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**Computational Analysis of the U.S FTAs with  
Central America, Australia, And Morocco**

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**Abstract**

We use the Michigan Model of World Production and Trade to assess the economic effects of the U.S. bilateral FTAs negotiated with Central America, Australia, and Morocco. 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 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 FTAs are not taken into account due to data constraints. The computational results indicate that the benefits of bilateral FTAs for the United States and partner countries are rather small in both absolute and relative terms, and that far greater benefits could be realized if the United States and its FTA partners adopted unilateral free trade and especially if multilateral free trade was adopted by all countries/regions in the global trading system.

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# COMPUTATIONAL ANALYSIS OF THE U.S. FTAs WITH CENTRAL AMERICA, AUSTRALIA, AND MOROCCO<sup>†</sup>

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## 1. INTRODUCTION

This paper presents a computational analysis of the economic effects of the U.S. bilateral free trade agreements (FTAs) negotiated with Central America (CAFTA), Australia, and Morocco. The CAFTA was concluded in December 2003, and the FTAs with Australia in February 2004 and with Morocco in March 2004. The Australia and Morocco FTAs were signed and approved by the U.S. Congress in 2004, and the CAFTA will be considered for approval sometime in 2005. The analysis of the individual U.S. FTAs 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 2 following, we present a brief description of the main features and data of the Michigan Model. In Sections 3-5, we provide some background information on the individual FTAs together with presentation of the modeling results of the potential effects of these FTAs on the economic welfare, trade, output, and employment for the United States and FTA partner countries. In Section 6, we provide a broader perspective on the FTAs that takes into account the effects of the unilateral removal of trade barriers by the United States and its FTA partner countries, and the effects of global free trade in which all countries/regions covered in the model

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<sup>‡</sup> Kozo Kiyota was a Visiting Scholar at the University of Michigan when this research was undertaken and would like to thank the Kikawada Fellowship Program for providing financial support.

are assumed to remove their existing trade barriers on a multilateral basis. Section 7 contains a summary and concluding remarks.

## 2. THE MICHIGAN MODEL OF WORLD PRODUCTION AND TRADE

### a. Overview of the Michigan Model

The version of the Michigan Model that we use in this paper covers 18 economic sectors, including agriculture, manufactures, and services, in each of 22 countries/regions. 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. Some details follow.<sup>1</sup> 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/).

#### *(i) Sectors and market structure*

As mentioned, the version of the model to be used here consists of 18 production sectors and 22 countries/regions (plus rest-of-world). The sectoral and country/region coverage are indicated in the tables below. Agriculture is modeled as perfectly competitive with product differentiation by country of origin, and the manufactures and services sectors are modeled as monopolistically competitive. Each monopolistically competitive firm produces a differentiated product and sets price as a profit-maximizing mark-up of price over marginal cost. Free entry and exit of firms then guarantees zero profits.

#### *(ii) Expenditure*

Consumers and producers are assumed to use a two-stage procedure to allocate expenditure across differentiated products. In the first stage, expenditure is allocated across goods without regard to the country of origin or producing firm. At this stage, the utility function is Cobb-Douglas, and the production function requires intermediate inputs in fixed proportions. In the second stage,

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

expenditure on monopolistically competitive goods is allocated across the competing varieties supplied by each firm from all countries. In the perfectly competitive agricultural sector, since individual firm supply is indeterminate, expenditure is allocated over each country's industry as a whole, with imperfect substitution between products of different countries.

The aggregation function in the second stage is a Constant Elasticity of Substitution (CES) function. Use of the CES function and product differentiation by firm imply that consumer welfare is influenced both by any reduction in real prices brought about by trade liberalization, as well as increased product variety. The elasticity of substitution among different varieties of a good is assumed to be three, a value that is broadly consistent with available empirical estimates. The parameter for the sensitivity of consumers to the number of product varieties is set at 0.5<sup>2</sup>

*(iii) Production*

The production function is separated into two stages. In the first stage, intermediate inputs and a primary composite of capital and labor are used in fixed proportion to output.<sup>3</sup> In the second stage, capital and labor are combined through a CES function to form the primary composite. In the monopolistically competitive sectors, additional fixed inputs of capital and labor are required. It is assumed that fixed capital and fixed labor are used in the same proportion as variable capital and variable labor so that production functions are homothetic. The elasticities of substitution between capital and labor vary across sectors and were derived from a literature search of empirical estimates of sectoral supply elasticities. Economies of scale are determined endogenously in the model.

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<sup>2</sup> If the variety parameter is greater than 0.5, it means that consumers value variety more. If the parameter is zero, consumers have no preference for variety. This is the same as the Armington assumption according to which consumers view products as distinguished by country of production. Sensitivity tests of alternative parameter values are included in an appendix below.

<sup>3</sup> Intermediate inputs include both domestic and imported varieties.

*(iv) Supply prices*

To determine equilibrium prices, perfectly competitive firms operate such that price is equal to marginal cost, while monopolistically competitive firms maximize profits by setting price as an optimal mark-up over marginal cost. The numbers of firms in sectors under monopolistic competition are determined by the zero profits condition. The free entry condition in this context is also the basic mechanism through which new product varieties are created (or eliminated). Each of the new entrants arrives with a distinctly different product, expanding the array of goods available to consumers.

Free entry and exit are also the means through which countries are able to realize the specialization gains from trade. In this connection, it can be noted that in a model with nationally differentiated products, which relies on the Armington assumption, production of a particular variety of a good cannot move from one country to another. In such a model, there are gains from exchange but no gains from specialization. The Dixit-Stiglitz framework that we use in the Michigan Model allows additionally for a specialization gain,<sup>4</sup> realization of economies of scale, and increased product variety.

*(v) Capital and labor markets*

Capital and labor are assumed to be perfectly mobile across sectors within each country. Returns to capital and labor are determined so as to equate factor demand to an exogenous supply of each factor. The aggregate supplies of capital and labor in each country are assumed to remain fixed so

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<sup>4</sup> That is, in the Michigan Model with differentiated products supplied by monopolistically competitive firms, production of a particular variety is internationally mobile. A decline in the number of firms in one country paired with an expansion in another essentially implies that production of one variety of a good is being relocated from the country in which the number of firms is declining to the country in which the number of firms is expanding.

The international relocation of a particular variety of a good can be understood in the context of the ongoing outsourcing debate. Domestic firms require intermediate inputs, in addition to capital and labor. To the extent that tariff reduction leads a firm to substitute toward traded intermediate inputs, domestic firms can be thought of as outsourcing some component of production. This is particularly the case if there is a decline in the number of domestic firms in the sector from which intermediate inputs are purchased and an expansion in the supplier country.

as to abstract from macroeconomic considerations (e.g., the determination of investment), since our microeconomic focus is on the intersectoral allocation of resources.

*(vi) World market and trade balance*

The world market determines equilibrium prices such that all markets clear. Total demand for each firm or sector's product must equal total supply of that product. It is also assumed that trade remains balanced for each country/region, that is, any initial trade imbalance remains constant as trade barriers are changed. This is accomplished by permitting aggregate expenditure to adjust to maintain a constant trade balance. Thus, we abstract away from the macroeconomic forces and policies that are the main determinants of trade imbalances. Further, it should be noted that there are no nominal rigidities in the model. As a consequence, there is no role for a real exchange rate mechanism.

*(vii) Trade policies and rent/revenues*

We have incorporated into the model the import tariff rates and export taxes/subsidies as policy inputs that are applicable to the bilateral trade of the various countries/regions with respect to one another. These have been computed using the 'GTAP-5.4 Database' provided in Dimaranan and McDougall (2002). The export barriers have been estimated as export-tax equivalents. We assume that revenues from both import tariffs and export taxes, as well as rents from NTBs on exports, are redistributed to consumers in the tariff- or tax-levying country and are spent like any other income.

Tariff liberalization can affect economic efficiency through three main channels. First, in the context of standard trade theory, tariff reductions both reduce the cost of imports for consumers and for producers purchasing traded intermediate inputs, thus producing an *exchange* gain. Second, tariff removal leads firms to direct resources toward those sectors in which the product varieties are expanded by firms in response to the changes occurring on the world market. That is, we have the standard *specialization* gain. Third, tariff reductions have a pro-competitive effect on sellers.

Increased price pressures from imported varieties force incumbent firms to cut price. Surviving firms remain viable by expanding output, thereby moving down their average total cost (ATC) curve. The consequent lower ATC of production creates gains from the *realization of economies of scale*.

*(viii) Model closure and implementation*

We assume in the model that aggregate expenditure varies endogenously to hold aggregate employment constant. This closure is analogous to the Johansen closure rule (Deardorff and Stern, 1990, pp. 27-29). The Johansen closure rule consists of keeping the requirement of full employment while dropping the consumption function. This means that consumption can be thought of as adjusting endogenously to ensure full employment. However, in the Michigan Model, we do not distinguish consumption from other sources of final demand. That is, we assume instead that total expenditure adjusts to maintain full employment.

The model is solved using GEMPACK (Harrison and Pearson, 1996). When policy changes are introduced into the model, the method of solution yields percentage changes in sectoral employment and certain other variables of interest. Multiplying the percentage changes by the absolute levels of the pertinent variables in the database yields the absolute changes, positive or negative, which might result from the various liberalization scenarios.

*(ix) Interpreting the modeling results*

To help the reader interpret the modeling results, 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.

Worldwide, these changes cause increased international demand for all sectors. World prices increase most for those sectors where trade barriers fall the most.<sup>5</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,<sup>6</sup> 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

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<sup>5</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>6</sup> The equivalent variation is a measure of the amount of income that would have to be given or taken away from an economy before a change in policy in order to leave the economy as well off as it would be after the policy change has taken place. If the equivalent variation is positive, it is indicative of an improvement in economic welfare resulting from the policy change.

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. All of these effects make it more likely that countries will gain from liberalization in ways that are shared across the entire population.<sup>7</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 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>8</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

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<sup>7</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>8</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 may generate a cut in price and increase in supply to excluded countries. The terms of trade of FTA members could possibly 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).

of equilibrium conditions rather than relationships that vary over time.<sup>9</sup> The model results 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>10</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.

#### b. Benchmark Data

Needless to say, the data needs of this model are immense. Apart from numerous share parameters, the model requires various types of elasticity measures. Like other CGE models, most of our data come from published sources.

As mentioned above, 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,

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<sup>9</sup> As noted above, 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 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>10</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.

2002). The reference year for this GTAP database is 1997. From this source, we have extracted the following data, aggregated to our sectors and countries/regions:<sup>11</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
- 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, and there is need also for estimates of sectoral employment.<sup>12</sup> The employment data, which have been adapted from a variety of published sources, will be noted in tables below.

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>13</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

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<sup>11</sup> Details on the sectoral and country/region aggregation are available from the authors on request.

<sup>12</sup> Notes on the construction of the data on the number of firms and for employment are available from the authors on request.

<sup>13</sup> The underlying data are drawn from World Bank (2003) 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).

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>14</sup> We have made 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 to be presented below, we use these re-adjusted data as the starting point to carry out our liberalization scenarios for the U.S. bilateral FTAs 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 by sector on a global and bilateral basis in Table 1.<sup>15</sup> The post-Uruguay Round tariff rates on agriculture, mining, and manufactures are applied rates and are calculated in GTAP by dividing tariff revenues by the value of imports by sector. For the United States, the highest import tariffs for manufactures are recorded for textiles, wearing apparel, and leather products & footwear, both globally and bilaterally. The import tariff rates on manufactures are noticeably higher for the CAC and especially for Morocco, while Australia's manufactures tariffs resemble those of the United States.

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<sup>14</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 projected 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 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.

<sup>15</sup> The basic GTAP 5.4 data that are available refer to an aggregate entitled Central America and the Caribbean (CAC). Since these data cannot be broken down for the individual countries in the region, it is assumed throughout this paper that the CAC aggregate data can be interpreted as a proxy for the CAFTA members that comprise the five Central American countries, Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua, together with the Dominican Republic. According to the IMF *Direction of Trade* for 1997-2001, the CAFTA countries plus the Dominican Republic accounted for about two-thirds of U.S. exports to the CAC region and around 75% of U.S. imports in the years covered. These countries also accounted for about 57% of the total population and labor forces for the CAC region. We trust therefore that the GTAP 5.4 data can be considered as reasonable proxies for the CAFTA member countries.

The services barriers 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). 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 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. It can be seen that 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 may considerably restrain international services transactions.<sup>16</sup>

The value and shares of U.S. exports and imports for 1997 are broken by sector according to destination and origin in Table 2. Sectoral tariff rates and exports/imports for the FTA partners are provided in Table 3. U.S. exports to the CAC are about 2% of total exports and are concentrated in wearing apparel, chemicals, and machinery & equipment, most of which have the characteristics of inputs into the production process. U.S. exports to Australia are less than 2% of

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<sup>16</sup> As will be noted below, services liberalization in the context of the Michigan Model results in significantly larger welfare effects compared to models using the GTAP structure that do not include services liberalization or that have smaller magnitudes of the estimated services barriers.

total exports, and nearly two-thirds of these exports consist of chemicals, transportation equipment, and machinery & equipment. U.S. exports to Morocco are about 0.1% of total exports and are concentrated in agriculture and food, beverages & tobacco, transportation equipment, machinery & equipment, and government services. U.S. imports from the CAC are less than 2% of total imports and are comprised primarily of agricultural products, food, beverages & tobacco, textiles, wearing apparel, and machinery & equipment. U.S. imports from Australia are less than 1% of total imports and are concentrated especially in services, food, beverages & tobacco, and metal products. U.S. imports from Morocco are less than 0.1% of total imports and consist to a large extent of services, mining, food, beverages, & tobacco, wearing apparel, and machinery & equipment.

Employment by sector is indicated in Table 4. Nearly 80% of U.S. employment is in the services sectors and the remainder spread across agriculture and manufacturing. About 30% of employment in the CAC is in agriculture and in food, beverages & tobacco, and nearly 60% in services. In Australia, services account for about 80% of total employment, and agriculture for 5.1%. In Morocco, about 68% of total employment is in services, 10% in agriculture and food, beverages & tobacco, and nearly 10% in textiles and wearing apparel.

An indication of the stock of U.S. foreign direct investment abroad for 2002 is given in Table 5. Detailed data are available only for Australia, which can be seen to account for about 2.5% of the total U.S. FDI abroad. Mining accounts for 23%, manufactures are 30%, and services are 28% of the total for Australia. Sectoral details are not given for the CAC and Morocco because of disclosure limitations. As noted in the USTR's 'Interim Environmental Review' (2003b, p. 8) for CAFTA, available on the USTR website ([www.ustr.gov](http://www.ustr.gov)), U.S. FDI was \$3.0 billion in the CAFTA member countries in 2001. According to Belghazi et al. (2002, p. 37), the United States was Morocco's third largest investor (9%), after France (46%) and Portugal (10%), based on cumulative data for direct investments and loans combined for the period 1997-2001. The U.S. share largely reflects a sizable investment made in the energy and mining sector

in 1997. Services are estimated to account for nearly three-quarters of foreign investment in Morocco, with the largest investments having been made in 1999-2001 in telecommunications.

### 3. AN ASSESSMENT OF THE ECONOMIC EFFECTS OF THE U.S.-CAFTA

#### a. The Main Features of the CAFTA

The draft texts of the CAFTA, which are available on the official USTR website ([www.ustr.gov](http://www.ustr.gov)), contain 22 detailed provisions, three annexes, and side letters. For our purposes, the main features of the CAFTA are summarized succinctly in the USTR Press Release 04-03 (January 25, 2004), and are as follows:<sup>17</sup>

- *New Opportunities for U.S. Workers and Manufacturers:* More than 80 percent of U.S. exports of consumer and industrial goods will become duty-free in Central America immediately, with remaining tariffs phased out over 10 years. Key U.S. export sectors will benefit, such as information technology products, agricultural and construction equipment, paper products, chemicals, and medical and scientific equipment.
- *Expanded Markets for U.S. Farmers and Ranchers:* More than half of current U.S. farm exports to Central America will become duty-free immediately, including high quality cuts of beef, cotton, wheat, soybeans, key fruits and vegetables, processed food products, and wine, among others. Tariffs on most remaining U.S. farm products will be phased out within 15 years. U.S. farm products that will benefit from improved market access include pork, dry beans, vegetable oil, poultry, rice, corn, and dairy products.
- *Textiles and Apparel:* Textiles and apparel will be duty-free and quota-free immediately if they meet the Agreement's rule of origin, promoting new opportunities for U.S. and Central American fiber, yarn, fabric and apparel manufacturing. The agreement's benefits for textiles and apparel will be retroactive to January 1, 2004. An unprecedented provision will give duty-free benefits to some apparel made in Central America that contains certain fabrics from NAFTA partners Mexico and Canada. This provision encourages integration of the North and Central American textile industries, and is a step to prepare for an increasingly competitive global market.
- *Access to Services:* The Central American countries will accord substantial market access across their entire services regime, offering new access in sectors such as telecommunications, express delivery, computer and related services, tourism, energy, transport, construction and engineering, financial services, insurance, audio/visual and entertainment, professional, environmental, and other sectors. Central American

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<sup>17</sup> For more information, see [www.ustr.gov](http://www.ustr.gov), 'Trade Facts: Free Trade with Central America: Summary of the U.S.-Central America Free Trade Agreement,' December 17, 2003. The Report of the Advisory Committee for Trade Policy and Negotiations on the CAFTA and draft texts of the CAFTA, including the Dominican Republic, are available on the USTR website. The CAFTA is to be considered for approval by the U.S. Congress in 2005.



countries have agreed to change dealer protection regimes and loosen restrictions that lock U.S. firms into exclusive or inefficient distributor arrangements.

- *A Trade Agreement for the Digital Age:* State-of-the-art protections and non-discriminatory treatment are provided for digital products such as U.S. software, music, text, and videos. Protection for U.S. patents, trademarks and trade secrets is strengthened.
- *Strong Protections for Worker Rights:* Goes beyond Chile and Singapore FTAs to create a three-part strategy on worker rights that will ensure effective enforcement of domestic labor laws, establish a cooperative program to improve labor laws and enforcement, and build the capacity of Central American nations to monitor and enforce labor rights.
- *An Innovative Environment Chapter:* Goes beyond Chile and Singapore FTAs in seeking to develop a robust public submissions process to ensure that views of civil society are appropriately considered, and for benchmarking of environmental cooperation activities and input from international organizations.
- *Strong Protections for U.S. Investors:* The Agreement establishes a secure, predictable legal framework for U.S. investors in Central America.
- *Open and Fair Government Procurement:* Provides ground-breaking anti-corruption measures in government contracting. U.S. firms are guaranteed a fair and transparent process to sell goods and services to a wide range of Central American government entities.'

In addition to the foregoing, the full CAFTA includes provisions for rules of origin, customs administration and trade facilitation, sanitary and phytosanitary measures, technical barriers to trade, trade remedies, transparency, and dispute settlement procedures. While the CAFTA thus reflects a myriad of objectives from the U.S. perspective, there is an evident focus on expanding the market access for U.S. goods and services and shaping the regulatory environment in the CAFTA member countries to conform to U.S. principles and institutions. By the same token, the CAFTA members may be attracted by the more favorable access that the agreement will provide for their exports to the U.S. market and the opportunities to improve their economic efficiency and to design and implement more effective domestic institutions and development policies.

We turn now to our computational analysis, which will focus on the economic effects of the removal of the trade barriers on agricultural products, manufactures, and services that will be

removed as the result of the CAFTA.<sup>18</sup> While, as noted, many barriers are to be removed immediately, some barriers will be phased out over longer periods of time. For modeling purposes, however, we assume that all barriers are removed at the same time rather than in phases.

#### b. Computational Results of the CAFTA

The global welfare effects of the bilateral removal of agricultural protection, manufactures tariffs, and services barriers are indicated in Table 6a. It can be seen that there are negligible effects on economic welfare with the bilateral removal of agricultural protection. U.S. economic welfare is increased by \$3.7 billion with the bilateral elimination of manufactures tariffs and \$13.5 billion with the bilateral elimination of services barriers. The total improvement of U.S. economic welfare is \$17.3 billion, which is 0.17% of U.S. GNP. Economic welfare in the CAC increases by \$3.5 billion with the bilateral elimination of manufactures tariffs and \$1.8 billion with the bilateral elimination of services barriers. The total improvement in CAC economic welfare is \$5.3 billion, which is 4.4% of CAC GNP.<sup>19,20</sup> It can also be seen that the CAFTA is apparently

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<sup>18</sup> In anticipation of the presentation of our computational results, it is of interest to cite Harrison et al. (2003), who have summarized the main conclusions that can be drawn from a number of CGE modeling studies of preferential trading arrangements (PTAs) by themselves and others. Among their conclusions are the following: (1) countries excluded from a PTA almost always lose; (2) market access is a key determinant of the net benefits of a PTA; (3) for Southern countries, North-South PTAs offer a beneficial increase in competition in their home markets and involve little increase in the supply price of Northern country sales in Southern countries; (4) for some countries, ‘additive regionalism’ may result in larger gains than unilateral trade liberalization; (5) trade liberalization may be pro-poor in developing countries but may nonetheless require safety nets for some displaced workers; and (6) dynamic effects are not expected to reverse the main conclusions of static modeling.

<sup>19</sup> Andriamananjara and Tsigas (2003) use the standard GTAP model to analyze the welfare effects of bilateral U.S. FTAs with 65 countries/regions. This version of the GTAP model assumes constant returns to scale, perfect competition, and product 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. There is reason to believe accordingly that welfare changes in this version of the GTAP model may reflect strong terms-of-trade effects. This is evident in the results of a U.S.-CAC FTA, which is estimated to increase U.S. economic welfare by \$1.6 billion (.02% of GDP) and CAC welfare by \$2.2 billion (2.4% of GDP). The decomposition of the results by the authors in their Appendix Table indicates that a substantial proportion of these welfare changes is due to changes in terms of trade. DeRosa and Gilbert (2004) use the standard GTAP model to analyze U.S. bilateral FTAs with 13 prospective partner countries, and their results similarly suggest the dominance of terms-of-trade effects. See \_\_\_\_\_ goods tariffs, as well as USITC (2004b) that contains both GTAP economywide and

trade diverting to a small extent for most of the non-member countries/regions shown. Thus, for example, Japan's economic welfare declines by \$1.4 billion (-0.02% of GNP) and the EU and EFTA welfare by \$3.4 billion (-0.03% of GNP). Global economic welfare increases by \$15.7 billion.

The sectoral effects on exports, imports, output, and employment are indicated in Table 6b. The largest percentage increases in U.S. sectoral exports are in food, beverages & tobacco, textiles, wearing apparel, and leather products & footwear. The largest percentage increases in U.S. imports, except for leather products & footwear, are in these same sectors. For the CAC, there are sizable percentage increases in the exports of food, beverages & tobacco, textiles, wearing apparel, leather products & footwear, and services. What is striking are the large percentage increases in CAC imports in all sectors, which reflects the asymmetry between the

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selected sectoral effects for the United States, which are noticeably smaller compared to the results based on the Michigan Model. See also Hilaire and Yang (2002), who use the GTAP model to analyze U.S. bilateral FTAs with Chile, CAC, and Australia, concentrating on the removal of goods tariffs.

In contrast to GTAP studies, in the Michigan Model, manufactures and services products are differentiated 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>20</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.

It may be noted, finally, that the relative benefits to the CAC countries may reflect the large shares of CAC exports and imports vis-à-vis the United States.

significantly higher rates of protection in the CAC as compared to the United States noted in Table 1.

Gross output is increased in all of the U.S. sectors, except for textiles and wearing apparel. The changes in sectoral outputs are reflected in the employment impacts. For the United States, there are employment declines of 5,133 workers in textiles and 14,006 workers in apparel, which are -0.55% and -1.77%, respectively, of initial employment. There is increased employment in practically all of the other U.S. sectors, but the absolute and percent changes are small. The CAFTA will thus have comparatively negligible effects on U.S. sectoral output and employment.

In the CAC, there are sizable percentage increases in output in textiles, wearing apparel, and leather products & footwear. These are sectors in which the CAC countries can be presumed to have a comparative advantage. Employment increases by 53,741 workers in textiles, 230,663 workers in wearing apparel, and 9,518 workers in leather products & footwear. The percentage increases in employment in these sectors are 28%, 42%, and 15%, respectively. It is noteworthy that there are employment declines in all of the other sectors, as the expansion of the relatively labor-intensive industries attracts workers from the rest of the economy. These employment reallocations are apparently quite substantial and suggest that the CAFTA may result in significant worker displacement in the process of adjustment brought about by elimination of the import barriers.

Changes in bilateral trade flows associated with the CAFTA are indicated in Table 6c. It can be seen that U.S. exports to the CAC aggregate increase by \$8.1 billion and U.S. imports increase by \$9.8 billion. There are pervasive indications of trade diversion as shown by the reductions in the bilateral trade flows involving many of the other countries/regions.

Our modeling results in Tables 6a-6c reflect the bilateral elimination of barriers to trade in agricultural products, manufactures, and services. As noted in the summary of the main features of the CAFTA, there are a number of non-trade issues that are covered as well. No

allowance has been made for these non-trade benefits, although the relatively small size of the benefits calculated from bilateral free trade suggests that the non-trade benefits are likely also to be fairly small. No account has been taken of possible increases in U.S. foreign direct investment in the CAFTA members in response to the incentives provided by the bilateral liberalization, and no allowance has been made for possible increases in capital formation and economic growth and improvements in productivity in the United States and the CAFTA countries. Our modeling results may thus constitute a lower bound to the welfare changes due to the CAFTA bilateral liberalization. But it remains unclear how significant the non-trade and growth effects of the CAFTA may be, and there may still remain issues of trade diversion..

#### 4. AN ASSESSMENT OF THE ECONOMIC EFFECTS OF THE U.S.-AUSTRALIA FTA

##### a. The Main Features of the U.S.-Australia FTA

The negotiation of the U.S.-Australia FTA was completed in February 2004. It was approved by the U.S. Congress later in the year and takes effect on January 1, 2005. As noted above, a common framework is used for all of the bilateral FTAs being negotiated by the United States along the same lines as in our description of the main features of the CAFTA. This is evident from the November 13, 2002 text, reproduced on the USTR website, of the ‘Notification Letters to Congressional Leaders’ sent from USTR Robert B. Zoellick notifying the intention to initiate negotiations for an FTA with Australia. Of course, the details for particular FTA negotiations will vary depending on the partner country and the U.S. interests.<sup>21</sup>

In the case of the U.S.-Australia FTA, according to the aforementioned ‘Notification Letters’ (pp. 1-2), the primary U.S. objectives are as follows:

- ‘The increased access to Australia’s market that an FTA would provide would further boost trade in both goods and services, enhancing employment opportunities in both

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<sup>21</sup> See USTR, ‘Trade Facts: Free Trade ‘Down Under’,’ Press Release 04-08, The Report of the Advisory Committee for Trade Policy and Negotiations, and the draft texts of the FTA, all of which are available on the USTR website ([www.ustr.gov](http://www.ustr.gov)).

countries. An FTA also would encourage additional foreign investment between the United States and Australia, adding to the many jobs that the significant investment flows between the two countries currently support. In addition, an FTA would result in greater business integration, especially in the information technology sector, increasing efficiency and the competitiveness of U.S. industry.

- ...an FTA with Australia is of particular interest and concern to the U.S. agriculture community. Making progress on a number of issues of concern to U.S. agriculture will be essential for the successful conclusion of these negotiations. In this regard, we will work hard to facilitate the export of U.S. food and agricultural products to the Australian market and to address the full range of issues facing U.S. agriculture exports. As an example, several U.S. agricultural interests have raised serious concerns about Australia's use of phytosanitary (SPS) measures as a means of restricting trade.
- ...We will also seek improved market access through eliminating high tariffs on industrial goods of export interest to the United States. ...we will also seek to improve protection of intellectual property rights in Australia, eliminate restrictions that make it difficult for U.S. service providers to operate in the Australian market, and address other barriers to U.S. goods and services.
- ...FTA negotiations with Australia will further deepen the already close cooperation between the United States and Australia in advancing our objectives for the multilateral negotiations currently underway in the World Trade Organization (WTO). ...FTA negotiations will provide the opportunity for even closer cooperation in the WTO agriculture negotiations in particular.
- ...In addition to complementing our partnership with Australia on global and Asia-Pacific trade issues, an FTA would also further deepen the ties between our societies and strengthen the foundation of our security alliance. We are already partners in the areas of intelligence, military inter-operability, command-and-control, and security planning. An FTA would facilitate the building of new networks that enhance our Pacific democracies' mutual interests, shared experiences, and promotion of common values so that we can work together more effectively with third countries.'

In the course of negotiating the U.S.-Australia FTA, there was considerable debate in Australia about the advantages and limitations of the FTA from the Australian perspective as well as some CGE modeling studies of the effects of the FTA.<sup>22</sup> Much of the opposition to the FTA stemmed from the concerns that it may undermine Australia's traditional reliance on the pursuit of the benefits from multilateral liberalization in the WTO framework, the preferential arrangements may be welfare reducing for Australia and non-member countries, Australian consumers might face higher pharmaceutical prices, and Australia's security interests may be

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<sup>22</sup> Some pertinent references, which were provided by Philippa Dee, include: ACIL Consulting (2003); Berkelmans et al. (2001); Bhagwati and Garnaut (2003); Centre for International Economics (2003); Centre for Policy Studies (2003); Cutbush (2003); Garnaut (2003a,b,c,d,e); and Kasper (2002). See also Stoler (2003).

compromised rather than enhanced by closer bilateral relations with the United States. In any event, we turn now to a presentation and discussion of our modeling results for the U.S.-Australia FTA.

#### b. Computational Results of the U.S.-Australia FTA

The global welfare effects of the bilateral removal of U.S.-Australia agricultural protection, manufactures tariffs, and services barriers are indicated in Table 7a. It can be seen that there are negligible effects from the bilateral removal of agricultural protection. The removal of manufactures tariffs increases U.S. welfare by \$2.6 billion (0.03% of GNP) and Australia's welfare by \$0.5 billion (0.10%). The largest welfare increases come from services liberalization, with an increase in U.S. welfare of \$16.8 billion (0.17% of GNP) and an increase in Australia's welfare of \$4.9 billion (0.98%). The total welfare increases are \$19.4 billion (0.20% of GNP) for the United States and \$5.4 billion (1.1% of GNP) for Australia.<sup>23</sup> There are many instances of trade diversion for non-partner countries, although the absolute and percentage changes are small. Global economic welfare rises by \$23.1 billion.

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<sup>23</sup> Andriamananjara and Tsigas (2003, p. 15) estimate that a U.S.-Australia FTA will increase Australia's economic welfare by \$44 million (.01% of GDP) and U.S. welfare by \$396 million (.005% of GDP). The terms-of-trade changes dominate these results, which, in any case, are considerably lower than those based on the Michigan Model just noted.

There are a number of other CGE modeling studies that have focused explicitly on the Australia-U.S. FTA. Using a modified version of the standard version of the GTAP model with some dynamic features and a variety of additional data inputs adapted for Australia, the Centre for Policy Studies (2003) estimates that Australian GDP will increase in the long run by 0.17% and U.S. GDP will increase by 0.004%. The Centre for International Economics (2001) uses both the standard GTAP model and the dynamic APG-Cubed model. The GTAP estimates (p. 35) indicate an increase in real GDP of 0.34% for Australia and 0.02% for the United States, as compared to increases of 1.1% and 0.2%, respectively, in the results based on the Michigan Model. The net present value of the increase in real GDP (1999 dollars) between 2000 and 2020 (p. 25), using the APG-Cubed dynamic model, is \$15.5 billion for Australia and \$16.9 billion for the United States. These results suggest that the long-run gains from the Australia-U.S. FTA are greater than the results based on the static model. ACIL Consulting (2003) has used the standard GTAP model with some data modifications and assumptions about the phasing of the Australia-U.S. FTA. They conclude that Australia will be worse off with the FTA, experiencing a decline of 0.09% in real GNP between 2005 and 2010. This result has been challenged in a CIE (2003) comment that points out some contradictions, mistakes, and misrepresentations in the ACIL study. Hilaire and Yang (2003) use the GTAP model to analyze the bilateral removal of U.S.-Australia goods tariffs. They find that U.S. welfare rises to a small extent while Australian and global welfare decline. USITC (2004a) presents GTAP economywide and selected sectoral effects for the United States, which are considerably smaller than the results based on the Michigan Model.

The sectoral effects are shown in Table 7b. There are relatively small increases in U.S. exports for all sectors. Australia's agricultural and mining and several of the manufactures sectors show reductions in exports, and there are increases in Australia's exports of food, beverages & tobacco, textiles, wearing apparel, and services. The increases in U.S. imports are concentrated in agriculture, food, beverages & tobacco, textiles, and services, and there are small declines across most of the other manufactures sectors. Australia's imports are seen to increase in all sectors, reflecting the relatively higher trade barriers being removed compared to the United States. U.S. output rises by relatively small percentages in most sectors, while Australian output increases and declines appear broadly to reflect the changes in sectoral exports.

U.S. employment changes reflect the output changes, with rather small absolute and percentage increases in agriculture, mining, and manufactures and declines in food, beverages & tobacco, and in services. For Australia, there are small absolute and percentage employment increases in food, beverages & tobacco and in trade & transport and other private services and declines in agriculture, mining, and across virtually all manufactures.

Changes in bilateral trade flows are indicated in Table 7c. U.S. exports to Australia increase by \$2.1 billion and imports from Australia increase by \$3.5 billion. As with the CAFTA, there is noteworthy evidence of trade diversion for most of the other trading partners.

It thus appears that the U.S.-Australia FTA will have fairly small effects on the aggregate economic welfare and the sectoral trade, output, and employment of the two countries. As mentioned above, there are several non-trade issues that should be taken into account in evaluating the FTA, as well as the potential changes in foreign direct investment, capital formation, productivity, and technical change. But the questions again are how significant these various changes might be as compared to the rather small effects stemming from the bilateral elimination of the trade barriers in the FTAs, and how significant the effects of trade diversion might be.



## 5. AN ASSESSMENT OF THE ECONOMIC EFFECTS OF THE U.S.-MOROCCO FTA

### a. The Main Features of the U.S.-Morocco FTA

The U.S.-Morocco FTA was signed and approved by the U.S. Senate in July 2004. As with the other U.S. FTAs, there was a common framework guiding the negotiations, with the details of course reflecting the concerns of the United States and Morocco. The U.S. objectives in pursuing an FTA with Morocco were stated in the January 21, 2003 ‘Notification Letters to Congress,’ reproduced on the USTR website ([www.ustr.gov](http://www.ustr.gov)) and sent from USTR Robert B. Zoellick notifying the intention to initiate negotiations for an FTA with Morocco. The primary U.S. objectives were as follows (p. 1):

- ‘...it is in the United States’ interest to pursue a free trade agreement with Morocco. An FTA will create improved commercial and market opportunities for U.S. exports to Morocco and to North and West Africa. It will foster economic growth, increase living standards, and create higher paying jobs in the United States and Morocco by reducing and eliminating barriers to trade, while reinforcing American values in the region. The FTA will also strengthen our relations with a country that was one of the first to condemn the September 11 terrorist attacks and has stood by our side ever since.
- Trade liberalization with Morocco will support this Administration’s commitment to promote more tolerant, open, and prosperous Muslim societies. A U.S.-Morocco FTA will support the significant economic and political reforms underway in Morocco, enhance the Moroccan government’s efforts to attract new trade and investment, ... promote sustainable development...and help create better jobs for Morocco’s citizens. For both Morocco and the United States of course implementation of the agreement will be critical to realizing its benefits. The Administration therefore intends to target ongoing development assistance and trade-related technical assistance to help Morocco follow through the commitments it will make as part of the FTA.’

It is also mentioned in USTR, ‘Trade Facts’ (p. 2, January 21, 2003), which is available on the USTR website, that:

‘Morocco has begun implementing an association agreement with the European Union (EU), which provides preferential tariff treatment for most EU industrial and some agricultural exports to Morocco, putting American producers at a comparative disadvantage. The FTA will improve U.S. exporters’ competitiveness in this market.’<sup>24</sup>

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<sup>24</sup> According to Belghazi et al. (2002, p. 28), following the implementation of the Morocco-EU Association Agreement in March 2001, the overall, trade-weighted tariff advantage favoring the EU was an estimated 3.3% in 2001. But for some particular agricultural products and manufactures, the preferences were to become much greater over the 12-year phase-in period. Thus, there may be a potential for trade diversion that would favor EU suppliers relative to the United States. A U.S.-Morocco FTA would accordingly diminish the EU tariff advantages and place the United States on a more equal footing in exporting to

It is evident from the statement of these objectives that the United States had a variety of economic, political, and national security interests in undertaking an FTA with Morocco. We turn now to consider in particular the effects of the trade liberalization in the U.S.-Morocco FTA.

#### b. Computational Results of the U.S.-Morocco FTA

As noted in Table 2 above, U.S. trade in goods and services with Morocco is rather small, less than \$1 billion for U.S. exports to and imports from Morocco in the 1997 base data. More detail on Morocco's trade broken down by sector and destination/origin is provided in Table 3. It can be seen that the U.S. shares in Morocco's exports are 10.5% in mining products, 13.3% in machinery & equipment, 20-30% in services, and relatively small in the remaining sectors. By far the largest proportions of Morocco's exports of agricultural products and manufactures are with the EU and EFTA. On the import side, the United States accounted for 18% of Morocco's agricultural imports, 15% of food, beverages & tobacco, 11% of non-metallic mineral products, 21% of trade & transport services, 19% of other private services, and 68% of government services. But for imports as well, the EU and EFTA account for very substantial proportions of Morocco's imports of manufactures.

The global welfare effects of the U.S.-Morocco FTA are indicated in Table 8a. The effects of removal of bilateral agricultural protection are negligible. The bilateral elimination of manufactures tariffs increases U.S. welfare by \$0.4 billion and Morocco's welfare by \$0.2 billion (0.5% of GNP). The removal of services barriers increases U.S. welfare by \$5.6 billion (0.05% of GNP) and Morocco's welfare by \$0.6 billion (1.4% of GNP). The total welfare increase for the United States is \$6.0 billion (0.05% of GNP) and \$0.9 billion for Morocco (2.0% of GNP).<sup>25</sup> Global welfare is increased by \$7.5 billion.

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Morocco. But in view of the limited U.S. shares of Morocco's imports compared to the EU and EFTA, it may require special efforts in the future by U.S. firms to increase their exports to Morocco in competition with European firms.

<sup>25</sup> Andriamananjara and Tsigas (2003, p. 16) estimate that the U.S.-Morocco FTA will reduce Morocco's economic welfare by \$108 million (-0.3% of GDP) and will increase U.S. welfare by \$161 million (.002%

The sectoral results are presented in Table 8b. There are negligible percentage changes in U.S. exports and imports. Morocco's exports of agricultural products and leather products & footwear are reduced somewhat, and there are increases of 1.5-3% in the exports of manufactures, and increases of 4.7-21% in services. Morocco's imports are increased to some extent in all sectors except metal products, with the largest increases particularly in services. There are negligible changes in U.S. sectoral outputs. Moroccan output declines in agricultural products, food, beverages & tobacco, and leather products & footwear, and rises in other sectors, ranging between 0.5% for transportation equipment to 1.9% for machinery & equipments. U.S. employment rises by 1,314 workers in agriculture and 389 workers in government services, and there are small declines in a number of the other sectors. The percentage changes in U.S. sectoral employment are thus negligible. For Morocco, the largest employment increases are in trade & transport, textiles, and wearing apparel, and the largest declines in agriculture, food, beverages & tobacco, and government services.

The changes in bilateral trade are shown in Table 8c. U.S. exports to Morocco increase by \$658 million and imports from Morocco by \$437 million. The imports of the EU/EFTA from Morocco increase by \$124 million and EU/EFTA exports to Morocco decline by \$78 million.

As noted above, the United States had a number of interrelated objectives in negotiating an FTA with Morocco. The effects of the bilateral elimination of barriers on agricultural products, manufactures, and services are seen to be fairly small, given especially the comparatively small size of existing trade between the United States and Morocco. It is conceivable that U.S. trade with Morocco will increase in the future as the bilateral relationship is further developed. It may also be the case that the FTA will serve to reinforce the process of economic reform and economic development in Morocco over time and enhance U.S. economic and national security influence in the wider region of North and West Africa and the Middle East.

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of GDP). Terms-of-trade effects are again evidently dominant. See also USITC (2004c) for some GTAP economywide and selected sectoral effects. The overall welfare effects in these studies are much lower than the results based on the Michigan Model.

## 6. WELFARE COMPARISONS OF BILATERAL FTAS, UNILATERAL FREE TRADE, AND GLOBAL FREE TRADE

Having now analyzed the economic effects of the bilateral FTAs between the United States and CAFTA members, Australia, and Morocco, we now consider whether the economic interests of these countries would be more or less enhanced by unilateral free trade and global (multilateral) free trade as compared to the adoption of bilateral FTAs. The welfare comparisons are indicated in Table 9 and can be summarized as follows:

1. U.S. unilateral free trade increases U.S. economic welfare by \$320 billion (3.2% of GNP). In comparison, the three FTAs combined increase U.S. welfare by \$27 billion. Global welfare rises by \$507 billion with U.S. unilateral free trade compared to \$47 billion for the three FTAs combined. The U.S. adoption of unilateral free trade would thus have a very much larger effect on U.S. and global economic welfare than the bilateral FTAs, and there would be significant welfare increases for the FTA partners even without the FTAs.
2. Unilateral free trade increases CAC economic welfare by \$6.2 billion, which is greater than the \$5.3 billion resulting from CAFTA. Global welfare with unilateral free trade rises by \$34 billion compared to \$16 billion for the CAFTA.
3. Unilateral free trade increases Australia's economic welfare by \$4.6 billion compared to \$5.4 billion for the U.S.-Australia FTA. Global welfare rises by \$19 billion for unilateral free trade and \$23 billion for the FTA.
4. Unilateral free trade increases Morocco's economic welfare by \$1.6 billion compared to \$0.9 billion for the U.S.-Morocco FTA. Global welfare rises by \$11 billion with Moroccan unilateral free trade compared to \$8 billion with the FTA.

These results thus suggest that U.S. and global economic welfare would rise significantly more with U.S. unilateral free trade as compared to the bilateral U.S. FTAs. The CAFTA members have a significantly larger welfare gain from unilateral free trade as compared to the CAFTA. Australia's welfare gains are somewhat greater for the FTA as compared to unilateral free trade. Morocco's welfare gains from unilateral free trade are about double what they are from the bilateral FTA. Global welfare increases noticeably more with unilateral free trade for CAFTA and Morocco and is about the same for Australia as compared to the FTAs.

The welfare effects of global (multilateral) free trade that are shown in Table 9 can be summarized as follows:

1. Global free trade increases U.S. economic welfare by \$543 billion (5.4% of GNP). This is greater than the \$320 billion increase in U.S. economic welfare resulting from U.S. unilateral free trade. With global free trade, economic welfare rises by \$2.4 trillion. The components of the increases in welfare from global free trade are \$54 billion for agriculture, \$702 billion for manufactures, and \$1.7 trillion for services. These welfare increases greatly exceed the increases associated with the U.S. bilateral FTAs.
2. With global free trade, CAC economic welfare increases by \$18 billion (15% of GNP), as compared to a welfare increase of \$6.2 billion for unilateral free trade and \$5.3 billion for CAFTA.
3. With global free trade, Australia's economic welfare increases by \$30 billion (6% of GNP). This compares to a welfare increase of \$4.6 billion with unilateral free trade for Australia and \$5.4 billion for the U.S.-Australia FTA.
4. With global free trade, Morocco's economic welfare increases by \$5 billion (11% of GNP) as compared to \$1.6 billion for unilateral free trade and \$0.9 billion for the U.S.-Morocco FTA.

These calculations clearly show that multilateral trade liberalization offers potentially far greater increases in economic welfare for the United States, its FTA partner countries, and the other countries/regions that are covered in the global trading system.<sup>26</sup> 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 FTAs that have been analyzed and the gains from the possible adoption of unilateral free trade by the United States and other countries involved. This would almost certainly remain true even if there are other benefits stemming from the FTAs that have not been taken into account in the Michigan Model simulations.

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<sup>26</sup> Andriamananjara and Tsigas (2003) also calculate the welfare effects of global trade liberalization using the standard GTAP model. Their results (pp. 15-16) indicate that Australia's welfare would rise by \$2.4 billion (0.6% of GDP), CAC welfare would rise by \$2.1 billion (2.3% of GDP), and Morocco's welfare would rise by \$778 million (2.3% of GDP). They do not report the terms-of-trade components for these effects, but presumably they are substantial. In any case, the welfare effects of global trade liberalization using the Michigan Model are much higher than the welfare effects based on the standard GTAP model used by Andriamananjara and Tsigas.

## 7. SUMMARY AND CONCLUSIONS

This paper has been designed to assess the economic effects of the U.S. bilateral FTAs negotiated with Central America and the Dominican Republic, Australia, and Morocco. 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 data for the model are based on Version 5.4 of the GTAP database for 1997 together with some data derived from other sources.

The United States uses a common framework covering the issues to be negotiated in each of its bilateral FTA negotiations. This framework follows along the lines of the North American Free Trade Agreement (NAFTA) negotiated in 1992-93, and it has been updated and adapted for the new FTAs. The main negotiating issues in the FTAs cover bilateral removal of tariffs and other barriers to trade in agricultural products, manufactures, and services, rules of origin, intellectual property rights, worker rights, environmental standards, investment, government procurement, customs administration and trade facilitation, trade remedies, and dispute settlement procedures. The actual negotiations of course reflect the particular conditions and interests of the United States and partner countries.

For modeling purposes, the focus has been on the effects of the bilateral removal of trade barriers, which lend themselves most readily to quantification. The non-trade aspects of the FTAs may also be important but are intrinsically more difficult to incorporate into a modeling framework. This is the case as well for the possible increases in foreign direct investment and the rate of economic growth and improvements in productivity that may be induced over time as the consequence of the FTAs. The computational results presented for the bilateral FTAs are therefore best interpreted as providing a lower bound for the potential benefits involved. But since these benefits have been shown mostly to be rather small for the United States and partner countries in both absolute and relative terms, the non-trade and dynamic benefits of the FTAs are

unlikely to alter these results significantly. Furthermore, we may possibly have underestimated the negative effects of trade diversion resulting from the FTAs, since, because of the lack of information, we did not take rules of origin and other restrictive measures commonly used in FTAs into account.

To provide some perspective on the results of the FTAs, the model was also used to calculate the effects of unilateral tariff removal by the United States, CAC, Australia, and Morocco. Except for Australia, unilateral free trade would result in much larger increases in economic welfare for the United States, CAC, and Morocco than the bilateral FTAs. Finally, the effects of global (multilateral) free trade were calculated and shown to be far greater for all of the countries as compared to the bilateral FTAs.<sup>27</sup> Our results suggest accordingly that the interests of the WTO member countries could be better served if they were able to overcome their divisiveness and indecisions and to keep the multilateral negotiations on track.<sup>28</sup>

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<sup>27</sup> As mentioned above, the appendix contains a discussion of sensitivity analysis of introducing alternative parameter values in the model and the resulting welfare impacts of trade liberalization.

<sup>28</sup> This conclusion is reinforced in Brown, Kiyota, and Stern (2005) in which the negative effects of overlapping FTAs negotiated or in process by the United States and Japan are contrasted with the benefits that unilateral or multilateral free trade may provide.

## Appendix

### 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, consumers value variety more. 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. Post-Uruguay Round Tariff Rates by Sector for the United States, Central America and the Caribbean (CAC), Australia, and Morocco**  
(Percent)

|                             | United States |      |           |         | CAC    |      | Australia |      | Morocco |      |
|-----------------------------|---------------|------|-----------|---------|--------|------|-----------|------|---------|------|
|                             | Global        | CAC  | Australia | Morocco | Global | U.S. | Global    | U.S. | Global  | U.S. |
| Agriculture                 | 2.7           | 1.0  | 4.0       | 0.1     | 3.1    | 0.4  | 1.6       | 1.8  | 7.1     | 6.9  |
| Mining                      | 0.2           | 0.3  | 0.3       | 0.0     | 1.7    | 3.8  | 0.0       | 0.0  | 0.5     | 2.4  |
| Food, Beverages & Tobacco   | 3.5           | 3.0  | 3.4       | 2.8     | 8.2    | 8.5  | 3.2       | 3.4  | 14.3    | 9.6  |
| Textiles                    | 5.7           | 6.8  | 6.5       | 7.1     | 13.0   | 14.5 | 12.5      | 12.3 | 27.5    | 18.6 |
| Wearing Apparel             | 11.0          | 11.6 | 9.7       | 10.5    | 23.5   | 25.7 | 6.3       | 3.8  | 34.1    | 27.9 |
| Leather Products & Footwear | 7.2           | 4.6  | 4.1       | 3.6     | 13.7   | 16.4 | 11.9      | 12.6 | 23.5    | 0.0  |
| Wood & Wood Products        | 0.3           | 0.5  | 0.8       | 0.7     | 9.9    | 9.8  | 3.0       | 3.2  | 16.8    | 21.9 |
| Chemicals                   | 1.9           | 0.8  | 1.0       | 1.0     | 7.6    | 8.0  | 3.1       | 3.4  | 13.0    | 14.8 |
| Non-metallic Min. Products  | 3.2           | 3.8  | 2.9       | 0.9     | 11.4   | 11.0 | 4.7       | 5.1  | 18.0    | 17.1 |
| Metal Products              | 1.4           | 0.5  | 0.2       | 1.4     | 7.6    | 8.1  | 4.0       | 4.8  | 9.6     | 20.7 |
| Transportation Equipment    | 1.2           | 1.3  | 1.5       | 0.3     | 8.1    | 10.4 | 7.3       | 4.2  | 13.9    | 7.2  |
| Machinery & Equipment       | 1.0           | 0.3  | 1.6       | 0.0     | 5.8    | 5.6  | 3.2       | 3.0  | 10.5    | 11.4 |
| Other Manufactures          | 1.3           | 2.2  | 0.9       | 0.0     | 13.6   | 17.0 | 3.6       | 3.7  | 25.3    | 25.1 |
| Elec., Gas & Water          | 0.0           | 0.0  | 0.0       | 0.0     | 0.0    | 0.0  | 0.0       | 0.0  | 0.0     | 0.0  |
| Construction                | 9.0           | 9.0  | 9.0       | 9.0     | 18.0   | 18.0 | 4.0       | 4.0  | 29.0    | 29.0 |
| Trade & Transport           | 27.0          | 27.0 | 27.0      | 27.0    | 32.0   | 32.0 | 0.0       | 0.0  | 27.0    | 27.0 |
| Other Private Services      | 31.0          | 31.0 | 31.0      | 31.0    | 34.0   | 34.0 | 0.0       | 0.0  | 33.0    | 33.0 |
| Government Services         | 25.0          | 25.0 | 25.0      | 25.0    | 17.0   | 17.0 | 21.0      | 21.0 | 21.0    | 21.0 |

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

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

|                             | U.S. Exports   |               |               |            | U.S. Imports     |               |              |            |
|-----------------------------|----------------|---------------|---------------|------------|------------------|---------------|--------------|------------|
|                             | World          | CAC           | Australia     | Morocco    | World            | CAC           | Australia    | Morocco    |
| Agriculture                 | 35,176         | 1,098         | 109           | 128        | 18,602           | 2,280         | 181          | 15         |
| Mining                      | 6,421          | 26            | 22            | 6          | 69,939           | 664           | 413          | 72         |
| Food, Beverages & Tobacco   | 30,541         | 1,464         | 281           | 75         | 28,813           | 1,421         | 898          | 41         |
| Textiles                    | 11,485         | 1,362         | 159           | 11         | 21,514           | 1,725         | 169          | 4          |
| Wearing Apparel             | 6,847          | 2,428         | 35            | 4          | 38,335           | 5,443         | 45           | 62         |
| Leather products & Footwear | 2,280          | 213           | 24            | 0          | 21,842           | 438           | 28           | 5          |
| Wood & Wood Products        | 29,386         | 1,094         | 542           | 8          | 43,785           | 165           | 85           | 4          |
| Chemicals                   | 90,569         | 2,737         | 2,129         | 26         | 77,142           | 879           | 302          | 11         |
| Non-metallic Min. Products  | 11,921         | 269           | 318           | 20         | 14,071           | 369           | 40           | 2          |
| Metal Products              | 34,238         | 712           | 312           | 1          | 56,001           | 429           | 998          | 5          |
| Transportation Equipment    | 102,640        | 953           | 1,800         | 89         | 128,874          | 21            | 613          | 0          |
| Machinery & Equipment       | 269,892        | 3,795         | 5,440         | 77         | 307,001          | 1,128         | 549          | 94         |
| Other Manufactures          | 11,322         | 273           | 210           | 2          | 39,851           | 289           | 80           | 3          |
| Elec., Gas & Water          | 751            | 2             | 4             | 0          | 2,230            | 5             | 2            | 1          |
| Construction                | 4,023          | 32            | 3             | 0          | 1,268            | 18            | 3            | 2          |
| Trade & Transport           | 81,445         | 514           | 1,675         | 60         | 75,050           | 873           | 2,084        | 163        |
| Other Private Services      | 81,707         | 588           | 1,047         | 66         | 59,724           | 522           | 1,034        | 77         |
| Government Services         | 42,165         | 282           | 574           | 321        | 18,838           | 335           | 501          | 222        |
| <b>Total</b>                | <b>852,808</b> | <b>17,843</b> | <b>14,686</b> | <b>894</b> | <b>1,022,879</b> | <b>17,004</b> | <b>8,025</b> | <b>782</b> |

  

|                             | U.S. Exports |            |            |            | U.S. Imports |            |            |            |
|-----------------------------|--------------|------------|------------|------------|--------------|------------|------------|------------|
|                             | World        | CAC        | Australia  | Morocco    | World        | CAC        | Australia  | Morocco    |
| Agriculture                 | 100.0        | 3.1        | 0.3        | 0.4        | 100.0        | 12.3       | 1.0        | 0.1        |
| Mining                      | 100.0        | 0.4        | 0.3        | 0.1        | 100.0        | 0.9        | 0.6        | 0.1        |
| Food, Beverages & Tobacco   | 100.0        | 4.8        | 0.9        | 0.2        | 100.0        | 4.9        | 3.1        | 0.1        |
| Textiles                    | 100.0        | 11.9       | 1.4        | 0.1        | 100.0        | 8.0        | 0.8        | 0.0        |
| Wearing Apparel             | 100.0        | 35.5       | 0.5        | 0.1        | 100.0        | 14.2       | 0.1        | 0.2        |
| Leather Products & Footwear | 100.0        | 9.3        | 1.0        | 0.0        | 100.0        | 2.0        | 0.1        | 0.0        |
| Wood & Wood Products        | 100.0        | 3.7        | 1.8        | 0.0        | 100.0        | 0.4        | 0.2        | 0.0        |
| Chemicals                   | 100.0        | 3.0        | 2.4        | 0.0        | 100.0        | 1.1        | 0.4        | 0.0        |
| Non-metallic Min. Products  | 100.0        | 2.3        | 2.7        | 0.2        | 100.0        | 2.6        | 0.3        | 0.0        |
| Metal Products              | 100.0        | 2.1        | 0.9        | 0.0        | 100.0        | 0.8        | 1.8        | 0.0        |
| Transportation Equipment    | 100.0        | 0.9        | 1.8        | 0.1        | 100.0        | 0.0        | 0.5        | 0.0        |
| Machinery & Equipment       | 100.0        | 1.4        | 2.0        | 0.0        | 100.0        | 0.4        | 0.2        | 0.0        |
| Other Manufactures          | 100.0        | 2.4        | 1.9        | 0.0        | 100.0        | 0.7        | 0.2        | 0.0        |
| Elec., Gas & Water          | 100.0        | 0.3        | 0.6        | 0.0        | 100.0        | 0.2        | 0.1        | 0.0        |
| Construction                | 100.0        | 0.8        | 0.1        | 0.0        | 100.0        | 1.4        | 0.2        | 0.1        |
| Trade & Transport           | 100.0        | 0.6        | 2.1        | 0.1        | 100.0        | 1.2        | 2.8        | 0.2        |
| Other Private Services      | 100.0        | 0.7        | 1.3        | 0.1        | 100.0        | 0.9        | 1.7        | 0.1        |
| Government Services         | 100.0        | 0.7        | 1.4        | 0.8        | 100.0        | 1.8        | 2.7        | 1.2        |
| <b>Total</b>                | <b>100.0</b> | <b>2.1</b> | <b>1.7</b> | <b>0.1</b> | <b>100.0</b> | <b>1.7</b> | <b>0.8</b> | <b>0.1</b> |

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

**Table 3. Sectoral Tariff Rates and Shares of Australia, Central America and the Caribbean (CAC), and Morocco Trade by Destination and Origin, 1997**  
(Percent)

| Tariff                      | (Percent) |      |             |       |        |                                   |             |        |               |        |         |             |        |
|-----------------------------|-----------|------|-------------|-------|--------|-----------------------------------|-------------|--------|---------------|--------|---------|-------------|--------|
|                             | Australia |      |             |       |        | Central America and the Caribbean |             |        |               |        | Morocco |             |        |
|                             | Japan     | U.S. | EU and EFTA | China | Global | U.S.                              | EU and EFTA | Mexico | South America | Global | U.S.    | EU and EFTA | Global |
| <b>Australia</b>            |           |      |             |       |        |                                   |             |        |               |        |         |             |        |
| Agriculture                 | 2.5       | 1.8  | 1.9         | 0.1   | 1.6    | 0.4                               | 5.1         | 11.9   | 9.4           | 3.1    | 6.9     | 5.8         | 7.1    |
| Mining                      | 0.0       | 0.0  | 0.2         | 0.0   | 0.0    | 3.8                               | 5.3         | 2.0    | 2.1           | 1.7    | 2.4     | 2.9         | 0.5    |
| Food, Beverages & Tobacco   | 1.7       | 3.4  | 5.5         | 6.0   | 3.2    | 8.5                               | 10.6        | 10.6   | 15.7          | 8.2    | 9.6     | 22.2        | 14.3   |
| Textiles                    | 14.5      | 12.3 | 12.2        | 15.0  | 12.5   | 14.5                              | 13.8        | 5.9    | 10.2          | 13.0   | 18.6    | 28.3        | 27.5   |
| Wearing Apparel             | 5.8       | 3.8  | 11.6        | 7.4   | 6.3    | 25.7                              | 17.4        | 8.3    | 19.5          | 23.5   | 27.9    | 34.5        | 34.1   |
| Leather Products & Footwear | 4.5       | 12.6 | 15.6        | 12.4  | 11.9   | 16.4                              | 14.0        | 8.6    | 16.2          | 13.7   | 0.0     | 23.7        | 23.5   |
| Wood & Wood Products        | 3.7       | 3.2  | 3.4         | 4.4   | 3.0    | 9.8                               | 8.6         | 6.4    | 10.1          | 9.9    | 21.9    | 18.4        | 16.8   |
| Chemicals                   | 5.8       | 3.4  | 2.4         | 4.7   | 3.1    | 8.0                               | 6.6         | 3.7    | 7.1           | 7.6    | 14.8    | 13.9        | 13.0   |
| Non-metallic Min. Products  | 5.0       | 5.1  | 4.5         | 4.8   | 4.7    | 11.0                              | 12.1        | 8.8    | 11.2          | 11.4   | 17.1    | 21.6        | 18.0   |
| Metal Products              | 5.6       | 4.8  | 5.3         | 5.3   | 4.0    | 8.1                               | 8.2         | 6.1    | 6.7           | 7.6    | 20.7    | 10.6        | 9.6    |
| Transportation Equipment    | 8.5       | 4.2  | 7.9         | 4.8   | 7.3    | 10.4                              | 10.4        | 8.8    | 6.9           | 8.1    | 7.2     | 14.8        | 13.9   |
| Machinery & Equipment       | 3.7       | 3.0  | 3.8         | 4.1   | 3.2    | 5.6                               | 4.5         | 5.7    | 4.9           | 5.8    | 11.4    | 11.0        | 10.5   |
| Other Manufactures          | 4.1       | 3.7  | 3.4         | 4.3   | 3.6    | 17.0                              | 11.5        | 14.8   | 13.8          | 13.6   | 25.1    | 27.1        | 25.3   |
| 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    |
| Construction                | 4.0       | 4.0  | 4.0         | 4.0   | 4.0    | 18.0                              | 18.0        | 18.0   | 18.0          | 18.0   | 29.0    | 29.0        | 29.0   |
| Trade & Transport           | 0.0       | 0.0  | 0.0         | 0.0   | 0.0    | 32.0                              | 32.0        | 32.0   | 32.0          | 32.0   | 27.0    | 27.0        | 27.0   |
| Other Private Services      | 0.0       | 0.0  | 0.0         | 0.0   | 0.0    | 34.0                              | 34.0        | 34.0   | 34.0          | 34.0   | 33.0    | 33.0        | 33.0   |
| Government Services         | 21.0      | 21.0 | 21.0        | 21.0  | 21.0   | 17.0                              | 17.0        | 17.0   | 17.0          | 17.0   | 21.0    | 21.0        | 21.0   |
|                             | Japan     | U.S. | EU and EFTA | China | Global | U.S.                              | EU and EFTA | Mexico | South America | Global | U.S.    | EU and EFTA | Global |
| <b>Exports</b>              |           |      |             |       |        |                                   |             |        |               |        |         |             |        |
| Agriculture                 | 13.1      | 2.2  | 16.9        | 10.7  | 100.0  | 38.1                              | 47.6        | 0.6    | 0.3           | 100.0  | 2.4     | 79.7        | 100.0  |
| Mining                      | 42.4      | 2.9  | 13.8        | 7.0   | 100.0  | 84.7                              | 7.4         | 0.1    | 1.8           | 100.0  | 10.5    | 51.5        | 100.0  |
| Food, Beverages & Tobacco   | 27.0      | 11.3 | 9.5         | 2.6   | 100.0  | 30.2                              | 22.6        | 1.6    | 3.0           | 100.0  | 4.5     | 52.3        | 100.0  |
| Textiles                    | 11.4      | 9.8  | 17.0        | 16.9  | 100.0  | 82.0                              | 5.5         | 0.6    | 2.3           | 100.0  | 1.0     | 86.8        | 100.0  |
| Wearing Apparel             | 7.6       | 16.3 | 20.4        | 6.3   | 100.0  | 94.2                              | 1.4         | 0.1    | 0.7           | 100.0  | 3.0     | 94.0        | 100.0  |
| Leather Products & Footwear | 2.2       | 6.7  | 52.0        | 5.9   | 100.0  | 69.4                              | 7.6         | 0.6    | 6.2           | 100.0  | 1.9     | 80.3        | 100.0  |
| Wood & Wood Products        | 36.6      | 6.1  | 6.8         | 5.7   | 100.0  | 24.7                              | 11.5        | 1.8    | 6.0           | 100.0  | 3.8     | 69.6        | 100.0  |
| Chemicals                   | 6.4       | 8.7  | 9.7         | 3.6   | 100.0  | 19.4                              | 15.3        | 3.1    | 8.7           | 100.0  | 1.0     | 40.0        | 100.0  |
| Non-metallic Min. Products  | 15.1      | 7.8  | 11.2        | 2.6   | 100.0  | 57.5                              | 5.2         | 1.0    | 8.2           | 100.0  | 3.9     | 66.4        | 100.0  |
| Metal Products              | 13.3      | 9.3  | 6.0         | 5.9   | 100.0  | 19.4                              | 27.9        | 2.8    | 5.1           | 100.0  | 3.1     | 73.9        | 100.0  |
| Transportation Equipment    | 4.9       | 21.4 | 12.8        | 0.9   | 100.0  | 1.4                               | 43.9        | 0.1    | 2.1           | 100.0  | 1.4     | 79.4        | 100.0  |
| Machinery & Equipment       | 5.7       | 11.4 | 15.0        | 4.2   | 100.0  | 57.6                              | 7.7         | 1.1    | 10.8          | 100.0  | 13.3    | 80.0        | 100.0  |
| Other Manufactures          | 10.5      | 9.6  | 54.3        | 0.4   | 100.0  | 45.6                              | 39.3        | 0.5    | 3.4           | 100.0  | 5.4     | 84.9        | 100.0  |
| Elec., Gas & Water          | 17.0      | 10.7 | 40.6        | 1.3   | 100.0  | 10.8                              | 46.2        | 1.1    | 16.6          | 100.0  | 17.6    | 41.2        | 100.0  |
| Construction                | 14.1      | 3.9  | 42.7        | 2.3   | 100.0  | 22.7                              | 33.2        | 1.1    | 4.1           | 100.0  | 13.8    | 37.7        | 100.0  |
| Trade & Transport           | 12.2      | 24.1 | 39.6        | 2.2   | 100.0  | 15.5                              | 43.8        | 0.9    | 3.3           | 100.0  | 20.1    | 40.1        | 100.0  |
| Other Private Services      | 10.4      | 17.3 | 44.2        | 1.6   | 100.0  | 20.5                              | 39.5        | 1.2    | 3.2           | 100.0  | 20.2    | 39.9        | 100.0  |
| Government Services         | 12.7      | 24.6 | 35.9        | 2.0   | 100.0  | 38.6                              | 25.3        | 1.0    | 2.8           | 100.0  | 31.3    | 31.3        | 100.0  |
| Total                       | 18.7      | 11.0 | 19.5        | 5.1   | 100.0  | 40.9                              | 25.2        | 1.1    | 3.6           | 100.0  | 8.7     | 64.2        | 100.0  |
|                             | Japan     | U.S. | EU and EFTA | China | Global | U.S.                              | EU and EFTA | Mexico | South America | Global | U.S.    | EU and EFTA | Global |
| <b>Imports</b>              |           |      |             |       |        |                                   |             |        |               |        |         |             |        |
| Agriculture                 | 1.4       | 17.3 | 9.2         | 4.3   | 100.0  | 59.6                              | 7.7         | 3.5    | 9.2           | 100.0  | 18.1    | 31.2        | 100.0  |
| Mining                      | 0.0       | 0.8  | 0.8         | 1.3   | 100.0  | 0.9                               | 0.6         | 16.1   | 59.6          | 100.0  | 0.7     | 5.2         | 100.0  |
| Food, Beverages & Tobacco   | 1.8       | 13.1 | 31.6        | 2.7   | 100.0  | 36.6                              | 23.2        | 3.5    | 9.5           | 100.0  | 15.0    | 34.4        | 100.0  |
| Textiles                    | 3.1       | 7.5  | 15.7        | 25.8  | 100.0  | 47.1                              | 5.1         | 4.8    | 1.7           | 100.0  | 0.9     | 91.6        | 100.0  |
| Wearing Apparel             | 0.7       | 2.9  | 9.3         | 52.8  | 100.0  | 77.7                              | 1.6         | 0.6    | 1.1           | 100.0  | 1.1     | 93.4        | 100.0  |
| Leather Products & Footwear | 0.3       | 2.8  | 18.2        | 47.9  | 100.0  | 29.9                              | 6.5         | 3.0    | 4.4           | 100.0  | 0.2     | 91.9        | 100.0  |
| Wood & Wood Products        | 2.9       | 17.6 | 34.2        | 3.6   | 100.0  | 53.4                              | 11.6        | 4.6    | 7.4           | 100.0  | 2.0     | 76.4        | 100.0  |
| Chemicals                   | 7.9       | 25.2 | 35.9        | 4.4   | 100.0  | 34.2                              | 16.1        | 7.8    | 12.1          | 100.0  | 2.3     | 74.0        | 100.0  |
| Non-metallic Min. Products  | 7.6       | 26.2 | 38.7        | 7.0   | 100.0  | 28.5                              | 22.7        | 13.1   | 12.2          | 100.0  | 10.7    | 54.3        | 100.0  |
| Metal Products              | 11.6      | 9.0  | 25.3        | 6.0   | 100.0  | 28.9                              | 19.6        | 10.3   | 10.0          | 100.0  | 0.2     | 76.4        | 100.0  |
| Transportation Equipment    | 35.9      | 24.6 | 24.4        | 1.0   | 100.0  | 8.0                               | 13.5        | 1.4    | 2.5           | 100.0  | 14.3    | 70.5        | 100.0  |
| Machinery & Equipment       | 16.6      | 25.4 | 28.5        | 5.0   | 100.0  | 47.2                              | 19.7        | 4.7    | 2.6           | 100.0  | 4.4     | 78.8        | 100.0  |
| Other Manufactures          | 9.0       | 13.8 | 23.6        | 25.8  | 100.0  | 24.9                              | 51.3        | 1.9    | 1.2           | 100.0  | 1.6     | 71.9        | 100.0  |
| Elec., Gas & Water          | 7.4       | 25.8 | 46.6        | 0.6   | 100.0  | 8.7                               | 50.9        | 0.0    | 19.9          | 100.0  | 4.8     | 67.5        | 100.0  |
| Construction                | 2.2       | 5.0  | 45.5        | 0.3   | 100.0  | 14.4                              | 49.4        | 0.4    | 1.4           | 100.0  | 9.1     | 38.6        | 100.0  |
| Trade & Transport           | 8.3       | 22.3 | 36.6        | 2.3   | 100.0  | 21.0                              | 32.8        | 1.5    | 2.8           | 100.0  | 21.3    | 33.8        | 100.0  |
| Other Private Services      | 6.5       | 18.4 | 51.7        | 0.5   | 100.0  | 21.2                              | 44.5        | 0.7    | 2.5           | 100.0  | 18.8    | 45.8        | 100.0  |
| Government Services         | 4.5       | 50.9 | 26.1        | 1.2   | 100.0  | 50.5                              | 24.2        | 0.5    | 2.0           | 100.0  | 67.5    | 18.3        | 100.0  |
| Total                       | 12.3      | 20.7 | 29.7        | 6.0   | 100.0  | 31.9                              | 17.0        | 4.7    | 8.4           | 100.0  | 9.1     | 60.6        | 100.0  |

Sources: Adapted from Francois and Strutt (1999); Brown, Deardorff and Stern (2002); and Dimaranan and McDougall (2002).

**Table 4. Employment by Sector, 1997: United States, Central America and Caribbean (CAC), Australia, and Morocco**  
(Percent of Employment and Number of Workers)

|                             | United States |             | CAC   |            | Australia |           | Morocco |            |
|-----------------------------|---------------|-------------|-------|------------|-----------|-----------|---------|------------|
|                             | %             | Workers     | %     | Workers    | %         | Workers   | %       | Workers    |
| Agriculture                 | 2.7           | 3,538,000   | 25.8  | 4,073,711  | 5.1       | 430,500   | 5.2     | 551,756    |
| Mining                      | 0.5           | 634,000     | 0.6   | 97,348     | 0.9       | 74,700    | 0.9     | 92,638     |
| Food, Beverages & Tobacco   | 1.7           | 2,144,942   | 4.6   | 725,235    | 2.5       | 208,261   | 5.3     | 568,097    |
| Textiles                    | 0.7           | 948,740     | 1.1   | 179,245    | 0.5       | 41,401    | 3.6     | 383,401    |
| Wearing Apparel             | 0.6           | 796,958     | 3.3   | 512,837    | 0.5       | 45,165    | 6.1     | 653,094    |
| Leather Products & Footwear | 0.1           | 111,039     | 0.4   | 63,601     | 0.1       | 12,546    | 0.8     | 84,187     |
| Wood & Wood Products        | 1.7           | 2,218,458   | 1.3   | 207,217    | 2.6       | 214,534   | 1.5     | 158,119    |
| Chemicals                   | 2.1           | 2,666,937   | 1.7   | 260,793    | 1.3       | 112,913   | 2.5     | 264,465    |
| Non-metallic Min. Products  | 0.5           | 689,823     | 0.6   | 88,125     | 0.6       | 47,674    | 2.1     | 220,204    |
| Metal Products              | 2.4           | 3,053,744   | 0.7   | 117,625    | 2.3       | 189,442   | 1.3     | 140,167    |
| Transportation Equipment    | 1.7           | 2,244,402   | 0.2   | 28,232     | 1.2       | 96,603    | 0.6     | 66,464     |
| Machinery & Equipment       | 4.2           | 5,440,783   | 0.8   | 123,325    | 1.8       | 150,550   | 1.1     | 113,417    |
| Other Manufactures          | 0.4           | 519,174     | 0.2   | 33,932     | 0.2       | 16,310    | 0.0     | 3,072      |
| Elec., Gas & Water          | 1.2           | 1,493,000   | 0.9   | 137,560    | 0.8       | 65,500    | 0.9     | 96,964     |
| Construction                | 6.4           | 8,302,000   | 6.2   | 982,142    | 6.9       | 580,300   | 9.0     | 959,465    |
| Trade & Transport           | 26.6          | 34,466,000  | 24.1  | 3,800,310  | 31.9      | 2,674,100 | 25.8    | 2,756,743  |
| Other Private Services      | 11.4          | 14,768,000  | 2.6   | 404,888    | 14.3      | 1,197,200 | 2.3     | 243,811    |
| Government Services         | 35.1          | 45,521,000  | 24.9  | 3,924,632  | 26.6      | 2,229,000 | 31.1    | 3,318,934  |
| Total                       | 100.0         | 129,557,000 | 100.0 | 15,760,757 | 100.0     | 8,386,700 | 100.0   | 10,675,000 |

Sources: ILO website (2003); Taiwan government website (2002); UNIDO (2003); and World Bank (2003).



**Table 5. Stock of U.S. Foreign Direct Investment Abroad, 2002**

(Percent of Total FDI Stock and Millions of U.S. Dollars)

|  | World        |                  | CAC          |              | Australia    |               | Morocco     |             |
|--|--------------|------------------|--------------|--------------|--------------|---------------|-------------|-------------|
|  | %            | Mil.             | %            | Mil.         | %            | Mil.          | %           | Mil.        |
| Mining   | 5.3          | 80,976           | n.a.         | n.a.         | 22.6         | 8,218         | n.a.        | n.a.        |
| Utilities  | 1.4          | 20,932           | n.a.         | n.a.         | 4.5          | 1,629         | n.a.        | n.a.        |
| Manufacturing  | 25.8         | 392,553          | n.a.         | n.a.         | 29.7         | 10,781        | n.a.        | n.a.        |
| Of which: Food   | 1.9          | 28,240           | 7.6          | 136          | 3.6          | 1,304         | n.a.        | n.a.        |
| Chemicals  | 6.5          | 99,371           | n.a.         | n.a.         | 4.2          | 1,522         | n.a.        | n.a.        |
| Primary and fabricated metals                          | 1.6          | 24,359           | 1.6          | 28           | 7.0          | 2,553         | n.a.        | n.a.        |
| Machinery  | 1.4          | 22,025           | 0.1          | 1            | 0.9          | 322           | n.a.        | n.a.        |
| Computer and electronic products                       | 4.6          | 69,208           | n.a.         | n.a.         | 0.4          | 132           | n.a.        | n.a.        |
| Electrical equipment, appliances, and components       | 0.7          | 10,166           | 5.8          | 104          | 0.3          | 123           | n.a.        | n.a.        |
| Transportation equipment                               | 3.2          | 48,378           | n.a.         | n.a.         | 3.1          | 1,112         | n.a.        | n.a.        |
| Wholesale trade  | 7.6          | 114,895          | 1.2          | 21           | 7.9          | 2,869         | n.a.        | n.a.        |
| Information  | 3.5          | 53,841           | n.a.         | n.a.         | 1.2          | 441           | n.a.        | n.a.        |
| Depository institutions                                | 3.5          | 52,935           | n.a.         | n.a.         | 4.7          | 1,692         | n.a.        | n.a.        |
| Finance (except depository institutions) and insurance | 16.1         | 244,480          | 1.1          | 19           | 10.9         | 3,951         | n.a.        | n.a.        |
| Professional, scientific, and technical services       | 2.5          | 38,307           | 1.5          | 26           | 3.0          | 1,076         | n.a.        | n.a.        |
| Other industries                                       | 34.3         | 522,047          | n.a.         | n.a.         | 15.6         | 5,678         | n.a.        | n.a.        |
| <b>Total</b>   | <b>100.0</b> | <b>1,520,965</b> | <b>100.0</b> | <b>1,786</b> | <b>100.0</b> | <b>36,337</b> | <b>n.a.</b> | <b>n.a.</b> |

Notes: 1) FDI data for CAC refer only to Costa Rica and Honduras.

2) n.a. means not available.

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

**Table 6a. Global Welfare Effects of U.S.-Central America and the Caribbean (CAC) FTA (Billions of U.S. Dollars and Percent)**

|   | Agricultural Protection |        | Manufactures Tariffs |        | Services Barriers |        | Total |       | Real Returns |       |
|---|-------------------------|--------|----------------------|--------|-------------------|--------|-------|-------|--------------|-------|
|   | %                       | Bil.   | %                    | Bil.   | %                 | Bil.   | %     | Bil.  | Capital      | Labor |
| Japan                                   | 0.00                    | (0.14) | -0.03                | (1.67) | 0.01              | 0.44   | -0.02 | -1.37 | -0.01        | 0.00  |
| United States                           | 0.00                    | 0.07   | 0.04                 | 3.72   | 0.13              | 13.47  | 0.17  | 17.26 | 0.07         | 0.06  |
| Canada                                  | 0.00                    | (0.02) | -0.02                | (0.20) | 0.01              | 0.06   | -0.01 | -0.16 | 0.00         | -0.01 |
| Australia                               | 0.00                    | (0.01) | -0.03                | (0.13) | 0.01              | 0.03   | -0.02 | -0.11 | 0.00         | 0.00  |
| New Zealand                             | 0.00                    | (0.00) | -0.02                | (0.02) | 0.01              | 0.01   | -0.01 | -0.02 | 0.00         | 0.00  |
| EU and EFTA                             | 0.00                    | (0.31) | -0.03                | (3.67) | 0.00              | 0.54   | -0.03 | -3.44 | -0.01        | -0.01 |
| Hong Kong                               | 0.00                    | 0.00   | -0.04                | (0.07) | 0.00              | (0.00) | -0.04 | -0.08 | -0.02        | -0.03 |
| China                                   | 0.00                    | 0.01   | -0.05                | (0.49) | 0.00              | 0.02   | -0.05 | -0.46 | 0.00         | -0.01 |
| Korea                                   | 0.00                    | (0.02) | -0.04                | (0.24) | 0.01              | 0.05   | -0.03 | -0.20 | -0.01        | -0.01 |
| Singapore                               | 0.00                    | (0.00) | -0.03                | (0.03) | 0.01              | 0.01   | -0.02 | -0.02 | 0.00         | -0.01 |
| Taiwan                                  | 0.00                    | 0.00   | -0.05                | (0.21) | 0.00              | 0.01   | -0.05 | -0.19 | 0.00         | -0.02 |
| Indonesia                               | 0.00                    | (0.00) | -0.05                | (0.14) | 0.00              | 0.01   | -0.05 | -0.13 | -0.01        | -0.03 |
| Malaysia                                | 0.00                    | (0.00) | -0.01                | (0.02) | 0.01              | 0.01   | 0.00  | -0.01 | 0.01         | -0.01 |
| Philippines                             | 0.00                    | 0.00   | -0.09                | (0.09) | 0.00              | 0.00   | -0.09 | -0.08 | 0.00         | -0.10 |
| Thailand                                | 0.00                    | (0.00) | -0.04                | (0.08) | 0.00              | 0.01   | -0.04 | -0.07 | 0.00         | -0.02 |
| Rest of Asia                            | 0.00                    | (0.01) | -0.03                | (0.22) | 0.00              | 0.01   | -0.03 | -0.21 | 0.01         | -0.01 |
| Chile                                   | 0.00                    | (0.00) | -0.04                | (0.04) | 0.00              | 0.00   | -0.04 | -0.04 | -0.01        | -0.01 |
| Mexico                                  | 0.00                    | 0.01   | -0.04                | (0.21) | 0.01              | 0.05   | -0.03 | -0.15 | -0.01        | -0.01 |
| Central America and the Caribbean (CAC) | -0.01                   | (0.01) | 2.90                 | 3.47   | 1.53              | 1.84   | 4.42  | 5.30  | 4.47         | 4.42  |
| South America                           | 0.00                    | (0.04) | -0.01                | (0.15) | 0.01              | 0.13   | 0.00  | -0.05 | 0.00         | 0.00  |
| Morocco                                 | 0.00                    | (0.00) | -0.03                | (0.01) | 0.00              | 0.00   | -0.03 | -0.01 | -0.01        | -0.01 |
| Southern African Customs Union (SACU)   | 0.00                    | (0.00) | -0.02                | (0.03) | 0.00              | 0.01   | -0.02 | -0.02 | 0.00         | 0.00  |
| Total                                   |                         | (0.48) |                      | (0.51) |                   | 16.71  |       | 15.72 |              |       |

**Table 6b. U.S.-Central America and the Caribbean (CAC) FTA: Change in Exports, Imports, Outputs, and Number of Workers**  
(Percent, Millions of Dollars, and the Number of Workers)

|                             | Exports<br>(Percent) |              | Imports<br>(Percent) |              | Output<br>(Percent) |              | Employment<br>(Percent)                        |          |
|-----------------------------|----------------------|--------------|----------------------|--------------|---------------------|--------------|--|----------|
|                             | U.S.                 | CAC          | U.S.                 | CAC          | U.S.                | CAC          | U.S.   | CAC      |
|                             | Agriculture          | 0.92         | 1.47                 | 2.09         | 23.43               | 0.06         | -0.58  | 0.06     |
| Mining                      | 0.06                 | -12.97       | 0.04                 | 1.42         | 0.16                | -12.81       | 0.09   | -13.62   |
| Food, Beverages & Tobacco   | 2.10                 | 13.58        | 2.44                 | 20.41        | 0.09                | 1.05         | 0.02   | -1.87    |
| Textiles                    | 6.28                 | 53.69        | 4.06                 | 26.26        | -0.32               | 34.58        | -0.55  | 27.85    |
| Wearing Apparel             | 11.47                | 69.66        | 7.78                 | 18.36        | -1.28               | 51.57        | -1.77  | 42.20    |
| Leather Products & Footwear | 5.68                 | 38.63        | 0.22                 | 14.01        | 1.75                | 20.08        | 1.51   | 14.55    |
| Wood & Wood Products        | 1.11                 | -2.97        | 0.01                 | 18.48        | 0.12                | -5.32        | 0.08   | -8.98    |
| Chemicals                   | 0.79                 | -4.15        | 0.02                 | 12.82        | 0.15                | -4.23        | 0.10   | -7.31    |
| Non-metallic Min. Products  | 0.68                 | -0.94        | 0.10                 | 12.44        | 0.12                | -5.28        | 0.10   | -7.75    |
| Metal Products              | 0.55                 | -7.69        | 0.05                 | 9.57         | 0.12                | -7.22        | 0.07   | -10.20   |
| Transportation Equipment    | 0.28                 | -3.99        | 0.02                 | 1.74         | 0.11                | -4.26        | 0.05   | -8.51    |
| Machinery & Equipment       | 0.26                 | 0.88         | 0.10                 | 7.49         | 0.10                | -6.10        | 0.07   | -9.95    |
| Other Manufactures          | 1.20                 | 0.26         | 0.00                 | 11.87        | 0.36                | -4.04        | 0.30   | -6.92    |
| Elec., Gas & Water          | 0.01                 | -5.48        | 0.06                 | 7.02         | 0.06                | 1.00         | 0.01   | -0.38    |
| Construction                | 0.49                 | -2.32        | 0.28                 | 14.08        | 0.03                | -1.37        | 0.00   | -1.42    |
| Trade & Transport           | 0.48                 | 3.70         | 0.75                 | 21.46        | 0.04                | 0.23         | 0.00   | -1.90    |
| Other Private Services      | 0.57                 | 3.73         | 0.61                 | 24.98        | 0.03                | -2.41        | 0.01   | -2.82    |
| Government Services         | 0.35                 | 15.89        | 1.02                 | 28.91        | 0.00                | -0.84        | 0.00   | -1.89    |
|                             | Exports<br>(Value)   |              | Imports<br>(Value)   |              | Output<br>(Value)   |              | Employment<br>(Number of Workers) <sup>†</sup> |          |
|                             | U.S.                 | CAC          | U.S.                 | CAC          | U.S.                | CAC          | U.S.   | CAC      |
|                             | Agriculture          | 444          | 95                   | 472          | 541                 | 162          | (113)  | 2,173    |
| Mining                      | 5                    | (110)        | 35                   | 57           | 189                 | (293)        | 596  | (12,650) |
| Food, Beverages & Tobacco   | 1,002                | 887          | 1,009                | 1,034        | 512                 | 203          | 495  | (14,061) |
| Textiles                    | 954                  | 1,648        | 1,157                | 999          | (354)               | 2,457        | (5,133)  | 53,741   |
| Wearing Apparel             | 1,029                | 5,351        | 3,742                | 716          | (1,149)             | 4,060        | (14,006)                                       | 230,663  |
| Leather Products & Footwear | 171                  | 297          | 62                   | 122          | 212                 | 310          | 1,512  | 9,518    |
| Wood & Wood Products        | 422                  | (13)         | 8                    | 422          | 589                 | (246)        | 1,761  | (18,415) |
| Chemicals                   | 928                  | (137)        | 20                   | 1,047        | 1,123               | (527)        | 2,667  | (19,202) |
| Non-metallic Min. Products  | 106                  | (5)          | 16                   | 126          | 118                 | (111)        | 666  | (6,720)  |
| Metal Products              | 243                  | (174)        | 32                   | 266          | 519                 | (423)        | 2,218  | (11,865) |
| Transportation Equipment    | 370                  | (81)         | 37                   | 282          | 577                 | (184)        | 1,069  | (2,310)  |
| Machinery & Equipment       | 913                  | 19           | 377                  | 764          | 915                 | (310)        | 3,626  | (12,126) |
| Other Manufactures          | 177                  | 2            | 1                    | 161          | 171                 | (66)         | 1,558  | (2,361)  |
| Elec., Gas & Water          | 0                    | (3)          | 2                    | 2            | 198                 | 52           | 156  | (518)    |
| Construction                | 25                   | (2)          | 4                    | 49           | 310                 | (117)        | 31   | (13,873) |
| Trade & Transport           | 500                  | 265          | 715                  | 705          | 862                 | 65           | 640  | (71,515) |
| Other Private Services      | 603                  | 117          | 459                  | 959          | 1,088               | (608)        | 1,362  | (11,273) |
| Government Services         | 191                  | 174          | 243                  | 274          | 79                  | (122)        | (1,390)  | (73,302) |
| <b>Total</b>                | <b>8,081</b>         | <b>8,331</b> | <b>8,391</b>         | <b>8,526</b> | <b>6,122</b>        | <b>4,025</b> | <b>0</b>                                       | <b>0</b> |

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

**Table 6c. U.S.-Central America and the Caribbean (CAC) FTA: Changes in Bilateral Trade Flows (Millions of Dollars)**

| From                              | To  |       |       |      |      |     |       |       |       |       |      |      |      |      |      |      |       |      |      |       |      |     | Exports |       |       |
|-----------------------------------|-----|-------|-------|------|------|-----|-------|-------|-------|-------|------|------|------|------|------|------|-------|------|------|-------|------|-----|---------|-------|-------|
|                                   | JPN | USA   | CAN   | AUS  | NZL  | EUN | HKG   | CHN   | KOR   | SGP   | TWN  | IDN  | MYS  | PHL  | THA  | ROA  | CHL   | MEX  | CAC  | SAM   | MCC  | SAC |         | ROW   |       |
| Japan                             | JPN | 0     | 20    | (1)  | (1)  | 0   | 36    | (16)  | (92)  | (11)  | (5)  | (23) | (13) | (5)  | (4)  | (7)  | (14)  | 0    | (2)  | 6     | 7    | 0   | 0       | (13)  | (137) |
| United States                     | USA | 1     | 0     | 57   | 1    | 1   | 59    | (11)  | (40)  | (6)   | 1    | (18) | (10) | (4)  | (10) | (4)  | (16)  | 3    | 13   | 8,056 | 42   | 0   | 1       | (33)  | 8,081 |
| Canada                            | CAN | (3)   | (23)  | 0    | (0)  | 0   | 6     | (2)   | (6)   | (1)   | (0)  | (2)  | (2)  | (1)  | (2)  | (1)  | (2)   | 0    | (1)  | 29    | 3    | 0   | 0       | (3)   | (12)  |
| Australia                         | AUS | (4)   | (0)   | 1    | 0    | 1   | 6     | (3)   | (7)   | (3)   | (0)  | (4)  | (4)  | (1)  | (2)  | (1)  | (4)   | 0    | (0)  | 9     | 1    | 0   | 0       | (2)   | (18)  |
| New Zealand                       | NZL | (1)   | (2)   | 0    | (1)  | 0   | 1     | (1)   | (1)   | (1)   | (0)  | (1)  | (1)  | (0)  | (1)  | (0)  | (1)   | 0    | (0)  | 6     | 0    | 0   | 0       | (1)   | (2)   |
| EU and EFTA                       | EUN | (63)  | (177) | (18) | (14) | (2) | 0     | (37)  | (99)  | (30)  | (17) | (31) | (29) | (16) | (22) | (17) | (68)  | (1)  | (17) | 284   | 11   | (0) | (8)     | (111) | (481) |
| Hong Kong                         | HKG | 5     | (140) | (1)  | 2    | 0   | 3     | 0     | 1     | 1     | 5    | 1    | 0    | 2    | 0    | 1    | 0     | 0    | 0    | 13    | 2    | 0   | 1       | (5)   | (106) |
| China                             | CHN | 7     | (311) | 4    | 1    | 0   | 80    | (32)  | 0     | 12    | 15   | 8    | 2    | 6    | (1)  | 4    | (3)   | 0    | 2    | (122) | 9    | 0   | 2       | (8)   | (327) |
| Korea                             | KOR | 1     | (60)  | 1    | 1    | 0   | 18    | (10)  | (37)  | 0     | 1    | (2)  | (7)  | 1    | (3)  | (1)  | (10)  | 0    | (1)  | 18    | 4    | 0   | 0       | (7)   | (95)  |
| Singapore                         | SGP | 0     | 8     | 1    | 0    | 0   | 15    | (4)   | (15)  | (1)   | 0    | (2)  | (7)  | (3)  | (2)  | (1)  | (10)  | 0    | 0    | 7     | 1    | 0   | 0       | (4)   | (15)  |
| Taiwan                            | TWN | 18    | (43)  | 4    | 2    | 1   | 44    | 2     | (70)  | 1     | 8    | 0    | (3)  | 3    | (8)  | 1    | (12)  | 0    | 1    | 4     | 4    | 0   | 1       | (1)   | (44)  |
| Indonesia                         | IDN | 20    | (87)  | (0)  | 2    | 0   | (5)   | (2)   | (1)   | 5     | 2    | 2    | 0    | 2    | 0    | 1    | (1)   | 0    | 0    | (11)  | 1    | 0   | 0       | (1)   | (74)  |
| Malaysia                          | MYS | 2     | (10)  | 1    | 1    | 0   | 14    | (3)   | (7)   | (0)   | 3    | (2)  | (1)  | 0    | (0)  | 0    | (5)   | 0    | 0    | 0     | 2    | 0   | 0       | (2)   | (7)   |
| Philippines                       | PHL | 2     | (97)  | 2    | 0    | 0   | 21    | 1     | (0)   | 2     | 3    | 2    | 1    | 2    | 0    | 1    | (1)   | (1)  | 0    | (2)   | 2    | 0   | 0       | (1)   | (63)  |
| Thailand                          | THA | 9     | (48)  | 1    | 1    | 0   | 16    | (1)   | (4)   | 1     | 6    | 0    | (1)  | 2    | (0)  | 0    | (3)   | 0    | 0    | (1)   | 1    | 0   | 0       | (2)   | (23)  |
| Rest of Asia                      | ROA | 12    | (218) | 1    | 2    | 0   | 23    | 0     | 1     | 2     | 4    | 1    | 1    | 2    | 0    | 2    | 0     | 0    | 1    | 5     | 3    | 0   | 1       | (5)   | (160) |
| Chile                             | CHL | (3)   | (2)   | 0    | (0)  | 0   | (1)   | (1)   | (1)   | (1)   | (0)  | (2)  | (1)  | (0)  | (0)  | (1)  | (1)   | 0    | (1)  | 5     | 0    | 0   | (0)     | (0)   | (9)   |
| Mexico                            | MEX | 2     | (93)  | 5    | 0    | 0   | 13    | (0)   | (1)   | 0     | 1    | 0    | (0)  | 0    | (0)  | 0    | (0)   | 2    | 0    | 51    | 9    | 0   | 2       | (1)   | (11)  |
| Central America and the Caribbean | CAC | (175) | 9,835 | (73) | (15) | (4) | (917) | (5)   | (26)  | (59)  | (29) | (6)  | (12) | (8)  | (7)  | (9)  | (18)  | (13) | (35) | 0     | (83) | (7) | (6)     | (1)   | 8,331 |
| South America                     | SAM | (7)   | (46)  | (2)  | (1)  | (0) | (10)  | (3)   | (11)  | (3)   | (1)  | (4)  | (2)  | (1)  | (1)  | (1)  | (4)   | (1)  | (4)  | 107   | 0    | 0   | (1)     | (5)   | 1     |
| Morocco                           | MCC | (0)   | (2)   | 0    | 0    | 0   | (0)   | 0     | (0)   | (0)   | 0    | 0    | 0    | 0    | (0)  | 0    | (1)   | 0    | (0)  | 1     | 0    | 0   | 0       | (0)   | (4)   |
| Southern African Customs Union    | SAC | (0)   | (6)   | 0    | 0    | 0   | 6     | (1)   | (1)   | (1)   | 0    | (1)  | (1)  | (0)  | (0)  | (0)  | (1)   | 0    | (0)  | 5     | 1    | 0   | 0       | (2)   | (3)   |
| Rest of the world                 | ROW | (33)  | (105) | (3)  | (2)  | (0) | 6     | (7)   | (29)  | (19)  | (13) | (4)  | (8)  | (2)  | (8)  | (7)  | (36)  | 0    | (2)  | 58    | 2    | 0   | (1)     | 0     | (210) |
| Imports                           |     | (210) | 8,391 | (21) | (23) | (2) | (566) | (136) | (445) | (110) | (19) | (84) | (97) | (22) | (71) | (38) | (210) | (9)  | (46) | 8,526 | 21   | (5) | (7)     | (206) |       |

**Table 7a. Global Welfare Effects of U.S.-Australia FTA (Billions of U.S. Dollars and Percent)**

|   | Agricultural Protection |        | Manufactures Tariffs |        | Services Barriers |        | Total |       | Real Returns |       |
|---|-------------------------|--------|----------------------|--------|-------------------|--------|-------|-------|--------------|-------|
|   | %                       | Bil.   | %                    | Bil.   | %                 | Bil.   | %     | Bil.  | Capital      | Labor |
| Japan                                   | 0.00                    | (0.00) | 0.00                 | (0.11) | -0.01             | (0.53) | -0.01 | -0.64 | -0.01        | -0.01 |
| United States                           | 0.00                    | 0.01   | 0.03                 | 2.60   | 0.17              | 16.77  | 0.20  | 19.39 | 0.02         | 0.02  |
| Canada                                  | 0.00                    | (0.00) | 0.01                 | 0.06   | -0.01             | (0.12) | 0.00  | -0.06 | 0.01         | 0.00  |
| Australia                               | 0.00                    | 0.00   | 0.10                 | 0.51   | 0.98              | 4.89   | 1.08  | 5.40  | 0.66         | 0.76  |
| New Zealand                             | 0.00                    | 0.00   | -0.03                | (0.02) | 0.06              | 0.05   | 0.03  | 0.03  | -0.01        | -0.02 |
| EU and EFTA                             | 0.00                    | (0.00) | 0.00                 | (0.24) | 0.00              | (0.16) | 0.00  | -0.39 | 0.00         | 0.00  |
| Hong Kong                               | 0.00                    | (0.00) | 0.00                 | 0.01   | -0.02             | (0.04) | -0.02 | -0.03 | -0.02        | -0.02 |
| China                                   | 0.00                    | 0.00   | 0.00                 | (0.02) | -0.01             | (0.11) | -0.01 | -0.14 | -0.01        | -0.01 |
| Korea                                   | 0.00                    | (0.00) | 0.00                 | (0.02) | -0.02             | (0.10) | -0.02 | -0.12 | -0.02        | -0.02 |
| Singapore                               | 0.00                    | (0.00) | -0.01                | (0.01) | -0.01             | (0.01) | -0.02 | -0.02 | -0.02        | -0.02 |
| Taiwan                                  | 0.00                    | (0.00) | 0.00                 | (0.01) | -0.02             | (0.10) | -0.02 | -0.11 | -0.02        | -0.02 |
| Indonesia                               | 0.00                    | 0.00   | 0.00                 | (0.00) | 0.00              | 0.01   | 0.00  | 0.01  | 0.00         | -0.02 |
| Malaysia                                | 0.00                    | (0.00) | 0.00                 | (0.01) | -0.02             | (0.03) | -0.02 | -0.03 | -0.01        | -0.02 |
| Philippines                             | 0.00                    | (0.00) | 0.01                 | 0.01   | -0.03             | (0.03) | -0.02 | -0.03 | -0.01        | -0.02 |
| Thailand                                | 0.00                    | (0.00) | 0.00                 | (0.00) | -0.02             | (0.04) | -0.02 | -0.04 | -0.02        | -0.01 |
| Rest of Asia                            | 0.00                    | 0.00   | 0.00                 | 0.00   | -0.01             | (0.06) | -0.01 | -0.06 | 0.00         | -0.01 |
| Chile                                   | 0.00                    | 0.00   | 0.00                 | (0.00) | 0.01              | 0.01   | 0.01  | 0.01  | 0.01         | 0.00  |
| Mexico                                  | 0.00                    | 0.00   | 0.01                 | 0.03   | -0.01             | (0.07) | 0.00  | -0.03 | 0.00         | 0.00  |
| Central America and the Caribbean (CAC) | 0.00                    | 0.00   | 0.00                 | 0.00   | -0.01             | (0.01) | -0.01 | -0.01 | 0.00         | 0.00  |
| South America                           | 0.00                    | 0.00   | 0.00                 | 0.03   | 0.00              | (0.06) | 0.00  | -0.03 | 0.00         | 0.00  |
| Morocco                                 | 0.00                    | 0.00   | 0.00                 | 0.00   | 0.00              | (0.00) | 0.00  | -0.00 | 0.00         | 0.00  |
| Southern African Customs Union (SACU)   | 0.00                    | 0.00   | 0.00                 | 0.00   | 0.00              | 0.01   | 0.00  | 0.01  | 0.00         | 0.00  |
| Total                                   |                         | 0.02   |                      | 2.82   |                   | 20.27  |       | 23.10 |              |       |

**Table 7b. U.S.-Australia FTA: Percent Change in Exports, Imports, Outputs, and Number of Workers**  
(Percent, Millions of Dollars, and the Number of Workers)

|                             | Exports<br>(Percent) |           | Imports<br>(Percent) |           | Output<br>(Percent) |           | Employment<br>(Percent)                        |           |
|-----------------------------|----------------------|-----------|----------------------|-----------|---------------------|-----------|--|-----------|
|                             | U.S.                 | Australia | U.S.                 | Australia | U.S.                | Australia | U.S.   | Australia |
| Agriculture                 | 0.06                 | -1.20     | 0.05                 | 2.90      | 0.00                | -0.06     | 0.00   | -0.07     |
| Mining                      | 0.19                 | -3.15     | -0.04                | 2.20      | 0.12                | -2.19     | 0.08   | -1.87     |
| Food, Beverages & Tobacco   | 0.18                 | 2.52      | 0.77                 | 3.19      | -0.02               | 0.77      | -0.04  | 0.26      |
| Textiles                    | 0.58                 | 1.73      | 0.05                 | 2.52      | 0.13                | 0.06      | 0.09   | -0.62     |
| Wearing Apparel             | 0.49                 | 4.07      | -0.09                | 1.81      | 0.11                | 0.55      | 0.08   | -0.35     |
| Leather Products & Footwear | 0.49                 | -0.11     | -0.04                | 1.41      | 0.23                | -0.33     | 0.21   | -0.99     |
| Wood & Wood Products        | 0.26                 | -0.88     | -0.04                | 3.01      | 0.03                | 0.20      | 0.02   | -0.30     |
| Chemicals                   | 0.37                 | -1.27     | -0.06                | 3.76      | 0.08                | -1.10     | 0.06   | -1.43     |
| Non-metallic Min. Products  | 0.51                 | -0.82     | -0.06                | 4.90      | 0.09                | -0.47     | 0.08   | -0.92     |
| Metal Products              | 0.26                 | -2.36     | -0.05                | 3.14      | 0.09                | -1.30     | 0.06   | -1.54     |
| Transportation Equipment    | 0.32                 | -0.12     | -0.06                | 3.68      | 0.11                | -0.67     | 0.08   | -1.25     |
| Machinery & Equipment       | 0.28                 | -0.96     | -0.06                | 2.11      | 0.13                | -1.78     | 0.11   | -2.34     |
| Other Manufactures          | 0.35                 | -2.34     | -0.08                | 2.45      | 0.15                | -2.14     | 0.13   | -2.44     |
| Elec., Gas & Water          | 0.09                 | -2.01     | -0.04                | 2.26      | 0.03                | 0.06      | 0.00   | -0.10     |
| Construction                | 0.07                 | 0.05      | -0.01                | 2.05      | 0.01                | 0.31      | 0.00   | -0.10     |
| Trade & Transport           | 0.04                 | 15.69     | 1.70                 | 0.17      | -0.02               | 1.64      | -0.03  | 0.43      |
| Other Private Services      | 0.04                 | 11.62     | 1.17                 | 1.15      | -0.01               | 0.94      | -0.01  | 0.26      |
| Government Services         | 0.76                 | 13.70     | 1.50                 | 27.77     | 0.01                | 0.41      | 0.00   | -0.08     |
|                             | Exports<br>(Value)   |           | Imports<br>(Value)   |           | Output<br>(Value)   |           | Employment<br>(Number of Workers) <sup>a</sup> |           |
|                             | U.S.                 | Australia | U.S.                 | Australia | U.S.                | Australia | U.S.   | Australia |
| Agriculture                 | 31                   | (124)     | 11                   | 25        | 8                   | (16)      | 94   | (300)     |
| Mining                      | 16                   | (520)     | (31)                 | 77        | 140                 | (585)     | 504  | (1,390)   |
| Food, Beverages & Tobacco   | 87                   | 273       | 317                  | 95        | (89)                | 266       | (756)  | 564       |
| Textiles                    | 89                   | 34        | 13                   | 73        | 141                 | 4         | 810  | (244)     |
| Wearing Apparel             | 44                   | 14        | (42)                 | 39        | 101                 | 19        | 619  | (145)     |
| Leather Products & Footwear | 15                   | (1)       | (11)                 | 16        | 28                  | (4)       | 207  | (121)     |
| Wood & Wood Products        | 97                   | (15)      | (20)                 | 120       | 166                 | 48        | 394  | (648)     |
| Chemicals                   | 434                  | (56)      | (55)                 | 413       | 621                 | (282)     | 1,555  | (1,612)   |
| Non-metallic Min. Products  | 79                   | (5)       | (10)                 | 79        | 89                  | (36)      | 539  | (437)     |
| Metal Products              | 113                  | (307)     | (33)                 | 140       | 392                 | (423)     | 1,957  | (2,912)   |
| Transportation Equipment    | 421                  | (4)       | (95)                 | 350       | 561                 | (115)     | 1,741  | (1,196)   |
| Machinery & Equipment       | 965                  | (58)      | (231)                | 583       | 1,220               | (301)     | 6,229  | (3,490)   |
| Other Manufactures          | 51                   | (24)      | (36)                 | 47        | 71                  | (39)      | 653  | (390)     |
| Elec., Gas & Water          | 1                    | (1)       | (1)                  | 1         | 97                  | 11        | 15   | (67)      |
| Construction                | 4                    | 0         | (0)                  | 2         | 100                 | 149       | (257)  | (599)     |
| Trade & Transport           | 39                   | 1,718     | 1,622                | 17        | (517)               | 2,113     | (11,719)                                       | 11,593    |
| Other Private Services      | 39                   | 881       | 885                  | 85        | (460)               | 1,630     | (2,188)  | 3,160     |
| Government Services         | 416                  | 353       | 359                  | 407       | 177                 | 363       | (398)  | (1,764)   |
| Total                       | 2,940                | 2,159     | 2,643                | 2,566     | 2,844               | 2,802     | 0  | 0         |

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

**Table 7c. U.S.-Australia FTA: Changes in Bilateral Trade Flows (Millions of Dollars)**

| From                              | To  |       |       |      |       |      |       |      |      |       |      |      |      |      |      |      |      |     |      |     |      |     | Exports |     |       |
|-----------------------------------|-----|-------|-------|------|-------|------|-------|------|------|-------|------|------|------|------|------|------|------|-----|------|-----|------|-----|---------|-----|-------|
|                                   | JPN | USA   | CAN   | AUS  | NZL   | EUN  | HKG   | CHN  | KOR  | SGP   | TWN  | IDN  | MYS  | PHL  | THA  | ROA  | CHL  | MEX | CAC  | SAM | MCC  | SAC |         | ROW |       |
| Japan                             | JPN | 0     | (142) | (11) | 51    | 7    | (10)  | 1    | (1)  | (2)   | (6)  | (10) | 8    | (4)  | (4)  | (2)  | 1    | (0) | (5)  | (3) | (3)  | 0   | 1       | 6   | (129) |
| United States                     | USA | 104   | 0     | 85   | 2,068 | 14   | 297   | 18   | 40   | 44    | 31   | 29   | 14   | 17   | 10   | 13   | 13   | 7   | 42   | 17  | 55   | 1   | 8       | 14  | 2,940 |
| Canada                            | CAN | 10    | (44)  | 0    | 10    | 1    | 15    | 2    | 2    | 3     | 1    | 1    | 2    | 1    | 0    | 0    | 1    | 0   | (0)  | 0   | 2    | 0   | 1       | 1   | 7     |
| Australia                         | AUS | (352) | 3,479 | (21) | 0     | (62) | (203) | (55) | (95) | (149) | (40) | (97) | (56) | (40) | (23) | (32) | (51) | (5) | (5)  | (1) | (15) | (1) | (19)    | 1   | 2,159 |
| New Zealand                       | NZL | (6)   | (9)   | (2)  | 32    | 0    | (14)  | (1)  | (2)  | (2)   | (1)  | (2)  | (1)  | (1)  | (1)  | (1)  | (1)  | (0) | (1)  | (1) | (2)  | (0) | (0)     | 0   | (14)  |
| EU and EFTA                       | EUN | (14)  | (219) | (26) | 179   | 16   | 0     | 5    | 3    | 1     | (3)  | 4    | 13   | (2)  | (3)  | (2)  | 7    | 0   | (14) | (6) | (13) | 0   | 7       | 49  | (17)  |
| Hong Kong                         | HKG | (1)   | (16)  | (1)  | 3     | 0    | (2)   | 0    | (2)  | (0)   | (1)  | (1)  | 0    | (0)  | (0)  | (0)  | 0    | 0   | (0)  | (0) | (0)  | 0   | 0       | 2   | (18)  |
| China                             | CHN | (8)   | (75)  | (5)  | 30    | 2    | (17)  | (1)  | 0    | 2     | (2)  | (1)  | 2    | (1)  | (1)  | (1)  | 1    | (0) | (1)  | (2) | (3)  | 0   | 0       | 3   | (76)  |
| Korea                             | KOR | (7)   | (34)  | (4)  | 19    | 1    | (11)  | 1    | (11) | 0     | (3)  | (3)  | 1    | (2)  | (2)  | (1)  | (1)  | (0) | (2)  | (2) | (3)  | 0   | 0       | 3   | (61)  |
| Singapore                         | SGP | (3)   | (27)  | (1)  | 10    | 1    | (7)   | (1)  | (1)  | (1)   | 0    | (3)  | 1    | (8)  | (2)  | (2)  | 0    | 0   | (1)  | (0) | (1)  | 0   | 0       | 2   | (43)  |
| Taiwan                            | TWN | (3)   | (40)  | (3)  | 13    | 1    | (5)   | (0)  | (16) | (1)   | (3)  | 0    | 1    | (1)  | (1)  | (1)  | (1)  | (0) | (2)  | (0) | (1)  | 0   | 0       | 1   | (64)  |
| Indonesia                         | IDN | 6     | (28)  | (2)  | 30    | 0    | (20)  | (1)  | (2)  | 4     | (1)  | 7    | 0    | (2)  | 0    | (1)  | (1)  | (0) | (1)  | (1) | (1)  | 0   | (0)     | 1   | (13)  |
| Malaysia                          | MYS | 2     | (31)  | (3)  | 11    | 1    | (11)  | (1)  | (1)  | 2     | (12) | (0)  | 1    | 0    | (1)  | (1)  | 1    | (0) | (1)  | (0) | (1)  | 0   | 0       | 1   | (44)  |
| Philippines                       | PHL | (1)   | (18)  | (1)  | 3     | 0    | (3)   | (0)  | (0)  | (0)   | (1)  | (1)  | 1    | (1)  | 0    | (0)  | 0    | 0   | (0)  | (0) | (0)  | 0   | 0       | 0   | (23)  |
| Thailand                          | THA | (4)   | (19)  | (1)  | 8     | 0    | (5)   | (0)  | (1)  | (0)   | (5)  | (1)  | 1    | (1)  | (1)  | 0    | 0    | 0   | (0)  | (0) | (0)  | 0   | 0       | 1   | (28)  |
| Rest of Asia                      | ROA | 1     | (25)  | (2)  | 18    | 1    | (15)  | (0)  | (0)  | (0)   | 0    | (0)  | 1    | (0)  | (0)  | (0)  | 0    | (0) | (1)  | (0) | (1)  | 0   | 0       | 2   | (23)  |
| Chile                             | CHL | 4     | (3)   | (0)  | 1     | 0    | (0)   | 0    | 0    | 1     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0   | (0)  | (0) | (1)  | 0   | 0       | 0   | 2     |
| Mexico                            | MEX | 3     | (7)   | (1)  | 3     | 0    | 7     | 0    | 0    | 1     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1   | 0    | 1   | 2    | 0   | 1       | 0   | 13    |
| Central America and the Caribbean | CAC | 1     | (13)  | 0    | 2     | 0    | 6     | 0    | 0    | 1     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0   | (0)  | 0   | 1    | 0   | 0       | 0   | (2)   |
| South America                     | SAM | 4     | (19)  | (1)  | 8     | 1    | 8     | 0    | 1    | 2     | 0    | 1    | 1    | 0    | 0    | 0    | 1    | 1   | (2)  | (1) | 0    | 0   | 1       | 2   | 9     |
| Morocco                           | MCC | (0)   | (1)   | (0)  | 1     | 0    | (0)   | 0    | 0    | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0   | (0)  | 0   | 0    | 0   | 0       | 0   | (0)   |
| Southern African Customs Union    | SAC | 0     | (5)   | (1)  | 5     | 0    | (4)   | 1    | (0)  | 2     | (0)  | 1    | 0    | (0)  | 0    | 0    | (0)  | (0) | (0)  | (0) | (1)  | 0   | 0       | 1   | (2)   |
| Rest of the world                 | ROW | 66    | (62)  | (5)  | 63    | 2    | (25)  | 2    | (2)  | 19    | 2    | 2    | 1    | (0)  | 1    | (1)  | (1)  | (0) | (1)  | (1) | (4)  | (1) | 1       | 0   |       |
| Imports                           |     | (201) | 2,643 | (4)  | 2,566 | (12) | (22)  | (31) | (87) | (74)  | (43) | (72) | (9)  | (45) | (27) | (31) | (30) | 3   | 4    | (2) | 12   | 0   | 1       | 90  |       |

**Table 8a. Global Welfare Effects of U.S.- Morocco FTA (Billions of U.S. Dollars and Percent)**

|   | Agricultural Protection |        | Manufactures Tariffs |        | Services Barriers |      | Total |      | Real Returns |       |
|---|-------------------------|--------|----------------------|--------|-------------------|------|-------|------|--------------|-------|
|   | %                       | Bil.   | %                    | Bil.   | %                 | Bil. | %     | Bil. | Capital      | Labor |
| Japan                                   | 0.00                    | 0.02   | 0.00                 | 0.03   | 0.00              | 0.08 | 0.00  | 0.13 | 0.00         | 0.00  |
| United States                           | 0.00                    | (0.02) | 0.00                 | 0.43   | 0.05              | 5.55 | 0.05  | 5.97 | 0.00         | 0.00  |
| Canada                                  | 0.00                    | 0.00   | 0.00                 | 0.02   | 0.00              | 0.02 | 0.00  | 0.04 | 0.00         | 0.00  |
| Australia                               | 0.00                    | 0.00   | 0.00                 | 0.00   | 0.00              | 0.01 | 0.00  | 0.01 | 0.00         | 0.00  |
| New Zealand                             | 0.00                    | 0.00   | 0.00                 | (0.00) | 0.00              | 0.00 | 0.00  | 0.00 | 0.00         | 0.00  |
| EU and EFTA                             | 0.00                    | 0.04   | 0.00                 | 0.03   | 0.00              | 0.21 | 0.00  | 0.29 | 0.00         | 0.00  |
| Hong Kong                               | 0.00                    | 0.00   | 0.00                 | 0.00   | 0.00              | 0.00 | 0.00  | 0.00 | 0.00         | 0.00  |
| China                                   | 0.00                    | 0.00   | 0.00                 | 0.00   | 0.00              | 0.01 | 0.00  | 0.02 | 0.00         | 0.00  |
| Korea                                   | 0.00                    | 0.00   | 0.00                 | 0.00   | 0.00              | 0.01 | 0.00  | 0.01 | 0.00         | 0.00  |
| Singapore                               | 0.00                    | 0.00   | 0.00                 | 0.00   | 0.00              | 0.00 | 0.00  | 0.00 | 0.00         | 0.00  |
| Taiwan                                  | 0.00                    | 0.00   | 0.00                 | 0.00   | 0.00              | 0.01 | 0.00  | 0.01 | 0.00         | 0.00  |
| Indonesia                               | 0.00                    | 0.00   | 0.00                 | 0.00   | 0.00              | 0.00 | 0.00  | 0.00 | 0.00         | 0.00  |
| Malaysia                                | 0.00                    | 0.00   | 0.00                 | 0.00   | 0.00              | 0.00 | 0.00  | 0.00 | 0.00         | 0.00  |
| Philippines                             | 0.00                    | 0.00   | 0.00                 | 0.00   | 0.00              | 0.00 | 0.00  | 0.00 | 0.00         | 0.00  |
| Thailand                                | 0.00                    | 0.00   | 0.00                 | 0.00   | 0.00              | 0.00 | 0.00  | 0.01 | 0.00         | 0.00  |
| Rest of Asia                            | 0.00                    | 0.00   | 0.00                 | (0.00) | 0.00              | 0.01 | 0.00  | 0.01 | 0.00         | 0.00  |
| Chile                                   | 0.00                    | 0.00   | 0.00                 | (0.00) | 0.00              | 0.00 | 0.00  | 0.00 | 0.00         | 0.00  |
| Mexico                                  | 0.00                    | 0.00   | 0.00                 | 0.01   | 0.00              | 0.01 | 0.00  | 0.02 | 0.00         | 0.00  |
| Central America and the Caribbean (CAC) | 0.00                    | 0.00   | 0.00                 | (0.00) | 0.00              | 0.00 | 0.00  | 0.00 | 0.00         | 0.00  |
| South America                           | 0.00                    | 0.00   | 0.00                 | 0.00   | 0.00              | 0.02 | 0.00  | 0.02 | 0.00         | 0.00  |
| Morocco                                 | 0.08                    | 0.03   | 0.54                 | 0.24   | 1.40              | 0.62 | 2.02  | 0.89 | 1.06         | 1.06  |
| Southern African Customs Union (SACU)   | 0.00                    | (0.00) | 0.00                 | (0.00) | 0.00              | 0.01 | 0.00  | 0.00 | 0.00         | 0.00  |
| Total                                   |                         | 0.10   |                      | 0.77   |                   | 6.58 |       | 7.45 |              |       |



**Table 8b. U.S.-Morocco FTA: Percent Change in Exports, Imports, Outputs, and Number of Workers**  
(Percent, Millions of Dollars, and the Number of Workers)

|                             | Exports<br>(Percent) |         | Imports<br>(Percent) |         | Output<br>(Percent) |         | Employment<br>(Percent)                        |          |
|-----------------------------|----------------------|---------|----------------------|---------|---------------------|---------|--|----------|
|                             | U.S.                 | Morocco | U.S.                 | Morocco | U.S.                | Morocco | U.S.   | Morocco  |
| Agriculture                 | 0.14                 | 0.42    | 0.05                 | 6.73    | 0.04                | -0.57   | 0.04   | -0.57    |
| Mining                      | -0.01                | 1.62    | 0.01                 | -0.03   | -0.01               | 1.69    | -0.01  | 1.09     |
| Food, Beverages & Tobacco   | 0.38                 | 1.66    | 0.03                 | 12.53   | 0.03                | -0.86   | 0.03   | -1.67    |
| Textiles                    | 0.03                 | 2.11    | 0.01                 | 0.45    | 0.00                | 2.02    | 0.00   | 1.30     |
| Wearing Apparel             | 0.02                 | 2.55    | 0.05                 | -0.32   | -0.01               | 1.91    | -0.02  | 1.24     |
| Leather Products & Footwear | 0.01                 | -1.04   | 0.01                 | 1.43    | 0.00                | -0.52   | -0.01  | -0.45    |
| Wood & Wood Products        | 0.01                 | 1.57    | 0.01                 | 0.55    | 0.00                | 1.00    | 0.00   | 0.15     |
| Chemicals                   | 0.00                 | 1.46    | 0.02                 | 0.15    | 0.00                | 1.00    | 0.00   | 0.20     |
| Non-metallic Min. Products  | 0.05                 | 2.53    | 0.01                 | 2.23    | 0.01                | 0.58    | 0.00   | -0.46    |
| Metal Products              | -0.01                | 2.26    | 0.01                 | -0.82   | 0.00                | 1.66    | 0.00   | 0.65     |
| Transportation Equipment    | 0.01                 | 1.67    | 0.01                 | 1.38    | 0.00                | 0.47    | 0.00   | -0.55    |
| Machinery & Equipment       | -0.01                | 2.98    | 0.01                 | -0.04   | -0.01               | 1.94    | -0.01  | 0.87     |
| Other Manufactures          | -0.01                | 1.72    | 0.01                 | 0.10    | -0.01               | 0.90    | -0.01  | 0.08     |
| Elec., Gas & Water          | -0.01                | 0.86    | 0.01                 | -0.21   | 0.00                | 0.71    | 0.00   | 0.12     |
| Construction                | -0.01                | 4.65    | 0.05                 | 4.27    | 0.00                | 0.39    | 0.00   | -0.12    |
| Trade & Transport           | 0.03                 | 15.33   | 0.16                 | 11.38   | 0.00                | 1.71    | 0.00   | 0.50     |
| Other Private Services      | 0.04                 | 16.82   | 0.11                 | 11.47   | 0.00                | 1.45    | 0.00   | 0.09     |
| Government Services         | 0.37                 | 21.12   | 0.73                 | 32.30   | 0.01                | 1.16    | 0.00   | -0.49    |
|                             | Exports<br>(Value)   |         | Imports<br>(Value)   |         | Output<br>(Value)   |         | Employment<br>(Number of Workers) <sup>a</sup> |          |
|                             | U.S.                 | Morocco | U.S.                 | Morocco | U.S.                | Morocco | U.S.   | Morocco  |
| Agriculture                 | 67                   | 3       | 10                   | 66      | 101                 | (58)    | 1,314  | (3,124)  |
| Mining                      | (1)                  | 12      | 12                   | (0)     | (8)                 | 26      | (44)   | 992      |
| Food, Beverages & Tobacco   | 181                  | 26      | 14                   | 154     | 161                 | (48)    | 542  | (9,562)  |
| Textiles                    | 5                    | 12      | 4                    | 8       | (1)                 | 21      | (32)   | 5,431    |
| Wearing Apparel             | 2                    | 71      | 25                   | (1)     | (12)                | 58      | (129)  | 8,580    |
| Leather Products & Footwear | 0                    | (4)     | 2                    | 2       | (0)                 | (21)    | (8)  | (376)    |
| Wood & Wood Products        | 3                    | 2       | 6                    | 3       | 5                   | 21      | (10)   | 236      |
| Chemicals                   | (2)                  | 21      | 15                   | 2       | 0                   | 49      | (55)   | 534      |
| Non-metallic Min. Products  | 8                    | 2       | 2                    | 6       | 5                   | 14      | 29   | (995)    |
| Metal Products              | (5)                  | 4       | 10                   | (6)     | (13)                | 36      | (138)  | 889      |
| Transportation Equipment    | 10                   | 1       | 16                   | 11      | (5)                 | 4       | (50)   | (353)    |
| Machinery & Equipment       | (18)                 | 26      | 47                   | (1)     | (55)                | 42      | (367)  | 963      |
| Other Manufactures          | (1)                  | 1       | 5                    | 0       | (4)                 | 4       | (52)   | 2        |
| Elec., Gas & Water          | (0)                  | 0       | 0                    | 0       | 7                   | 10      | 2  | 113      |
| Construction                | (1)                  | 1       | 1                    | 0       | (10)                | 19      | (57)   | (1,097)  |
| Trade & Transport           | 32                   | 155     | 149                  | 42      | (49)                | 165     | (1,140)  | 13,729   |
| Other Private Services      | 46                   | 80      | 83                   | 52      | (42)                | 79      | (194)  | 207      |
| Government Services         | 202                  | 188     | 175                  | 200     | 98                  | 141     | 389  | (16,168) |
| Total                       | 529                  | 602     | 577                  | 537     | 178                 | 562     | 0  | 0        |

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

**Table 8c. U.S.-Morocco FTA: Changes in Bilateral Trade Flows (Millions of Dollars)**

| From                              | To  |      |     |     |     |     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     | Exports |     |     |     |
|-----------------------------------|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------|-----|-----|-----|
|                                   |     | JPN  | USA | CAN | AUS | NZL | EUN  | HKG | CHN | KOR | SGP | TWN | IDN | MYS | PHL | THA | ROA | CHL | MEX | CAC | SAM |         | MCC | SAC | ROW |
| Japan                             | JPN | 0    | 17  | 1   | (0) | (0) | (8)  | (0) | (0) | 0   | 0   | 1   | (0) | 0   | 0   | 0   | (1) | 0   | 1   | (0) | (0) | (5)     | (0) | 0   | 6   |
| United States                     | USA | (12) | 0   | (7) | (3) | (1) | (63) | (2) | (4) | (5) | (4) | (4) | (1) | (2) | (2) | (2) | (2) | (1) | (4) | (3) | (9) | 658     | (1) | 1   | 529 |
| Canada                            | CAN | (1)  | 13  | 0   | (0) | (0) | (4)  | (0) | (0) | (0) | (0) | (0) | (0) | (0) | (0) | (0) | (0) | 0   | 0   | (0) | (0) | (2)     | 0   | 0   | 5   |
| Australia                         | AUS | 0    | 1   | 0   | 0   | (0) | (1)  | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | (0) | 0   | 0   | 0   | 0   | (1)     | 0   | 0   | 0   |
| New Zealand                       | NZL | 0    | 0   | 0   | 0   | 0   | 0    | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | (2)     | 0   | 0   | (1) |
| EU and EFTA                       | EUN | 9    | 52  | 6   | 1   | (0) | 0    | 1   | 3   | 3   | 2   | 2   | 1   | 2   | 1   | 1   | 0   | 0   | 3   | 1   | 3   | (78)    | 1   | 2   | 16  |
| Hong Kong                         | HKG | 0    | 2   | 0   | 0   | 0   | (1)  | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | (1)     | 0   | 0   | 1   |
| China                             | CHN | 0    | 7   | 0   | (0) | (0) | (6)  | (0) | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | (1) | 0   | 0   | 0   | (0) | (2)     | 0   | 0   | (1) |
| Korea                             | KOR | 0    | 3   | 0   | 0   | 0   | (2)  | (0) | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | (0) | 0   | 0   | 0   | (0) | (1)     | 0   | 0   | 1   |
| Singapore                         | SGP | 0    | 3   | 0   | 0   | 0   | (2)  | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | (0) | 0   | 0   | 0   | 0   | (1)     | 0   | 0   | 2   |
| Taiwan                            | TWN | 0    | 4   | 0   | 0   | 0   | (2)  | (0) | (1) | 0   | 0   | 0   | (0) | 0   | 0   | 0   | (0) | 0   | 0   | 0   | (0) | (1)     | 0   | 0   | (0) |
| Indonesia                         | IDN | 0    | 1   | 0   | 0   | 0   | (1)  | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | (0) | 0   | 0   | 0   | 0   | (0)     | 0   | 0   | 0   |
| Malaysia                          | MYS | 0    | 3   | 0   | 0   | 0   | (1)  | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | (0) | 0   | 0   | 0   | 0   | (1)     | 0   | 0   | 2   |
| Philippines                       | PHL | 0    | 2   | 0   | 0   | 0   | (1)  | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | (0)     | 0   | 0   | 1   |
| Thailand                          | THA | 0    | 2   | 0   | 0   | 0   | (1)  | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | (0) | 0   | 0   | 0   | 0   | (0)     | 0   | 0   | 1   |
| Rest of Asia                      | ROA | 1    | 2   | 0   | 0   | 0   | (1)  | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | (1)     | 0   | 0   | 2   |
| Chile                             | CHL | 0    | 1   | 0   | 0   | 0   | (0)  | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | (0) | (0)     | 0   | 0   | (0) |
| Mexico                            | MEX | (0)  | 5   | 0   | 0   | 0   | (2)  | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | (0) | 0   | (0) | (0) | (1)     | (0) | 0   | 2   |
| Central America and the Caribbean | CAC | 0    | 2   | 0   | 0   | 0   | (1)  | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | (2)     | 0   | 0   | (1) |
| South America                     | SAM | 0    | 8   | 0   | 0   | 0   | (1)  | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | (0) | 0   | 0   | 0   | 0   | (11)    | 0   | 0   | (3) |
| Morocco                           | MCC | 12   | 437 | 2   | 1   | 1   | 124  | 0   | 2   | 2   | 1   | 1   | 1   | 1   | 1   | 1   | 9   | 0   | 2   | 0   | 3   | 0       | 1   | 0   | 602 |
| Southern African Customs Union    | SAC | 0    | 1   | 0   | 0   | 0   | (1)  | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | (0)     | 0   | 0   | (0) |
| Rest of the world                 | ROW | 3    | 13  | 1   | 0   | (0) | (4)  | 0   | 1   | 1   | 1   | 0   | 0   | 0   | 0   | 0   | (0) | 0   | 0   | 0   | 0   | (11)    | 0   | 0   | 6   |
| Imports                           |     | 15   | 577 | 7   | 0   | (0) | 21   | (1) | 1   | 1   | 2   | 1   | 0   | 2   | 1   | 1   | 4   | (0) | 3   | (2) | (5) | 537     | 0   | 4   |     |

**Table 9. Computation of Welfare Effects of Bilateral FTAs, 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>US-CAC</i>               | Welfare  |            | <i>United States</i>         | Welfare  |            | <i>Agricultural Protection</i> | Welfare  |            |
|                             | (U.S.\$) | (% of GNP) |                              | (U.S.\$) | (% of GNP) |                                | (U.S.\$) | (% of GNP) |
| United States               | 17.3     | 0.2        | United States                | 320.2    | 3.2        | United States                  | 0.4      | 0.0        |
| CAC                         | 5.3      | 4.4        | Global                       | 507.0    |            | CAC                            | 0.5      | 0.4        |
| Global                      | 15.7     |            | <i>CAC</i>                   | Welfare  |            | Australia                      | -0.1     | 0.0        |
| <i>US-Australia</i>         | Welfare  |            |                              | (U.S.\$) | (% of GNP) | Morocco                        | 0.4      | 0.8        |
|                             | (U.S.\$) | (% of GNP) | CAC                          | 6.2      | 5.1        | Global                         | 53.9     |            |
| United States               | 19.4     | 0.2        | Global                       | 33.7     |            | <i>Manufactures Tariffs</i>    | Welfare  |            |
| Australia                   | 5.4      | 1.1        | <i>Australia</i>             | Welfare  |            |                                | (U.S.\$) | (% of GNP) |
| Global                      | 23.1     |            |                              | (U.S.\$) | (% of GNP) | United States                  | 75.7     | 0.8        |
| <i>US-Morocco</i>           | Welfare  |            | Australia                    | 4.6      | 0.9        | CAC                            | 7.7      | 6.5        |
|                             | (U.S.\$) | (% of GNP) | Global                       | 19.3     |            | Australia                      | 11.2     | 2.2        |
| United States               | 6.0      | 0.1        | <i>Morocco</i>               | Welfare  |            | Morocco                        | 1.9      | 4.4        |
| Morocco                     | 0.9      | 2.0        |                              | (U.S.\$) | (% of GNP) | Global                         | 701.6    |            |
| Global                      | 7.5      |            | Morocco                      | 1.6      | 3.5        | <i>Services Barriers</i>       | Welfare  |            |
|                             |          |            | Global                       | 11.4     |            |                                | (U.S.\$) | (% of GNP) |
|                             |          |            |                              |          |            | United States                  | 466.4    | 4.6        |
|                             |          |            |                              |          |            | CAC                            | 9.5      | 8.0        |
|                             |          |            |                              |          |            | Australia                      | 19.0     | 3.8        |
|                             |          |            |                              |          |            | Morocco                        | 2.5      | 5.7        |
|                             |          |            |                              |          |            | Global                         | 1,661.8  |            |
|                             |          |            |                              |          |            | <i>Total</i>                   | Welfare  |            |
|                             |          |            |                              |          |            |                                | (U.S.\$) | (% of GNP) |
|                             |          |            |                              |          |            | United States                  | 542.5    | 5.4        |
|                             |          |            |                              |          |            | CAC                            | 17.7     | 14.8       |
|                             |          |            |                              |          |            | Australia                      | 30.1     | 6.0        |
|                             |          |            |                              |          |            | Morocco                        | 4.8      | 10.9       |
|                             |          |            |                              |          |            | Global                         | 2,417.3  |            |