

THE ECONOMIC CONSEQUENCES OF WESTERN HEMISPHERE ECONOMIC INTEGRATION: EMPHASIS ON FOOD AND AGRICULTURAL SECTORS

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Abstract

The advent of the North American Free Trade Agreement (NAFTA) laid the groundwork for negotiations to establish a Free Trade Area of the Americas (FTAA) by the year 2005. Western Hemisphere (WH) market integration would fortify free trade by reducing or eliminating trade barriers among member countries, providing more open markets and freer movement of investment capital across national boundaries. The formation and expansion of a free trade agreement in the WH increases export and investment opportunities for agribusinesses in member countries, particularly as the demand for goods and services increases with the growth in the number of consumers and their corresponding income levels. For multinational agribusiness managers, understanding the consequences of the recent passage of the NAFTA and the continuing evolution of the FTAA and other WH regional trading blocs is essential. The research reported in this manuscript identifies the influence of market integration on agricultural trade and production in the WH. The results are based on a computable general equilibrium model (Global Trade Analysis Project-- GTAP), which provides an interdependent global framework, but yet regionalized, for sophisticated economic analysis of WH market integration. Based on the results of the GTAP analysis, economic integration results in substantial investment capital flows into Mexico and Latin America while Argentina and Brazil experience lesser inflows.

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THE ECONOMIC CONSEQUENCES OF WESTERN HEMISPHERE ECONOMIC INTEGRATION: EMPHASIS ON FOOD AND AGRICULTURAL SECTORS

In December 1994, Western Hemisphere (WH) countries met in Miami to begin negotiations to establish a "Free Trade Area of the Americas" (FTAA) by the year 2005. These negotiations closely followed the passage of the North American Free Trade Agreement (NAFTA) and the ratification of the Uruguay Round under the General Agreement on Tariffs and Trade (GATT) by 125 member nations. While the GATT is a world agreement that reduces trade barriers, the NAFTA is a free trade agreement that seeks to remove barriers to trade between the United States, Mexico, and Canada over a 15-year time frame.

Thirty-two WH countries participated in the Summit of the Americas. A theme of the Summit was economic integration to provide more open markets and freer movement of investment capital across national boundaries within the WH. A WH Free Trade Agreement would expand the NAFTA to include countries in Latin America, the Caribbean, and South America. Several trading blocs have already emerged within the WH.

Agreements among WH countries already established include: the Latin American Integration Association (ALADI); Central American Common Market (Bolivia, Columbia, Ecuador, Peru, Venezuela); Caribbean Community and Common Market (CARICOM); Group of Three (Colombia, Mexico, Venezuela); and Southern Cone Common Market (MERCOSUR - Argentina, Brazil, Paraguay, and Uruguay). In mid-1995, Chile was negotiating for inclusion into NAFTA, however, incorporating established trading blocs into NAFTA is considered simpler than adding some 35 independent countries individually (Sharples).

Objectives

The purpose of this research is to analyze the long-term economic consequences of market integration on agricultural trade and production in the Western Hemisphere. Implications for agribusiness managers are provided based on these consequences. Economic market integration refers to trade liberalization through regional integration of countries into trading blocs, resulting in a homogenization of factor inputs available for production in the integrated geographic area.

This research employs a computable general equilibrium (CGE) model to analyze the effects of market integration in the Western Hemisphere. CGE models provide an economy-wide framework for quantitative analysis of international trade issues. The Global Trade Analysis Project (GTAP), operationalized in 1992 by Thomas Hertel and others at Purdue University, is used in this research because it allows for simulations of trade liberalization scenarios and provides post-simulation data on the state of the economy after the specified shock has worked its way through the economy.

This manuscript first provides a brief overview of agricultural trade in the Western Hemisphere. Next a brief survey of the FTA literature and recent research employing general equilibrium models is presented. The Global Trade Analysis Project (GTAP) model and the specific aggregation for the WH analysis is described, along with the scenarios analyzed. Finally, the implications of the analysis, along with the summary and conclusions of the research are presented.

Evolution of Trading Blocs in the WH

There are four types of trading blocs, each representing increasing complexity and economic integration. The free trade area is the simplest type of trading bloc, where member countries reduce or eliminate trade barriers among themselves, but each member maintains its own trade barriers to regions outside the FTA. In a customs union, member countries eliminate internal trade barriers and establish a common set of tariffs for countries external to the trading bloc. A customs union becomes a common market when labor and capital become fully mobile between member countries. Full economic integration occurs in an economic union, where in addition to common trade and factor mobility, member countries have common monetary and fiscal policies (van der Veen).

The NAFTA is a free trade area, whereas the EU is seeking full economic integration in an economic union. The NAFTA will give Mexico an advantage over Latin American and Caribbean countries in their exports to the U.S. Foreign direct investment (FDI) will also be more attractive in Mexico than in other Western Hemisphere (WH) countries as a result of the NAFTA. For these reasons, countries in the WH will likely seek membership in the NAFTA.

Many developing countries pursued import-substitution policies during the 1950's, where markets were relatively closed to foreign competition, FDI was restricted and domestic financial markets were tightly regulated. The rationale behind these closed market policies was the dependency theory, in which poor countries were thought to have to break away from developed countries to sustain economic growth. "...As world income rose, the demand for manufactured products would increase relative to primary products, and this change would lead to a lower relative price for primary products in international markets. As a result, if developing countries did nothing to change the structure of their output, their terms of trade would always move against them." (Gould, p.11). Rather than the traditional exporting of primary goods and importing of manufactured goods by developing countries, the dependency theory held that government intervention was necessary to support domestic industries and manage international competition (Gould).

The import-substitution industrialization policies hurt developing countries' economic efficiency and long-term economic growth. In comparison, more outward-oriented countries such as Chile, Hong Kong, Korea, Singapore and Taiwan achieved higher sustained economic

growth than developing countries with restrictions on foreign direct investment and markets closed to foreign competition (Gould).

Previous Research and Modeling Market Integration

This section provides some recent research on the economic implications of free trade agreements (FTAs) in the Western Hemisphere (WH) and reviews research employing the economic modeling of market integration. Several studies have analyzed the economic and specific agricultural impacts of the NAFTA, typically with reference to a base case without the NAFTA and an alternative scenario which incorporates total trade liberalization. In a recent study, Tweeten lists the advantages and disadvantages of regionalism, defined as the "...formation of political groupings or 'blocs' of countries for the purpose of promoting intra-regional trade" (Tweeten, p. 810). The research provides an assessment of the impact on U.S. agriculture of a Western Hemisphere free trade agreement. Among the advantages of regionalism are the benefits from trade of specialization and economies of size. Additionally, Tweeten notes that changes can be made incrementally in FTAs, negotiations are less complex, and FTAs can form rapidly. Incorporating established trading blocs into FTAs is simpler than adding many countries individually, and liberalization negotiations among a few trading blocs is more feasible than among many individual countries.

The formation of FTAs has some disadvantages, in particular, if prices internal to the FTA are raised to protect member countries from the competition of trade from countries outside the FTA. Also discouraging is the evidence that FTAs among developing countries have not been successful (Tweeten).

Another study of the impact of the NAFTA assesses the FTA's effects on farm wages and employment and land markets in the United States (Claassen and Gardner). Because Mexico implemented economic reforms prior to the passage of the NAFTA, the effects of the agreement must be separated from changes that had already taken place and were likely to continue even without the NAFTA. Similarly, policy changes in factor markets have been ongoing since before the passage of the NAFTA, which influence labor and land markets in the United States and Mexico (Claassen and Gardner). In reference to a study which surveyed the literature on the labor impacts of the NAFTA, the authors indicate that factor market linkages, especially labor flows, represent a more extensive economic linkage between the two economies than does trade in goods (Claassen and Gardner, p. 63).

The significance of comprehending the effects of FTA's on labor markets lies in the fact that changes in factor mobility, in terms of labor migration, have a greater effect on factor returns (wage rates) than do changes in commodity trade (Hinojosa-Ojeda and Robinson; Burfisher, Robinson, and Thierfelder). Most CGE studies assume that labor is fully mobile among countries being analyzed, however, Claassen and Gardner use a partial equilibrium approach and assume

that labor is not necessarily mobile among sectors. As a result, they found that the degree of labor mobility affects wage rate adjustments differently in different sectors.

A Free Trade Agreement ideally encompasses a region that includes neighboring countries because of low transportation and communication costs, and one among developed countries to take advantage of gains from higher volumes of trade (Tweeten). Western Hemisphere economic integration incorporates a large region of neighboring countries, some of which have greater proximity to the U.S. than others. The WH includes countries with differing levels of economic development, and with different resource endowments and dimensions of comparative advantage.

Methods and Data

The modeling of the economic effects of FTAs can be classified into computable general equilibrium models (CGE) or partial equilibrium models (PEM). Only CGE models can determine changes in economy-wide resource allocation, such as wages, employment, and migration (Hueth, O'Mara and Just). Following Burfisher (p. 5), a CGE model is defined as a type of applied, economy-wide model that simulates the behavior of a market economy. Within the model, sectors are linked in terms of factors of production and their use as intermediate inputs in each others' final production. A CGE model is similar to an input-output model but fully accounts for the income flows through an economy, with land, labor, and capital earning rents, wages and profits, and resulting in household, industry and government consumption, savings and tax payments, and final demand. The CGE approach allows the analysis to be based on macroeconomic equilibrium for the economy, including the fiscal deficit, savings and investment, balance of trade, exchange rates, and international terms of trade. Data contains sectoral aggregations on intermediate and primary factor demand, trade and prices, and household and government revenue and expenditure.

The GTAP model used is based on standard modeling methods and allows analysis of changes in policy, technology, population, and factor endowments. Simulations using the model provide information on bilateral trade, activity levels by sector and region, private and government consumption, regional welfare, and prices (Hertel). Along with analyses of trade policy and technological progress, GTAP models the effects of regional integration. In the standard closure of the GTAP model, the regional household has a Cobb-Douglas utility function which allocates constant budget shares across three categories: private, government and savings expenditures (Hertel and Tsigas). Therefore, a rise in income will result in an increase in private consumption as well as government and savings expenditures. The model accounts for taxes and transport margins in the distribution of commodities to regional markets. Household and government purchases of tradeable commodities are accounted for, as are firms' purchases of intermediate and primary factors of production. Firms purchase services of nontradeable commodities, or endowment commodities, which include agricultural land, labor and capital. Land is considered a sluggish endowment commodity, while labor and capital are perfectly mobile. Once all tradeable (intermediate) inputs, and endowment (primary) factors of production

are accounted for in the model, expenditures on private, government and savings commodities must exhaust regional income to insure zero pure economic profits.

Border interventions are modeled for export and import subsidies and taxes. An export subsidy is indicated by a commodity with a higher domestic price than the world price, while a world price above the market price indicates an export tax. The Armington approach to import demand is utilized in the GTAP model, which differentiates products by origin. Import taxes arise when market prices exceed world prices, due to either tariffs on imports or from an import quota.

Firm behavior in GTAP is modeled using separable, constant returns-to-scale technology. The production structure assumes constant elasticity of substitution (CES) between factor inputs; that is, firms combine intermediate and primary inputs in fixed proportions. The production process also assumes separability between imported and domestically produced intermediate inputs. Using the Armington approach to modeling import demand, firms determine the optimal mix of imported and domestically produced goods based on a composite import price, having first determined the sourcing of imports.

Percentage changes in export and import values by commodity and by region are computed in the GTAP model. Other equations in the model calculate changes in aggregate trade values, prices and quantity indices, which in turn allow computation of volume changes in aggregate trade and output. The final equations in the model compute the change in the trade balance, by commodity, and by region.

GTAP allows a specific aggregation of countries and sectors. The data base for GTAP is disaggregated into 24 regions and 37 sectors, with information on bilateral trade, and transport and protection linkages among regions for all commodities. The database originates primarily from United Nations trade data. The Australian Industry Commission, the USDA, the World Bank and the GATT have contributed to the development of the database for the GTAP.

The regions included in the analysis are those in the Western Hemisphere. The six regions in the WH and their symbols are: Canada (CAN), the United States (USA), Argentina (ARG), Brazil (BRA), Mexico (MEX), and the rest of Latin America (LAM). The regional aggregation includes five individual countries and two regions: Canada, the United States, Argentina, Brazil, Mexico, the Rest of Latin America, and the Rest of the World (ROW). The nine sectors modeled are: food and feed grains (paddy rice, wheat, and grains), non-grain crops (oilseeds, fruits and vegetables), livestock and wool, processed rice, meat products, milk products, processed food products (canned and frozen, excluding meat and milk products), beverages and tobacco, and manufacturing and services. The analysis of the results of the simulation focus on the WH regions and the agricultural sectors modeled.

Five policy scenarios (E1-E5) are analyzed based on the simulation of unilateral liberalization of agricultural policies by the U.S. (E1), Canada (E2), Mexico (E3), regional liberalization by the member countries of the NAFTA--the U.S., Canada, and Mexico (E4), and

regional liberalization by the Western Hemisphere countries and regions in the GTAP model-- Canada, the U.S., Mexico, Argentina, Brazil and the rest of Latin America (E5). These scenarios assume a variable investment allocation and use the Euler solution method. The scenarios are analyzed by comparing macro variables such as terms of trade, changes in trade balances, and equivalent variation. The rates of return on capital and the corresponding flow of capital following WH integration are analyzed, along with the change in the value of GDP. Sectoral analysis includes changes in output, imports and exports and changes in world prices in the agricultural sectors modeled.

The GTAP simulation for the three unilateral liberalization scenarios (E1-E3), incorporates shocks to remove the policies of taxes on agricultural domestic output (to), output taxes (txs), and import tariff and non-tariff equivalents (tms) (Figures 1 and 2, Table 1). Negative domestic output values indicate that a subsidy will be removed, resulting in a drop in domestic producer prices, whereas positive output values indicate the elimination of net producer taxes. Similarly, negative (positive) txs values indicate the removal of an export subsidy (tax), which lowers (raises) domestic prices relative to world prices. Negative (positive) tms values indicate that a border import tax (subsidy) is removed, which lowers (raises) the domestic market price (MacLaren).

The shocks required for unilateral agricultural trade liberalization reveal which commodities are taxed or subsidized in the three member countries of the NAFTA. On a relative basis, the United States subsidizes grains, and to a lesser extent, other commodities such as non-grain crops, wool and other livestock, and milk products. The commodity group, beverages and tobacco, is heavily taxed in the United States, as well as in Mexico. Canada subsidizes its grains, non-grain crops, wool and other livestock, meat products, and milk products. The U.S. and Canada support their milk products through export subsidies. All of the commodities in the analysis are protected from imports from the ROW, particularly grains by the U.S. and Canada, and non-grain crops, wool and livestock, processed rice, meat products, and milk products by all three NAFTA countries.

Results of Scenario Analysis

The impact of the unilateral and multilateral agricultural liberalization scenarios on output, exports, and imports for the U.S., Canada, and Mexico is reported (Tables 2-4). Given U.S. unilateral or with regional (NAFTA) liberalization, the output in all the agricultural commodities declines except for in beverages and tobacco. The output of the beverages and tobacco sector increases with both U.S. and regional liberalization (\$18.3 million and \$17.8 million). The drop in domestic output in the agricultural commodities under unilateral U.S. and regional liberalization scenarios corresponds to a decline in the exports of these commodities. Exports of grains, livestock, processed rice, meat products and milk products fall sharply, while exports of beverages and tobacco show a dramatic increase. The drop (increase) in exports also corresponds to an increase (a decline) in imports. Similar data were generated for the impact of the agricultural liberalization scenarios on output, exports and imports for Canada and for Mexico (Tables 3 and 4).

Changes in world prices for the commodities illustrate the effects of these changes in output under each liberalization scenario (Table 5). Price indices increase most dramatically for grains under both U.S. unilateral and regional liberalization. All other agricultural commodities show an increase in price with the exception of beverages and tobacco, which declines under U.S. and Mexican unilateral and regional liberalization.

The largest change in national welfare, measured by equivalent variation (in 1992 dollars), occurs in the U.S., which shows a large increase under unilateral and both regional liberalization scenarios (\$21.5 billion, \$26.7 billion and \$28.6 billion, respectively), while the welfare of the ROW increases significantly under U.S. unilateral liberalization (\$20.3 billion), but declines under both regional liberalization scenarios (Table 6). Welfare declines in each of the liberalization scenarios for Canada and Mexico. Changes in welfare in each of the seven regions show small gains to Argentina and Brazil with WH agricultural liberalization.

The terms of trade are measured as the difference between the index of prices received for tradeables and the index of prices paid for tradeables. For Canada and Mexico, the terms of trade declines most significantly with regional liberalization; however, the US benefits (Table 6). The terms of trade also decline in Argentina, Brazil, and the rest of Latin America with liberalization by the WH countries.

In terms of the flow of capital resulting from WH integration, Mexico, the United States, and the rest of Latin America benefit the most from the trade liberalization scenario, while Canada and Brazil show smaller gains. Argentina and the rest of the world are net losers. The beginning-of-period capital stock is set at zero in the GTAP simulation, with the following end-of-period levels of capital stock: Canada (0.29), US (1.1), Argentina (-0.02), Brazil (0.18), Mexico (1.3), the rest of Latin America (1.3), and the rest of the world (-0.4). The flow of capital corresponds to the rate of return on capital stock. The GTAP model sets the global net rate of return on capital stock at 4.2%. The following rates of return reflect the results of the simulation of WH integration: Canada (7.2%), US (16.0%), Argentina (3.9%), Brazil (6.1%), Mexico (18.2%), the rest of Latin America (18.6%), and the rest of the world (-0.11%).

The change in the value of GDP as a result of trade liberalization in the WH shows an improvement for the US, the rest of Latin America, and the rest of the world. Canada, Argentina, Brazil, and Mexico show a loss in the value of their GDP. The changes in percentages are as follows: Canada (-3.4), US (1.4), Argentina (-2.5), Brazil (-2.6), Mexico (-0.9), the rest of Latin America (0.1), and the rest of the world (0.2).

Implications

Clearly, the WH is on a course of economic integration by 2005. Results of the GTAP analysis suggest that from a U.S. perspective, the sectors that will gain exports include beverages and tobacco while imports within this sector remain virtually unchanged. For processed foods, grain, and livestock sectors, the analysis suggests that imports to the U.S. will increase while

exports decline. For Mexico, exports of grains and livestock increase dramatically while imports within these sectors remain stable. The processed foods sector within Mexico is stable with changes in imports and exports nearly balanced on a value basis.

The analysis also suggests a substantial return on capital invested in WH countries after economic integration occurs. Return on capital after integration is dramatically improved in each WH country. The U.S., Latin America, and Mexico in particular experience inflows of capital as a result of economic integration. Each country enjoys about the same influx of investment capital while Argentina and Brazil lag significantly.

The influence of market integration runs counter to the popular notion that American jobs and the flow of capital would move south of the US borders after the passage of the NAFTA. Mexico and the rest of Latin America benefit from trade liberalization, but the US also sees an increase in its rate of return on capital and a corresponding increase in its capital stock. Canada loses the most in the value of GDP, reflecting subsidized grains and meat products sectors, and heavily subsidized exports of milk products (Table 1). Subsidies on exports and taxes on imports create inefficient and noncompetitive sectors. A shift toward production of agricultural products in regions with a competitive advantage occurs after trade liberalization, resulting in a loss of value of GDP for regions with heavily subsidized agricultural sectors.

Summary and Conclusions

The advent of the North American Free Trade Agreement (NAFTA) laid the groundwork for negotiations to establish a Free Trade Area of the Americas (FTAA) by the year 2005. Western Hemisphere (WH) market integration reduces or eliminates trade barriers among member countries, providing more open markets and freer movement of investment capital across national boundaries. The formation and expansion of a free trade agreement in the WH increases export and investment opportunities for agribusinesses in member countries, particularly as the demand for goods and services increases with the growth in the number of consumers and their corresponding income levels. For multinational agribusiness managers, understanding the consequences of the recent passage of the NAFTA and the continuing evolution of the FTAA and other WH regional trading blocs is essential. The research identifies the influence of market integration on agricultural trade and production in the WH. The results are based on a computable general equilibrium model (Global Trade Analysis Project-- GTAP).

The GTAP model enabled a simulation of trade liberalization as a proxy for market integration, and provided data on sectoral and macroeconomic changes as a result of unilateral and regional trade liberalization. The GTAP simulation of agricultural policy liberalization removed the import tariffs and export subsidies on agricultural commodities. Data were generated for changes in domestic output, exports and imports for each of the nine sectors. The macroeconomic variables obtained in the analysis included changes in world price indices, equivalent variation measures, changes in trade balance and in terms of trade, changes in the flow of capital and in the value of GDP.

Figure 1

Figure 2

Table 1. Percentage Shocks for U.S., Canadian, and Mexican Unilateral Agricultural Policy Liberalization (1992)

<u>ROW</u>	<u>Domestic Output</u>	<u>Exports to ROW</u>	<u>Imports from</u>
	(to)	(txs)	(tms)
<i>Grains</i>			
U.S.	-24.5	-8.2	-63.1
Canada	-11.6	-8.2	-40.9
Mexico	-3.8	0.0	-1.1
<i>Non-grain Crops</i>			
U.S.	-4.9	-0.0	-45.3
Canada	-9.3	-5.0	-42.7
Mexico	-1.0	0.0	-41.6
<i>Livestock and Wool</i>			
U.S.	-3.5	0.0	-31.1
Canada	-4.5	0.0	-25.3
Mexico	0.1	0.0	-31.8
<i>Processed Rice</i>			
U.S.	0.4	0.0	-26.7
Canada	0.4	0.0	-33.2
Mexico	-3.8	0.0	-56.3
<i>Meat Products</i>			
U.S.	0.3	-1.5	-33.0
Canada	-18.0	0.0	-34.0
Mexico	0.1	0.0	-36.2
<i>Milk Products</i>			
U.S.	-4.1	-34.1	-40.0
Canada	-4.3	-44.1	-48.1
Mexico	0.1	0.0	-57.0
<i>Processed Food Products</i>			
U.S.	0.5	0.0	-9.5
Canada	0.4	-0.3	-10.8
Mexico	-3.7	0.0	-5.5
<i>Beverages and Tobacco</i>			
U.S.	23.2	0.0	-7.0
Canada	1.6	0.0	-8.1
Mexico	27.0	0.0	-8.3
<i>Manufacturing and Services</i>			
U.S.	5.1	0.0	-5.3
Canada	2.2	0.0	-5.4
Mexico	7.2	0.1	-2.5

Source: Calculated

Table 2: Impact of Liberalizing Agricultural Policies on U.S. Agricultural Output, Exports and Imports (1992 \$US m)

	<u>Output</u> (qo)	<u>Exports</u> (qxw)	<u>Imports</u> (qim)
Grains			
U.S. (E1)	-18.5	-60.2	67.6
Canada (E2)	1.5	4.1	-16.1
Mexico (E3)	0.9	3.7	0.3
NAFTA (E4)	-16.8	-55.4	39.8
WH (E5)	-17.4	-55.8	41.4
Non-grain crops			
U.S. (E1)	-5.1	-9.3	29.7
Canada (E2)	1.3	8.2	0.5
Mexico (E3)	0.3	0.1	-1.7
NAFTA (E4)	-3.4	-1.1	27.2
WH (E5)	-9.1	-15.8	50.6
Livestock and Wool			
U.S. (E1)	-7.6	-33.0	74.8
Canada (E2)	0.8	3.7	-0.2
Mexico (E3)	0.2	2.6	-2.1
NAFTA (E4)	-6.7	-28.2	71.3
WH (E5)	-7.5	-36.9	79.6
Processed Rice			
U.S. (E1)	-9.4	-18.8	21.3
Canada (E2)	-0.1	-0.4	0.3
Mexico (E3)	0.1	0.2	0.1
NAFTA (E4)	-9.4	-19.0	21.7
WH (E5)	3.2	19.0	33.0
Meat Products			
U.S. (E1)	-4.0	-22.5	41.1
Canada (E2)	1.0	13.4	-4.3
Mexico (E3)	0.1	1.7	0.1
NAFTA (E4)	-3.0	-10.3	34.1
WH (E5)	-3.6	-18.8	42.7
Milk Products			
U.S. (E1)	-6.8	-87.4	281.1
Canada (E2)	0.4	29.5	-0.8
Mexico (E3)	0.1	9.5	0.1
NAFTA (E4)	-6.6	-82.1	276.5
WH (E5)	-6.7	-84.0	313.9
Processed Food Products			
U.S. (E1)	-1.7	-1.4	16.9
Canada (E2)	0.1	1.1	0.8
Mexico (E3)	0.1	0.7	-0.6
NAFTA (E4)	-1.5	0.3	17.2
WH (E5)	-2.6	-11.0	27.6
Beverages and Tobacco			
U.S. (E1)	18.3	145.8	-24.8
Canada (E2)	-0.1	-0.8	1.4
Mexico (E3)	-0.3	-0.7	4.3
NAFTA (E4)	17.8	142.7	-20.4
WH (E5)	13.3	83.5	-4.9
Manufacturing and Services			
U.S. (E1)	0.1	17.6	10.8
Canada (E2)	-0.0	0.6	1.4
Mexico (E3)	-0.0	0.3	0.7
NAFTA (E4)	0.1	18.4	12.8
WH (E5)	0.2	-1.6	27.8

Source: Calculated

Table 3: Impact of Liberalizing Agricultural Policies on Canadian Agricultural Output, Exports and Imports (1992 \$US m)

	<u>Output</u> (qo)	<u>Exports</u> (qxw)	<u>Imports</u> (qim)
Grains			
U.S. (E1)	29.6	41.0	-31.0
Canada (E2)	-29.3	-38.6	26.1
Mexico (E3)	0.3	0.2	0.2
NAFTA (E4)	-6.2	-7.6	-14.0
WH (E5)	-3.2	-3.0	-18.8
Non-grain crops			
U.S. (E1)	5.3	5.8	-0.9
Canada (E2)	-21.0	-25.2	34.0
Mexico (E3)	0.6	2.0	-0.2
NAFTA (E4)	-15.1	-17.1	31.7
WH (E5)	-17.7	-29.8	33.4
Livestock and Wool			
U.S. (E1)	8.6	60.3	-13.5
Canada (E2)	-15.6	-4.0	50.1
Mexico (E3)	0.6	4.2	-0.0
NAFTA (E4)	-6.8	65.1	29.4
WH (E5)	-6.6	68.0	27.8
Processed Rice			
U.S. (E1)	5.1	42.3	-3.8
Canada (E2)	-1.3	9.4	-2.7
Mexico (E3)	0.2	0.4	-0.1
NAFTA (E4)	4.0	57.0	-6.5
WH (E5)	3.9	103.6	-6.5
Meat Products			
U.S. (E1)	4.0	31.2	-8.8
Canada (E2)	-18.8	-57.4	112.3
Mexico (E3)	0.3	2.7	-0.0
NAFTA (E4)	-16.0	-42.0	92.8
WH (E5)	-16.1	-43.3	92.1
Milk Products			
U.S. (E1)	1.9	39.8	-11.8
Canada (E2)	-16.8	-92.5	490.0
Mexico (E3)	0.2	5.0	-0.0
NAFTA (E4)	-15.6	-88.9	421.8
WH (E5)	-16.1	-89.4	448.0
Processed Food Products			
U.S. (E1)	4.3	21.1	-4.1
Canada (E2)	-2.7	6.8	7.9
Mexico (E3)	0.2	1.0	-0.2
NAFTA (E4)	2.1	31.4	3.1
WH (E5)	1.1	24.3	3.5
Beverages and Tobacco			
U.S. (E1)	2.3	28.5	8.4
Canada (E2)	-2.0	13.1	34.0
Mexico (E3)	-0.6	-4.0	1.5
NAFTA (E4)	0.3	39.0	40.4
WH (E5)	-2.8	23.7	59.0
Manufacturing and Services			
U.S. (E1)	-0.6	-3.6	-0.6
Canada (E2)	0.9	15.6	9.9
Mexico (E3)	-0.0	-0.1	-0.1
NAFTA (E4)	0.4	12.0	9.0
WH (E5)	0.4	9.1	8.7

Source: Calculated

Table 4: Impact of Liberalizing Agricultural Policies on Mexican Agricultural Output, Exports and Imports (1992 \$US m)

	<u>Output</u> (qo)	<u>Exports</u> (qxw)	<u>Imports</u> (qim)
<i>Grains</i>			
U.S. (E1)	6.4	74.7	-33.8
Canada (E2)	0.4	19.4	-2.4
Mexico (E3)	-10.0	-32.6	47.8
NAFTA (E4)	-2.7	40.9	-4.9
WH (E5)	-2.9	50.6	-4.3
<i>Non-grain crops</i>			
U.S. (E1)	9.3	75.4	-6.6
Canada (E2)	0.2	0.6	-1.0
Mexico (E3)	-6.3	-22.6	14.0
NAFTA (E4)	1.6	39.6	5.2
WH (E5)	-1.9	7.7	11.9
<i>Livestock and Wool</i>			
U.S. (E1)	3.7	103.7	-22.1
Canada (E2)	0.2	4.5	-1.1
Mexico (E3)	-5.4	-26.9	27.4
NAFTA (E4)	-1.9	55.4	-0.7
WH (E5)	-2.1	46.8	1.9
<i>Processed Rice</i>			
U.S. (E1)	6.1	24.4	-3.1
Canada (E2)	0.3	1.1	-0.2
Mexico (E3)	-23.3	-27.7	8.3
NAFTA (E4)	-18.1	-8.8	4.6
WH (E5)	-19.4	62.0	5.5
<i>Meat Products</i>			
U.S. (E1)	0.6	29.6	-13.5
Canada (E2)	0.1	8.0	-2.0
Mexico (E3)	-3.6	-19.1	25.5
NAFTA (E4)	-2.9	13.8	6.6
WH (E5)	-2.9	1.1	8.6
<i>Milk Products</i>			
U.S. (E1)	3.7	47.5	-13.3
Canada (E2)	0.6	2.3	-2.4
Mexico (E3)	-9.0	-19.7	19.6
NAFTA (E4)	-4.1	21.9	0.2
WH (E5)	-5.7	-3.1	7.0
<i>Processed Food Products</i>			
U.S. (E1)	0.5	19.0	-3.2
Canada (E2)	-0.0	0.5	-0.4
Mexico (E3)	-6.0	-27.0	21.8
NAFTA (E4)	-5.7	-13.2	17.6
WH (E5)	-6.0	-20.4	22.2
<i>Beverages and Tobacco</i>			
U.S. (E1)	-1.9	-25.7	18.8
Canada (E2)	-0.1	-0.2	-0.5
Mexico (E3)	12.6	213.7	-14.8
NAFTA (E4)	8.6	132.7	2.8
WH (E5)	7.0	88.6	14.8
<i>Manufacturing and Services</i>			
U.S. (E1)	-0.8	-3.3	0.7
Canada (E2)	-0.0	-0.4	-0.3
Mexico (E3)	0.9	22.3	11.9
NAFTA (E4)	0.2	18.8	11.9
WH (E5)	0.5	6.2	20.6

Source: Calculated

Table 5: Liberalization of U.S. (E1), Canadian (E2), Mexican (E3), NAFTA (E4), and WH (E5) Agricultural Policies: Changes in World Prices Indices

	E1	E2	E3	E4	E5
Grains	14.2	2.6	0.2	18.1	20.8
Non-grain crops	1.7	0.4	0.3	2.6	-0.7
Livestock and Wool	2.5	0.3	0.3	3.1	3.9
Processed Rice	2.6	0.2	0.1	3.0	5.7
Meat Products	2.4	1.0	0.1	3.8	4.6
Milk Products	2.0	0.6	0.1	3.0	2.6
Processed Food Products	1.2	0.2	0.2	1.6	1.7
Beverages and Tobacco	-6.6	0.1	-0.4	-6.7	-7.3
Manufacturing and Services	-0.4	-0.0	0.0	-0.4	0.2

Source: Calculated

Table 6: Measures of Agricultural Policy Liberalization of U.S. (E1), Canadian (E2), Mexican (E3), NAFTA (E4), and WH (E5) Agricultural Policies

<i>Equivalent Variation (1992 \$US m) EV(r)</i>					
	E1	E2	E3	E4	E5
U.S.	21,482	3197	1449	26,675	28,583
Canada	-4093	-1473	-74	-4939	-4817
Mexico	-1853	-186	-392	-2113	-2152
Argentina	-412	14	-40	-393	335
Brazil	-1396	-21	151	-1257	1619
Latin America	-787	-249	35	-971	721
ROW	20,288	-1433	-984	-23,302	-16,670
World	-7345	-150	144	-6301	7620

<i>Terms of Trade (%) (tot)</i>					
	E1	E2	E3	E4	E5
U.S.	-1.4	0.5	0.2	1.7	2.0
Canada	1.0	-1.7	-0.0	-3.1	-3.0
Mexico	-1.4	-0.2	-1.6	-3.0	-3.1
Argentina	-1.0	0.1	-0.1	-0.9	-1.2
Brazil	-1.1	-0.0	0.2	-0.9	-4.3
Latin America	-0.3	-0.1	0.0	-0.4	-3.9
ROW	-0.1	0.0	-0.0	-0.1	0.0

Source: Calculated

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