilitated very large increases in the exports of a handful of enterprises with quality products that did not require export financing from the Mexican banking system, it also triggered much sharper declines in real income than had been anticipated. The interest rate fluctuated as much as 25 percent from one day to the next (real rates ranging between 25 and 50 percent). This lead to an acceleration of unemployment and a severe economic recession from which the country has been much slower to recover than economists had predicted. This occurred despite the rapid and marked improvement of the balance of payments position and the recovery of financial markets (Schwartz, 1998, p. 33.)

The extent of market reactions to the initial December 1994 devaluation in Mexico seems inconsistent with the assumption that people - investors in particular- are rational and, for the most part, risk averse. Mexico's peso devaluation in 1994 indicates the importance of developing policy models that incorporate empirically grounded findings into financial and economic models.

The U.S. Deputy Secretary of the Treasury offered public testimony citing psychological factors along with traditional economic reasoning for supporting several policy recommendations. In the 1960s, professional analysts and the public in general had an appreciable confidence in the ever-more rigorous techniques being applied in financial and economic analysis. The shifting estimation of financial and economic analysis may help explain the new interest in a behavioral approach.

Other economists, such as Mancur Olson, Douglas North, and others in the emerging area of law and economics, have reflected the experience of individuals, groups and nations over relatively long periods of time. They have helped to explain how legal and other institutions play an important role in determining the character of economic growth. For these writers, the word *institutions* refers not to associations and entities, but to the formal rules and informal constraints (the conventions and understandings) that prevail in a society. Institutions are seen as altering transactions costs and agency relationships, thus explaining the at -times- differing behavior of the same economic agents in different communities. This constitutes an important addition to economic analysis, but it has been carried out within a neoclassical maximizing framework. No consideration has been given to whether the findings of psychology and the other social sciences might help to explain some of the differences in the institutional evolution. The New Institutional Economics might conclude that institutional arrangements affect economic behavior, because of changes in how preferences are reflected and in the capacity for implementing objectives that result from those altered institutional arrangements.

The border crossing environment at Laredo is not desirable from an overall efficiency criterion. In fact, it undermines the basic objective of NAFTA of facilitation of trade and the elimination of non-tariff barriers.

What do individuals, particularly successful businesspeople, seek? Economists and financial analysts believe they act rationally, and make decisions that attempt to maximize profits. Psychologists, sociologists and other behavioral social scientists maintain that human objectives are broader and affect the full range of human activity, including financial and economic decisions.

Many businesspeople declare that they seek profits, but insist that they do not attempt to maximize. Rather, they seek to maximize only after taking into account other objectives. This is constrained maximization, that is, they have multiple objectives. At the same time, some of the most successful seem to have an objective that more nearly approximates cost minimization/ profit maximization, and that becomes more apparent with increased competitive pressures.

Objectives involving less than optimization may have adverse affects on efficiency. But if that reflects less than full exploitation of other actors, the cost of less than full optimization might be offset by greater trust and implicit cooperation. Experimental economics shows that individuals are not as rational as the logic of economics expects them to be, and the result can be a larger overall economic pie. It might be possible to design better public policies if we were able to gauge the costs to society that are actually realized when objectives reflect alternative deviations from maximization. Finally, there is an undisputed cost to the community of being unable to *implement* optimization objectives.

Implementation difficulties make the probability of realizing a maximization goal very low, unless market interaction and learning provide a major assist. A decision maker may not have access to the necessary information or programs to employ information efficiently. Even when alternatives are clear, the manner of presentation may affect choice. Many decision makers assume that data for implementation of objectives are what they seem to

be. Problems of data perception are referred, but almost none of the literature of economics and finance indicates how to conduct a reality check. In the basic economic model, of perfect knowledge and perfect rationality, there is no need or room for learning.

Schwarts considers the processing of information highly important in the process of negotiation. The key is the lack of information of one or more of the parties involved in any transaction and uncertainty about the meaning of some information. Complaints about "information overload" merely restate Herbert Simon's observations concerning the difficulties of achieving maximization because of the lack of adequate programs to deal with information. Even the consequences of well-defined alternatives are not well understood. What constitutes an optimal search is not all obvious, and second-best solutions may be sensed only during experience, an evolutionary process. This evolutionary process is influenced, but not determined, by the historical and cultural context of a society. Particular management cultures also modify the search process, as does the learning process.

NAFTA defined clear goals but failed in two basic aspects:

1) the negotiators did not obtain the necessary information for the elimination of all nontariff barriers. Specifically they ignored the Mexican brokers business practices at the border crossing. NAFTA negotiators apparently did not know these practices existed on the U.S.- Mexican border, assuming the environment there was the same as on the U.S. border with Canada.

2) The negotiators failed to define how to achieve a seamless border, especially regarding transportation of goods. This made it difficult to implement measures needed to reduce non-tariff barriers.

For example, they did not require implementation of a system such as the International Trade Data System (ITDS), a federal government information technology initiative to implement an integrated, government wide system for the electronic collection, use and

dissemination of international trade and transportation data. This is a promising but little-used tool to facilitate the border clearance of commercial goods. ITDS would give the governments the required trade information to take decisions to facilitate the clearance of goods. The introduction of intelligent transportation system technology might produce efficiencies that have not been available for border crossings, despite the provisions of NAFTA. Technology can be of great help, but the human and institutional factors determine the efficiencies. If resentments and distrust exist between the groups involved, the problem may remain.

The challenge is how best to describe the behavior of economic agents in complex environments. The power of traditional economic theory helps in analyzing many phenomena, but exclusive attention to the analytical tools can lead economists to restrict their investigations to those explanations consistent with the existing paradigm, overlooking more important institutional factors.

Expectations by economists are based on observations of objective data. A more eclectic view, used often by psychologists, states that expectations are formed on the basis of (1) extrapolation of past ideas; (2) learning (based on the degree of success of past experiences); and (3) new information about the individual's environment. Some economists also have included all three types of information in estimating expectations. Experimental cognitive psychology and experimental economics have dealt little with the expectations component of decision making.

4.5.9 The Cost Aggregation Model

Smith and Giermanski (1997) developed a model to calculate the total variable costs involved in trans-U.S./Mexican truck shipments of goods in the U.S. automobile industry through Laredo, Texas, based on the current condition and from the perspective of the U.S. carrier only. The cost data provided by the automotive industry are slightly lower than costs for smaller firms for shipment into Mexico, which is consistent with the relative efficiency of the automotive industry.

This deterministic model presents in a simple way the cost factors involved in the current border-crossing operation. I will later modify the model to calculate the costs for the scenarios of improving the cross border system.

The model used to calculate the total variable costs, Ycurrent, takes the form:

$$Ycurrent = Xs[a1 + a2 + a3 + a4 + a5 + b1X1 + b2X2 + b3X3 + b4X4 + b4X5 + b5X4 + b5X5 + b6X4 + b6X5 + b7X4 + b7X5]$$

where, Y = total variable cost incurred under the current condition

Xs = total number of southbound shipments

a1 = average forwarding agent fees per crossing

a2 = average Mexican brokers fees per crossing

a3 = average storage costs per shipment

a4 = average crossing fees per crossing (to Mexico)

a5 = average crossing fees per crossing (return to U.S. by drayage driver)

X1 = average hours driven (U.S. carrier driver)

X2 = average hours driven (local/drayage driver)

X3 = average hours of wait time (engine idle)

X4 = average miles driven (U.S. carrier driver)

X5 = average miles driven (local/drayage driver)

b1 = average hourly burden (wage and benefits) of U.S. carrier driver

b2 = average hourly burden (wage and benefits) of local/drayage driver

b3 = average fuel cost per hour (idle)

b4 = average cost of tires per mile

b5 = average cost of maintenance per mile

b6 = average fuel cost per mile

b7 = average depreciation expense per mile

Most of the elements in this formula are self-explanatory. However, certain factors need clarification.

The average forwarding agent fees per crossing, a1, are paid in U.S. dollars, and include charges for such services as cargo classification, off-loading and reloading the cargo, actual customs clearance, and cargo verification. The average Mexican broker's fee per crossing, a2, is paid in Mexican pesos; the average storage cost per shipment, a3, depends on how many nights the cargo is stored; the average crossing fees per crossing to Mexico, a4, and the average crossing fees to return to the United States, a5, are paid in Mexican pesos. The hours driven by the U.S. carrier X1 varies according the length of the trip within the United States; the average hours driven by the drayage driver, X2, and the hours of wait time (engine idle) X3, can vary from 1 to several hours based upon the delays encountered at the crossing site.

Giermanski and Smith (1997) calculate the added costs for trans-U.S./Mexican truck shipments at Laredo, south-bound, based on shipments of goods by the automobile industry. This is the most efficient crossing at the border, due to the frequency of the shipments and the industry's capacity to cut deals with Mexican brokers. The cost elements for 1994 and 1995 are shown in Table 4.1.

Smith and Giermanski used the same model to calculate the total variable costs under NAFTA conditions, Ynafta. For in the same trans-U.S./Mexico truck shipments, the equation takes the form:

$$Ynafta = Xs\,[a1 + a2 + a4 + b1X1 + b3X3 + b4X4 + b5X4 + b6X4 + b7X4]$$

where,
- Y = total variable cost incurred under NAFTA conditions
- Xs = total number of southbound shipments
- a1 = average forwarding agent fees per crossing
- a2 = average Mexican brokers fees per crossing
- a4 = average crossing fees per crossing (to Mexico)
- X1 = average hours driven (U.S. carrier driver)
- X3 = average hours of wait time (engine idle)
- X4 = average miles driven (U.S. carrier driver)
- b1= average hourly burden (wage and benefits) of U.S. carrier driver
- b3 = average fuel cost per hour (idle)

b4 = average cost of tires per mile

b5 = average cost of maintenance per mile

b6 = average fuel cost per mile

b7 = average depreciation expense per mile

The model for the calculation of the total additional costs, Yadditional, can be derived by subtracting the total variable costs incurred based on NAFTA conditions (Ynafta) from the total variable costs incurred based on the current condition (Ycurrent). The model for calculating the additional costs is:

Yadditional = Ycurrent - Ynafta

Y additional = Xs[a3 + a5 + b2X2 + b4X5 + b5X5 + b6X5 + b7X5]

where, Y = total variable costs in addition to those under NAFTA conditions

Xs = total number of southbound shipments

a3 = average storage costs per shipment

a5 = average crossing fees per crossing (return to U.S. by drayage driver)

X2 = average hours driven (local/drayage driver)

X5 = average miles driven (local/drayage driver)

b2 = average hourly burden (wage and benefits) of local/drayage driver

b4 = average cost of tires per mile

b5 = average cost of maintenance per mile

b6 = average fuel cost per mile

b7 = average depreciation expense per mile

Smith and Giermanski inserted Yadditional into the model for the estimation of the total additional costs associated with trans-U.S./Mexico truck shipments made by the automotive industry in 1994. The model was modified to reflect the costs of the hourly wage burden of the drayage driver and the average costs of the tires, maintenance, fuel, and depreciation (b2, b4, b5, b6, and b7), which were already included in the crossing fees incurred returning to the United States by the

drayage driver. These additional costs, on an average per-trip basis, amounted to $82.50 and $85.36 in 1994 and 1995, respectively.

The average cost for crossing the border southbound in 1994 (Table 4.1) is over $400 for the automotive industry. The average cost for crossing the border for other less efficient industries, is higher. In 1998, the cost for border crossing southbound for general industry was between $350 and $750. However, the tendency of the cost for border crossing southbound in 1999 for all kinds of products is approximately $300 (Giermanski, 1999).

Table 4.1. Cost Element for trans-U.S./Mexican truck shipments, crossing Laredo south-bound

	COST ELEMENT	**1994**	**1995**
1.	Forwarding agent fees per crossing (a1)	$ 36.71	$ 22.20
2.	Mexican brokers fees per crossing (a2)	242.60	254.67
3.	Storage costs per shipment (a3)	12.15	12.40
4.	Crossing fees per crossing (to Mexico) (a4)	74.31	80.77
5.	Crossing fees per crossing (returning to U.S.) (A5)	70.34	74.96
	Total	436.11	445.00

Note: Weighted Average of Selected Aggregated Costs (stated on a per-trip basis).
Source: Smith and Giermanski (1997)

In an unpublished paper, Giermanski (1999) estimated border crossing costs for 1999, for all kinds of cargo, for low and high values (Table 4.2). It is difficult to quantify who pays what due to the privacy of the deals each shipper negotiates with the Mexican broker. However, the more savvy the shipper and more frequent the border-crossing operations, the higher the possibility that the southbound border crossing costs are on the low side of the $275 to $600 range, according to Table 4.2.

Table 4.2. Estimated Border Crossing Costs Southbound per Truck Shipments 1999

Description United States Side	**Low**	**High**
U.S. forwarding Agent on the U.S. Border	USD	USD
Classification, Inspection, Verification of freight	110	300
Unloads and Reloads trailers as needed	90	150
Arranges for Shuttle/drayage/transfer	75	150
Description Mexican side	Border Based Broker-10% I.V.A. on services	
Mexico Broker	Temporary Import/In-Bond	Definite Import
Fees are based on Ad Valorem of Commercial Invoice Value		
1.Fee on entry Summary (pedimento)	(75.00+150.00)x.0045%	75+200+.0045%
2.Import Duties (range from 10,15,20%)	10%	20%
3.Value Added Tax (VAT/IVA)		15%
4.Customs Processing Fee (MPF.DTA)	$13	$13
5.Mexico Customs Intensive Examination	$90-200	$90-200
1,2,3,4 are compounded and not cumulative		
1 Adjusted quarterly by U.S. Customs.		

Source: Giermanski, Fall 1999.

The estimated border crossing costs for northbound truck shipments are similar but less, since the Mexican broker's charges are in pesos and the U.S. Customs brokers' charges are less.

4.6 Border Crossing Costs

This section explains how the charges are configured based on information I obtained during discussions with Dr. Giermanski at Laredo in February 1999, through telephone conversations, and e-mail in June, 1999 which I corroborated through interviews with shippers, officials and consultants. The Mexican broker's invoice includes the cost of his forwarding agent(s) on the U.S. side for southbound shipments into Mexico. The following is a general description of the charges. The structure of the charges vary somewhat from broker to broker. In general, however, the charges are divided into three groups:

1. Disbursements (*desembolsos, gastos comprobados*). Disbursements are usually related to out-of-pocket expenses with an invoice to support the disbursement such as freight, duties, and other expenses like the Merchandise Processing Fee (D.A.T), the Value Added Tax (I.V.A.) Prior to November 11, 1991, the Mexican Value-Added Tax (I.V.A.) was 15 percent ad valorem. On November 11, 1991, it was reduced to 10 percent. On April 1, 1995 it was increased again to its current value of 15 percent.

2. Accessorial charges (*gastos complementarios*). Accessorial charges are for general expenses/overhead related to messenger services, faxes, telephone calls, and other import-related costs such as the Customs entry documents and processing. However, there is a direct relationship to the invoice value: the higher the value, the higher the charge. On average, this charge is in the US$ 100 to US$150 range.

Broker's commission (*honorarios*). The broker's commission is the fee charged by the broker to handle the entry. To date, most Mexican brokers are charging their fees and commission under the old government regulated rates even though the Mexican Customs brokers were officially deregulated in June, 1989. The broker's fee is found by multiplying the sum of the commercial invoice plus disbursements by .0045. The Mexican broker's total invoice is calculated by adding all three sections: disbursements; accessorial charges; and the broker's fee. The result is multiplied by 10 percent (I.V.A.) for brokers who practice on the border (a special consideration for border brokers), and by 15 percent for those brokers headquartered outside the border zone.

Table 4.3 shows that in 1999 the cost for border crossings northbound for the general industry was between $150 and $500, or 65 percent of the cost of border crossings southbound.

Table 4.3 Estimated Border Crossing Costs Northbound Truck Shipments

Description Mexico Broker	Exports on In-Bond (TIB)	Exports (Definite)
Fee on Export Entry Summary (pedimento)	($40-75)+.18%AdValorem	($75-150)+.45% AdV
Drayage/Shuttle/Transfer	75 - 150	75 - 150
Unloads and Reloads trailers as needed	75 - 150	75 - 150
Mexico Customs Intensive Examination	100 - 200	100 - 200
Description U.S. Broker	Low	High
Fee for Entry/Entry Summary	45	85
Duties		
non NAFTA	2.5%	5%
NAFTA	0%	2.5%
Merchandise Processing Fee (MPF)		
Non-NAFTA (Ad Valorem: .21%w/$25-485)	25	485
NAFTA (Ad Valorem: .19%w/ $21- $400)	21	400
Preparation of Bill of Lading	00	15
U.S. Customs Intensive Examination	50	200

Source: Giermanski, Fall 1999.

Each Mexican broker is unique, making it difficult to estimate accurately the typical or average costs of crossing the southern border of the United States. Some state that they utilize only a flat monthly fee, regardless of the number of crossings. Others claim they use a flat fee for each crossing regardless the value, difficulty in crossing, or complexity of the shipment. Despite the alleged disparities among brokers, interviews, reviews of invoices of Mexican brokers, and documents show a similarity and consistency among crossing charges. Smith and Giermanski obtained empirical data for the actual costs of crossing by certain shippers from the major three U.S. auto manufacturers on the condition that this information not be released to any particular one of the manufacturers. Therefore, they aggregated their data to reflect the average of costs for this industry for two consecutive years (1994 and 1995). Some Mexican brokers who are uncomfortable with these findings for 1994 and 1995 argue that while these costs seem accurate for the years studied, costs are coming down.

Additional research done by the International Trade Data System (ITDS) Office of the U.S. Treasury Department finds, on average for all ports nationally, the typical broker's fee is $143.86 per transaction, which represents solely the filing of paperwork. This very limited and relatively low fee is consistent with only one segment of the costs charged by the

Mexican broker, the accessorial charge. The ITDS study also revealed that there is an additional "burden-hour-cost" to the shipper of an average of $144.51 to the shipper to utilize paper entries supporting international trade transactions in 1997, amounting to $3.2 billion dollars nationally (ITDS 1998 pp. 2-10 to 2-13.) This figure is likely to be low. The U.S. treasury and Pennsylvania State University, which cooperated in the federal report, show no actual specific data for the southern border of the United States.

Finally, Smith and Giermanski reviewed selected large brokers on the estimated costs of southbound and northbound crossings for both truck and rail on the southern border of the United States. Their findings were consistent with all data obtained to date on crossing costs. In general, the average minimum crossing costs (including drayage and bridge fees) either north or south by truck or rail, ranged from US$300 to US$500. The minimum northbound rail costs ranges between US$150 to US$250. The maximum crossing either north or south by truck and south by rail ranged from US$600 to US$800. The maximum average costs for rail northbound ranged from US$500 to US$700.

While these charges can be fairly well documented by actual invoices when provided, the Mexican broker and his U.S. forwarding agent routinely deny these high charges and state that the minimum ranges from US$65 to US$150, with a maximum of only US$200 to US $250 for truck or rail. No documents or records were provided to confirm these relatively inexpensive charges, and the brokers' claims which are not consistent with empirical data supported by actual invoices and research.

In sum institutional constraints have maintained a system of high costs and inefficiency for nearly a decade. In the absence of institutional reform, there is an incentive to find ways to circumvent some of the barriers to efficiency and exploit some of the latent competitive forces within the system.

There is some empirical evidence that costs are decreasing slightly, for the following reasons: (1) more competition among the Mexican drayage firms whose drivers can return with cargo; (2) U.S. shippers are learning to obtain better prices through negotiations with

Mexican brokers; (3) more Mexican brokers have been licensed by the Mexican government, increasing competition among them; and (4) Mexican brokers are buying U.S. forwarding corporations, since U.S. rules allow foreigners to own U.S. forwarding agencies if one of the officers is a U.S. Customs broker.

4.7 A Network Representation of the Laredo Border Crossing

Smith and Giermanski present a model of the 1995 cost factors for automotive products involved in the southbound border-crossing operation. However, they do not analyze the times involved in each step of the border crossing system. Since these times are very important for the current research, I adapt and update the Giermanski-Smith model to analyze the transportation of manufactures across the border. I apply the new model using a hypothetical example of a shipment from Chicago to Monterrey.

The first goal of the application is to quantify the times and costs of each step of the border crossing system. The second goal is to identify the bottlenecks and measure their impacts on the border crossing system, in terms of time and costs. These include: (1) trucking from Chicago to Laredo; (2) handling costs and associated times of Mexican broker inspections for pre-clearance and storage; (3) costs of loading and unloading; (4) drayage costs and times of border crossing transport; (5) inspections in the U.S. and Mexican sides; and (6) trucking from Nuevo Laredo to Monterrey.

The third goal is to locate the most serious congestion- causing constraints in the Laredo border crossing, including infrastructure limitations, business practices, bureaucracy, and regulations.

Figure 4.1 shows the movements of a truck transporting manufactures from Chicago to Monterrey. Table 4.4 shows the times and direct transport costs for the Laredo crossing south-bound. These costs exclude indirect costs such as pedimento, duties, taxes, and broker's commissions. Figure 4.1 and Table 4.4 shows that the transport of a trailer with manufactures from Chicago to Monterrey (1750 miles) entails 10 movements of four

Figure 4.1: Current Situation Scenario

Break-down of Costs and Times Crossing the Border South-bound

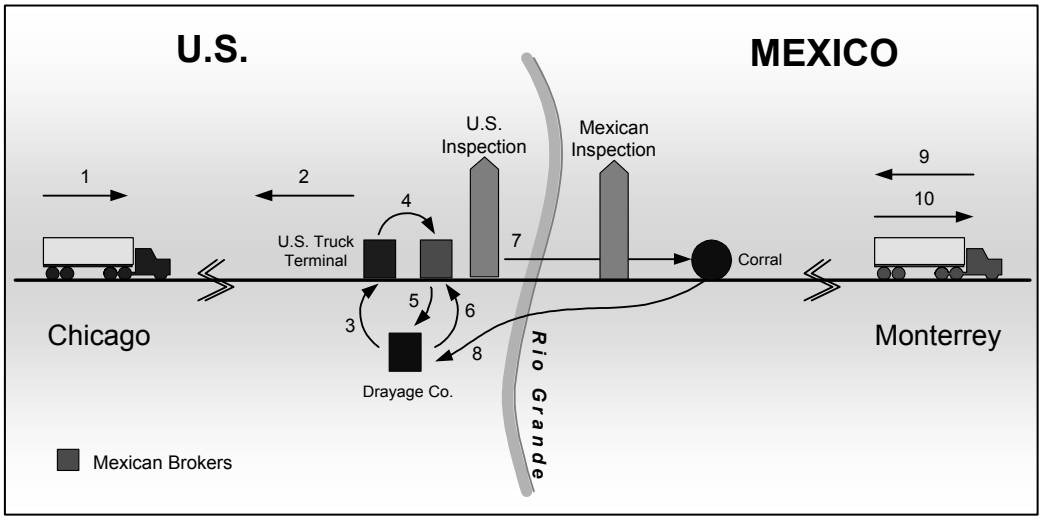


Table 4.4: Current Situation Costs and Time

	CURRENT SITUATION			
	Costs (US$)		Time (hours)	
	Low	High	Low	High
United States side				
Trucking Chicago-Laredo	1,338	1,343	30.0	51.0
Warehouse ($12/night)	12	36	12.0	72.0
Inspection, classification, verification	110	300		
Unloads and reloads as needed	90	150		
Drayage	75	150		
US inspection			0.0	1.0
Congestion, waiting time			0.0	8.0
Others				
Totals US	***1,625***	***1,979***	***42.0***	***132.0***
Mexican side				
Mexican inspection			0.0	2.0
Unloads and reloads as needed			0.1	0.3
Trucking to Monterrey	188	210	2.5	3.0
Others				
Totals Mexico	***188***	***210***	***2.6***	***5.3***
Total US & Mexico	***1,813***	***2,189***	***44.6***	***137.3***

Source: Figure and Table by the Author.

different trucks and various pieces of equipment for loading and unloading. The U.S. long-haul truck is barred from crossing into Mexico, so the U.S. driver leaves the trailer in a U.S. trucking terminal facility movement 1)and returns working with or without trailer (movement 2). If there is a team of drivers, the trip from Chicago to Laredo takes 32 hours, plus or minus two hours; a driver working alone takes about 48 hours, plus or minus three hours (Martinez 1999; Weid 1999). The freight bill varies from $1,338 to $1,343, depending on the carrier. The trailer with cargo to Mexico is moved to the Mexican broker's warehouse facility by a drayage truck (movements 3 and 4). There, the cargo is inspected, counted, and assessed by the Mexican broker to complete the pre-clearance process for entry into Mexico. This process can take from 12 hours to 74 hours. The charges include: warehouse, $12/night; inspection, classification, verification, ($110-$300); unloading and reloading, ($90-$150); and drayage ($75-$150) for a total of $287 to $636.

If the U.S. trailer is going into Mexico, there must be an interline agreement between the U.S. trucking company and a Mexican trucking company. Once the pre-clearance process is completed, another drayage truck is called to transfer the trailer through U.S. inspection, cross the bridge, go through Mexican inspection and, finally, enter a designated "coral" (movement 7). The drayage truck returns to the United States with or without cargo or trailer (movement 8). The drayage service charge ranges between $75 to 150. Mexican brokers do paper work in the morning so the trucks are released at about the same time for crossing in the early afternoon. The worse congestion is between 1:30 p.m. - 7 p.m.

In the corral, a Mexican trucking company picks up the trailer (movement 9) and drives the 150 miles to Monterrey (movement 10). This takes from 2.5 to 3 hours and costs from $188 to 210. The total charges range from $1813 to $2189.

Figure 4.2 and Table 4.5 show the current situation scenario and the break-down of costs and times crossing the border north-bound.

These figures reflect the inefficiencies in the Laredo border crossing system and raise several questions. If the time and costs of the border crossing far exceed efficient levels,

Figure 4.2: Current Situation Scenario

Break-down of Costs and Times crossing the Border North-bound

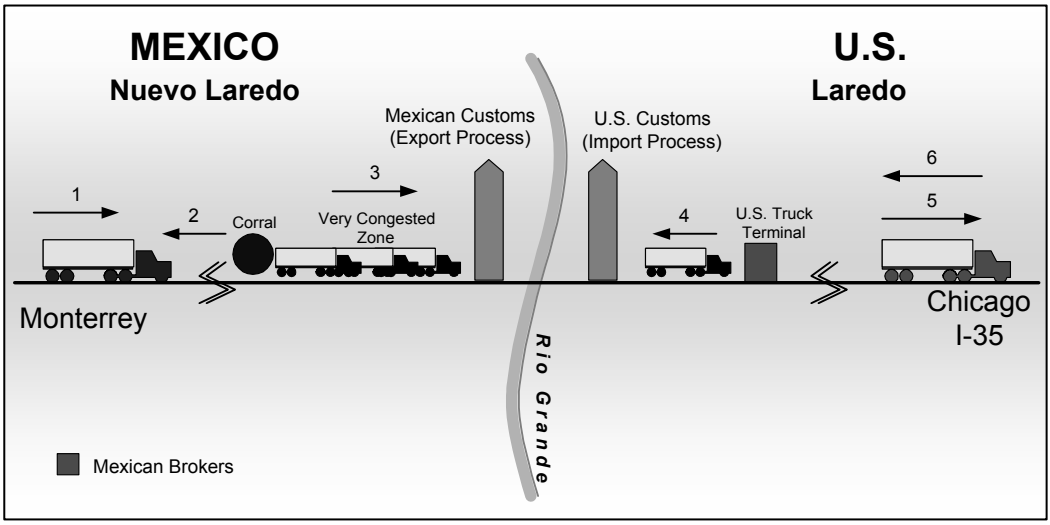


Table 4.5: North Bound Costs and Time

	NORTH BOUND			
	Costs (US$)		Time (hours)	
	Low	High	Low	High
Mexican side				
Trucking Monterrey-Border	188	210	2.5	3.0
Unloads and reloads as needed	75	150	0.3	1.0
Drayage	75	150		
Mexican inspection			0.0	2.0
Totals Mexico	***338***	***510***	***2.8***	***6.0***
United States side				
Congestion, waiting time			1.0	6.0
US inspection			0.0	4.0
Unloads and reloads as needed			0.3	0.5
Trucking to Chicago	1,338	1,343	30.0	51.0
Totals US	***1,338***	***1,343***	***31.3***	***61.5***
Total US & Mexico	***1,676***	***1,853***	***34.0***	***67.5***

Source: Figure and Table by the Author.

and could be reduced, why has the system remain so inefficient for so many years? Why is the current border crossing system so distant from economic reality? Why does it take longer to travel a few miles near the border than from Chicago to Laredo, which are 1500 miles apart?

Geographic distance in the United States costs about a dollar a truck mile. The cost of distance is somewhat higher on international routes both north and south of the border. But the inefficiencies in the Laredo border crossing system make the Rio Grande a very broad river. If border crossings add several hundred dollars of costs, the Rio Grande is, from an economic perspective, several hundred miles wide. The trucking provisions of NAFTA, if implemented, would have the economically equivalent effect of moving Mexico northward by shrinking the economic distance of the Rio Grande to something nearer its physical dimension.

4.8 Effect of the Border Crossing Inefficiencies on Trade Flows

In previous chapters this research identified and quantified the microeconomic impact of the inefficiencies of border crossing on shippers. There is of course a secondary impact on overall trade, harder to measure because many other variables affect overall trade. The working hypothesis of this research is that an efficient border crossing, with other factors, promotes free trade. The motive for free trade is to create wealth and promote expansion and interaction of economic markets. This in turn leads to more wealth through greater specialization, competition, and more efficient combinations of factors of production. This also lowers total costs of production and distribution, along with the costs of all associated services and research and development.

Prior Chapters demonstrate that substantial border crossing inefficiencies remain in spite of NAFTA. They benefit specific interest groups, while the extra costs and times affect trade in the form of higher prices paid by the importer that eventually are passed on to the consumer.

This section presents a brief review of the literature on border economies and border effects within the NAFTA countries, including a review of econometric models for measuring the effects of imposing import duty on trade. Then, the GTAP model is used to simulate the reduction of border crossing inefficiencies to see what the effects are in the trade between United States and Mexico. To simulate the reduction in border-crossing costs, I use the GTAP model to simulate augmenting technical change for products imported into Mexico from the United States.[9] The experiment reports the impact on welfare in each of the regions as well as changes in relative trade flows.

The following scenarios are investigated: a) the Mexican tariff on U.S. and Canadian products is increased by the measured friction of border crossing inefficiencies (money paid by shippers for charges for non-essential border crossing services; and b) an iceberg tariff to account for the value of time it takes to cross the border. Then the experiment involves simultaneously removing both (a) and (b). The experiment reports the impact on welfare (EV) as well as relative trade flows.

4.8.1 Overview of Previous Work on Border Economy

Rogers and Smith (2001) observed that "in perfectly integrated markets, prices of similar goods ought to be equalized, when those prices are denominated in a common currency. If the price in one location rose substantially above that in another, market forces would tend to move prices back towards equality. However, empirical studies uniformly find large deviations from such a benchmark." This is the case for the NAFTA countries where prices of traded products present big differences, especially U.S.-Mexican relative prices.

Rogers and Smith (2001) estimated the "border effect" on U.S.-Mexican relative prices using consumer price indexes from cities in the U.S., Canada and Mexico, and found that it

[9] The technical implementation of this type of productivity=augmenting shock is laid out in Itakura and Hertel (2001). In some sense, this does overstate the benefits of removing the impediment. In the real world, there are certainly those who benefit from the presence of these border frictions. Here we treat the entire friction as a deadweight loss eliminated by productivity-augmenting change, but in reality certain aspects of the frictions resemble a privately-collected tariff accruing on to certain interests at the border. The time lost in transit, though, can justly be characterized as a pure deadweight loss.

is nearly an order of magnitude larger than for U.S.-Canada price differentials. They present evidence on alternative explanations of the large border effect for pairs involving Mexican cities. These explanations include sticky prices and variable nominal exchange rates; formal or informal barriers to trade; and labor markets, marketing networks and distribution networks.

They present evidence that the U.S.- Mexican prices differential is not primarily due to the differences in U.S.-Mexican wages. Using the prices of 276 highly disaggregated goods and services, they estimated the variability of declines during the stable peso sub-period. The variability on goods and services prices fell by less than the variability of nominal and real exchange rates. Their results are strong evidence of a "nominal border effect" in relative prices within NAFTA that are not explained by the exchange rate differences or the U.S.-Mexican wages.

Rogers and Smith (2001) indicate that other real external influences are important:

1. Even after NAFTA is fully implemented and eliminates formal barriers to trade within the member countries, there are important informal barriers to trade.
2. Marketing and distribution networks are more homogenous within countries than across borders, due in part to language, cultural differences, and tastes. Because of these factors, markets are segmented and prices can differ for identical products across locations.
3. Labor markets are more integrated within countries than across borders, and this contributes to a large border effect on prices.

Although Rogers and Smith mention generically in (1) the informal barriers to trade, they do not provide any substantive analysis regarding their nature, impacts, and how they are established and maintained.

Engels and Rogers (2001) also mention the informal trade barriers that exist, even after NAFTA, as one possible explanation for the relatively large border effect for pairs involving Mexican cities, again without identifying or explaining them.

The advent of NAFTA in 1993 reduced formal trade barriers and was supposed to result in a smoother border crossing. However, the price difference between the United States and Mexico during NAFTA has been higher than in previous years when the exchange rate was more stable. This raises the hypothesis that the non-formal trade barriers have increased after NAFTA, decreasing the positive impact of the reduction of formal trade barriers.

The border crossing inefficiencies found at Laredo are important informal barriers to trade and a partial cause of the "real border effect", as are exchange rates, wages, corruption, and the psychological effect of dealing with a market that has a different culture, language, legal and institutional system.

Hummels (1999) estimates that language effects are a significant trade barrier and that speaking a common language lowers costs by an average of 5 percent. The price premium indicates that importers will pay a 3 to 5 percent premium to trade with partners of a common language and 1 to 3 percent premium to trade with contiguous border partners.

The growth of trade between United States and Mexico over the past 15 years has been impressive, but the restrictions on cross-border trucking generate congestion, long waits and extra costs. Both producers and consumers bear the burden of higher transaction costs. The result is that U.S. surface trade with Mexico continues to be markedly more expensive than U.S. trade with Canada, the United States' other NAFTA partner.

4.8.2 Implications of Cross-Border Inefficiencies in U.S./Mexico Trade

The time to cross from Laredo to Nuevo Laredo, a 10mile trip, usually takes from 2-5 days and may take longer, and the border crossing services cost between $287 – $636/truck. The border crossing services times and costs include handling costs and associated times of

Mexican broker inspections for pre-clearance and storage; costs of loading and unloading; drayage costs and times of border crossing transport; inspections on the U.S. and Mexican sides. These are non-tariff barriers that affect trade. What are the implications of these inefficiencies?

A simple calculation of the microeconomic impact of these extra costs of south-bound border crossings shows that the impact is apparently minimal: $285-$636 of border crossing costs/ trailer, with an average cost of $30,000 cargo/trailer represents from 0.95% to 2.12% percent. But there are also hidden costs: the time waiting to cross, the uncertainty of time the process takes, pollution, congestion from border crossings with empty tucks, corruption, investments in unnecessary infrastructure, and the cost of maintaining the infrastructure. An increase of 1% to 2% in the costs due to border crossing inefficiencies is insufficient to explain the big price differences observed between United States and Mexico. A more important reason is possibly the time involved.

Hummels (2001) estimates indicate that each day saved in shipping time is worth 0.8 percent ad-valorem for manufactured goods. Applying this estimate, and considering that manufactures have to wait in Laredo from two to five days to cross the border southbound, this is equivalent to a tariff from 1.6 percent to 4 percent or more, according to the number of days the cargo has to wait to cross the border.

The border crossing inefficiencies in the southbound trade between U.S and Mexico are equivalent to explicit tariffs from 1.8 percent to 6 percent (1- 2% of extra costs charged by Mexican Customs for unnecessary services and 0.8 % per day waiting to cross the border). The northbound crossing from Nuevo Laredo to Laredo takes less time (1.5 hour – 13.5h) and costs less money ($150 – $300). Hummels (2001) estimates that each additional day spent in transport reduces the probability that the United States will source from that country by 1 –1.5 percent. This would help explain why vested Mexican interests have introduced border delays in only the southbound direction.

Because of the nature of trade between the United States and Mexico, the removal of the frictions in border crossing will facilitate the integration of the economies of these countries in a more efficient way. Reducing the time and the cost involved in shipping products will help the "just in time process" liberating inventory-holding and depreciation costs on shippers. These border crossing frictions have pronounced implications for trade and the international organization of production.

The United States sources its imports from all over the world. Efficient border crossing operations are important in the northbound crossing, otherwise Mexico risks decreasing its participation in the U.S. Market. This explains in partly explains why the inefficiencies that exist in the southbound crossing are not present in the northbound crossing to the same extent.

The delays are a major contributor to the price difference between the United States and Mexico, introducing extra time, uncertainty and difficulties to manage "just in time" inventories in the industrial processes, impeding a more efficient combination of the factors of production. This is more a question of integration of the economies (medium and long term) and not of trade (over 80 percent of Mexican imports come from the United States and the bilateral trade has grown to $240 billions in the year 2001).

4.8.3 The General Trade Analysis Project (GTAP) Model

I apply the GTAP model and database to measure the implications of border related trade barriers and to model how reductions in the costs surveyed might impact trade volumes. The experiment was developed with the assistance of Alan Fox (2002).

Over the last several decades Applied General Equilibrium (AGE) models have become an important tool for analyzing economic issues due to their capability to provide an elaborate and realistic representation of the economy, including relationships among all agents, sectors and other economies.

The GTAP model is a multi-regional AGE model which captures world economic activity in 57 different industries and 66 regions (Version 5 of the database). The underlying equation system of GTAP includes two different kinds of equations. One part covers the accounting relationships to ensure that the receipts and expenditures of every agent in the economy are balanced. The other part accounts for the behavioral equations which are based on microeconomic theory. This is pure simulation that indicates what is the optimal outcome of supply and demand.

GTAP is used for the analysis because it includes all the economic factors emphasized in general equilibrium trade theory, versus the partial equilibrium modeling which focuses on a more limited set of factors, such as few products and policy variables.

The GTAP model employs the Armington assumption in the trading sector which provides the possibility to distinguish imports by their origin and explains intra-industry trade of similar products. Thus, imported commodities are assumed to be differentiated from domestically produced goods and combined in an additional nest in the production tree. The elasticity of substitution in this input nest is equal across all uses. The firms decide on the sourcing of their imports and based on the resulting composite import price, they then determine the optimal mix of imported and domestic goods.

The GTAP model has been used by many economists to measure the effects and the impact of new trade agreements. For example, Hertel, Walmsley, and Itakura (December 2001) used a modified version of the GTAP model to evaluate the impact of the FTA between Japan and Singapore on production, consumption, trade international investment flows, GDP and welfare. They found that the impact of the FTA on investment, capital accumulation and economic growth is significant- particularly in Singapore. They assert that the global benefits from the proposed FTA are substantial, and all regions of the world gain from this agreement, 70 % of the gains are captured by Japan, which is the region undertaking most of the reforms. They focused on the implementation of the FTA considering the “new age” features such as - e-commerce and automating customs procedures – which added facilitate the recognition and calculation of added benefits to

other regions and global gains. They recognize that one of the limitations of their study was that they omitted the effects of liberalization of direct trade in transport services, where non tariff barriers are potentially quite large. Even in the e-commerce era, products have to be delivered and transported. Non-tariff barriers involved in the transportation services, specially crossing borders, have a big impact not only on trade flows but also on the welfare of the nations.

4.8.4 The Experiment: Simulating Removal of Trade Frictions at the U.S.-Mexico Border

In this experiment we implement the measurement of inefficiencies or border crossing frictions in the U.S.-Mexican border at Laredo, the main crossing point. Inefficiencies here are defined as money paid by shippers for charges for non-essential border crossing services and the times involved in each step of the border crossing operation. Using the border friction measurements of Haralambides, Londoño-Kent (2004), we simulate their removal as import-augmenting technical change in the GTAP model.

The model used is the GTAP model, version 6.0. An aggregate data set is constructed with 5 countries and 11 sectors, as indicated in Table 4.6.[10]

Haralambides and Londoño-Kent's surveys have indicated that trade frictions on truck-based imports from the United States to Mexico are approximately equal to a 5% tariff, while northbound trade faces the equivalent of about a 1% tariff due to similar frictions. In order to properly assess the welfare impact of these frictions, we divide the border effect into two components: an iceberg tariff to represent efficiency losses and a normal tariff to represent border frictions where rents can be captured. In Table 4.6, those sectors predominantly shipped by truck are indicated with an asterisk.

The iceberg tariff captures the inefficiencies of lost time in transit. Following Hummels (2001), we attribute a cost of 0.8% per day to southbound, truck-based trade. We calculate

[10]The GTAP aggregation file is available by request from the authors.

Table 4.6: Model Regions and Sectors

RegionsSectors[i]	
Mexico	Food and Agriculture*
United States	Coal, Oil and Gas
Canada	Other Primary Production*
European Union	Motor Vehicles and Parts*
Rest of World	Petroleum, Coal Products
	Minerals and Metals
	Electronic Equipment*
	Other Manufacturing*
	Transport, NEC
	Sea and Air Transport
	Services and Activities, NES

*Sectors included in set *T*, commodities predominantly shipped by truck.

that 3% of the 5% barrier to southbound trade is due to the iceberg tariff, while the remaining 2% can be modeled by a Mexican-imposed tariff on imports from the United States. The barriers to northbound trade are considerably smaller, although nontrivial. The 1% barrier is divided in a similar manner, with 0.75% attributed to a Mexican-imposed export tax, and the remaining 0.25% modeled as an iceberg tariff imposed on U.S. imports from Mexico.

In order to simulate the benefits of removing the costly customs brokerage barriers, we first take the aggregated data set and then recalibrate it to include the import tariff and export tax for U.S.-Mexico trade. This involves adjusting tms(*T*,US, Mex) and txs(*T*,Mex,US) such that the tariffs in the database are 2% and 0.75% higher, respectively. *T* denotes the set of traded commodities predominantly carried by truck between the United States and Mexico.

There is no need to make any similar adjustment for the iceberg tariffs that are to be removed.[11] The variable ams, representing import-augmenting technical change and introduced in version 6.0 of the GTAP model, allows us to simulate the removal of an iceberg tariff by applying a positive shock to the technical efficiency of the trade flow. Essentially, truck-borne goods imported into Mexico become 3% more "efficient" from the Mexican consumer's point of view, while U.S. imports become 0.25% more efficient for the U.S. consumer. Since there are no revenue implications with ams, there is no need to recalibrate the benchmark model.

4.8.5 Results

Table 4.7 shows a detailed breakdown of the experiment. A summary of the welfare impact of the results of this experiment is given in Table 4.8. We can see that under these assumptions, the potential benefits from liberalization are substantial for the U.S. and Mexico. Total welfare for Mexico is projected to rise by about $1.8 billion, while the United States benefits slightly less, with an anticipated rise in welfare of about $1.4 billion. The improvement in Mexico's welfare is due, unsurprisingly, to the technical efficiency gains from reducing time in transit (iceberg tariffs). As with all preferential trading arrangements, this bilateral improvement in efficiency leads to some allocative losses from trade diversion. Mexico, too, suffers a modest loss of welfare due to the terms of trade effect, again unsurprising given Mexico's market power in a model with Armington preferences. Investment and savings rise as the returns to capital rise, leading to a modest increase in welfare.

The United States sees a similarly positive outcome, but for different reasons. The reduction in Mexican border frictions leads to a modest increase in allocative efficiency. The gains from technical change from the removal of the iceberg tariff are much smaller

[11] See *A Note on Changes Since GTAP Book Model (Version 2.2a/GTAP94)*, Ken Itakura and Thomas Hertel, Center for Global Trade Analysis, Purdue University. This is available as GTAP Resource Number 721, http://www.gtap.org.

Table 4.7: Experiment Structure

	*Variable shocked**	
Barrier	*Southbound*	*Northbound*
Lost time	? ams(*T*, US, Mex) = +3%	ms(*T*, Mex, US) = +0.25%
Brokerage frictions	? tms(*T*, US, Mex) = -2%	xs(*T*, Mex, US) = -0.75%

**T* is the set of commodities shipped predominantly by truck. See Table 1.

than that for Mexico. However, the iceberg being removed is only one-twelfth the size of that faced by southbound shipments. Mexico's declining barriers also lead to a substantial improvement in the terms of trade for the United States, contributing about $1 billion to the U.S. increase in welfare. Investment and savings effects are about the same as in Mexico, modestly improving the overall number.

The welfare impacts for the other countries/regions in the model, however, are negative. Allocative efficiency worsens because of the trade diversion between Mexico and United States (although Canada faces little trade diversion). Terms of trade effects and investment and savings effects are also negative, since both are zero-sum welfare impacts. The global impact is still positive, though, thanks to the improvement in technical efficiency through the shortening of delays at the U.S.-Mexico border.

Trade flows between the United States and Mexico increase substantially thanks to the removal of the border frictions. Quantities traded rise substantially in most sectors, and the total value of trade increases by about $1 billion northbound and $6 billion southbound. Table 4.8 shows quantity changes, both in value at base-year prices and in percentage terms. The total change in value of goods and services traded is listed in the final row of Table 4.9. The largest relative expansion in U.S. imports occurs in motor vehicles, with the quantity of imports from Mexico rising by about 5.5%. Electronic Equipment shows a similar increase of about 4.75%. Mexican imports see their greatest increase in Motor Vehicles and Parts, rising by over 16%, while imports of Other Primary Production rise by over 13%. The most substantial increase in *value* of Mexican-bound trade occurs in Other

Table 4.8: Welfare Impact of Friction Removal (millions of 1997 dollars)

Region	*Allocative*	*Technical Change*	*Terms of Trade*	*Investment and Savings*	*Total*
Mexico	-137	1962	-82	83	**1826**
USA	73	185	1003	98	**1360**
Canada	-3	0	-75	-7	**-85**
EU	-107	0	-344	-36	**-486**
Rest of World	-137	0	-503	-138	**-779**
Total	-312	2147	-1	-0	**1834**

Table 4.9: Changes in Trade Flows Resulting from Friction Removal

Sector	***Mexican imports from the United States***		***U.S. imports from Mexico***	
	Chg. (mill.)	***Percent***	***Chg. (mill.)***	***Percent***
Food and Agriculture*	419	8.62	-66	-1.40
Coal, Oil and Gas	1	0.70	-35	-0.46
Other Primary Production*	68	13.16	-3	-1.15
Motor Vehicles and Parts*	1230	16.16	763	5.52
Petroleum, Coal Products	-4	-0.30	-1	-0.37
Minerals and Metals	-26	-0.73	22	0.56
Electronic Equipment*	880	7.64	709	4.76
Other Manufacturing*	3339	9.29	-345	-0.88
Transport, NEC	-0	-0.03	-4	-0.94
Sea and Air Transport	-1	-0.32	0	0.01
Services and Activities, NES	7	0.37	-11	-1.20
Total (? viws)	6055	8.78	1055	1.21

*Commodities predominantly shipped by truck and subject to liberalization.
Note: The full aggregation file is available on request from the author. the total does not equal the sum of the column above. Note also the rest of the table lists changes in *quantity*, the variable qxs. In the post-simulation environment, however, aggregating across different sectors requires taking into account the relative price changes that have also occurred. Therefore, we provide the sum of viws, the value of import flows.

Manufacturing ($3.4 billion in value, not listed in the table). The substantial increases in trade flows are all concentrated in the sectors that use truck transportation and hence subject to removal of significant non-tariff barriers to trade in the simulation.

5 Simulation Scenarios of the Laredo Border Crossing

You cannot solve a problem
with the same level of
thinking that created it
- Albert Einstein

5.1 Introduction

Chapter 3 discussed the Laredo cross point. Chapter 4 reviewed the models and approaches available to quantify border crossing costs and formulated an economic model for the analysis of truck transportation and border crossings at Laredo. I assigned costs and times to each activity of the actual cross-border operation and identified the most serious bottlenecks. Chapter 4 also reviewed institutional and behavioral approaches that help explain high costs, inefficiencies, and non-optimal, rent-seeking behavior.

In this current chapter, I integrate the quantitative concepts into an economic model that I use to simulate solution scenarios of border crossing improvements. I then examine the institutional question of why the inefficiencies have persisted over a long period despite a legal framework (NAFTA) based on economic rationality.

In the first section I present scenarios of improved border crossing operations including: (1) the full implementation of NAFTA provisions; (2) the implementation of International Trade Data Systems (ITDS); (3) truck leasing between an American trucking company and a Mexican trucking company; and (4) intermodal (combination of truck and train). In the second section I present planned improvements in infrastructure projects and to evaluate their impact on border crossing times and costs. In the third section I present a quantitative analysis of the results with an interpretation of the subproblems, and examine the intriguing question of why the high costs and delays have remained so high over such a long period.

5.2 Simulation Scenarios

5.2.1 Introduction

In this section I develop scenarios that simulate improvements in the most serious bottlenecks identified in Chapter 3, particularly the congestion caused by drayage services, the multiple movements of trucks, unnecessary loading and unloading operations, Mexican brokers' business practices, and government inspections.

The different scenarios are based on the sequence of operations followed in crossing the border and simulated changes in the system and business practices.

5.2.2 NAFTA

Under NAFTA, at 12:01 a.m. on December 18, 1995, the borders of Mexico and the United States were supposed to open to permit access by both nations' motor carriers to their border states. The implicit assumption was that, when this occurred, the drayage system would disappear or change significantly enough to improve the cargo flow between the two countries. Figure 5.1 represents the movement of manufactures from Chicago and Monterrey under these assumptions.

Table 5.1 presents NAFTA scenario, a breakdown of approximate costs and times involved in the example of transporting manufactured items from Chicago to Laredo (excluding the duties, taxes, and commissions paid to the Mexican brokers). The Table shows savings in the range of US$287 - US$ 636, or 16-30 percent less than the present total costs of a truck from Chicago crossing the border south-bound. The time savings are even more dramatic, between 12 and 76 hours, or 27 - 58 percent less than current total truck times.

The NAFTA ideal scenario represents faster equipment turnover and additional savings in capital investments. The cost and time saving in the NAFTA scenario are due to avoiding payment to the Mexican brokers for warehousing, inspection, classification, and verification, unloading/reloading, and drayage, along with the delays this process imposes on shippers. The elimination of drayage by itself would reduce vehicle movements by 50

Figure 5.1:NAFTA Scenario

Break-down of Approximate Truck Costs and Times

Crossing the Border at Laredo - Southbound

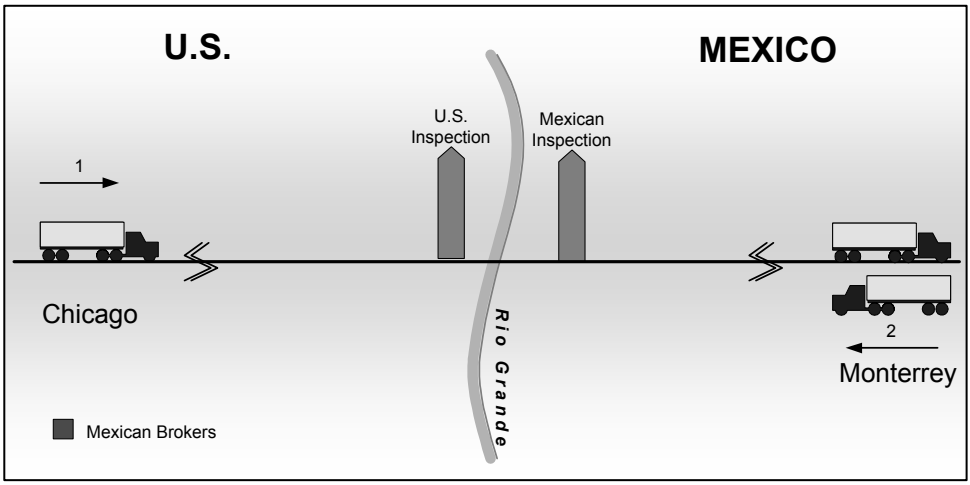


Table 5.1: NAFTA Scenario Costs and Time

	WITH NAFTA			
	Costs (US$)		Time (hours)	
	Low	High	Low	High
United States side				
Trucking Chicago-Laredo	1,338	1,343	30.0	51.0
Warehouse ($12/night)	-	-	0.0	0.0
Inspection, classification, verification				
Unloads and reloads as needed	-	-		
Drayage	-	-		
US inspection			0.0	1.0
Congestion, waiting time			0.0	4.0
Others				
Totals US	***1,338***	***1,343***	***30.0***	***56.0***
Mexican side				
Mexican inspection			0.0	2.0
Unloads and reloads as needed	-	-		
Trucking to Monterrey	188	210	2.5	3.0
Others				
Totals Mexico	***188***	***210***	***2.5***	***5.0***
Total US & Mexico	***1,526***	***1,553***	***32.5***	***61.0***
Potential Savings	***287***	***636***	***12.1***	***76.3***

Source: Figure and Table by the Author.

percent or more, given the many unnecessary empty truck trips crossing back and forth across the bridge. It would reduce congestion even more.

However, the United States unilaterally decided not to grant entry to Mexican trucks (Chapter 1), arguing that they were not safe enough to transit U.S. roads. This would have been an argument for technical inspection and training. Politically, the Clinton administration catered to the Teamsters Union's interest in protecting the jobs of its members, fearing competition from Mexican drivers.

As an unstated *quid pro quo*, the Mexican brokers' situation remained unchanged. This means that all southbound trucks with goods must stop on the U.S. side of the border before crossing, and the drayage industry continues unaltered. The incentives for the trucking industry are against change on both sides of the border. Unless the Mexican government decides to change the pre-clearance requirement for the entry of trucks with goods into Mexico, the situation will remain the same. The U.S. firms will probably use Mexican drivers and equipment for the part of the trip in Mexican territory.

Giermanski (2000) explains that there are four ways of avoiding the Mexican broker: (1) *transito interno* (bonded shipment); (2) *use of a recinto fiscal* (bonded warehouse at the border side); (3) *Rule 98* which lets the importer accept responsibility directly with Mexican customs; and (4) *use of recinto fiscalizado* (now a foreign trade zone site like AND plus). These four ways to avoid chaos, brings the intriguing question, why does it exist? There is the possibility that the ways to avoid the Mexican brokers are not known by the shippers, transporter and importers.

5.2.3 International Trade Data System (ITDS)

The ITDS is another border crossing alternative. The objective of ITDS is to facilitate and promote global trade by addressing the problems of the current trade processing environment. ITDS can reduce costs, enhance enforcement and compliance, and improves the quality of international trade and transportation data. ITDS meets this vision through

standard commercial- based data, common business functions, elimination of redundant and confusing processing, improved risk assessment, convenient access to process requirements information, improved data editing and validation, and an integrated electronic environment.

ITDS supports four U.S. government roles within the international trade environment:

1) *Border* operations, which include the processing of conveyance, crew and goods, duties, taxes, and fees at U.S. ports of arrival and departure.
2) *Licensing and permitting,* which includes verification of export licenses, visas, import licenses, and permits.
3) *Statistics, analysis, policy, and reporting,* which provide more timely and accurate data for imports and exports to assist in economic forecasting, analysis, and trade negotiations.
4) *Trade promotion,* which provides U.S. business with access to more accurate information to identify potential business opportunities.

The following section describes how the ITDS border crossing could operate and how the standardization and harmonization of data between Mexico and the United States could facilitate the border crossing operation.

Using my earlier example, the originator of a shipment in Chicago, (the manufacturer or the exporter), files electronically a commercial document that contains the information of the commercial invoice, the DUNS (unique number system). This commercial document file is sent to: (1) the U.S. export broker, who appends it to the file the U.S. export government requires, and sends it to the U.S. government export agencies; they process the results and hold them pending the export of the goods; (2) the Mexican import broker, who appends the file record of Mexican import requirements and sends this information to the Mexican import officials, who process and hold the results pending the truck's arrival.

The carrier files a transport declaration with two basic pieces of information: (1) an extract of the commercial invoice with the International Transaction Number (ITN); and (2) the shipping quantity. The transport declaration has information about: (1) the carrier's DUNS; (2) the driver's registration number or name and date of birth; (3) the truck license plate and container number; (4) and the transponder number (ABC). This transport declaration is sent by the driver to the government agency (Department of Transportation, Immigration, etc.), which checks the driver and trucking company information, assess the immigration status, and creates a pending arrival file.

There are three stages of processing an ITDS transaction: pre-arrival, arrival, and post-exit. The major steps for an entire ITDS transaction are:

(1) Pre-arrival Processing:
step 1: trade and transportation filers submit declaration data to ITDS;
step 2: ITDS edits and validates de declaration data;
step 3: ITDS sends response messages to trade and transportation filers;
step 4: ITDS sends relevant data to appropriate government agencies;
step 5: agencies process data;
step 6: agencies send processing results to ITDS;

(2) Arrival Processing:
step 7: carrier sends advance arrival notification to ITDS through DOT agency;
step 8: ITDS sends processing results to port of arrival/departure;
step 9: carrier sends arrival notification message to ITDS through DOT agency;
step 10: ITDS sends transaction status messages to agencies and filers;

(3) Post-Exit Processing:
revenue collection and data storage messaging (TBD).

When the truck approaches the U.S. side of the border, the transponder sends a signal: A green light for goods, truck, and driver means the truck, the cargo, and the driver can

continue without stopping. If the light is red, the truck has to stop for any of the following: driver - immigration; goods - Customs or government agency that have required the examination; the truck - Department of Transportation (DOT) (Nolle 1999).

The fees for crossing the bridge can be charged to the transponder's number account; therefore a truck receiving a green light does not need to stop during the border crossing process. The Mexican broker has received complete information in advance regarding the cargo and the transport; with this information, he can prepare the pedimento required for cargo to enter Mexico. The duties can be paid in advance or at the moment the truck enters Mexico. The Mexican broker submits the pedimentos electronically to Mexican Customs using the SAAI. The whole operation is the same as described in Appendix A, except for steps 8 (drayage, which is completely eliminated by ITDS), and 18 (Truck Corral, which is unnecessary because the same truck goes to Monterrey).

ITDS can yield substantial improvements in the times and costs of border crossings, as shown in Table 5.2. The major savings are derived from eliminating warehousing, unloading and reloading, and drayage, and reducing congestion-waiting time (since there are lanes exclusively dedicated to clear ITDS cargoes, so the truck does not have to wait).

If the transaction is not bonded, the Mexican Customs may inspect the cargo in case there is any cause for a red light (for either the goods of the transportation declaration). When the transaction is bonded, if there is any disparity, Mexican Customs claim the bond.

Comparing the current situation with the ITDS situation, the cost and time savings per truck crossing the border southbound under the ITDS scenario are in the range of US$ 287 - US$ 636 and 12.05 - 80.15 hours. Exporters state they are willing to pay more if they can get their cargo across the border faster. This makes the time issue the principal concern in the border crossing problem.

Giermanski (March 1998) describes the advantages of ITDS:

Table 5.2

Break-down of Costs and Times Crossing the Border South-bound

	ITDS			
	Costs (US$)		Time (hours)	
	Low	High	Low	High
United States side				
Truck Chicago-Laredo	1,338	1,343	30.0	51.0
Warehouse ($12/night)	-	-	0.0	0.0
Inspection, classification, verification				
Unloads and reloads as needed				
Drayage				
Change tag, driver				
US inspection				1.0
Congestion, waiting time				1.0
Bonds				
Others				
Totals US	***1,338***	***1,343***	***30***	***53***
Mexican side				
Mexican inspection				2.0
Unloads and reloads as needed				
Trucking to Monterrey	188	210	2.5	3.0
Others				
Totals Mexico	***188***	***210***	***2.5***	***5.0***
Total US & Mexico	***1,526***	***1,553***	***32.5***	***58.0***
Potential Savings	***287***	***636***	***12.1***	***79.3***

Source: Author's calculations based on data in text.

Clearly ITDS allows expedited movement of goods throughout North America and creates a seamless, easily monitored automated system that records statistical data in all three countries. ITDS reduces and eliminates certain types of paperwork and clearance delays, reduces congestion through pre-arrival processing, and improves the timeliness of communication regarding the cargo-clearance process among customs authorities and trading partners.

Other indirect but substantial benefits for traders who participate in ITDS include quicker billing, reductions and elimination in long-term warehousing requirements and associated space costs, and lower fuel and maintenance costs. The biggest savings come from the diminished use of local border drayage and

the reduction or elimination of some transfer and customs brokerage fees, since shippers will be able to deal directly with the customs services.

ITDS is considered the best way to do business in the future. This system represents substantial changes in the business practices at the border crossing. The inspections also are facilitated due to the information the agents receive in advance so they can do their risk assessments and prepare in advance for the inspection. This system reduces substantially by eliminating drayage and local truck movements, facilitating the border crossing process.

Mexico, at cross-border points, is reluctant to completely endorse ITDS until the Mexican brokers find another way to maintain their incomes (Nolle, 1999). The banking industry would also be affected by ITDS. It has financed the construction of warehouses, so it needs assurances that the warehouses are going to be used and the loans repaid.

5.2.4 Intermodal

This scenario assumes a truck driving from Chicago to the free trade zone in San Antonio, 50 miles north of Laredo. There, the truck unloads the container or the trailer in a rail yard, which is then loaded onto a unit train of 25 cars or more. A unit train is not required to stop at the border, except for changing the crew and locomotive at the middle of the bridge. Then the train goes to Monterrey. The total journey is 150 miles long (Horn 1999 and Nygren 1999). Figure 5.2 and Table 5.3 show the breakdown of costs and times crossing the border under the intermodal scenario.

For rail crossings, the Mexican crew does not come to the United States. Northbound, the cars of the train are pushed by a Mexican locomotive to the middle of the bridge, and from there a U.S. locomotive with a U.S. crew pulls it across, and vice-versa for south-bound.

The train then goes to the free trade zone in Monterrey for inspections. This cargo is under a provision in the Mexican law that allows the importer/shipper relationship to accept responsibility for compliance with aduana rules (rule 98, bonded cargo).

Figure 5.2: Intermodal Scenario

Break-down of Costs and Times Crossing the Border South-bound

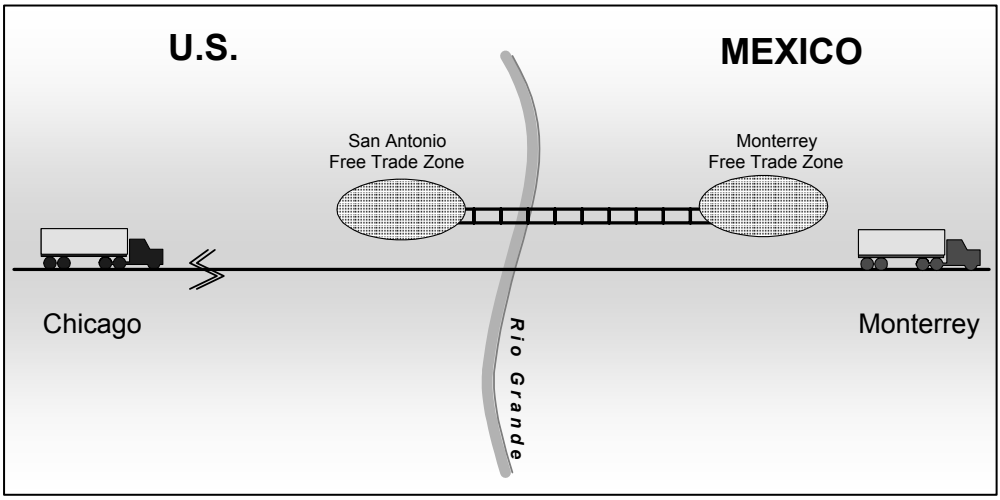


Table 5.3: Intermodal Scenario Costs and Time

	INTERMODAL			
	Costs (US$)		Time (hours)	
	Low	High	Low	High
United States side				
Truck Chicago-San Antonio	1,338	1,343	30.0	48.0
Warehouse ($12/night)	-	-	0.0	0.0
Inspection, classification, verification	-	-		
Unloads and reloads as needed	-	-		
Rail San Antonio-Border	200	300	2	5
US inspection				
Congestion, waiting time			3.0	24.0
Others				
Totals US	***1,538***	***1,643***	***35***	***77***
Mexican side				
Mexican inspection				
Unloads and reloads as needed				
Rail to Monterrey	98	113	4.0	10.0
Others				
Totals Mexico	***98***	***113***	***4.0***	***10.0***
Total US & Mexico	***1,636***	***1,756***	***39.0***	***87.0***
Potential Savings	***178***	***434***	***5.6***	***50.3***

Note: Rail freight between Mexican border and Monterrey calculated on a 65-75 cents per mile basis.

Source: Figure and Table by the Author.

There are currently problems with the intermodal system, such as security, but the principal concern is infrastructure, particularly at the border interchanges. At Laredo, the railroad system is constrained by having only a single track on the bridge; that track serves trains in both directions (north and south-bound). That limits train competition for cargo at border crossings. On both sides of the border, the inspections are less intensive for cargo arriving by train than by truck.

The provision of the right equipment is also a problem. Specific intermodal equipment is needed to service the ports of entry. There are also labor problems with the privatization process of the Mexican railroad, with strikes and slowdowns to protest staff reductions. These problems have partially offset the effort Mexican railroads are making to improve service for rail and intermodal users.

One practical problem is to convince shipper and the U.S. rail system to move trains for only 150 miles. U.S. and Mexican rail companies need to earn about US$ 200 per trailer from a point like San Antonio, to the border to find this traffic profitable. This fee is less expensive for the shipper than the average fee of border crossing by truck and can be time saving because trains don't have to stop at the U.S. border to be pre-cleared by Mexican brokers (Horn, 1999).

5.2.5 Leasing

This simulation assumes a U.S. truck and trailer driving U.S. cargo from Chicago to the U.S. side of the border, where the truck and trailer change to Mexican tags and get a Mexican driver who drives the truck and the trailer to the final destination in Mexico . The U.S. trucking company owns the equipment (truck and trailer) and has a leasing arrangement with a Mexican trucking company. The main concern of the U. S. trucking company is the security of the equipment. The U.S. and Mexican trucking companies work out an arrangement under which the U.S. trucking company can lease similar equipment from the Mexican trucking company, so at any point in time, if there are any problems (for example, in Mexico with the U.S. equipment) the U.S. trucking company withholds Mexican equipment of similar value, and vice-versa. Also they work out legal

aspects and insurance policies for both the equipment and the cargo to cover them in both countries (Barnhill, 1999).

The leasing arrangement permits the equipment to return with cargo from the country of destination to the country of origin. The trucking companies using the leasing agreement can also benefit from the four ways to avoid Mexican brokers mentioned before or employ the bond system. The advantages of the leasing agreement are: (1) to avoid the drayage service; (2) to reduce Mexican brokers' fees; (3) to enhance the trucking equipment. Figure 5.3 and Table 5.4 show the breakdown of costs and times crossing the border south-bound under the leasing scenario.

5.3 Infrastructure Projects

The most important changes to reduce congestion at border crossings are institutional issues and business practices. However, some improvements in border crossing infrastructure are also necessary.

5.3.1 Bridges and Access Roads

In addition to the Juarez- Lincoln and the Colombia bridge, a new bridge, called the World Trade bridge (bridge #4) was built in Tamaulipas, financed in part with an investment of approximately $128 million (NAFTA Works, May 2000), a $15 million contribution from the Mexican Brokers Association; American banks are also involved in financing the bridge (Dreyfus, 1999).

The border station costs US$ 60 million and is being financed by the City of Laredo. The access roads to the bridge cost US$ 90 million and are being built by the Texas Department of Transportation. This new bridge was partially open by April 2000, with 6 lanes in each direction.

Figure 5.3: Leasing Scenario Break-down of Costs and Times Crossing the Border South-bound

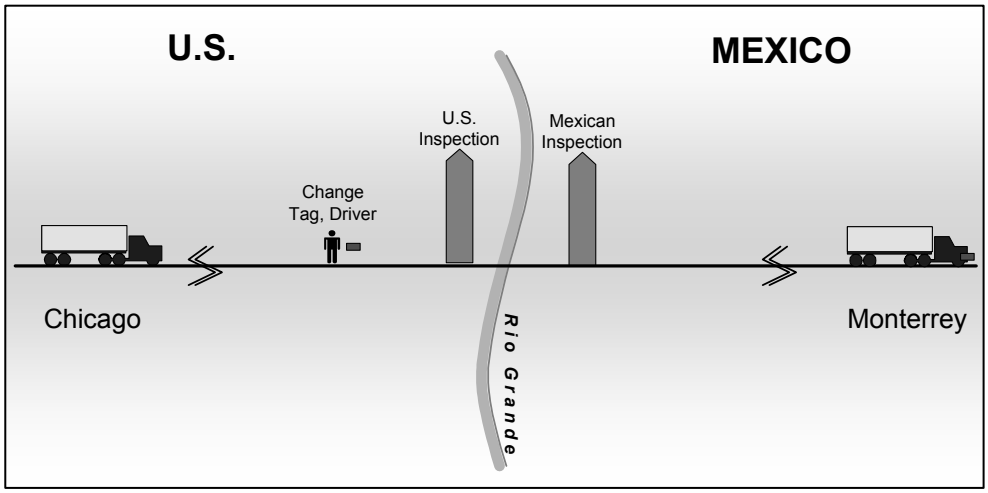


Table 5.4: Leasing Scenario Costs and Time

	LEASING			
	Costs (US$)		Time (hours)	
	Low	High	Low	High
United States side				
Truck Chicago-Laredo	1,338	1,343	30.0	51.0
Warehouse ($12/night)	-	-	0.0	0.0
Inspection, classification, verification				
Unloads and reloads as needed				
Drayage				
Change tag, driver			0.25	0.5
US inspection			0.0	1.0
Congestion, waiting time			0.0	4.0
Bonds				
Others				
Totals US	***1,338***	***1,343***	***30.25***	***56.5***
Mexican side				
Mexican inspection			0.0	2.0
Unloads and reloads as needed				
Trucking to Monterrey	188	210	2.5	4.0
Others				
Totals Mexico	***188***	***210***	***2.5***	***6.0***
Total US & Mexico	***1,526***	***1,553***	***32.8***	***62.5***
Potential Savings	***287***	***636***	***11.8***	***74.8***

Source: Figure and Table by the Author.

In September two additional lanes were opened, one in each direction. After April 2000, Bridge # 2 at Laredo was closed for all commercial traffic. The trucks are free to go either to Colombia Solidarity Bridge in Nuevo León or World Trade Bridge in Tamaulipas. Built on the outskirts of Nuevo Laredo and Laredo, this new bridge is expected to relieve the traffic congestion caused by a great number of trucks that until now had to go through the city of Laredo to cross the border. The construction of the bridge consolidates the city of Laredo as the most important point of entry for U.S.-Mexico trade.

The commercial traffic projected for Laredo Bridge #4 for the year 2,000 is 3,927 trucks/day northbound and 4,275 trucks/day southbound. The projected traffic for the Colombia Solidarity bridge in the year 2000 is 3,000 trucks/day northbound and 2,700 trucks/day southbound (Curtis, 1999). The construction of the World Trade bridge between Texas and Tamaulipas addresses the Laredo bridge infrastructure problem: urban and international trade traffic congestion. But the business practices of the Mexican brokers will remain the same and they are the major cause of congestion, as explained in Chapter 3. Chapter 6 examines the effort to solve the border crossing problem by constructing new infrastructure at Laredo.

5.3.2 The Railroad

Figure 5.4 presents a map of Mexico's rail system. The Mexican railroad privatization process has split the system into four parts. Part one is the North East Railroad (NER), privatized in June 1997 via a concession awarded to Transportacion Ferrovia Mexicana (TFM), a company owned by the Mexican transportation group (TMM) and the US railroad Kansas City Southern. NER has 80 percent of the total with 20 percent still held by the Mexican government with options for TMM to buy at a later date, for US$1.8 billion. The second stage was awarded the Pacific North Railway to Ferrocarril Mexicano (Ferromex), a grouping of Mexican industrial conglomerates, for a reported US$1 billion.

Figure 5.4: Mexican Railroad Network

Part three of the network was privatized late in 1998, and was awarded to US railroads. The final part is 7950 kms of track split up in to short line packages, due for concessioning early in year 2000.

The rail and the truck crossing procedures are vastly different. The rail cross-border system is closer to NAFTA's objective of eliminating barriers to cross-border trade (Ehinger 1999). Rail presents an interesting potential to compete with trucking, not only for border crossing but also over the long distances in Mexico.

6 The Attempt to Solve Institutional Problems with Improved Infrastructure

6.1 Introduction

This chapter examines the effort to solve the border crossing problem by constructing new infrastructure at Laredo: the World Trade Bridge with access roads and inspection booths at the Laredo crossing point. In the following sections I will describe the new bridge and discuss the principal characteristics of the Laredo border crossing problem, the various parties involved in the border crossing process, their objectives, and how they interact. Four different institutional/infrastructure scenarios are examined to assess the impact that institutional and/or infrastructure factors have on border crossing efficiency. I will compare operations near the Laredo bridge on the U.S./Mexican border with those near the Ambassador bridge on the U.S./Canadian border to show the institutional differences in the two border crossing systems and how they impact the flow of trade.

6.2 The World Trade Bridge

The new World Trade Bridge (Bridge #4) was recently built between Laredo, Texas and Nuevo Laredo, in Mexico. This new bridge is located on the outskirts of the two cities and is expected to relieve the traffic congestion caused by a great number of trucks that until April 2000 had to go through the city of Laredo to cross the border. The city of Laredo considers that the construction of the bridge will consolidate its position as the most important point of entry for U.S.-Mexico trade.

The total investment of the bridge was approximately $128 million (NAFTA Works, May 2000); it involved a $ 15 million contribution of the Mexican Brokers and financing of American Banks, the City of Laredo, and the Texas Department of Transportation. In addition, the city of Laredo financed the border station costs of US $ 60 million, and the Texas Department of Transportation financed the access roads to the bridge at a cost of US

$ 90 million. Thus a total of US $ 278 million was spent to solve the infrastructure problem and remove the truck traffic from the city of Laredo.

Six lanes of this new bridge were opened to traffic during April 2000, with 3 lanes in each direction. In September two additional lanes were opened, one in each direction. Bridge # 2 at Laredo was closed to all commercial traffic and is now open only for passenger cars and other light vehicles . Truck drivers are free to go either to the Colombia Solidarity Bridge to enter Colombia, Nuevo León, 15 miles west from Laredo, or the World Trade Bridge to enter Tamaulipas, 10 miles west from Laredo.

The commercial traffic projected for the World Trade Bridge for the year 2000 is 3,927 trucks/day northbound and 4,275 trucks/day southbound. The projected commercial traffic for the Colombia Solidarity bridge in the year 2000 is 3,000 trucks/day northbound and 2,700 trucks/day southbound (Curtis, 1999), for a total of 14,000 trucks/day crossing at Laredo.

6.3 The Infrastructure at the Laredo Crossing Point and Border Crossing Scenarios

The construction of the World Trade Bridge brings the total number of crossing lanes to 22 on four bridges: Laredo #1, 2 lanes; Laredo #2 or Lincoln- Juarez, 4 lanes; Colombia Solidarity, 8 lanes; and World Trade Bridge, 8 lanes (Figure 3.2). The projected traffic for the year 2000 at the Laredo border crossing is 14,000 trucks daily and 21,000 automobiles, and 24 buses (TDOT). This totals 35,000 vehicles (including trucks, buses and automobiles) crossing daily through 22 lines. I include the buses and automobiles to include their effect on the capacity of the Laredo bridges in the following paragraphs.

Table 6.1 shows the operating environment for the border crossing at Laredo under four scenarios.

Scenario 1 assumes no institutional reform and no new bridge that is, the situation prior to April 2000. There are 35,000 vehicles crossing on 14 lanes (Lincoln-Juarez Bridge, 4

Table 6.1: Bridge Operating Environment and Total Times for Border Crossings Under 4 Scenarios

Bridge Status	Operational Factors	No Institutional Reform	Complete Institutional Reform
No New Bridge		***Scenario 1***	***Scenario 2***
	Total Crossing Time	**12 - 83.5 hours**	**5 minutes - 3 hours**
	Infrastructure Lanes	14	14
	Bridge Operation	12 hours, 5 days/week	24 hours, 7 days/week
	Daily Crossings	35,000 vehicles	29,750 vehicles
	Trucks	14,000	8,750
	Automobiles and Buses	21,000	21,000
	Throughput Rate	208 vehicles/lane/hour	450 vehicles/lane/hour
New Bridge		***Scenario 3***	***Scenario 4***
	Total Crossing Time	**12.5 - 76 hours**	**30 minutes - 3.5 hours**
	Infrastructure Lanes	22	22
	Bridge Operation	12 hours, 5 days/week	24 hours, 7 days/week
	Daily Crossings	35,000 vehicles	29,750 vehicles
	Trucks	14,000	8,750
	Automobiles and Buses	21,000	21,000
	Throughput Rate	132 vehicles/lane/hour	450 vehicles/lane/hour

lanes, Bridge #1, 2 lanes, and Colombia Solidarity Bridge, 8 lanes). The bridges are open 12 hours/day; the throughput is 2500 vehicles per lane per day or 208 vehicles/lane/hour. Under the present institutional conditions and business practices, trucks do not have an even distribution, presenting high peaks that cause congestion from 1 p.m. to 7 p.m. This is due to the business practice of the Mexican brokers of clearing high numbers of trucks at the same time (usually after 12 p.m.), and the drayage industry that generates unnecessary truck crossings in both directions; 46 percent of these crossings are empties.

The Highway Capacity Manual (2000) indicates that a multilane highway or bridge has a capacity to carry up to 2000 cars/ hour/lane. If there is a lateral barrier, it reduces the capacity by 10 percent, to 1800 cars/lane/ hour. The conversion factor for trucks varies from a minimum of 1.7 to 4 in the worst case scenario, or 1800/1.7 = 1,058 trucks/lane/hour in the best case to 1800/4 = 450 trucks/lane/hour in a worst-case scenario.

The availability of only one lane can reduce the capacity further if there are breakdowns or other irregularities in the flow. The use of the conservative passenger-car equivalent factor of 4 should account for this in the following calculations. Inefficient toll-charging procedures can also limit bridge capacity.

As shown in Scenario 1 of Table 6.1, the throughput/lane/hour at Laredo Bridge # 2 is only 208 trucks, 46 percent lower than the capacity for the case with a truck having a passenger-car equivalent factor of 4. That is, a single lane with random dispatching of trucks would have excess capacity.

Figure 4.1 indicated that under this scenario, a trailer with cargo waits from 12 to 72 hours for inspection, classification, verification, unloads and reloads, and processing of papers. A drayage truck can wait up to 8 hours to cross a bridge southbound. Under this scenario it takes from *12 to 83.5 hours* to cross the border.

These calculations show that the congestion and delays presented at Laredo under the situation before the construction of the new bridge were not due to infrastructure capacity but to the institutional practices of inspection, classification, elaboration of papers, unloads and reloads of cargo, changes of equipment and business practices such as bunching the trucks in the afternoon hours and using the bridge only 12 hours per day, five days per week. Inefficient toll-charging procedures can also cause delays, especially when large numbers of trucks are released simultaneously by the Mexican broker.

Scenario 2 analyzes the capacity of Laredo bridges before building the World Trade Bridge, assuming a complete institutional reform leading to the levels of efficiency of an almost

seamless border crossing, as envisioned by NAFTA. A complete institutional reform would include 24 hours of bridge operation, seven days/week, standardization and automation of information and processes integration among the agencies within each country and among the two countries; drayage would be eliminated. This reduces 50 percent the amount of trucks crossing daily in each direction on Laredo from about 14,000 trucks to 7,000 trucks and assuming a 25 percent of empties due to the trade imbalance, the total number of crossings/day would be 8,750 trucks. Even using the most conservative capacity calculation of 450 trucks per hour, they could all cross in about 7 hours, with minimal bunching with the bridge open 24 hours. There would be no significant delays on the bridge or its accesses with institutional reform.

Under Scenario 2: no new bridge but complete institutional reform, the total time to cross the border would vary between *5 minutes and 3 hours* with government inspections on both sides of the border, versus *12 - 83.5 hours* in Scenario 1.

This shows that the congestion and long waiting times presented at Laredo before the construction of the new bridge resulted from the business practices and institutional and operational restrictions imposed on the border crossing system.

Scenario 3 simulates the current situation (post September 2000) includes the 8 lanes of the World Trade Bridge and assumes no institutional reform. With the same estimates of traffic for year 2000, the throughput is 1,591 vehicles/lane/ day or 132 vehicles/lane/ hour. This indicates a very high excess capacity for all 22 lanes, since each lane could carry 1,800 cars/hour or from 450 to 1,058 trucks/hour. Under these conditions, there is no traffic congestion, even with the present inefficiency of the border crossing system. The current situation at Laredo indicates that the new bridge is taking away business from the Colombia bridge, but that is because Customs increased the number of personnel for inspections. The World Trade Bridge alone has the capacity to handle 3,600 - 8,472 trucks/hour.

Under Scenario 3, in spite of the new bridge, without complete institutional reform, the total time it takes a truck to cross the border is between *12.5 and 76 hours* vs.*12 - 83.5 hours* under Scenario 1. The only reduction is 7.5 hours of waiting time due to congestion presented before the construction of the new bridge. The time used in waiting for papers, processes of inspection, classification, verification, changing equipment, and loading and reloading are the same. Also, trucks have to go 30 additional miles in order to access the World Trade Bridge, thus increasing the cross border time an average of 30 minutes. Under Scenario 2: no new bridge and a complete institutional reform, the time to cross the border would be from *5 minutes to 3 hours*; with Scenario 3, the new bridge but no reform, it takes from *12.5 to 76 hours.* The length of the time to cross the border with the new infrastructure demonstrates that the institutional and legal constraints are the cause of the problem.

Scenario 4 simulates the World Trade Bridge and complete institutional reform. The full capacity of the 22 lanes of bridge, if open 24 hours, and with a complete institutional reform would be 950,000 passenger car equivalents/day or 237,600 to 559,152 trucks per day or any intermediate combination of cars and trucks. Even with bunching accounting for only the equivalent of 8 hours at capacity, 317,000 cars or from 79,200 to 186,000 trucks could pass daily.

Under this scenario, the total time to cross the border varies from *35 minutes to 3.5 hours,* still slightly more than Scenario 2 without the new bridge but with complete institutional reform, where time would vary from 5 minutes to 3 hours.

6.4 Comparison of the Present Situation at Laredo with the Ambassador Bridge on U.S/Canadian Border

Table 6.2 presents a comparison of the present situation at Laredo (Scenario 3) with the situation present at the Ambassador bridge on the U.S./Canadian border.

At the Ambassador Bridge in Detroit, approximately 16,000 trucks and about 32,000 vehicles (cars, other light passenger vehicles and a few buses), cross the bridge daily for a

Table 6.2: Comparison of the U.S./ Canadian Crossing at Ambassador Bridge with the U.S./Mexican Crossing at Laredo (Scenario 3)

	Factors	U.S./Canadian Border	U.S. Mexican Border
Infrastructure Factors	Number of Lanes	4	22
	Cars and other light vehicles	32,000	21,000
	Trucks	16,000	14,000
	Total Vehicles	48,000	35,000
	Throughput rate	450 trucks - 1,800 cars/lane/hr	132 vehicles/lane/hour
	Bridge Capacity	43,200 trucks - 172,800 cars/day	118,800 trucks - 475,200 cars/day
Institutional Factors	Time of Operation	24 hours/day, 7 days/week	12 hours/day, 5 days/week
	Bonded Shipments Permitted	yes	no
	Pre-Clearance Requirements	no	yes
	Inspections	yes	yes (more intensive)
	Drayage	no	yes
	Empty Trucks	25%	46%
	Trust Between the two Countries	yes	no
	Free Operation of Truckers and	yes	no
	Brokers in Both Countries	no	yes
	Seasonal Traffic Surges	no	yes
	Access Time Requirements for Specific Products	no	yes

total of 48,000 vehicles (Zeigler, 2000). This is greater than the approximately 14,000 trucks and 21,000 cars that cross to and from Mexico daily via Laredo for a total 35,000 vehicles per day (TDOT). Both the number of trucks and the number of cars are greater on the Ambassador Bridge than at Laredo.

The Ambassador Bridge is a toll bridge and has only four lanes, which trucks share with passenger vehicles, and operates 24 hours/day, seven days/week. As noted, Laredo has four city-owned bridges, totaling 22 lanes and operating only 12 hours/day; previous to the recent opening of the World Trade Bridge, there were 3 bridges with 14 lanes.

In Detroit, the bridge is congested at times, especially around 12 Noon, but there are no lines of vehicles downtown, nor hundreds of warehouses nearby. About 25 percent of commercial vehicles crossing the bridge are empty. In Laredo, there are more than 300 warehouses located near the bridges; and about 46 percent of the commercial vehicles crossing the bridge are empty (Giermanski, 2000).

The Ambassador Bridge has more traffic than all four Laredo bridges combined. Yet it has only 4 lanes versus the 14 previously available in Laredo and the 22 lanes now available. The problem is not the infrastructure, but the institutional barriers to an efficient crossing on the U.S.-Mexican border. The inefficient procedures for these include federal and state inspections of cargo and motor vehicles, limited hours of bridge operation, and limitations on the operations of trucks in each country.

6.5 Characteristics of the Laredo Border Crossing Problem.

In Chapter 4, I defined ten characteristics of the Laredo Border crossing problem, only two of which are related to infrastructure: (i) border crossing infrastructure limitations, such as insufficient access roads to the Lincoln-Juarez bridge; only I-35 is available (4 lanes in each direction) and it is in the middle of the City of Laredo whose urban traffic aggravates congestion; and; (ii) the limited capacity of some inspection areas, which aggravates congestion.

The construction and operation of the World Trade Bridge removes the infrastructure limitations. Crossing the World Trade Bridge does not present the physical problems presented by Bridge # 2, which is located at the edge of the city of Laredo. There are no lines of trucks waiting for hours to cross the bridge because Customs has finally decided to

open up 5 lanes for Customs processing. This was an institutional decision, not an infrastructure solution.

Though the trucks have to go 30 extra miles on both sides of the border, which adds at least 30 minutes to transit time, now the trucks do not have to wait up to 8 hours to cross the bridge. However, the extra distance truckers must travel diminishes some of the gains from eliminating the "normal" level of congestion (that which is not caused by institutional inefficiencies that resulted in bunching).

Regardless of all the new infrastructure, the delays and extra costs on the U.S. - Mexican border still persist due to the lack of integrated and automated processes within each country and the lack of integrated processes and standardized data between the United States and Mexico. It still takes between 12.5 to 75.5 hours to cross the border and requires at least two equipment changes. The eight operational and institutional problems remain.

6.5.1 Operational Factors

1. Operational restrictions on the trucking operations in each country. The unilateral decision of the United States to suspend the implementation of the NAFTA provision that allowed trucks and buses to operate in the trans-border market, reciprocated by Mexican restrictions on use of U.S. trucks in Mexico, complicates the border crossing operation and generates the usage of drayage with numerous equipment changes and unnecessary trips across the border. This unilateral U.S. decision undermines the ability of the U.S. government to protest restrictions imposed by Mexican practices at border crossings.

2. Excessive stops, when combined with equipment changes, interrupt the transport flows and make the cargo more susceptible to damage, loss, and tampering; they also generate pollution (much pollution from diesel engines comes from acceleration and working under heavy loads).

3. Bridge operation restricted to 12 hours/day, 5 days/week, instead of 24 hours/day, 7days/ week.

4. There are certain products that must cross the bridge at specific times; failure to cross during that window means more delays. These business practices create a peak crossing period from about 1:00 p.m. to 7:00 p.m., which overburdens customs personnel on both sides. In Laredo, Mexican customs brokers do not handle border crossings late at night or early in the morning, even though customs authorities have said they would extend their hours of operation if the brokers and forwarders would use extended hours.

6.5.2 Institutional Factors

1. The lack of integrated processes within each country and among the two countries complicates the inspection processes of the different governmental agencies involved in the international trade operations. The inspections take place at the border and they generate part of the operational problems described in item 2, section 6.4.1.

Each institution has its own culture and bureaucracy. Each blames the others for the inefficiency; they have great difficulty sharing data with one another. On the U.S. side, the different agencies do not collaborate on electronic clearance procedures to speed crossings because they do not want to share data with other agencies. The best technology in the world is available but the officials do not want to use it. Each institution defends its own territory, has no particular interest in speed, and feels little pressure to be efficient. The agencies blame each other for delays to shippers (Samuel, Sept. 2000). The various government institutions dealing with international trade on both sides of the border impose a burden on the trade community to file Government international trade forms. These cause delays and congestion in the inspection areas and add costs and time from paper work.

Haughton, et al. (1997) calculated the cost to the trade community of filing international trade forms as an average cost of $143.86 per transaction.

The documentation required for each institution involved in international trade, such as Customs, Department of Agriculture, Drug and Enforcement Administration, Department of Transportation, and the Department of Immigration in each country, is redundant and

presents problems even if high technology is used in the process. The computers of each agency are not compatible with those of other agencies; there is a lack of trust or interest in sharing information; there is interest in keeping information confidential. Due to the reduction of tariffs, U.S. Customs' importance as revenue collectors has diminished. A consequence of this is that they have lost their influence and have now chosen to preserve their power by controlling access to or sharing of information (Nolle, 2000).
In Mexico, the documentation required for trade is enormous, the inspections are done manually, take time, and create delays.

2. There are no integrated processes between the United States and Mexico. The cultural environment on the U.S.-Mexican border, characterized by language and racial differences, distrust, and the pressure on U.S. customs to cut the northbound flow of illegal drugs and aliens, and on Mexican Customs to prevent contraband from entering that country, are causes of delays on the border.

3. The legal institutional restrictions and procedures imposed by Mexico and tolerated by the United States are still in place. As explained earlier in Chapter 3, the Mexican custom broker is legally responsible and liable for the content of shipments entering Mexico from across the border. Therefore, the process used by the Mexican customs broker is more rigorous than on the U.S. side. On the other hand, Mexican Customs' practices require that products exported from the United States entering into Mexico by truck have to be pre-cleared, and pay the tariff or duty before entering Mexico. The Mexican brokers are the only ones allowed to forward freight into Mexico. This gives the Mexican brokers a very powerful position. U.S. truckers must unload their cargo at Laredo warehouses, owned by Mexican brokers. The Mexican brokers and their forwarding agents in the United States clear the cargo through the processes of counting, identification, and classification of the goods for assigning the proper tariff on the *pedimento,* which is executed by the Mexican broker.

If any required document does not accompany the cargo, the forwarding agent waits for the U.S. exporter to send them. While the cargo is in the Mexican brokers possession, he

informs the importer that the goods are ready on the U.S. side for entry into Mexico. At this point, the Mexican importer must pay any duty or taxes owed along with the Mexican broker's fee for all the services rendered before the Mexican broker will authorize its agent to release the shipment. Typically, the paperwork takes from 2 to 5 days, even more depending on the season. During this period, the cargo is stored in a warehouse paying daily fees. Additionally, some Mexican brokers may hold an importer's payment in the bank to earn interest, while the forwarding agent may hold trailers on the U.S. side to earn storage revenue (Giermanski, 1999).

If there was complete institutional reform, the two to five days time would be reduced to near zero for truckers even without the World Trade Bridge. Congestion delays were created by institutional restrictions that caused enormous bunching of trucks.

4. Lack of leadership in the private and public sector to promote change. The political cost of a complete institutional reform is high and in times of political elections candidates are not willing to take the risk to alienate voters. Politicians from Texas have a very strong interest in preserving the status quo. Improving efficiency at the border crossing is of little importance for non-Texan politicians.

6.6 Local Interest in Improved Infrastructure

The new World Trade Bridge solves only the congestion-waiting time to cross the bridge. The long times and high costs of crossing the border and continuing the journey remain.

The construction of the World Trade Bridge between Texas and Tamaulipas provides an enormous excess capacity. It also relieves the urban traffic congestion and the pollution emitted by trucks in the City of Laredo. By getting the new bridge and shifting other functions out of the center of the city, Laredo eliminates the negative externalities without losing the economical benefits created by the inefficiency. These benefits accrue to: (i) Mexican brokers who provide warehousing, inspection, and classification services on the U.S. side of the border; (ii) the Laredo/Nuevo Laredo drayage industry; (iii) U.S. bankers that finance the construction of the warehouses and benefit from the effects of spending in

the local economy; (iv) the state and municipal governments on both sides of the border who receive extra toll payments; (v) the Mexican states that receive a share of Customs tax collections and import duties; and (vi) the entire regional economy that provides goods and services to the above economic agents.

The interest in constructing infrastructure rather than solving the institutional problem is not confined to Texas. Bud Shuster, the U.S. Congressman who is Chairman of the House Transportation and Infrastructure Committee, has been investigated and accused by the House ethics committee of bringing "discredit to the House of Representatives" by accepting improper gifts from infrastructure and transportation lobbyists (Eilperin, 2000). He has been tied to questionable contracts that benefit a group of road builders in the United States (Samuel, 2000). More importantly, he masterminded passage of the largest highway bill in U.S. history by assigning projects to every congressperson's district except those who were disposed to vote against the bill (Washington Post 2000). Similar processes obviously affect the willingness of Texas to build unneeded infrastructure rather than undertake institutional reform. Public works stimulate the local economy.

ITDS offer the best available technology and ideals for an efficient border crossing. Laredo can have state of the art infrastructure. However, if the agents involved are not interested in changing their practices, there is little positive impact that technology and infrastructure can have on time and costs involved in crossing this border.

7 Summary, Conclusions, and Discussion

7.1 Summary and Conclusions

7.1.1 The Context of the Study

This research examined the economics of border crossing of goods transported by truck between the United States and Mexico from the aspects of theoretical efficiency and institutional barriers to achieving such efficiency. The general objective is to provide a conceptual framework for understanding the economics of cross border trucking problems in the trade between the United States and Mexico, a pre-requisite for achieving free trade among these two countries.

This research outlined previous work on transfer arrangements on border crossings in Europe and North America. Europe's trading arrangements are further advanced, both in terms of formal agreements and the level of intra-regional trade. Most of this trade can be explained by the size of the members of the European Union (EU), their level of development, proximity, and common borders. The European Union accounts for 30 percent of gross world product.

Church and Reid provide the conceptual elements of the "new institutionalist" perspective to examine the broader effects of trans-frontier regions on political analysis in Europe. The terms "institutional thickness" and "territorial embeddedness" are used by the institutionalists to assess the way individual organizations and networks contribute to the process of regional and urban change. Institutional thickness reflects the relationships between old and new structures as institutional legacies create frictions for newly emerging entities.

The number of studies reviewed of cross border activity in Europe do not explicitly analyze or even comment on transport. They implicitly consider it subject to local initiatives. They address the social, economic, and policy decision-making processes that give an overview of the intricate nature of trade transport across borders.

Canada and the United States are a good example of two geographical units that share such links as similarities of culture, legal systems, language, race, economic institutions and development, and capital. These factors help to create a comfortable trading environment; having a trusting relationship facilitates border crossing activities and boosts their bilateral trade.

The U.S.-Mexican case is unique since interdependency covers virtually every aspect of the sociopolitical and economic spectrum, while the cultures, economic political and legal institutions, and social policies are diverse, along with the frameworks, which is not characteristic of the previously studied border-specific cases. This diversity presents serious challenges to Mexican and U.S. negotiators in their efforts to harmonize the trade facilitation policies across the borders. Furthermore, the convergence, or institutional thickness found in the EU and the U.S.-Canadian border crossings, has not occurred in the U.S.-Mexican case. This requires additional economic theory to elucidate the causes of the cross-border problem.

The U.S.-Mexican case also differs from the European context by having the world's longest border between a highly industrialized country and a developing one, 1,933 miles, traversing four U.S. states and six Mexican states. There is some limited cultural and economic integration between the two countries. The population of the U.S. border states is 10 percent of Mexican ancestry and shares some of Mexico's cultural values and attributes.

Mexico is a very important trade partner of the United states. The total population of Mexico is 100 million people, with 50 percent under 25 years of age. Mexico City alone (25 million people) has as many people as all of Canada. In ten years this younger generation will be demanding goods and services. Both countries would therefore also benefit substantially from optimizing efficiencies in transport movements and associated logistics of cross-border trade. The U.S.-Mexican border features sharp differences in economic development, language, legal tradition, culture, and race. In addition, Mexico is a major source country for drugs smuggled into the United States, along with illegal aliens.

Because the differences of culture, language, and race, a war in which Mexico lost half its territory to the United States, and other armed conflicts, there is little trust between the two countries.

7.1.2 The Economic Problem

The conceptual framework for conducting this investigation was the hypothetical model of border crossing assumed by the North American Free Trade Agreement (NAFTA). NAFTA took effect in January 1, 1994. In a formal sense, NAFTA expanded trade links between Canada, Mexico, and the United States, eliminated barriers to cross-border trade in goods and services and established rules guaranteeing the permanent access of each country's domestic products to the other North American markets (Izquierdo 1998, p.1).

Trucking became one of the most disputed elements: NAFTA did not specify how trade would be administered by the government agencies of the three NAFTA countries. The implicit assumption was that it would take only one truck and minimum time to go from point A in the United States to point B in Mexico and vice-versa. In reality, however, it takes two days to go from Chicago to Laredo, a 2000 mile trip, while to cross the border from Laredo, Texas, to New Laredo, Mexico, just across the Rio Grande, it often takes from three to five days and at least four pieces of equipment and three drivers. Obviously, there is a large gap between NAFTA's underlying assumption and reality. Some of the processing of trade movements are long standing practices of governments, others are established by transportation interests, Customs brokers and the traditions of other trade businesses.

The non-tariff barriers were inadequately addressed by NAFTA. The implementation of NAFTA provision that allowed buses and trucks to operate in the trans-border market, was unilaterally suspended by the United States, undermining the U.S. ability to protest restrictions imposed by the Mexican on border crossings.

Trade between the two countries has grown from US$27 billion in 1982 to an estimated US$220 billion by 1999. Trucking is the primary form of transportation in the trade between the United States and Mexico, with roughly 85 percent of this freight by value.

Due to the overriding importance of trucking, this mode is the focus of this research, although trains are recognized as competitors. The other modes represent rather limited movements between the two countries. Except for air, they consist primarily of bulk items whose value-to-weight ratios are low.

Under the formal provisions of NAFTA, the border crossing should be seamless, clear and efficient. This would mean one truck and one driver from point A in the United States to point B in Mexico. In reality, restriction of crossing truck operations creates great truck congestion. The current arrangement requires one or two transfers into terminals on each side of the border. A complex border crossing system exists despite NAFTA and creates delays and extra costs that are non-tariff barriers to trade. The present border system presents obvious inefficiencies that have persisted since 1994 and now extend into the new millennium.

7.1.3 Results

The research has found substantial inefficiencies in the border crossing process, and has quantified their costs in dollars and time, along with the benefits of an efficient border crossing by truck in terms of:

a) how improvements in border crossing procedures will affect trucking costs;
b) the impact in the trucking industry and type of operation;
c) the competitiveness of trucking, against rail. It has also defined and analyzed the factors that explain the differences between the economically efficient solution and the reality found at the Laredo border crossing.
d) the impact of the border related inefficiencies on trade flows and the welfare of the U.S. and Mexican economies.

Based on the working hypothesis that an efficient border crossing, with other factors, promotes free trade, I identified an efficient or a seamless border crossing as a function of:

A: Adequate infrastructure to serve demand for transport: bridges, access roads, governmental inspection facilities, commercial infrastructure

B: Lack of institutional constraints

C: Homogeneous government systems

D: Cultural factors: language, race, economic development, legal and political system.

Under these conditions, I found evidence to reject the following null hypothesis:

H_o : Formal NAFTA provisions will lead to an efficient border crossing. I accepted the alternative, H_a : NAFTA provisions will not lead an efficient border crossing. A border that could be crossed in 15 minutes (or a maximum of 4 hours with inspection) requires three to five days, three drivers, and at least four pieces of equipment.

7.1.4 Comparisons of EU, U.S.-Canadian and U.S.- Mexican Borders

As Fujita, Krugman and Venables (1999) stated, the real world is anything but seamless: it remains separated by oceans, rivers and deserts, by cultural and language differences, and by national boundaries that continue to impose substantial obstacles to trade even when there are no formal trade barriers.

The European Union context presents advanced trading arrangements, both in terms of formal agreements and the level on intraregional trade. The size and proximity, the similarities in culture and economic development help to explain the level of trade and the existence of "institutional thickness" (Reid and Church 1999). The local municipalities in Europe have developed intrarregional initiatives, some of them have overcome institutional obstacles and competitive differences, producing positive results and as they mature they involve cooperation between local government, and business, resulting in programs such as new infrastructure, tourism, education, and cultural interchange. Some experiences have not been that positive and they still experience difficulties establishing initial structures. European countries speak different languages than their neighbors and this creates a problem in trade and in the process of political integration.

The United States and Canada share such links as common language, cultural heritage, legal and political systems, and economic development. These factors have boosted their trade and maintain a comfortable cross-border environment with easy inspections that relay in a post- audit approach. The United States and Canada are good examples of institutional thickness with a cross-border co-operation and of a "seamless border".

On the U.S.-Mexican border such trust does not exist due to the sharp differences in their legal systems, economic development, culture, language, race, besides the historic conflicts and the on-going problem of drugs and illegal aliens, with Mexico a major source. These factors make the cross-border environment complex. Specifically, "local initiatives" along the border produce institutional and economic inefficiencies, rather than "institutional thickness" *viz-a viz* the European experience.

Most of the problems at Laredo cross point are induced by institutional means. The overall economic inefficiency, exemplified by high costs, delays and congestion, generate revenue, and employment in the towns on the border. Since NAFTA took effect in 1994, Laredo is the United States' second-fastest growing metropolitan area with 190,000 residents, up 50 percent from the last decade. Another 20,000 more are expected by year 2000 and 50,000 by 2010. Although the costs and time of border crossing could be substantially reduced, vested interests have successfully blocked change for over 6 years. The United States tolerates the situation because the previous administration was reluctant to alienate the truckers' union, the truck owners associations, and other special interests. At local level, politicians are strongly influenced by the electorate and the cross-border industry, which is a source of revenue and employment. Overall economic rationality has thus far lost out to the interest groups at the Laredo border crossing.

While many aspects of NAFTA are achieving their intended objectives, the provisions for trucking and border crossings are delayed and may never be implemented in their original form. Implementation would require solving conflicts of interest that are relevant to the trading institutions at national and local level. Safety and environmental regulations and anti-smuggling measures should be enforced, but they are not excuses for failing to

implement agreements to allow truckers to cross national boundaries. In this regard, the U.S. and Mexican authorities have failed to maintain the integrity of this agreement, which is also a precondition for creating the trust necessary for an efficient cross border system. Trade agreements are not efficient if the parties involved need the courts for their enforcement.

The NAFTA trucking case was disputed in court and the NAFTA panel issued its decision on February 6, 2001 regarding cross border point to point services and the Mexican ability to invest in U.S. truck service companies. The panel's decision does not mean an automatic right to provide cross border services. The practical implications of the ruling and the regulatory process applied in each country are hard to predict. These are political sensitive issues in both countries, given the interest groups and pressures from service providers on both sides of the border.

NAFTA has been an instrument for Mexican economic development. Mexico has integrated its manufacturing industry into the productive processes, going beyond the assembly functions of the maquila industry. The progress of manufactures has been substantial. The services sector, however, has been constrained by powerful interest groups. The politicians serve these interests and the political cost of changing this situation is high. The Mexican brokers are a prime example.

The International Trade Data Systems offers a way in the future to cross borders in North America. In the United States and Canada, traders post a bond and they are effectively released. They have a grace period to pay taxes, and the trade moves quickly. Mexico has the technology and capability to implement ITDS. Mexico's Customs electronic capability is more advanced than that of the U.S. Customs service. But the Mexican Customs sees itself as an enforcement agency protecting revenue, rather than as a facilitator of trade so goods can flow as quick as possible. In Mexico the brokers are the enforcers of the Customs law, and constitute a powerful monopoly. They create a system that blocks the efficiencies of the electronic technology.

A major cause of delay is the requirement that all documents be present and duties paid, when products come to the border by truck. All inspection resources are located at the border. Rather than building new cross-border bridges, there are options to avoid this by moving the inspection resources away from the border: (a) leasing; if a trailer is sealed in San Antonio and the seal is intact when it arrives to the border, the truck should be able to continue to Monterrey without stopping, where the inspection would take place; (b) intermodal; if the truck-rail option is undertaken, the truck stops in San Antonio, the container is loaded in a train-car and the train can go to Monterrey without stopping at the border.

The Mexican trucking industry is hampered by high costs and scarce capital. In the future, trains and the other alternatives of border crossing can gradually become competitive, braking little by little the monopoly of the Mexican brokers, forcing them to become more competitive. This will shrink the economic distance of the Rio Grande to something nearer its physical dimension.

7.2 Conclusions

This research presents the economic implications of the costs and times of crossing the border between the United States and Mexico. While there are other nontariff barriers that have not been considered, such as social, political, infrastructure, corruption, and pollution costs, delays at the border are a major contributor to the price difference between the United States and Mexico. These frictions lengthen delivery schedules, introduce uncertainty into these schedules, and make difficult the implementation of "just in time" inventory management and industrial processes, impeding a more efficient combination of the factors of production. While the U.S. and Mexican economies have already achieved a great degree of integration (over 80 percent of Mexican imports come from the United States and the bilateral trade has grown to $240 billions in year 2001), removal of border impediments to trade can lead to still greater efficiencies and welfare for both economies. Reducing the time and the cost involved in shipping products will help the "just in time" process, reducing inventory and depreciation costs for shippers. These border-crossing frictions have pronounced implications for trade and the international organization of

production. The reduction of border crossing frictions will facilitate a more efficient utilization of the transport equipment, faster equipment turnover and additional savings in capital investments not only in transport equipment but also savings in infrastructure construction, maintenance, and pollution.

For these reasons, I consider the estimates of the gains from improved border crossing a lower-bound estimate. The GTAP model as implemented does not consider the impacts of a reorganization of the production process, or the other nontariff implications of trans-border production listed above.

A conservative estimate of the benefits of tighter integration of the economies is that the value of trade between the United States and Mexico will rise by over $7 billion, while welfare in the United States will increase by about $1.4 billion per year, and that in Mexico will rise by over $1.8 billion per year.

While the shipping industry that has blossomed at the U.S.-Mexican border crossing at Laredo no doubt benefits any number of special interest groups in the border trucking and brokering industries, the overall welfare of the two economies is not well-served by the continuation of these artificial frictions at the border. There is no time like the present to finish the NAFTA liberalization process and to remove the not-so-invisible hand slowing trade between the United States and Mexico.

7.3 Implications

7.3.1 Limitations of the Study

The politically sensitive nature of the Laredo border crossing problem makes difficult to obtain precise quantitative data. The cross-border costs are subject to error, although they reflect the inefficiency of the cross border operations. The times are a more reliable indicator of the inefficiency of the system than the costs.

This research quantifies the costs and times of the non-tariff barriers in the border crossing process through an updated and expanded border crossing model. There are costs that have not been considered, like the social costs, the political costs, and the pollution costs. The simulation scenarios presented as alternatives for border crossings present basic information. The operating costs can increase or decrease when the scenarios are implemented. The simulations indicate substantial savings in times and costs, given the assumed simplifications of the border crossing process; they are subject, however, to some error.

The complex political, and social nature of the border crossing problem makes it difficult to obtain all the information regarding the costs of implementing these options.

7.3.2 Future Research

An improved border crossing system requires improved estimates of the political, financial, and social costs of truck and rail transportation in the United States and Mexico. Realistic costs of truck and railway projects would permit the development of the ITDS approach for both modes when modeling or evaluating the simulations for new border crossing systems. Continued research is required to determine the overall strategy for transportation according to NAFTA ideals.

I documented the importance of the influence of the cultural and pollution issues in the creation of non-tariff barriers. There is a need for future research into how these factors work, developing a relevant theory from disciplines such as sociology and political sciences, with concrete application.

This thesis examined the topic of transportation and border crossing in international trade using the joint framework of economic analysis, public choice theory, and behavioral economic theories that include institutional arrangements. The analysis provides insight into the characteristics of the underlying economic, social, and political situation, along with the likely effects of alternative strategies for dealing with the changes in the cross-

border transport system. Future research along the lines suggested may provide a refined theoretical and methodological basis for cross-border policy.

The application of the inefficiencies in the border-crossing transportation process in the GTAP modeling for the analysis of their impact on trade flows is original since there is little modeling work done about non-tariff barriers with concrete examples.

References

American Trucking Association (1992) "South of the Border-U.S. Trucking in Mexico." Office of International Affairs, Alexandria, VA.

Amin A. and Thrift N. (1994) "Globalization, Institutions and Regional Development in Europe." Oxford: Oxford University Press.

Amjadi, A. Winters, A. and Yeats, A. (1995) "Transport Costs and Economic Integration in the Americas," *Swiss Journal of Economics and Statistics* 131, pp. 465-488.

Balassa B. (1989) "Comparative Advantage: Trade Policy and Economic Development." Wheatsheaf, Hemel Hempstead.

Barnhill, E. (1999) George Washington University, Financial Consultant, interview, Washington, D.C. November 9.

Barton-Aschman, La Empresa (1997) "Binational Border Transportation Planning and Programming Process." gov/binational/reports/task 8/toc8.html.

Best, A. (1992) "Will increased Trade from NAFTA Outstrip Transportation Capacity?" *Traffic World,* November 16.

Bhagwati (1992) "Regionalism vs. Multilateralism." *The World Economy* 15, (5) September: 535-56.

Bhagwati (1993a) "Regionalism vs. Multilateralism: An Overview." *New Dimensions in Regional Integration,* ed. by Jaime de Melo and Arvind Panagariya. New York: Cambridge University Press.

Bonney, A. (1992) "More than Just Cheap Mexican Labor." *American Shipper*, June.

Brockmeier, M. (@001) "A Graphical Exposition of the GTAP model." GTAP Technical Paper No.8, Center for Global Analysis, Purdue University.

Boyer, K.D. (1997) " American Trucking, NAFTA, and the Cost of Distance." *ANNALS, AAPSS,* 553, September.

Brown, C. (1998) "Planning for an Integrated Europe: Lessons from border regions." paper presented to XII Aesop Congress, July, Aveiro.

Buchanan, J.M., and Tullock, G. (1963) "The Calculus of Consent: Logical Foundations of Constitutional Democracy." Ann Arbor: University of Michigan Press.

Bureau of Transportation Statistics, U.S. Department of Transportation. Table:" North American Merchandise Trade by Truck with Commodity detail, 2001." www.bts.gov/ntda/tbscd/reports/annual01nat/na_com_2001trk2.html

Button, K.J. (2000) George Mason University, interview, Va. September 14.

Button, K.J (2000 b) "Analytical Transport Economics." England: Pollack and Elga Publishers, Autumn 2000.

Button, K.J. (1993), "Transport Economics." England: Edward Edgar Publishing Company, 2nd Edition.

Capellin R. (1992) "Theories of Local Endogenous Development and International Co-operation, in TYKKYLAINEN." Avebury: Aldershot. *Development Issues and Strategies in the New Europe*, pp. 1-19.

Casas, F.R. (1983) "International Trade With Produced Transport Services." England: *Oxford Economic Papers,* Vol. 35, pp.89-105.

Castells M. and Hall P. (1994) "Technoples of the World." London: Routledge.

Church A. and Reid P. (1998) "Transfrontier Co-operation, Spatial Development Strategies and the Emergence of a New Scale of Regulation: The Anglo-French Border." England: Regional Studies, Vol. 29.3, pp. 297-316.

Church, A and Reid, P. (1999) "Cross-border Co-operation, Institutionalization and Political Space Across the English Channel." England: Regional Studies, Vol. 33.7. pp.643-655.

Coyle, J.J. Bardi, E.J., and Cavinato, J.L. (1994) "Transportation." St. Paul/Minneapolis: West Publishing Company, Third ed.

Curtis, R. (1999) Project Manager, Bridge #4, telephone interview, Forth Worth, Texas, November 22.

Dankbaar B., Corvers F. And Hassink R. (1994) "Euroregions: springboard to regional development?" Ifresi, Lille: In Moulaert F. And Demaziere C. (Eds) New Trends in Local Economic Development.

De La Mora, L.M (2000) Embassy of Mexico, SECOFI-NAFTA Counselor, interview, Washington, D.C., May 17.

Di Sanza, Emile (1999) "Regional Regulatory Harmonization and De-Regulation of Intermodal Transport The Case of NAFTA and the EU." London: Transatlantic Transport Conference, The George Washington University School of Business and Public Management, International Maritime Organization, London, December 15.

Dreyfus, D. (1999) Boos-Allen&Hamilton Inc., Interview, Washington, D.C., Oct. 21.

Ehinger, R. (1998), Executive Director of International Trade Data Systems, Interview, Washington, D.C., October 19.

Ehinger, R. (1999), Executive Director of International Trade Data Systems (ITDS), Interview, Washington, D.C. and Laredo, Texas, February 17.

Eilperin, J. (2000) *Washington Post,* Washington Post Staff Writer, 6 October 2000.

Engel, Ch. and Rogers, J.(December 1996) "How Wide is the Border?." *American Economic Review*, 86, No 5, pp. 1112-125.

Falvey, R.E. (1976) "Transportation Costs in the Pure Theory of International Trade." *The Economic Journal,* September, pp. 536-50.

Federal Reserve Bank of Dallas (June 2001) *Border Economy*.

Fox, A. (2002-2003) Economist, United States International Trade Commission (USITC). Washington, D.C., November 2002- June 2003.

Francois, J. and Reinert, K (1997) *Applied Methods for Trade Policy Analysis*. Cambridge University Press.

Frankel, J.A. (1997) "Regional Trading Blocs in the World Economic System" Institute for International Economics, Washington, D.C.

Frankel, J. and Romer, D. (1996) "Trade and Growth." *NBER Working Paper,* No. 5476. Cambridge, MA: National Bureau of Economic Research.

Fujita, M., Krugman, P., and Venables, A. (1999) "The Spatial Economy: Cities, Regions and International Trade." Cambridge, Massachusetts: The MIT Press.

Gereffy, Gary and Wyman, Donald (1991) "Manufacturing Miracles, Paths of Industrialization in Latin America and East Asia." Princeton, New Jersey: Princeton University Press

Giermanski, J.R. (1996) "Texas to Mexico: A Border to Avoid." *Journal of Borderland Studies,* Texas: Texas A & M International University, Volume X, Number 2.

Giermanski, J.R. (March 1998) "Update on the North American International Trade Data Systems." *Logistics online Magazine.*

Giermanski, J.R. (1999) Texas: Laredo, interview February 19,

Giermanski, J.R. (1999) "Why is so Hard to Cross the Border?" *Logistics Management,* July 1999.

Giermanski, J.R. (Fall 1999) "Estimated Border Crossing Costs." Texas: Texas A&M International University, unpublished paper.

Giermanski, J.R. (February 2000) "Know thy Broker: By choosing the right customs broker and taking advantage of new Mexican laws, shippers may be able to save time and money on shipments south of the border." *Logistics Online.*

Goldstein, J., (Winter 1988) "Ideas, Institutions, and American Trade Policy." *International Organization* 42, pp. 179-218.

Gooley, T.(December1998) "NAFTA at Five Years: Uneven Progress". *Logistics Online.*

Grabher G. and Stark D. (1997) "Organizing diversity: evolutionary theory, network analysis and post-socialism." *Reg. Studies* 31, 533-44.

Grabher G. and Stark D. (1996) "Restructuring Networks in Post-socialism: Legacies, Linkages and Localities." Oxford: *Oxford University Press.*

Hall, K. (1993) "New Mexico, Arizona Look to Boost Mexican Trade," *The Journal of Commerce,* April 13, p.3B.

Hall, K. (1993) "Study Stresses Reform at N. American Borders," *The Journal of Commerce,*August 13.

Hall, K.(1997) *The Journal of Commerce*, December 18.

Hall, K. (1998) "Mexico-U.S. Truck Talks to go Another Round." *The Journal of Commerce*, August 21.

Haralambides, H. and Londoño-Kent P. (2004) "Supply Chain Bottlenecks: Border Crossing inefficiencies between Mexico and the United States", *International Journal of Transport Economics*, Rome, June.

Harrington, L.(1992) "NAFTA-One Continent One Market." *Inbound* Logistics, October 12.

Hathaway, M. (2001) North American Free Trade Agreement, Arbitral Panel In the Matter of Cross-Border Trucking Services, Panel Member, Interview, Washington, D.C., March 1.

Haughton, M., Grenoble, W., Thomchick , E., and Young R. (1997) "Measuring and Improving Import Performance." Pennsylvania: Center for Logistics Research of the Pennsylvania State University, August 1997.

Healey, P. et al., 1995 "Managing Cities: The New Urban Context." John Wiley, Chichester.

Herberg, H. (1970) "Economic Growth and International Trade with Transport Costs." *Zeitschrift fur die Gesamte Staatswissenschaft*, October, pp. 577-600.

Hertel, T. Walmsley, T. and Ikatura, K (2001) "Dynamic Effects of the "New Age" Free Trade Agreement between Japan and Singapore", Journal of Economic Integration, pp. 446-484.

Hertel, T. and Itakura, K. (2001) "A Note on Changes Since GTAP Book Model (Version 2.2a/GTAP 94)", GTAP resource 721, Center for Global Trade Analysis.

Hirst, P. and Thompson J. (1992) "The Problem of Global International Economic Regulation, National Economic Management and the Formation of Trading Blocs." *Econ. Society* 21, 358-96.

Horn, K.(1999) Senior Economist and Professor/Consultant in Transportation, National Ports and Waterways Institute, Louisiana State University, interview, Arlington, Va. December 10.

Hummels, D. (2001) "Time as a Trade Barrier", Working Paper, Purdue University, July 2001.

Hummels, D. (1999) "Toward a Geography of Trade Costs", Purdue University, January 1999, pp.22 and 24

Ikenberry, G. J., Lake, D.A. and Mastanduno, M. (Winter 1988) "Introduction Approaches to Explaining American Foreign Policy." *International Organization*, 42, pp.7-8.

Ikenberry, G.J., Lake, D.A. and Mastanduno, M. (Winter 1988) "Conclusion: An Institutional Approach to American Foreign Economic Policy." *International Organization*, 42, pp. 219-243.

Inside U.S. Trade, January 24, 2003.

International Trade Data System Office Information (1998) *Cost Benefit analysis for the International Trade Data System,* Technology Architecture/Design Report, ITDS Office, Washington D.C., pp. 2-10 to 2-13.

International Trade Data System Office Information (1998) *Cost Benefit analysis for the International Trade Data System,* Technology Architecture/Design Report, ITDS Office, Washington D.C., P II

Izquierdo, A. (1998) "NAFTA at five years: Uneven progress," *Logistics Online,* p.1

Kellmann International Forwarders (1999) " *The Journal of Commerce Online*".

Kohn, R. (2001) "New Turn for Mexican Trucks?" *The Journal of Commerce*, February 22.

Kindleberger, C.P. (1973) "Foreign Trade and the National Economy." Homewood: *International Economics*, 5th. ed.

Koeing, R (2000) "European Trucking: Poland adds border Crossing, but Polish language requirement may hinder truckers." *The Journal of Commerce Online,* April 25.

Kramer, T. (1999) International Trade Data Systems memo file from phone call to Gonzalez, J.L. Laredo Customs Official, May 4.

Kramer, T. (1999) Interview, Booz-Allen and Hamilton Inc., consultants for ITDS project, Washington, D.C. May 17.

Krugman, P. (1991c) "Geography and Trade." Cambridge, MA:MIT Press.

Krugman, P. (1995b) "Development, Geography, and Economic Theory," Cambridge, MA: MIT Press.

Linnemann, H. (1996) "An Econometric Study of International Trade Flows," Amsterdam: North-Holland.

Magee, John F., (1968) "Industrial Logistics." New York: McGraw Hill Co.

Maillot D. (1990) "Transborder Regions Between Members of the European Community and non-member Countries." *Built Environ*. 16, pp. 25-37.

Mansfield, E. Busch, M. (1995), "The Political Economy of Nontariff Barriers: A Cross National Analysis." Harvard: Harvard University, *The Center for International Affairs,* Working Paper Series, Paper No. 95-8.

March, J. and Olsen, J. (1984) "The New Institutionalism", *Am. Pol. Sci. Rev.* 78, 734-49.

Martinez, J. (1999) South West Motor Transport Co. Interview Oct.17.

McCray, J. and Harrison, R. (1999) "NAFTA Trucks on U.S. Highway Corridors", Transportation Research Board, 78th Annual Meeting, Washington, D.C., January 11-14

McCteer, B. (2001) "Border Economy", Federal Reserve Bank of Dallas, June, presentation page.

McDaniel, Ch. And Balistreri, E. (2001) "A Discussion on Armington Trade Substitution Elasticities." Working paper, 02-02-A, Research Division, Office of Economics, U.S. International Trade Commission, January 2001.

Minghi, J.V. (1991) "From Conflict to Harmony in Border Landscapes." London: Routledge, in Rumley D. and Minghi J. V. (Eds) *The Geography of Border Landscapes*, pp. 15-31.

Moore, Ch. (2000) Office of NAFTA and Inter-American Affairs, U.S. Department of Commerce, Washington, D.C., May 2.

Mundell, R.A. (1957) "A Geometry of Transport Costs in International Trade Theory." Canada: *Canadian Journal of Economic and Political Science*, August, pp.331-48.

Nolle, W. (2000) U.S. Customs interview, May 16.

Nolle, W. (1999), International Trade Data Systems, ITDS, interview, October 20.

Nolle, W. and Kramer T. (1998) International Trade Data Systems, ITDS, interview, Washington, D.C., October 5.

Nygren, P.B. (1999) Manager Customer Service Systems (EDI), The Kansas City Southern Railway Company, Interview, Laredo, February 18.

Orrenius, P., Phillips, k, and B. Blackburn (2001) "Beating Border Barriers in U.S.-Mexico Trade", Federal Reserve Bank of Dallas, June 2001.

O'Riordan T. and Jordan A. (1996) "Social Institutions and Climate Change." London: Routledge, in O'Riordan T. and Jager J. (Eds.) *Politics of Climate Change*, pp.65-105.

Phillips, K. and Manzanares, C. (2001), "Transportation: Infrastructure and the Border Economy", Federal Reserve Bank of Dallas, June 2001 pp. 1.

Reid, P. (2000) London: comments on publications, journal articles and other data regarding the cross border activity, e-mail, February 6.

Rogers, John H. and Smith, Hayden P. (2001) "Border Effects Within the NAFTA Countries." Board of Governors of the Federal Reserve System, *International Finance Discussion Papers*, Number 698, March 2001, pp. 1-30.

Rojas, M. (1997) Director of International Affairs for the American Trucking Associations, interview, Alexandria, VA., January 10.

Rojas, M. (1999) Director of International Affairs for the American Trucking Associations, interview, Alexandria, VA., May 19.

Samuel, P.A. (2000) Editor and Publisher Toll Roads News Letter, interview, Fairfax, Va. May 5.

Samuelson, P.A. (1954) "The Transfer Problem and Transport Costs; II: Analysis of Effects of Trade Impediments." *The Economic Journal*, June, pp.264-269

Schwartz, H. (1998) "Rationality Gone Awry? Decision Making Inconsistent with Economic and Financial Theory." United States : Praeger Publishers.

Scott J. (1996) "Dutch-German Euroregions: a model for transboundary co-operation?." in

Scott J., Sweedler A., Ganster P. And Eberwein W (Eds.) *Border Regions in Functional Transition: European and North American Perspectives.* Berlin: Institute fur Regionalentwicklung und Strukturplanung Erkner.

Smith, H.C. and Giermanski, J.R. (1997) "An Analysis of the Added Costs of Trans-U.S./Mexican Truck Shipments at the Port of Laredo, Texas: NAFTA versus Reality." Texas: College of Business Administration and The Graduate School of International Trade & Business Administration, Texas A&M International University, Laredo, unpublished paper.

Strah, T. (1992), "NAFTA: The Ownership Question." *Transport Topics*, October 12.

U.S. Department of Transportation (1998) "Binational Border Transportation Planning and Programming Proses," gov/binational/reports/Task8/toc8.html, p 76.

U.S. Department of Transportation (1994) "Making Things Work: Transportation and Trade Expansion in Western North America", Internodal Surface Transportation Efficiency Act 6015 Study: Assessment of Border Crossings and Transportation Corridors for North American Trade.

U.S. Department of Transportation (1991) Intermodal Surface Transportation Efficiency Act: Section 1089 and Section 6015, "Assessment of Border Crossings and Transportation Corridors for North American Trade", Report to Congress, Washington, D.C.

Valdes, R. and Crum, M. (1994) "U.S. Motor Carrier Perspectives on Trucking to Mexico." *Transportation Journal,* Vol. 33, No. 4, Summer.

Vallejo, R. (1999) Economic Counselor, Embassy of Mexico, Washington, D.C., interview. November 10.

Vartiainen, P. (1994) "Urban region as a geoeconomic and geopolitical unit: a Europe or regions." Berlin: in Braun G. O. (Ed) *Managing and Marketing Urban Development and Urban Life.* Dietmar Reimer Verlag.

Weid, T. (1999) Emerson Electric, Distribution Manager, interview, October 28.

Wilson J., M. C., and Otsuki T.(2000) "Trade Facilitation and Economic Development: A New Approach to Measuring the Impact", mimeo.

Wright, Charles (2000), Interview, Interamerican Development Bank (IDB), Washington, D.C. July 2000.

Zeigler, A (2000) Planning Division, Michigan Department of Transportation, October 9.

Appendix A: Traditional Trade Flow Process[1]

Southbound U.S. to Mexico Trade Flow Process

1. Product Origin - U.S. Shipper

The U.S. shipper is defined as the company that wants to export merchandise to Mexico. The shipper may be the manufacturer of the product itself or a distributor of one or more products. In the United States, the shipper is typically responsible for preparing the **Bill of Lading (D1)** that governs the U.S. portion of the transport to Mexico. However, the U.S. carrier will provide a bill of lading if the shipper elects not to prepare his own.

The truck and rail bills of lading are[2]:

- "the carrier's formal receipt of the goods shipped;
- evidence of the contract of carriage between the carrier and shipper, including freight charges and the terms and conditions of the carrier's liability; and
- the consignor-shipper's means with which to stop or divert delivery of the goods shipped."

An important aspect of filling out the bill of lading is the classification of goods used to calculate the freight charges in accordance with the carrier's filed tariff. All goods are classified by the National Motor Freight Classifications (NMFC) listing. Freight rates are

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[1]Binational Border Transportation Planning and Programming Study, Task 3.1: Description of Commercial Motor Vehicle Trade Flow Process, Final Report, Barton-Aschman Associates, Inc. La Empresa, S. De R.L. May 8,1996, Ps. 3,4,10, 13,14, 17-25,28-30, 37-41.Reviewed with Mexican Customs Official and ITDS team members, Washington, D.C. January, 1999.

[2]*Disparities in the Law and Practice of Surface Transportation of Goods Between the United States and Mexico*; National Law Center for Inter-American Free Trade; Tucson, Arizona, July 1993.

established for each classification based on weight and volume and considering susceptibility to damage.

An original bill of lading travels with the shipment to the border region destination which is one of the following: the carrier's terminal; a freight forwarder; a U.S. broker; or a Mexican broker. If the destination is not the carrier's terminal, either an electronic copy or facsimile is transmitted to the freight forwarder or broker.

In terms of transport origin and destination, **Product Origin** in international trade is often subject to a loose interpretation of the actual physical location where the product was made or assembled. On the other hand, **Country of Origin** is tracked with a very high level of accuracy, but may not be directly linked to the origin of transport. For goods to receive preferential tariff treatment under the NAFTA accords, a **Certificate of Origin (D2)** must be prepared and kept on file for any goods imported between the United States, Mexico and Canada. The certificates are available in English, French and Spanish.

The breakdown occurs in product origin with the **State of Origin,** which tends to be open to interpretation, and therefore, often incorrectly assigned. If products are shipped to a consolidation point within the United States, the product's state of origin may be reassigned to the state where consolidation occurred. For **Less than Truck Load** (LTL) shipments, a second (new) bill of lading may also be prepared by the carrier if multiple LTL's are consolidated prior to shipment across the border. This breakdown in the product's origin makes it difficult to correctly estimate origin and destination pairs for transport planning purposes.

2. Transport to Border Region - U.S. Carrier

Once the carrier picks up the shipment, the land transport of goods to the border region occurs either over private rail lines or Federal, State, and municipal highways. During the trip from the point of origin or consolidation to the border region, the Carrier's truck will be subject to the motor vehicle laws of the state or states through which it travels. All U.S. states have vehicle safety and weight requirements enforced at permanent safety inspection

facilities and weight stations. Permanent weight stations are located at the state borders (entering the state) and along heavily traveled truck corridors. In addition, many states use roving or temporary units to perform inspections at random locations throughout the state.

3. Border Regional Destination - Carrier Terminal, Freight Forwarder, or Broker

Prior to beginning the actual border crossing, a truck will typically go to the U.S. carrier's terminal, a freight forwarder's facility or a broker's facility. In many instances, a U.S. broker will have been contacted to facilitate the border crossing process. The U.S. broker will fill out the **Shippers Export Declaration (SED) (D3)**. This is a standard form required by the International Trade Administration, an agency within the U.S. Department of Commerce - Bureau of the Census. Most U.S. Customs brokers participate in the Paperless Export Monthly Reporting Program run by the Department of Commerce (DOC). This program allows the broker to place a seal on the pedimento or invoice and retain the paper copy of the SED. The information from the SED is later entered into a database system and submitted monthly to DOC.

Since this is a census form, there are no legal requirements that a U.S. broker or even a U.S. citizen fill out this form. Therefore, shippers can work directly with a Mexican Custom broker by-passing the U.S. broker. In this event, the shipper or the Mexican broker can fill out and submit the export declaration. Many shippers, however, feel more comfortable using a U.S. broker to represent their interests at the border crossing.

Most of the information required to fill out the export declaration is included on the bill of lading. The individual filling out the form must make sure that the commodities are correctly classified into the appropriate chapters (1-97) of the **Harmonized Tariff Schedule** (HST Schedule B). Since the broker usually has this information prior to the shipment's arrival at the border, the export declaration is usually filed electronically using DOC's automated Paperless Export Monthly Reporting System prior to or immediately upon its arrival at the border destination.

It typically takes less than one hour for a U.S. broker to complete the paperwork required for export. One estimate is 20 minutes for the SED for 90-95 percent of the loads handled by U.S. brokers, including entering the SED into the Paperless Report System. Since the filling of the SED is usually completed prior to the truck's arrival at the border, there is minimal or no delay to the vehicle.

4. Equipment Inspection - U.S. Equipment Bound for Mexico

If a U.S.- owned trailer is to be taken into Mexico, the trailer may be inspected to assess the condition of the trailer prior to leaving the United States. In addition, some carriers require a surety bond or proof of insurance for the equipment; in this event, the inspection is also used to determine the value of the equipment. If there is an interline agreement between the U.S. and Mexican carriers, this step can be avoided.

5 Freight Forwarder or Broker Verifies Load

The U.S. broker is not legally liable or financially responsible for the contents of the southbound shipment, so the U.S. broker's verification effort is minimal compared to that of the Mexican broker. For frequent customers, there may be no verification by the U.S. broker. For infrequent or one- time customers, the probability increases that the broker wants to verify the load. Once the broker is satisfied that the information provided matches the information on the SED, the export declaration is released to U.S. Customs and to the Mexican broker who will prepare the required Mexican paperwork.

6. Mexican Customs Broker

Mexican Customs brokers, unlike U.S. brokers, are legally responsible and liable for the content of shipments across the border. Therefore, the process used by the Mexican Customs brokers is more rigorous. The broker typically receives both the export

declaration and bill of lading in advance of the truck arriving at their facility. With this information, the broker begins preparing the **Mexican Import Pedimentos (D4)** required for cargo to enter Mexico.

If the shipper is a frequent customer of the Mexican Customs Broker, minimal or no inspection may be undertaken. However, if the shipper is unknown to the broker or is an infrequent customer, a thorough inspection may be required to verify the contents and/or for classification purposes. When an inspection is required, the U.S. shipper may incur fees for the unloading and reloading the truck and for storage (parking) of the vehicle or trailer during the inspection.

While both the United States and Mexico use HST Schedule B, there are significant differences in the method of classification, which account for some of the differences in the trade values reported by the United States and Mexico.

The pedimentos, which are similar to the U.S. Entry Documents required by U.S. Customs, include an invoice identifying the shipper (exporter). The Mexican broker submits the pedimentos electronically to Mexican Customs using the Sistema de Automatizacion Aduanera Integral (SAAI), which is similar to the U.S. ABI/ACS systems. The SAAI server is located at the Customs Broker Association (Asociación de Agentes Aduanales or AAA) and can only be accessed by a limited number of broker representatives. Once the pedimentos are approved, an electronic signature and bar code are attached to the pedimentos document. Finally, the pedimentos must include an acknowledgment of the pre-payment of any fees, duties or taxes required by Mexican law. Pre-payment is made prior to the border crossing at the Banking Module.

7. Mexican Broker - Agricultural Inspections

Agricultural inspections are performed at one of three facilities within U.S. territory that have been approved by the **Secretaria de Agricultura, Ganaderia y Desarrollo Rural (SAGAR)** of Mexico. Each facility is designed for the inspection of a

particular product type: animal, vegetable, or forest product. The time for processing agricultural products is approximately 30 minutes, which includes a review of the paperwork and visual inspection of the products. It takes another 30 minutes to issue the **Mexican import certificate (D5)**

8. Mexican Broker - Banking Module

Duties are paid at the Bank of Laredo upon clearance. Customs brokers can pay in cash, by check, or through wire transfer. A wire transfer hastens the process, but many companies are afraid of untraceable breaks in the paper trail and do not want to pay twice to get shipments into the country. They would rather wait to hand over duties at the point of entry. This does not apply to big shippers who handle their paperwork through faxes and pay duties through wire transfers.

The majority of trade flowing across the border is handled by large shippers. The payment of pedimentos does not add any significant delay to the process; however, small brokers or infrequent shippers may experience a delay while the pedimentos are paid.

9. Mexican Drayage

Once all the physical paper work is prepared and the pedimentos are electronically transmitted to the Mexican Customs officials, the shipment can move across the border. In the past, the Mexican broker always arranged the drayage across the border due to the laws that governed trucking into Mexico, while the drayage company was often either part of or directly associated with the Mexican Customs broker. Regardless of ownership, this step required at a minimum that the tractor be switched from the U.S. carrier to the Mexican drayage company. In the event the U.S. trailer not leave the country, the shipment would have to be off-loaded and reloaded onto a Mexican trailer.

10. U.S. Customs - Standard Export Declaration

Once the shipment reaches the port of entry, a U.S. Customs inspector checks to see if the invoice or Pedimento has been stamped by the U.S. broker indicating that SED will be filed electronically with the Department of Commerce. Since most of the SEDs are filed monthly, there is minimal delay exiting the country and processing time is less than 2 minutes for most exports. If a SED must be filled out at the time of export, the delay corresponds to the time it takes to type out the SED. There are some commodities, such as arms, munitions, and certain electronic/computer technologies, that require an export license or have quotas, and U.S. customs inspectors must inspect these loads on export.

11. U.S. Customs - Export Loads Requiring Inspection

U.S. Customs inspectors enforce the laws and regulations of government agencies at U.S. ports of entry. There are several commodities that must be inspected on export. Typically, these commodities require a license or permit to export or have export quotas. The most common commodities that require an inspection on export are firearms, ammunition, computers, specialized electronic equipment, and hazardous materials.

12. Physical Border Crossing

At Laredo, the toll is typically collected just prior to crossing. Therefore, the U.S. bridge owner collects the southbound tolls and the Mexican bridge owner collects the northbound tolls. Southbound tolls range from U.S. $1 to U.S.$30, depending on the type of shipment or the seize/weight of the vehicle or number of axles.

13. Mexican Customs - Module 1

Module 1 is where the first interaction occurs with Mexican Customs officials. The Customs inspector verifies that the papers carried by the driver match the information that

has been filed electronically. This check takes only 1 or 2 minutes to complete. If the paperwork has not been filed correctly, the truck can be impounded or returned to the United States.

If all the paperwork is in order, the truck is subject to the random selection system (red light primary inspection, green light pass). The random selection system is designed to select 10 percent of all southbound trucks. If the truck receives a green light, it proceeds to the final check point at the commercial facility. If it receives a red light, it moves to the primary inspection area.

14. Mexican Customs - Primary Inspection

A primary inspection typically does not require unloading the vehicle. The paperwork is sent to the Customs office and is held until the inspection is complete. The time consumed by a primary inspection ranges from 15 minutes to 3 hours.

Once the primary inspection is complete, the vehicle is again subjected to the random selection system. Again, 10 percent of the vehicles passing through the primary inspection area, so that 1 percent of all vehicles are selected for a secondary inspection.

15. Mexican Customs - Secondary Inspection

Secondary inspection is more thorough than the primary inspection. Secondary inspection often requires that either port, or all contents of a truck be unloaded. Secondary inspections are carried out by private company (ISOSA) under contract to Mexican Customs whose job is to serve as a quality control of Mexican Customs officials. The amount of time required to perform a secondary inspection is also between 15 minutes and 3 hours.

16. Mexican Customs - Final Check Point

The final check point is where all paperwork is collected and the vehicle is allowed to exit the import compound.

17. SCT Vehicle Safety Inspection

Typically, SCT maintains a vehicle inspection point at the exit of the commercial compound. This inspection point is used to ensure that both the tractor and trailer are cleared to operate in Mexico.

18. Mexican Broker - Truck Corral

Once the vehicle has cleared the SCT inspection, it moves on to either a broker's facility or a truck corral where the drayage company's tractor is disconnected and the trailer is stored until a long-haul carrier's tractor arrives to transport it to the interior of Mexico.

19. Mexican Carrier

A Mexican carrier is used to transport products to the interior of Mexico.

20. 25km Check Point

This point defines the limit of the free travel zone for foreign travelers in Mexico. The 25km check point is operated by Immigration officials. Each vehicle most stop and passengers must declare citizenship. For commercial shipments the 25km check point serves as a final quality control point for Mexican Customs. Each commercial vehicle is again submitted to a random selection process. If the vehicle is selected by the system for

inspection, the inspector verifies three items, the driver's license, the cargo seal, and the bond. The inspection is carried out by a private contractor to the Ministry of Revenue.

21. Final Destination

The highest concentrations of population are located in the center of the Mexico (Mexico City, Guadalajara, Monterrey), which are the primary traditional trade destination.
The flow charts provided in Appendix B provide for an overview of the southbound trade flow process. The descriptions included in this Appendix are linked to the flow charts by the number and title of each discussion.

Northbound Mexico to U.S. Trade Flow Process

1. Product Origin - Mexican Shipper[3]

The **Mexican Shipper** is defined as the organization or person that wants to export merchandise to the United States. The shipper may be the manufacturer of the product itself or a distributor of one or more products. In Mexico, unlike in the United States, it is typically the receiver of the goods (consignee) that negotiates with the carrier to arrange the transport. For international shipments, however, it is more common for the shipper to arrange transport.

The U.S. and Mexican systems also differ in that the Mexican carrier is usually responsible for preparing the **Bill of Lading (D1)** that governs the Mexican portion of the transport to the United States. Often the carrier prepares and keeps the bill of lading until it is turned over to the consignee upon delivery.

[3] Disparities in the Law and Practice of Surface Transportation of Good Between the United States and Mexico; National Law Center for Inter-American Free Trade; Tucson Arizona, July 1993; July 1993.

While the bill of lading in the United States serves as a contractual agreement between the consignor and the carrier, in Mexico the terms of the contract (bill of lading) are regulated and standardized by the **Secretaria of Comunicaciones and Transportes** (SCT). Any changes to this format must be approved by SCT.

The Mexican carrier is not required to file a tariff and is free to charge what the market will bear. The carrier's liability is also negotiable. If the carrier's liability is limited, then a "less than ordinary rate" can be used; otherwise an ordinary rate is used, which includes the charge for increased liability.

An original bill of lading travels with the shipment to the border region destination, which is either the carrier's terminal or a Mexican broker's facility. Typically, a facsimile of the bill of lading is transmitted directly to the broker in advance of the shipment's arrival. If a U.S. broker is involved in the shipment's entry to the United States, a facsimile of the bill of lading is also sent to the U.S. broker in advance of the shipment's arrival.

Product Origin in international trade is often subject to a loose interpretation of the actual location where the product was made or assembled. On the other hand, **Country of Origin** is tracked with a very high level of accuracy. For goods to receive preferential tariff treatment under the NAFTA accords, a **Certificate of Origin (D5)** must accompany any goods imported into the United States, Mexico or Canada. The certificates are available in English, Spanish and French.

For transport planning and analysis, the problem of determining the actual physical product origin is important. Without accurate origin and destination data, it is impossible to make reasonable estimates and/or projections of demand that international trade places on existing transport facilities or to plan future transportation facilities.

2. Transport Border Region - Mexican Carrier

As stated above, the Mexican Carrier will prepare the bill of lading and pick up the goods for transport to the border. In Mexico, the Federal government is responsible for planning and maintaining national and regional roadways. In many of the most traveled corridors, the carrier has the opportunity to use either free or tolled roads. The toll roads tend to be better maintained and to reduce the travel time; however, the tolls represent a direct cost that must be included in the total cost of the shipment.

3. U.S. Brokers - Mexican Office

At some ports of entry, U.S. brokers are allowed to maintain small offices in Mexico. These offices are typically used as collection points for information forwarded to the U.S. broker's offices in the United States. The information allows the U.S. broker to prepare the appropriate U.S. entry documents and, in most cases, to file them electronically with U.S. Customs using the **Automated Broker Interface** (ABI). In addition, the U.S. broker's Mexico offices provide a location where truckers can pick up the U.S. entry papers prior to approaching the U.S. border.

The U.S. entry documents for conveyance are:

- **Evidence of Right to Make Entry (D2)** - goods may be entered only by the owner, purchaser, or by a licensed broker. When the goods are consigned "to order," the bill of lading properly endorsed by the consignor may serve as evidence of the right to make entry. In most instances, entry is made by a person or firm certified by the carrier bringing the goods to the port of entry and is considered the "owner" of the goods for Customs purposes. The document issued by the carrier is known as a "Carrier's Certificate."
- **Entry or Inward Manifest (D3)** - typically, the entry manifest is prepared using Customs Form (CF) 7533 and the bill of lading may be used as a supporting

document. However, there are other forms for other types of shipments, such as CF 3461 for Entry/Immediate Delivery or a Bar Code For Line Release. District directors may specify other types of forms for merchandise release unique to their POE operation.

- **Invoice or a proforma Invoice (D4)** - this document must identify the buyer, seller, and port of entry; it must provide a detailed description of the merchandise, quantities, weights, and measures, purchase price, all charges on the merchandise, and country of origin. While there is no standard format for the invoice, the specific content is well documented. This information can be entered into the **Automated Invoice** system by a broker using the ABI.

In some cases, packing lists may be required and/or there may be documents required to determine if the merchandise is admissible to the United States.

The entry must be accompanied by evidence that a bond is posted with Customs to cover any potential duties, taxes, and penalties that may accrue. Bonds may be secured through a resident U.S. surety company and may be posted in the form of U.S. dollars or U.S. government obligations. If a customs broker is employed for the purpose of making entry, the broker may use his bond to provide the required coverage.

If the goods are to be released from Customs custody on entry documents, an entry summary for Consumption must be filed and estimated duties deposited at the port of entry within 10 working days of the time the goods are entered and released. The Entry Summary Documentation process is as follows:

- **Entry Documents are Returned -** the entry documents described above are returned to the importer, broker or their authorized agent after the release of the merchandise is permitted.
- **Entry Summary (D5)** - Customs Form 7501 is called the entry summary and which is used to collect classification, values and other statistical information on the merchandise entered.

- **Certificate of Origin (D6)** - as described above, this certificate is required to benefit from the preferential NAFTA tariffs. This form does not have to be submitted with the entry summary documentation; however, it must be kept on file in the event a dispute arises over the tariffs and/or duties charged.

Once the information above is complete, it is submitted within 10 working days to Entry Control of U.S. Customs for final review and quality control of the information filed.

4. Agricultural Grading and Market Demand Evaluation

Prior to crossing the border into the United States, agricultural products must be graded and an evaluation must be made for products covered by any import demand quotas.

5. Mexican Broker - Preparation of Pedimentos

The Mexican broker prepares the **Mexican Export Pedimentos (D7),** which are similar to the U.S. export declaration. Both the Mexican and U.S. documents require an invoice and certificate of origin. The process usually begins with the truck arriving at the broker's office in the early morning and the drivers submitting their paperwork to the broker. When the brokers arrive, they typically complete filing the previous days receipts before they process the paperwork for the new shipments. The Mexican brokers may begin processing new shipments after 9:00-9:30 a.m.

The preparation of the pedimentos begins with an inspection of each vehicle's cargo. Usually a broker will inspect all of the vehicles prior to beginning the preparation of any pedimentos. Once the pedimentos are prepared for all of the broker's vehicles, they are submitted to a senior broker for final checking. Only after the senior broker has approved the pedimentos are they submitted to the validator. While the validator reviews the pedimentos, the broker arranges the drayage for the shipment across the border.

In the northbound direction, the Mexican broker usually works with a U.S. broker to prepare the U.S. entry documents. If the Mexican shipper or carrier did not contact a U.S. broker before the shipment reached the border, the Mexican broker will typically facsimile a copy of the paperwork to a U.S. broker who will enter the information into the ABI. This step can be critical at some ports of entry. In Laredo, Customs requires 6 hours of lead time for preclearance.

6. Validator

The validator is a broker representative who electronically files the pedimento via the Sistema de Automatización Aduanera Integral (SAAI) server located at the Customs Broker Association (Asociación de Agentes Aduaneras or AAA.) SAAI is an electronic filling system that the AAA, Mexican brokers, Mexican Customs (port of entry modules), and Bank Modules use to track the import and export processes.

Once the pedimento is entered into the system and approved, a validated pedimento with an electronic signature and bar code is created that is used to release the shipment to Mexican Customs. Once the pedimentos are released, any taxes or duties must be paid prior to the shipment moving north to the Mexican Customs.

7. Payment of Duties or Taxes - Bank Module

The Bank Module is a bank office located at the border that has the responsibility to collect any export duties and taxes owed to the Mexican Government. The pedimentos are presented for visual inspection and verification of the electronic signature and bar code. The Bank Module is also responsible for confirming that the duty and tax amounts on the pedimentos are the same as the amounts entered into SAAI. The Bank certifies the pedimentos and the shipment can be moved north into Mexican Customs Module 1.

8. Mexican Drayage Across Border

Once the export pedimentos are complete, the Mexican broker must collect the pedimentos, an invoice, certificate of origin (NAFTA requirement for special tariffs), and the U.S. entry documents. Mexican drayage companies transport most of the goods across the U.S./Mexican border. Often the drayage company is associated with the Mexican broker.

By the time the Mexican broker has completed all the pedimentos, paid any duties or taxes, and connected the appropriate paperwork from the driver and vehicle, it is often 2 p.m. or later. In most cases, each broker releases his vehicles all at once, even though this often results in congestion at the U.S. port of entry.

9. Mexican Customs - Module 1

Upon entering the Mexican Customs Facility, the driver presents the export pedimentos. These are compared to the electronic forms filed with Customs using the Sistema de Automatizacion Aduanera Integral (SAAI) which is similar to the Automated Broker Interface in the United States. Once the Customs inspector verifies that the paperwork is complete, the vehicle is subjected to the random selection system, which separates approximately 2 percent of the northbound vehicles for a primary inspection. The random selection system serves as a quality control of the work performed by the Mexican brokers and validators.

10. Mexican Customs - Primary Inspection

Once a shipment is selected for primary inspection, the documents submitted by the truck driver are sent from the Module 1 to the Vista Aduanal offices at the dock area. Depending on the port of entry, the documents may be sent by a customs official that rides

back and forth by bicycle from the module to the dock area. The officer at the module directs the driver to the primary inspection area, where the driver parks the vehicle.

At the dock office, a customs official (vista aduanal) confirms that the documents are complete and then proceeds to verify pallet, box, and piece counts. Depending on the type of commodity, the truck may also be unloaded. Unloading is performed by personnel of the load/unload unions. If something is wrong with the shipment, the cargo is impounded until the problem is corrected. If everything is correct, the shipment is released (desaduanamiento) using the SAAI, and the documents are returned to the truck driver, who then proceeds to Customs Module 2. The primary inspection time ranges from 30 minutes to 3 hours, depending on the type of commodity and the way it is loaded in the truck.

Once the primary inspection is complete, the vehicle is then again subject to the random selection system. This time the system selects 10 percent of vehicles in the primary inspection area for a secondary inspection. Therefore, 0.2 percent of all vehicles are subjected to a secondary inspection.

11. Mexican Customs - Secondary Inspection

The secondary inspection is used as a quality control system for Mexican Customs. Secondary inspections, called "Dictaminadores Aduaneros," are conducted by a private company. These procedures are identical to the primary inspection. Brokers report that in practice very few, if any, secondary inspections occur in the northbound direction.

12. Mexican Customs - Final Check Point

This is the final check point in the Mexican commercial export process. Once all paperwork is completed, the vehicle leaves the Customs compound. Since the Laredo

border crossing has a toll bridge, the vehicle moves forward and the truck driver pays the toll on the Mexican side of the border.

13. Physical Border Crossing

In most cases, the driver pays the toll upon reaching the bridge. CAPUFE is a Mexican central government agency in charge of Mexican toll bridges. Some bridges are operated directly by CAPUFE while others are concessioned to private companies. Tolls are based on the vehicle type. For commercial trucks, tolls range from US$4 to 85 Mexican pesos, depending on the number of axles. These tolls apply to both loaded and empty vehicles.

14. U.S. Customs Primary Inspection

At the U.S. Primary Inspection station, the Customs inspector begins by determining the citizenship of the driver and any passengers in the vehicle, in compliance with U.S. immigration law. The officer then obtains a declaration for any agricultural products, narcotics, merchandise, or currency in excess of $10,000. The response to the questions will determine whether the vehicle is sent for inspection or the shipment is processed for release into the United States.

There are four basic entry processes: informal entries; at the gates entries; Automated Broker Interface (ABI) pre-file entries; and line release entries. Automated Broker Interface (ABI) entries are the most common. A U.S. customs broker files the release documents electronically with U.S. Customs prior to the arrival of the shipment. Since some pre-processing can occur, this form of entry tends to reduce the amount of time a shipment is at the port of entry.

The Customs inspector reviews the paperwork presented by the driver. Most informal and at-the-gate entries, are sent to a secondary inspection area to complete the paperwork. There are very few informal and at- the- gate entries at the major commercial ports of entry.

If the entry is an ABI, the agent compares the driver's paperwork with the information in the **Automated Customs System (ACS)**. The ACS is the information system that stores data originally entered by the U.S. broker using the ABI. If the entry is Line-Release, the driver presents a form that has a series of bar codes on it. The Customs inspector scans the bar codes and the shipment is verified by the ACS.

Once the paperwork and computer information has been verified by the agent (or computer in the case of line-release), the computer may indicate that the vehicle needs to undergo a secondary inspection. U.S. Customs will not discuss exactly how vehicles are selected for secondary inspection, but there are only two reasons for selecting a particular vehicle: enforcement and compliance monitoring.

Depending on the specific product, agricultural, food products, pharmaceuticals, and medical equipment shipments may be sent directly to the agricultural inspection docks where the U.S. Department of Agriculture and or the U.S. Food and Drug Administration inspect the loads. USDA has established some low risk products that can be precleared and are subject only to random inspections.

Finally, while vehicles are at the primary inspection station or in the queue, K9 units will patrol around the vehicles. If a dog reacts to a vehicle, it is selected for a secondary inspection. In addition, the agent may send a vehicle to a secondary inspection if he or she feels that there is something suspicious about the paperwork, vehicle, or driver.

If everything is in order and no inspections are required, the vehicle is allowed to pass through to the final check point and exit the port of entry. Some Mexican vehicles - particularly some tankers - are too large (oversized) for operation on U.S. roadways. These vehicles may have to be trans-loaded onto smaller U.S. vehicles. This transfer occurs within the commercial compound and the oversized vehicles return to Mexico.

15. U.S. Customs - Secondary Inspection

Regardless of the type of secondary inspection, the first item of business will be to verify the information on the driver and the equipment. The driver must have the appropriate documentation, typically a passport and visa, to satisfy the **Immigration and Naturalization Services (INS).** If the driver does not have the appropriate documentation, he is referred to INS, which has offices at most commercial ports.

As there are three types of inspections: random, compliance, and stratified. The type of secondary inspection determines if the trailer is unloaded. In some cases, the inspector has sufficient room to move within the trailer and nothing has to be removed from the vehicle. In other cases, the entire contents on the trailer most be unloaded so the inspector can examine the goods.

In the event the trailer is unloaded, the shipper typically has to pay a fee for unloading the vehicle. In some ports stevedores unload the trucks by hand. In other ports, the brokers have personnel and equipment for unloading vehicles. Pelletization of loads has improved the efficiency of this process.

Throughout the secondary inspection process, K9 patrols may move in and around the trucks and trailer. If a dog reacts to a vehicle, a Contraband Enforcement Team (CET) may be called in to aid in the inspection of the vehicle. Depending on the level of inspection required, processing a vehicle in the secondary inspection area may take from 1 to 6 hours. In rare cases an inspection takes more than 6 hours, due to special circumstances.

16. U.S. Customs - Final Check Point

A vehicle released from primary or secondary inspection proceeds to the final check point at the U.S. commercial compound. All the paperwork is submitted and the vehicle is allowed to exit the compound.

17. State Safety Inspection and Weight Control

All U.S. states have vehicle safety inspection and weight station programs. In the past Texas performed the inspection within the U.S. compound. However, when this operation was in progress the demand at the port dropped. Once the inspection team left, the demand increased significantly.

18. Border Destination - Carrier, Freight Forwarder, or Broker Facility

For shipments destined to the U.S. interior, the drayage company will deliver the trailer to a U.S. carrier, broker, or freight forwarder's facility. The tractor will either return without a trailer to Mexico or pick up a southbound trailer.

19. U.S. Carrier

If a single bill of lading was not prepared in Mexico, a new bill of lading will be prepared to cover the transport from the border region to the interior of the United States. If information is transmitted to the carrier in advance of the shipment's arrival, there may not be any additional delay. Some delays may occur if the bill of lading must be created. Once the U.S. bill of lading is prepared, a driver picks up the load and transports it to the final destination.

20. Weigh Station and Inspections

During the trip from the border region to its final destination, the carrier's truck will be subject to the motor vehicle laws of the state or states through which it travels.

21. Final Destination

In the United States most traditional trade from Mexico goes to distribution centers operated by major retailers or importers. These distribution centers are usually located in the border states along the major trade corridors, such as I-35 in Texas. Mexican products are shipped throughout the United States from these regional distribution centers.

Appendix B: NAFTA Timetable for Trucking Provisions

18 December 1995: Mexican trucking firm gains the authority for cross-border operations to and from Texas to New Mexico, Arizona, and California. U.S. firms gain parallel access to cross-border shipments to and from the six border states in Mexico. Mexican firms are permitted to own 100 percent of U.S. firms moving international cargo between points in the United States. U.S. firms are permitted to own up to 49 percent of Mexican firms moving international cargo between points in Mexico. Only Mexican firms are permitted to carry domestic cargo within Mexico; only U.S. firms may carry domestic cargo within the United States.

1 January 2000: Mexican trucking entities can obtain operating authority for cross-border operations to or from any point in the United States. U.S. carriers may move cross-border freight to or from any point in Mexico.

1 January 2001: U.S. firms may own up to 51 percent of Mexican operations carrying international freight within Mexico.

1 January 2004: U.S. firms may own up to 100 percent of Mexican operations carrying international freight within Mexico. These firms must be Mexican operations, using Mexican equipment and drivers. They may not carry domestic cargoes within Mexico.

Appendix C: Letter from Assistant Attorney General[1]

August 3, 1993

The Honorable E (Kika) de la Garza
U.S. House of Representatives
Washington, D.C. 20515-4315

Dear Congressman de la Garza:

This letter responds to your recent letter to the Attorney General enclosing a position paper formulated by the National Alliance for Fair Trade. That group, on behalf of several United States customs brokers, is concerned about a situation involving Mexican customs brokers that they believe involves violations of the federal antitrust laws, and which they requested be investigated by the Department of Justice.

Members of the Antitrust Division staff have met and spoken with representatives of the Alliance and have carefully reviewed a series of documentary submissions they provided. The Alliance's complaint is essentially that, under U.S. law, Mexican nationals are permitted to engage in customs brokering and freight forwarding operations with respect to goods exported from the United States into Mexico, while U.S. firms are not permitted, under Mexican law, to provide such services. Rather, Mexican law requires that goods imported into Mexico from the United States be inspected and certified by Mexican customs brokers. Thus, the Alliance contends that, with respect to goods moving from the United States into Mexico, Mexican firms have been able to provide both U.S. and Mexican clearance, while U.S. brokers and freight forwarders are only able to offer U.S. clearance. As a result, American firms lose a significant amount of outbound business because shippers can obtain all necessary outbound documentation by patronizing a Mexican broker doing business in the U.S.

From the available information, including the materials enclosed with your letter and additional materials provided by Mary Sotelo of the Hidalgo Customs Brokers' Association, it appears that any disadvantage faced by U.S. brokers and forwarding firms results from the differences in U.S. and Mexican law with respect to their treatment of foreign firms, and not from any anticompetitive action by Mexican firms that

AUG 05 1993

[1]Prof. James Giermanski file, Texas A&M International University.

violates U.S. antitrust law. Accordingly, formal investigation by the Department of Justice does not appear to be warranted. While our letter addresses only the request for an antitrust investigation made by the customs brokers, we understand that they have also contacted other federal agencies about their complaint. I enclose a letter written to Senator Hatch by the U.S. Customs Service that addresses other aspects of the brokers' complaints.

I trust this information will assist you in responding to your the customs brokers who have contacted you. Your interest in this matter and in the enforcement of the antitrust laws is greatly appreciated.

Sincerely,

Anne K. Bingaman
Assistant Attorney General

Enclosure

Appendix D: Letter from Deputy United States Trade Representative[1]

DEPUTY UNITED STATES TRADE REPRESENTATIVE
EXECUTIVE OFFICE OF THE PRESIDENT
WASHINGTON, D.C. 20506

Ms. Maria L. Sotelo
Legislative Committee
Hidalgo Customs Brokers Association
P.O. Box 800
Hidalgo, Texas 78557

Dear Ms. Sotelo:

Thank you very much for your letter of October 19, 1993, in which you raised your industry's concerns regarding the treatment of customs brokers in the North American Free Trade Agreement (NAFTA), particularly with regards to the accessibility of U.S. customs brokers to the Mexican market.

We appreciate your concerns regarding this issue. This was the subject of many discussions during the NAFTA negotiations. Unfortunately, we were unable to secure equal access for U.S. customs brokers in Mexico. The NAFTA maintains our current requirements with respect to the licensing of customs brokers in the United States. Mexican Customs brokers can work for a U.S. licensed broker or establish a partnership in the U.S. where at least one member of the company is a licensed broker. The licensed broker must be a U.S. citizen.

The Agreement contains an overall balance of concessions. There were also many requests from Canada and Mexico not considered by the United States. With respect to this issue, however, the three countries agreed to revisit it within five years. Overall, the NAFTA gives the United States a better opportunity to achieve equal access to the Mexican market than without it.

I can assure you that once this issue is raised again, we will consider your industry's requests when pressing our case. If you have additional questions, please do not hesitate to contact us again.

Sincerely,

Rufus Yerxa

[1]Prof. James Giermanski, Texas A&M International University.

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Institutional Arrangements that Affect Free Trade Agreements:

Economic Rationality Versus Interest Groups

This dissertation presents a time motion study of what actually happens at the busiest U.S-Mexican border crossing at Laredo. The North American Free Trade Agreement (NAFTA) assumes seamless border crossings without detailing however how this would be achieved particularly in the case of trucking, the most important cargo transport mode. This dissertation presents evidence that NAFTA has not led to an efficient border crossing: a border that could be crossed in 15 minutes with a single truck and driver takes several days, drivers, and pieces of equipment. In fact it takes longer to cross the Rio Grande than go from Chicago to Laredo by truck. This is contrasted with a mini-time motion study of an efficient border crossing at Ambassador bridge between the United States and Canada, which has more traffic than all Laredo bridges combined, yet it has only 4 lanes versus the 22 crossing lanes available at Laredo, presenting the effects of the attempt to solve an institutional problem by building more infrastructure. The time-motion study establishes which practices or regulations cause which inefficiencies and what are the consequences in terms of time, money, and equipment. This analysis shows the way in which interest groups profit from inefficiency, and it also reveals the economic forces at work on the local and national level in both countries. Such inefficiencies not only cost importers and exporters time and money – they also cause welfare losses to the entire economy because of the distortions they introduce to consumption and sourcing decisions. In order to measure the macro-economic impact of these non-tariff barriers, the dissertation uses the General Trade Analysis Project – GTAP model – to simulate the removal of iceberg trade costs. The results of the analysis indicate that the removal of such barriers would benefit the Mexican economy by $1.8 billion per year, while the U.S. economy would see a welfare increase of about $1.4 billion per year. Trade flows between Mexico and the United States would likewise increase, with southbound trade expanding by about $6 billion and northbound trade growing about $1 billion per year. This work is relevant for business and government people pressing the case for well intended free trade agreements and promoting the technology that can expedite greater volumes of trade. Further research along the lines of this work may provide a refined theoretical and methodological basis for cross-border policy.

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