RESEARCH SEMINAR IN INTERNATIONAL ECONOMICS

School of Public Policy
The University of Michigan
Ann Arbor, Michigan 48109-1220

Discussion Paper No. 514

Computational Analysis of the U.S FTA with the Southern African Customs Union (SACU)

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Abstract

We use the Michigan Model of World Production and Trade to assess the economic effects of the U.S. FTA being negotiated with the Southern African Customs Union (SACU). 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 monopolistic competition in the manufacturing and services sectors, including 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 U.S.-SACU FTA are not taken into account due to data constraints. The computational results indicate that the benefits of the bilateral FTA for the United States and the SACU are rather small in both absolute and relative terms. Far greater benefits could be realized if the United States and the SACU adopted unilateral free trade and especially if multilateral free trade was adopted by all countries/regions in the global trading system.

July 6, 2004

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Keywords: Free Trade Agreements, Unilateral Liberalization, Multilateral Liberalization
JEL: F10; F13; F15

COMPUTATIONAL ANALYSIS OF THE U.S. FTA WITH THE SOUTHERN AFRICAN CUSTOMS UNION (SACU)[†]

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I. Introduction

This paper presents a computational analysis of the economic effects of the U.S. bilateral free trade agreement (FTA) being negotiated with the Southern African Customs Union (SACU), whose members include Botswana, Lesotho, Namibia, South Africa, and Swaziland. The negotiations were notified to the U.S. Congress by the U.S. Trade Representative (USTR) in November 2002 and are expected to be concluded at the end of 2004. The analysis of the U.S.-SACU FTA is based on the Michigan Model of World Production and Trade. This is a multi-country/multi-sectoral computable general equilibrium (CGE) model of the global trading system that has been used for over three decades to analyze the economic effects of multilateral, regional, and bilateral trade negotiations and a variety of other changes in trade and related policies.

In Section II following, we present a brief description of the main features and data of the Michigan Model. In Section III, we provide some background information on the U.S.-SACU FTA together with presentation of the modeling results of the potential economic effects of the FTA on the economic welfare, trade, output, and employment for the United States and the SACU. In Section IV, we provide a broader perspective on the U.S.-SACU FTA that takes into account the effects of the unilateral removal of trade barriers by the United States and the SACU, and the effects of global free trade in which all countries/regions covered in the model are

[†]The research in this paper was funded by the U.S. Department of Labor (DOL). The analysis and conclusions are those of the authors and do not necessarily reflect those of the DOL or the U.S. Government. Helpful comments on an earlier version of the paper were provided by Greg Schoepfle.
[‡] 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.

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

II. The Michigan Model of World Production and Trade

Overview of the Michigan Model

The version of the Michigan Model that we use in this paper covers 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 increasing returns to scale, monopolistic competition, and product variety. Some details follow.[1] 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/.

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. Because of data constraints, the five SACU members – Botswana, Lesotho, Namibia, South Africa, and Swaziland – are aggregated for computational purposes. 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.

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

[1] See also Deardorff and Stern (1990, esp. pp. 9-46) and Brown and Stern (1989a,b).

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, 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.

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.[2] 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.

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

[2] Intermediate inputs include both domestic and imported varieties.

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. However, 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. Thus, we have both an exchange gain and a specialization gain from international trade.[3]

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

[3] 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.

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.

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 that have the greatest value on the world market. That is, we have the standard *specialization* gain. Third, tariff reductions have a pro-competitive effect on sellers. Increased price pressure from imported varieties forces 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*.

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 present 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.

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.[4] 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,[5] although some factor owners within a country may lose, as will be noted below. However, it is possible for a particular country whose net imports are concentrated in sectors with the greatest liberalization to lose overall, if the worsening of its terms of trade swamps these efficiency gains.

On the other hand, although trade with imperfect competition is perhaps best known for introducing reasons why countries may lose from trade, actually its greatest contribution is to expand the list of reasons for gains from trade. Thus, in the Michigan Model, trade liberalization permits all countries to expand their export sectors at the same time that all sectors compete more

[4] 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.

[5] 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.

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.[6]

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.[7]

In the real world, all of the various effects occur over time, some of them more quickly than others. However, the Michigan Model is static in the sense that it is based upon a single set of equilibrium conditions rather than relationships that vary over time.[8] The model results therefore refer to a time horizon that depends on the assumptions made about which variables do

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[6] 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.

[7] It may be noted that, in a model with perfect competition, bilateral trade liberalization should have the effect of contracting trade with excluded countries, thereby improving the terms of trade for FTA members vis-à-vis the rest of world. But in a model with scale economies, the pro-competitive effect of trade liberalization can generate a cut in price and increase in supply to excluded countries. The terms of trade of FTA members may therefore deteriorate in this event.

[8] 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.

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,[9] the modeling results are appropriate for a relatively long time horizon of several years – perhaps two or three at a minimum. On the other hand, the model does not allow for the very long-run adjustments that could occur through capital accumulation, population growth, and technological change. The modeling results should therefore be interpreted as being superimposed upon longer-run growth paths of the economies involved. To the extent that these growth paths themselves may be influenced by trade liberalization, therefore, the model does not capture such effects.

Benchmark Data

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, 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:[10]

- 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

[9] 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.

[10] Details on the sectoral and country/region aggregation are provided in Brown, Kiyota, and Stern (2004a) and are available on request.

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

The monopolistically competitive market structure in the nonagricultural sectors of the model imposes an additional data requirement of the numbers of firms at the sectoral level, and there is need also for estimates of sectoral employment.[11] The employment data, which have been adapted from a variety of published sources, will be noted 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.[12] The 2005 data have been adjusted to take into account two major developments that have occurred in the global trading system since the mid-1990s. These include: (1) implementation of the Uruguay Round negotiations that were completed in 1993-94 and were to be phased in over the following decade; and (2) the accession of Mainland China and Taiwan to the WTO in 2001.[13] We have made

[11] Notes on the construction of the data on the number of firms and for employment are available from the authors on request.

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

[13] The tariff data for the WTO accession of China and Taiwan have been adapted from Ianchovichina and Martin (2003). In addition to benchmarking the effects of the Uruguay Round and China/Taiwan accession to the WTO, Francois et al. (2003) benchmark their GTAP 5.4 dataset to take into account the enlargement of the European Union (EU) in 2004 to include ten new member countries from Central and Eastern Europe and some changes in the EU Common Agricultural Policies that were introduced in 2000. Our EU and EFTA regional aggregate includes the 25-member EU, but the benchmark data were not adjusted to take

allowance for the foregoing developments by readjusting the 2005 scaled-up database for benchmarking purposes to obtain an approximate picture of what the world may be expected to look like in 2005. In the computational scenarios 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 for the United States and SACU in Table 1. 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 SACU tariff rates on these sectors can also be seen to be relatively high. Other SACU sectors with relatively high tariff rates include non-metallic minerals and transportation equipment.

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, 2003). The gross operating margins are calculated as the differences between total revenues and total operating costs. Some of these differences are presumably attributable to fixed costs. Given that the gross operating margins vary across countries, a portion of the margin can also be attributed to barriers to FDI. For this purpose, a benchmark is set for each sector in relation to the country with the smallest gross operating 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.

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

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 restrain international services transactions. This can be seen in the last four rows covering the services sectors in Table 1 for both the United States and SACU..

The value and shares of U.S. exports and imports of goods and services for 1997 are broken down by sector according to destination and origin in Table 1. U.S. exports to SACU in 1997 totaled $4.1 billion, with the largest values recorded for machinery & equipment, chemicals, transportation equipment, and services. The sectoral shares of U.S. exports to the SACU are relatively small, ranging between 0.1% and 0.8%. Overall, U.S. exports to the SACU were 0.5% of total U.S. exports. U.S. imports from SACU totaled $3.8 billion in 1997, with the largest values recorded for metal products, chemicals, and services. Imports of metal products were 2.5% of U.S. imports, while the remaining sectoral shares were less than 1%. Imports from SACU were 0.6% of total U.S. imports.

SACU exports totaled $37.3 billion and total imports were $34.4 billion in 1997. The United States accounted for 9.8% of total SACU exports and 12.2% of total SACU imports. The sectoral values and shares of the United States in SACU exports and imports are also provided in Table 1, and it is evident that the United States accounts for sizable shares in a number of sectors. We will note below that a significant proportion of SACU member trade is channeled through South Africa. Also, trade with the European Union is quite important.

Employment by sector is indicated in the last two columns of Table 1. Nearly 80% of U.S. employment is in the services sectors and the remainder spread across agriculture and manufacturing. In the SACU, agriculture accounts for 25.3% of total employment, manufactures for 8.9%, and services for 65.6%. Information on the stock of U.S. foreign direct investment (FDI) abroad is available only for South Africa and is indicated in Table 2. The total is $3.4 billion, one-third of which is in manufacturing and the remainder in services and other industries. A further breakdown of the source and sectoral coverage of FDI in SACU member countries is given below.

III. An Assessment of the Economic Effects of the U.S.-SACU FTA

Background Information on the SACU Member Countries

As noted in WTO (2003, p. xvii), the SACU countries differ significantly in terms of their levels of economic scale, structure, and development. Botswana and South Africa are upper middle-income countries, Namibia and Swaziland are lower middle-income countries, and Lesotho is a least developed country. It is noted in World Bank (2003) that the total SACU population, ages 15-64, was 30.8 million in 2001, with South Africa accounting for about 90% of the total. The total SACU labor force was nearly 20 million, with South Africa dwarfing the other SACU countries.

As indicated in WTO (2003, pp. A-1, 57, 58), Botswana had a nominal GDP of $5.3 billion and GDP per capita of $2,970 in 2000/01. The primary sector accounted for 37.4%, the secondary sector, 4.2%, and the tertiary sector, 58.4%, of GDP. Mining products accounted for 90.1% of total commodity exports in 2001, with diamonds accounting for 85.2%. The largest share of exports was to Europe, 84.7%, and the United Kingdom in particular, 66.5%. The United States accounted for 0.7% of Botswana's exports in 2001. Imports were spread across the individual sectors noted, with 76.6% coming from within SACU, presumably mainly from South Africa. The United States accounted for 1.8% of Botswana's imports in 2001. Foreign direct

investment (FDI) at the end of 2000 was $1.9 billion and was concentrated in the mining sector. The United States accounted for 1.0% of Botswana's total inward FDI.

According to WTO (2003, pp. A-2, 15, 16), in Lesotho, the primary sector accounted for 17.8%, the manufacturing sector, 15.3%, and utilities and the tertiary sector, 66.8%, of real GDP in 2000-01. In 2000, North America accounted for 59.8% of Lesotho's exports, consisting mainly of textiles and clothing under the provisions of the U.S. African Growth and Opportunity Act (AGOA). Lesotho's imports came primarily from within SACU, some 88.2% of total imports in 2000.

As noted in WTO (2003, pp. A3-155, 159, 160), Namibia's nominal GDP was $3.2 billion and GDP per capita was $1,750 in 2001. The primary sector accounted for 24.2% of real GDP in 2001, the secondary sector, 10.8%, and the tertiary sector, 65.0%. In 2001, mining products accounted for 55.3% of Namibia's total exports (diamonds, 41.4%) and prepared and preserved fish for 24.5%. South Africa accounted for 30.9% of Namibia's total exports and Europe, 55.1%. Namibia's imports were spread across the various sectors, most of which, 86.2%, came from South Africa.

For South Africa, as indicated in WTO (2003, pp. A4-217, 224, 293-96), nominal GDP in 2001 was $102.3 billion and GDP per capita was $2,793. In 2000, agriculture was 3.2% of real GDP, industry, 30.9%, and services, 65.9%. South Africa's exports were $26.1 billion in 2000. Agricultural products were 12.8%, mining products, 21.0%, and manufactures, 52.7%, of total exports. The United States accounted for 9.2%, the EU-15 for 33.1%, East Asia, 14.9%, and Other Africa for 15.3% of total exports. South Africa's imports were $26.6 billion in 2000. Agricultural imports were 6.2%, mining products, 17.0%, and manufactures, 68.7%, of total imports. The United States accounted for 12.0%, the EU-15, 39.8%, the Middle East, 13.8%, and East Asia, 20.9% of total imports. In 2000, the European Union accounted for about 90% of South Africa's total inflow of FDI and the United States, 6.0%. FDI in mining and quarrying was 27.8%, manufacturing, 26.4%, and services, 45.8%, of the inflows in 2000.

For Swaziland, as noted in WTO (2003, pp. A5-351-354), total exports were $694 million in 2001. Exports of agricultural products were 51.5% of total exports and manufactures were 46.8%, especially chemicals and clothing and other consumer goods. South Africa accounted for 91.8% of Swaziland's exports in 2001, and the United States, 4.0%. Total imports were $847 million in 2001. Agricultural products were 22.4% of imports, mining products, 12.6%, and manufactures, 64.3%. South Africa accounted for 94.5% of Swaziland's imports and the United States, 0.2%.

The dominant size of South Africa compared to the other four SACU members and its role as the conduit for intra-SACU trade are evident from the foregoing information. The export composition of the SACU members reflects the presence of significant mineral resource endowments especially for Botswana and Namibia and to some extent for South Africa. The, non-mineral exports of South Africa are diversified. Textile and clothing exports are important for Lesotho. SACU exports go primarily to Western Europe and, within SACU, to South Africa, and the U.S. share of exports is comparatively small. Imports are diversified across sectors and South Africa is the major supplier to the other SACU countries. Most of the foreign direct investment (FDI) inflows in the SACU members come from Western Europe, especially the United Kingdom, and the U.S. share is relatively small.

The Main Features of the U.S.-SACU FTA

As already indicated, USTR Robert Zoellick notified the U.S. House and Senate on November 5, 2002 that the Administration intended to initiate free trade negotiations with Sub-Saharan nations:

> "In pursuing a negotiation with SACU, we are responding to Congress' direction, as expressed in the African Growth and Opportunity Act (AGOA) to initiate negotiations with interested beneficiary countries to serve as the catalyst for increasing free trade between the United States and sub-Saharan Africa and for increasing the private sector in the region.
>
> A free trade agreement with SACU would deepen our economic and political ties to sub-Saharan Africa and lend momentum to our development efforts for the

> region. SACU is the largest U.S. export market in sub-Saharan Africa, accounting for approximately $3.1 billion in exports in 2001. Total two-way trade between the United States and SACU was approximately $7.9 billion in 2001.
>
> Since 2002, U.S. trade preferences provided to sub-Saharan countries through AGOA have contributed significantly to sustainable economic development and poverty alleviation in the region. By moving from one-way trade preferences to a reciprocal free trade agreement, we will build on the success of AGOA – expanding U.S. access to the SACU market, further linking trade to SACU's economic development strategies, encouraging greater foreign direct investment, and promoting regional integration and economic growth.
>
> We plan to use our negotiations with the SACU countries to strengthen growing bilateral commercial ties and to address barriers in these countries to U.S. exports – including high tariffs on certain goods, overly restrictive licensing measures, inadequate protection of intellectual property rights, and restrictions that the SACU governments impose that make it difficult for our services firms to do business in these markets. We also see the negotiations as an opportunity to advance U.S. objectives for the multilateral negotiations currently underway in the World Trade Organization (WTO). We will also seek to level the playing field in areas where U.S. exporters are disadvantaged by the European Union's free trade agreement with South Africa.
>
> In recent years, the SACU countries have made important strides in implementing economic reforms and in lifting their people out of poverty. A free trade agreement will reinforce the reforms that have taken place, and will encourage additional progress where needed. An enhanced framework of rules governing trade and close cooperation between our governments will have a profound effect in promoting stronger economies, greater respect for the rule of law, sustainable development, and accountable institutions of governance.
>
> SACU governments, businesses, and citizens regard a possible free trade agreement negotiations with the United States from a similarly broad perspective, and consider such a negotiation to be an important opportunity to move their societies forward economically, politically, and socially. …As we move forward, we will focus ongoing bilateral and multilateral development assistance and trade-related technical assistance to support commitments these countries make as part of the FTA, and to strengthen the government institutions in SACU countries that will be responsible for implementing their commitments."

In pursuing bilateral FTAs, the United States uses a common framework covering the issues to be negotiated with the partners involved. This framework, which is patterned after the North American Free Trade Agreement (NAFTA) negotiated in 1992-93, has been updated and adapted for the new FTAs negotiated in recent years and currently in process. In the case of the SACU FTA, the specific U.S. negotiating objectives stated in USTR Zoellick's November 5, 2002 Letter to the House and Senate are as follows:

"*1. Trade in Industrial Goods and Agriculture:*

-- Seek to eliminate tariffs and other duties and charges on trade between SACU countries and the United States on the broadest possible basis, subject to reasonable adjustment periods for import-sensitive products.

-- Seek agreement by SACU countries to join the WTO Information Technology Agreement.

-- Seek to eliminate non-tariff barriers in SACU countries to U.S. exports, including licensing barriers, unjustified trade restrictions that affect new U.S. technologies, and other non-tariff measures identified by U.S. exporters.

-- Pursue favorable staging of tariff elimination and other market access commitments from SACU countries that improve the competitive position of U.S. goods vis-à-vis those of the European Union in SACU markets.

-- Pursue fully reciprocal access to the SACU market for U.S. textile and apparel products.

-- Pursue a mechanism with SACU countries that will support achieving the U.S. objective in the WTO negotiations of eliminating all export subsidies on agricultural products, while maintaining the right to provide *bona fide* food aid and preserving U.S. agricultural market development and export credit programs.

-- Seek to eliminate SACU country practices that adversely affect U.S. exports of perishable or cyclical agricultural products, while improving U.S. import relief mechanisms as appropriate.

2. Customs Matters, Rules of Origin, and Enforcement Cooperation:

-- Seek rules to require that customs operations of SACU and SACU countries are conducted with transparency, efficiency, and predictability and that customs laws, regulations, and decisions of SACU and SACU countries are not applied in a manner that creates unwarranted procedural obstacles to U.S. exports.

-- Seek terms for cooperative efforts with the SACU governments regarding enforcement of customs and related issues, including trade in textiles and apparel.

-- Seek rules of origin, procedures for applying these rules, and provisions to address circumvention matters that will ensure that preferential duty rates under the FTA apply only to goods eligible to receive such treatment, without creating unnecessary obstacles to trade.

3. Sanitary and Phytosanitary (SPS) Measures:

-- Seek to have the SACU countries reaffirm their WTO commitments on SPS measures and eliminate any unjustified SPS restrictions.

-- Seek to strengthen collaboration with SACU countries in implementing the WTO SPS Agreement and to enhance cooperation with SACU countries in relevant international bodies on developing international SPS standards, guidelines, and recommendations.

4. Technical Barriers to Trade (TBT):

-- Seek to have the SACU countries reaffirm their WTO TBT commitments and eliminate any unjustified TBT measures.

-- Seek to strengthen collaboration with SACU countries on implementation of the WTO TBT Agreement and create a procedure for exchanging information with the SACU countries on TBT-related issues.

5. Intellectual Property Rights:

-- Seek to establish standards that reflect a standard of protection similar to that found in U.S. law and that build on the foundations established in the WTO Agreement on Trade-Related Aspects of Intellectual Property (TRIPs Agreement) and other international intellectual property agreements, such as the World Intellectual Property Organization Copyright Treaty and Performances and Phonograms Treaty, and the Patent Cooperation Treaty.

-- Establish commitments for SACU countries to strengthen significantly their domestic enforcement procedures, such as by ensuring that government agencies may initiate criminal proceedings on their own initiative and seize suspected pirated and counterfeit goods, equipment used to make or transmit these goods, and documentary evidence. Seek to strengthen measures in SACU countries that provide for compensation of right holders for infringements of intellectual property rights and to provide for criminal penalties under the laws of SACU countries that are sufficient to have a deterrent effect on piracy and counterfeiting.

6. Trade in Services:

-- Pursue disciplines to address discriminatory and other barriers to trade in the SACU countries' services markets. Pursue an ambitious approach to market access, including enhanced access for U.S. services firms to telecommunications and any other appropriate services sectors in SACU markets.

-- Seek improved transparency and predictability of SACU countries' regulatory procedures, specialized disciplines for

financial services, and additional disciplines for telecommunications services and other sectors as necessary.

-- Seek appropriate provisions to ensure that the SACU countries will facilitate the temporary entry of U.S. business persons into their territories, while ensuring that any commitments by the United States are limited to temporary entry provisions and do not require any changes to U.S. laws and regulations relating to permanent immigration and permanent employment rights.

7. Investment:

-- Seek to establish rules that reduce or eliminate artificial or trade-distorting barriers to U.S. investment in SACU countries, while ensuring that investors of SACU countries in the United States are not accorded greater substantive rights with respect to investment protections than U.S. investors in the United States, and to secure for U.S. investors in SACU countries important rights comparable to those that would be available under U.S. legal principles and practice.

-- Seek to ensure that U.S. investors receive treatment as favorable as that accorded to domestic or other foreign investors in SACU countries and to address unjustified barriers to the establishment and operation of U.S. investments in those countries. Provide procedures to resolve disputes between U.S. investors and the governments of SACU countries that are in keeping with the Trade Promotion Authority goals of making such procedures expeditious, fair and transparent.

8. Electronic Commerce:

-- Seek to affirm that the SACU countries will allow goods and services to be delivered electronically on terms that promote the development and growth of electronic commerce.

-- Seek to ensure that the SACU countries do not apply customs duties in connection with digital products or unjustifiably discriminate among products delivered electronically.

9. Government Procurement:

-- Seek to establish rules requiring government procurement procedures and practices in the SACU countries to be fair, transparent, and predictable for suppliers of U.S. goods and services who seek to do business with the SACU governments.

-- Seek to expand access for U.S. goods and services to SACU government procurement markets.

10. Transparency/Anti-Corruption/Regulatory Reform:

-- Seek to make the SACU countries' administration of their trade regimes more transparent and pursue rules that will permit

timely and meaningful public comment before the SACU governments adopt trade-related measures.

-- Seek to ensure that the SACU countries adopt and apply high standards prohibiting corrupt practices that affect international trade and enforce such prohibitions.

11. Trade Remedies:

-- Provide a bilateral safeguard mechanism during the transition period.

-- Make no changes to U.S. antidumping and countervailing duty laws.

12. Labor, including Child Labor:

-- Based upon a review and analysis of their labor laws and practices, establish procedures for consultations and cooperative activities with the SACU countries to strengthen their capacity to promote respect for core labor standards, including compliance with ILO Convention 182 on the worst forms of child labor, building on technical assistance programs administered by the U.S. Department of Labor.

-- Seek an appropriate commitment from SACU countries to the effective enforcement of their labor laws.

-- Establish that SACU countries will strive to ensure that they will not, as an encouragement for trade or investment, weaken or reduce the protections provided for in their labor laws.

13. Environment:

-- Seek to promote trade and environment policies that are mutually supportive.

-- Seek an appropriate commitment by the SACU countries to the effective enforcement of their environmental laws.

-- Establish that the SACU countries will strive to ensure that they will not, as an encouragement for trade, weaken or reduce the protections provided for in their environmental laws.

-- Seek to assist the SACU countries to strengthen their capacity to protect the environment through the promotion of sustainable development, such as by establishing consultative mechanisms.

14. State-to-State Dispute Settlement:

-- Encourage the early identification and settlement of disputes through consultation.

-- Seek to establish fair, transparent, timely, and effective procedures to settle disputes arising under the agreement.

> In addition, the FTA will take into account other legitimate U.S. objectives including, but not limited to, the protection of legitimate health or safety, essential security, and consumer interests."

It should be evident from the foregoing that the SACU FTA reflects a myriad of objectives from the U.S. perspective, with a focus on expanding the market access in the SACU for U.S. goods and services and shaping the regulatory environment in the SACU member countries to conform to U.S. principles and institutions. By the same token, the SACU members may be attracted by the more favorable access that the FTA 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.[14]

With the foregoing by way of background, we turn now to our computational analysis, which will focus on the economic effects on the United States and the SACU of the bilateral removal of trade barriers on agricultural products, manufactures, and services as the result of the U.S.-SACU FTA. Many of these bilateral barriers would be removed immediately, but some would be phased out over longer periods of time. For modeling purposes, however, we assume that all barriers are removed at the time rather than in phases.

Computational Results of the U.S.-SACU FTA

The global welfare effects of the bilateral removal of agricultural protection, manufactures tariffs, and services barriers are indicated in Table 3a. 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 $1.4 billion with the bilateral elimination of manufactures tariffs and $8.2 billion with the bilateral elimination of services barriers. The total improvement of U.S. economic welfare is $9.6 billion, which is 0.09% of U.S. GNP. The real return to U.S. labor and the real return to capital are increased by 0.01%. Global economic welfare rises by

[14] For further elaboration and analysis of the negotiating issues, prospective benefits, and the asymmetric characteristics and policy implications of a U.S.-SACU FTA, see Whalley and Leith (2004).

$11.8 billion. Economic welfare for the SACU is increased by $2.2 billion (1.2% of GNP). The real return to capital rises by 0.6% and the real return to labor by 0.8%.

The sectoral effects on exports, imports, gross output, and employment are indicated in Table 3b. The percentage increases in U.S. sectoral exports to SACU are all below 1%. The largest absolute increases in U.S. sectoral exports are in food, beverages, and tobacco ($193 million), transportation equipment ($109 million), machinery & equipment ($247 million), trade & transport ($193 million), and other private services ($158 million). Total U.S. exports are increased by $1.2 billion. The increases in U.S. imports from SACU are small in percentage terms. The largest absolute increases in U.S. imports are in food, beverages & tobacco ($182 million), trade & transport ($493 million), other private services ($214 million), and government and related services ($128 million). Total U.S. imports are increased by $1.2 billion.

Total SACU exports are increased by $1.2 billion, with the largest increases in food, beverages & tobacco ($106 million), textiles and wearing apparel ($120 million), chemicals ($43 million), metal products ($37 billion), and services ($841 million). The percentage increases are sizable in several SACU export sectors. SACU imports increase by $1.1 billion, with the largest increases in agricultural products and food, beverages & tobacco ($237 million), chemicals ($35 million), transportation equipment and machinery & equipment ($271 million), and services ($397 million). There are significant percentage increases in several SACU import sectors.

There are small increases in U.S. sectoral gross outputs, except for wearing apparel.[15] The sectoral percentage changes in U.S. employment are very small. In terms of number of workers, there are employment increases particularly in U.S. agriculture (973 workers), food, beverages & tobacco (353 workers), transportation equipment (147 workers), machinery & equipment (277 workers), and other private services (167 workers). There are employment declines in textiles (-109 workers), wearing apparel (-211 workers), trade & transport (-2,101

[15] It may be noted that changes in gross output will reflect the combined changes in sectoral exports and imports and domestic consumption resulting from the removal of the trade barriers. Changes in gross output may therefore be positive or negative as our computational results indicate.

workers) and government and related services (-1,221 workers). These employment changes are determined by changes in outputs and by capital-labor substitution and broadly reflect U.S. comparative advantage.

Gross outputs in the SACU increase especially in textiles (2.1%) and wearing apparel (13.9%), and there are small percentage changes in other sectors. It is evident that labor and capital are attracted to textiles and wearing apparel, with increases of 799 and 14,668 workers in these sectors as well as in trade & transport services (1,046 workers). Employment declines in all other sectors, especially agriculture and food, beverages & tobacco (-7,315 workers), metal products, transportation equipment, machinery & equipment, and other manufactures (-3,997 workers), and construction and other private services (-2,418 workers). These sectoral employment changes may accordingly reflect SACU comparative advantage. While the U.S.-SACU FTA would be phased in over a period of years, the SACU employment shifts noted suggest a possible need for programs of assistance for dislocated workers who would change employment between sectors. Adjustment costs would thus have to be factored into the assessment of the welfare effects of the U.S.-SACU FTA.

The effects on bilateral U.S. trade with SACU and other trading partners are provided in Table 3c. U.S. bilateral exports to SACU and bilateral imports from SACU increase by $1.2 billion. There are indications of trade diversion, but the amounts involved appear small.

Our modeling results just described reflect the bilateral elimination of barriers to trade in agricultural products, manufactures, and services. As noted in the discussion of the main features and objectives of the U.S.-SACU FTA, 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 a bilateral FTA 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 SACU 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 SACU members. Our modeling results may thus constitute a lower bound to the welfare changes due to the U.S.-SACU FTA bilateral liberalization. But it remains unclear how significant the non-trade and growth effects of the SACU FTA may be.

IV. Welfare Comparisons of the U.S.-SACU Bilateral FTA, Unilateral Free Trade, and Global Free Trade

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

1. Global economic welfare is increased by $507.0 billion with U.S. unilateral free trade and by $32.3 billion with SACU unilateral free trade, as compared to the U.S.-SACU FTA liberalization of $11.8 billion.

2. With unilateral free trade, U.S. economic welfare increases by $320.2 billion (3.2% of GNP) compared to $9.6 billion (0.1% of GNP) with the bilateral U.S.-SACU FTA. SACU unilateral free trade increases SACU welfare by $13.6 billion (7.4% of GNP) compared to $2.2 billion (1.2% of GNP) with the U.S.-SACU FTA.

3. Global (multilateral) free trade increases total economic welfare by $2.4 trillion compared to $507.0 billion and $32.3 billion with unilateral U.S. and SACU free trade and $11.8 billion with the bilateral U.S.-SACU FTA.

4. With global free trade, U.S. economic welfare rises by $542.5 billion (5.4% of GNP) compared to $320.2 billion (3.2%% of GNP) billion with unilateral free trade and $9.6 billion (0.1%) with the bilateral U.S.-SACU FTA. SACU welfare increases by $15.5 (8.5% of GNP) with global free trade compared to $13.6 billion for SACU unilateral free trade and $2.2 billion for the bilateral U.S.-SACU FTA liberalization.

These calculations clearly show that multilateral trade liberalization offers potentially far greater increases in economic welfare for the United States and the SACU and other countries/regions in the global trading system. This would be 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 bilateral U.S.-SACU FTA and would serve to offset the negative welfare effects of any trade diversion resulting from the U.S.-SACU FTA. This would almost certainly remain true even if there are other benefits from the non-trade aspects of the U.S.-SACU FTA and possible increases in capital accumulation and productivity.

IV. Summary and Conclusions

This paper has been designed to assess the economic effects of the U.S. bilateral FTA being negotiated with the Southern African Customs Union (SACU). The SACU FTA negotiations were initiated in June 2003 and are expected to be completed in December 2004. The analysis presented has been based on the Michigan Model of World Production and Trade, which is a multi-country/multi-sector computable general equilibrium (CGE) model that has been used for over three decades to provide estimates of the economic effects of multilateral, regional, and bilateral trade negotiations and other aspects of changes in trade policies of the United States and other major trading countries/regions. The version of the model used 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 is a model with imperfectly competitive firms and incorporates increasing returns to scale, monopolistic competition, and product variety. 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.

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 FTA 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 FTA. The computational results that have been presented are therefore best

interpreted as providing a lower bound for the potential benefits involved. But since these benefits are shown mostly to be rather small in both absolute and relative terms, the non-trade and dynamic benefits of the SACU FTA are unlikely to alter these results significantly.

To provide a broader perspective on the potential economic effects of the U.S.-SACU FTA, the model was also used to calculate the effects of unilateral tariff removal by the United States and SACU. It was shown that unilateral free trade would result in much larger increases in economic welfare for the United States and SACU as compared to the FTA bilateral trade liberalization. Finally, the effects of global (multilateral) free trade were calculated and shown to be greater for the United States and SACU as compared to both the bilateral FTA liberalization and unilateral tariff removal. Our results suggest accordingly that the interests of the global trading community, including the United States and SACU, could be better served if the members of the WTO were able to put their divisiveness and indecisions aside and work to keep the multilateral negotiations on track.[16]

[16] This conclusion is reinforced in Brown, Kiyota, and Stern (2004b) 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.

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Table 1. Post-Uruguay Round Tariff Rates, Trade and Employment by Sector for the United States and SACU countries

United States	Tariff		Exports (million $)		Exports (%)		Imports (million $)		Imports (%)		Employment	
	Global	SACU	World	SACU	World	SACU	World	SACU	World	SACU	%	Workers
Agriculture	2.7	1.3	35,176	65	100.0	0.2	18,602	53	100.0	0.3	2.7	3,538,000
Mining	0.2	0.1	6,421	38	100.0	0.6	69,939	133	100.0	0.2	0.5	634,000
Food, Beverages & Tobacco	3.5	2.8	30,541	145	100.0	0.5	28,813	138	100.0	0.5	1.7	2,144,942
Textiles	5.6	6.3	11,485	36	100.0	0.3	21,514	101	100.0	0.5	0.7	948,740
Wearing Apparel	11.0	12.4	6,847	8	100.0	0.1	38,335	139	100.0	0.4	0.6	796,958
Leather Products & Footwear	7.2	2.3	2,280	16	100.0	0.7	21,842	25	100.0	0.1	0.1	111,039
Wood & Wood Products	0.3	0.3	29,386	165	100.0	0.6	43,785	81	100.0	0.2	1.7	2,218,458
Chemicals	1.9	0.7	90,569	524	100.0	0.6	77,142	259	100.0	0.3	2.1	2,666,937
Non-metallic Min. Products	3.2	0.0	11,921	96	100.0	0.8	14,071	44	100.0	0.3	0.5	689,823
Metal Products	1.4	0.6	34,238	97	100.0	0.3	56,001	1,417	100.0	2.5	2.4	3,053,744
Transportation Equipment	1.2	1.7	102,640	349	100.0	0.3	128,874	69	100.0	0.1	1.7	2,244,402
Machinery & Equipment	1.0	0.1	269,892	1,367	100.0	0.5	307,001	117	100.0	0.0	4.2	5,440,783
Other Manufactures	1.3	0.4	11,322	55	100.0	0.5	39,851	219	100.0	0.6	0.4	519,174
Elec., Gas & Water	0.0	0.0	751	2	100.0	0.2	2,230	22	100.0	1.0	1.2	1,493,000
Construction	9.0	9.0	4,023	4	100.0	0.1	1,268	3	100.0	0.2	6.4	8,302,000
Trade & Transport	27.0	27.0	81,445	549	100.0	0.7	75,050	578	100.0	0.8	26.6	34,466,000
Other Private Services	31.0	31.0	81,707	315	100.0	0.4	59,724	216	100.0	0.4	11.4	14,768,000
Government Services	25.0	25.0	42,165	250	100.0	0.6	18,838	159	100.0	0.8	35.1	45,521,000
Total			852,808	4,080	100.0	0.5	1,022,879	3,771	100.0	0.4	100.0	129,557,000

SACU	Tariff		Exports (million $)		Exports (%)		Imports (million $)		Imports (%)		Employment	
	Global	U.S.	World	U.S.	World	U.S.	World	U.S.	World	U.S.	%	Workers
Agriculture	2.7	8.2	1585.0	45.2	100.0	2.8	584	70	100.0	12.0	25.3	4,686,185
Mining	0.1	0.0	6013.0	118.2	100.0	2.0	1,721	42	100.0	2.4	1.7	308,007
Food, Beverages & Tobacco	0.0	0.0	1492.2	130.1	100.0	8.7	1,619	152	100.0	9.4	1.1	201,291
Textiles	11.3	17.3	628.8	96.7	100.0	15.4	1,115	38	100.0	3.4	0.4	67,947
Wearing Apparel	17.1	4.8	352.6	133.7	100.0	37.9	372	9	100.0	2.3	0.6	117,477
Leather Products & Footwear	9.9	9.2	224.7	24.3	100.0	10.8	480	16	100.0	3.4	0.2	30,117
Wood & Wood Products	2.7	3.4	1511.8	75.0	100.0	5.0	1,152	174	100.0	15.1	1.1	200,825
Chemicals	3.2	3.9	2368.6	247.5	100.0	10.4	4,232	548	100.0	13.0	0.9	161,848
Non-metallic Min. Products	8.0	5.1	449.7	39.7	100.0	8.8	851	109	100.0	12.9	0.4	72,924
Metal Products	4.5	5.7	11857.7	1376.5	100.0	11.6	1,982	102	100.0	5.1	1.1	202,110
Transportation Equipment	16.5	7.9	1529.2	67.1	100.0	4.4	3,912	357	100.0	9.1	0.5	84,394
Machinery & Equipment	2.6	3.4	2448.1	113.3	100.0	4.6	10,447	1,407	100.0	13.5	0.9	174,765
Other Manufactures	3.7	3.0	1392.8	209.6	100.0	15.1	815	57	100.0	7.0	0.1	24,488
Elec., Gas & Water	0.0	0.0	396.9	22.1	100.0	5.6	22	2	100.0	8.2	0.7	130,965
Construction	1.0	1.0	23.2	3.1	100.0	13.4	38	4	100.0	11.1	7.4	1,362,277
Trade & Transport	11.0	11.0	3127.3	577.6	100.0	18.5	2,761	549	100.0	19.9	16.3	3,024,190
Other Private Services	17.0	17.0	1412.2	215.7	100.0	15.3	1,828	315	100.0	17.2	7.3	1,353,927
Government Services	4.0	4.0	487.0	158.5	100.0	32.5	481	250	100.0	51.9	34.1	6,304,063
Total			37300.8	3653.8	100.0	9.8	34,410	4,201	100.0	12.2	100.0	18,507,800

Sources: Tariff and trade data are adapted from Francois and Strutt (1999); Brown, Deardorff and Stern (2002); and Diamaranan and McDougall (2002).
Employment data are adapted from ILO website (2003); UNIDO (2003); and World Bank (2003).

Table 2. Stock of U.S. Foreign Direct Investment Abroad, 2002

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

			World Mil.	SACU Mil.
Mining			80,976	84
Utilities			20,932	0
Manufacturing	Total		392,553	1,183
	Of which	Food	28,240	97
		Chemicals	99,371	550
		Primary and fabricated metals	24,359	-7
		Machinery	22,025	109
		Computer and electronic products	69,208	4
		Electrical equipment, appliances, and components	10,166	n.a.
		Transportation equipment	48,378	328
Wholesale trade			114,895	223
Information			53,841	972
Depository institutions			52,935	n.a.
Finance (except depository institutions) and insurance			244,480	38
Professional, scientific, and technical services			38,307	n.a.
Other industries			522,047	n.a.
Total			1,520,965	3,428

			World %	SACU %
Mining			5.3	2.5
Utilities			1.4	0.0
Manufacturing	Total		25.8	34.5
	Of which	Food	1.9	2.8
		Chemicals	6.5	16.0
		Primary and fabricated metals	1.6	-0.2
		Machinery	1.4	3.2
		Computer and electronic products	4.6	0.1
		Electrical equipment, appliances, and components	0.7	n.a.
		Transportation equipment	3.2	9.6
Wholesale trade			7.6	6.5
Information			3.5	28.4
Depository institutions			3.5	n.a.
Finance (except depository institutions) and insurance			16.1	1.1
Professional, scientific, and technical services			2.5	n.a.
Other industries			34.3	n.a.
Total			100.0	100.0

Notes: 1) FDI data for SACU refer only to South Aftica.

2) n.a. means not available.

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

Table 3a. Global Welfare Effects of U.S.-Southern African Customs Union (SACU) 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	0.01	0.00	-0.03	0.00	0.01	0.00	-0.00	0.00	0.00
United States	0.00	0.01	0.01	1.40	0.08	8.20	0.09	9.61	0.01	0.01
Canada	0.00	0.00	0.00	0.03	0.00	-0.01	0.00	0.02	0.00	0.00
Australia	0.00	0.00	0.00	-0.01	0.00	0.01	0.00	0.00	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	0.05	0.00	-0.13	0.00	0.05	0.00	-0.03	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	-0.02	0.00	0.00	0.00	-0.01	0.00	0.00
Korea	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	-0.00	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	-0.01	0.00	0.00	0.00	-0.00	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	-0.00	0.00	0.00
Rest of Asia	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	-0.00	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	0.00	0.00	0.01	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)	0.07	0.13	0.41	0.76	0.73	1.34	1.21	2.23	0.63	0.79
Total		0.22		1.98		9.63		11.83		

Table 3b. U.S.-Southern African Customs Union (SACU) FTA: Change in Exports, Imports, Outputs, and Number of Workers
(Percent, Millions of Dollars, and the Number of Workers)

	Exports (Percent)		Imports (Percent)		Output (Percent)		Employment (Percent)	
	U.S.	SACU	U.S.	SACU	U.S.	SACU	U.S.	SACU
Agriculture	0.10	0.20	0.08	9.75	0.03	-0.11	0.03	-0.14
Mining	0.07	-0.25	0.02	0.78	0.01	0.04	0.00	-0.31
Food, Beverages & Tobacco	0.41	4.57	0.24	5.61	0.03	0.27	0.02	-0.41
Textiles	0.13	6.35	0.12	1.29	0.00	2.09	-0.01	1.18
Wearing Apparel	0.09	22.32	0.11	-1.49	-0.01	13.90	-0.03	12.80
Leather Products & Footwear	0.61	1.63	-0.01	1.41	0.22	0.42	0.20	-0.53
Wood & Wood Products	0.10	0.13	0.01	3.15	0.01	0.24	0.01	-0.40
Chemicals	0.07	1.45	0.05	1.67	0.01	0.39	0.00	-0.26
Non-metallic Min. Products	0.11	1.27	0.05	2.23	0.02	0.08	0.01	-0.30
Metal Products	0.05	0.23	0.08	1.08	0.01	0.15	0.00	-0.48
Transportation Equipment	0.08	0.41	0.00	2.05	0.03	-0.06	0.02	-0.82
Machinery & Equipment	0.07	0.14	0.01	1.43	0.03	-0.59	0.02	-1.19
Other Manufactures	0.07	-0.47	0.01	1.30	0.02	-0.43	0.01	-0.96
Elec., Gas & Water	0.00	-0.38	0.01	0.65	0.01	0.15	0.00	-0.20
Construction	0.00	3.24	0.07	0.77	0.01	0.34	0.00	-0.09
Trade & Transport	0.18	12.51	0.52	5.41	0.00	1.04	-0.01	0.03
Other Private Services	0.15	11.06	0.28	7.52	0.00	0.66	0.00	-0.09
Government Services	0.05	19.14	0.54	6.52	0.00	0.39	0.00	0.00

	Exports (Value)		Imports (Value)		Output (Value)		Employment (Number of Workers)[a]	
	U.S.	SACU	U.S.	SACU	U.S.	SACU	U.S.	SACU
Agriculture	47	4	19	55	73	-13	973	-6,495
Mining	6	-20	13	18	16	6	27	-961
Food, Beverages & Tobacco	193	106	100	182	145	53	353	-820
Textiles	20	49	35	17	3	93	-109	799
Wearing Apparel	9	81	52	-6	-10	77	-211	14,668
Leather Products & Footwear	18	5	-2	11	27	4	202	-145
Wood & Wood Products	39	2	7	42	68	25	163	-801
Chemicals	76	43	48	85	103	75	127	-427
Non-metallic Min. Products	17	7	9	21	16	3	76	-224
Metal Products	22	37	58	23	51	32	33	-999
Transportation Equipment	109	6	6	87	147	-5	369	-694
Machinery & Equipment	247	4	33	184	277	-55	1,230	-2,068
Other Manufactures	11	-8	3	13	12	-9	77	-236
Elec., Gas & Water	0	-2	0	0	35	23	14	-261
Construction	-0	1	1	0	60	45	-13	-1,185
Trade & Transport	193	514	493	186	74	542	-2,101	1,046
Other Private Services	158	205	214	172	167	251	11	-1,233
Government Services	28	122	128	39	-20	140	-1,221	35
Total	1,193	1,154	1,217	1,128	1,245	1,287	0	0

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

Table 3c. U.S.-Southern African Customs Union (SACU) FTA: Changes in Bilateral Trade Flows (Millions of Dollars)

From	To	JPN	USA	CAN	AUS	NZL	EUN	HKG	CHN	KOR	SGP	TWN	IDN	MYS	PHL	THA	ROA	CHL	MEX	CAC	SAM	MCC	SAC	ROW	Exports
Japan	JPN	0	-1	-1	0	0	-2	-0	-0	-0	-0	0	0	-0	-0	-0	0	-0	-0	0	-0	-0	0	-3	-7
United States	USA	8	0	13	1	0	17	-1	0	1	2	2	-1	1	-0	0	-2	0	2	-3	4	0	1,170	2	1,217
Canada	CAN	-0	8	0	0	0	1	0	0	-0	0	0	-0	0	0	0	0	0	-0	0	0	0	1	-0	10
Australia	AUS	0	0	-0	0	0	-0	0	-0	-0	0	0	0	0	0	0	0	-0	-0	0	-0	0	1	-0	1
New Zealand	NZL	-0	-0	-0	-0	0	-0	0	-0	-0	-0	0	-0	-0	-0	-0	-0	-0	-0	0	-0	-0	0	-0	-0
EU and EFTA	EUN	1	-7	-1	0	0	0	-0	1	-0	0	1	-0	0	0	0	-0	-0	-0	1	-0	-0	-12	-11	-29
Hong Kong	HKG	-0	0	-0	0	0	-0	0	-0	0	0	0	-0	-0	0	0	0	0	-0	0	-0	0	-1	-0	-2
China	CHN	-2	-0	-0	-0	-0	-3	-0	0	-1	-0	-2	-0	-0	-0	-0	-0	-0	-0	0	-0	-0	-1	-2	-12
Korea	KOR	-0	0	-0	0	0	-1	-0	0	0	-0	-0	0	0	0	-0	0	0	-0	0	0	-0	-4	-1	-4
Singapore	SGP	-0	1	-0	0	0	-1	-0	0	-0	0	0	0	-0	0	0	0	0	-0	0	-0	-0	0	-1	-0
Taiwan	TWN	-1	-0	-0	0	-0	-1	-0	0	-0	-0	0	0	-0	0	-0	0	-0	-0	0	-0	-0	-0	-0	-2
Indonesia	IDN	0	-0	-0	-0	0	-0	0	0	-0	-0	-0	0	-0	0	0	0	-0	-0	0	-0	0	-0	-0	-1
Malaysia	MYS	-0	0	-0	0	0	-0	0	0	-0	-0	0	-0	0	0	0	0	-0	-0	0	-0	0	-0	-0	-0
Philippines	PHL	0	0	-0	0	0	-0	0	0	-0	0	-0	0	0	0	0	0	0	-0	0	-0	0	-0	-0	-0
Thailand	THA	-0	0	-0	0	0	-0	-0	0	-0	-0	0	0	0	0	0	0	-0	-0	0	-0	-0	-0	-1	-1
Rest of Asia	ROA	-0	-0	-0	-0	-0	-1	-0	0	-0	-0	-0	-0	-0	-0	-0	0	-0	-0	0	-0	-0	-0	-2	-5
Chile	CHL	0	0	-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	0	0	0	-0	0	0	0	0	0	0	0	-0	0	0	0	-0	0	-0	5
Central America and the Caribbean	CAC	-0	0	-0	-0	-0	-1	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	0	-0	-0	0	-0	-2
South America	SAM	0	2	-0	0	0	-0	0	0	-0	0	0	-0	0	0	0	0	-0	-0	0	0	-0	0	-1	2
Morocco	MCC	0	-0	0	0	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	-7	1,186	-1	-1	-0	-29	-1	-9	-3	-1	-2	-0	-1	-0	-1	-3	-0	5	-0	-2	-0	0	-1	1,128
Rest of the world	ROW	-1	-1	-0	-0	-0	-5	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-21	-30
Imports		-2	1,193	10	0	-0	-27	-3	-7	-5	0	-1	-1	-0	-0	-1	-4	0	5	-2	0	-0	1,154	-42	

Table 4. Computation of Welfare Effects of Bilateral FTAs, Unilateral Free Trade, and Global Free Trade (Billions of Dollars and Percent)

Bilateral Free Trade			**Unilateral Free Trade**			**Global Free Trade**		
US-SACU	Welfare (U.S.$)	(% of GNP)	*United States*	Welfare (U.S.$)	(% of GNP)		Welfare (U.S.$)	(% of GNP)
United States	9.6	0.1	United States	320.2	3.2	United States	542.5	5.4
SACU	2.2	1.2	Global	507.0		SACU	15.5	8.5
Global	11.8		*SACU*	Welfare (U.S.$)	(% of GNP)	Global	2417.3	
			SACU	13.6	7.4			
			Global	32.3				

Global Free Trade: Decomposition								
Agricultural Protection	Welfare (U.S.$)	(% of GNP)	*Manufactures Tariffs*	Welfare (U.S.$)	(% of GNP)	*Services Barriers*	Welfare (U.S.$)	(% of GNP)
United States	0.4	0.0	United States	75.7	0.8	United States	466.4	4.6
SACU	0.3	0.2	SACU	8.3	4.5	SACU	7.0	3.8
Global	53.9		Global	701.6		Global	1661.8	

Table A. Labor Force of SACU Countries

	(1,000) Population ages 15-64, total							(1,000) Labor force, total						
SACU	1995	1996	1997	1998	1999	2000	2001	1995	1996	1997	1998	1999	2000	2001
Botswana	799	823	848	873	900	927	937	658	678	697	714	730	744	756
Lesotho	1,047	1,065	1,083	1,101	1,119	1,138	1,152	759	777	794	810	824	838	852
Nambia	838	861	885	909	934	960	973	654	667	680	694	708	724	739
South Africa	23,767	24,367	24,983	25,615	26,264	26,930	27,166	15,288	15,646	15,992	16,329	16,657	16,983	17,214
Swaziland	488	503	520	537	555	573	583	320	332	345	359	372	383	394
Total	26,939	27,619	28,318	29,035	29,772	30,528	30,811	17,679	18,099	18,507	18,906	19,292	19,672	19,954

Source: World Bank (2003).