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**Computational Analysis of the Free Trade  
Area of the Americas (FTAA)**

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Revised, February 5, 2005

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**Abstract**

We use the Michigan Model of World Production and Trade to assess the economic effects of the Free Trade Area of the Americas (FTAA) that is currently being negotiated among the 34 countries in the region. The model covers 18 economic sectors in each of 22 countries/regions and is based on Version 5.4 of the GTAP database for 1997 together with specially constructed estimates of services barriers and other data on sectoral employment and numbers of firms. The distinguishing feature of the model is that it incorporates some aspects of trade with imperfect competition in the manufacturing and services sectors, including monopolistic competition, increasing returns, and product variety. The modeling focus is on the effects of the bilateral removal of tariffs on agriculture and manufactures and services barriers. Rules of origin and other restrictive measures and the non-trade aspects of the FTAA are not taken into account due to data constraints. The computational results indicate that the FTAA would increase the economic welfare of the FTAA member countries by \$118.8 billion, with the largest increases accruing to the United States, \$67.6 billion, and to South America, \$31.0 billion. The FTAA is trade diverting for most of the rest-of-world, with a welfare reduction of \$9.3 billion. In comparison, if the FTAA countries were to adopt unilateral free trade, total FTAA member welfare would increase by \$476.8 billion and global welfare by \$812.7 billion. If multilateral free trade were adopted by all countries/regions in the global trading system, the welfare effects would be considerably larger, \$751.2 billion for the FTAA members and \$2.7 trillion globally.

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# COMPUTATIONAL ANALYSIS OF THE FREE TRADE AREA OF THE AMERICAS (FTAA)<sup>†</sup>

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## I. Introduction

This paper presents a computational analysis of the economic effects of the Free Trade Area of the Americas that is currently being negotiated by the 34 countries in the region. The initiative for the FTAA was first announced in December 1994 at the Summit of the Americas in Miami and is supposed to be completed in 2005. The analysis of the FTAA is based on the Michigan Model of World Production and Trade. This is a multi-country/multi-sectoral computable general equilibrium (CGE) model of the global trading system that has been used for over three decades to analyze the economic effects of multilateral, regional, and bilateral trade negotiations and a variety of other changes in trade and related policies.

In Section II following, we present a brief description of the main features and data of the Michigan Model. In Section III, we present brief background information on the FTAA and U.S. FTAA negotiating proposals together with presentation of the modeling results of the potential economic effects of the FTAA on the economic welfare, trade, output, and employment for the United States, Canada, Chile, Mexico, and aggregates of 19 countries in Central America and the Caribbean (excluding Cuba) and 11 countries in South America (excluding Chile). In Section IV, we provide a broader perspective on the FTAA that takes into account the effects of the unilateral removal of trade barriers by the aforementioned FTAA countries/regions and the effects of global free trade in which all countries/regions covered in the model are assumed to remove their

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existing trade barriers on a multilateral basis. Section V contains a summary and concluding remarks.

## **II. The Michigan Model of World Production and Trade**

### **Overview of the Michigan Model**

The version of the Michigan Model that we use in this paper covers each of 22 countries/regions and 18 economic sectors, including agriculture, manufactures, and services. The distinguishing feature of the Michigan Model is that it incorporates some aspects of trade with imperfect competition, including monopolistic competition, increasing returns to scale, and product variety. A more complete description of the formal structure and equations of the model can be found on line at [www.Fordschool.umich.edu/rsie/model/](http://www.Fordschool.umich.edu/rsie/model/).<sup>1</sup>

### ***Interpreting the Modeling Results***

To help the reader interpret the modeling results to be presented, it is useful to review the features of the model that serve to identify the various economic effects to be reflected in the different applications of the model. Although the model includes the aforementioned features of imperfect competition, it remains the case that markets respond to trade liberalization in much the same way that they would with perfect competition. That is, when tariffs or other trade barriers are reduced in a sector, domestic buyers (both final and intermediate) substitute towards imports and the domestic competing industry contracts production while foreign exporters expand. Thus, in the case of multilateral liberalization that reduces tariffs and other trade barriers simultaneously in most sectors and countries, each country's industries share in both of these effects, expanding or contracting depending primarily on whether their protection is reduced more or less than in other sectors and countries.

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<sup>1</sup> See also Deardorff and Stern (1990, esp. pp. 9-46), Brown and Stern (1989a,b), and Brown, Kiyota, and Stern (2005a,b).

Worldwide, these changes cause increased international demand for all sectors. World prices increase most for those sectors where trade barriers fall the most.<sup>2</sup> This in turn causes changes in countries' terms of trade that can be positive or negative. Those countries that are net exporters of goods with the greatest degree of liberalization will experience increases in their terms of trade, as the world prices of their exports rise relative to their imports. The reverse occurs for net exporters in industries where liberalization is slight – perhaps because it may already have taken place in previous trade rounds.

The effects on the welfare of countries arise from a mixture of these terms-of-trade effects, together with the standard efficiency gains from trade and also from additional benefits due to the realization of economies of scale. Thus, we expect on average that the world will gain from multilateral liberalization, as resources are reallocated to those sectors in each country where there is a comparative advantage. In the absence of terms-of-trade effects, these efficiency gains should raise national welfare measured by the equivalent variation for every country, although some factor owners within a country may lose, as will be noted below. However, it is possible for a particular country whose net imports are concentrated in sectors with the greatest liberalization to lose overall, if the worsening of its terms of trade swamps these efficiency gains.

On the other hand, although trade with imperfect competition is perhaps best known for introducing reasons why countries may lose from trade, actually its greatest contribution is to expand the list of reasons for gains from trade. Thus, in the Michigan Model, trade liberalization permits all countries to expand their export sectors at the same time that all sectors compete more closely with a larger number of competing varieties from abroad. As a result, countries as a whole gain from lower costs due to increasing returns to scale, lower monopoly distortions due to greater competition, and reduced costs and/or increased utility due to greater product variety.<sup>3</sup>

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<sup>2</sup> The price of agricultural products supplied by the rest of the world is taken as the numeraire in the model, and there is a rest-of-world against which all other prices can rise.

<sup>3</sup> As noted in Brown, Kiyota, and Stern (2005a,b), there have been many computational studies using the standard GTAP model, which assumes constant returns to scale, perfect competition, and product

All of these effects make it more likely that countries will gain from liberalization in ways that are shared across the entire population.<sup>4</sup>

The various effects just described in the context of multilateral trade liberalization will also take place when there is unilateral trade liberalization, although these effects will depend on the magnitudes of the liberalization in relation to the patterns of trade and the price and output responses involved between the liberalizing country and its trading partners. Similarly, many of the effects described will take place with the formation of bilateral or regional free trade agreements (FTAs). But in these cases, there may be trade creation and positive effects on the economic welfare of FTA-member countries together with trade diversion and negative effects on the economic welfare of non-member countries. The net effects on economic welfare for individual countries and globally will thus depend on the economic circumstances and policy changes implemented.<sup>5</sup>

In the real world, all of the various effects occur over time, some of them more quickly than others. However, the Michigan Model is static in the sense that it is based upon a single set of equilibrium conditions rather than relationships that vary over time.<sup>6</sup> The model results

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differentiation by country of origin (the so-called Armington assumption). The Armington assumption implies that countries have monopoly power in their trading relationships, and that trade liberalization may thus have sizable terms-of-trade effects, depending on the structure and pattern of trade. In the Michigan Model, manufactures and services products are distinguished by firm, so that countries have much less leverage over their terms of trade. It should furthermore be noted that, while the GTAP framework is structured to take shifts of productive resources into account and generates results for effects on real wages and the return to capital, the GTAP framework does not permit calculation of shifts in the sectoral employment of workers as is done in the Michigan Model.

<sup>4</sup> In perfectly competitive trade models such as the Heckscher-Ohlin Model, one expects countries as a whole to gain from trade, but the owners of one factor – the “scarce factor” – to lose through the mechanism first explored by Stolper and Samuelson (1941). The additional sources of gain from trade due to increasing returns to scale, competition, and product variety, however, are shared across factors, and we routinely find in our CGE modeling that both labor and capital gain from multilateral trade liberalization.

<sup>5</sup> It may be noted that, in a model with perfect competition, bilateral trade liberalization should have the effect of contracting trade with excluded countries, thereby improving the terms of trade for FTA members vis-à-vis the rest of world. But in a model with scale economies, the pro-competitive effect of trade liberalization can generate a cut in price and increase in supply to excluded countries. The terms of trade of FTA members may therefore deteriorate in this event. It should also be mentioned that rules of origin may offset some of the potential welfare benefits of FTAs insofar as they may lead to higher input costs and consequent reduction of preference margins. In this connection, see Krishna (2005).

<sup>6</sup> Macroeconomic closure in the model involves the equivalent of having expenditure equal to the sum of earned incomes plus redistributed net tax revenues. However, the actual solution is attained indirectly, but

therefore refer to a time horizon that depends on the assumptions made about which variables do and do not adjust to changing market conditions, and on the short- or long-run nature of these adjustments. Because the supply and demand elasticities used in the model reflect relatively long-run adjustments and it is assumed that markets for both labor and capital clear within countries,<sup>7</sup> the modeling results are appropriate for a relatively long time horizon of several years – perhaps two or three at a minimum. On the other hand, the model does not allow for the very long-run adjustments that could occur through capital accumulation, population growth, and technological change. The modeling results should therefore be interpreted as being superimposed upon longer-run growth paths of the economies involved. To the extent that these growth paths themselves may be influenced by trade liberalization, therefore, the model does not capture such effects.

### **Benchmark Data**

The main data source used in the model is “The GTAP-5.4 Database” of the Purdue University Center for Global Trade Analysis Project (Dimaranan and McDougall, 2002). The benchmark data are described in the Appendix and in the Appendix tables below. The tariff data, which are noted in Table A-1, indicate for the United States, that the highest tariffs for manufactures are recorded for textiles, wearing apparel, and leather products & footwear, both globally and bilaterally. The highest tariff rates for Canada are in food, beverages & tobacco, textiles, wearing apparel, and leather products & footwear. Chile’s manufactures tariffs are

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equivalently, by imposing a zero change in the trade balance. Since the model allows for all net tax and tariff revenues to be redistributed to consumers, when tariffs are reduced with trade liberalization, the model implicitly imposes a non-distorting tax to recoup the loss in tariff revenues.

<sup>7</sup> The analysis in the model assumes throughout that the aggregate, economy-wide, level of employment is held constant in each country. The effects of trade liberalization are therefore not permitted to change any country’s overall rates of employment or unemployment. This assumption is made because overall employment is determined by macroeconomic forces and policies that are not contained in the model and would not themselves be included in a negotiated trade agreement. The focus instead is on the composition of employment across sectors as determined by the microeconomic interactions of supply and demand resulting from the liberalization of trade.

uniform at around the 10% level. Mexican tariffs are relatively low across sectors.<sup>8</sup> CAC tariffs are relatively high across manufactures, especially in textiles, wearing apparel, leather products & footwear, non-metallic mineral products, and other manufactures. Tariffs on manufactures imports range between 8 and 20% for the aggregate of South American countries.

The constructed services barriers are considerably higher than the import barriers on manufactures. While possibly subject to overstatement, it is generally acknowledged that many services sectors are highly regulated and thus considerably restrain international services transactions.

The values and shares of U.S. exports and imports of goods and services for 1997 are broken by sector according to destination and origin in Table A-2. U.S. exports to other FTAA countries/regions were \$268.4 billion in 1997 and were 31.5% of total U.S. exports. The largest U.S. exports to the other FTAA countries/regions consisted of wood & wood products, chemicals, metal products, transportation equipment, and machinery & equipment. The United States also had sizable exports of textiles and wearing apparel especially to Mexico and the CAC, reflecting presumably their use as inputs into the production process in these countries. U.S. imports from other FTAA countries/regions were \$317.3 billion in 1997 and were 31.0% of U.S. total imports. The sectoral and geographical composition of U.S. imports of manufactures is similar to the composition of U.S. exports noted. In addition, the United States had sizable imports of agricultural products and food, beverages & tobacco especially from Canada, Mexico, the CAC, and South America, as well as sizable imports of mining products from Canada, Mexico, and South America.

The sectoral shares and total values of exports and imports by destination and origin for Canada, Chile, Mexico, the CAC, and South America are given in Tables A-3 and A-4 for 1997.<sup>9</sup>

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<sup>8</sup> The negative entries for Mexico in agriculture and food, beverages & tobacco in the GTAP 5.4 database apparently reflect domestic policies that result in lower domestic as compared to world prices.

<sup>9</sup> The values and shares of the total exports and imports of the 34 FTAA countries are available from the authors on request.

It can be seen that the United States accounted for over 70% of Canada's total exports and imports and higher percentages in many of the individual sectors shown. This is the case also for Mexico, with the United States accounting for 75% of the values of Mexico's exports and imports. The U.S. shares of total exports and total imports were 14% for Chile, 41% for the CAC, and 24% for South America. The shares of exports and imports can be seen to vary somewhat across sectors for the FTAA countries/regions but appear to be quite similar on the whole. The trade data in Tables A-2—A-4 reflect the “revealed” cooperative of the various FTAA members and will provide an indication of how trade may respond to the FTAA removal of bilateral trade barriers.

Employment by sector is indicated in Table A-5. Nearly 80% of U.S. employment is in the services sectors and the remainder spread across agriculture and manufacturing. This is the case for Canada as well. Agriculture accounts for 14.4% of total employment in Chile, 24.2% in Mexico, 25.8% in the CAC, and 18.1% in South America. The services sectors account for 67.4% of total employment in Chile, 58.4% in Mexico, 57.8% in the CAC, and 67.3% in South America.

Information on the stock of U.S. foreign direct investment (FDI) abroad in 2002 is indicated in Table A-6. The other FTAA countries/regions accounted for \$424.9 billion of the total of \$1,521 billion, or 27.9%. It is evident from the details in Table A-6 that the United States has considerable FDI interests in many of the FTAA countries/regions.

### **III. An Assessment of the Economic Effects of the FTAA**

#### **Background Information on the FTAA**

As noted in the website, Free Trade of the Americas – FTAA (2004), “Antecedents of the FTAA Process” ([www.ftaa-alca.org/View\\_e.asp](http://www.ftaa-alca.org/View_e.asp)), the effort to unite the 34 countries (excluding Cuba) in the Western Hemisphere was initiated at the Summit of the Americas in Miami in December 1994. The objective was to attain progressive elimination of barriers to trade and

investment and to complete the negotiations by 2005 and have the agreement enter into force by December 2005. In the Ministerial Declaration issued on November 20, 2003, the following vision of the FTAA was expressed ([www.ftaa-alca.org/Ministerials/Miami/Miami\\_e.asp](http://www.ftaa-alca.org/Ministerials/Miami/Miami_e.asp)):

“We, the Ministers, reaffirm our commitment to the successful conclusion of the FTAA negotiations by January 2005, with the ultimate goal of achieving an area of free trade and regional integration. The Ministers reaffirm their commitment to a comprehensive and balanced FTAA that will most effectively foster economic growth, the reduction of poverty, development, and integration through trade liberalization. Ministers also recognize the need for flexibility to take into account the needs and sensitivities of all FTAA partners.

We are mindful that negotiations must aim at a balanced agreement that addresses the issue of differences in the levels of development and size of economies of the hemisphere, through various provisions and mechanisms.

Taking into account and acknowledging existing mandates, Ministers recognize that countries may assume different levels of commitments. We will seek to develop a common and balanced set of rights and obligations applicable to all countries. In addition, negotiations should allow for countries that so choose, within the FTAA, to agree to additional obligations and benefits. One possible course of action would be for these countries to conduct plurilateral negotiations within the FTAA to define the obligations in the respective individual areas.

We fully expect that this endeavor will result in an appropriate balance of rights and obligations where countries reap the benefits of their respective commitments.”

The Ministers also issued the following general instructions:

“The Agreement will include measures in each negotiating discipline, and horizontal measures, as appropriate, that take into account the differences in the levels of development and the size of the economies, and are capable of implementation. Special attention will be given to the needs, economic conditions (including transition costs and possible internal dislocations) and opportunities of small economies, to insure their full participation in the FTAA process.”

It is evident from the foregoing FTAA Ministerial statements that individual countries reserve the right to opt out of specific elements of the FTAA negotiations and to pursue specific negotiations with other FTAA countries. This means that the FTAA negotiations may not be concluded with the full set of rights and obligations assumed by all of the member countries at the

same time, and that the negotiating process may be ongoing for an undetermined period after 2005.<sup>10</sup>

### **U.S. FTAA Negotiations Proposals**

It is interesting in connection with the process leading up to and beyond the November 2003 FTAA Ministerial Meeting in Miami to take note of the proposals that the United States tabled prior to the Miami Ministerial that were designed to expedite the conclusion of the negotiations in 2005. The U.S. proposals for the FTAA negotiations were set out in the USTR Press Release 03-08 on February 11, 2003 and in “Trade Facts. Free Trade Area of the Americas: The Opportunity for a Hemispheric Marketplace” ([www.ustr.gov](http://www.ustr.gov), February 11, 2003).

The U.S. proposals were designed to provide momentum to the FTAA negotiating process and to elicit offers from the other FTAA countries in an effort to bring the FTAA negotiations to a conclusion in 2005. But as already noted, it remains to be seen how the negotiating process will unfold in terms of the comprehensiveness of participation of the 34 FTAA countries in removing their trade barriers against each other and the time periods over which the liberalization will take place. In addition, the FTAA countries will have to address and to provide a timetable for dealing with many important non-trade issues of policy reform and institutional change that in their own right may generate benefits and costs that need to be assessed with care. This suggests that the realization of the FTAA may evolve over a considerable period of time, and that the process of negotiation could be encumbered by less than full compliance on the part of some of the FTAA member countries. There is the further political question in the United States of obtaining Congressional approval of the negotiated agreement. A

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<sup>10</sup> It is also not clear, given that the FTAA negotiating process is supposed to reach its final stage in 2005, how rules of origin are to be handled in the FTAA agreement. But it appears that the rules of origin in bilateral and sub-regional FTAs would take precedence over the provisions for rules of origin in the FTAA. By the same token, it is conceivable that the product coverage of rules of origin in existing agreements could be extended and administrative procedures become more burdensome and costly in the context of the FTAA.

final issue is how the FTAA negotiations will be tied into and possibly affected by the multilateral Doha Development Agenda negotiations that are in process under WTO auspices.

### **Computational Results of the FTAA**

To shed some light on the FTAA issues, we turn now to our computational analysis, which is based on the Michigan Model of World Production and Trade. For modeling purposes, we use as inputs into the model the bilateral tariff rates and estimates of services barriers discussed above. It is assumed that the FTAA countries/regions covered in the model reduce their bilateral trade barriers at a single point in time and thus adopt the measures for trade liberalization that the FTAA agreement is designed to achieve.

The global welfare effects of the FTAA are shown in Table 1.<sup>11</sup> Total welfare for the FTAA members is increased by \$118.8 billion. The increase in U.S. economic welfare is \$67.6 billion (0.7% of GNP), Canada, \$5.8 billion (0.7% of GNP), Chile, \$3.4 billion (3.6% of GNP), Mexico, \$6.6 billion (1.3% of GNP), CAC, \$7.8 billion (6.5% of GNP), and South America \$27.6 billion (1.5% of GNP).<sup>12</sup> The decomposition of the results for the FTAA members shows relatively small welfare changes from agricultural liberalization, sizable welfare increases from manufactures liberalization, and the largest welfare increases from services liberalization. As

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<sup>11</sup> See the Appendix below for sensitivity analyses of the results for alternative values of some key parameters in the model.

<sup>12</sup> It should be noted in the computational results that there tend to be larger absolute welfare gains and smaller percent changes in welfare for the large countries as compared to the small countries. In this connection, the expectation is that, under conditions of perfect competition, a small country may appropriate a large share of the absolute gains from trade liberalization because the prices of the small country will tend to move towards the prices in the large country. Since large price changes give rise to large gains from trade, the small country may be expected therefore to realize greater gains from liberalization than the large country.

But when scale effects are present, as in the Michigan Model, the foregoing distributional logic may not hold. That is, scale gains will be substantial for countries that specialize in sectors with significant unrealized scale economies, and it may well be that large countries are in a better position to realize big scale gains. Also, the pro-competitive effects resulting from liberalization may produce efficiency gains throughout an industry. As a consequence, the absolute gain will be proportional to the industry's/country's size. With regard to percent changes, however, there is reason to believe that a large country will exert stronger pro-competitive forces on a small country, than vice versa. We might therefore expect to observe larger percent changes in scale in small as compared to large countries. This is borne out in our calculations of scale effects for the countries/regions in the various liberalization scenarios that we have run, the results of which are available on request.

mentioned earlier, services liberalization reflects the sizable services barriers that are included in the model database. There is apparently trade diversion across most non-FTAA countries/regions, especially the EU/EFTA that shows a welfare decline of \$6.2 billion (0.05% of GNP). Global welfare thus rises by \$109.5 billion, which is less than the \$118.8 billion increase for the FTAA members.

The decomposition of the results for the FTAA members shows relatively small welfare changes from agricultural liberalization, sizable welfare increases from manufactures liberalization, and the largest welfare increases from services liberalization. As mentioned earlier, services liberalization reflects the sizable services barriers that are included in the model database.<sup>13</sup>

The real returns to capital and labor rise in all FTAA members: 0.2% in both the United States and Canada, 3.0% and 2.9% in Chile, 0.4% in Mexico, 6.4% and 6.2% in the CAC, and 0.6 and 0.5% in South America.<sup>14</sup> The real returns to capital and labor fall in Japan, Australia, New Zealand, Korea, and the Southern African Customs Union (SACU). The real return to capital rises and the real return to labor falls in several of the Asian countries.

In Table 2, it can be seen that total FTAA exports increase by \$59.3 billion and total imports by \$60.3 billion. The increases in total exports and imports for the United States are \$22.7 and \$25.7 billion, \$2.0 and \$2.3 billion for Canada, \$3.0 and \$2.8 billion for Chile, \$2.1 and \$2.5 billion for Mexico, \$10.5 and \$10.5 billion for CAC, and \$19.0 and \$16.5 billion for South America. The sectoral effects of the FTAA on exports and imports, which are shown in Table 2, are quite large in percentage terms in many of the FTAA members.

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<sup>13</sup> As already mentioned, the imperfectly competitive features of the Michigan Model provides the basis for additional welfare benefits from trade liberalization beyond the benefits derived from the standard GTAP model based on perfect competition, constant returns to scale, and national product differentiation. For some comparisons of the results of the two modeling structures, see Brown, Kiyota, and Stern (2005b).

<sup>14</sup> As mentioned above, because the additional gains from trade due to increasing returns, increased competition, and product variety are shared across factors, both capital and labor can gain from trade liberalization.

The absolute and percent changes in gross outputs shown in Table 2 reflect the sectoral responses to the liberalization among the FTAA countries/regions. That is, changes in gross outputs represent the combined changes in sectoral exports and imports and domestic consumption resulting from the removal of trade barriers. The changes in gross output may therefore be positive or negative as shown and will reflect the underlying comparative advantage in each country/region. It is evident accordingly that the FTAA will shift labor and capital in the United States out of agriculture, mining, textiles, and wearing apparel into a broad spectrum of other manufacturing sectors and into services. In Canada, the negative shifts occur in mining, food, beverages & tobacco, and labor-intensive manufactures, and there are positive shifts elsewhere. All sectors in Chile expand except non-metallic mineral products and government-related services. In Mexico, agriculture-related and labor-intensive manufactures contract and other manufactures and services expand. In the CAC, there are substantial increases in gross output concentrated especially in food, beverages & tobacco, textiles, wearing apparel, leather products & footwear, electricity, gas & water, and trade & transport, and there are declines in remaining sectors. In South America, the negative shifts in output occur in wood & wood products, transportation equipment, machinery & equipment, and services, and there are expansions in output especially in agriculture, mining, food, beverages & tobacco, labor-intensive manufactures, chemicals, non-metallic mineral products, and metal products.

Changes in sectoral employment are also shown in Table 2. These employment changes are determined by changes in outputs and by capital/labor substitution and broadly reflect the comparative advantage of the FTAA countries/regions. The percentage employment effects for the United States are small on the whole. In terms of numbers of workers, there are employment declines in U.S. agriculture (12,460 workers), mining (3,251 workers), food, beverages & tobacco (3,452 workers), textiles (6,028 workers), wearing apparel (16,804 workers), electricity, gas & water (228 workers), and construction (88 workers). U.S. employment rises in capital-intensive manufactures and in the main services sectors. In Canada, there are employment increases in

agriculture, transportation equipment, machinery & equipment, trade & transport, and other private services, and declines in employment across the other natural resource and manufactures sectors.

In Chile, the most noteworthy employment declines are in mining, wearing apparel, chemicals, non-metallic mineral products, and services, and there are increases especially in agriculture, food, beverages & tobacco, metal products, and machinery & equipment. There are employment reductions in Mexico in agriculture, food, beverages & tobacco, labor-intensive manufactures, other private services, and government-related services and employment expansions in the more capital-intensive manufacturing sectors, construction, and trade & transport. In the CAC, there is significant employment expansion concentrated in textiles, wearing apparel, and leather products & footwear, and resources are attracted away from the remaining sectors. Finally, in South America, it can be seen that employment expansion is concentrated in agriculture, mining, food, beverages & tobacco, and leather products & footwear, and there are employment declines across the relatively more capital-intensive manufacturing sectors and in services.

The percentage changes in employment can be seen in Table 2 to be relatively large in several sectors especially in Chile, Mexico, the CAC, and South America. While, as noted, the FTAA liberalization would be phased in over a period of years, the employment shifts noted suggest nonetheless that there may be a need for programs of assistance for dislocated workers who would change employment between sectors. Adjustment costs would thus have to be factored into the assessment of the welfare effects of the FTAA for these countries/regions.

It was mentioned above in discussing the global welfare results of the FTAA that there were indications of trade diversion for the non-member countries/regions. This can be seen more clearly in Table 3, which shows the changes in bilateral trade flows associated with the FTAA. Thus, intra-FTAA bilateral exports increase by \$61.8 billion, and intra-FTAA bilateral imports increase by \$59.3 billion. Total U.S. exports increase by \$22.7 billion, with \$21.5 billion going

to other FTAA members. Total U.S. total imports increase by \$25.7 billion, whereas U.S. imports from FTAA members increase by \$27.3 billion. U.S. imports are seen therefore to decline from all of the non-FTAA countries/regions shown. The changes in exports and imports for the other FTAA members – Canada, Chile, Mexico, the CAC, and South America -- also reflect the importance of their intra-FTAA trade, with somewhat different effects on their exports/imports vis-à-vis non-FTAA trading partners. In any event, the exports and imports of the non-FTAA countries/regions can be seen to decline in total.

Our foregoing discussion of the FTAA results reflects the bilateral elimination of barriers to trade in agricultural products, manufactures, and services among the FTAA countries/regions covered in the Michigan Model. The computational results suggest that the FTAA would be beneficial to the welfare of the FTAA members, at least in terms of how they have been represented in the model database and the fact that we assumed that all FTAA members agreed to remove their intra-FTAA trade barriers at a single point in time. In this light, our results may then need to be qualified, especially since, as we noted, some FTAA countries could choose to opt out of specific aspects of the FTAA agreement, including presumably the complete removal of their intra-FTAA trade barriers. Also, some FTAA countries may experience adjustment costs due to labor-market displacements. The FTAA may therefore not be unambiguously beneficial to all FTAA member countries. Finally, our results suggest that non-FTAA trading partners will be affected adversely because of the trade diversion that the FTAA may engender.

Our results may need to be qualified even further since there are a number of non-trade issues of policy reform and institutional changes related to the FTAA that will require careful assessment in terms of the benefits and costs to individual FTAA member countries. We have not made allowance for these non-trade benefits/costs in our analysis. Also, no account has been taken of possible increases in foreign direct investment in the FTAA members in response to the incentives provided by the FTAA trade liberalization, and no allowance has been made for possible increases in capital formation and economic growth and improvements in productivity

that the FTAA may engender. It is possible of course that the non-trade and dynamic growth and productivity benefits of the FTAA could turn out to be significant and thus reinforce the benefits of the FTAA trade liberalization and more than offset the costs of adjustment and trade diversion. But it would take several years of experience following the implementation of the FTAA before such an evaluation is possible.

#### **IV. Welfare Comparisons of the FTAA with Unilateral Free Trade of FTAA Member Countries and Global (Multilateral) Free Trade**

Having analyzed the economic effects of the FTAA, we now consider whether the economic interests of the FTAA members would be more or less enhanced by unilateral free trade and global (multilateral) free trade as compared to the adoption of the FTAA. The welfare comparisons are indicated in Table 4 and can be summarized as follows:

1. Unilateral free trade increases total FTAA economic welfare by \$476.8 billion compared to the FTAA liberalization of \$118.8 billion. Global welfare with unilateral free trade by the FTAA members is \$812.7 billion compared to \$109.5 billion for the FTAA liberalization.
2. With unilateral free trade, U.S. economic welfare increases by \$346.5 billion (3.4% of GNP) compared to \$67.6 billion (0.7% of GNP) with the FTAA. The welfare effects of unilateral free trade are similarly much larger for the other FTAA countries/regions shown as compared to the FTAA liberalization.
3. Global (multilateral) free trade increases total FTAA economic welfare by \$751.2 billion as compared to \$476.8 billion with unilateral free trade and \$118.8 billion with the FTAA. Global free trade increases global welfare by \$2.4 trillion compared to \$812.7 billion with FTAA unilateral liberalization, and \$109.5 billion with the FTAA.
4. With global free trade, U.S. economic welfare rises by \$542.5 billion (5.4% of GNP) compared to \$346.5 (3.4% of GNP) billion with unilateral free trade and \$67.6 billion (0.7%) with the FTAA. The welfare effects of global free trade are also much larger for the other FTAA countries/regions as compared to unilateral free trade and the FTAA liberalization.

These calculations clearly show that multilateral trade liberalization offers potentially far greater increases in economic welfare for the FTAA members and non-FTAA countries/regions in the global trading system. This is the case even if there would be less than complete free trade

globally. That is, if existing trade barriers in the ongoing Doha Development Agenda negotiations were to be reduced, for example, by one-third or one-half, the resulting global and national gains would be proportionally lower. But these welfare gains would still far exceed the welfare gains from the FTAA and would serve to offset the negative welfare effects of the adjustment costs and trade diversion resulting from the FTAA. This would almost certainly remain true even if there are other benefits from the non-trade aspects of the FTAA and possible increases in capital accumulation and productivity.

## **V. Summary and Conclusions**

This paper has been designed to assess the economic effects of the FTAA that is entering the final stages of negotiation and designed for completion in 2005. The analysis has been based on a version of the Michigan Model of World Production and Trade that covers 18 economic sectors, including agriculture, manufactures, and services, in each of 22 countries/regions. The 34 countries involved in the FTAA are represented for modeling purposes to include the United States, Canada, Chile, Mexico, an aggregate of 19 countries (excluding Cuba) in Central America and the Caribbean (CAC), and an aggregate of 11 countries in South America (excluding Chile). The data for the model are based on Version 5.4 of the GTAP database for 1997 together with some other data derived from other sources.

For modeling purposes, the focus has been on the effects of the removal of FTAA trade barriers, which lend themselves most readily to quantification. The computational results presented for the FTAA are therefore best interpreted as providing a lower bound for the potential benefits involved. We have shown that these benefits are fairly large in absolute and relative terms for the FTAA countries/regions covered in the model. We also noted that non-trade and dynamic benefits could add to the welfare gains of the FTAA. But there is a downside to the FTAA resulting from the adjustment costs that may be experienced and from negative effects of trade diversion that we have shown may occur. Further, because of the lack of information, we

were not able to allow for rules of origin and related restrictive measures that are likely to be incorporated into the FTAA and that could undermine the welfare benefits of the trade liberalization. Finally, it appears likely that there may be less than full compliance with the FTAA negotiating agenda, and that the negotiations may be drawn out over an extended period of time before some FTAA members may decide to accept full compliance with the FTAA obligations.

To provide a broader perspective on the potential economic effects of the FTAA, the model was also used to calculate the effects of unilateral tariff removal by the FTAA countries/regions. It was shown that unilateral free trade would result in much larger increases in economic welfare for the FTAA members as compared to the FTAA trade liberalization. Finally, the effects of global (multilateral) free trade were calculated and shown to be far greater for all of the FTAA countries/regions and for non-FTAA countries/regions as compared to both the FTAA liberalization and unilateral tariff removal by the FTAA members. Our results suggest accordingly that the interests of the global trading community, including the FTAA member countries, could be better served if the members of the WTO were able to put their divisiveness and indecisions aside and work to keep the multilateral negotiations on track.<sup>15</sup>

## Appendices

### Benchmark Data

The reference year for the GTAP 5.4 database used in the model is 1997. From this source, we have extracted the following data, aggregated to our sectors and countries/regions:<sup>16</sup>

- Bilateral trade flows among 22 countries/regions, decomposed into 18 sectors. Trade with the rest-of-world (ROW) is included to close the model.
- Input-output tables for the 22 countries/regions, excluding ROW

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<sup>15</sup> This conclusion is reinforced in Brown, Kiyota, and Stern (2005a) in which the negative effects of overlapping FTAs are contrasted with the benefits that unilateral or multilateral free trade may provide.

<sup>16</sup> Details on the sectoral and country/region aggregation are provided in Brown, Kiyota, and Stern (2004) and are available on request.

- Components of final demand along with sectoral contributions for the 22 countries/regions, excluding ROW
- Gross value of output and value added at the sectoral level for the 22 countries/regions, excluding ROW
- Bilateral import tariffs by sector among the 22 countries/regions
- Elasticity of substitution between capital and labor by sector
- Bilateral export-tax equivalents among the 22 countries/regions, decomposed into 18 sectors

The monopolistically competitive market structure in the nonagricultural sectors of the model imposes an additional data requirement of the numbers of firms at the sectoral level. There is need also for estimates of sectoral employment, which have been adapted from a variety of published sources.<sup>17</sup>

The GTAP-5.4 1997 database has been projected to the year 2005, which is when the Uruguay Round liberalization will have been fully implemented. In this connection, we extrapolated the labor availability in different countries/regions by an average weighted population growth rate of 1.2 percent per annum. All other major variables have been projected, using an average weighted growth rate of GDP of 2.5 percent.<sup>18</sup> The 2005 data have been adjusted to take into account two major developments that have occurred in the global trading system since the mid-1990s. These include: (1) implementation of the Uruguay Round negotiations that were completed in 1993-94 and were to be phased in over the following decade; and (2) the accession of Mainland China and Taiwan to the WTO in 2001.<sup>19</sup> We have made

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<sup>17</sup> Notes on the construction of the data on the number of firms and for employment are provided in Brown, Kiyota, and Stern (2004) and are available from the authors on request.

<sup>18</sup> The underlying data are drawn from World Bank sources and are available on request. For a more elaborate and detailed procedure for calculating year 2005 projections, see Hertel and Martin (1999) and Hertel (2000).

<sup>19</sup> The tariff data for the WTO accession of China and Taiwan have been adapted from Ianchovichina and Martin (2004). In addition to benchmarking the effects of the Uruguay Round and China/Taiwan accession to the WTO, Francois et al. (2005) benchmark their GTAP 5.4 dataset to take into account the enlargement of the European Union (EU) in 2004 to include ten new member countries from Central and Eastern Europe and some changes in the EU Common Agricultural Policies that were introduced in 2000. Our EU and EFTA regional aggregate includes the 25-member EU, but the benchmark data were not adjusted to take

allowance for the foregoing developments by readjusting the 2005 scaled-up database for benchmarking purposes to obtain an approximate picture of what the world may be expected to look like in 2005. In the computational scenarios, we use these re-adjusted data as the starting point to carry out the liberalization scenarios for the FTAA and for the accompanying unilateral and global free trade scenarios.

The GTAP 5.4 (1997) base data for tariffs and the estimated tariff equivalents of services barriers are broken down in Table A-1 by sector on a global and bilateral basis for the United States, Canada, Chile, Mexico, and aggregates of Central America and the Caribbean (CAC) and South America (excluding Chile).<sup>20</sup> The tariff rates refer to the post-Uruguay Round and are applied rates that are calculated in GTAP by dividing tariff revenues by the value of imports in the agricultural and manufactures sectors.<sup>21</sup>

The services barriers noted in Table A-1 are based on financial data on average gross (price-cost) margins constructed initially by Hoekman (2000) and adapted for modeling purposes in Brown, Deardorff, and Stern (2002, 2003). The gross operating margins are calculated as the differences between total revenues and total operating costs. Some of these differences are presumably attributable to fixed costs. Given that the gross operating margins vary across countries, a portion of the margin can also be attributed to barriers to FDI. For this purpose, a benchmark is set for each sector in relation to the country with the smallest gross operating

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into account the adoption of the EU common external tariffs by the new members. Because of data constraints, we have not made allowance for the Information Technology Agreement and agreements for liberalization of financial and telecommunications services following conclusion of the Uruguay Round negotiations.

<sup>20</sup> The CAC countries include: Antigua and Barbuda; Bahamas; Barbados; Belize; Costa Rica; Dominica; Dominican Republic; El Salvador; Grenada; Guatemala; Haiti; Honduras; Jamaica; Nicaragua; Panama; St. Kitts and Nevis; St. Lucia; St. Vincent & Grenadines; and Trinidad and Tobago. South America includes: Argentina; Bolivia; Brazil; Colombia; Ecuador; Guyana; Paraguay; Peru; Suriname; Uruguay; and Venezuela. Chile is included separately as noted.

<sup>21</sup> It will be noted that the bilateral tariff rates for the United States, Canada, and Mexico are set to zero in the context of the NAFTA. But the other bilateral rates for the NAFTA members and for the other FTAA countries/regions are an amalgam that reflects Most-Favored-Nation (MFN) tariffs and preferential tariffs that are applied in other sub-regional, bilateral, and special preferential trading arrangements. Because of data constraints, it is not feasible to take these various preferential tariff rates and related trade agreements explicitly into account.

margin, on the assumption that operations in the benchmark country can be considered to be freely open to foreign firms. The excess in any other country above this lowest benchmark is then taken to be due to barriers to establishment by foreign firms.

That is, the barrier is modeled as the cost-increase attributable to an increase in fixed cost borne by multinational corporations attempting to establish an enterprise locally in a host country. This abstracts from the possibility that fixed costs may differ among firms because of variations in market size, distance from headquarters, and other factors. It is further assumed that this cost increase can be interpreted as an ad valorem equivalent tariff on services transactions generally.

### **Sensitivity Analysis**

This appendix reports on sensitivity analysis of the Michigan Model. There are three key elasticities/parameters in the Model: the elasticity of substitution among varieties, which is exogenously set at three; the parameter that measures the sensitivity of consumers to the number of varieties, which is set at 0.5; and the elasticities of supply that are taken from the literature.

The variety parameter can take on values between zero and one. The larger it is, the more consumers value variety. If the parameter is set at zero, consumers have no preference for variety. This would correspond to the Armington assumption, according to which consumers view products depending on their place of production.

To analyze the sensitivity of our model results, we have experimented with different values of the elasticity of substitution among varieties and the consumer sensitivity to the number of varieties. The following tests were conducted: (1) increase the elasticity of substitution among varieties by 10 percent, holding other parameters constant; (2) decrease the elasticity of substitution by 10 percent, holding other parameters constant; (3) increase the consumption varieties by 10 percent, holding other parameters constant; and (4) decrease the consumption varieties by 10 percent, holding other parameters constant.

The results, which are available on request, are not very sensitive to the alternative parameters of the consumption varieties. That is, a 10 percent increase (decrease) in these parameters yields only 2 percent larger (smaller) welfare effects compared to the baseline model. The sensitivity to the changes in the elasticity of substitution is large compared with the results of differences in the variety parameters. For some countries, the differences are greater than 10 percent.

In Brown, Deardorff, and Stern (2000), sensitivity tests reveal that the model may exaggerate the likely gains from economies of scale due to trade liberalization in the context of expansion of the NAFTA. But the error is small in this context because the impact of trade liberalization is small. When econometric estimates of scale economies are incorporated into the model, the welfare gains due to capital flows are shown to remain robust.

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**Table 1. Global Welfare Effects of Free Trade Area of Americas (FTAA) (Billions of U.S. Dollars and Percent)**

	Agricultural Protection		Manufactures Tariffs		Services Barriers		Total		Real Returns	
	%	Bil.	%	Bil.	%	Bil.	%	Bil.	Capital	Labor
FTAA (total)		1.68		44.79		72.31		118.78		
United States	0.01	0.74	0.23	23.15	0.43	43.71	0.67	67.59	0.24	0.23
Canada	0.00	-0.01	0.29	2.31	0.43	3.46	0.72	5.76	0.21	0.23
Chile	0.05	0.05	1.89	1.82	1.61	1.55	3.55	3.42	3.00	2.88
Mexico	0.04	0.20	0.83	4.14	0.46	2.31	1.33	6.64	0.39	0.37
Central America and the Caribbean (CAC)	0.10	0.11	3.86	4.63	2.56	3.07	6.52	7.81	6.36	6.22
South America	0.03	0.59	0.48	8.74	1.01	18.22	1.52	27.55	0.56	0.48
Japan	0.00	-0.10	-0.05	-2.57	0.02	1.11	-0.03	-1.56	-0.01	-0.01
Australia	0.00	-0.00	-0.05	-0.24	0.01	0.04	-0.04	-0.20	-0.02	-0.01
New Zealand	-0.01	-0.00	-0.05	-0.04	0.01	0.01	-0.05	-0.03	-0.01	-0.01
EU and EFTA	0.00	-0.19	-0.06	-7.02	0.01	1.04	-0.05	-6.16	-0.02	-0.02
Hong Kong	0.00	-0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01
China	0.01	0.06	-0.06	-0.62	0.01	0.15	-0.04	-0.41	0.02	0.00
Korea	0.00	-0.00	-0.09	-0.49	0.02	0.11	-0.07	-0.38	-0.03	-0.03
Singapore	0.00	-0.00	-0.01	-0.01	0.01	0.01	0.00	-0.00	0.01	0.00
Taiwan	0.00	0.00	-0.07	-0.25	0.02	0.09	-0.05	-0.16	0.00	-0.02
Indonesia	0.00	0.00	-0.06	-0.17	0.01	0.04	-0.05	-0.13	0.00	-0.02
Malaysia	0.00	-0.00	0.00	-0.01	0.03	0.04	0.03	0.03	0.02	0.02
Philippines	0.00	0.00	-0.04	-0.04	0.03	0.03	-0.01	-0.02	0.02	-0.06
Thailand	0.00	0.01	-0.03	-0.05	0.02	0.04	-0.01	-0.00	0.02	-0.02
Rest of Asia	0.00	-0.00	-0.03	-0.22	0.01	0.05	-0.02	-0.17	0.01	-0.01
Morocco	0.00	0.00	-0.02	-0.01	0.01	0.00	-0.01	-0.00	0.01	0.01
Southern African Customs Union (SACU)	0.01	0.01	-0.05	-0.09	0.01	0.02	-0.03	-0.06	-0.01	-0.03
Total		1.46		32.95		75.11		109.52		

**Table 2. Free Trade Area of the Americas (FTAA): Percent and Absolute Changes in Exports, Imports, Output, and Number of Workers**  
(Percent, Millions of Dollars, and Number of Workers)

	Exports (Percent)						Imports (Percent)					
	U.S.	Canada	Chile	Mexico	CAC	South America	U.S.	Canada	Chile	Mexico	CAC	South America
Agriculture	1.39	0.99	8.77	-1.01	0.38	11.72	9.51	0.45	27.81	2.06	29.91	13.55
Mining	-0.94	-0.38	4.42	-1.40	-14.60	9.89	1.56	1.10	18.40	11.46	11.50	-4.95
Food, Beverages & Tobacco	2.84	-0.03	12.24	0.38	17.10	10.41	6.32	3.19	23.76	5.34	27.27	12.36
Textiles	8.05	-1.93	36.56	1.36	59.08	15.87	5.09	0.97	7.62	1.95	28.21	9.05
Wearing Apparel	12.47	-3.35	30.37	-4.54	74.71	26.77	9.22	3.00	3.80	2.98	18.28	10.20
Leather Products & Footwear	6.30	-1.75	27.48	-0.44	45.98	17.62	1.36	1.87	3.07	5.13	15.64	0.56
Wood & Wood Products	2.09	0.19	8.05	1.02	4.96	7.66	0.62	0.31	13.35	1.43	21.76	10.70
Chemicals	2.02	0.05	15.95	4.97	6.47	14.10	1.36	0.61	12.59	2.19	14.47	5.31
Non-metallic Min. Products	1.98	0.11	11.62	2.74	6.52	16.12	1.38	0.46	16.72	2.49	18.08	8.19
Metal Products	1.65	0.07	11.76	3.14	-1.49	9.09	1.35	0.67	10.64	2.62	12.50	8.27
Transportation Equipment	1.53	1.40	47.90	4.86	-1.29	12.32	0.83	0.57	5.19	0.90	2.88	10.44
Machinery & Equipment	1.69	0.76	35.52	0.92	10.13	11.07	0.65	0.30	4.39	0.74	8.33	7.50
Other Manufactures	2.77	0.16	21.94	0.08	5.51	12.76	0.63	0.56	3.72	1.78	12.52	5.64
Elec., Gas & Water	-0.86	-0.40	3.50	-1.06	-2.90	3.77	0.50	1.46	-0.29	1.95	6.22	-3.98
Construction	-0.07	1.71	5.86	1.52	2.27	5.73	1.28	0.93	6.98	2.41	14.42	-0.53
Trade & Transport	2.67	2.41	14.06	1.35	9.49	14.79	3.18	1.71	12.75	4.05	25.68	13.23
Other Private Services	1.96	2.10	16.29	1.06	8.77	18.55	2.98	1.84	14.50	4.58	31.00	13.09
Government Services	1.56	0.99	30.64	0.19	17.94	27.89	4.49	0.50	30.22	2.40	30.63	20.00

  

	Exports (Value)						Imports (Value)					
	U.S.	Canada	Chile	Mexico	CAC	South America	U.S.	Canada	Chile	Mexico	CAC	South America
Agriculture	670	130	186	-49	25	2,407	2,148	23	143	108	690	616
Mining	-78	-99	137	-201	-123	2,705	1,312	88	333	80	463	-239
Food, Beverages & Tobacco	1,353	-4	606	17	1,116	3,049	2,617	404	303	236	1,381	734
Textiles	1,223	-52	82	58	1,813	296	1,449	54	74	69	1,073	331
Wearing Apparel	1,118	-52	28	-234	5,739	354	4,438	93	19	75	713	141
Leather Products & Footwear	189	-5	17	-4	354	692	387	38	14	39	136	7
Wood & Wood Products	796	78	184	46	21	388	332	36	107	73	497	600
Chemicals	2,365	12	199	375	213	1,853	1,308	167	449	398	1,182	1,398
Non-metallic Min. Products	308	4	19	63	34	288	233	21	90	43	184	224
Metal Products	734	18	781	238	-34	1,216	938	126	169	244	348	650
Transportation Equipment	2,016	835	62	1,069	-26	560	1,354	305	151	120	466	1,928
Machinery & Equipment	5,889	387	152	494	221	627	2,503	235	334	357	849	4,207
Other Manufactures	409	3	8	2	42	149	304	20	17	26	170	184
Elec., Gas & Water	-8	-9	0	-0	-2	42	14	11	-0	3	2	-68
Construction	-4	2	1	1	2	9	21	1	1	1	50	-1
Trade & Transport	2,803	347	372	139	679	1,963	3,030	218	309	204	844	2,791
Other Private Services	2,060	412	122	40	276	1,739	2,261	452	161	338	1,190	2,149
Government Services	850	14	42	1	196	612	1,075	11	99	39	290	874
<b>Total</b>	<b>22,693</b>	<b>2,020</b>	<b>2,998</b>	<b>2,054</b>	<b>10,546</b>	<b>18,950</b>	<b>25,725</b>	<b>2,303</b>	<b>2,773</b>	<b>2,453</b>	<b>10,528</b>	<b>16,526</b>

**Table 2 (continued). Free Trade Area of the Americas (FTAA): Percent and Absolute Changes in Exports, Imports, Output, and Number of Workers**  
(Percent, Millions of Dollars, and Number of Workers)

	Output (Percent)						Employment (Percent)					
	U.S.	Canada	Chile	Mexico	CAC	South America	U.S.	Canada	Chile	Mexico	CAC	South America
Agriculture	-0.35	0.14	1.84	-0.23	-0.97	1.07	-0.35	0.14	1.85	-0.23	-0.95	1.08
Mining	-0.38	-0.32	0.05	-0.53	-18.95	4.04	-0.51	-0.41	-2.92	-0.51	-21.20	2.90
Food, Beverages & Tobacco	0.12	-0.38	2.58	-0.02	1.75	0.76	-0.16	-0.56	0.67	-0.23	-2.53	0.44
Textiles	-0.17	-1.31	3.69	-0.15	38.63	0.36	-0.65	-1.48	0.46	-0.46	30.06	-0.19
Wearing Apparel	-1.39	-1.18	2.16	-1.98	56.01	0.49	-2.13	-1.33	-0.41	-2.31	44.77	0.07
Leather Products & Footwear	1.25	-1.93	4.14	-0.35	24.50	3.20	0.62	-2.25	1.13	-0.60	16.95	2.35
Wood & Wood Products	0.27	0.14	2.75	0.35	-3.89	-0.02	0.11	-0.02	0.43	0.09	-9.42	-0.41
Chemicals	0.34	-0.03	1.03	0.44	-0.14	0.66	0.11	-0.22	-2.54	0.13	-6.12	-0.02
Non-metallic Min. Products	0.27	0.09	-0.65	0.58	-3.95	0.26	0.14	-0.05	-2.16	0.42	-8.30	-0.24
Metal Products	0.30	0.18	7.44	0.88	-3.97	0.30	0.07	-0.03	3.41	0.36	-9.17	-0.23
Transportation Equipment	0.41	1.30	4.91	3.54	-2.03	-0.81	0.13	0.97	0.45	2.84	-8.00	-1.50
Machinery & Equipment	0.57	0.61	7.56	0.81	-1.05	-1.78	0.40	0.34	3.77	0.32	-6.83	-2.37
Other Manufactures	0.65	-0.05	3.23	-0.03	-0.78	0.14	0.42	-0.22	-0.56	-0.29	-5.36	-0.32
Elec., Gas & Water	0.16	0.04	3.55	0.32	2.83	0.32	-0.02	-0.03	0.95	0.02	-0.30	0.09
Construction	0.16	0.16	1.63	0.43	-0.19	-0.15	-0.00	-0.00	-0.27	0.04	-1.50	-0.16
Trade & Transport	0.19	0.23	1.92	0.29	2.29	-0.00	0.01	0.04	-0.20	0.10	-1.65	-0.32
Other Private Services	0.13	0.17	0.58	0.01	-1.62	-0.05	0.02	0.01	-0.04	-0.15	-2.79	-0.13
Government Services	0.06	0.04	-0.01	0.08	-0.30	-0.42	0.00	-0.02	-0.92	-0.00	-2.12	-0.36

  

	Output (Value)						Employment (Number of Workers) <sup>a</sup>					
	U.S.	Canada	Chile	Mexico	CAC	South America	U.S.	Canada	Chile	Mexico	CAC	South America
Agriculture	-94,667	5,946	21,440	-11,286	-18,916	222,308	-12,460	1,478	14,744	-20,701	-39,042	202,605
Mining	-44,487	-12,073	283	-13,689	-43,465	234,970	-3,251	-1,505	-2,486	-553	-19,685	29,499
Food, Beverages & Tobacco	66,203	-18,365	42,364	-1,259	33,857	201,731	-3,452	-3,049	1,953	-3,658	-18,987	16,172
Textiles	-18,632	-10,976	8,735	-1,937	275,403	26,808	-6,028	-2,060	206	-2,251	57,999	-2,133
Wearing Apparel	-125,325	-8,581	4,319	-19,691	441,395	21,035	-16,804	-2,089	-163	-3,687	244,675	818
Leather Products & Footwear	15,157	-2,225	2,982	-1,862	37,920	71,241	620	-650	301	-1,000	11,090	10,500
Wood & Wood Products	132,508	10,077	14,978	7,083	-18,045	-2,047	2,502	-166	561	538	-19,314	-6,481
Chemicals	251,285	-1,788	7,690	20,671	-1,716	131,111	2,883	-1,014	-3,018	1,334	-16,078	-393
Non-metallic Min. Products	25,944	820	-972	6,451	-8,365	9,919	957	-52	-749	1,372	-7,194	-2,081
Metal Products	129,022	8,492	71,160	25,768	-23,330	41,788	2,024	-151	3,512	1,782	-10,672	-3,014
Transportation Equipment	215,510	86,414	5,248	110,239	-8,767	-74,331	2,970	5,206	114	16,633	-2,171	-7,730
Machinery & Equipment	527,680	38,639	12,683	41,441	-5,347	-195,173	21,830	2,450	1,611	2,489	-8,320	-20,176
Other Manufactures	30,383	-217	918	-148	-1,282	3,734	2,148	-149	-20	-1,177	-1,828	-532
Elec., Gas & Water	54,942	1,325	11,112	3,551	14,991	15,204	-228	-81	293	36	-410	179
Construction	163,048	13,521	17,109	15,809	-1,607	-24,803	-88	-39	-1,306	622	-14,623	-11,433
Trade & Transport	465,435	48,167	51,494	36,341	65,485	-694	1,991	2,952	-2,705	9,799	-62,175	-74,080
Other Private Services	548,166	39,318	12,493	904	-41,050	-18,821	2,788	229	-154	-2,190	-11,146	-4,712
Government Services	115,824	1,712	-59	3,044	-4,338	-102,754	1,597	-1,309	-12,693	-387	-82,120	-127,009
Total	2,457,997	200,205	283,978	221,432	692,825	561,226	0	0	0	0	0	0

a) Changes in employment sum to zero because of assumption of full employment.

**Table 3. Free Trade Area of the Americas (FTAA): Changes in Bilateral Trade Flows (Millions of Dollars)**

From	To																							Exports		
	FTAA	USA	CAN	CHL	MEX	CAC	SAM	JPN	AUS	NZL	EUN	HKG	CHN	KOR	SGP	TWN	IDN	MYS	PHL	THA	ROA	MCC	SAC		ROW	
FTAA (total)	FTAA	27,276	2,530	2,357	2,379	11,625	15,571	254	27	0	-864	-47	-478	-170	112	72	-86	80	-23	14	-163	3	-23	-136	60,308	
United States	USA	21,544	0	291	783	-427	10,486	10,411	922	71	16	2,163	-30	23	137	179	226	-29	139	-10	51	-114	6	33	398	25,725
Canada	CAN	1,651	352	0	152	29	251	867	80	12	3	344	4	32	26	15	27	4	17	12	11	10	1	6	48	2,303
Chile	CHL	3,512	1,480	138	0	289	63	1,542	-123	-12	-3	-361	-1	-74	-67	-5	-19	-8	-9	-1	-3	-6	-0	-10	-37	2,773
Mexico	MEX	2,015	467	14	247	0	197	1,089	54	8	4	244	3	18	20	9	17	5	8	3	5	8	3	4	26	2,453
Central America and the Caribbean	CAC	10,533	7,646	428	69	727	0	1,662	-40	8	5	164	10	-144	2	6	-0	-13	-3	-2	-3	5	1	2	-2	10,528
South America	SAM	22,483	17,330	1,659	1,107	1,760	627	0	-638	-60	-24	-3,418	-32	-333	-289	-93	-179	-46	-73	-25	-47	-65	-8	-59	-569	16,526
Japan	JPN	-421	-686	-103	124	-57	-144	445	0	-11	1	88	4	51	18	2	22	23	0	4	10	14	0	6	-54	-244
Australia	AUS	-97	-110	-8	4	-6	-12	34	-3	0	0	8	1	3	1	0	3	3	0	0	0	2	0	1	-3	-80
New Zealand	NZL	-18	-22	-3	1	-1	-3	9	-1	-0	0	2	0	0	0	-0	1	0	0	-0	0	0	0	0	-1	-16
EU and EFTA	EUN	-1,263	-2,349	-245	268	-179	-782	2,025	-100	-15	-4	0	-14	49	-2	-25	27	-20	-7	-4	-10	-11	-2	3	-439	-1,836
Hong Kong	HKG	-38	-84	-12	14	-3	-3	51	-9	-2	-0	-3	0	-12	-1	1	7	-0	-1	2	1	1	-0	0	-8	-62
China	CHN	-60	-252	-28	27	-9	-21	224	-137	-11	-1	-88	-12	0	-35	-22	-103	-2	-12	-1	-7	-1	-0	-1	-45	-536
Korea	KOR	-125	-261	-31	80	-11	-39	136	-40	-13	-1	-25	-0	10	0	-3	-0	1	-6	-0	-1	1	-0	-3	-48	-253
Singapore	SGP	-102	-123	-6	15	-6	-16	34	11	0	0	31	5	28	8	0	15	3	26	6	16	5	0	1	-13	42
Taiwan	TWN	-34	-178	-14	63	-6	-4	105	-17	-9	-0	-3	1	15	3	3	0	1	-0	3	2	2	-0	-0	-6	-41
Indonesia	IDN	-35	-68	-13	10	-3	-9	47	-18	-5	-1	-17	-0	4	-7	-9	-4	0	-2	-0	-2	0	-0	-0	-10	-106
Malaysia	MYS	-32	-81	-7	8	-2	-7	58	5	0	0	19	2	12	8	12	8	4	0	3	4	3	0	1	-3	45
Philippines	PHL	-50	-62	-9	3	-2	-6	27	14	-0	-0	13	1	5	4	4	-5	1	2	0	1	2	0	0	-5	-13
Thailand	THA	-25	-68	-6	12	-4	-7	47	-1	-1	-0	9	1	8	3	2	4	2	2	2	0	3	0	0	-5	5
Rest of Asia	ROA	-33	-81	-11	9	-5	-14	68	-16	-5	-1	-47	-0	2	-8	-11	-15	-1	-10	-1	-3	0	-1	-1	-42	-192
Morocco	MCC	5	-11	-2	0	-1	-6	25	-0	-0	-0	-1	0	0	-0	-0	0	0	-0	0	-0	0	0	0	-1	3
Southern African Customs Union	SAC	-9	-38	-3	3	-27	-4	60	-4	-2	-0	-15	0	-0	-1	-1	-0	-0	-1	-0	-0	0	-0	0	-5	-40
Rest of the world	ROW	-140	-108	-10	-1	-3	-3	-15	-42	-8	-2	-371	-17	-25	-22	-12	-4	-5	-7	-3	-6	-15	-1	-7	-823	-1,509
Imports		59,261	22,693	2,020	2,998	2,054	10,546	18,950	-105	-54	-9	-1,261	-73	-330	-202	53	28	-76	65	-13	19	-157	-0	-24	-1,645	

**Table 4. Computation of Welfare Effects of the FTAA, Unilateral Free Trade, and Global Free Trade (Billions of Dollars and Percent)**

<b>Bilateral Free Trade</b>				<b>Unilateral Free Trade</b>				<b>Global Free Trade</b>			
<i>FTAA</i>	Welfare			<i>FTAA</i>	Welfare				Welfare		
	(U.S.\$)	(% of GNP)			(U.S.\$)	(% of GNP)			(U.S.\$)	(% of GNP)	
United States	67.6	0.7		United States	346.5	3.4		United States	542.5	5.4	
Canada	5.8	0.7		Canada	26.0	3.2		Canada	50.1	6.2	
Chile	3.4	3.6		Chile	7.7	8.1		Chile	10.8	11.3	
Mexico	6.6	1.3		Mexico	22.7	4.6		Mexico	33.6	6.7	
CAC	7.8	6.5		CAC	12.1	10.1		CAC	17.7	14.8	
South America	27.6	1.5		South America	61.8	3.4		South America	96.5	5.3	
Total FTAA welfare	118.8			Total FTAA welfare	476.8			Total FTAA welfare	751.2		
Global	109.5			Global	812.7			Global	2417.3		
<b>Global Free Trade: Decomposition</b>											
<i>Agricultural Protection</i>	Welfare			<i>Manufactures Tariffs</i>	Welfare			<i>Services Barriers</i>	Welfare		
	(U.S.\$)	(% of GNP)			(U.S.\$)	(% of GNP)			(U.S.\$)	(% of GNP)	
United States	0.4	0.0		United States	75.7	0.8		United States	466.4	4.6	
Canada	-0.4	-0.1		Canada	11.5	1.4		Canada	39.0	4.9	
Chile	0.1	0.1		Chile	5.3	5.5		Chile	5.4	5.6	
Mexico	-0.1	0.0		Mexico	13.3	2.7		Mexico	20.3	4.1	
CAC	0.5	0.4		CAC	7.7	6.5		CAC	9.5	8.0	
South America	1.7	0.1		South America	32.4	1.8		South America	62.5	3.5	
Total FTAA welfare	2.2			Total FTAA welfare	145.9			Total FTAA welfare	603.1		
Global	53.9			Global	701.6			Global	1661.8		

**Table A-1. Post-Uruguay Round Tariff Rates by Sector for the United States and Other FTAA Countries/Regions**  
(Percent)

	(Percent)															
	Global	Canada	United States				Canada		Chile		Mexico		CAC		South America	
			Chile	Mexico	CAC	South America	Global	U.S.	Global	U.S.	Global	U.S.	Global	U.S.	Global	U.S.
Agriculture	2.7	0.0	0.8	0.0	1.0	3.2	0.2	0.0	5.0	4.8	-2.7	0.0	3.1	0.4	4.0	0.8
Mining	0.2	0.0	0.1	0.0	0.3	0.1	0.0	0.0	9.1	11.0	1.5	0.0	1.7	3.8	3.0	0.9
Food, Beverages & Tobacco	3.5	0.0	1.3	0.0	3.0	1.8	5.7	0.0	8.2	11.0	-4.8	0.0	8.2	8.5	9.0	11.5
Textiles	5.6	0.0	14.0	0.0	6.8	7.7	4.2	0.0	10.2	11.0	3.3	0.0	13.0	14.5	14.2	13.0
Wearing Apparel	11.0	0.0	11.5	0.0	11.6	13.6	13.8	0.0	10.4	11.0	2.5	0.0	23.5	25.7	19.6	19.8
Leather Products & Footwear	7.2	0.0	7.7	0.0	4.6	6.3	9.2	0.0	10.8	11.0	5.3	0.0	13.7	16.4	14.1	15.9
Wood & Wood Products	0.3	0.0	0.2	0.0	0.5	0.4	0.3	0.0	9.6	10.7	0.9	0.0	9.9	9.8	7.8	7.7
Chemicals	1.9	0.0	0.0	0.0	0.8	0.9	1.0	0.0	9.5	11.0	2.0	0.0	7.6	8.0	8.6	9.0
Non-metallic Min. Products	3.2	0.0	0.6	0.0	3.8	2.3	0.8	0.0	9.9	11.0	4.4	0.0	11.4	11.0	11.2	11.3
Metal Products	1.4	0.0	0.5	0.0	0.5	0.6	0.8	0.0	10.2	11.0	2.7	0.0	7.6	8.1	10.7	11.6
Transportation Equipment	1.2	0.0	1.4	0.0	1.3	0.2	0.7	0.0	10.2	9.2	2.6	0.0	8.1	10.4	20.0	15.6
Machinery & Equipment	1.0	0.0	0.2	0.0	0.3	0.4	0.5	0.0	10.4	11.0	2.6	0.0	5.8	5.6	12.2	11.7
Other Manufactures	1.3	0.0	0.1	0.0	2.2	1.5	1.2	0.0	10.8	11.0	4.2	0.0	13.6	17.0	14.8	16.3
Elec., Gas & Water	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Construction	9.0	0.0	9.0	0.0	9.0	9.0	3.0	0.0	58.0	58.0	15.0	0.0	18.0	18.0	18.0	18.0
Trade & Transport	27.0	0.0	27.0	0.0	27.0	27.0	13.0	0.0	24.0	24.0	27.0	0.0	32.0	32.0	32.0	32.0
Other Private Services	31.0	0.0	31.0	0.0	31.0	31.0	27.0	0.0	20.0	20.0	32.0	0.0	34.0	34.0	34.0	34.0
Government Services	25.0	0.0	25.0	0.0	25.0	25.0	0.0	0.0	21.0	21.0	21.0	0.0	17.0	17.0	17.0	17.0

Note: Central America and Caribbean (CAC) members include Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, and Nicaragua. South America excludes Chile.  
Sources: Adapted from Francois and Strutt (1999); Brown, Deardorff and Stern (2002); and Diamaranan and McDougall (2002).

**Table A-2. Value and Shares of U.S. Sectoral Trade by Destination and Origin, 1997 (Millions of U.S. Dollars)**

	U.S. Exports							U.S. Imports						
	World	Total FTAA	Canada	Chile	Mexico	CAC	South America	World	Total FTAA	Canada	Chile	Mexico	CAC	South America
Agriculture	35,176	8,748	2,815	47	3,242	1,098	1,547	18,602	13,521	3,984	716	2,956	2,280	3,585
Mining	6,421	2,129	1,416	39	214	26	434	69,939	39,016	17,060	74	8,324	664	12,894
Food, Beverages & Tobacco	30,541	8,558	3,964	83	2,065	1,464	982	28,813	11,892	5,553	534	1,957	1,421	2,427
Textiles	11,485	6,610	2,538	90	2,055	1,362	565	21,514	6,541	1,803	9	2,640	1,725	365
Wearing Apparel	6,847	4,709	423	21	1,623	2,428	213	38,335	11,095	1,050	17	3,974	5,443	612
Leather products & Footwear	2,280	786	185	6	323	213	59	21,842	2,841	219	5	607	438	1,572
Wood & Wood Products	29,386	13,747	7,717	151	3,415	1,094	1,371	43,785	29,947	25,258	352	2,956	165	1,216
Chemicals	90,569	36,446	15,886	665	10,405	2,737	6,752	77,142	23,648	15,449	159	2,747	879	4,414
Non-metallic Min. Products	11,921	4,732	2,703	93	922	269	745	14,071	4,931	2,572	18	1,365	369	607
Metal Products	34,238	17,932	10,460	223	5,089	712	1,447	56,001	24,423	15,649	573	4,180	429	3,592
Transportation Equipment	102,640	46,999	33,595	607	8,130	953	3,713	128,874	59,396	43,993	3	14,064	22	1,314
Machinery & Equipment	269,892	95,169	44,683	1,860	27,568	3,795	17,262	307,001	73,397	32,119	13	38,411	1,128	1,726
Other Manufactures	11,322	3,062	1,400	69	794	273	526	39,851	3,175	988	7	1,400	289	491
Elec., Gas & Water	751	186	113	2	9	2	60	2,230	1,569	1,445	1	2	5	117
Construction	4,023	49	5	0	2	32	9	1,268	30	4	0	2	18	7
Trade & Transport	81,445	7,036	2,401	308	744	514	3,069	75,050	5,657	1,696	296	1,270	873	1,523
Other Private Services	81,707	7,752	3,889	151	928	588	2,195	59,724	4,563	2,111	94	741	522	1,096
Government Services	42,165	3,727	826	139	722	282	1,759	18,838	1,698	467	54	144	335	699
<b>Total</b>	<b>852,808</b>	<b>268,375</b>	<b>135,019</b>	<b>4,554</b>	<b>68,250</b>	<b>17,843</b>	<b>42,708</b>	<b>1,022,879</b>	<b>317,342</b>	<b>171,418</b>	<b>2,924</b>	<b>87,739</b>	<b>17,004</b>	<b>38,256</b>

  

	U.S. Exports							U.S. Imports						
	World	Total FTAA	Canada	Chile	Mexico	CAC	South America	World	Total FTAA	Canada	Chile	Mexico	CAC	South America
Agriculture	100.0	24.9	8.0	0.1	9.2	3.1	4.4	100.0	72.7	21.4	3.9	15.9	12.3	19.3
Mining	100.0	33.2	22.0	0.6	3.3	0.4	6.8	100.0	55.8	24.4	0.1	11.9	0.9	18.4
Food, Beverages & Tobacco	100.0	28.0	13.0	0.3	6.8	4.8	3.2	100.0	41.3	19.3	1.9	6.8	4.9	8.4
Textiles	100.0	57.6	22.1	0.8	17.9	11.9	4.9	100.0	30.4	8.4	0.0	12.3	8.0	1.7
Wearing Apparel	100.0	68.8	6.2	0.3	23.7	35.5	3.1	100.0	28.9	2.7	0.0	10.4	14.2	1.6
Leather Products & Footwear	100.0	34.5	8.1	0.3	14.2	9.3	2.6	100.0	13.0	1.0	0.0	2.8	2.0	7.2
Wood & Wood Products	100.0	46.8	26.3	0.5	11.6	3.7	4.7	100.0	68.4	57.7	0.8	6.8	0.4	2.8
Chemicals	100.0	40.2	17.5	0.7	11.5	3.0	7.5	100.0	30.7	20.0	0.2	3.6	1.1	5.7
Non-metallic Min. Products	100.0	39.7	22.7	0.8	7.7	2.3	6.3	100.0	35.0	18.3	0.1	9.7	2.6	4.3
Metal Products	100.0	52.4	30.6	0.7	14.9	2.1	4.2	100.0	43.6	27.9	1.0	7.5	0.8	6.4
Transportation Equipment	100.0	45.8	32.7	0.6	7.9	0.9	3.6	100.0	46.1	34.1	0.0	10.9	0.0	1.0
Machinery & Equipment	100.0	35.3	16.6	0.7	10.2	1.4	6.4	100.0	23.9	10.5	0.0	12.5	0.4	0.6
Other Manufactures	100.0	27.0	12.4	0.6	7.0	2.4	4.6	100.0	8.0	2.5	0.0	3.5	0.7	1.2
Elec., Gas & Water	100.0	24.8	15.1	0.2	1.3	0.3	8.0	100.0	70.4	64.8	0.0	0.1	0.2	5.2
Construction	100.0	1.2	0.1	0.0	0.0	0.8	0.2	100.0	2.4	0.3	0.0	0.1	1.4	0.5
Trade & Transport	100.0	8.6	2.9	0.4	0.9	0.6	3.8	100.0	7.5	2.3	0.4	1.7	1.2	2.0
Other Private Services	100.0	9.5	4.8	0.2	1.1	0.7	2.7	100.0	7.6	3.5	0.2	1.2	0.9	1.8
Government Services	100.0	8.8	2.0	0.3	1.7	0.7	4.2	100.0	9.0	2.5	0.3	0.8	1.8	3.7
<b>Total</b>	<b>100.0</b>	<b>31.5</b>	<b>15.8</b>	<b>0.5</b>	<b>8.0</b>	<b>2.1</b>	<b>5.0</b>	<b>100.0</b>	<b>31.0</b>	<b>16.8</b>	<b>0.3</b>	<b>8.6</b>	<b>1.7</b>	<b>3.7</b>

Source: GTAP 5.4 adapted from Dimaranan and McDougall (2002).

**Table A-3. Shares and Total Values of Exports by Destination, 1997: Canada, Chile, Mexico, CAC and South America**  
(Percent)

	Canada						Chile						Mexico					
	U.S.	Chile	Mexico	CAC	South America	Global	U.S.	Canada	Mexico	CAC	South America	Global	U.S.	Canada	Chile	CAC	South America	Global
Agriculture	40.1	0.6	2.7	0.9	5.0	100.0	33.0	1.4	2.3	0.6	17.8	100.0	76.8	2.0	0.2	1.6	1.0	100.0
Mining	80.8	0.2	0.3	0.1	0.7	100.0	2.5	1.4	3.3	0.0	10.2	100.0	72.1	1.6	0.1	4.4	0.2	100.0
Food, Beverages & Tobacco	66.8	0.1	0.7	1.5	1.0	100.0	17.3	2.8	1.6	1.7	14.1	100.0	64.1	1.9	0.9	4.9	4.3	100.0
Textiles	83.9	0.2	0.4	0.3	0.5	100.0	5.0	1.4	12.0	1.4	64.9	100.0	77.6	2.4	1.8	4.1	4.7	100.0
Wearing Apparel	86.1	0.1	0.6	0.5	0.2	100.0	23.1	3.0	4.4	1.6	37.6	100.0	96.0	0.6	0.2	0.5	0.2	100.0
Leather Products & Footwear	80.4	0.0	0.7	0.2	0.7	100.0	9.3	2.1	7.6	0.7	47.7	100.0	79.3	3.0	1.4	2.8	1.2	100.0
Wood & Wood Products	76.2	0.1	0.2	0.3	1.3	100.0	17.5	0.2	0.7	0.5	22.6	100.0	82.7	6.5	0.7	2.7	3.0	100.0
Chemicals	80.7	0.2	0.5	0.4	1.7	100.0	15.5	1.3	2.6	2.1	39.5	100.0	46.3	1.8	2.7	10.8	17.1	100.0
Non-metallic Min. Products	89.3	0.1	0.2	0.2	0.5	100.0	14.6	0.1	0.9	1.8	35.0	100.0	72.4	3.6	2.6	6.6	5.6	100.0
Metal Products	80.9	0.1	0.2	0.2	0.3	100.0	10.3	0.1	1.9	0.4	9.5	100.0	69.5	2.4	2.2	4.3	6.4	100.0
Transportation Equipment	93.6	0.0	0.6	0.1	1.3	100.0	3.4	0.6	3.8	1.3	83.4	100.0	81.5	9.1	1.5	1.0	3.4	100.0
Machinery & Equipment	80.4	0.2	0.6	0.4	1.5	100.0	4.0	0.6	9.6	2.4	71.5	100.0	90.3	2.2	0.6	0.9	2.1	100.0
Other Manufactures	72.5	0.2	0.3	0.6	0.8	100.0	24.9	2.1	4.2	3.3	36.3	100.0	87.0	2.1	0.5	1.3	1.7	100.0
Elec., Gas & Water	78.5	0.0	0.3	0.1	3.9	100.0	15.6	2.6	0.9	0.5	2.9	100.0	10.7	13.5	4.6	0.1	2.0	100.0
Construction	5.3	0.1	0.3	2.1	1.7	100.0	4.7	0.8	0.4	2.1	1.7	100.0	4.3	0.6	0.1	2.4	1.3	100.0
Trade & Transport	15.2	0.4	0.9	0.5	3.2	100.0	13.9	1.5	0.8	0.4	3.1	100.0	15.9	2.5	0.3	0.5	3.1	100.0
Other Private Services	13.9	0.2	0.4	0.6	2.7	100.0	15.6	3.3	3.1	0.8	2.8	100.0	25.2	1.5	0.2	0.7	2.2	100.0
Government Services	41.8	0.2	0.9	0.5	2.3	100.0	49.0	0.6	0.9	0.5	2.1	100.0	32.0	1.5	0.2	0.6	2.4	100.0
Total - Percent	72.8	0.2	0.5	0.4	1.6	100.0	14.0	1.2	2.2	0.7	15.1	100.0	75.0	3.3	0.9	2.3	3.3	100.0
Total Value (Bill. \$)	168.2	0.4	1.3	0.8	3.6	231.0	2.6	0.2	0.4	0.1	2.8	18.8	86.4	3.7	1.0	2.6	3.8	115.2

  

	CAC						South America					
	U.S.	Canada	Chile	Mexico	South America	Global	U.S.	Canada	Chile	Mexico	CAC	Global
Agriculture	38.1	3.4	0.1	0.6	0.3	100.0	17.3	1.2	1.1	0.5	0.9	100.0
Mining	84.7	0.2	0.0	0.1	1.9	100.0	49.7	2.4	3.6	0.3	7.5	100.0
Food, Beverages & Tobacco	30.1	2.6	1.6	1.6	3.0	100.0	10.6	1.2	2.6	0.6	1.8	100.0
Textiles	82.0	0.9	0.1	0.6	2.3	100.0	13.2	1.6	4.9	1.8	1.9	100.0
Wearing Apparel	94.2	1.0	0.1	0.1	0.7	100.0	44.3	1.0	2.8	0.5	2.7	100.0
Leather Products & Footwear	69.4	0.9	0.1	0.6	6.2	100.0	40.4	3.1	1.2	1.1	0.8	100.0
Wood & Wood Products	24.7	0.6	0.1	1.8	6.0	100.0	20.5	0.9	2.4	1.1	2.8	100.0
Chemicals	19.4	0.8	1.6	3.1	8.7	100.0	26.5	1.5	4.5	4.3	6.2	100.0
Non-metallic Min. Products	57.5	0.3	0.1	1.0	8.2	100.0	25.6	0.9	5.7	2.1	5.6	100.0
Metal Products	19.4	19.6	0.0	2.8	5.1	100.0	26.3	2.9	2.5	3.0	1.9	100.0
Transportation Equipment	1.4	0.4	0.0	0.1	2.1	100.0	15.0	0.7	3.2	1.9	3.5	100.0
Machinery & Equipment	57.6	1.6	0.2	1.1	10.8	100.0	18.7	1.1	5.1	2.4	2.3	100.0
Other Manufactures	45.6	0.6	0.2	0.5	3.4	100.0	46.7	1.0	2.1	1.1	1.3	100.0
Elec., Gas & Water	10.8	5.8	0.1	1.2	16.6	100.0	6.2	4.2	0.0	0.8	0.3	100.0
Construction	22.7	1.9	0.2	1.1	4.1	100.0	5.4	0.6	0.1	0.4	2.4	100.0
Trade & Transport	15.5	2.1	0.4	0.9	3.3	100.0	14.1	1.7	0.4	0.8	0.6	100.0
Other Private Services	20.5	3.4	0.2	1.2	3.2	100.0	14.5	3.5	0.2	2.5	0.9	100.0
Government Services	38.6	1.5	0.2	1.0	2.8	100.0	39.5	1.1	0.2	0.9	0.6	100.0
Total - Percent	40.9	2.8	0.5	1.1	3.6	100.0	24.2	1.7	2.7	1.5	3.1	100.0
Total Value (Bill. \$)	16.1	1.1	0.2	0.4	1.4	39.3	35.9	2.6	4.0	2.2	4.6	148.5

Source: Adapted from Dimaranan and McDougall (2002).

**Table A-4. Shares and Total Values of Imports by Origin, 1997: Canada, Chile, Mexico, CAC and South America**  
(Percent)

	Canada						Chile						Mexico					
	U.S.	Chile	Mexico	CAC	South America	Global	U.S.	Canada	Mexico	CAC	South America	Global	U.S.	Canada	Chile	CAC	South America	Global
Agriculture	39.0	0.6	2.7	1.0	5.0	100.0	34.5	1.5	2.4	0.6	16.9	100.0	75.9	2.0	0.2	1.8	1.0	100.0
Mining	79.1	0.3	0.3	0.1	0.8	100.0	2.9	1.4	3.3	0.0	10.1	100.0	71.4	1.6	0.1	4.5	0.2	100.0
Food, Beverages & Tobacco	65.7	0.1	0.7	1.5	1.0	100.0	17.8	2.8	1.6	1.6	14.1	100.0	63.6	1.9	0.9	5.0	4.4	100.0
Textiles	83.4	0.2	0.4	0.3	0.5	100.0	5.0	1.3	12.0	1.3	65.2	100.0	77.0	2.4	1.8	4.2	4.8	100.0
Wearing Apparel	85.9	0.1	0.6	0.5	0.2	100.0	23.2	3.0	4.5	1.6	38.0	100.0	96.0	0.6	0.2	0.5	0.2	100.0
Leather Products & Footwear	80.1	0.0	0.7	0.2	0.7	100.0	9.2	2.1	7.6	0.7	48.1	100.0	79.1	3.0	1.5	2.9	1.2	100.0
Wood & Wood Products	74.8	0.1	0.2	0.3	1.4	100.0	17.0	0.2	0.7	0.4	21.8	100.0	82.2	6.5	0.7	2.8	3.1	100.0
Chemicals	80.2	0.2	0.5	0.4	1.7	100.0	15.4	1.3	2.7	2.1	39.4	100.0	45.7	1.8	2.8	11.0	17.3	100.0
Non-metallic Min. Products	89.2	0.1	0.1	0.2	0.5	100.0	13.7	0.1	0.8	1.6	33.2	100.0	70.7	3.5	2.9	7.0	5.9	100.0
Metal Products	80.7	0.1	0.2	0.2	0.3	100.0	10.3	0.1	1.9	0.4	9.6	100.0	68.8	2.5	2.3	4.4	6.6	100.0
Transportation Equipment	93.6	0.0	0.6	0.1	1.3	100.0	3.3	0.6	3.8	1.3	83.6	100.0	81.4	9.1	1.6	1.0	3.5	100.0
Machinery & Equipment	80.2	0.2	0.6	0.4	1.5	100.0	4.0	0.6	9.6	2.4	71.6	100.0	90.2	2.2	0.6	0.9	2.2	100.0
Other Manufactures	71.8	0.2	0.3	0.6	0.8	100.0	24.6	2.1	4.3	3.3	37.1	100.0	86.7	2.1	0.5	1.4	1.7	100.0
Elec., Gas & Water	78.5	0.0	0.3	0.1	3.9	100.0	15.6	2.6	0.9	0.5	2.9	100.0	10.7	13.5	4.6	0.1	2.0	100.0
Construction	5.3	0.1	0.3	2.1	1.7	100.0	4.7	0.8	0.4	2.1	1.7	100.0	4.3	0.6	0.1	2.4	1.3	100.0
Trade & Transport	15.2	0.4	0.9	0.5	3.2	100.0	13.9	1.5	0.8	0.4	3.1	100.0	15.9	2.5	0.3	0.5	3.1	100.0
Other Private Services	13.9	0.2	0.4	0.6	2.7	100.0	15.6	3.3	3.1	0.8	2.8	100.0	25.2	1.5	0.2	0.7	2.2	100.0
Government Services	41.8	0.2	0.9	0.5	2.3	100.0	49.0	0.6	0.9	0.5	2.1	100.0	32.0	1.5	0.2	0.6	2.4	100.0
Total - Percent	72.3	0.2	0.5	0.4	1.6	100.0	14.6	1.2	2.1	0.7	15.2	100.0	74.7	3.2	0.9	2.3	3.3	100.0
Total Value (Bill. \$)	171.4	0.4	1.3	0.9	3.8	237.0	2.9	0.2	0.4	0.1	3.1	20.1	87.7	3.8	1.1	2.8	3.9	117.5

  

	CAC						South America					
	U.S.	Canada	Chile	Mexico	South America	Global	U.S.	Canada	Chile	Mexico	CAC	Global
Agriculture	38.9	3.4	0.1	0.6	0.3	100.0	17.6	1.1	1.1	0.5	0.9	100.0
Mining	84.8	0.2	0.0	0.1	2.0	100.0	48.7	2.4	3.5	0.3	7.3	100.0
Food, Beverages & Tobacco	30.0	2.6	1.6	1.6	3.0	100.0	10.2	1.2	2.5	0.6	1.8	100.0
Textiles	82.0	0.9	0.1	0.6	2.3	100.0	13.2	1.6	4.9	1.8	1.8	100.0
Wearing Apparel	94.3	1.0	0.1	0.1	0.7	100.0	44.5	1.0	2.8	0.5	2.6	100.0
Leather Products & Footwear	69.4	0.9	0.1	0.6	6.3	100.0	40.4	3.1	1.2	1.1	0.8	100.0
Wood & Wood Products	24.9	0.5	0.1	1.9	6.0	100.0	20.6	0.9	2.3	1.1	2.7	100.0
Chemicals	19.8	0.8	1.6	3.1	8.7	100.0	26.8	1.5	4.5	4.3	6.2	100.0
Non-metallic Min. Products	57.9	0.3	0.1	1.0	8.2	100.0	26.6	0.9	5.7	2.0	5.5	100.0
Metal Products	19.4	19.3	0.0	2.9	5.3	100.0	26.2	2.8	2.6	3.0	1.9	100.0
Transportation Equipment	1.3	0.3	0.0	0.1	2.1	100.0	15.0	0.7	3.2	1.9	3.5	100.0
Machinery & Equipment	57.5	1.6	0.2	1.1	10.8	100.0	18.6	1.1	5.1	2.4	2.3	100.0
Other Manufactures	45.7	0.6	0.2	0.5	3.5	100.0	46.4	1.0	2.2	1.2	1.3	100.0
Elec., Gas & Water	10.8	5.8	0.1	1.2	16.6	100.0	6.2	4.2	0.0	0.8	0.3	100.0
Construction	22.7	1.9	0.2	1.1	4.1	100.0	5.4	0.6	0.1	0.4	2.4	100.0
Trade & Transport	15.5	2.1	0.4	0.9	3.3	100.0	14.1	1.7	0.4	0.8	0.6	100.0
Other Private Services	20.5	3.4	0.2	1.2	3.2	100.0	14.5	3.5	0.2	2.5	0.9	100.0
Government Services	38.6	1.5	0.2	1.0	2.8	100.0	39.5	1.1	0.2	0.9	0.6	100.0
Total - Percent	41.2	2.8	0.5	1.1	3.6	100.0	24.2	1.7	2.7	1.5	3.1	100.0
Total Value (Bill. \$)	17.0	1.1	0.2	0.5	1.5	41.3	38.3	2.7	4.2	2.4	4.9	158.2

Source: Adapted from Dimaranan and McDougall (2002).

**Table A-5. Employment by Sector, 1997: United States and Other FTAA Countries/Regions**  
(Percent of Employment and Number of Workers)

	United States		Canada		Chile		Mexico		CAC		South America	
	%	Workers	%	Workers	%	Workers	%	Workers	%	Workers	%	Workers
Agriculture	2.7	3,538,000	3.8	1,057,800	14.4	775,900	24.2	9,023,392	25.8	4,073,711	18.1	18,635,678
Mining	0.5	634,000	1.3	364,800	1.6	87,900	0.3	108,437	0.6	97,348	1.0	1,021,196
Food, Beverages & Tobacco	1.7	2,144,942	2.0	543,754	5.2	277,309	4.2	1,556,262	4.6	725,235	3.6	3,657,121
Textiles	0.7	948,740	0.5	143,052	0.8	45,525	1.3	495,191	1.1	179,245	1.1	1,118,847
Wearing Apparel	0.6	796,958	0.6	160,479	0.7	40,186	0.4	161,768	3.3	512,837	1.1	1,103,914
Leather Products & Footwear	0.1	111,039	0.1	32,309	0.5	27,909	0.5	172,152	0.4	63,601	0.4	456,190
Wood & Wood Products	1.7	2,218,458	3.2	901,658	2.5	133,659	1.6	586,075	1.3	207,217	1.5	1,586,805
Chemicals	2.1	2,666,937	1.7	462,217	2.2	120,628	2.8	1,041,845	1.7	260,793	2.1	2,172,198
Non-metallic Min. Products	0.5	689,823	0.4	115,557	0.6	34,859	0.9	325,305	0.6	88,125	0.9	887,379
Metal Products	2.4	3,053,744	2.0	552,920	2.0	106,750	1.3	492,957	0.7	117,625	1.3	1,335,574
Transportation Equipment	1.7	2,244,402	1.9	534,043	0.5	26,358	1.6	583,420	0.2	28,232	0.5	522,903
Machinery & Equipment	4.2	5,440,783	2.6	718,748	0.8	43,890	2.1	790,311	0.8	123,325	0.8	859,293
Other Manufactures	0.4	519,174	0.2	68,962	0.1	3,728	0.2	61,762	0.2	33,932	0.2	168,550
Elec., Gas & Water	1.2	1,493,000	0.9	256,000	0.6	31,100	0.5	187,564	0.9	137,560	0.2	212,583
Construction	6.4	8,302,000	5.3	1,478,000	9.1	488,800	4.7	1,759,103	6.2	982,142	6.8	6,973,844
Trade & Transport	26.6	34,466,000	30.6	8,541,100	25.6	1,376,900	25.6	9,550,372	24.1	3,800,310	22.8	23,466,222
Other Private Services	11.4	14,768,000	14.0	3,905,500	7.0	376,500	4.1	1,513,318	2.6	404,888	3.6	3,660,586
Government Services	35.1	45,521,000	28.8	8,042,700	25.7	1,382,400	24.0	8,950,667	24.9	3,924,632	34.1	35,062,057
Total	100.0	129,557,000	100.0	27,879,600	100.0	5,380,300	100.0	37,359,900	100.0	15,760,757	100.0	102,900,940

Sources: ILO website (2003); UNIDO (2003); and World Bank (2003).

**Table A-6. Stock of U.S. Foreign Direct Investment Abroad, 2002**

(Millions of U.S. Dollars and Percent)

	World	Total FTAA	Canada	Chile	Mexico	CAC	South America
	Mil.	Mil.	Mil.	Mil.	Mil.	Mil.	Mil.
Mining	80,976	36,045	20,345	2,939	459	n.a.	12,302
Utilities	20,932	9,253	355	1,743	298	n.a.	6,857
Manufacturing Total	392,553	113,732	67,209	1,807	19,172	n.a.	25,544
Of which Food	28,240	8,406	3,668	56	1,228	136	3,318
Chemicals	99,371	21,288	9,765	594	4,999	n.a.	5,930
Primary and fabricated metals	24,359	8,822	4,430	39	n.a.	28	4,325
Machinery	22,025	4,887	1,930	28	1,011	1	1,917
Computer and electronic products	69,208	8,537	9,189	2	-1,414	n.a.	760
Electrical equipment, appliances, and components	10,166	2,462	1,578	16	735	104	29
Transportation equipment	48,378	25,073	17,504	n.a.	4,861	n.a.	2,708
Wholesale trade	114,895	20,508	9,065	610	2,365	21	8,447
Information	53,841	7,628	1,861	490	n.a.	n.a.	5,277
Depository institutions	52,935	8,283	2,211	989	13,630	n.a.	-8,547
Finance (except depository institutions) and insurance	244,480	94,757	23,498	2,072	n.a.	19	69,168
Professional, scientific, and technical services	38,307	5,264	1,863	12	573	26	2,790
Other industries	522,047	129,238	26,116	962	12,472	n.a.	89,688
Total	1,520,965	424,885	152,522	11,625	58,074	1,786	200,878
	World	Total FTAA	Canada	Chile	Mexico	CAC	South America
	%	%	%	%	%	%	%
Mining	5.3	8.5	13.3	25.3	0.8	n.a.	6.1
Utilities	1.4	2.2	0.2	15.0	0.5	n.a.	3.4
Manufacturing Total	25.8	26.8	44.1	15.5	33.0	n.a.	12.7
Of which Food	1.9	2.0	2.4	0.5	2.1	7.6	1.7
Chemicals	6.5	5.0	6.4	5.1	8.6	n.a.	3.0
Primary and fabricated metals	1.6	2.1	2.9	0.3	n.a.	1.6	2.2
Machinery	1.4	1.2	1.3	0.2	1.7	0.1	1.0
Computer and electronic products	4.6	2.0	6.0	0.0	-2.4	n.a.	0.4
Electrical equipment, appliances, and components	0.7	0.6	1.0	0.1	1.3	5.8	0.0
Transportation equipment	3.2	5.9	11.5	n.a.	8.4	n.a.	1.3
Wholesale trade	7.6	4.8	5.9	5.2	4.1	1.2	4.2
Information	3.5	1.8	1.2	4.2	n.a.	n.a.	2.6
Depository institutions	3.5	1.9	1.4	8.5	23.5	n.a.	-4.3
Finance (except depository institutions) and insurance	16.1	22.3	15.4	17.8	n.a.	1.1	34.4
Professional, scientific, and technical services	2.5	1.2	1.2	0.1	1.0	1.5	1.4
Other industries	34.3	30.4	17.1	8.3	21.5	n.a.	44.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Notes: 1) FDI data for CAC refer only to Costa Rica and Honduras, South American data refer to Latin America and other Western Hemisphere minus Chile, Mexico, and CAC.

2) n.a. means not available.

Source: Adapted from U.S. Bureau of Economic Analysis (2003).