Data Base for a Computable General Equilibrium Model of the Agricultural Sectors of the United States and Mexico and Their Interactions

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Abstract

This paper documents the data base for a 28-sector, agriculture-focused computable general equilibrium (CGE) model of U.S. and Mexican farm programs and trade policies. The data base for each country in the U.S.-Mexico CGE model includes: a social accounting matrix (SAM), data on domestic farm programs, data on trade policies (tariffs, export subsidies, and tariff equivalents of quotas), and elasticities assumed for production and consumption functions. This report presents the data base and describes sources of the data and the computer programs that generate a balanced SAM for each country.

Keywords: data base, computable general equilibrium (CGE), modeling, agricultural trade policy.

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List of Abbreviations

BEA	Bureau of Economic Analysis, U.S. Department of Labor
CES	Constant elasticity of substitution import demand function
CET	Constant elasticity of transformation output supply function
CGE	Computable general equilibrium
CSE	Consumer subsidy equivalent
EEP	Export Enhancement Program
FTA	Free trade area
GAMS	General algebraic modeling system
GSP	Generalized System of Preferences
GTL	GATT Tariff Library
INEGI	Instituto Nacional de Estadistica Geografica e Informatica
NIPA	National income and product accounts
PSE	Producer subsidy equivalent
SAM	Social accounting matrix
SARH	Secretaria de la Agricultura y Recursos Hidraulicos

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Introduction

This paper documents the data base developed for a computable general equilibrium (CGE) model useful in examining economic interactions between the United States and Mexico.[1] The CGE model has 28 sectors, primarily agricultural, and explicitly models domestic farm programs and trade policies in the United States and Mexico (table 1).

Components of the Data Base

The data base developed for the CGE model consists of a balanced social accounting matrix (SAM), and elasticities parameters for the behavioral equations in the model.

The SAM is a system of double-entry accounting that organizes data on economywide income flows and expenditures among factors, firms, households, government, and domestic and foreign institutions. The SAM depicts the structure of an economy in the base year in a format that ensures a consistency between income and expenditures.[2] In the SAM, the circular flow of income is accounted for from producers to factor payments, households, government and investors, and back to demand for final products. The columns of a SAM represent expenditures; the rows represent income. Balance of the rows and columns ensures that producer costs equal revenues, that expenditure equals income for consumers, government, and investors, and that demand equals supply for each commodity.

Tables 2 and 3 are the macro SAM's for the United States and Mexico, and provide the aggregate control totals for the two economies. Sectoral disaggregation of the macro SAM's incorporates sectoral data on factors, output and trade, and the input-output matrices for each country. A RAS procedure is used to reconcile current year aggregate and sectoral data on output, trade, and consumption, with the intermediate demand implied by the input-output accounts of a previous year.

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[1]Copies of the data base are available from the authors. Model results are reported in Burfisher, Robinson, and Thierfelder (1992). A small-sector version of the 28-sector model described here is Robinson, Burfisher, Hinojosa, and Thierfelder (1991).

[2]Extensive literature on social accounting matrices exists. For example, see King (1985), Dervis, de Melo, and Robinson (1982), Reinert and Roland-Holst (1990), and Hanson and Robinson (1991).

Table 1--Sectors in the model

CGE sector	Commodity	Description
1	Poultry and eggs	chicken, turkeys, ducks, eggs
2	Meat animals	cattle, hogs, sheep, goats
3	Cotton	cotton, raw, lint and seed
4	Food grains	wheat, rice, rye
5	Food corn	corn used for human consumption
6	Feed grains	feed corn, oats, barley, sorghum, hay, alfalfa, pasture
7	Fruits/vegetables	fruits, berries, vegetables (incl. pulses)
8	Oilseeds	soybeans, peanuts, sesame, safflower, sunflower
9	Forestry/fishery	timber, commercial fishing, game, hatcheries
10	Other agriculture	seeds, tobacco, sugar, nuts, milk, misc. crops
11	Meat/poultry processing	meat and meat products, hides and skins
12	Dairy processing	cheese, butter, milk products
13	Canned/frozen foods	frozen, canned, prepared foods, frz. fish
14	Grain milling	wheat and rice flour and related products
15	Feed milling	prepared animal feeds
16	Corn milling	wet corn milling
17	Sugar mfg.	sugar refining
18	Alcoholic beverages	beer, wine, other alcoholic beverages
19	Animal/vegetable oils	vegetable and animal oils
20	Other food proc.	roasted coffee, syrups, confections
21	Textiles and apparel	threads, fabrics, apparel and textiles
22	Leather manufacturing	tanned leather, leather prods., footwear
23	Other light manufacturing	lumber, wood, paper, tobacco mfg.
24	Oil and refining	crude and refined oil, natural gas
25	Intermediates	mining, chemical, metal and nonmetal mfg.
26	Consumer durables	appliances, vehicles
27	Capital goods	machinery, equipment, scientific apparatus
28	Services	trade, finance, real estate, education, health, govt.

The SAM for Mexico uses a 1988 base year. Mexican macroeconomic data are from Mexico's Second Report to the President (Estados Unidos Mexicanos, Segundo Informe, 1990). The 1988 sectoral data are from various sources, including Secretaria de la Agricultura y Recursos Hidraulicos (SARH), and Nacional Financiera, La Economia Mexicana en Cifras, 1990. Sectoral data on intermediate input demand are from a 93-sector version of Mexico's 1985 input-output accounts that contains a disaggregation of the agriculture and livestock sectors.

The SAM for the United States uses a 1987 base year because of the severe contraction of U.S. agricultural output following the 1988 drought. Bilateral trade flows are from 1988. Because of the volatility in U.S. 1987-88 agricultural output, the model follows Adams and Higgs (1986) and Hertel (1990) in the use of a synthetic base year, where the synthesis is solely the use of 1988 U.S.-Mexican bilateral trade flows in a 1987 U.S. economy. This approach achieves a more representative U.S. base year, with a minimal adjustment to data.[3]

The primary data sources for the U.S. SAM are the national income and product accounts (NIPA), the input-output accounts, and quantity measures for factors of production. At the time the 1987 U.S. SAM was developed, the most recent official U.S. input-output account was for 1977. The 1987 U.S. SAM was built by updating the USDA's 1982 SAM, which was based on the IMPLAN input-

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[3]A comparison of 1987 and 1988 U.S.-Mexico trade shows that this trade increased in 1988 as U.S. agricultural output fell. Use of a 1987/88 split year for the United States moderates the importance of Mexico in U.S. agricultural trade in 1988.

Table 2--Social accounting matrix for Mexico, 1988

Receipts or income	Suppliers: Commodity	Activity	Value added	Insti- tutions	Actors Household	Government	Capital	World	Row
					Trillion pesos				
Suppliers: Commodity					269.2	33.0	81.6	65.6	449.4
Activity	392.8								392.8
Value added		357.1							357.1
Institutions	0.08		347.8			26.1		-16.6	357.4
Household				293.0		3.9		1.0	297.9
Government	4.3	35.7	9.3	17.6	9.0			1.4	77.3
Capital account				46.8	19.7	14.3		0.9	81.6
World	52.3							-13.3	39.0
Column totals	449.4	392.8	357.1	357.4	297.9	77.3	81.6	39.0	

Table 3--Social accounting matrix for the United States, 1987

Receipts or income	Suppliers: Commodity	Activity	Value added	Insti- tutions	Actors Household	Government	Capital	World	Row
					Million dollars				
Suppliers: Commodity					3009.4	921.4	699.5	353.0	4983.3
Activity	4471.1								4471.1
Value added		4118.8							4118.8
Institutions			1432.4			11.0		29.0	1472.4
Household			2286.3	785.9	90.7	603.4			3766.3
Government	15.5	352.3	400.1	126.9	571.6			-37.7	1428.7
Capital account				559.6	92.5	-107.1			545.0
World	496.7				2.1		-154.5		344.3
Column totals	4983.3	4471.1	4118.8	1472.4	3766.3	1428.7	545.0	344.3	

output accounts (Alward, 1987). Sources of 1987 sectoral output, trade, and employment data were the Bureau of Labor Statistics, U.S. Department of Commerce, and the U.S. Department of Agriculture.

Embedded in the SAM are data on trade policies and domestic farm programs. Tariff data are mostly from 1988. Mexican tariff rates are 1988 trade-weighted averages, using tariff rates reported in the GATT Tariff Library (GTL). Tariff equivalents of agricultural quotas are calculated from 1988 price wedges between domestic and imported goods using data from the USDA producer subsidy equivalent (PSE) and consumer subsidy equivalent (CSE) data base, with the wedges adjusted for tariffs. Tariff equivalents of Mexican nonagricultural quotas are from Roland-Holst, Reinert, and Shiells (1992). Data on fiscal expenditures for Mexican farm programs are from the USDA PSE and CSE data base.

Some Mexican policy data are updated from 1988 to reflect the current policy environment. Quotas and tariffs for grains are updated to 1991. Fiscal expenditures for crops have been updated to 1990 to reflect the decline in Mexican agricultural subsidies. Expenditures for the food processing sector are from 1988, the latest year for which reliable data are available.

U.S. tariffs are 1988 trade-weighted averages, with bilateral tariffs on Mexico reflecting 1988 GSP treatment. Tariff equivalents of U.S. agricultural quotas are from the U.S. International Trade Commission (1990). U.S. deficiency payment expenditures are for 1987 (USDA, Agricultural Outlook), and EEP expenditures are a 1987-90 average.

We used four types of elasticity parameters. The CGE model assumes a nested constant elasticity of substitution (CES) value-added production function in which sectoral demand for primary factors (land, labor types, and capital) is determined at the top level, and demand for two land types is determined in the second level. This production specification requires sectoral elasticities of subsitution among primary factors in the top level of the CES function, and elasticities of substitution between land types in the second level.

The constant elasticity of transformation (CET) export supply functions require elasticities of transformation between goods sold on the home and export markets. We also report import substitution elasticities for a CES specification of import demand.

The CGE model assumes a nested Leontief production function over primary factors and intermediate goods, implying zero substitution elasticities between them. Demand for intermediate goods is determined from fixed base-year input-output coefficients, implying zero elasticities of substitution among intermediate inputs.

We have drawn on elasticity estimates from various studies, including Hinojosa and Robinson (1991), Hanson, Robinson, and Tokarick (1989), and Reinert and Shiells (1991). We analyze the sensitivity of the model results to changes in elasticity parameters, and we calculate the implied supply elasticities in the agricultural sectors.

Mexican Data Base Development

The Mexican SAM is generated from 1988 macro and sectoral data and the 1985 input-output accounts. This Mexican SAM is developed in three steps. The first step is to build a macro SAM that balances aggregate data on output, factor returns, final demand, trade, taxes, and transfers (table 2). The second step is a sectoral disaggregation of the SAM. The rows and columns of the SAM matrix are extended by the number of sectors in the model, and sectoral expenditures for intermediate inputs, value-added and taxes, and sectoral revenue from final demand and exports are accounted for.

Sectoral data on intermediate input demand are from Mexico's 1985 input-output table. Other sectoral data on output, employment, and trade are from 1988 and are drawn from various sources. Data from the aggregate SAM serve as control totals for the sectoral disaggregation of the SAM, with sectoral data adjusted if necessary to sum to the control totals. Data sources and adjustments are described in more detail below.

In the third step, the sectoral demands for intermediate goods are adjusted using a RAS procedure. This procedure reconciles current year (that is, 1988) data for output, trade, and consumption, with the intermediate demand implied by the 1985 input-output accounts. A RAS program iteratively readjusts the rows and columns of the intermediate demand matrix until the sum of sectoral expenditures for intermediate inputs, value-added, and indirect taxes (matrix column total) converges with the sum of intermediate and final demand (matrix row total). For Mexico, a general algebraic modelling system (GAMS) matrix-balancing program was developed that also adjusts the Mexican data to include imports in consumption, both in intermediate goods and in government spending, capital formation, and private consumption.

Special data problems in the development of the Mexican SAM are noted as follows.

Gross Output

Data on gross output are available for agricultural sectors from the Secretaria de la Agricultura y Recursos Hidraulicos (SARH).[4] To estimate gross output in the light manufacturing sectors, apply the percentage change in the index of volume output during 1985-88, obtained from Estados Unidos Mexicanos, Segundo Informe, to the 1985 value of output from the 1985 input-output accounts. The value of output in 1985 prices is adjusted for inflation using the price index for the manufacturing sector (also from Segundo Informe). Data on gross output in other nonagricultural sectors are from Hinojosa-Ojeda and Robinson (1991).

Factor Markets

Employment data for the total economy and for nonagricultural sectors are from Nacional Financiera, La Economia Mexicana en Cifras. There are no employment data by crop. Following Levy and van Wijnbergen (1991), sectoral employment is estimated using land/labor ratios from the CHAC model (Bassoco and Norton, 1983). First, the nonirrigated and irrigated land input is determined for each crop using data from Segundo Informe. Land/labor ratios for each type of land are used to infer the labor requirement in each sector, and the inferred sectoral employment numbers are scaled to match the agricultural employment total. This approach results in differences in labor/output ratios among crops based on their irrigated and nonirrigated composition.

Data on sectoral capital stocks are from Hinojosa-Ojeda and Robinson (1991). Capital stocks in the 28-sector model are estimated from their 7-sector data by allocating sectoral stocks according to shares of each subsectors' output in each of the 7 sectors. This treatment means that subsectors are assumed to have common capital/output ratios.

Aggregate factor income uses a control total from the national accounts. Sectoral allocation of capital and labor returns are estimated using 1985 shares as reported in the input-output accounts, except that the division of factor incomes between labor and capital are adjusted in the farm and food processing

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sectors. Mexico's input-output accounts report capital shares of factor incomes that in some farm sectors exceed 90 percent, suggesting that Mexican capital income, as in the U.S. national accounts, includes returns to land and proprietors, that is, owner-operated farms. The capital and labor allocation of agricultural factor incomes (farm and food processing sectors) is estimated at 50 percent, and sensitivity analysis is then carried out to compare alternative allocations of factor income. Capital income is adjusted for land income.

Total factor return to agricultural land is from Hinojosa-Ojeda and Robinson (1991). Sectoral returns to land are estimated using data from the CHAC model on net returns per hectare of irrigated and nonirrigated land in Mexico (Bassoco and Norton, 1983). According to Bassoco and Norton, net returns to irrigated land are more than quadruple the returns to nonirrigated farmland. These are results of the CHAC model, rather than survey data. The CHAC model calculates net income as a function of other parameters in the model, such as yields, endogenous prices, and input costs. Using CHAC findings on differential land returns, we calculate total land returns by sector as the sum of irrigated and nonirrigated returns, with land income scaled to match the total factor return to agricultural land reported in Hinojosa-Ojeda and Robinson.

Trade Data

Data on 1988 sectoral imports are those reported by Mexico to the GTL, with some adjustments. GTL data on agricultural and light manufacturing imports are compared with data reported by the Food and Agriculture Organization Trade Yearbook and Instituto Nacional de Estadistica Geografica e Informatica (Boletin de Information), and are adjusted to the latter two sources in some cases. Total imports reported in Segundo Informe are used as a control total, and are higher than those reported to the GATT. Nonagricultural merchandise imports are scaled upward to account for the discrepancy. Mexican service imports are those reported in Segundo Informe. Mexican bilateral imports are calculated using sectoral shares of the United States in Mexican world imports from the GATT Tariff Library, and the revised Mexican import data.

Data on Mexican agricultural and light manufacturing exports are drawn from the sources cited below. Because commodity classifications for the highly aggregated nonagricultural sectors are not comparable with most sources of trade data (such as the United Nations), exports for the four nonagricultural, nonservice sectors are estimated using shares of exports compared with output from the 1985 input-output accounts.

Mexico reports maquiladoro trade as a service export composed only of the value-added component.[5] The United States reports these goods as commodity imports and includes the total value of the commodity. If U.S. bilateral import data are used with Mexican export data, the result is a small share of U.S. imports in Mexican service exports (40 percent). Also, U.S. merchandise imports exceed Mexican global exports in those sectors in which there is significant maquiladoro trade. This model accepts U.S. data on service imports, which are net of maquiladoro. U.S. merchandise imports from Mexico are adjusted downward to include only the estimated value-added component using data from the Banco de Mexico. The result is that bilateral trade flows follow the Mexican treatment in including only the value-added component. However, the sectoral match is inaccurate. This results in the U.S. share of Mexico's service exports being understated, while its share of exports in sectors with maquiladoros is overstated. This treatment, which is not entirely satisfactory, is one method of resolving the different handling of maquiladoros in the two countries' trade data.

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[5]Maquiladoros are export-oriented assembly located along the U.S.-Mexican border, which are permitted to import intermediate inputs duty-free, and whose exports to the United States are dutiable only on the value-added component.

Data Sources for Mexico

Type of Data	Source
Output:	
Agricultural	SARH, Produccion Agricola.
Nonagricultural	Estimated from growth in 1985-88 indices of volume output, Estados Unidos Mexicanos, Segundo Informe.
Value-added:	
Aggregate	Estados Unidos Mexicanos, Segundo Informe.
Sectoral	Estimated from 1985 shares of value-added expenditure relative to gross output, adjusted to 1988 aggregate value added using RAS.
Demand:	
Aggregate final demand (Consumption, government investment	Estados Unidos Mexicanos, Segundo Informe.
Final demand by sector	1985 sectoral shares in final demand adjusted to 1988 totals by RAS procedure.
Intermediate demand	1985 input-output coefficients applied to 1988 output, adjusted by RAS procedure.
Investment:	
Aggregate and sectoral	Estados Unidos Mexicanos, Segundo Informe.
Inventory:	
Aggregate and sectoral	1985 sectoral shares in inventory applied to 1988 inventory change, adjusted using RAS procedure.
Taxes and savings:	
Aggregate taxes, savings, transfers, and tariff revenue	Estados Unidos Mexicanos, Segundo Informe.
Factors:	
Labor--	
Agricultural	Nacional Financiera, La Economia Mexicana en Cifras. Bassoco and Norton.
Nonagricultural	Nacional Financiera, La Economia Mexicana en Cifras. Hinojosa and Robinson.
Capital, sectoral	Hinojosa and Robinson. 1985 input-output accounts.
Agricultural land--	
Sectoral and irrigated	SARH, Produccion Agricola. Estados Unidos Mexicanos, Segundo Informe.

Type of Data	Source
Returns to labor--	
Aggregate	Estados Unidos Mexicanos, Segundo Informe.
Nonagriculture	1985 input-output accounts, adjusted to 1988 aggregate using RAS.
Agriculture	Generated from land/labor ratios, Bassoco and Norton.
Returns to capital--	
Aggregate	Estados Unidos Mexicanos, Segundo Informe.
Sectoral	1985 input-output accounts adjusted to 1988 aggregate.
Returns to land	Hinojosa and Robinson.
Trade:	
Exports--	
Total	Estados Unidos Mexicanos, Segundo Informe.
Sectoral,	
Agricultural	Estados Unidos Mexicanos, Segundo Informe
	INEGI, Boletin de Informacion.
	FAO, Trade Yearbook.
Nonagricultural	Hinojosa and Robinson.
Bilateral U.S.	Dept. of Agriculture, FATUS. Dept. of Commerce, Bureau of the Census, merchandise trade data tape.
Imports--	
Total	Estados Unidos Mexicanos, Segundo Informe.
Sectoral,	
Agricultural	INEGI, Boletin de Informacion.
	FAO, Trade Yearbook.
	GATT Tariff Library.
Nonagricultural	Hinojosa and Robinson.
Bilateral U.S.	GATT Tariff Library, shares of 1988 imports from U.S.
Premium shares to government/private	INEGI, Boletin de Informacion.
	Banco de Mexico, Indicadores.
Value-added share of maquiladora exports	Banco de Mexico, Indicadores.

Type of Data	Source
Farm programs:	
Farm program expenditures	Dept. of Agriculture, Economic Research Service, consumer subsidy equivalents and producer subsidy equivalents for Mexico, based on data from Estados Unidos Mexicanos, Segundo Informe, and SARH.
Trade policies:	
Sectoral tariffs	GATT Tariff Library.
Tariff equivalents of quotas	Dept. of Agriculture, Economic Research Service, consumer subsidy equivalents and producer subsidy equivalents for Mexico.

U.S. Data Base Development

A 1987 U.S. SAM for 28 sectors was built by updating a 27-sector aggregation of the 1982 121-sector SAM maintained at ERS/USDA.[6] The primary data sources for the U.S. SAM are the national income and product accounts (NIPA), the input-output accounts, and quantity measures for factors of production. At the time of this project, the most recent official U.S. input-output account was for 1977. This input-output account was updated to 1982 by the U.S. Forest Service for the IMPLAN project. Our 1982 SAM is based on the IMPLAN input-output account (Alward, 1987).[7] The SAM is disaggregated to 121 sectors, which include the 79 two-digit SIC industries used by the Bureau of Economic Analysis (BEA) in its input-output accounts. Agriculture is further disaggregated into 16 sectors, and food processing is disaggregated into 13 sectors. A few other manufacturing and service sectors are disaggregated from the two-digit SIC.

A SAM Generator FORTRAN program aggregates and updates the 1982 121-sector SAM to a more recent n-sector SAM. The aggregate structure of the 1987 updated SAM is presented in table 3. The macro data for the aggregate SAM are from the national income and product accounts, usually published in the July issues of the Survey of Current Business. The aggregate SAM serves as control totals for updating the sectoral data for the components of value-added and final demand.

As much sectoral data as are readily available are used in updating the sectoral components of the U.S. SAM. The sectoral data available for updating are described below. For some variables, usually components of final demand, sectoral data are not readily available. Thus, the 1982 values are proportionately adjusted to the 1987 control totals. For other variables, sectoral data are not available for the sectoral detail desired. In this case, the 1987 sectoral data available are proportionately disaggregated, given the 1982 sectoral data. Given the updated sectoral data for production, value-added, and final demand, a RAS procedure is used to adjust the interindustry transactions into consistency.

Once the 27-sector U.S. SAM is generated, a food corn sector is disaggregated from the feedgrain sector. This sector is created to correspond with food corn production and trade in Mexico, where

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[6]The aggregate structure of the U.S. SAM is described in Hanson and Robinson (1991). Hanson (1990) describes the data required for a 1982 disaggregated SAM and the updating procedure used for a 1986 SAM. Robinson, Kilkenny, and Hanson (1990) describe the use of the SAM in CGE modeling.

[7]The official BEA 1982 IO account has been published in the Survey of Current Business, July 1991. After January 1992, ERS/USDA SAM data bases use the official 1982 input-output account.

corn is used almost exclusively for food. The U.S. food corn sector is made up of No. 2 yellow corn exports to the world.

Data Sources for the United States

1982 data	Source
Macro aggregate data	National income and product accounts (NIPA). Survey of Current Business.

Savings:
    Enterprise retained earnings
    Household savings
    Government deficit
    Net foreign investment

Taxes:	
Social Security tax on labor	
Enterprise profit tax	
Household income tax	
Total tariff collections	Subtract from indirect business tax.

Transfers:	
Government to enterprise	Hanson and Robinson.
Government to households	
Government to rest of world	Net transfers and interest payments.

Input-output accounts, 1982	IMPLAN's update of the 1977 table; Will be updated using Dept. of Commerce, BEA, 1982 table.
Interindustry transactions	Input-output accounts.
Production	Input-output accounts.
Value-added	Input-output accounts.
Indirect business tax	Input-output accounts.
Return to labor (employee compensation)	Input-output accounts.
Return to capital (nonlabor value-added)	Input-output accounts.

Final demand	Input-output accounts.
Household consumption	
Government purchases	
Investment by sector of origin	
Change in inventory	
Exports	
Imports	

Noninput-output account sectoral data

Labor	Survey of Current Business, July 1990.
Full-time equivalents of hired persons plus self-employed.	

1982 data	Source
Fixed private capital stocks, constant-cost valuation, net stock, fixed nonresidential and residential capital	Fixed Reproducible Tangible Wealth in the United States, 1982-1985, Dept. of Commerce, BEA. When detail is not available for nonagricultural sectors, use output shares to disaggregate. For agriculture, disaggregate the BEA total using adjusted 1982 Agricultural Census data on farm equipment classified by SIC, 1982 Census of Agriculture, Dept. of Commerce, Bureau of the Census (1984).
Depreciation of capital stocks and investment by sector of destination	Dept. of Commerce, BEA. Fixed Reproducible Tangible Wealth in the United States, 1982-85.
Capital composition matrix	Capital flow table derived from "New Structures and Equipment by Using Industries, 1977," Survey of Current Business, 1985. Dept. of Commerce, BEA, data tape.
Land, acres harvested	Dept. of Agriculture, Agricultural Statistics: 1988, (For some miscellaneous crops, data on harvested acres taken from Dept. of Commerce, Bureau of the Census, 1982 Agricultural Census.
Tariff collections by sector	Dept. of Commerce, trade data tapes.

1987 data	Source
Macro aggregate data	Survey of Current Business.
Final demand, value-added, taxes, savings, and transfers	

Sectoral data:

Production	Bureau of Labor Statistics unpublished data.
Value-added	National income and product accounts, January 1991.
Indirect business tax	National income and product accounts, January 1991.
Return to labor (employee compensation)	National income and product accounts, January 1991.
Return to capital (non-labor factors)	National income and product accounts, January 1991.

Final demand--

Household consumption	Adjust 1982 data to 1987 totals.
Government purchases	Adjust 1982 data to 1987 totals.
Investment by sector of origin	Adjust 1982 data to 1987 totals.
Change in inventory	Adjust 1982 data to 1987 totals.
Trade	Dept. of Commerce data, adjusted to 1987 totals; Survey of Current Business, January 1991.

1987 data	Source
Interindustry transactions	Update by RAS procedure, given data on production, value-added, and final demand.

Factor use by sector--
Labor	Survey of Current Business, July 1990, (T. 6.10B)
Capital	Survey of Current Business, September 1990, table 4.

Investment by sector of destination	Adjust 1982 data to 1987 totals.
Capital composition matrix	RAS 1982 matrix to investment data.

Data for disaggregating agriculture
Production	Dept. of Agriculture, Agricultural Statistics, 1989, farm production tables 558 and 575.
Value-added and factor returns	Adjust 1982 data with Dept. of Agriculture, Economic Research Service data.

Agricultural trade	Dept. of Agriculture, FATUS.

U.S. farm programs
EEP expenditures	Unpublished data compiled by Karen Ackerman, Dept. of Agriculture, Economic Research Service.
Deficiency payments	Dept. of Agriculture, Agricultural Outlook.

Inventory valuation adjustment	Unpublished BEA data, George Smith.
Target price	Dept. of Agriculture, Agricultural Outlook.

U.S. trade policies
Tariffs	U.S. Harmonized Tariff Code, 1987.
Tariff equivalents of quotas	U.S. International Trade Commission, Estimated Tariff Equivalents of U.S. Quotas on Agricultural Imports and Analysis of Competitive Conditions in U.S. and Foreign Markets for Sugar, Meat, Peanuts, Cotton, and Dairy Products.

References

Ackerman, Karen Z., U.S. Department of Agriculture, Economic Research Service. Unpublished data on Export Enhancement Program expenditures.

Adams, P.D., and P.J. Higgs, 1986. "Calibration of Computable General Equilibrium Models from Synthetic Benchmark Equilibrium Data Sets," IMPACT Preliminary Working Paper No. OP-57, Melbourne, Australia.

Alward, G.S., 1987. IMPLAN Version 2.0: Methods Used to Construct the 1982 Regional Economic Data Base. U.S. Dept. Agr., Forest Serv., Technical Report RM-000. Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO.

Bassoco, Luz Maria, and Roger Norton, 1983. "A Quantitative Framework for Agricultural Policies," The Book of CHAC: Programming Studies for Mexican Agriculture. Roger Norton and Leopoldo Solis, eds. Washington, DC: World Bank.

Banco de Mexico, 1989. Indicadores del Sector Externo, Numero 128, September.

Burfisher, Mary E., Sherman Robinson, and Karen Thierfelder, 1992. "Agricultural and Food Policies in a U.S.-Mexico Free Trade Agreement," North American Journal of Economics and Finance, forthcoming.

Dervis, Kemal, Jaime de Melo, and Sherman Robinson, 1982. General Equilibrium Models for Development Policy. Washington, DC: World Bank.

Estados Unidos Mexicanos, 1990. Segundo Informe de Gobierno, 1990. Anexo.

Food and Agriculture Organization of the United Nations (FAO), 1989. Trade Yearbook, 1989. Rome.

Hanson, Kenneth, 1990. "National Level SAM's and CGE Models Emphasizing Agriculture." Paper presented at the Southern Regional Science Association meetings, Washington, DC, March 22-24, 1990.

Hanson, Kenneth and Sherman Robinson, 1991. "Data, Linkages and Models: U.S. National Income and Product Accounts in the Framework of a Social Accounting Matrix," Economic Systems Research, Vol. 3, No. 3, pp. 215-232.

Hanson, Kenneth, Sherman Robinson and Stephen Tokarick (1989). United States Adjustment in the 1990's: A CGE Analysis of Alternative Trade Strategies. Giannini Foundation of Agricultural Economics Working Paper No. 510. University of California, Berkeley.

Hertel, Thomas, 1990. "Applied General Equilibrium Analysis of Agricultural Policies." Staff Paper No. 90-9, Department of Agricultural Economics, Purdue University.

Hinojosa-Ojeda, Raul, and Sherman Robinson, 1991. Alternative Scenarios of U.S.-Mexico Integration: A Computable General Equilibrium Approach. Giannini Foundation of Agricultural Economics Working Paper No. 609. University of California, Berkeley.

Instituto Nacional de Estadistica Geografica e Informatica (INEGI), 1989. Boletin de Informacion Oportuna del Sector Alimentario, Numero 48, December.

King, Benjamin B., 1985. "What is a SAM?" in Graham Pyatt and Jeffrey I. Round, Social Accounting Matrices: A Basis for Planning. Washington, DC: World Bank.

Levy, Santiago and Sweder van Wijnbergen, 1991. "Agriculture in the Mexico-U.S. Free Trade Agreement." Paper prepared for the CEPR-OECD conference on "International Dimensions to Structural Adjustment." Paris, April 22 and 23.

Nacional Financiera, 1990. La Economia Mexicana en Cifras. Mexico City.

Reinert, Kenneth, and David Roland-Holst, 1990. "Social Accounting Matrices for U.S. Trade Policy Analysis." U.S. International Trade Commission, unpublished paper.

Reinert, Kenneth, and Clint Shiells, 1991. "Trade Substitution Elasticities for Analysis of a North American Free Trade Area." U.S. International Trade Commission.

Robinson, Sherman, Mary Burfisher, Raul Hinojosa, and Karen Thierfelder, 1991. Agricultural Policies and Migration in a U.S.-Mexico Free Trade Area: A Computable General Equilibrium Analysis. Giannini Foundation of Agricultural Economics Working Paper No. 617. University of California, Berkeley.

Robinson, Sherman, Maureen Kilkenny, and Kenneth Hanson. 1990. The USDA/ERS Computable General Equilibrium (CGE) Model of the United States. Staff Report no. AGES 9049. U.S. Dept. Agr., Econ. Res. Serv.

Roland-Holst, David, Kenneth Reinert, and Clint Shiells. 1992. "North American Trade Liberalization and the Role of Nontariff Barriers, "Economy-wide Modeling of the Economic Implications of a FTA with Mexico and a NAFTA with Canada and Mexico. U.S. International Trade Commission.

Schneider, Michael H., and Stavros A. Zenios, 1990. "A Comparative Study of Algorithms for Matrix Balancing," Operations Research, Vol. 38, No. 3, pp. 439-55.

Secretaria de la Agricultura y Recursos Hidraulicos (SARH), 1990. Produccion Agricola Nacional de Veinte y Seis Cultivos, 1970-88.

U.S. Department of Agriculture, 1988. Agricultural Statistics: 1988.

_____. Economic Research Service, 1991. Agricultural Outlook. April.

_____. Producer and Consumer Subsidy Equivalents for Mexico and the United States, unpublished data.

_____, 1991. Economic Indicators of the Farm Sector, National Financial Summary, 1989, ECIFS 9-2.

_____, 1989. Foreign Agricultural Trade of the United States (FATUS).

U.S. Department of Commerce, Bureau of the Census. 1984. 1982 Census of Agriculture. Vol. 1, Part 51.

_____, 1989. 1987 Census of Manufactures: Preliminary Report, Industry Series.

_____, 1990. U.S. Merchandise Trade Data. Unpublished magnetic tapes.

U.S. Department of Commerce, Bureau of Economic Analysis, 1984. "The Input-Output Structure of the U.S. Economy, 1977," Survey of Current Business, Vol. 64, No. 5, pp. 42-84, May.

_____, 1985. "New Structures and Equipment by Using Industries, 1977," Survey of Current Business, Vol. 65, No. 11, pp. 26-35, November.

_____, 1987. Fixed Reproducible Tangible Wealth in the United States, 1982-85.

U.S. Department of Labor, Bureau of Labor Statistics, 1989a. "Industry Employment Projections Data Base." Unpublished BLS data from the Office of Economic Growth and Employment Projections.

_____, 1989b. "International Price Indexes." Chapter 17 in BLS Handbook of Methods. Bulletin 2285.

U.S. International Trade Commission, 1990. Estimated Tariff Equivalents of U.S. Quotas on Agricultural Imports and Analysis of Competitive Conditions in U.S. and Foreign Markets for Sugar, Meat, Peanuts, Cotton, and Dairy Products. Report No. 332-281.

_____, 1990. Harmonized Tariff Schedule of the United States.

U.S. Trade Representative, "GATT Tariff Library," unpublished data.

Appendix table 1--Input-output flows in the United States

Commodity	Poultry	Live-stock	Cotton	Food-grains	Food corn	Feed-grains	Fruit/vegetable	Oilseed	Forestry/fishing	Other agriculture
					Billion U.S. dollars					
Poultry	0.0043	0.0026	0.0059	0.0131	0.0085	0.0674	0.0075	0.0167	0.0029	0.0041
Livestock	0.1037	16.5636	0.0880	0.0914	0.0468	0.3714	0.1080	0.0683	0.0719	0.1577
Cotton	0.0583	0.0353	0.1324	0.0048	0.0017	0.0131	0.0296	0.0038	0.0398	0.0305
Foodgrain	0.0769	0.0814	0.0096	0.1671	0.0008	0.0063	0.0143	0.0018	0.0191	0.0293
Food corn	0.0000	0.0000	0.0000	0.0000	0.0500	0.0000	0.0000	0.0000	0.0000	0.0000
Feedgrain	1.6420	11.2043	0.0158	0.0038	0.0000	0.4199	0.0235	0.0030	0.0316	5.8054
Fruit/vegetable	0.0450	0.0599	0.0154	0.0037	0.0013	0.0101	0.2682	0.0030	0.0307	0.0236
Oilseed	0.0583	0.1534	0.0199	0.0048	0.0017	0.0131	0.0296	2.4255	0.0398	0.0305
For/fish	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0968	0.0000
Other agriculture	0.0650	0.5323	0.0244	0.0101	0.0592	0.4695	0.4652	0.0226	0.0596	0.9454
Meat manufacturing	0.0057	0.0057	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0165	0.0008
Dairy manufacturing	0.0158	0.0292	0.0000	0.0001	0.0001	0.0004	0.0001	0.0000	0.0006	0.0172
Prepared foods	0.0148	0.0283	0.0000	0.0001	0.0001	0.0004	0.0003	0.0000	0.0287	0.0142
Grain mills	0.1066	0.2494	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0008	0.1101
Feed mills	2.1797	4.0545	0.0003	0.0006	0.0004	0.0028	0.0009	0.0003	0.0460	2.2851
Corn mills	0.0251	0.0280	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0256
Sugar manufacturing	0.0130	0.2918	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.1100
Alcoholic beverages	0.0224	0.0251	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0224
Oilseed manufacturing	0.7295	0.9424	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0005	0.2158
Miscellaneous food	0.0011	0.0022	0.0011	0.0014	0.0009	0.0069	0.0027	0.0010	0.0018	0.0031
Textile/apparel	0.0010	0.0021	0.0001	0.0002	0.0057	0.0455	0.0717	0.0002	0.0919	0.0806
Leather manufacturing	0.0001	0.1683	0.0000	0.0000	0.0000	0.0001	0.0014	0.0000	0.0003	0.0003
Other manufacturing	0.1590	0.0425	0.0038	0.0038	0.0025	0.0199	0.4987	0.0060	0.0111	0.1157
Oil/gas	0.1590	0.7375	0.1421	0.3455	0.1445	1.1453	0.5923	0.2587	0.2962	0.9279
Intermediates	0.3285	1.0790	0.4677	0.6363	0.4054	3.2143	1.2645	0.4517	0.7042	2.3529
Consumer durables	0.0084	0.0961	0.0040	0.0068	0.0025	0.0195	0.0161	0.0077	0.0117	0.0505
Capital goods	0.0809	1.1126	0.0750	0.1295	0.0608	0.4822	0.2559	0.1597	0.6642	0.6092
Services	4.3066	12.5169	1.9900	1.7337	0.7636	6.0545	3.8303	1.7075	3.8095	8.5939
Total	10.2108	50.0441	2.9957	3.1564	1.5563	12.3629	7.4808	5.1375	6.0762	22.5618

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Commodity	Meat manufacturing	Dairy manufacturing	Prepared foods	Grain mills	Feed mills	Corn mills	Sugar manufacturing	Alcoholic beverages	Oilseed products	Miscellaneous foods
					Billion U.S. dollars					
Poultry	7.2789	0.0160	0.0597	0.0239	0.0000	0.0000	0.0000	0.0178	0.0000	0.1399
Livestock	34.4453	0.0032	0.2288	0.1156	0.0000	0.0000	0.0000	0.0000	0.0049	0.0060
Cotton	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.6451	0.0000
Foodgrain	0.0002	0.0000	0.0004	2.7972	0.0504	0.0000	0.0001	0.0044	0.0000	0.0002
Food corn	0.0000	0.0000	0.0000	0.5254	1.2943	0.0000	0.0000	0.0000	0.0000	0.0000
Feedgrain	0.0000	0.0000	0.0000	0.0000	0.0000	1.1104	0.0000	0.2756	0.0025	0.0000
Fruit/vegetable	0.0000	0.0000	3.4646	0.0241	0.0000	0.0127	0.0000	0.4054	0.0000	0.0000
Oilseed	0.0000	0.0000	1.0317	0.0000	0.0000	0.0000	0.0000	0.0000	7.1563	3.2032
For/fish	0.0000	0.0025	1.2987	0.0070	0.0057	0.0000	0.0000	0.0000	0.0518	0.0000
Other agriculture	0.0000	19.5012	0.5579	0.2188	0.0208	0.0272	6.2928	0.1224	0.0153	0.6477
Meat manufacturing	9.3954	0.0081	0.6572	0.3249	0.1769	0.0000	0.0006	0.0000	0.2242	0.3642
Dairy manufacturing	0.0501	5.6096	0.1585	0.3657	0.0914	0.0000	0.0001	0.0010	0.0136	0.6549
Prepared foods	0.1464	0.0550	0.5667	0.0611	0.0249	0.0089	0.0036	0.0262	0.0275	0.6652
Grain mills	0.0045	0.0035	0.3428	1.4118	0.6782	0.0022	0.0101	0.1765	0.0052	3.7624
Feed mills	0.0005	0.0020	0.0013	0.0130	0.3768	0.0000	0.0000	0.0005	0.0001	0.0150
Corn mills	0.0012	0.0170	0.1735	0.1363	0.1058	0.3313	0.0000	0.0102	0.0587	1.3129
Sugar manufacturing	0.0008	0.2835	0.5581	0.6788	0.1578	0.0011	7.2237	0.1102	0.0002	5.5961
Alcoholic beverages	0.0053	0.0029	0.0122	0.0104	0.0463	0.0024	0.0012	0.9169	0.0007	0.0648
Oilseed manufacturing	0.0149	0.0078	0.8902	0.5031	1.8190	0.0029	0.0001	0.0010	1.4854	0.8873
Miscellaneous food	0.0146	0.1279	0.1997	0.0519	0.0044	0.0000	0.0071	0.0038	0.0195	5.1144
Textile/apparel	0.0164	0.0083	0.0168	0.0537	0.0347	0.0005	0.0038	0.0020	0.0013	0.0260
Leather manufacturing	0.0031	0.0015	0.0012	0.0022	0.0012	0.0000	0.0003	0.0002	0.0003	0.0061
Other manufacturing	2.4542	1.9367	3.0062	2.4067	0.1221	0.1096	0.4149	1.3825	0.2408	4.9825
Oil/gas	0.2116	0.1204	0.2731	0.0895	0.0697	0.1007	0.2940	0.1092	0.0488	0.5335
Intermediates	1.0975	1.0302	4.4798	0.8748	1.1934	0.1084	0.3991	3.9687	0.4285	9.2959
Consumer durables	0.0347	0.0200	0.0642	0.0514	0.0062	0.0012	0.0083	0.0387	0.0056	0.1306
Capital goods	0.1239	0.1899	0.8364	0.1093	0.0226	0.0235	0.0439	0.2569	0.0396	1.1375
Services	7.5236	3.3054	9.9850	5.6462	2.1149	1.2587	2.8270	3.0585	1.1693	14.3371
Total	62.8232	32.2526	28.8647	16.5025	8.4173	3.1017	17.5307	10.8886	11.6451	52.8835

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Appendix table 1--Input-output flows in the United States, continued

Commodity	Textile/ apparel	Leather manufacturing	Other light manufacturing	Oil/gas mills	Inter- mediates	Consumer durables	Capital goods	Services	Total
				Billion U.S. dollars					
Poultry	0.0000	0.0000	0.0003	0.0000	0.0300	0.0000	0.0000	1.1356	8.8351
Livestock	0.1777	0.0144	0.1111	0.0000	0.0342	0.0023	0.0014	0.7217	53.5374
Cotton	6.5235	0.0000	0.0018	0.0000	0.0135	0.0000	0.0000	0.0430	7.5761
Foodgrain	0.0002	0.0000	0.0019	0.0002	0.0056	0.0003	0.0009	0.0317	3.3003
Food corn	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.8696
Feedgrain	0.0000	0.0000	0.0017	0.0000	0.0512	0.0000	0.0000	0.8153	21.4062
Fruit/vegetable	0.0000	0.0000	0.0017	0.0000	0.0045	0.0000	0.0000	2.3249	6.6988
Oilseed	0.0000	0.0000	0.0023	0.0000	0.0224	0.0000	0.0000	0.0380	14.2305
For/fish	0.3492	0.0000	7.3763	0.0000	0.1012	0.0075	0.0000	1.6129	10.9097
Other agriculture	0.0739	0.0001	7.7257	0.0055	0.4791	0.0550	0.0152	1.5513	39.9631
Meat manufacturing	0.0048	0.4432	0.0000	0.0121	0.3316	0.0280	0.0514	15.5671	27.6185
Dairy manufacturing	0.0012	0.0004	0.0061	0.0037	0.0672	0.0041	0.0140	7.2644	14.3693
Prepared foods	0.0019	0.0004	0.0304	0.0035	0.0598	0.0049	0.0134	8.3337	10.1205
Grain mills	0.0006	0.0003	0.0067	0.0016	0.1147	0.0026	0.0056	1.2641	8.2604
Feed mills	0.0007	0.0000	0.0007	0.0006	0.0731	0.0004	0.0013	0.0516	9.1080
Corn mills	0.0018	0.0004	0.2722	0.0063	0.2186	0.0005	0.0018	0.0299	2.7571
Sugar manufacturing	0.0004	0.0001	0.0168	0.0018	0.1367	0.0004	0.0021	0.4395	15.6228
Alcoholic beverages	0.0122	0.0023	0.0476	0.0051	0.0634	0.0132	0.0500	8.1805	9.5071
Oilseed manufacturing	0.0058	0.0069	0.0720	0.0202	0.7024	0.0011	0.0223	1.2522	9.5829
Miscellaneous food	0.0015	0.0002	0.0034	0.0053	0.1535	0.0020	0.0047	15.7847	21.5208
Textile/apparel	48.6244	0.4195	3.6591	0.0427	3.4509	3.4634	1.9917	11.0948	73.2089
Leather manufacturing	0.3031	1.4168	0.1240	0.0258	0.1099	0.2365	0.0638	1.0431	3.5093
Other manufacturing	1.5988	0.2256	92.4998	1.4666	17.6857	5.2241	9.6113	103.2229	249.4538
Oil/gas	0.7431	0.0492	4.3609	69.1573	19.8673	0.7617	3.6000	131.1202	236.2592
Intermediates	11.8670	0.7027	21.2808	7.0944	192.6008	31.1999	88.9005	189.7511	577.1776
Consumer durables	0.9644	0.0777	1.1402	0.2826	2.4548	37.1915	13.1938	42.1673	98.0564
Capital goods	0.7508	0.1064	9.0683	3.3622	28.3831	34.8146	132.9501	103.1345	318.9833
Services	14.6891	1.0835	63.7498	41.9790	128.2489	30.1714	99.3943	1186.2277	1662.0757
Total	86.6962	4.5500	211.5614	123.4765	395.4636	143.1853	349.8893	1834.2036	3515.5183

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Appendix table 2--Input-output flows in Mexico

Commodity	Poultry	Live-stock	Cotton	Food-grains	Food corn	Feed-grains	Fruit/ vegetable	Oilseed	Forestry/ fishing	Other agriculture
				Trillion pesos						
Poultry	0.0045	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Livestock	0.0000	0.0513	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Cotton	0.0000	0.0000	0.0014	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Foodgrain	0.0000	0.0000	0.0000	0.0563	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Food corn	0.0000	0.0000	0.0000	0.0000	0.0998	0.1522	0.0000	0.0000	0.0000	0.0000
Feedgrain	2.0396	1.6795	0.0000	0.0000	0.0000	0.0468	0.0000	0.0000	0.0000	0.0106
Fruit/vegetable	0.0062	0.5544	0.0023	0.0099	0.0739	0.0336	0.0319	0.0040	0.0000	0.0213
Oilseed	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0217	0.0000	0.0000
For/fish	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other agriculture	0.0000	0.0101	0.0001	0.0010	0.0024	0.0037	0.0034	0.0003	0.0000	0.4234
Meat manufacturing	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Dairy manufacturing	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Prepared foods	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005
Grain mills	0.0170	0.3369	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0027
Feed mills	0.4684	1.6774	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Corn mills	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006
Sugar manufacturing	0.0006	0.0055	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001
Alcoholic beverages	0.0027	0.0308	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003
Oilseed manufacturing	0.0009	0.0008	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0871	0.0060
Miscellaneous food	0.0116	0.0672	0.0000	0.0000	0.0000	0.0000	0.0143	0.0040	0.0506	0.0284
Textile/apparel	0.0003	0.0004	0.0001	0.0173	0.0158	0.0453	0.0000	0.0000	0.0053	0.0000
Leather manufacturing	0.0001	0.0002	0.0000	0.0000	0.0000	0.0000	0.0055	0.0000	0.0135	0.0271
Other manufacturing	0.1265	0.0007	0.0000	0.0000	0.0000	0.0000	0.0631	0.0039	0.0820	0.0271
Oil/gas	0.0130	0.0501	0.0013	0.0332	0.0227	0.0721	0.0631	0.0039	0.0820	0.4995
Intermediates	0.2037	0.4695	0.0149	0.1446	0.2772	0.4154	0.3283	0.0264	0.0817	0.4995
Consumer durables	0.0163	0.0330	0.0002	0.0005	0.0013	0.0010	0.0003	0.0004	0.0081	0.0045
Capital goods	0.0815	0.1456	0.0013	0.0098	0.0342	0.0426	0.0200	0.0054	0.2622	0.1856
Services	0.2808	1.0545	0.0130	0.1109	0.2016	0.2165	0.2340	0.0285	0.3269	0.2847
Total	3.2734	6.1680	0.0346	0.3834	0.6503	1.0293	0.7009	0.0944	0.9174	1.5224

Appendix table 2--Input-output flows in Mexico, continued

Commodity	Meat manufacturing	Dairy manufacturing	Prepared foods	Grain mills	Feed mills	Corn mills	Sugar manufacturing	Alcoholic beverages	Oilseed products	Miscellaneous foods
						Trillion pesos				
Poultry	1.3013	0.6402	0.0031	0.1369	0.0000	0.0000	0.0000	0.0007	0.0000	0.0007
Livestock	9.1721	4.5122	0.0000	0.0604	0.0000	0.0000	0.0000	0.0134	0.0000	0.0035
Cotton	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Foodgrain	0.0000	0.0000	0.0000	0.6923	0.0586	0.0122	0.0000	0.0000	0.0000	0.3054
Food corn	0.0000	0.0000	0.0000	0.0000	0.0000	1.5896	0.0000	0.0000	0.0000	0.3071
Feedgrain	0.0002	0.0001	0.0312	0.0150	0.2373	0.0000	0.0000	0.3399	0.0025	0.0239
Fruit/vegetable	0.0011	0.0005	0.0762	0.0002	0.0252	0.0004	0.0000	0.1007	0.0000	0.0296
Oilseed	0.0000	0.0000	0.0025	0.0057	0.0577	0.0000	0.0000	0.0000	1.0449	0.0532
For/fish	0.0000	0.0000	0.0010	0.0003	0.0006	0.0157	0.0000	0.0017	0.0000	0.4670
Other agriculture	0.0917	0.0451	1.9207	0.0000	0.0004	0.0000	2.0723	0.0000	0.0000	0.5210
Meat manufacturing	0.5553	0.0000	0.0111	0.0283	0.0738	0.0000	0.0000	0.0010	0.0000	0.0726
Dairy manufacturing	0.0000	0.2826	0.0057	0.0144	0.0376	0.0000	0.0000	0.0005	0.0000	0.0370
Prepared foods	0.0052	0.0025	0.5968	0.0473	0.0000	0.0000	0.0000	0.0001	0.0000	0.0402
Grain mills	0.0001	0.0000	0.0005	0.8807	0.0366	0.0000	0.0000	0.0000	0.0000	0.0158
Feed mills	0.0000	0.0000	0.0000	0.0000	0.0162	0.0000	0.0000	0.0000	0.0000	0.0000
Corn mills	0.0000	0.0000	0.0000	0.0000	0.0000	4.2117	0.0000	0.0104	0.0000	0.0015
Sugar manufacturing	0.0054	0.0027	0.0618	0.3637	0.0295	0.0000	0.0980	0.2174	0.0000	0.3903
Alcoholic beverages	0.0000	0.0000	0.0000	0.0000	0.0029	0.0000	0.0000	0.3309	0.0000	0.0016
Oilseed manufacturing	0.0573	0.0282	0.0416	0.7294	0.4907	0.0000	0.0000	0.0000	0.3740	0.1187
Miscellaneous food	0.0408	0.0201	0.0092	0.2450	0.0682	0.0000	0.0000	0.0423	0.0357	1.2422
Textile/apparel	0.0001	0.0001	0.0013	0.0232	0.0009	0.0001	0.0017	0.0064	0.3667	0.0194
Leather manufacturing	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other manufacturing	0.0092	0.0045	0.0130	0.0517	0.0268	0.0103	0.0053	0.2275	0.0292	0.1551
Oil/gas	0.0160	0.0079	0.0027	0.0178	0.0024	0.0875	0.0206	0.0156	0.0054	0.0459
Intermediates	0.0233	0.0115	0.0804	0.0238	0.1128	0.0599	0.0359	0.4410	0.2385	0.4341
Consumer durables	0.0017	0.0008	0.0021	0.0045	0.0031	0.0054	0.0235	0.0120	0.0137	0.0186
Capital goods	0.0547	0.0269	0.2294	0.0512	0.0063	0.0150	0.0544	0.1378	0.0454	0.7064
Services	2.1567	1.0610	0.2763	0.3589	0.2760	0.3812	0.2175	1.1834	0.9264	1.6553
Total	13.4920	6.6468	3.3665	3.7505	1.5634	6.3887	2.5293	3.0829	3.0823	6.6662

Appendix table 2--Input-output flows in Mexico, continued

Commodity	Textile/ apparel	Leather manufacturing	Other light manufacturing	Oil/gas mills	Inter-mediates	Consumer durables	Capital goods	Services	Total
				Trillion pesos					
Poultry	0.0000	0.0000	0.0000	0.0000	0.0084	0.0000	0.0000	0.0534	2.1493
Livestock	0.0601	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0463	13.9194
Cotton	0.2231	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2245
Foodgrain	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.1248
Food corn	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2.0489
Feedgrain	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	4.4597
Fruit/vegetable	0.0003	0.0000	0.0084	0.0000	0.0271	0.0000	0.0087	0.0299	1.0656
Oilseed	0.0000	0.0000	0.0000	0.0000	0.0157	0.0000	0.0000	0.0000	1.2013
For/fish	0.0217	0.0201	0.6361	0.0000	0.0763	0.0000	0.0002	0.0106	1.2512
Other agriculture	0.0489	0.0000	0.3060	0.0000	0.0117	0.0000	0.0017	0.0187	5.9059
Meat manufacturing	0.0040	0.4999	0.0006	0.0000	0.3909	0.0000	0.0000	0.1988	1.8362
Dairy manufacturing	0.0021	0.2547	0.0003	0.0000	0.1991	0.0000	0.0000	0.1013	0.9352
Prepared foods	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1218	0.8140
Grain mills	0.0000	0.0000	0.0000	0.0000	0.0017	0.0000	0.0000	0.0608	1.3511
Feed mills	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0086	2.1760
Corn mills	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0387	4.2624
Sugar manufacturing	0.0004	0.0005	0.2468	0.0000	0.1858	0.0000	0.0000	0.0282	1.6375
Alcoholic beverages	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.3693
Oilseed manufacturing	0.0008	0.0003	0.0033	0.0000	0.4643	0.0000	0.0002	0.0348	2.3458
Miscellaneous food	0.0065	0.0000	0.0086	0.0005	0.0368	0.0021	0.0000	0.1066	2.0425
Textile/apparel	3.8339	0.0561	0.1800	0.0095	0.1719	0.0926	0.0753	0.5699	5.6138
Leather manufacturing	0.0430	0.7002	0.0024	0.0025	0.0013	0.0018	0.0034	0.3054	1.0656
Other manufacturing	0.2187	0.0271	3.9552	0.0162	1.2491	0.6508	0.3516	5.9257	13.1271
Oil/gas	0.0176	0.0331	0.0812	6.0808	3.3071	0.0309	0.1632	4.9068	15.2378
Intermediates	2.9377	0.3465	1.3437	0.4315	17.3673	3.4098	4.0299	22.0019	56.2899
Consumer durables	0.0317	0.0039	0.0266	0.0023	0.2887	3.1580	0.1233	2.8134	6.6033
Capital goods	0.1509	0.0859	0.4126	0.3977	1.8718	0.9479	1.5652	7.8412	15.5743
Services	3.0356	0.7697	3.1118	1.7475	10.4157	5.6768	4.5938	54.8001	95.6796
Total	10.6368	2.7978	10.3234	8.6884	36.0909	13.9706	10.9165	100.0228	260.3122

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Appendix table 3--Factor markets in the United States by sector

Commodity	Factor incomes				Factor employment			
	Labor	Capital	Land 1 1/	Land 2	Labor	Capital	Land 1	Land 2
	-----------Billion dollars-----------				Thousands	Billion dollars	--1,000 acres--	
Poultry	0.812	0.71	0.000	0.000	113.8	2.4	0.00	0.00
Livestock	2.741	2.64	0.000	0.000	298.8	28.0	0.00	0.00
Cotton	0.893	0.41	0.450	0.000	34.7	4.1	10.04	0.00
Foodgrain	1.373	1.00	0.000	1.135	82.3	7.6	0.00	58.98
Food corn	0.578	0.43	0.000	0.200	20.0	4.0	0.00	12.00
Feedgrain	4.333	4.30	0.000	1.659	215.8	34.8	0.00	138.03
Fruit/vegetable	4.953	2.91	2.393	0.000	396.4	11.8	8.64	0.00
Oilseed	2.684	2.03	0.000	1.981	101.5	13.5	0.00	61.00
For/fish	5.251	0.72	0.000	0.000	342.5	5.5	0.00	0.00
Other agriculture	10.173	8.75	2.244	0.000	736.7	34.1	5.83	0.00
Meat manufacturing	8.489	0.34	0.000	0.000	372.0	15.3	0.00	0.00
Dairy manufacturing	4.808	1.44	0.000	0.000	154.8	8.3	0.00	0.00
Prepared foods	6.238	3.00	0.000	0.000	288.1	7.4	0.00	0.00
Grain mills	4.236	2.60	0.000	0.000	121.8	5.4	0.00	0.00
Feed mills	1.077	0.14	0.000	0.000	37.7	2.2	0.00	0.00
Corn mills	0.447	0.45	0.000	0.000	9.4	0.9	0.00	0.00
Sugar manufacturing	0.763	0.05	0.000	0.000	21.4	3.3	0.00	0.00
Alcoholic beverages	2.943	5.03	0.000	0.000	60.8	5.2	0.00	0.00
Oilseed manufacturing	1.056	0.64	0.000	0.000	32.9	3.1	0.00	0.00
Miscellaneous food	14.758	6.91	0.000	0.000	495.9	14.1	0.00	0.00
Textile/apparel	33.159	8.48	0.000	0.000	1,803.0	23.1	0.00	0.00
Leather manufacturing	2.671	0.59	0.000	0.000	147.0	1.4	0.00	0.00
Other manufacturing	97.774	50.50	0.000	0.000	3,508.0	106.1	0.00	0.00
Oil/gas	24.763	59.87	0.000	0.000	567.0	252.8	0.00	0.00
Intermediate	166.812	73.04	0.000	0.000	4,866.0	298.0	0.00	0.00
Consumer durables	63.751	15.57	0.000	0.000	1,872.4	68.8	0.00	0.00
Capital goods	195.600	28.87	0.000	0.000	5,332.6	195.7	0.00	0.00
Services	2,199.792	964.38	0.000	0.000	85,857.4	5,967.8	0.00	0.00
Total	2,862.918	1,245.82	5.087	4.976	107,890.9	7,124.9	24.503	270.000

1/ In United States, Land 1 refers to cotton, fruit/vegetable, and other agricultural land. Land 2 refers to grain/oilseed cropland.

Appendix table 4--Factor markets in Mexico by sector

Commodity	Factor incomes				Factor employment			
	Labor	Capital	Land 1 1/	Land 2	Labor	Capital	Land	Land 2
	----------Trillion pesos----------				Thousands	Tril. ps.	--1,000 ha.--	
Poultry	0.556	1.872	0.000	0.000	782.4	2.141	0	0
Livestock	2.292	8.212	0.000	0.000	782.4	6.321	0	0
Cotton	0.029	0.109	0.048	0.005	68.0	0.063	100	47
Foodgrain	0.067	0.937	0.349	0.034	491.1	0.510	735	303
Food corn	0.853	1.977	0.422	0.634	1,671.6	1.332	887	5,619
Feedgrain	0.562	2.603	0.299	0.189	711.6	1.540	629	1,678
Fruit/vegetable	0.492	3.873	0.378	0.193	815.7	1.921	796	1,710
Oilseed	0.033	0.232	0.112	0.022	178.2	0.128	236	197
For/fish	0.421	1.689	0.000	0.000	326.0	1.149	0	0
Other agriculture	1.188	3.965	0.193	0.122	459.1	2.529	406	1,082
Meat manufacturing	0.365	2.001	0.000	0.000	138.4	3.311	0	0
Dairy manufacturing	0.180	0.985	0.000	0.000	67.6	1.631	0	0
Prepared foods	0.163	1.038	0.000	0.000	40.0	0.964	0	0
Grain mills	0.728	2.476	0.000	0.000	55.3	1.326	0	0
Feed mills	0.152	0.685	0.000	0.000	21.5	0.479	0	0
Corn mills	0.315	4.125	0.000	0.000	95.3	2.251	0	0
Sugar manufacturing	0.367	1.286	0.000	0.000	30.7	0.751	0	0
Alcoholic beverages	0.456	1.951	0.000	0.000	55.3	1.346	0	0
Oilseed manufacturing	0.116	1.252	0.000	0.000	40.0	0.926	0	0
Miscellaneous food	1.341	4.713	0.000	0.000	113.8	2.723	0	0
Textile/apparel	2.010	5.101	0.000	0.000	304.3	3.902	0	0
Leather manufacturing	0.760	1.440	0.000	0.000	108.7	1.055	0	0
Other manufacturing	2.013	7.705	0.000	0.000	297.4	4.527	0	0
Oil/gas	1.218	9.963	0.000	0.000	122.0	30.230	0	0
Intermediate	7.672	23.817	0.000	0.000	840.4	35.269	0	0
Consumer durables	2.539	6.379	0.000	0.000	220.0	8.565	0	0
Capital goods	3.665	8.753	0.000	0.000	582.7	25.192	0	0
Services	71.087	146.290	0.000	0.000	17,020.0	604.607	0	0
Total	101.640	255.428	1.801	1.199	26,439.5	746.689	3,789	10,636

1/ In Mexico, LAND 1 is irrigated and LAND 2 is unirrigated cropland.

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Appendix table 5--Household consumption expenditures by sector

Sector	United States	Mexico
	Billion dollars	Trillion pesos
Poultry	3.2	3.4
Livestock	1.4	1.6
Cotton	0.0	0.0
Foodgrain	0.0	0.0
Food corn	0.0	2.5
Feedgrain	0.4	0.0
Fruit/vegetable	11.7	2.3
Oilseed	0.2	0.0
For/fish	1.6	0.8
Other agriculture	9.4	0.4
Meat manufacturing	42.3	14.9
Dairy manufacturing	25.3	7.5
Prepared foods	28.1	2.3
Grain mills	14.0	4.9
Feed mills	0.2	0.0
Corn mills	0.3	6.5
Sugar manufacturing	2.9	1.8
Alcoholic beverages	18.4	5.6
Oilseed manufacturing	2.2	2.8
Miscellaneous food	52.5	10.5
Textile/apparel	84.9	12.5
Leather manufacturing	17.0	3.3
Other manufacturing	90.9	5.9
Oil/gas	28.4	0.5
Intermediate	57.4	11.0
Consumer durables	150.4	6.0
Capital goods	31.1	5.9
Services	2335.3	156.1
Total	3009.4	269.2

Appendix table 6--Sectoral quantities and prices, United States

Sector	Gross output	Government demand	Inventory change	Invest- ment
	Billion dollars			
Poultry	11.769	0.091	(0.349)	0.000
Livestock	56.574	0.050	1.961	0.000
Cotton	4.897	(2.941)	(1.318)	0.000
Foodgrain	6.835	(0.656)	1.354	0.000
Food corn	2.956	0.000	(0.100)	0.000
Feedgrain	23.435	0.074	(0.941)	0.000
Fruit/vegetable	18.141	0.438	0.201	0.000
Oilseed	12.215	(1.579)	(4.941)	0.000
For/fish	12.346	0.019	0.061	0.000
Other agriculture	44.285	2.971	(2.224)	0.000
Meat manufacturing	71.814	1.933	0.301	0.000
Dairy manufacturing	38.607	(0.895)	0.179	0.000
Prepared foods	38.428	1.128	0.317	0.000
Grain mills	23.462	0.289	0.096	0.000
Feed mills	9.666	0.019	0.064	0.000
Corn mills	4.037	0.006	0.173	0.000
Sugar manufacturing	18.382	0.103	0.032	0.000
Alcoholic beverages	26.153	0.002	0.187	0.000
Oilseed manufacturing	13.394	0.081	0.066	0.000
Miscellaneous food	74.967	1.378	0.345	0.000
Textile/apparel	129.196	3.048	1.721	1.584
Leather manufacturing	7.850	0.154	0.127	0.000
Other manufacturing	367.461	21.022	2.510	13.803
Oil/gas	222.077	5.254	2.036	0.145
Intermediate	647.164	17.695	4.304	6.255
Consumer durables	225.681	29.126	7.294	50.843
Capital goods	580.393	82.348	4.304	159.852
Services	5,294.434	760.242	10.541	438.683
Total	7,986.618	921.400	28.300	671.200

Appendix table 7--Sectoral quantities and prices, Mexico

Sector	Gross output	Government demand	Inventory change	Invest- ment
		Trillion pesos		
Poultry	5.631	0.024	0.041	0.087
Livestock	16.624	0.001	0.882	0.071
Cotton	0.165	0.000	0.000	0.000
Foodgrain	1.341	0.000	0.515	0.000
Food corn	3.502	0.000	(0.369)	0.000
Feedgrain	4.051	0.031	0.039	0.000
Fruit/vegetable	5.051	0.029	(0.448)	0.157
Oilseed	0.338	0.000	0.071	0.000
For/fish	3.022	0.001	0.049	0.000
Other agriculture	6.652	0.003	0.026	0.008
Meat manufacturing	15.929	0.001	0.190	0.000
Dairy manufacturing	7.845	0.001	0.093	0.000
Prepared foods	4.638	0.003	0.135	0.004
Grain mills	6.380	0.001	0.111	0.002
Feed mills	2.305	0.064	0.040	0.002
Corn mills	10.827	0.000	0.063	0.038
Sugar manufacturing	3.614	0.002	0.002	0.008
Alcoholic beverages	6.475	0.000	0.164	0.005
Oilseed manufacturing	4.454	0.001	0.164	0.008
Miscellaneous food	13.102	0.002	0.322	0.019
Textile/apparel	18.771	0.121	0.647	0.046
Leather manufacturing	5.078	0.007	0.228	0.001
Other manufacturing	21.778	0.599	0.626	0.284
Oil/gas	20.137	0.432	0.109	0.000
Intermediate	68.519	0.591	2.427	0.175
Consumer durables	23.756	0.048	(0.199)	7.980
Capital goods	24.523	0.482	0.657	10.467
Services	347.075	30.517	0.000	55.699
Total	651.582	32.961	6.585	75.057

Appendix table 8--U.S.-Mexico trade

Sector	U.S. exports	U.S. imports	Mexico exports	Mexico imports
	--Billion dollars--		--Trillion pesos--	
Poultry	0.055	0.016	0.000	0.036
Livestock	0.388	0.778	0.596	0.469
Cotton	1.544	0.001	0.001	0.060
Foodgrain	2.876	0.054	0.013	0.312
Food corn	1.086	0.000	0.000	0.707
Feedgrain	2.653	0.086	0.002	0.469
Fruit/vegetable	1.366	2.294	1.988	0.062
Oilseed	4.401	0.052	0.060	1.019
For/fish	0.035	0.319	0.997	0.036
Other agriculture	0.823	6.629	0.889	0.201
Meat manufacturing	3.097	3.492	0.018	1.060
Dairy manufacturing	0.383	0.759	0.006	0.680
Prepared foods	0.972	2.216	1.527	0.110
Grain mills	0.979	0.189	0.017	0.033
Feed mills	0.295	0.049	0.050	0.040
Corn mills	0.892	0.046	0.001	0.005
Sugar manufacturing	0.210	0.523	0.068	0.000
Alcoholic beverages	0.196	2.121	0.423	0.096
Oilseed manufacturing	2.075	0.645	0.019	0.877
Miscellaneous food	1.008	1.759	0.240	0.064
Textile/apparel	5.290	40.497	0.541	0.674
Leather manufacturing	1.011	13.953	0.522	0.080
Other manufacturing	18.284	28.502	2.887	1.654
Oil/gas	9.347	59.353	6.709	2.826
Intermediate	49.230	64.878	8.057	9.470
Consumer durables	35.426	145.375	12.236	8.404
Capital goods	112.076	128.246	7.848	14.979
Services	97.000	9.366	19.879	12.214
Total	353.000	512.200	65.594	56.639

Appendix table 9--Shares of partner in U.S. and Mexican trade

Sector	Mexican share of U.S.		U.S. share of Mexican	
	Imports	Exports	Imports	Exports
		Percent		
Poultry	0	27	92	0
Livestock	34	52	98	100
Cotton	12	1	63	44
Foodgrain	0	3	72	1
Food corn	0	28	99	0
Feedgrain	1	8	97	100
Fruit/vegetable	27	2	94	70
Oilseed	0	9	86	0
For/fish	97	22	48	71
Other agriculture	5	7	66	90
Meat manufacturing	0	15	97	97
Dairy manufacturing	0	34	44	43
Prepared foods	10	4	72	34
Grain mills	2	1	89	52
Feed mills	1	4	73	2
Corn mills	1	0	60	100
Sugar manufacturing	8	0	100	1
Alcoholic beverages	8	5	25	94
Oilseed manufacturing	1	14	75	100
Miscellaneous food	5	2	80	90
Textile/apparel	0	4	72	80
Leather manufacturing	1	2	64	80
Other manufacturing	4	3	81	80
Oil/gas	5	11	83	97
Intermediate	4	6	66	81
Consumer durables	2	6	60	59
Capital goods	2	4	65	68
Services	82	5	93	88
Total trade	4	5	74	78

Appendix table 10--Tariffs and tariff equivalents of quotas in U.S.-Mexico trade 1/

| Sector | U.S. trade barriers | | | | Mexican trade barriers | | | |
| | On Mexico-- | | On rest of world-- | | On U.S.-- | | On rest of world-- | |
	Tariff	Quota	Tariff	Quota	Tariff	Quota	Tariff	Quota
				Percent				
Poultry	0.0	0.0	3.3	0.0	10.2	0.0	11.2	0.0
Livestock	1.7	0.0	1.1	0.0	8.2	0.0	4.8	0.0
Cotton	0.0	4.0	1.2	4.0	7.5	0.0	10.4	1.0
Foodgrain	0.0	0.0	4.5	0.0	9.9	12.6	9.5	14.0
Food corn	0.0	0.0	0.3	0.0	0.5	45.0	3.7	45.0
Feedgrain	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fruit/vegetable	13.2	0.0	3.4	0.0	12.5	0.0	11.9	0.0
Oilseed	8.4	0.0	8.6	0.0	10.0	0.0	1.3	0.0
For/fish	0.0	0.0	1.5	0.0	19.7	0.0	19.9	0.0
Other agriculture	0.2	0.0	0.2	0.0	9.7	0.0	10.5	0.0
Meat manufacturing	0.2	0.1	1.2	0.1	6.5	0.0	13.4	0.0
Dairy manufacturing	1.7	40.0	3.1	40.0	10.1	10.0	8.5	10.0
Prepared foods	6.5	0.0	9.7	0.0	16.6	0.0	16.2	0.0
Grain mills	15.1	0.0	0.3	0.0	10.6	0.0	13.9	0.0
Feed mills	1.0	0.0	2.6	0.0	10.5	0.0	10.0	0.0
Corn mills	0.0	0.0	1.1	0.0	4.4	0.0	12.3	0.0
Sugar manufacturing	4.2	62.0	3.6	62.0	13.9	0.0	0.0	0.0
Alcoholic beverages	2.2	0.0	2.8	0.0	14.9	0.0	18.1	0.0
Oilseed manufacturing	0.4	0.0	2.6	0.0	4.4	0.0	2.5	0.0
Miscellaneous food	0.6	0.0	7.1	0.0	14.1	0.0	11.2	0.0
Textile/apparel	12.6	0.0	11.8	0.0	16.0	0.0	15.6	0.0
Leather manufacturing	17.5	0.0	17.5	0.0	19.8	0.0	19.5	0.0
Other manufacturing	1.4	0.0	0.7	0.0	5.1	0.0	6.2	0.0
Oil/gas	1.5	0.0	1.2	0.0	8.8	0.0	8.3	0.0
Intermediates	2.2	0.0	1.7	0.0	8.0	0.0	8.8	0.0
Consumer durables	1.8	0.0	1.5	0.0	12.0	0.0	10.0	0.0
Capital goods	3.6	0.0	2.8	0.0	12.7	0.0	11.6	0.0
Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1/ For United States, tariff and tariff equivalents of quotas are 1988 rates. For Mexico, tariffs are 1988 rates and tariff equivalents of quotas are 1990 rates applied to commodities imported under quota in June 1991.

Appendix table 11--Indirect taxes, United States and Mexico

Sector	United States	Mexico 1/
	Billion dollars	Trillion pesos
Poultry	0.041	0.002
Livestock	1.151	0.008
Cotton	0.152	(0.008)
Foodgrain	0.168	(0.047)
Food corn	0.840	(0.044)
Feedgrain	0.100	(0.040)
Fruit/vegetable	0.403	(0.018)
Oilseed	0.381	(0.022)
For/fish	0.302	0.010
Other agriculture	0.556	(0.009)
Meat manufacturing	0.165	0.010
Dairy manufacturing	0.108	0.005
Prepared foods	0.324	0.067
Grain mills	0.126	(0.615)
Feed mills	0.035	(0.089)
Corn mills	0.039	(0.132)
Sugar manufacturing	0.037	(0.574)
Alcoholic beverages	7.296	0.973
Oilseed manufacturing	0.054	0.001
Miscellaneous food	0.416	0.336
Textile/apparel	0.859	0.948
Leather manufacturing	0.039	0.054
Other manufacturing	7.623	1.699
Oil/gas	13.963	0.289
Intermediate	11.851	1.002
Consumer durables	3.177	1.066
Capital goods	6.031	1.257
Services	296.061	29.595
Total	352.300	35.724

1/ In U.S., indirect taxes are net of tariffs. In Mexico, value-added taxes are net of subsidies.

Appendix table 12--Macroeconomic data, United States and Mexico 1/

Item	United States	Mexico
	Million dollars	Trillion pesos
Government consumption	921.4	33.0
Government saving	-107.1	14.3
Government revenue	1428.7	77.3
Enterprise transfers	93.1	26.1
Enterprise tax	126.9	17.6
Indirect or value-added tax	352.3	35.7
Aggregate nominal investment	699.5	81.6
Foreign capital flow to enterprises	29.0	-16.6
Foreign borrowing	-37.7	1.4
Enterprise saving	559.6	46.8
Remittances	-2.1	1.0
Household transfers	521.3	3.9
Net foreign savings	154.6	-13.3
Social security taxes	400.1	9.3
Household tax	571.6	9.0
Household savings	92.4	19.7
Household consumption	3009.4	269.2

1/ U.S. data are for 1987. Mexican data are for 1988.

Appendix table 13--Mexican agricultural program expenditures by sector, 1990

Subsidy	Foodgrains ex. corn	Food corn	Feed-grains	Oilseeds	Cotton
	Billion pesos				
Credit	56.45	181.27	106.27	25.49	8.39
Fertilizer	83.10	79.72	79.58	26.78	21.03
Insurance	0.00	0.00	0.00	0.00	0.00
Irrigation	138.23	132.61	132.38	44.55	34.99
Feed	0.00	0.00	0.00	0.00	0.00
Total	277.77	393.60	318.22	96.82	64.41

	Fruit/ vegetable	Livestock	Poultry	Other agriculture	Total agriculture
	Billion pesos				
Credit	83.55	55.23	1.15	4.13	521.93
Fertilizer	24.83	0.00	0.00	0.00	315.03
Insurance	0.00	0.00	0.00	0.00	0.00
Irrigation	41.30	0.00	0.00	0.00	524.04
Feed	0.00	15.59	22.33	13.12	51.04
Total	149.67	70.82	23.48	17.25	1,412.04

Source: USDA/ERS producer and consumer subsidy equivalents.

Appendix table 14--Mexican food processing subsidy expenditures, 1988

Subsidy	Grain mills	Corn milling	Dairy manufacturing	Oilseed products	Miscellaneous foods	Total
	Billion pesos					
Direct payment	23.60	293.50	7.96	0.00	0.00	325.06
Price	363.95	307.49	353.29	5.60	54.73	1,085.06
Tortilla	0.00	223.82	0.00	0.00	0.00	223.82
Total	387.55	824.81	361.25	5.60	54.73	1,633.94

Source: USDA/ERS producer and consumer subsidy equivalents.

Appendix table 15--Selected U.S. farm program expenditures, 1987

Program	Food-grains	Food corn	Feed-grain
	Billion dollars		
EEP 1/	0.880		
to Mexico 2/	0.029		
Deficiency payments	3.863	0.762	5.991
Total	4.773	0.762	5.991

1/ EEP expenditures include only wheat.
2/ 1987-90 average EEP expenditure in Mexico.

Appendix table 16--Sectoral elasticities 1/

Sector	United States			Mexico			
	Import demand	Export supply	Factor demand	Import demand	Export supply	Factor demand	Land

Elasticity

Sector	Import demand	Export supply	Factor demand	Import demand	Export supply	Factor demand	Land
Poultry	1.5	3.5	0.8	1.5	3.5	0.8	0.0
Livestock	1.5	3.5	0.8	1.5	3.5	0.8	0.0
Cotton	4.0	4.0	0.8	4.0	4.0	0.8	0.3
Foodgrain	4.0	4.0	0.8	4.0	4.0	0.8	0.3
Food corn	4.0	4.0	0.8	2.0	4.0	0.8	0.3
Feedgrain	4.0	4.0	0.8	4.0	4.0	0.8	0.3
Fruit/vegetable	2.0	4.0	0.8	2.0	4.0	0.8	0.3
Oilseed	4.0	4.0	0.8	4.0	4.0	0.8	0.3
For/fish	1.5	3.5	0.8	1.5	3.5	0.8	0.0
Other agriculture	1.5	3.5	0.8	1.5	3.5	0.8	0.3
Meat manufacturing	2.0	2.8	2.0	2.0	2.8	2.0	0.0
Dairy manufacturing	2.0	2.8	2.0	2.0	2.8	2.0	0.0
Prepared foods	2.0	2.8	2.0	2.0	2.8	2.0	0.0
Grain mills	2.0	3.5	2.0	2.0	3.5	2.0	0.0
Feed mills	2.0	3.5	2.0	2.0	3.5	2.0	0.0
Corn mills	2.0	3.5	2.0	2.0	3.5	2.0	0.0
Sugar manufacturing	2.0	3.5	2.0	2.0	3.5	2.0	0.0
Alcoholic beverages	2.0	3.0	2.0	2.0	3.0	2.0	0.0
Oilseed manufacturing	2.0	3.5	2.0	2.0	3.5	2.0	0.0
Miscellaneous food	2.0	2.8	2.0	2.0	2.8	2.0	0.0
Textile/apparel	2.0	2.8	2.0	2.0	2.8	2.0	0.0
Leather manufacturing	2.0	2.8	2.0	2.0	2.8	2.0	0.0
Other manufacturing	2.0	2.8	2.0	2.0	2.8	2.0	0.0
Oil/gas	3.0	3.5	2.0	3.0	3.5	2.0	0.0
Intermediate	2.5	3.0	2.0	2.5	3.0	2.0	0.0
Consumer durables	2.0	2.8	2.0	2.0	2.8	2.0	0.0
Capital goods	2.0	2.5	2.0	2.0	2.5	2.0	0.0
Services	1.5	0.5	2.0	1.5	0.5	2.0	0.0

1/ Land substitution elasticities in the United States between cereal/oilseeds and all other crops are assumed to be zero, and are not reported.