16.C

Agricultural Tariff Data

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16.C.1 Overview

This section discusses the agricultural tariff data that was used in the GTAP version 5 data base. In particular, it covers the sources of tariff data, calculation of tariff rates in *ad valorem* equivalent terms, and the aggregation of tariff data for GTAP commodities.

16.C.2 Sources of Tariff Data

The primary source of bound tariff data used in this data set is the Agricultural Market Access Database (*AMAD*). The AMAD is the most comprehensive collection of available public data on World Trade Organization (*WTO*) market access, containing detailed data on WTO tariff and TRQ schedules, import data, applied tariffs, production, consumption, and trade, among other information. The AMAD contains data on about 50 WTO members, including all major agricultural trading members of the WTO. AMAD data can be accessed through its web site, www.amad.org. Country coverage of the data includes 113 of 140 WTO members.[1]

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[1] As of November 30, 2000, WTO membership totaled 140 countries or customs territories. Of this number 16 are accounted for by the European Union; one each for the EU Commission and the 15 member states.

Tariff bindings included in this data set for countries not in the AMAD are from tariff bindings of the WTO Secretariat. These bindings are reproduced on the CD-ROM "Results of the Uruguay Round," WTO Secretariat. Additional data on applied tariffs is from the United Nations Conference on Trade and Development (*UNCTAD*) Trade Analysis and Information System (*TRAINS*) data base. UNCTAD TRAINS contains a comprehensive collection of applied tariff data. Applied tariff data for developing countries, where available, are included in the data base. For a summary table of data availability in this data set, by tariff type and country, see table 16.C.1.

Table 16.C.1 Tariff Data Availability

Country	Bound WTO Rate	In-quota Tariff Rate	Over-quota Tariff Rate	1995 Applied Rate	1996 Applied Rate	1997 Applied Rate	1998 Applied Rate	1999 Applied Rate
Angola	X							
Antigua & Barbuda	X							
Argentina	X					X	X	
Australia	X	X	X					
Bahrain	X							
Bangladesh	X							
Barbados	X	X	X					
Belize	X							
Benin	X							
Bolivia	X							
Botswana	X	X	X					
Brazil	X	X	X	X	X	X	X	X
Brunei	X							
Burkina Faso	X							
Burundi	X							
Cameroon	X							
Canada	X	X	X					
Cent Afr Republic	X							
Chad	X							
Chile	X							
Colombia	X	X	X	X	X	X	X	X
Congo	X							
Costa Rica	X	X	X	X				X
Cote d'Ivoire	X							
Cuba	X							
Cyprus	X							
Czech Republic	X	X	X					
Djibouti	X							
Dominica	X							
Dominican	X							
Ecuador	X	X	X	X		X	X	X
Egypt	X							

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Table 16.C.1 Tariff Data Availability (continued)

Country	Bound WTO Rate	In-quota Tariff Rate	Over-quota Tariff Rate	1995 Applied Rate	1996 Applied Rate	1997 Applied Rate	1998 Applied Rate	1999 Applied Rate
El Salvador	X	X	X	X		X	X	
European Union	X	X	X					
Fiji	X							
Gabon	X							
Gambia	X							
Ghana	X							
Grenada	X							
Guatemala	X	X	X	X			X	
Guinea	X							
Guinea-Bissau	X							
Guyana	X							
Haiti	X							
Honduras	X							
Hong Kong	X							
Hungary	X	X	X					
Iceland	X	X	X					
India	X					X		
Indonesia	X	X	X	X	X			
Israel	X	X	X					
Jamaica	X							
Japan	X	X	X					
Kenya	X							
Korea, Republic of	X	X	X	X	X			
Kuwait	X							
Lesotho	X							
Macau	X							
Madagascar	X							
Malawi	X							
Malaysia	X	X	X					
Maldives	X							
Mali	X							
Malta	X							
Mauritania	X							
Mauritius	X							
Mexico	X	X	X	X		X	X	
Morocco	X	X	X			X		
Mozambique	X							
Namibia	X							
New Zealand	X	X	X					

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Table 16.C.1 Tariff Data Availability (continued)

Country	Bound WTO Rate	In-quota Tariff Rate	Over-quota Tariff Rate	1995 Applied Rate	1996 Applied Rate	1997 Applied Rate	1998 Applied Rate	1999 Applied Rate
Nicaragua	X	X	X	X			X	
Niger	X							
Nigeria	X							
Norway	X	X	X					
Pakistan	X						X	
Panama	X	X	X				X	
Papua New Guinea	X							
Paraguay	X					X	X	
Peru	X							
Philippines	X	X	X	X			X	
Poland	X	X	X					
Qatar	X							
Romania	X							
Rwanda	X							
Saint Kitts & Nevis	X							
Saint Lucia	X							
Saint Vincent &	X							
Senegal	X							
Sierra Leone	X							
Singapore	X							
Slovak Republic	X	X	X					
Slovenia	X	X	X					
Solomon Islands	X							
South Africa	X	X	X					
Sri Lanka	X							
Suriname	X							
Swaziland	X							
Switzerland	X	X	X					
Tanzania	X							
Thailand	X	X	X	X				
Togo	X							
Trinidad & Tobago	X							
Tunisia	X	X	X	X			X	
Turkey	X					X		
Uganda	X							
United Arab	X							
United States	X	X	X					
Uruguay	X					X	X	
Venezuela	X	X	X	X		X	X	X

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Table 16.C.1 Tariff Data Availability (continued)

Country	Bound WTO Rate	In-quota Tariff Rate	Over-quota Tariff Rate	1995 Applied Rate	1996 Applied Rate	1997 Applied Rate	1998 Applied Rate	1999 Applied Rate
Zaire	X							
Zambia	X							
Zimbabwe	X							

Source: USDA, Economic Research Service
Note: X = Tariff data included in the ERS tariff data base

16.C.3 Calculation of ad valorem Equivalent Tariffs

In their WTO schedules, members used a variety of formats to specify individual tariff commitments. In most cases, members specified tariffs in *ad valorem* terms, as a simple percentage of the value of the imported product. However, some countries elected to specify some or all tariffs in specific or other non-*ad valorem* terms. There are two main forms of non-*ad valorem* tariffs:

— specific tariffs, which define the tariff as a monetary amount per unit of imports, such as cents per liter, and

— compound tariffs, which describe the tariff as a combination of *ad valorem* and non-*ad valorem* rates, such as 12.5 percent plus 2 cents per liter.

Before making comparisons of tariff protection across countries and commodities, detailed tariff bindings must be converted into a common format. Calculating *ad valorem* equivalents (AVEs) of specific or other non-*ad valorem* tariffs allows aggregation of tariffs across the widest group of commodities and countries.

Agricultural commodity coverage is based on the definition of agriculture as specified in Annex 1 of the WTO Agreement on Agriculture (see table 16.C.2). This definition includes all items from chapters 1-24 of the harmonized system, minus chapter 3 (fish and crustaceans). Also included are selected products from other chapters, such as selected chemicals, fibers, and other substances. Many developing countries which had not previously scheduled tariff bindings, were allowed to scheduled ceiling bindings in the Uruguay Round. The ceiling bindings established nearly uniform tariffs (such as 100 percent) across all commodities in a given country's tariff schedule. In such cases, for purposes of this data base, a 6-digit tariff schedule for the country was constructed to reflect the ceiling binding across all commodities in the country's tariff schedule.

Comparing levels of protection across countries and commodities is complicated when some countries use non-*ad valorem* tariffs. A recent paper by the WTO secretariat, "*Ad Valorem,* Specific, and Other Tariffs," (AIE/S5, February 6, 1998), discusses issues raised about the calculation of *ad* *valorem* equivalents (*AVEs*) of non-*ad valorem* tariffs. In order to calculate AVEs, it is necessary to divide the specific tariff by a price. Given the lack of detailed price data available on prices at the HS level, AVEs were calculated using world import unit values as a proxy for prices. The world import unit values were defined at the 6-digit HS level, which is the most disaggregate level at which tariff nomenclatures are internationally comparable. Import unit values were calculated for available world imports from all sources (minus EU-intra-trade), in value and volume terms, using global trade data from the United Nations Trade Data System (COMTRADE). The import unit values used were for the period 1995-97, the most recent period available. The world import unit values expressed, where available, the unit value in U.S. dollars for each 6-digit category, in kilograms or pieces. For countries that did not schedule their tariff bindings in U.S. dollars, a final step prior to calculating the AVEs was to convert the import unit values, for each year, into national currencies, and then calculate average import unit values for 1995-97, in national currencies. The exchange rate used in making such conversions was the period average exchange rate for each year, 1995-97.

Table 16.C.2 Product Coverage of the WTO Agreement on Agriculture (HS96)

HS Chapters 1 to 24 less fish and fish products, plus:		
HS Code	2905.43	(mannitol)
HS Code	2905.44	(sorbitol)
HS Code	2905.45	(glycarol (other than crude)
HS Heading	33.01	(essential oils)
HS Code (ex)	Ex 3302.10	(preparations based on odoriferous substances, of a kind
HS Headings	35.01 to 35.05	(albuminoidal substances, modified starches, glues)
HS Code	3809.10	(finishing agents)
HS Heading	3823	(oleochemicals)
HS Code	3824.60	(sorbitol n.e.p.)
HS Headings	41.01 to 41.03	(hides and skins)
HS Headings	43.01	(raw furskins)
HS Headings	50.01 to 50.03	(raw silk and silk waste)
HS Headings	51.01 to 51.03	(wool and animal hair)
HS Headings	52.01 to 52.03	(raw cotton, waste and cotton carded or combed)
HS Heading	53.01	(raw flax)
HS Heading	53.02	(raw hemp)

The foregoing shall not limit the product coverage of the Agreement on the application of Sanitary and Phytosanitary Measures.
Note: The product descriptions in round brackets are not necessarily exhaustive.
Source: WTO Agreement on Agriculture, Annex 1.

Tariff schedules of 113 WTO members are contained in this data set, yielding a total of about 91,000 individual tariff lines. *Ad valorem* equivalent of non-*ad valorem* tariffs were calculated for about 5,600 tariff lines. Of this total, AVEs could not be calculated for 387 of the tariff lines. The majority of the tariff lines (198) for which AVEs were not calculated were in chapter 22 of the harmonized system, which covers beverages, spirits, and vinegar. Duties on many items in this chapter are not specified in terms comparable to the world import unit values. Therefore, AVE calculations were not be made for these items. The next largest number (95) of the remaining items for which AVE calculations were not possible pertained to many of the complex tariffs scheduled by Malaysia on products outside of chapter 22.

Tariff schedules of WTO members were specified at various levels of commodity detail. AVEs were calculated at the tariff-line level, whether it be the 4, 6, 8, or 10-digit level, but using import unit values at the 6 digit level. Therefore, when a tariff was scheduled at the 6 or 8-digit level, the import unit value used corresponded to the average world import unit value for each respective 6-digit category. When a tariff was scheduled at the more aggregate 4-digit level, the price used was a simple average of all 6-digit import unit values within each given 4-digit tariff.

AVE tariffs available in the data set are the final bound MFN tariffs scheduled by WTO members (in and over quota tariff rates), and applied rates where available. The final tariff bindings reflect the rate effective after phased implementation of Uruguay Round tariff cuts. As a general rule, developed countries phased in their tariff reductions during the period 1995-2000, and developing countries were allowed from 1995-2004 to phase in Uruguay Round tariff cuts. In some cases, members scheduled tariff bindings on selected lines that became effective in 1995. Therefore, for countries with TRQs, the tariff averages reflect an average of the final bound rates and over-quota tariff rates.

16.C.4 GTAP Commodity Aggregates

After AVEs were calculated, the next step was to aggregate the tariffs for extremely narrowly defined products (a total of 91,000 tariffs across all countries) into regional and commodity categories. The portion of the concordance that defines GTAP categories for agricultural commodities in at the HS 6-digit level was applied to the AVE tariff data, with the data aggregated by region and GTAP commodity group. These aggregated tariffs were computed using simple, unweighted averages.[2]

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[2] There are a number of alternative ways to average and aggregate tariffs across countries and commodities, none of which is without bias. For a discussion of the various approaches to aggregation, see "Profiles of Tariffs in Global Agricultural Markets," by Paul Gibson, John Wainio, Daniel Whitley, and Mary Bohman ,USDA, Economic Research Service, AER No. 796, January 2001, pp. 6-7.