Privatization of Mexico's Railroad Market: Implications for U.S./Mexico Grain/Oilseed Trade

by
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Introduction

Mexico has become an important importer of U.S. grain/oilseed during the 1990's. Nearly half of the U.S.'s grain/oilseed exports to Mexico enter that country via overland crossings on the U.S. /Mexico border. Most overland shipments are rail-transported. Railroads in the United States transport grain/oilseed from U.S. origins to U.S./Mexico border crossing locations where the railcars are transferred to the Ferrocarriles Nacionales de Mexico (FNM), the state-owned railroad of Mexico. The U.S. railcars are transported to Mexican demand centers with FNM power and under a rate structure determined by Mexico's Secretaría de Communicaciones y Transportes (SCT).

In 1995, the Mexican government announced that the Ferrocarriles Nacionales de Mexico would be privatized and divided into four main systems. Privatization of the Mexican railroad would seem to have important implications for U.S. overland exports since railroad's will become profit maximizers thus altering the overland rate structure which currently includes cross-product subsidies, and other non-economic characteristics (Estrada). In an unregulated transportation environment, railroad costs and demands, and intramodal and intermodal competition become important determiners of transportation rates. Since grain is a low-valued, bulky commodity whose geographic flow pattern is sensitive to transportation/logistic costs, privatization may be disruptive to U.S. overland grain exports to Mexico. The objective of this study is to determine how privatization of the FNM will likely affect the competitiveness of the U.S. in Mexico's

regional grain/oilseed markets, the U.S.'s overland grain/oilseed exports and welfare of U.S./Mexican producers. The study focuses on privatization of the Northeast section (Ferrocarriles de Norteste), the only mainline for which the Mexican government has requested bids and historically a major artery for U.S. grain exports to Mexico.

Background

This section presents information on (1) the transportation and historic routing of U.S. grain/soybeans to Mexico's import demand centers and (2) the Ferrocarriles Nacionales de Mexico (FNM) and the privatization process.

Transportation of U.S. exports

Corn, sorghum, wheat and soybeans are the principal U.S. grain/oilseed exports to Mexico. Historically, the United States supplied virtually all of Mexico's imports of these commodities; the recent exception is wheat, which has been imported from Canada. During the 1990-95 period, the U.S. annually exported an average of 8.4 million metric tons (mmt) of corn (2.2 mmt), sorghum (3.4 mmt), wheat (1.0 mmt), and soybeans (1.8 mmt) to Mexico (Klindworth).

The routing of U.S. grain/soybean exports to Mexico and the associated logistics tend to vary by commodity and with time. On average, about 45 percent of these exports moved via overland routes during the 1990-1994 period (U.S./Mexico border) while the remainder (55 percent)

moved by ocean transport to Mexico's Gulf and Pacific ports (Table 1). Nearly 40 percent of U.S. exports entered Mexico via Brownsville, Laredo and Eagle Pass, Texas or the Laredo district while the remaining overland exports (7 percent) were via the western district (El Paso, Texas; Nogales, Arizona and Calexico, California). Virtually all of the overland exports to Mexico were rail-carried from origins in Texas, Kansas, Nebraska and Missouri. The exception is sorghum which was transported by Mexican motor carriers from south Texas supply origins to Mexico. Klindworth estimated that nineteen percent of U.S. sorghum exports were truck-transported into Mexico in 1990-91.

Mexico received on average 44 percent of its imports from the U.S. via Mexican Gulf ports in the 1990-91 period (Table 1). The principal Mexican Gulf grain ports are located at Tampico, Tuxpan, Veracruz, Coatzacoalcos, and Progresso with most grain/soybean imports entering via facilities at Tampico, Veracruz and Progresso. Progresso is a shallow-water port which accommodates vessels with cargoes of 8-15,000 tons. Draft limitations constrain grain cargoes to 20-25,000 metric tons at other Mexican Gulf ports while cargoes up to 30-34,000 metric tons can be accommodated at Pacific ports. Pacific ports are located at Guaymas, Topolobampo, Mazatlan, Manzanillo, Lazaro Cardenas and Salina Cruz with the majority of Pacific Coast grain imports received via Guaymas and Manzanillo (Klindworth).

The routing of grain to and within Mexico is influenced by the geographic location of Mexican import demands. It is estimated that in 1990-91 about 40 percent of Mexico's grain/soybean

imports were destined for central Mexico, but in particular Districto Federal (14 percent), Estado de Mexico (9 percent), Puebla (9 percent) and Quanajuato (4 percent). Additional states with important demands were Nuevo Leon (9 percent) in northeast Mexico; Sonora (9 percent) in northwest Mexico; Durango (4 percent) in northcentral Mexico; Yucatan (7 percent) in the peninsula region, and Jaliso (14 percent), a state in central Mexico located on the Pacific Coast (Klindworth). Fuller, Gutierrez and Gillis estimated grain/soybean consumption and production by Mexican state for the 1989-90 period and found states with estimated deficits to be highly correlated with Klindworth's estimate of state-level imports.

FNM and Privatization

In 1903, the Mexican government purchased majority interests in three of that county's railroads and in 1907 merged two of these lines to create the Ferrocarriles Nacionales de Mexico (Neyer). The system was nationalized in 1937 and in 1987 the current Ferrocarriles Nacionales de Mexico was created with merger of five regional railroads. Unfortunately, the FNM suffered significant financial difficulties. In 1991, it registered an operating deficit of $552 million which represented 37 percent of its operating budget. In 1989 and 1990, the FNM's deficit amounted to $449 and $549 million, respectively (Klindworth). At the same time, increased competition from trucking and shipping decreased railroad's share of the total freight market to about 9 percent or about half of railroads share of a decade earlier. In view of Mexico's difficult financial conditions in late 1994, the Mexican Congress elected to privatize the state railroad through a series of long-term concessions.

The FNM has been central to the U.S.'s rail-carried grain/soybean exports to Mexico since U.S. railcar shipments from border-crossing locations to Mexican destinations are moved under FNM control and generally FNM locomotives. Klindworth reports substantial improvements in the FNM's ablitity to accommodate U.S. exports. Investments in trackage now allow full-loading of grain hoppers on most of the important transportation corridors and grain car turn-round time in Mexico has declined from an average of 38 days to 12 days over the decade ending in 1991. Although the FNM was able to become a relatively effective partner in the transportation of U.S. grain to Mexico, it was unable to overcome its inefficient utilitization of labor and capital and an inefficient pricing scheme (Estrada). Outdated labor work rules and policies lead to a bloated unproductive work force. Klindworth observes that even though FNM wage rates are one-third U.S. wages, total wage cost for a 50-car train was five times those of a comparable U.S. movement. Further, the FNM's pricing policy tends to set rates below costs in short-haul markets where railroad costs are high and substantially above costs in long-haul markets where costs are comparatively low (Estrada). Further, there are significant differences among FNM grain rates, thus apparent cross-subsidization among grains. For example, rates on movements of wheat and soybeans from Laredo to central Mexico (800 miles) are about $30/ton while corn and sorghum rates are about $24 and $27/ton, respectively.

Mexico's Secretaría de Comunicaciones y Transportes (SCT) is charged with administering privatization of the Ferrocarriles Nacionales de Mexico into four systems. Under terms of privatization, Mexico will auction off renewable, 50-year operating concessions. Foreign investment is limited to 49 percent with any higher foreign ownership share subject to approval

by Mexico's Foreign Investment Commission. Recently, the Mexican government announced it would retain 20 percent ownership in selected concessions but with the intent to sell its 20 percent stake through a public offering within two years after privatization (Sutter).

Privatization plans call for dividing the FNM into three mainlines operations, a terminal railroad and several shortlines; these include the Northeast, Pacific-North and Southeast mainlines and a terminal railroad which is to serve the Valley of Mexico region (Beachy). The Northeast section or the Ferrocarriles del Noreste is a 2500 mile system that connects Laredo and Brownsville to Monterrey, an industrial hub in north Mexico, and to Mexico City. In addition, this mainline (1) connects Mexico City to the Gulf port at Veracruz and to the Pacific port at Lazaro Cardenas, and (2) links the port of Tampico to Aguascalientes via San Luis Potosi. Because this system carries about two-thirds of Mexico's rail cargo, it is viewed as the most valuable mainline. In August, 1996 the Mexican government announced it was accepting bids for the Northeast sector; and in December, 1997 a consortium including Mexican shipper, Transportacion Maritima Mexicana (TMM), and Kansas City Southern Industries were the announced buyers with a bid of $1.4 billion (Millman). The Northeast sector is the only mainline for which the Mexican government has requested bids. Other segments to be privatized include the Pacific-North system which connects Mexico City to border crossings at Eagle Pass and El Paso, Texas; Nogales, Arizona; and Calexico, California. In addition, this system is to connect to the port at Tampico and Pacific ports at Guaymas, Mazatlan, and Manzanillo. The Southeast railroad is to operate between Mexico City and the Yucatan peninsula. The terminal railroad, Valley of Mexico, is to operate in

the Mexico City area and is to be owned jointly by the Northeast, Pacific-North and Southeast railroads as well as an urban passenger line.(Beachy)

Most major U.S. railroads entered into agreements with Mexican companies for purposes of bidding on selected portions of the FNM. Most prominent among U.S. bidders were the Union Pacific Southern Pacific, Kansas City Southern and Burlington Northern Santa Fe railroads. The Union Pacific Southern Pacific (UPSP) railroad has worked with the FNM on upgrading and computerizing the Laredo to Mexico City mainline.(Hall, July 3, 1996) The UPSP connects with the FNM at all major U.S./Mexico border crossings and is the leading carrier of U.S. freight to/from the Mexican market. Most bidders report the FNM track infrastructure to be in good condition but railcar and locomotive power outmoded, and telecommunications and signaling systems inadequate. Of greatest concern to potential owners is FNM's bloated labor force of 49,000.(*Traffic World*) To ease the transition to private rail operations, the FNM has reached a labor agreement with the Mexican railroad workers union that reduces duplicity and obsolete work provisions, and removes pension responsibilities for retired railroad workers (Hall, June 18, 1996). It is reported that the Mexican government may use revenues obtained from railroad privatization to make severance payments to about 24,000 FNM (about half) workers that are likely to be found in surplus under a privatized scheme (Burke). Mexican law requires a minimum three months severance pay plus 20 days of pay for each year of employment.

Model

Analyses is accomplished with spatial, intertemporal equilibrium models of the international corn, sorghum and soybean sectors. The models are specified as quadratic programming models of the type developed by Takayama and Judge. The objective function of each model maximizes consumer plus producer surplus minus grain handling, storage and transportation costs. The objective function is maximized subject to constraints regarding flows between excess supplies and excess demands of domestic and foreign regions and quantities transhipped via port areas and barge loading sites.

The quadratic programming models include detail on regional excess supplies/demands and transportation/logistics in the United States and Mexico. For example, the international corn model includes 48 U.S. excess demand and 58 excess supply regions, 18 Mexican excess supply/demand regions, and 25 foreign (non-Mexico) excess demand and five foreign (non-Mexico) excess supply regions. The sorghum and soybean models are similarly structured. The models include barge-loading sites on the Mississippi and Ohio rivers and 17 U.S. port areas. The U.S. excess supply regions are linked to U.S. excess demand regions, U.S. barge-loading sites and ports, and U.S./Mexican border-crossing locations with appropriate grain handling storage and transportation (truck, rail, barge) costs/rate. Barge-loading sites are connected to barge-unloading locations and ports with grain handling and barge costs. U.S. ports and foreign excess supply regions are linked to foreign and Mexican ports by grain handling costs and ship rates. Mexico's excess demand regions are linked with that country's excess supply regions and

Mexico's ports and border-crossing locations with trucking and railroad rates and grain handling/storage costs. In the model, Mexico's overland grain/soybean imports may enter at Brownsville, Laredo, Eagle Pass and El Paso, Texas; Nogales, Arizona; and Calexico, California, while maritime imports enter via Tampico, Tamaulipas; Tuxpan, Veracruz; Veracruz, Veracruz; Progresso, Yucutan; Guaymas, Sonora; Manzanillo, Colima; and Lazaro Cardenas, Michoacan. Solution to the models yield all interregional and intercountry grain/soybean flows by transport mode and commodity price.

Base models were constructed that included a demand/supply structure representative of the 1991-95 period and that reflected the pre-privatization era in Mexico. Rail rates linking U.S./Mexico border-crossing locations and Mexican ports to that country's excess demand regions were taken from the official tariff of the FNM. Historic rate data on Mexico's unregulated grain trucking industry were taken from Salcedo Baca. Base model flow patterns (quantities entering Mexico via overland crossings and ports) were compared with historical data to validate the developed base models. The base model flow patterns closely approximated historical flows, thus models were judged adequate to carry out study objectives.

Procedure

Estrada shows that in a market-oriented industry the optimal railroad rates will exceed marginal costs because of the need to cover total costs. Factors to be considered in determining optimal variations from marginal costs are: (1) the size of the shipments (railroad has advantage at higher transported volumes); (2) the value of the commodities being transported (under an

efficient pricing strategy, high-value commodities will tend to contribute less than bulk commodities to fixed railroad costs); and (3)the length of the haul, (railroads marginal cost increases at decreasing rates with distance). Further, if a shipper is captive, it will tend to pay a relatively high rate or markup. Thus, the essential determinants of optimal railroad markups are marginal costs in combination with information on the cost advantage of railroad transportation relative to competing transportation modes.

Estrada concludes that efficient railroad rates must satisfy the following conditions: (1) they cannot be negative (i.e., marginal costs are the lower bound for efficient railroad rates); (2) must be high enough to fully cover system-wide fixed costs; and (3) cannot exceed the relative cost advantage of the railroad. Although these conditions offer ranges, they do not offer the final efficient price markups for the various routings. The relevant element in determining optimal markups is not the value of the commodity (as current FNM rates are in part determined), but the comparative advantage of the railroad. As the advantage of rail over other modes increase, the likehood decreases that inefficient shipments divert to other modes. Thus, the efficient markup will increase with the comparative advantage of the railroads.

To develop perspective on the rate structure and associated flow patterns that would likely evolve with privatization of the Northeast mainline, (Ferrocarriles de Norteste (FNE)), a heuristic procedure was followed to determine profit-maximizing rates in Mexico's grain/soybean transportation markets where the FNE would compete. In the first step, variable costs that the FNE would likely experience when routing grain/soybeans over the various origin-destination

combinations in its network was estimated. Variable costs represented a lower bound estimate of possible rates. Then, marginal prices (shadow prices) for each relevant transportation link in the above-disscused spatial models were estimated and used as a guide to establish FNE rates for the various transportation markets in which it participated. The estimated rates were the maximum that could be charged by the FNE without diverting traffic.

The above-discussed mathematical programming transportation models were used to carry out the analysis. The initial or base model included FNE base rates (marginal cost). From the initial model solution, a matrix of marginal prices was obtained. The matrix provided quantitative information about marginal prices for each transportation market in which FNE was a participant. The marginal price matrix shows pricing advantage of the FNE relative to competing modes and the extent to which rates could be adjusted above marginal costs without diverting traffic.

Recall the shadow price vector (**u**) from any linear programming model is given by the formula

$$\mathbf{u} = \mathbf{c_B}\,\mathbf{B}^{-1}$$

where $\mathbf{c_b}$ gives the objective function coefficients for the basic variables, and $\mathbf{B}^{-1}$ is the basis inverse for the optimal solution (Bazarra, et. al.).

The estimated **(u)** provided the marginal effect on the objective function (social welfare) that result from changes in transportation rates in each transportation market. If the non-optimal mode of transportation were chosen, there would be a marginal decrease in the social welfare.

For example, the base model solution shows Laredo-Central Mexico(FNE's main artery) as a critical route for the soybean market. The marginal price matrix shows the Nogales-Central Mexico corridor, a non-FNE route, to have a value -2.43; this negative value represents the cost disadvantage of the Nogales-Central Mexico corridor relative to the Laredo-Central Mexico route (FNE road).

The extent to which rates could be adjusted above variable costs on the various FNE routes was determined by systematically adjusting the potential rate upward to the limit reflected by marginal prices on competitive routings. These new railrate parameters were then included in the model and the model solved to determine quantity of FNE-carried grain on each route, and associated revenues above variable costs. The maximum rate markup on a particular route was viewed as that which yielded greatest revenue over variable cost or maximum net cash flow without traffic diversion. Variable costs likely to be experienced by FNE on its various routes were determined with a Reebie Associates rail costing code that included secondary data thought to be representative of a privatized Mexican railroad (tons/car, distance, cars/shipment).

Results

Results focus on privatization of the Ferrocarriles de Norteste (Northeast mainline) and its likely affect on U.S./Mexico overland flows and Mexican and U.S. producers welfare. The analysis focuses on U.S. sorghum, soybean and corn exports to Mexico.

Grain Sorghum

The base solution (pre-privatization) shows U.S. sorghum exports to Mexico of 3.54 million metric tons (mmt) with 1.976 mmt entering Mexico via overland routes and the remaining 1.163 mmt entering through Mexico's port system.(Table 2) Of the 1.976 mmt entering Mexico by overland routes, an estimated 1.649 mmt (83.5 percent) is rail-carried with 0.327 mmt (16.5% percent) transported by truck from south Texas border communities. About 92 percent of the rail-carried grain (1.505 mmt) enters through the Laredo region and moves over trackage that will become part of the FNE after privatization.

To generate maximum net cash flow for the FNE, a pricing strategy was developed to capture overland hauls into central and north central Mexico, regions which include much of Mexico's excess sorghum demand and FNE trackage. This was facilitated by setting FNE rates that link Mexican Gulf ports with central and north central excess demand regions at comparatively high levels for purposes of discouraging sorghum imports via Gulf ports. This strategy was to allow the FNE maximum latitude in establishing rates on overland shipments into central and north central regions. Analysis with the sorghum model showed the FNE could earn revenues above variable costs equal to $9.52 million. This would yield a weighted system-wide revenue-to-variable cost ratio for sorghum haulage of about 1.5, a ratio that is above that associated with much grain haulage in the United States.

Analysis with the sorghum model shows U.S. sorghum exports to Mexico and overland flow patterns to be virtually unchanged as a result of privatizing the Northeast corridor. Total exports decline from 3.54mmt to 3.566 mmt. Overland sorghum movements into Mexico edge upward from 1.976 mmt to 2.289 mmt, with virtually all increase in flow occurring through El Paso and Nogales crossings (non-FNE crossings). In spite of the virtually unchanged flow pattern, FNE rates may unfavorably affect Mexican producers surplus while improving the welfare of US producers. Results indicate Mexican sorghum producers welfare would decline $1.12 million with the privatization of the FNE while that of US producers increase by $2.47 million.

Soybeans

The base solution (pre-privatization) shows U.S. soybean exports to Mexico of 1.822 mmt with 1.287 mmt entering that country through overland crossings while the remaining 0.535 mmt arrives via Gulf and Pacific ports.(Table 2) Of the 1.287 mmt that enters by overland crossing, about 1.163 mmt is rail-carried, with about 34 percent (0.394 mmt) moving through the Laredo region. Remaining soybeans (0.769 mmt) enter Mexico via the western crossings (Piedras Negras, Nogales).

Because much of Mexico's excess soybean demands (78 percent) are not served by FNE trackage and much of the demand is positioned in proximity of effective intramodal/intermodal competition no general pricing strategy seemed apparent. The exception was central Mexico's demands where attempts were made to capture the overland haul by increasing FNE rates that

link Gulf ports with central Mexico demands. The analysis shows the FNE to earn revenues above variable cost equal to $2.83 million on its soybean haulage, with an associated weighted system-wide revenue-to-variable cost ratio of 1.45.

The United States soybean exports to Mexico are projected to decrease a modest 0.1 percent (0.027 mmt) as a result of privatizing the Northeast sector; overland flows increase 0.121 mmt while port flows decline 0.126 mmt. Privatization of the Northeast segment is projected to increasing Mexican producers surplus approximately $1.701 million but lowering US producers surplus by $2.59 million.

Corn

The base solution (pre-privatization) shows U.S. corn exports to Mexico of 1.840 million metric tons (mmt) with 0.358 mmt entering Mexico via overland routes and the remaining 1.482 mmt entering through Mexico's port system.(Table 2) About 80 percent (0.286 mmt) of the 0.358 mmt entering Mexico by overland routes is rail-carried with virtually all entering through the Laredo district for movement over trackage that will become part of the Northeast railroad system.

Historic flow data and the base model solution show most of the U.S.'s corn exports to Mexico are transported via ocean routings. This routing is expected since the majority of U.S. corn exports exit important U.S. surplus regions (Iowa, Illinois, Minnesota) via low-cost barge

transportation for purposes of moving to lower Mississippi River ports for export. Thus, the least-cost supply of U.S. corn for Mexico involves barge transportation over the Mississippi River system with subsequent ocean transportation to Mexico's ports. Accordingly, the U.S. exports modest quantities to Mexico via overland routes. Excess corn supplies in the western Corn Belt (Nebraska, Iowa, Missouri) are potential sources of supply for overland exports to Mexico but strong export competition via Pacific northwest ports and livestock/poultry/dairy demands in the U.S. west and southwest offer strong competition to overland corn exports to Mexico. Thus, the geographic location of the U.S. corn demands/supplies and the U.S. barge transportation system have important implications for FNE pricing and corn haulage in Mexico.

In general, the FNE would have limited ability to capture long overland hauls of corn into central Mexico, a major demand center. But FNE would have the ability to modified the historic flow pattern since rates from gulf to central Mexico could set higher markups on Gulf rail rates compare with FNE overland rates. Rather, its focus would be on marginal prices of overland hauls routings between Laredo entry and important demand centers in central and northeast Mexico. Higher markups on the Gulf would decrease marginal prices for overland routings until traffic would divert to Laredo points. For purposes of this study, the FNE pricing strategy concentrated on maximizing revenues over variable costs on routings long-hauls like Nebraska-Central Mexico.. Analysis with the corn model showed the FNE could earn revenues above variable costs equal to $4..57 million on its corn haulage. The FNE would carry an estimated 0.476 mmt between Mexican Gulf ports and central Mexico demand centers and about 0.775

mmt via overland crossings. This activity was projected to yield a weighted system-wide revenue-to-variable cost ratio for corn haulage of 1.4.

Analysis with the corn model shows U.S. corn exports increase under privatization. U.S. corn exports to Mexico edge upward from 1.840.3 mmt to 2.102 mmt with the increase in entering at Laredo points. Privatization lowers transportation costs that link the U.S. with Mexico, thus U.S. producers surplus is projected to increase $3.01 million while Mexican producers surplus decreases $1.79 million.

Summary

Privatization of Mexico's state-owned railroad, in particular, the Northeast sector could have important implications for U.S. overland grain/soybean exports since the current state-owned system has rates that include cross-subsidies and the other non-economic characteristics. With privatization, railroad costs and demands and intramodal and intermodal competition would become important determiners of transportation rates. Thus, under privatization, rates are likely to change and because grain is a low-valued, bulky commodity whose geographic flow pattern is sensitive to transportation costs, privatization may be disruptive to U.S. overland grain exports to Mexico. This study focuses on privatization of the Ferrocarriles de Norteste (Northeast segment), the mainline for which the Mexican government has requested bids and the main artery for U.S. overland grain exports to Mexico.

The study focuses on the U.S.'s sorghum, soybean, and corn exports to Mexico. Analysis is accomplished with spatial models of the international corn, sorghum and soybean sectors. A heuristic procedure is followed with the spatial models for purposes of determining the profit-maximizing rates likely to be charged by a privatized railroad in the various Mexican transportation markets. The profit-maximizing rate structure following marginal prices is subsequently entered into the spatial models and the models solved to determine the resulting flows.

Results show that privatization would have modest impacts on U.S. overland exports and for U.S. sorghum and corn exports. The transportation costs linking the U.S. and Mexico are projected to decline. Thus, a gain in U.S. producers surplus and a modest increase in exports. Intermodal and intramodal competition were found generally effective at restraining the Ferrocarriles de Norteste grain rates with system-wide revenue-to-variable costs ratios of about 1.6. These revenue-to-variable cost ratios are somewhat closer to rates experienced by U.S. railroads on most grain haulage.

In summary, privatization of Mexico's railroad system, in particular, the Northeast sector, is not likely to unfavorably impact the U.S.'s ability to export grain/soybeans to Mexico. In fact, the analysis suggests that transportation cost reductions are likely and exports and U.S. producers welfare may modestly increase.

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Table 1: Mexican Grain Imports, Percentages by Route and Port Range, 1990-94

Route/Port/Year	1990	1991	1992	1993	1994	Average
Overland:						
Laredo District	24	39	36	47	44	38
Western Border	7	4	7	9	7	7
Subtotal	32	43	42	56	50	45
Maritime:						
Maritime/Gulf	55	46	42	36	41	44
Maritime/Pacific	13	11	15	8	9	11
Subtotal	68	57	58	44	50	55
Total	100	100	100	100	100	100

Source: Klindworth, et.al.

Table 2:
Estimated U.S. Exports of Grain/Soybeans via U.S./Mexico Border Crossings Under Pre- and Post-privatization Scenarios with Associated Changes in Producers Welfare[1]

	----------Border Crossings----------				Total U.S. Exports		Changes in Producers Surplus	
	Pre-privatization		Post-privatization		Pre-privatization	Post-privatization	U.S. Producers	Mexico Producers
Commodity	Laredo District[2] (mmt)	Western District[3] (mmt)	Laredo District[2] (mmt)	Western District[3] (mmt)	(mmt)	(mmt)	($millions)	($millions)
Sorghum	1.992	0.423	1.991	0.460	3.580	3.559	+2.47	-1.11
Soybeans	0.888	0.398	0.632	0.777	1.822	1.817	-2.59	+1.71
Corn	0.358	0.0	0.775	0.111	1.839	2.102	+3.01	-1.79

1 Analysis focuses on privatization of the Northeast sector or the Ferrocarriles de Norteste.
2Includes truck and rail crossings at Brownsville, McAllen, Laredo and Eagle Pass, Texas. Virtually all is railcarried except for sorghum. Truck crossings of sorghum comprised about 8 percent of Laredo crossings.
3 Includes truck and rail crossings at El Paso, Texas; Nogales, Arizona and Calexio, California. Virtually all crossings are rail-carried