

## Policy Liberalization and US Merchandise Trade Growth, 1980–2006

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### Abstract

This working paper draws on historical and contemporary data on tariffs, nontariff barriers, and transportation costs (for the United States and its major trading partners) to estimate the role of policy liberalization in US merchandise trade growth over the period 1980 to 2006. Both partial equilibrium analysis and computable general equilibrium analysis are used to make the estimates. Both methods indicate that roughly 25 percent of US trade growth since 1980 can be attributed to policy liberalization. Policy liberalization plays a larger role in US export growth (35 to 40 percent) than US import growth (25 percent). According to these estimates, policy liberalization accounts for almost all US merchandise growth in excess of growth that can be explained by expanding GDP in the United States and abroad.

**Keywords:** International trade, policy liberalization, tariff liberalization, nontariff barriers, transportation costs

**JEL Codes:** F1, F13, F15, F17, C68

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## INTRODUCTION

In 1980 US two-way merchandise trade was \$467 billion. By 2006 US two-way trade had grown more than five-fold in nominal terms, to reach \$2,942 billion.<sup>1</sup> During this period of rapid growth, the international economy continued its hurried pace of globalization that began after the Second World War. The international economy became increasingly interdependent, as transportation and communication costs declined, multinational enterprises flourished, and trade barriers receded through multilateral, preferential, and unilateral initiatives.

Against this background, it seems worthwhile to evaluate the sources of past growth in US merchandise trade in order to make informed guesses about the future course of trade growth. In this paper we attempt to do just that: using various data sources, a simple partial equilibrium analysis, and a more complex computable general equilibrium (CGE) model. These tools are deployed to determine what share of US trade growth over the last 25 years is attributable to policy liberalization, what share is attributable to the decline in transportation costs, and as a residual, income growth and unidentified technology—a basket category dominated by market forces, especially the remarkable expansion of multinational enterprises (MNEs).

In the next section we present our simple partial equilibrium analysis. We use estimates of the price elasticities of trade combined with the declines in tariff rates, nontariff barriers (NTBs), and transportation costs to make ballpark estimates of the role of each force in US trade growth. In the third section we present the CGE analysis carried out at our request by Professor John Gilbert of Utah State University. We run several scenarios off the baseline model (i.e., current circumstances) to determine what US trade would look like in the event of a reversion to the policies or the transportation costs that prevailed in the 1980s. We then compare the results of the two analyses to determine the role of various forces that promote trade growth. We conclude with implications from our results.

## PARTIAL EQUILIBRIUM ANALYSIS

Using various data sources that stretch back to the Tokyo Round of multilateral trade negotiations (1973–79), conducted under the auspices of the General Agreement on Tariffs and Trade (GATT), we analyze six hypothetical scenarios that allow us to evaluate the impact of major policy liberalizations and the reduction in transportation costs since 1980. The data sources and methods are explained in detail in appendix A. The methodology for each scenario is straightforward: We determine a “past” and a “present” set of tariff rates and then using price elasticity estimates we determine the impact on current US trade of moving from the “present” rate back to the “past” rate. For this analysis we calculate weighted average

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1. US exports in 1980 totaled \$217 billion and imports were \$250 billion. US exports in 2006 were \$1,028 billion and imports were \$1,913 billion (UN Comtrade Database via WITS 2008).

protection rates that major US partners impose on US exports and US average protection rates that the United States imposes on imports from its major partners. The weighted average rates are based on disaggregated tariff and NTB data. The six scenarios that we consider in the partial equilibrium analysis are as follows:

- The first scenario examines the impact of a reversion, by the United States and its 17 major trading partners, from actual tariffs (most favored nation [MFN] applied tariffs or preferential tariffs where applicable) to Uruguay Round bound rates.<sup>2</sup> This scenario essentially examines the impact over the last 10 years of multilateral, unilateral, and preferential tariff liberalization combined.
- The second scenario evaluates the impact of a reversion by the United States and its major partners from current actual tariffs to Tokyo Round bound rates. This scenario examines the impact of undoing the Uruguay Round concessions and the unilateral and preferential tariff liberalization over the last 25 years.
- The third scenario examines the impact on US trade if current transportation costs reverted to their 1980 levels.
- In the fourth scenario we eliminate the preferential tariffs under the North American Free Trade Agreement (NAFTA), the Australia-US FTA, and the Singapore-US FTA.<sup>3</sup> This scenario assumes the United States applies its MFN applied rate to all partners and that all its FTA partners do the same for the United States.
- The fifth scenario investigates a reversion of present ad valorem tariff equivalents of NTBs to the NTB rates prevailing in approximately 1990. Our methodology suggests a very large decline in NTB rates since 1990, so this scenario indicates a large impact of policy liberalization. Due to data limitations we do not consider the impact of preferential NTB access under FTAs.<sup>4</sup>
- The sixth, and final, scenario examines the impact of reverting current US and major partner actual tariffs to the MFN applied tariffs of approximately 1990. This scenario analyzes the impact of unilateral and preferential tariff liberalization combined over the last 15 years.

In an attempt to estimate the costs of a failed Doha Round, Bouet and Laborde (2008) estimate the impact of scenarios similar to ours. They find that a reversion from current MFN applied tariffs to Uruguay Round bound rates by most countries would decrease world trade by 7.7 percent. The authors

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2. The 17 trading partners that we consider throughout our analysis are: Australia, Brazil, Canada, China, the European Union, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, Mexico, the Philippines, Singapore, Taiwan, Thailand, and Venezuela.

3. To keep the exercise manageable, we did not evaluate the effect of eliminating preferential tariffs in other US FTAs, e.g., the US-Chile FTA.

4. While in reality there is some easing of NTBs under US FTAs, the method used to calculate NTB tariff equivalents by Kee, Nicita, and Olarreaga (2005), the study from where we obtain the bulk of our NTB data, does not lend itself to differentiation of preferential NTBs from general NTBs. The method uses shortfalls in expected imports when NTBs are present to calculate the restrictiveness of NTBs for every tariff line for every country analyzed.

believe that a swing this large in protection would be unrealistic, so they also estimate the impact of a reversion from current tariffs to the highest MFN applied tariff over the last 13 years by product for every country. In this second scenario, they estimate a decrease in world trade of 3.2 percent.

Before going further, we pause to note an important critique, developed by Kei-Mu Yi (2003), of the method used by various scholars—Bouet and Laborde (2008), ourselves, and many others—who have investigated the role of policy on trade expansion.<sup>5</sup> These days, a great deal of trade involves vertically integrated supply chains, where the same inputs may criss-cross the same border more than once in the process of assembling the final product. This description characterizes the automobile industry in North America (the United States, Canada, and Mexico) and many electronic goods. Under these circumstances, any tariff reduction has a multiplied effect in enlarging trade flows, because it cuts the duty more than once. By contrast, in standard models of the sort we use, trade gains are calculated as if the imported input crosses the border only once.

To illustrate the difference, Yi (2003) analyzes the role of tariff liberalization on US trade growth from 1962 to 1999 using a standard model and a model that takes into account vertical specialization—i.e., criss-crossing trade. Yi (2003) finds, with one set of parameters, that the vertical model explains 35 percent of trade growth over the period while the standard model explains only 13 percent. Using a different set of parameters, the vertical model explains 53 percent of trade growth versus only 29 percent for the standard model.<sup>6</sup> The difference between the vertical and standard models is more exaggerated in later periods, suggesting an increasing role for vertical specialization. An inference from Yi's (2003) analysis is that our estimates may understate the impact of policy liberalization.

Turning first to our data and then to our findings, columns I and II of table 1 show estimates of average MFN applied tariffs in the “past” and the “present” for the 17 major US partners. In general, the “past” rates are the average of three years of available data from 1988 to 1993, with a preference for the oldest data; the “present” rates are the average of three years of available data from 2002 to 2005, with a preference for the most recent data. For most countries ad valorem equivalents of specific tariffs are included in the calculations (e.g., a specific tariff of \$100 per ton with a ton valued at \$1,000 would be expressed as 10 percent ad valorem). Using 1990 US export shares with the 17 partners as weights for the “past” rates and 2004 export shares as the weights for the “present” rates, we determine that the average MFN applied rate faced by the United States dropped from around 10.3 percent in the “past” (circa 1990) to about 7.4 percent in the “present” (circa 2004).

Columns III and IV of table 1 show our estimates of the average actual tariffs of US partners in the

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5. Yi's analysis was drawn to our attention by Alan Deardorff, professor of economics, University of Michigan.

6. Yi (2003) analyzes the export growth of manufactures in a two-country model, where the two countries are the United States and the rest of the world treated as a single country.

“past” and the “present.” These figures take into account preferential rates applied between FTA partners. Tariffs from the early phases of the Canada-US Free Trade Agreement are built into the “past” estimates. NAFTA, Australia-US FTA, and Singapore-US FTA tariffs are built into the “present” estimates. Taking these preferential agreements into account, the weighted average actual tariff faced by the United States in the “past” was 9.4 percent; by contrast, the “present” rate is 3.9 percent, which is slightly more than half the “present” MFN-only rate.

We present average Tokyo and Uruguay Round bound rates for the 17 major US partners in columns V and VI of table 1. For Mexico and Venezuela, GATT accession bindings are used for “past” rates because these two countries did not join the GATT until after the Tokyo Round. For China and Taiwan, World Trade Organization (WTO) accession bindings are used for “present” rates because the two did not join the GATT/WTO until after the Uruguay Round. For lack of a better alternative, we use “past” MFN applied rates for China and Taiwan as stand-in values for the “past” bound rates of these countries. The weighted average bound tariff faced by the United States in the “past” (i.e., the Tokyo Round) was 17.9 percent; the “present” rate (i.e., the Uruguay Round) is 13.5 percent. With regard to both the Tokyo and Uruguay Round scenarios (Scenarios 1 and 2) we are considering only the change in tariff rates resulting from the negotiations. The negotiations covered several topics other than tariffs, such as the removal of agricultural quotas and the creation of the WTO itself, which promoted trade; however, progress on these subjects is nearly impossible to quantify. The estimates for Scenarios 1 and 2 should therefore be considered as low-end estimates of the impact of the Tokyo and Uruguay Round negotiations.

Columns VII and VIII of table 1 show our estimates of NTB rates in the “past” and the “present.” The present rates are taken from Kee, Nicita, and Olarreaga (2005). For the “past” rates we adopt a patchwork approach, extrapolating NTB liberalization over a 15-year period from Kee, Nicita, and Olarreaga (2005) and several country-specific sources. We estimate a large fall in the ad valorem equivalent rate of NTB protection faced by the United States, with a “past” rate of 20.5 percent and a “present” rate of 10.3 percent.<sup>7</sup> Many scholars have commented on the increasing importance of NTBs in the overall profile of trade protection. Despite our estimate of a substantial fall in the level of NTB protection facing the United States, our figures are still consistent with the view that NTB protection currently plays a more prominent role in the overall profile of protection, since the present average NTB rate faced by the United States (10.3 percent) is more than twice the average actual tariff rate faced by the United States (3.9 percent).

In table 2, we display the average ad valorem cost of transportation for US imports from the 17

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7. We assume a 51.1 percent increase in the rate of NTB protection for all countries and sectors from “past” to “present”; the method behind this figure is explained in appendix A.

partners in 1980, 1990, and 2003. Due to data limitations, we use the estimate of transportation costs for US imports as an estimate of transportation costs for US exports in the same periods. The data for these rates come from Hummels (2007); ad valorem rates of transportation costs are calculated from this dataset as the total of insurance and freight charges divided by import values. According to our data, average transportation costs faced by US partners exporting to the United States (and, by proxy, US firms exporting to those same partners) have been low since 1980, with a 4.3 percent rate in 1980, a 3.7 percent rate in 1990, and a 3.2 percent rate in 2003. In other words, the decline in transportation costs has not been a big factor in trade growth.

In table 3 we present the actual tariff rate applied on US imports purchased from the 17 major partners. The table follows the same method as columns III and IV of table 1 (“actual tariffs faced for US exports”) but uses 1990 and 2004 US imports to calculate weighted averages. Other US rates (i.e., MFN applied, bound, and NTB) are displayed in table 4, which includes all the average tariff rates we use for the partial equilibrium analysis. US tariff or NTB rates (i.e., rates on US imports) in the “past” and “present” are lower than average tariff or NTB rates applied against US exports. For example, US MFN applied tariffs went from 5.7 percent in 1990 to 3.8 percent in the “present,” while the weighted average of US partner MFN applied tariffs dropped from 10.3 percent in 1990 to 7.4 percent in the “present.”

Our method for carrying out the partial equilibrium analysis of changed protection from “past” to “present” loosely follows from Hufbauer and Elliott (1994). In the present analysis we are concerned only with US trade in the aggregate, so we jump directly to price elasticities of demand for US exports and imports. Table 5 shows various estimates of price elasticities for US exports and imports. Crane, Crowley, and Quayyum (2007) and Mann and Plück (2005) provide useful surveys of the literature. We use weighted average estimates from Kee, Nicita, and Olarreaga (2004), who take the novel approach of calculating price elasticities at the tariff line level. We use a US import price elasticity (−1.30) that is somewhat larger (in absolute terms) than our US export price elasticity (−1.17). These estimates are what we consider “responsibly high” for the literature. We are comfortable with high estimates because the partial equilibrium approach we use probably does not account for the full impact of closer economic integration realized through policy liberalization or transportation cost declines.<sup>8</sup>

In table 6 we conduct the calculations for the six scenarios enumerated above. We calculate the percentage point change in ad valorem rates for each scenario and apply it to the relevant price elasticity to construct an “impact on trade” figure for each part (merchandise exports or imports) of the six scenarios. We then multiply the relevant trade flow by one minus the “impact on trade” figure to determine the hypothetical level of US trade with the policy reversion or transportation cost increase. We subtract the hypothetical trade figure to determine the impact on annual US trade in each scenario.

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8. See Bradford, Grieco, and Hufbauer (2006) and Yi (2003) for discussion.

The largest total impact is in Scenario 5; this is not surprising considering our estimate of a very large change in NTB levels of protection from “past” to “present.” We estimate that NTB liberalization increased US exports to the 17 partners by \$84 billion in 2004 and US imports from these same partners by \$132 billion. The impact of Scenario 3, reverting to 1980 transportation costs, is the smallest, with only a \$9 billion impact on US exports and a \$19 billion impact on imports. For Scenario 2, a calculation that analyzes the impact of traditional policy liberalization (i.e., tariff cuts), the impact is large, \$115 billion for US exports and \$59 billion for US imports. The four preferential trade agreements we consider (in Scenario 4) are estimated to increase US two-way trade with the 17 partners by about \$50 billion a year.

To compare the impacts calculated under Scenarios 1 through 6, we independently determine the amount of US trade growth from 1980 to 2004 that can be attributed to GDP growth and exchange rate changes. To do these calculations we need income elasticities of US trade, GDP growth estimates, and estimates of real effective exchange rate changes for the United States. Table 5 also shows various estimates of income elasticities of US trade. For our calculations we use long-run relative price estimates from Hooper, Johnson, and Marquez (2000)—specifically, a 0.80 income elasticity for US exports and a 1.80 income elasticity for US imports.<sup>9</sup> We calculate a weighted average of nominal GDP growth from 1980 to 2004 for the 18 countries we consider.<sup>10</sup> We do not differentiate between US growth and partner growth. The weighted average GDP growth rate, in nominal terms, is 312 percent for these countries. We also calculate the US real effective exchange rate from 1980 to the present. Over the period 1980 to 2004, the US dollar appreciated by roughly 13 percent.

In table 7 we estimate the role of GDP growth and exchange rate changes in US trade growth. To calculate the impact of GDP growth, we extrapolate from 1980 levels of US trade using the GDP growth of 312 percent and the relevant income elasticity of US trade (0.80 for exports and 1.80 for imports). Our estimates suggest that nominal GDP growth from 1980 to 2004 boosted US exports with the 17 partners by \$413 billion (in nominal value) and imports from the 17 partners by \$970 billion (again in nominal value). To determine the impact of exchange rate changes, we carry out the following calculation: divide the change in index values for the US real effective exchange rate from 1980 to 2004 (10.88) by the average of 1980 and 2004 index values (86.88); then multiply by the relevant price elasticity (−1.17 for exports and −1.30 for imports) and the relevant one-way US 1992 trade flow (exports or imports) with the 17 partners (1992 was chosen as a mid-point value). We estimate that exchange rate changes led to a \$53 billion decline in US exports to the 17 partners and a \$77 billion increase in US imports from the 17 partners.

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9. A larger income elasticity for US imports than US exports is a finding that can be traced to Houthakker and Magee (1969).

10. Weighted by 1990 GDP.

Our estimates of the impact of policy liberalization, derived from tariffs plus NTBs (i.e., Scenario 2 plus Scenario 5), exceed the remaining amount of US trade growth after independently accounting for GDP growth and exchange rate changes. However, if we focus solely on Scenario 2—i.e., the impact of just tariff liberalization since the Tokyo Round—we see that this dimension of policy liberalization explains roughly 70 percent, or \$175 billion, of the \$250 billion in two-way trade growth not explained by GDP growth or exchange rate changes. This works out to roughly 11 percent of total US two-way trade growth. Changes in transportation costs explain a small portion of US trade growth over the period.

Since the 17 partners accounted for roughly 85 percent of US trade in 2004, we can extrapolate from the 17 partner results to the whole world. These results suggest that tariff liberalization since the Tokyo Round has boosted US two-way trade by roughly \$200 billion per annum. The decline in transportation costs adds another \$30 billion. Our estimates of NTB liberalization suggest a further \$250 billion impact on two-way trade—quite a large figure. Either this NTB estimate has to be sharply discounted or we need to reduce the assigned income elasticities of merchandise trade (exports and imports) with respect to GDP. Since income elasticities have a far stronger econometric basis than NTB estimates, we are inclined to discount the large NTB figure.

### **Benefits of Trade Expansion**

Our estimates of the US trade expansion induced by policy liberalization can be converted into income effects. Bradford, Grieco, and Hufbauer (2006) have investigated the benefit for US economic welfare of US trade expansion since the 1950s. The authors draw on methods and key results from several studies to produce a range of estimates. We follow one of the methods set out in Bradford, Grieco, and Hufbauer (2006) to make our estimate of the income effects of trade growth induced by policy liberalization.

In an effort to understand the effect of various policies and characteristics on per capita income growth, an OECD (2003) study found that a 10 percent rise in a developed country's long-term trade exposure leads to a 2 percent increase in the level of annual per capita income (measured by GDP per capita). A standard measure of trade exposure is exports plus imports divided by GDP.<sup>11</sup>

Using the OECD (2003) coefficient of 0.2 (2 percent divided by 10 percent), we can estimate the per capita income effect under each of the six scenarios. To do so we must first scale up the export and import effects displayed in the last row of table 6, because these estimates cover only about 85 percent of US trade. We then calculate the actual US merchandise trade exposure in 2004 (20.1 percent) and the hypothetical merchandise trade exposures if we took away the trade growth suggested by each of the six

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11. OECD (2003) uses a slightly different measure, exports divided by GDP plus imports divided by GDP minus exports plus imports. Bradford, Grieco, and Hufbauer (2006) use the sum of exports plus imports divided by GDP, and we do the same here.



scenarios.<sup>12</sup> We then multiply the percent increase between each of the six hypothetical trade exposures and the actual trade exposure by the OECD (2003) coefficient of 0.2. This arithmetic gives us a factor that we multiply by actual US 2004 GDP per capita (\$39,811) to determine an effect under each scenario.

The estimated annual increases to GDP per capita under each scenario are as follows:

- 1 – Unilateral and preferential tariff liberalization since Uruguay Round: increase of \$441 per capita
- 2 – Multilateral, unilateral, and preferential tariff liberalization since 1980: increase of \$759 per capita
- 3 – Declining transportation costs since 1980: increase of \$114 per capita
- 4 – Preferential tariff liberalization since the start of the Canada-US FTA: increase of \$205 per capita
- 5 – Nontariff barrier liberalization: increase of \$964 per capita
- 6 – Unilateral and preferential tariff liberalization since 1990: increase of \$449 per capita

Using the same approach, Bradford, Grieco, and Hufbauer (2006) calculate the benefits of all US trade expansion in excess of GDP growth since 1950 (the expansion induced by both technology and policy) and arrive at a figure of \$5,000 per capita in 2003.

## COMPUTABLE GENERAL EQUILIBRIUM ANALYSIS

CGE models are used to examine counterfactual scenarios—namely, what would an economy look like if a certain economic shock occurred.<sup>13</sup> Most CGE analyses are therefore conducted to determine the impact of a potential event, like the conclusion of the Doha Development Round or the implementation of the Kyoto Protocol. Other applications attempt to confirm the benefits of enacted policies through ex post analysis (see DeRosa and Gilbert 2005, Kehoe 2005). Since many of these past works go to great lengths to explain the methods of CGE analysis and the associated Global Trade Analysis Project (GTAP) database,<sup>14</sup> we do not repeat the explanations.

Our method represents a hybrid of forward- and backward-looking methods. We attempt to confirm the benefits of policy reforms (or falling transportation costs) by considering the counterfactual modern-day economy with a “policy or transportation cost reversion.” Once we determine what the

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12. Trade exposure is measured by merchandise exports plus imports divided by GDP. The actual trade exposure in 2004 was 20.1 percent. The hypothetical trade exposures without each of the six scenarios are as follows: 1 – 19.0 percent; 2 – 18.3 percent; 3 – 19.8 percent; 4 – 19.5 percent; 5 – 17.9 percent; and 6 – 19.0 percent.

13. The CGE analysis was carried out by John P. Gilbert, associate professor, Department of Economics and Finance, Huntsman School of Business, Utah State University.

14. The GTAP database is updated periodically by the Center for Global Trade Analysis at Purdue University. Gilbert used GTAP database 7 with data for 2004.

counterfactual economy would look like with the reversions, we then compare the results to the current economy to size up the impact of actual policy reforms. Essentially, the logic of our CGE analysis follows the logic set out in our partial equilibrium analysis. CGE models are powerful tools for this type of calculation because they can evaluate the impact of shocks on the entire economic system. CGE models encompass both the direct impact of a policy or cost change and myriad indirect impacts through the vast network of economic linkages. For example, the repeal of NAFTA would certainly affect trade between the United States, Canada, and Mexico, but it would also have indirect impact on commerce within the United States and trade with non-NAFTA countries.

Our CGE analysis begins with the GTAP7 database, released in November 2008. The base year for the GTAP7 model is 2004. From the base year we run the same six scenarios that are outlined in the partial equilibrium analysis section. The scenarios are as follows:

- 1: Reversion to Uruguay Round bound tariff rates
- 2: Reversion to Tokyo Round bound tariff rates
- 3: Return to circa 1980 transportation costs
- 4: Removal of preferential tariff rates
- 5: Reversion to circa 1990 NTB levels
- 6: Reversion to circa 1990 MFN applied tariff rates

The starting or “present” data for each scenario, with the exception of Scenario 5, is wholly contained within the GTAP7 database. For Scenario 5 we must first augment the GTAP7 model with “present” NTB rates. For each of the six scenarios we shock the GTAP7 model by essentially replacing the “present” data with “past” data. The data are disaggregated versions of information used in the partial equilibrium analysis. Rather than the aggregate numbers displayed in table 4, however, we use specific data points for the United States and the 17 major partners across the 42 merchandise trade sectors included in GTAP7.<sup>15</sup> Due to the structure of the GTAP model, our results actually include the indirect impact on trade in services, even though we only include tariff, NTB, and transportation cost changes for merchandise goods. The general equilibrium model has the added benefit of analyzing the impact on more than one country at once. We stress the results for the United States in this paper, but we also display, and discuss in a few instances, the results from the other 17 countries.

Tables 8 and 9 show the estimated impact on exports for each of the six scenarios. A reversion in the NTB levels of protection that prevailed in the early 1990s in the 18 countries would reduce US exports by roughly \$140 billion a year, or 13 percent of total goods and services exports. A reversion to Tokyo Round bound rates would have a similar impact, \$130 billion or 12 percent of exports. The reversion to MFN applied tariff rates in the early 1990s would have a slightly smaller impact, a decrease of roughly

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15. See table 12 for a list of sectors.

\$110 billion in US exports. Reverting to the transportation costs of the early 1980s has the smallest impact of any of the six scenarios—a cut in US exports by \$23 billion or roughly 2 percent per year.<sup>16</sup> Repealing US FTAs would have a large impact on the United States, Canada, and Mexico. Exports from the three countries would fall by \$50 billion, \$25 billion, and \$20 billion, respectively; in percentage terms, 4, 8, and 10 percent, respectively. The impact of repealing US FTAs would be marginal in both absolute and percentage terms for Australian and Singaporean exports.

Tables 10 and 11 show the estimated impact on imports for each of the six scenarios. The impact on imports in dollar terms (table 10) for the United States is larger than the impact on exports in every scenario except NTB reversion, Scenario 5.<sup>17</sup> The Tokyo Round reversion is estimated to have the largest dollar impact on imports, \$150 billion or 9 percent of US imports. Reverting to 1980 transportation costs has the smallest impact, roughly \$45 billion or 2.5 percent of imports. Repealing US FTAs would reduce US imports by roughly \$60 billion or about 4 percent of total imports of goods and services. The impact on Canada would be roughly \$25 billion or 8 percent of imports; the impact on Mexico would be \$20 billion or 10 percent of imports.

The general equilibrium analysis also provides a picture of the impact of the six scenarios on US trade across sectors. For exports, the biggest hits come in the chemical, rubber, and plastics sector, the motor vehicles sector, and the other machinery and equipment sector (tables 12 and 13). Reverting to Tokyo Round tariffs would cut exports in the chemical, rubber, and plastics sector by \$20 billion (14 percent), the motor vehicles sector by \$12 billion (15 percent), and the other machinery sector by \$25 billion (14 percent). The Tokyo Round scenario would also drastically cut exports of dairy products and sugar, dropping them 77 percent (\$2 billion) and 35 percent (\$40 million), respectively. Another observation of note is the \$20 billion decline in services exports in the NTB reversion scenario.<sup>18</sup>

For US imports the biggest changes are in motor vehicles, electronic equipment, and other machinery and equipment. Reverting to Tokyo Round tariffs in the United States would cut motor vehicle imports by \$22 billion, electronic equipment imports by \$33 billion, and other machinery and equipment imports by \$31 billion (table 14). Reverting to Uruguay Round tariffs would cut imports in the three sectors by roughly \$20 billion each. A reversion to 1990 NTB levels of protection would have a substantial impact on motor vehicle imports, slashing them 16 percent or \$32 billion. The NTB reversion scenario indicates a \$13 billion or 23 percent decline in wearing apparel imports (table 15), reflecting the high levels of US protection for textiles and clothing in the early 1990s.

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16. This result is similar to our partial equilibrium analysis, which reflects a small decrease in transportation costs over the period.

17. However, in the percentage terms shown in table 11—comparing imports lost as a share of total imports versus exports lost as a share of total exports—only the transportation cost scenario has a larger impact on imports than exports.

18. We do not include service NTBs in our analysis. The calculated impact on services trade comes from the impact of reversion scenarios on terms of trade and efficiency for the whole economy.

Tables 16 and 17 provide percent change in employment estimates for the United States by sector, under each of the six scenarios. It should be noted that the model assumes no change in the overall level of the US workforce or employment; the results displayed in tables 16 and 17 simply show the redistribution of employment across sectors, always assuming full employment. For both unskilled (table 16) and skilled workers (table 17), the biggest changes come in the wearing apparel and gas sectors under the NTB reversion scenario, with both increasing roughly 15 percent. The largest negative impact for unskilled workers comes in the transportation cost scenario, where the reversion to 1980 transportation cost levels would trim employment in the wheat sector by 10 percent. The motor vehicles sector would see skilled and unskilled employment increases under every scenario except for the repeal of US FTAs (Scenario 4) and the reversion to circa 1990 applied tariffs (Scenario 6).

### **Benefits of Trade Expansion**

The cost to US and world real income under each scenario using Gilbert's CGE modeling is divided into efficiency and terms-of-trade effects. The efficiency effect is akin to comparative advantage gains or losses—in other words, the cost of reallocating resources to less productive sectors. Importantly, the CGE model does not encompass other channels by which trade increases real income—notably productivity gains by US firms when they face import competition, the spreading of overhead costs when US firms sell more in export markets, and greater variety gains for US consumers.

A negative impact on real income, by way of efficiency loss, occurs in each of the six scenarios. The terms-of-trade effect—changes in the price of exports relative to the price of imports—can be a benefit or loss to a country. For large countries higher tariffs can sometimes result in real income gains via the terms-of-trade effect, because they pay less for imports and get more for exports. In the six scenarios only the NTB reversion and transportation cost reversion scenarios generate positive terms-of-trade effects for US real income. Even in these cases, the negative impact on US real income via the efficiency effect results in an overall net loss for the United States.

Tables 18 and 19 summarize the real income effects for the six scenarios. Surprisingly, among the six scenarios, the reversion in transportation costs to 1980 levels is estimated to be the most costly for the United States, even though this scenario had the smallest trade impact. The net negative impact amounts to around a \$21 billion loss in annual real income (measured in 2004 dollars). The disparity between a large real income loss and a small trade impact reflects the fact that declining transportation costs generate a productivity shock to the whole economic system.

The scenario with the smallest impact on US real income is the NTB reversion, cutting only \$5 billion annually. However, this small result reflects the combination of a large positive terms-of-trade effect (\$25 billion) and a large negative efficiency effect (\$30 billion). We place more stock in estimates of efficiency gains and losses, so the small net estimate reported for the NTB scenario may be misleading.

For the United States the real income impact of repealing its FTAs is about the same as the impact of a reversion to Uruguay Round bound tariff rates, roughly \$13 billion. The annual US real income impact of reverting to Tokyo Round bound rates is estimated at roughly \$18 billion. Again, we emphasize that all these estimates reflect only the efficiency losses from relocating the workforce to less productive sectors. Many other channels are ignored in the CGE calculations.

In terms of world real income, the terms-of-trade effects cancel out because one country's terms-of-trade gain is another country's loss. Therefore when considering the loss to world real income under each of the six scenarios, only efficiency losses matter. The largest impact on world real income comes from NTB reversion (\$220 billion), while the impact of repealing US FTAs is the smallest (\$4 billion). The global impact of reverting to Tokyo Round bound rates is roughly \$150 billion, while the impact of reverting to Uruguay Round bound rates is roughly half that, at \$75 billion. The global impact of reverting to 1980 transportation costs is roughly \$135 billion.

## COMPARING PARTIAL AND GENERAL EQUILIBRIUM RESULTS

In rough terms, our estimates of the impact on trade under the partial equilibrium analysis of the six scenarios are about half that of the general equilibrium analysis (table 20). There are two main reasons: Unlike the partial calculations, the general equilibrium calculations reflect myriad indirect effects; and the partial equilibrium analysis considers only merchandise goods while the general analysis includes goods and services trade.

By contrast, the estimates of the impact on GDP under the partial equilibrium analysis far exceed the impacts on real income under the general equilibrium analysis. The difference reflects channels by which trade increases real income. The general equilibrium analysis includes only static efficiency effects (comparative advantage gained or lost by shifting the workforce) and terms-of-trade effects. The partial equilibrium analysis, which follows from the OECD (2003) approach, captures a much wider set of trade benefits. These multiple channels are detailed by Bradford, Hufbauer, and Grieco (2006): They include comparative advantage gains as well as benefits like increased productivity brought on by stiffer competition, better intermediate inputs, "just in time" production, and greater product variety.

## SOURCES OF TRADE GROWTH

US trade has grown at a tremendous rate since 1980. But what are the sources of growth? Our analysis roughly evaluates the sources of trade growth since 1980. It shows what the world would look like if trade policy or transportation costs reverted to prior levels, but looking counterfactually, this method also shows the benefit of policy liberalization and transportation costs declines.

Scenario 2, the reversion of current tariffs to Tokyo Round bound rates, indicates the impact of

tariff liberalization since 1980. This scenario covers the impact of preferential, unilateral, and multilateral tariff liberalization. Scenario 3 gives the impact of transportation cost declines since 1980. Scenario 5 gives the impact of NTB liberalization. Table 21 summarizes these scenarios as gauged by the partial and general equilibrium analyses. In table 21, we calculate the impact of income growth and unidentified technologies on trade as the residual left after the results from the three scenarios are subtracted from US trade growth between 1980 and 2004.<sup>19</sup>

In both the partial equilibrium analysis (goods only) and the general equilibrium analysis (goods and services) we estimate that roughly 25 percent of US two-way trade growth is due to policy liberalization (figures 1 and 2). Tariff and NTB liberalization contribute roughly equal shares to the 25 percent. A much smaller share of two-way trade growth, roughly 3 percent, is due to transportation cost declines. Income growth and unidentified technologies explain the rest, anywhere from 72 to 74 percent.

In terms of one-way trade growth, policy liberalization plays a much larger role (35 to 40 percent) in export growth than in import growth (roughly 20 percent). This is to be expected, since US partner trade barriers have descended from higher levels since 1980 than US barriers. The impact of the decline in transportation costs contributed about 3 percent for both US export and import growth. Calculated as a residual, income growth and unidentified technologies have played a much larger role in US import growth than in US export growth.

Baier and Bergstrand (2001) found similar results when they examined the sources of global trade growth between the late 1950s and late 1980s. Using a gravity model of trade—another widely used empirical model—the authors found that roughly 25 percent of world trade growth is due to lower trade barriers, 8 percent is due to lower transportation costs, and the remaining 67 percent is due to income growth. The larger role for transportation in Baier and Bergstrand’s (2001) analysis than in the analyses presented here can largely be explained by the movement of transportation costs over the two data periods. Baier and Bergstrand (2001) estimate that, in the late 1950s, the average tariff equivalent of transportation costs was 8.2 percent, while in the late 1980s it fell to 4.3 percent. We calculate a smaller change for the later period, with an average tariff equivalent of transportation costs for imports by the United States in the early 1980s of roughly 4.3 percent, compared with roughly 3.2 percent in 2003.

## CONCLUSION

Using two different methods, we conclude that roughly 25 percent of US merchandise trade growth since 1980 is due to policy liberalization. This result is strikingly similar to Baier and Bergstrand (2001), who attributed policy liberalization with 25 percent of world trade growth between 1960 and 1990. The other

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19. Earlier, in the partial equilibrium discussion, we took a different approach. We analyzed the role of GDP growth on trade directly, using econometrically estimated income elasticities of trade. Here we use the residual approach for the partial equilibrium analysis to conform to the approach we must take using the general equilibrium results. However, using the income elasticity approach for the partial equilibrium analysis would result in roughly equal numbers.

75 percent of US trade growth during the period 1980 to 2005 can be explained by the general expansion of the world economy (72 percent) and falling transportation costs (3 percent).

Evidently, policy liberalization has played an important role in trade growth. Moreover, econometric evidence strongly indicates that trade growth *above and beyond* the pace of GDP growth furnishes a powerful engine that drives the world economy. Our analysis, along with the work of others, demonstrates that policy liberalization supplies the lion's share of this "extra" trade growth.

Tariff liberalization accounts for about 45 percent of "extra" trade growth. Preferential and unilateral tariff liberalization have seemingly delivered more of a jolt than multilateral tariff liberalization.<sup>20</sup> Roughly speaking, the proportions are: 9 percent of the "extra" growth through multilateral tariff liberalization; 18 percent through preferential liberalization; and 19 percent through unilateral liberalization.<sup>21</sup>

NTB liberalization, as we measure it, also plays a large role in US trade growth—perhaps 44 percent of the "extra" growth—but we are less certain of NTB data than tariff data. However, since the current average level of NTB protection may be triple that of tariff protection (for US imports 7.5 percent versus 2.5 percent), the importance of fresh NTB liberalization is substantial. Here is where multilateral liberalization has achieved a great deal in the past and could prove to be the dominant force for future NTB liberalization. The GATT and the WTO have sharply constrained quotas, technical barriers, sanitary and phytosanitary barriers, and other NTBs. More progress on these and other NTB fronts can be expected from future multilateral negotiations.

One surprising result, and a marked contrast from earlier decades, is that the decline in transportation costs contributed only 11 percent to "extra" trade growth since 1980.

Going forward, policy liberalization will be critical to the future growth of US and world trade. If policy liberalization grinds to a halt, a powerful engine of economic growth will also splutter. A great deal of policy liberalization remains to be accomplished. Developing-country tariffs are far from zero, and developed countries still have high tariff peaks that restrain trade. NTBs represent a formidable wall of protection, and their removal would certainly boost trade.

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20. The 45 percent role of tariff liberalization is determined by taking the impact of the Tokyo Round scenario in the general equilibrium analysis (\$275 billion) as a share of the "extra" trade growth (\$605 billion), as determined by our CGE calculations.

21. The 18 percent role of preferential tariff liberalization is determined by taking the impact of Scenario 4 (\$109 billion) as a share of the "extra" trade growth (\$605 billion). The 19 percent role of unilateral liberalization is determined by adding the difference between Scenario 1 (\$171 billion) and Scenario 4 (\$109 billion) to the difference between Scenario 2 (\$275 billion) and Scenario 6 (\$225 billion). Together, these two figures equal \$112 billion, which is then expressed as a share of the "extra" trade growth (\$605 billion). The 9 percent role of multilateral liberalization is determined by subtracting the effect of preferential (\$109 billion) and unilateral tariff liberalization (\$112 billion) from the impact of Scenario 2 (\$275 billion) to arrive at a figure of \$54 billion. This figure is then expressed as a share of the "extra" trade growth (\$605 billion). Note that different arithmetic methods for evaluating the scenarios would suggest different roles for the three types of liberalization.

But will future policy liberalization occur? Or instead will we see real policy reversion, not just a simulated exercise? The financial crisis that began slowly late in 2007, and erupted with a fury in late 2008, has awakened protectionist sentiments around the world. The Doha Round of multilateral negotiations has dropped far back on the “must-do” list. Policymakers seem more willing to accept new episodes of protection than to energetically seek trade liberalization. On account of falling income worldwide, trade flows are shrinking, sometimes quite sharply. Export declines since July 2008 of 20 percent or more are common in Asia. Protectionist initiatives, on top of crisis losses, would be a colossal mistake. Going slow on policy liberalization is almost as bad.

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**Table 1 Average ad valorem rates of protection faced by US exports, past and present**

Country/region	MFN applied tariffs (percent)		Actual tariffs (percent)		Bound rates (percent)		Nontariff barriers (percent)		US exports (billions of dollars)		Export shares (percent)	
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
	Past	Present	Past	Present	Past (Tokyo)	Present (Uruguay)	Past	Present	1990	2004	Past	Present
Australia	15.1	4.3	15.1	1.3	20.9	10.5	16.9	8.3	9	14	3	2
Brazil	34.7	13.2	34.7	13.2	62.9	33.6	33.5	16.4	5	14	2	2
Canada	9.1	5.9	5.4	1.0	14.7	7.4	9.1	4.5	83	189	25	27
China	38.9	10.4	38.9	10.4	38.9	13.6	11.5	5.6	5	35	1	5
EU-15	7.3	5.6	7.3	5.6	6.5	5.2	21.6	10.6	93	169	28	24
Hong Kong	0.0	0.0	0.0	0.0	0.0	0.0	5.8	2.8	7	16	2	2
India	81.1	23.3	81.1	23.3	113.1	41.2	29.6	14.5	2	6	1	1
Indonesia	18.1	6.2	18.1	6.2	74.5	48.0	9.7	4.7	2	3	1	0
Japan	4.8	4.5	4.8	4.5	6.8	4.6	20.5	10.0	49	54	15	8
Korea	13.1	10.3	13.1	10.3	30.3	17.7	20.5	10.0	14	26	4	4
Malaysia	12.6	7.4	12.6	7.4	16.8	14.8	64.1	31.4	3	11	1	2
Mexico	14.6	13.6	14.6	0.0	50.0	36.0	32.7	16.0	28	111	9	16
Philippines	22.7	5.5	22.7	5.5	32.1	26.6	59.3	29.0	2	7	1	1
Singapore	0.4	0.0	0.4	0.0	18.6	7.4	5.8	2.8	8	20	2	3
Taiwan	10.5	7.1	10.5	7.1	10.5	7.6	64.1	31.4	11	22	3	3
Thailand	37.7	13.8	37.7	13.8	50.6	28.8	9.0	4.4	3	6	1	1
Venezuela	16.9	12.4	16.9	12.4	65.2	51.4	19.3	9.5	3	5	1	1
<i>Total</i>									328	707	100	100
Weighted average	10.3	7.4	9.4	3.9	17.9	13.5	20.5	10.3				

Columns I and II: Country rates are the simple average of MFN applied tariffs at the tariff line level, including ad valorem equivalents of specific tariffs.

Columns III and IV: Country rates are the simple average of MFN applied or, when applicable, preferential tariffs at the tariff line level, including ad valorem equivalents of specific tariffs.

Columns V and VI: Country rates are the simple average of bound rates at the tariff line level. Where specific bound rates exist, the ad valorem equivalent of the MFN applied rates are included. Accession rates are used for China, Mexico, Taiwan, and Venezuela in the appropriate eras. MFN applied rates are used for China and Taiwan in the "past" era.

Columns VII and VIII: Present nontariff barrier rates are the simple average of nontariff barrier rates from Kee, Nicita, and Olarreaga(2005). Past rates are derived from the present rates assuming a 51.1 percent increase in the ad valorem rate of protection. Due to data availability, Japan's nontariff barrier rates are used as a proxy for Korea's rates, Hong Kong's rates are used as a proxy for Singapore's, and Malaysia's rates are used as a proxy for Taiwan's.

Sources: UN Comtrade Database via WITS (2008); TRAINS Database via WITS (2008); WTO (2008); Kee, Nicita, and Olarreaga (2005); authors' calculations.

**Table 2 Estimates of tariff equivalents of transportation costs on US imports from 17 major countries**

<b>Country</b>	<b>1980 rate (percent)</b>	<b>1990 rate (percent)</b>	<b>2003 rate (percent)</b>	<b>Percentage point decline, 1980 to 2003</b>
Australia	10.4	7.7	5.0	5.4
Brazil	8.1	7.5	6.4	1.7
Canada	0.8	2.3	1.5	-0.7
China	10.0	7.2	7.0	3.0
Germany	4.4	3.1	2.3	2.1
Hong Kong	6.5	5.0	5.0	1.5
India	10.3	7.2	5.4	4.9
Indonesia	7.0	9.8	7.9	-0.9
Japan	6.3	3.4	2.7	3.6
Korea	6.8	4.3	3.6	3.2
Malaysia	4.2	4.1	3.0	1.2
Mexico	1.4	1.9	1.1	0.3
Philippines	9.6	7.3	4.4	5.2
Singapore	3.8	2.5	1.8	2.0
Taiwan	7.8	5.2	4.4	3.3
Thailand	6.8	5.6	6.2	0.6
United Kingdom	4.2	3.2	2.4	1.9
Venezuela	4.8	6.0	4.9	-0.1
Simple average	6.3	5.2	4.2	2.1
Weighted average by imports	4.3	3.7	3.2	1.0
Ad valorem equivalent of total charges and imports	4.3	3.7	3.2	1.1
<i>Memorandum</i>				
Simple average of weighted average of GTAP sector estimates	6.5		4.4	2.1

Notes: The simple average of rates from 1979, 1980, and 1981 are used for the 1980 rate; the simple average of rates from 1989, 1990, and 1991 are used for the 1990 rate; and the simple average of rates from 2002, 2003, and 2004 are used for the 2003 rate. Weighted averages are weighted by 1980, 1990, or 2003 imports.

Sources: UN Comtrade Database via WITS (2008); Hummels (2007); authors' calculations.

**Table 3 Actual US tariffs applied against imports from 17 major partners**

<b>Country/ region</b>	<b>Past tariffs (percent)</b>	<b>Present tariffs (percent)</b>	<b>1990 US imports (billions of dollars)</b>	<b>2004 US imports (billions of dollars)</b>	<b>Past import share (percent)</b>	<b>Present import share (percent)</b>	<b>Past tariff weight (percent)</b>	<b>Present tariff weight (percent)</b>
Australia	5.7	1.3	5	8	1	1	0.1	0.0
Brazil	5.7	3.8	9	23	2	2	0.1	0.1
Canada	3.8	0.2	94	260	21	20	0.8	0.0
China	5.7	3.8	16	211	4	16	0.2	0.6
EU-15	5.7	3.8	99	281	22	22	1.3	0.8
Hong Kong	5.7	3.8	10	10	2	1	0.1	0.0
India	5.7	3.8	3	16	1	1	0.0	0.0
Indonesia	5.7	3.8	4	12	1	1	0.0	0.0
Japan	5.7	3.8	94	133	21	10	1.2	0.4
Korea	5.7	3.8	19	48	4	4	0.3	0.1
Malaysia	5.7	3.8	5	29	1	2	0.1	0.1
Mexico	5.7	0.1	31	158	7	12	0.4	0.0
Philippines	5.7	3.8	4	10	1	1	0.0	0.0
Singapore	5.7	0.6	10	16	2	1	0.1	0.0
Taiwan	5.7	3.8	24	36	5	3	0.3	0.1
Thailand	5.7	3.8	6	19	1	1	0.1	0.1
Venezuela	5.7	3.8	10	26	2	2	0.1	0.1
Total			441	1294	Weighted average tariff		5.3	2.5

Notes: Country rates are the simple average of MFN applied or when applicable preferential tariffs at the tariff line level, including ad valorem equivalents of specific tariffs.

Sources: UN Comtrade Database via WITS (2008); TRAINS Database via WITS (2008); authors' calculations.

**Table 4 Changes in US and US partner applied tariffs, bound tariffs, preferential tariffs, nontariff barriers, and transportation costs**

<b>Subject</b>	<b>Rate in 1980 (percent)</b>	<b>Rate in 1990 (percent)</b>	<b>Rate in 2004 (percent)</b>	<b>Percentage point change</b>
US MFN applied tariffs	ND	5.7	3.8	-2.0
US partner MFN applied tariffs	ND	10.3	7.4	-2.9
AVE of US import transportation costs	4.3	3.7	3.2	-1.1
AVE of US export transportation costs	4.3	3.7	3.2	-1.1
US bound rates (Tokyo to Uruguay)	6.0	6.0	4.1	-2.0
US partner bound rates (Tokyo to Uruguay)	17.9	17.9	13.5	-4.4
AVE of US nontariff barriers	ND	15.4	7.5	-7.9
AVE of partner nontariff barriers	ND	20.5	10.3	-10.2
US actual tariffs (including preferential)	ND	5.3	2.5	-2.8
US partner actual tariffs (including preferential)	ND	9.4	3.9	-5.4

ND = no data available; AVE = ad valorem equivalent

Note: To derive "past" US nontariff barrier rates, a 51.1 percent increase from "present" rates is used as a discounting factor.

Sources: UN Comtrade Database via WITS (2008); TRAINS Database via WITS (2008); Hummels (2007); WTO (2008); Kee, Nicita, and Olarreaga (2005); authors' calculations.

**Table 5 Various estimates of price and income elasticities for US trade (imports and exports)**

Type of estimate	N1	N2	N3	Period	Price elasticity	Income elasticity	Authors
US exports	Goods and services	SR	Relative price	1956–1996	–0.50	1.80	Hooper, Johnson, and Marquez (2000)
US exports	Goods and services	LR	Relative price	1956–1996	–1.50	0.80	Hooper, Johnson, and Marquez (2000)
US exports	Goods and services	LR	Real effective exchange rate	2004	–1.00	1.50	Cline (2005)
US exports	Goods	LR	Real effective exchange rate	1981–2006	–0.63	2.51	Crane, Crowley, and Quayyum (2007)
US exports	Goods	LR	Relative price of exports	1981–2006	0.20	3.04	Crane, Crowley, and Quayyum (2007)
US exports	Goods	LR	Real effective exchange rate	1988–2006	–8.56	1.91	Crane, Crowley, and Quayyum (2007)
US exports	Goods	LR	Relative price of exports	1988–2006	2.21	4.90	Crane, Crowley, and Quayyum (2007)
US exports	Goods	LR	Real effective exchange rate	1973–2006	–0.27	1.82	Cardarelli et al. (2007)
US exports	Goods	LR	Relative price	1973–2006	–0.23	1.85	Cardarelli et al. (2007)
US exports	Goods	LR	Real effective exchange rate	1986–2006	ND	1.97	Cardarelli et al. (2007)
US exports	Goods	LR	Relative price	1986–2006	ND	0.76	Cardarelli et al. (2007)
US exports	Goods	SR	Relative price	1980–1995	–0.95	1.12	Wren-Lewis and Driver (1998)
US exports	Goods	LR	Relative price	1980–1995	–0.65	1.21	Wren-Lewis and Driver (1998)
US exports	Goods	SR	GDP as income	1980–2003	–0.07	2.79	Mann and Plück (2005)
US exports	Goods	LR	GDP as income	1980–2003	–0.20	1.44	Mann and Plück (2005)
US exports	Goods	SR	Matched expenditure and prices	1980–2003	–0.03		Mann and Plück (2005)
US exports	Goods	LR	Matched expenditure and prices	1980–2003	–0.09	1.19	Mann and Plück (2005)
US partners imports (i.e., US exports)	Goods	LR	Simple average of HS6 estimates	1988–2002	–2.40	ND	Kee, Nicita, and Olarreaga (2004)
US partners imports (i.e., US exports)	Goods	LR	Median of HS6 estimates	1988–2002	–1.12	ND	Kee, Nicita, and Olarreaga (2004)
US partners imports (i.e., US exports)	Goods	LR	Weighted average of HS6 estimates	1988–2002	–1.17	ND	Kee, Nicita, and Olarreaga (2004)
US imports	Goods and services	SR	Relative price	1956–1996	–0.60	2.30	Hooper, Johnson, and Marquez (2000)
US imports	Goods and services	LR	Relative price	1956–1996	–0.30	1.80	Hooper, Johnson, and Marquez (2000)
US partners exports (i.e., US imports)	Goods and services	LR	Real effective exchange rate	2004	–0.82	1.50	Cline (2005)
US imports	Goods	LR		1967–1987	–0.22	2.10	Crane, Crowley, and Quayyum (2007)
US imports	Goods	LR		1967–2006	–0.42	1.98	Crane, Crowley, and Quayyum (2007)
US imports	Goods	LR		1988–2006	–0.69	2.18	Crane, Crowley, and Quayyum (2007)
US imports	Goods	LR	Real effective exchange rate	1973–2006	–0.55	2.46	Cardarelli et al. (2007)
US imports	Goods	LR	Relative price	1973–2006	–0.41	2.03	Cardarelli et al. (2007)
US imports	Goods	LR	Real effective exchange rate	1986–2006	ND	1.86	Cardarelli et al. (2007)
US imports	Goods	LR	Relative price	1986–2006	ND	2.46	Cardarelli et al. (2007)
US imports	Goods	SR	Relative price	1980–1995	–0.38	2.43	Wren-Lewis and Driver (1998)
US imports	Goods	LR	Relative price	1980–1995	–0.18	2.36	Wren-Lewis and Driver (1998)
US imports	Goods	SR	GDP as income	1980–2003	–0.17	4.11	Mann and Plück (2005)
US imports	Goods	LR	GDP as income	1980–2003	–0.28	2.22	Mann and Plück (2005)
US imports	Goods	SR	Matched expenditure and prices	1980–2003	–0.09	1.00	Mann and Plück (2005)
US imports	Goods	LR	Matched expenditure and prices	1980–2003	0.10	1.63	Mann and Plück (2005)
US imports	Goods	LR	Simple average of HS6 estimates	1988–2002	–3.39	ND	Kee, Nicita, and Olarreaga (2004)
US imports	Goods	LR	Median of HS6 estimates	1988–2002	–1.16	ND	Kee, Nicita, and Olarreaga (2004)
US imports	Goods	LR	Weighted average of HS6 estimates	1988–2002	–1.30	ND	Kee, Nicita, and Olarreaga (2004)

Goods and services = goods and services are considered; LR = long-run analysis; SR = short-run analysis; ND = no estimate made.

Notes: The US import price elasticity calculated from Cline (2005) is the weighted average (by US 2004 imports) of export price elasticity estimates for the 17 US partner countries. The US export price elasticities calculated from Kee, Nicita, and Olarreaga (2004) are the weighted average (by US 2004 exports) of import price elasticity estimates for the 17 US partner countries (excluding Taiwan).

**Table 6 Partial equilibrium analysis scenarios 1 through 6**

	<b>1 – Back to Uruguay</b>		<b>2 – Back to Tokyo</b>		<b>3 – 1980 Transportation costs</b>	
	<b>A reversion from current tariffs (including preferential where applicable) to Uruguay Round era bound rates</b>		<b>A reversion from current tariffs (including preferential where applicable) to Tokyo Round era bound rates</b>		<b>A reversion to 1980 transportation cost</b>	
	<b>Impact on US exports</b>	<b>Impact on US imports</b>	<b>Impact on US exports</b>	<b>Impact on US imports</b>	<b>Impact on US exports</b>	<b>Impact on US imports</b>
Initial/present tariff/AVE (percent)	3.9	2.5	3.9	2.5	3.2	3.2
Final/past tariff/AVE (percent)	13.5	4.1	17.9	6.0	4.3	4.3
Tariff percentage point change	-9.5	-1.5	-14.0	-3.5	-1.1	-1.1
2004 US exports to partners (billions of dollars)	707	707	707	707	707	707
2004 US imports from partners (billions of dollars)	1,294	1,294	1,294	1,294	1,294	1,294
Export price elasticity	-1.17	-1.17	-1.17	-1.17	-1.17	-1.17
Import price elasticity	-1.30	-1.30	-1.30	-1.30	-1.30	-1.30
Applicable elasticity	Export	Import	Export	Import	Export	Import
Applicable trade flow	Export	Import	Export	Import	Export	Import
Impact on trade (tariff/AVE change*elasticity)	11.12	2.00	16.29	4.54	1.28	1.43
Hypothetical trade after tariff/AVE change (billions of dollars)	629	1,268	592	1,235	698	1,276
Impact of tariff/AVE change (billions of dollars)	79	26	115	59	9	19
	<b>4 – No preferential</b>		<b>5 – NTB reversion</b>		<b>6 – Back to 1990 MFN</b>	
	<b>A reversion from current tariffs (including preferential where applicable) to MFN only tariffs</b>		<b>A reversion from Kee, Nicita, and Olarreaga (2005) estimates of NTB barriers to "past" estimates of US partner NTB barriers</b>		<b>A reversion from current tariffs (including preferential where applicable) to circa 1990 MFN applied tariffs</b>	
	<b>Impact on US exports</b>	<b>Impact on US imports</b>	<b>Impact on US exports</b>	<b>Impact on US imports</b>	<b>Impact on US exports</b>	<b>Impact on US imports</b>
Initial/present tariff/AVE (percent)	3.9	2.5	10.3	7.5	3.9	2.5
Final/past tariff/AVE (percent)	7.4	3.8	20.5	15.4	10.3	5.7
Tariff percentage point change	-3.5	-1.2	-10.2	-7.9	-6.4	-3.2
2004 US exports to partners (billions of dollars)	707	707	707	707	707	707
2004 US imports from partners (billions of dollars)	1,294	1,294	1,294	1,294	1,294	1,294
Export price elasticity	-1.17	-1.17	-1.17	-1.17	-1.17	-1.17
Import price elasticity	-1.30	-1.30	-1.30	-1.30	-1.30	-1.30
Applicable elasticity	Export	Import	Export	Import	Export	Import
Applicable trade flow	Export	Import	Export	Import	Export	Import
Impact on trade (tariff/AVE change*elasticity)	4.08	1.59	11.91	10.22	7.45	4.14
Hypothetical trade after tariff/AVE change (billions of dollars)	678	1,273	623	1,162	655	1,240
Impact of tariff/AVE change (billions of dollars)	29	21	84	132	53	54

AVE = ad valorem equivalent, NTB = nontariff barrier, MFN = most favored nation

Sources: UN Comtrade Database via WITS (2008); TRAINS Database via WITS (2008); Kee, Nicita, and Olarreaga (2004, 2005); Hummels (2007); authors' calculations.



**Table 7 Increase in US trade due to policy liberalization, declining transportation costs, and GDP growth, 1980 to 2005 (billions of US dollars)**

<b>Partner/world estimates</b>	<b>Exports</b>	<b>Imports</b>	<b>Total trade</b>
Trade with 17 partner estimates			
Observed US merchandise trade in 1980 with 17 partners	166	173	338
Observed US merchandise trade in 2004 with 17 partners	707	1294	2001
Observed increase in trade from 1980 to 2004 in merchandise trade	542	1121	1663
Trade growth explained by GDP growth and income elasticities of trade	413	970	1384
Trade growth explained by appreciation of US dollar and price elasticities of trade	-53	77	24
Trade growth not explained by GDP growth or exchange rate change	181	74	255
Trade growth explained by traditional trade policy liberalization (i.e., tariffs) (Scenario 2)	115	59	174
Trade growth explained by lower transport costs (Scenario 3)	9	19	28
Trade growth explained by nontariff barrier cuts (Scenario 5)	84	132	216
Trade with world estimates (extrapolated from above)			
Observed US merchandise trade in 1980 with 17 partners	221	253	474
Observed US merchandise trade in 2004 with 17 partners	818	1525	2343
Observed increase in trade from 1980 to 2004 in merchandise trade	597	1272	1869
Trade growth explained by GDP growth and income elasticities of trade	447	1152	1599
Trade growth explained by appreciation of US dollar and price elasticities of trade	-64	88	24
Trade growth not explained by GDP growth or exchange rate change	215	32	246
Trade growth explained by traditional trade policy liberalization (i.e., tariffs) (Scenario 2)	135	69	204
Trade growth explained by lower transport costs (Scenario 3)	11	22	33
Trade growth explained by nontariff barrier cuts (Scenario 5)	99	155	253
<i>Memorandum (GDP growth rate, 1980 to 2004):</i>	<b>Growth (percent)</b>		
Weighted average (by 1990 GDP) of 18 country GDP growth	312		
World GDP growth	253		
<i>Memorandum (income and price elasticities):</i>	<b>Export</b>	<b>Import</b>	
Price elasticities (Kee, Nicita, and Olarreaga 2004)	-1.17	-1.30	
Income elasticities (Hooper, Johnson, and Marquez 2000)	0.80	1.80	
<i>Memorandum (exchange rate change):</i>	<b>Change in index value</b>		
Real equilibrium exchange rate change, 1980–2004	10.88		

Notes: Exchange rate effect is calculated by:  $[10.88/86.88] \times [\text{relevant price elasticity}] \times [\text{relevant one-way US 1992 trade}] - [\text{times } -1 \text{ for imports}]$

Sources: Hummels (2007); TRAINS Database via WITS (2008); UN Comtrade Database via WITS (2008); WTO (2008); Kee, Nicita, and Olarreaga (2004); Hooper, Johnson, and Marquez (2000); IMF *International Financial Statistics*, November 2008; IMF *World Economic Outlook*, October 2008; authors' calculations.

**Table 8 Absolute change in the volume of exports derived from the CGE model, FOB weights**  
(billions of US dollars)

Country/region	Uruguay Round reversion	Tokyo Round reversion	Transportation cost reversion	Preferential reversion	Nontariff barrier reversion	1990 tariff reversion
Australia	-8.1	-16.8	-2.0	-1.6	-8.0	-9.2
Brazil	-17.2	-30.4	-1.6	0.5	-14.3	-19.6
Canada	-22.2	-38.4	2.0	-24.7	-21.0	-35.0
China	-32.0	-61.4	-21.8	1.4	-66.0	-203.9
EU-15a	-257.7	-373.5	-63.4	5.3	-149.3	-367.2
Hong Kong	0.5	0.3	-0.9	0.1	-1.5	-1.2
India	-17.7	-49.0	-2.2	0.1	-11.4	-41.2
Indonesia	-23.9	-28.6	-1.4	0.1	-3.5	-9.6
Japan	-8.8	-33.1	-6.2	1.6	-56.7	-23.6
Korea	-17.8	-52.2	-2.9	0.5	-25.0	-30.7
Malaysia	-12.4	-15.9	-0.4	0.2	-22.1	-10.1
Mexico	-56.4	-70.3	0.7	-18.1	-26.8	-25.8
Philippines	-10.5	-11.6	0.2	0.0	-10.5	-8.8
Singapore	-23.1	-38.6	-4.4	-1.1	-8.9	-5.1
Taiwan	-6.6	-8.9	-3.6	0.3	-46.6	-17.7
Thailand	-20.3	-31.7	-0.2	0.2	-1.6	-26.4
Venezuela	-1.8	-2.5	-0.3	0.1	-0.7	-0.4
United States	-76.9	-127.5	-23.1	-47.1	-143.5	-107.3
Rest of world	-13.9	-18.8	13.4	-1.1	1.6	-10.4

CGE = computable general equilibrium; FOB = free on board

a. Intra-EU-15 trade included.

Source: Gilbert (2009) calculations using GTAP7 database.

**Table 9 Percentage change in the volume of exports derived from the CGE model, FOB weights**

Country/region	Uruguay Round reversion	Tokyo Round reversion	Transportation cost reversion	Preferential reversion	Nontariff barrier reversion	1990 tariff reversion
Australia	-7.5	-15.4	-1.8	-1.5	-7.4	-8.4
Brazil	-15.2	-26.9	-1.4	0.4	-12.6	-17.3
Canada	-6.8	-11.8	0.6	-7.6	-6.4	-10.7
China	-4.7	-9.0	-3.2	0.2	-9.7	-30.0
EU-15a	-7.0	-10.1	-1.7	0.1	-4.0	-9.9
Hong Kong	0.4	0.2	-0.7	0.1	-1.2	-1.0
India	-17.7	-48.8	-2.2	0.1	-11.4	-41.1
Indonesia	-27.3	-32.7	-1.6	0.2	-4.0	-11.0
Japan	-1.4	-5.4	-1.0	0.3	-9.2	-3.8
Korea	-6.3	-18.4	-1.0	0.2	-8.8	-10.8
Malaysia	-8.1	-10.5	-0.3	0.1	-14.6	-6.6
Mexico	-29.6	-36.9	0.4	-9.5	-14.0	-13.5
Philippines	-20.6	-22.9	0.5	0.0	-20.7	-17.3
Singapore	-15.3	-25.6	-2.9	-0.7	-5.9	-3.4
Taiwan	-3.0	-4.0	-1.6	0.1	-21.2	-8.0
Thailand	-17.0	-26.5	-0.2	0.2	-1.4	-22.1
Venezuela	-5.0	-7.0	-0.8	0.2	-1.8	-1.0
United States	-7.2	-11.9	-2.2	-4.4	-13.4	-10.0
Rest of world	-0.7	-0.9	0.7	-0.1	0.1	-0.5

CGE = computable general equilibrium; FOB = free on board

a. Intra-EU-15 trade included.

Source: Gilbert (2009) calculations using GTAP7 database.

**Table 10 Absolute change in the volume of imports derived from the CGE model, CIF weights**  
(billions of US dollars)

Country/ region	Uruguay Round reversion	Tokyo Round reversion	Transportation cost reversion	Preferential reversion	Nontariff barrier reversion	1990 tariff reversion
Australia	-7.9	-15.6	-6.1	-1.5	-8.3	-9.3
Brazil	-15.7	-28.1	-3.4	0.7	-13.9	-18.0
Canada	-22.7	-38.4	2.8	-26.3	-25.2	-35.5
China	-27.8	-59.3	-36.4	2.4	-66.1	-182.7
EU-15a	-267.3	-388.0	-116.1	9.1	-153.5	-381.3
Hong Kong	-0.3	-1.4	-2.7	0.0	-2.9	-4.0
India	-15.3	-42.8	-6.7	0.3	-10.6	-35.2
Indonesia	-22.0	-26.8	-3.2	0.2	-4.1	-9.1
Japan	-7.3	-32.7	-14.7	3.3	-57.9	-27.0
Korea	-17.2	-51.3	-7.2	1.2	-27.0	-32.0
Malaysia	-12.9	-16.9	-1.0	0.3	-21.7	-10.5
Mexico	-51.0	-63.9	0.2	-19.7	-26.3	-25.0
Philippines	-10.0	-11.4	-0.7	0.1	-10.2	-8.4
Singapore	-26.3	-43.2	-5.2	-1.5	-11.5	-9.2
Taiwan	-6.5	-9.4	-7.8	0.6	-44.0	-18.1
Thailand	-18.8	-29.3	-1.7	0.3	-2.7	-24.3
Venezuela	-1.8	-2.5	-0.3	0.1	-0.7	-0.6
United States	-93.6	-147.4	-43.8	-61.5	-120.8	-117.8
Rest of world	-23.8	-41.8	23.4	6.8	-34.4	-41.5

CGE = computable general equilibrium; CIF = cost, insurance, and freight

a. Intra-EU-15 trade included.

Source: Gilbert (2009) calculations using GTAP7 database.

**Table 11 Percentage change in the volume of imports derived from the CGE model, CIF weights**

Country/ region	Uruguay Round reversion	Tokyo Round reversion	Transportation cost reversion	Preferential reversion	Nontariff barrier reversion	1990 tariff reversion
Australia	-6.4	-12.6	-4.9	-1.2	-6.7	-7.5
Brazil	-19.3	-34.5	-4.2	0.9	-17.2	-22.2
Canada	-7.2	-12.1	0.9	-8.3	-8.0	-11.2
China	-4.6	-9.9	-6.1	0.4	-11.0	-30.5
EU-15a	-6.9	-10.0	-3.0	0.2	-4.0	-9.9
Hong Kong	-0.3	-1.3	-2.4	0.0	-2.7	-3.7
India	-12.0	-33.7	-5.3	0.2	-8.4	-27.6
Indonesia	-28.6	-34.8	-4.1	0.2	-5.3	-11.9
Japan	-1.3	-6.1	-2.7	0.6	-10.7	-5.0
Korea	-6.7	-20.0	-2.8	0.5	-10.5	-12.5
Malaysia	-12.2	-15.9	-0.9	0.3	-20.4	-9.9
Mexico	-27.0	-33.9	0.1	-10.4	-13.9	-13.2
Philippines	-20.5	-23.2	-1.5	0.2	-21.0	-17.2
Singapore	-16.4	-26.9	-3.2	-0.9	-7.1	-5.7
Taiwan	-3.6	-5.3	-4.4	0.3	-24.8	-10.2
Thailand	-18.3	-28.5	-1.7	0.3	-2.6	-23.7
Venezuela	-9.4	-12.8	-1.7	0.5	-3.6	-2.9
United States	-5.6	-8.9	-2.6	-3.7	-7.3	-7.1
Rest of world	-1.2	-2.2	1.2	0.4	-1.8	-2.2

CGE = computable general equilibrium; CIF = cost, insurance, and freight

a. Intra-EU-15 trade included.

Source: Gilbert (2009) calculations using GTAP7 database.

**Table 12 Absolute change in the sectoral composition of US exports derived from the CGE model, FOB weights (billions of US dollars)**

Sector	Uruguay Round reversion	Tokyo Round reversion	Transportation cost reversion	Preferential reversion	Nontariff barrier reversion	1990 tariff reversion
Paddy rice	-0.03	-0.04	-0.09	0.01	-0.09	-0.03
Wheat	-0.16	-0.17	-0.73	0.03	-0.49	-0.16
Other cereal grains	-0.30	-0.33	-0.39	-0.00	-0.49	-0.22
Vegetables, fruit, nuts	-0.87	-1.00	-0.31	-0.13	-1.88	-0.90
Oil seeds	-0.34	-0.32	-0.67	0.10	-0.68	-0.36
Sugar cane, beet	0.00	0.00	-0.00	0.00	-0.00	0.00
Plant-based fibers	-0.27	-0.38	-0.34	0.05	-0.37	-0.13
Other crops	0.04	-0.02	-0.33	0.00	-0.70	0.09
Cattle, sheep & goats, horses	-0.06	-0.07	-0.08	0.01	-0.10	-0.06
Other animal products	-0.15	-0.20	-0.11	0.00	-0.34	-0.21
Raw milk	0.00	0.00	0.00	0.00	-0.00	0.00
Wool, silkworm cocoons	-0.00	-0.00	-0.00	0.00	-0.01	-0.00
Forestry	-0.08	-0.13	-0.07	0.00	-0.45	-0.13
Fishing	0.01	0.00	-0.01	0.00	-0.17	-0.00
Coal	-0.01	-0.05	-0.45	0.05	-0.08	-0.07
Oil	-0.02	-0.04	-0.01	-0.03	0.00	-0.04
Gas	-0.53	-0.67	-0.00	-0.41	-1.99	-0.36
Other minerals	-0.09	-0.12	-0.07	-0.03	-0.04	-0.12
Cattle, sheep & goat meat	-0.52	-0.55	-0.28	-0.26	-0.68	-0.49
Other meat products	-1.18	-1.31	0.12	-0.48	-1.78	-1.58
Vegetable oils & fats	-0.50	-0.59	0.06	-0.24	-0.53	-0.35
Dairy products	-2.19	-2.23	-0.07	-0.81	-1.54	-2.17
Processed rice	-0.06	-0.07	-0.06	0.02	-0.13	-0.06
Sugar	-0.04	-0.04	-0.02	-0.02	-0.04	-0.02
Other food products	-1.36	-1.85	-0.07	-0.94	-3.75	-0.90
Beverages & tobacco	-0.54	-1.21	-0.42	-0.10	-0.60	-0.88
Textiles	-3.26	-4.43	-0.48	-3.25	-3.03	-3.51
Wearing apparel	-0.86	-1.06	-0.07	-0.86	-0.84	-0.86
Leather products	-0.82	-0.98	-0.08	-0.62	-0.66	-1.01
Wood products	-1.19	-1.92	-0.05	-1.44	-1.57	-1.75
Paper products, publishing	-1.96	-4.20	-0.65	-1.59	-2.63	-3.87
Petroleum, coal products	-1.24	-1.45	-3.72	-0.63	-2.48	-0.43
Chemical, rubber, plastics	-10.96	-19.76	-6.45	-7.89	-20.59	-15.26
Nonmetallic minerals	-0.74	-1.26	-0.11	-0.88	-0.79	-1.18
Ferrous metals	-1.16	-2.10	-0.26	-1.34	-1.73	-1.77
Other metals	-1.72	-2.87	-0.28	-1.49	-2.06	-2.13
Metal products	-3.60	-5.16	-0.24	-3.83	-2.89	-4.20
Motor vehicles & parts	-9.22	-12.09	0.86	-13.14	-13.89	-10.11
Other transport equipment	-5.52	-9.16	0.67	0.15	-13.62	-7.63
Electronic equipment	-7.77	-14.45	-5.05	-5.89	-15.19	-9.85
Other machinery & equipment	-13.92	-25.60	-5.84	-10.21	-26.25	-22.72
Other manufactures	-1.21	-2.58	-0.73	-0.62	-2.88	-2.37
Services	-3.87	-8.93	2.97	7.65	-19.23	-10.83

CGE = computable general equilibrium; FOB = free on board

Source: Gilbert (2009) calculations using GTAP7 database.

**Table 13 Percentage change in the sectoral composition of US exports derived from the CGE model, FOB weights**

Sector	Uruguay Round reversion	Tokyo Round reversion	Transportation cost reversion	Preferential reversion	Nontariff barrier reversion	1990 tariff reversion
Paddy rice	-5.7	-7.1	-17.2	1.7	-16.6	-5.0
Wheat	-2.7	-2.7	-12.0	0.5	-8.1	-2.6
Other cereal grains	-3.8	-4.3	-5.0	-0.0	-6.3	-2.9
Vegetables, fruit, nuts	-12.0	-13.7	-4.3	-1.8	-25.8	-12.3
Oil seeds	-4.5	-4.2	-8.8	1.3	-9.0	-4.8
Sugar cane, beet	11.5	9.7	-23.7	3.3	-2.0	8.7
Plant-based fibers	-6.3	-8.7	-7.8	1.2	-8.6	-3.1
Other crops	1.6	-0.7	-12.5	0.0	-26.3	3.4
Cattle, sheep & goats, horses	-15.4	-16.7	-19.3	2.3	-26.0	-14.8
Other animal products	-5.8	-7.8	-4.4	0.1	-13.7	-8.4
Raw milk	11.8	9.5	4.0	9.4	-12.0	4.1
Wool, silkworm cocoons	-1.8	-2.2	-7.1	4.2	-26.9	-1.8
Forestry	-5.2	-8.0	-4.6	0.3	-28.6	-7.9
Fishing	1.2	0.0	-0.7	0.2	-22.1	-0.2
Coal	-0.4	-2.1	-17.7	2.0	-3.0	-2.6
Oil	-14.3	-26.0	-7.8	-21.6	0.9	-25.5
Gas	-26.6	-33.4	-0.1	-20.6	-99.7	-18.0
Other minerals	-2.2	-3.0	-1.6	-0.7	-1.1	-3.0
Cattle, sheep & goat meat	-30.4	-32.2	-16.5	-15.2	-40.3	-28.8
Other meat products	-18.3	-20.3	1.8	-7.5	-27.7	-24.4
Vegetable oils & fats	-17.7	-21.2	2.0	-8.6	-18.8	-12.4
Dairy products	-76.1	-77.4	-2.4	-28.0	-53.3	-75.3
Processed rice	-8.0	-9.5	-7.9	2.1	-18.2	-7.8
Sugar	-29.6	-34.8	-12.6	-18.8	-29.2	-18.6
Other food products	-7.7	-10.5	-0.4	-5.3	-21.3	-5.1
Beverages & tobacco	-11.4	-25.6	-9.0	-2.1	-12.7	-18.7
Textiles	-21.7	-29.5	-3.2	-21.6	-20.2	-23.3
Wearing apparel	-23.8	-29.2	-1.9	-23.6	-23.1	-23.7
Leather products	-31.2	-37.3	-3.1	-23.4	-25.0	-38.1
Wood products	-13.7	-22.1	-0.6	-16.6	-18.0	-20.2
Paper products, publishing	-8.7	-18.5	-2.9	-7.0	-11.6	-17.1
Petroleum, coal products	-7.4	-8.6	-22.1	-3.7	-14.7	-2.5
Chemical, rubber, plastics	-7.5	-13.5	-4.4	-5.4	-14.1	-10.5
Nonmetallic minerals	-10.4	-17.7	-1.6	-12.4	-11.1	-16.6
Ferrous metals	-11.2	-20.4	-2.5	-13.0	-16.7	-17.1
Other metals	-10.6	-17.6	-1.7	-9.2	-12.6	-13.1
Metal products	-20.2	-28.9	-1.4	-21.4	-16.2	-23.5
Motor vehicles & parts	-11.3	-14.9	1.1	-16.2	-17.1	-12.4
Other transport equipment	-8.7	-14.4	1.1	0.2	-21.4	-12.0
Electronic equipment	-7.0	-13.1	-4.6	-5.3	-13.7	-8.9
Other machinery & equipment	-7.6	-13.9	-3.2	-5.5	-14.3	-12.4
Other manufactures	-7.2	-15.2	-4.3	-3.7	-17.0	-14.0
Services	-1.5	-3.5	1.2	3.0	-7.5	-4.2

CGE = computable general equilibrium; FOB = free on board

Source: Gilbert (2009) calculations using GTAP7 database.

**Table 14 Absolute change in the sectoral composition of US imports derived from the CGE model, CIF weights (billions of US dollars)**

Sector	Uruguay Round reversion	Tokyo Round reversion	Transportation cost reversion	Preferential reversion	Nontariff barrier reversion	1990 tariff reversion
Paddy rice	-0.01	-0.01	-0.01	-0.00	-0.02	-0.01
Wheat	-0.02	-0.03	-0.06	-0.03	-0.05	-0.03
Other cereal grains	-0.01	-0.01	-0.02	-0.00	-0.11	-0.01
Vegetables, fruit, nuts	-0.60	-0.79	-0.18	-0.33	-2.42	-0.64
Oil seeds	-0.16	-0.18	-0.02	-0.01	-0.10	-0.03
Sugar cane, beet	0.00	0.00	-0.00	-0.00	0.00	0.00
Plant-based fibers	-0.01	-0.01	-0.01	-0.00	0.00	-0.00
Other crops	-0.01	-0.02	-0.21	-0.08	-0.58	0.07
Cattle, sheep & goats, horses	-0.02	-0.03	-0.10	0.00	-0.17	-0.02
Other animal products	-0.04	-0.04	-0.02	-0.02	-0.16	-0.03
Raw milk	-0.00	-0.00	-0.00	-0.00	0.00	-0.00
Wool, silkworm cocoons	-0.00	-0.00	-0.00	-0.00	-0.01	-0.00
Forestry	-0.00	-0.00	-0.01	-0.00	-0.07	0.00
Fishing	0.00	0.00	-0.00	-0.01	-0.17	0.01
Coal	0.00	0.01	-0.34	-0.02	0.02	0.02
Oil	-1.44	-1.89	-2.80	-1.04	-2.44	0.61
Gas	-0.51	-0.56	-0.05	-0.51	-3.83	-0.17
Other minerals	-0.01	-0.02	-0.04	-0.05	-0.02	-0.01
Cattle, sheep & goat meat	-0.52	-0.66	-0.63	-0.30	-2.79	-0.18
Other meat products	-0.50	-0.55	-0.16	-0.32	-1.33	-0.51
Vegetable oils & fats	-0.23	-0.30	-0.17	-0.11	-0.21	-0.26
Dairy products	-0.52	-0.50	-0.12	-0.27	-1.69	-0.42
Processed rice	-0.01	-0.03	0.00	-0.01	-0.06	-0.02
Sugar	-0.11	-0.12	-0.01	-0.01	0.04	-0.11
Other food products	-1.74	-2.17	-0.87	-1.02	-7.17	-1.35
Beverages & tobacco	-1.36	-1.37	-0.93	-0.18	-1.01	-0.74
Textiles	-1.76	-3.71	-0.30	-2.17	-3.65	-3.81
Wearing apparel	-2.79	-5.46	-1.55	-2.54	-13.23	-5.30
Leather products	-0.97	-1.16	-0.10	-0.51	-0.73	-1.27
Wood products	-1.02	-3.44	-1.99	-2.18	-8.66	-3.58
Paper products, publishing	-0.05	-1.27	-0.78	-0.76	1.52	-1.04
Petroleum, coal products	-0.49	-0.76	-1.36	-0.32	0.89	-0.48
Chemical, rubber, plastics	-8.10	-16.29	-4.27	-6.58	-6.93	-15.21
Nonmetallic minerals	-0.74	-1.34	0.16	-0.86	0.63	-0.90
Ferrous metals	-0.63	-3.18	-2.71	-1.16	0.71	-2.77
Other metals	-1.24	-2.13	-0.33	-1.52	1.41	-1.69
Metal products	-1.48	-2.97	-1.74	-1.78	-0.12	-2.85
Motor vehicles & parts	-17.47	-22.27	-8.01	-10.12	-32.20	-11.15
Other transport equipment	-8.22	-8.78	-1.30	-1.95	-13.02	-5.41
Electronic equipment	-19.94	-32.55	-5.34	-6.57	-17.63	-33.38
Other machinery & equipment	-19.85	-30.65	-9.16	-12.93	-22.84	-24.31
Other manufactures	-2.71	-5.90	0.77	-1.54	-1.68	-5.64
Services	1.85	4.32	1.00	-3.54	10.17	5.58

CGE = computable general equilibrium; CIF = cost, insurance, and freight

Source: Gilbert (2009) calculations using GTAP7 database.

**Table 15 Percentage change in the sectoral composition of US imports derived from the CGE model, CIF weights**

Sector	Uruguay Round reversion	Tokyo Round reversion	Transportation cost reversion	Preferential reversion	Nontariff barrier reversion	1990 tariff reversion
Paddy rice	-18.3	-23.7	-22.9	-4.3	-57.1	-20.1
Wheat	-11.5	-16.2	-30.6	-17.2	-23.6	-14.1
Other cereal grains	-2.1	-3.2	-3.3	-0.8	-23.4	-2.8
Vegetables, fruit, nuts	-6.1	-8.1	-1.8	-3.3	-24.5	-6.5
Oil seeds	-31.7	-35.7	-5.0	-1.8	-20.8	-6.2
Sugar cane, beet	1.7	1.1	-0.5	-2.0	9.1	1.4
Plant-based fibers	-8.4	-8.4	-6.2	-2.4	2.1	-3.7
Other crops	-0.2	-0.3	-3.3	-1.3	-9.4	1.1
Cattle, sheep & goats, horses	-2.9	-4.1	-12.2	0.5	-19.6	-2.7
Other animal products	-2.4	-2.2	-0.8	-1.1	-8.7	-1.5
Raw milk	-4.8	-3.2	-2.4	-5.3	12.5	-1.9
Wool, silkworm cocoons	-1.1	-1.4	-2.2	-0.9	-13.7	-1.3
Forestry	-0.6	-0.2	-1.4	-0.3	-13.3	0.6
Fishing	0.3	0.1	-0.1	-0.5	-9.5	0.3
Coal	0.1	0.6	-30.3	-1.7	1.6	1.8
Oil	-1.1	-1.4	-2.1	-0.8	-1.8	0.5
Gas	-3.4	-3.8	-0.3	-3.4	-25.7	-1.1
Other minerals	-0.2	-0.4	-0.8	-1.0	-0.3	-0.3
Cattle, sheep & goat meat	-10.7	-13.4	-12.8	-6.2	-57.2	-3.6
Other meat products	-20.7	-23.0	-6.5	-13.4	-55.3	-21.1
Vegetable oils & fats	-9.2	-12.1	-6.7	-4.4	-8.3	-10.3
Dairy products	-20.5	-20.0	-4.8	-10.6	-67.1	-16.6
Processed rice	-4.4	-8.9	0.3	-1.8	-19.0	-5.0
Sugar	-11.6	-12.5	-0.7	-1.4	4.0	-11.0
Other food products	-6.3	-7.9	-3.1	-3.7	-25.9	-4.9
Beverages & tobacco	-10.2	-10.2	-7.0	-1.3	-7.6	-5.6
Textiles	-4.4	-9.3	-0.8	-5.5	-9.2	-9.6
Wearing apparel	-4.9	-9.5	-2.7	-4.4	-23.1	-9.3
Leather products	-3.9	-4.6	-0.4	-2.0	-2.9	-5.0
Wood products	-1.9	-6.5	-3.8	-4.1	-16.4	-6.8
Paper products, publishing	-0.2	-4.9	-3.0	-3.0	5.9	-4.0
Petroleum, coal products	-1.3	-2.1	-3.8	-0.9	2.5	-1.3
Chemical, rubber, plastics	-5.6	-11.2	-2.9	-4.5	-4.8	-10.4
Nonmetallic minerals	-3.9	-7.0	0.9	-4.5	3.3	-4.7
Ferrous metals	-2.5	-12.6	-10.7	-4.6	2.8	-10.9
Other metals	-4.1	-7.1	-1.1	-5.1	4.7	-5.6
Metal products	-4.6	-9.2	-5.4	-5.5	-0.4	-8.8
Motor vehicles & parts	-8.6	-11.0	-4.0	-5.0	-15.9	-5.5
Other transport equipment	-21.9	-23.4	-3.5	-5.2	-34.8	-14.4
Electronic equipment	-9.7	-15.8	-2.6	-3.2	-8.6	-16.3
Other machinery & equipment	-9.3	-14.4	-4.3	-6.1	-10.7	-11.4
Other manufactures	-5.2	-11.3	1.5	-2.9	-3.2	-10.8
Services	0.8	1.9	0.4	-1.5	4.4	2.4

CGE = computable general equilibrium; CIF = cost, insurance, and freight

Source: Gilbert (2009) calculations using GTAP7 database.

**Table 18 CGE estimated real income effect of multilateral trade reform and transportation cost declines** (billions of US dollars, equivalent variation measure)

Country/region	Reversion to Uruguay Round tariffs			Reversion to Tokyo Round tariffs			Reversion of transportation costs		
	Efficiency	Terms of trade	Overall effect	Efficiency	Terms of trade	Overall effect	Efficiency	Terms of trade	Overall effect
Australia	-1.1	0.5	-0.6	-3.7	1.8	-1.9	-3.0	-1.8	-4.8
Brazil	-3.5	1.5	-2.0	-9.3	2.4	-6.9	-2.2	-0.5	-2.7
Canada	-2.1	0.0	-2.1	-7.9	0.9	-7.0	-2.5	2.9	0.3
China	-1.2	5.9	4.7	-5.0	3.8	-1.2	-9.9	-9.2	-19.1
EU-15	-21.9	1.2	-20.7	-31.6	1.3	-30.3	-58.8	-6.9	-65.7
Hong Kong	-0.0	-0.9	-0.9	-0.0	-2.0	-2.0	-1.6	-0.5	-2.1
India	-5.0	3.7	-1.3	-20.9	12.1	-8.8	-3.1	-2.6	-5.7
Indonesia	-5.0	1.9	-3.0	-7.2	1.7	-5.6	-1.8	-0.4	-2.3
Japan	-1.2	3.0	1.8	-2.3	2.8	0.5	-11.5	0.6	-10.8
Korea	-1.6	2.7	1.1	-8.3	6.1	-2.2	-5.8	0.2	-5.6
Malaysia	-1.1	-3.3	-4.4	-1.6	-5.3	-7.0	-1.9	0.4	-1.5
Mexico	-20.3	6.7	-13.6	-30.9	8.1	-22.9	-2.2	1.8	-0.4
Philippines	-1.4	0.5	-0.9	-1.8	0.2	-1.5	-1.1	-0.0	-1.1
Singapore	-0.7	-1.2	-1.9	-2.7	-1.0	-3.8	-1.7	1.4	-0.3
Taiwan	-0.0	0.0	-0.0	-0.2	-1.1	-1.3	-3.9	-2.1	-5.9
Thailand	-2.9	0.7	-2.2	-7.4	0.8	-6.6	-1.9	-0.3	-2.2
Venezuela	-0.5	-0.6	-1.1	-0.8	-0.8	-1.6	-0.5	0.3	-0.2
United States	-2.1	-11.6	-13.7	-5.0	-13.3	-18.2	-22.8	1.9	-20.9
Rest of world	-2.4	-11.1	-13.5	-4.3	-19.4	-23.7	2.0	14.7	16.7
<i>Total</i>			-74.1			-152.0			-134.3

Notes: All simulations are run using Gilbert's CGE model and the GTAP7 database, which has a base year of 2004. The results are comparative static estimates—they represent only the allocation effects of a change in tariff levels and do not capture other channels, such as productivity effects. The overall real income effect is measured using an equivalent variation measure, and is decomposed into terms-of-trade and allocative efficiency components. The results should be interpreted as the annual real income gain or loss. To approximate a total loss over a long period of time, the figures can be treated as a discounted annuity. For example, the total loss to the United States from an undoing of the Tokyo Round tariff reductions would be approximately \$912 billion—that is, \$18.2 billion loss annually discounted to perpetuity at 2 percent. All measures are relative to a baseline of 2004, adjusted to reflect preferential agreements with the United States.

Source: Gilbert (2009) calculations using GTAP7 database.



**Table 19 CGE estimated net GDP effect of preferential and unilateral tariff liberalization and NTB liberalization** (billions of US dollars, equivalent variation measure)

Country/region	Reversion of preferentials			Reversion of nontariff barrier rates			Reversion to 1990 tariffs		
	Efficiency	Terms of trade	Overall effect	Efficiency	Terms of trade	Overall effect	Efficiency	Terms of trade	Overall effect
Australia	-0.2	0.2	0.0	-3.1	-0.2	-3.3	-1.9	0.2	-1.7
Brazil	0.1	0.4	0.5	-6.3	0.4	-6.0	-4.3	1.4	-3.0
Canada	-1.8	-1.3	-3.1	-4.5	-4.1	-8.6	-2.9	-0.1	-3.0
China	0.3	1.8	2.1	-14.5	-0.2	-14.7	-38.2	28.3	-9.9
EU-15	1.6	4.7	6.3	-84.0	1.1	-82.9	-29.2	1.2	-28.0
Hong Kong	0.0	0.0	0.0	-0.3	-1.6	-1.9	-0.0	-3.2	-3.3
India	0.1	0.3	0.3	-4.7	1.2	-3.5	-13.9	10.2	-3.6
Indonesia	0.0	0.1	0.1	-1.7	-0.6	-2.3	-1.5	0.4	-1.2
Japan	0.3	2.3	2.6	-16.4	1.9	-14.5	-2.0	-1.9	-3.9
Korea	0.1	0.8	0.9	-6.5	-0.0	-6.5	-3.1	1.4	-1.7
Malaysia	0.0	0.2	0.2	-7.7	-5.1	-12.8	-0.6	-3.9	-4.5
Mexico	-3.5	-1.5	-5.0	-14.0	0.6	-13.4	-8.1	0.9	-7.1
Philippines	0.0	0.1	0.1	-4.9	0.3	-4.6	-1.0	0.4	-0.7
Singapore	-0.0	-0.3	-0.3	-0.4	-1.8	-2.2	-0.2	-3.9	-4.1
Taiwan	0.0	0.4	0.4	-17.7	-0.4	-18.1	-0.9	-1.8	-2.7
Thailand	0.0	0.1	0.2	-0.7	-1.5	-2.2	-5.1	0.9	-4.2
Venezuela	0.0	0.0	0.1	-0.3	-0.3	-0.6	-0.1	-0.3	-0.4
United States	-1.8	-10.9	-12.7	-28.9	24.4	-4.5	-3.5	-5.0	-8.5
Rest of world	0.7	2.4	3.1	-2.3	-14.1	-16.4	-4.8	-26.0	-30.8
Total			-4.2			-218.9			-122.3

Notes: These results are interpreted in the same way as table 18. The model predicts big terms of trade swings for the larger economies in the NTB simulations, but only for the United States are the favorable swings large enough to roughly balance the allocative efficiency losses. The reversion of preferentials scenario entails elimination of the US trade agreements with Australia, Canada, Mexico, and Singapore.

Source: Gilbert (2009) calculations using GTAP7 database.

**Table 20 Comparison of partial and general equilibrium impacts for the United States** (billions of US dollars)

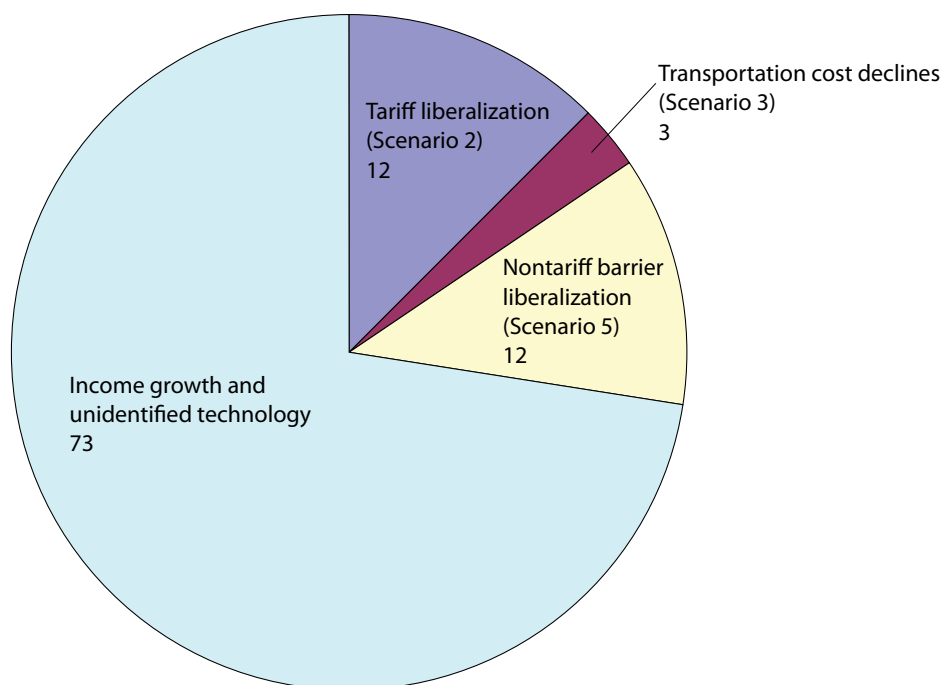
Scenario	Exports		Imports		Total trade		Annual benefit	
	Partial	General	Partial	General	Partial	General	Partial <sup>a</sup>	General
1 – Reversion to Uruguay Round bound tariff rates	–92	–77	–30	–94	–123	–171	–129	–14
2 – Reversion to Tokyo Round bound tariff rates	–135	–128	–69	–147	–204	–275	–222	–18
3 – Return to circa 1980 transportation costs	–11	–23	–22	–44	–33	–67	–33	–21
4 – Removal of preferential tariff rates	–34	–47	–25	–61	–59	–109	–60	–13
5 – Reversion to circa 1990 nontariff barrier levels	–99	–143	–155	–121	–253	–264	–282	–5
6 – Reversion to circa 1990 MFN applied tariff rates	–62	–107	–63	–118	–125	–225	–132	–9
<i>Services trade removed from general equilibrium analysis</i>								
1 – Reversion to Uruguay Round bound tariff rates	–92	–73	–30	–94	–123	–167		
2 – Reversion to Tokyo Round bound tariff rates	–135	–119	–69	–149	–204	–268		
3 – Return to circa 1980 transportation costs	–11	–26	–22	–44	–33	–70		
4 – Removal of preferential tariff rates	–34	–55	–25	–60	–59	–115		
5 – Reversion to circa 1990 nontariff barrier levels	–99	–124	–155	–125	–253	–249		
6 – Reversion to circa 1990 MFN applied tariff rates	–62	–96	–63	–120	–125	–217		

a. Calculated as the US population on July 1, 2004 (292.2 million) multiplied by the impacts determined in the sections on "Benefits of Trade Expansion" in this paper.

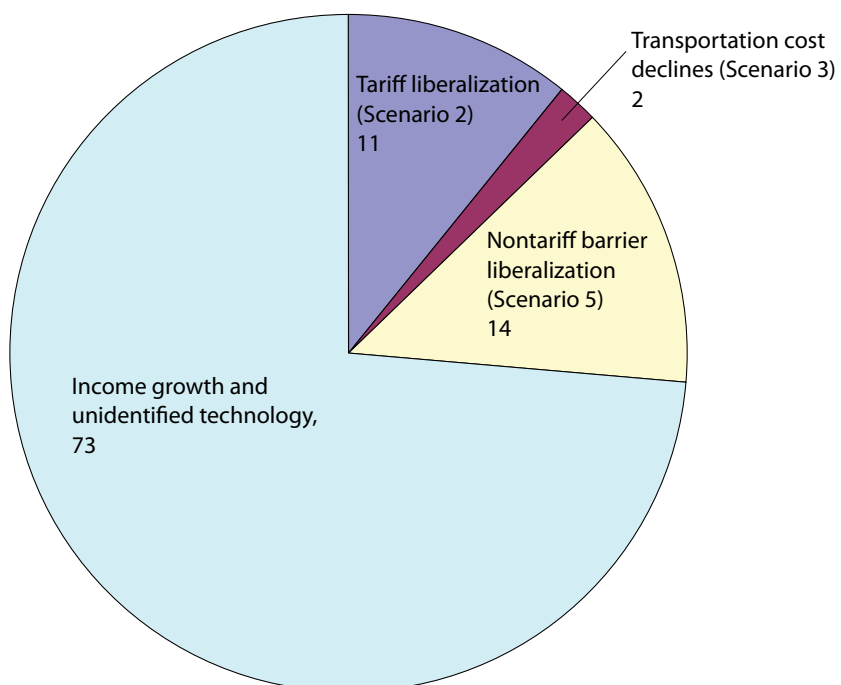
**Table 21 Share of US trade growth between 1980 and 2004 attributable to various factors** (billions of US dollars and percent)

	Exports \$	Imports \$	Exports %	Imports %
Partial equilibrium impact on trade				
Tariff liberalization (Scenario 2)	135	69	23	5
Transportation cost declines (Scenario 3)	11	22	2	2
NTB liberalization (Scenario 5)	99	155	17	12
Income growth and unidentified technology	352	1,026	59	81
	<b>Total trade \$</b>		<b>Total trade %</b>	
Partial equilibrium impact on total trade				
Tariff liberalization (Scenario 2)	204		11	
Transportation cost declines (Scenario 3)	33		2	
NTB liberalization (Scenario 5)	254		14	
Income growth and unidentified technology	1,378		74	
	Exports \$	Imports \$	Exports %	Imports %
General equilibrium impact on trade				
Tariff liberalization (Scenario 2)	128	147	16	11
Transportation cost declines (Scenario 3)	23	44	3	3
NTB liberalization (Scenario 5)	144	121	18	9
Income growth and unidentified technology	523	1,076	64	78
	<b>Total trade \$</b>		<b>Total trade %</b>	
General equilibrium impact on total trade				
Tariff liberalization (Scenario 2)	275		12	
Transportation cost declines (Scenario 3)	67		3	
NTB liberalization (Scenario 5)	265		12	
Income growth and unidentified technology	1,599		72	
	Exports \$	Imports \$	<b>Total trade \$</b>	
<i>Memorandum: 1980 to 2004 US trade growth</i>				
Partial equilibrium analysis (goods only)	597	1,272	1,869	
General equilibrium analysis (good and services)	818	1,388	2,206	

**Figure 1 Total US trade growth from 1980 to 2004 attributable to various sources:  
General equilibrium analysis (percent)**



**Figure 2 Total US trade growth from 1980 to 2004 attributable to various sources:  
Partial equilibrium analysis (percent)**



## APPENDIX A

### DATA SOURCES AND METHODS

This appendix outlines our data sources and methods. The creators and maintainers of the GTAP database work tirelessly to make their data as current as possible. However, our analysis requires both “present” and “past” data to examine the impact of policy reforms (or transportation costs) over the last 25 years. We summarize below the methods we used for creating our “past” and, where necessary, “present” estimates.

#### Country Coverage

The CGE analysis we have used (like the simple partial equilibrium analysis) considers only 18 countries: Australia, Brazil, Canada, China, the European Union, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, Mexico, the Philippines, Singapore, Taiwan, Thailand, the United States, and Venezuela. Table A.1 shows US exports and imports with these 17 partners in 1980 and in 2006. Of total US two-way trade, trade with these 17 partners made up 73 percent in 1980 and 84 percent in 2006. The list of countries was chosen based primarily on their importance in US trade but also reflects data availability.

#### Sector Coverage

The GTAP database contains data for 57 merchandise and service sectors. Our analysis covers only the 42 merchandise sectors. Table A.2 shows US exports and imports in 2006 by GTAP merchandise sector.

#### Applied Rates

Most favored nation (MFN) applied tariff rates are the rates that any WTO member (and at times non-WTO members) apply to all nonpreferential trade partners—namely, trade with countries that are not linked by a free trade agreement or customs union. To calculate “present” MFN applied rates, we take the simple average of MFN applied rates for each of the 18 countries for three years of available data, selected from the period 2002 to 2005, with a preference for the most recent data. For “past” tariff rates we consider three years of available data, selected from the period 1988 to 1993, with a preference for the oldest data.<sup>1,2</sup> The reason for using three-year averages is that applied rates bounce around for aggregate categories even when there is no policy change, simply because the importance of trade in individual tariff lines changes from year to year. When necessary, we include ad valorem equivalents of specific tariff rates.

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1. The phrase “three years of available data” effectively means if a country has only two years of data in the listed time frame, then only data from those two years is considered. If data from all the years in the time frame are available, the most recent years are preferred to calculate present tariff rates, and oldest years are preferred to calculate past tariff rates.

2. In the case of Mexico, we felt the increase in MFN applied tariffs after the Peso Crisis of 1995 inaccurately skewed the comparison of past to present tariffs. To compensate, we use Mexican 1998 MFN applied rates as the past rates and 2006 MFN applied rates as the present rates.

Data for ad valorem equivalents is not always available. The notes for tables A.3 through A.20, which display past and present MFN applied tariff rates, detail the specific years used for ad valorem equivalents of specific tariffs, as well as for tariffs that are expressed on an ad valorem basis. Keeping with the methodology of GTAP, ad valorem equivalents of specific tariffs are calculated using the United Nations Conference on Trade and Development (UNCTAD) Method 2. This method considers specific tariff rates and import unit values for OECD countries at the Harmonized System (HS) 6-digit level (FAO 2004).<sup>3</sup>

The MFN applied tariff figures, both ad valorem and ad valorem equivalents of specific rates, are taken from the UNCTAD Trade Analysis Information System (TRAINS). The data was retrieved using the World Integrated Trade Solution (WITS) software developed by the World Bank. The UNCTAD TRAINS database is standardized at the HS 6-digit level. When countries supply their tariff schedules to UNCTAD, tariffs at the HS 8-digit level or higher are collapsed into the HS 6-digit level. UNCTAD reports both a simple average and weighted average of tariffs at the tariff line level (i.e., when the underlying figures are reported in greater detail than HS 6-digit level). Using a concordance supplied by the World Bank between HS 1988/1992 and GTAP, we collapse the UNCTAD TRAINS estimates of “past” MFN applied tariffs at the HS 6-digit level into the 42 GTAP merchandise sectors, using the simple average of the HS 6-digit level tariffs. We do the same with the “present” MFN applied tariffs using a concordance between HS 2002 and GTAP also supplied by the World Bank.

The overwhelming trend in our estimates of MFN applied rates at the GTAP level from “past” to “present” is downward; yet, in a few instances, tariff increases are observed. The increases occur for four reasons. First, many countries have room under their bound commitments to the GATT/WTO to move their applied tariff rates up, and in a few cases this has happened. Second, as a result of Uruguay Round agreements, many countries underwent a process known as “tariffication” in which they converted quotas and other NTBs into ad valorem tariffs.<sup>4</sup> Under our method of averaging tariffs, Uruguay Round tariffication can at times make it seem like a country’s tariff took a big jump from past to present, which in reality exaggerates the overall level of protection. For example, if the GTAP sector for a country had only one tariff line in 1990 with a tariff rate of 0 percent but in 2005 had five tariffs, one with the same 0 percent and four others that were converted from quotas under the Uruguay Round to 50 percent tariffs, then the calculated average tariff rate for that GTAP sector would have jumped from 0 to 40 percent.

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3. The UNCTAD Method 1 for calculating ad valorem equivalents of specific tariffs prefers the specific tariff and the national import unit value at the tariff line level (i.e., potentially more detailed than the HS 6-digit level). If national import unit values at the tariff line level are not available, the specific tariffs and national import unit values at the HS 6-digit level are used. If the first two options are not available, the specific tariffs and OECD import unit values at the HS 6-digit level are used. HS

4. This process is occasionally referred to as “dirty tariffication” because many countries made their new tariffs much higher than the ad valorem equivalent of quotas or other NTBs.

In effect NTBs became tariffs; in the process there may have been some increase in overall protection, but not from 0 to 40 percent.<sup>5</sup> The third reason MFN applied tariffs may have increased from “past” to “present” is the introduction of new coding systems. Periodically, international trade classification systems are updated to account for new products and to regroup existing products. Our past tariff data was submitted to the UNCTAD data system using the HS 1988 coding system. This was revised twice with the HS 1996 system and the HS 2002 system. “Present” data was submitted to the UNCTAD data system using the HS 2002 system. For similar reasons as the tariffication process under the Uruguay Round, the introduction of new coding systems can influence the tariff averages at the GTAP level. Lastly, the TRAINS database does not include tariff lines with zero trade, so it is possible that some goods with high tariffs were traded in the “present” but not the “past.”

To control for instances where we believe increases in average tariff rates do not accurately reflect an increase in protection, we assume that the “present” MFN applied tariff is the same as the “past” rate—i.e., there was no change in tariff rates from “past” to “present”—whenever the “present” rate is more than 10 percentage points higher than the “past” rate. The middle column (“past rate used”) in tables A.3 through A.20 shows the results of this assumption.

## Bound Rates

Bound tariff rates are the rates that WTO members agree to as the cap for their MFN applied tariff rates. Traditionally, countries agree to bind their tariffs either during multilateral trade negotiations, like the current Doha Round, or during their accession process. All but four of the US partner countries in our analysis bound their tariffs during the Tokyo and Uruguay Rounds. Mexico and Venezuela bound their tariffs in the Uruguay Round but did not belong to WTO’s predecessor, the General Agreement on Tariffs and Trade (GATT), until after the Tokyo Round. Both Mexico and Venezuela bound their tariffs in their accession commitments during the mid-1980s; these are the rates we use in lieu of Tokyo Round rates. China joined the WTO in late 2001 and Taiwan joined in early 2002; we include their initial and final accession bindings in the relevant bound rate tables but only use the initial accession bindings in lieu of Uruguay Round rates. As the stand-in for the Tokyo Round rates for China and Taiwan we use the “past” applied rates from tables A.6 and A.17. For countries other than these four, we use Tokyo and Uruguay Round bindings.

We use the Uruguay Round raw tariff schedules (accession schedules for China and Taiwan) supplied by the 18 members directly to the WTO. These schedules include both a pre-Uruguay bound rate (usually the Tokyo Round binding) and a post-Uruguay bound rate. In a few cases the tariff

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5. By the process known as “dirty tariffication,” some countries exaggerated the ad valorem impact of their agricultural quotas when converting them to tariffs after the Uruguay Round.

schedules require extensive cleaning because the tariffs are not uniformly coded. The United States, for example, lists tariff codes predominantly at the HS 8-digit level; however, in some instances an 8-digit code contains several underlying tariff lines denoted by letters, usually with different tariff rates. We assign the same 8-digit code to all of these underlying codes. Once we have the bound tariff schedules appropriately cleaned at the tariff line level (usually at the HS 8-digit level but occasionally at the 10- or 12-digit level) we collapse the tariffs into the HS 6-digit level and take the simple average of all tariff lines under each code.

Countries also have specific bound tariffs. Rather than go through the laborious exercise of calculating our own ad valorem equivalents of bound specific rates, we splice into the HS 6-digit bound tariff schedule the ad valorem equivalent of MFN applied tariffs from a corresponding time period (circa 1990 for pre-Uruguay Round and circa 2003 for post-Uruguay Round) whenever there was a specific bound tariff at the tariff line level below any HS 6-digit code. The ad valorem equivalents of the MFN applied rates are derived in the same manner as the MFN applied rates discussed above and displayed in tables 3 through 20.

After splicing in the ad valorem equivalents of specific applied rates we use a concordance between HS 1988/1992 and GTAP (HS 1996 and GTAP for China and Taiwan) to collapse the tariff schedules into the 42 GTAP merchandise sectors, using the simple average of HS 6-digit codes.

In some instances the applied rates displayed in tables A.3 through A.20 actually exceed the bound rates for corresponding countries, sectors, and periods (circa 2004 for Uruguay Round and circa 1990 for Tokyo Round) displayed in tables A.21 through A.38. This is a coding and averaging problem rather than malfeasance by WTO members.<sup>6</sup> To control for this type of misreporting, we substitute the applied rate for the bound rate whenever the applied rate is higher. There is another similar problem: Occasionally, the post-Uruguay Round bound rates are higher than pre-Uruguay Round bound rates. This is matter of coding revisions and the tariffication process under the Uruguay Round. To control for this type of misreporting, we replace the pre-Uruguay bound rate with the post-Uruguay bound rate whenever the post-Uruguay bound rate is higher.

### **Preferential Tariffs**

The method used for calculating preferential tariff rates parallels the applied tariff rate method. Using the WITS software and UNCTAD TRAINS database we query effectively applied tariffs, which gives preferential tariffs when they are in effect and MFN applied tariffs otherwise. Again due to coding updates and tariffication under the Uruguay Round, there are some instances where even the preferential

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6. For China and Taiwan, applied rates may be higher than bound rates because some bound rates were implemented after our sample period for applied rates.



rate in the “present” is higher than the MFN applied rate from the past. To control for these errors, we assume no change in the preferential rate from past to present whenever the present preferential rate is higher than the past MFN applied rate. For this exercise, we used the preferential rates for the United States and its partners under the Mexican and Canadian segments of NAFTA, the Australia-US FTA, and the Singapore-US FTA. Preferential rates are displayed in tables A.39 through A.46.

## Nontariff Barriers

Efforts by scholars to estimate ad valorem tariff equivalents of NTBs—the data we need to analyze NTBs in GTAP—have been limited. Ferrantino (2006) surveys the work that has been done in this field; Deardorff and Stern (1997) provide an earlier assessment of NTB data work. Creating ad valorem equivalents of NTBs involves considerable guesswork. In general, authors try to determine the level of NTB protection either from the wedge between domestic and international prices caused by the NTB or from the shortfall in expected imports caused by the NTB. The level of sophistication varies widely between estimates, and most efforts have been limited to either a few countries or a few sectors. However, a recent database published by the World Bank, created by Kee, Nicita, and Olarreaga (2005), provides ad valorem equivalents at the HS 6-digit level for over 4,500 commodities for 91 countries. Their approach is to “predict import [values] using factor endowments and observe [the] deviations in the presence of NTBs” (Kee, Nicita, and Olarreaga 2005). The authors then convert the deviations to price effects to calculate ad valorem tariff equivalents of each NTB for each country.

The underlying data for the Kee, Nicita, and Olarreaga (2005) estimates of ad valorem tariff equivalents of NTBs is compiled from the UNCTAD TRAINS database, various WTO Trade Policy Reports, a European Union dataset created by the Groupe d’Economie Mondiale at Sciences Po (Paris), and notifications from WTO members of their domestic support programs. The following types of NTBs are included in the analysis: nonautomatic licenses, quotas, prohibitions, administrative pricing, voluntary export price restraints, variable charges, monopolistic measures, technical regulations, and domestic support subsidies.<sup>7</sup> Estimates of ad valorem equivalents of NTBs are made for one year for each country using data from the most recent year available. The underlying NTB data roughly corresponds to the year 2000 for every country we consider; other data in their model (e.g., tariffs and trade) is more recent.

Using a concordance between HS 1996 and GTAP codes provided by the World Bank, we collapse the Kee, Nicita, and Olarreaga (2005) NTB estimates, which are provided at the HS 6-digit level, into

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7. The UNCTAD codes for these NTBs are as follows: nonautomatic licenses (6100), quotas (6200), prohibitions (6300), administrative pricing (3100), voluntary export price restraints (3200), variable charges (3300), monopolistic measures (7000), and technical regulations (8000). Domestic support subsidies are not included in the UNCTAD coding. More specific NTBs are listed under each of these parent codes; see Ferrantino (2006) for a complete list. Variable charges are often included in national tariff schedules; however, they usually cannot be converted into ad valorem equivalents, so double counting between the ad valorem equivalents of applied tariff rates and NTBs is unlikely (Stawowy 2001).

the 42 GTAP merchandise sectors. We consider the simple average of underlying HS 6 codes in each GTAP sector. Due to limited data, Kee, Nicita, and Olarreaga (2005) do not make NTB estimates for Korea, Singapore, and Taiwan. To fill in the data, we assume that Korean NTBs are the same as Japan's, that Singaporean NTBs are the same as Hong Kong's, and that Taiwanese NTBs are the same as Malaysia's.

Kee, Nicita, and Olarreaga (2005) created relatively current estimates of ad valorem equivalents of NTBs, but they did not reach into earlier periods. Our method requires us to compare the changes in policy instruments, like NTBs, from past to present. Resource and data limitations rule out replicating the Kee, Nicita, and Olarreaga (2005) analysis to estimate ad valorem equivalents of NTBs for the “past” (i.e., 1994 or earlier). However, some estimates of ad valorem equivalents of NTBs for the past have been made; we use these to derive past ad valorem tariff equivalents of NTBs based on the more current Kee, Nicita, and Olarreaga (2005) estimates. Specifically, we create a concordance between “past” estimates of ad valorem equivalents of NTBs by sector with corresponding “present” estimates, drawing on several sources: Linkins and Acre (2004) for the United States; Messerlin (2001) for the European Union; Shuguang, Yansheng, and Zhongxin (1998) for China; and Sazanami, Urata, and Kawai (1995) for Japan. The concordance reveals examples of the change in ad valorem equivalents of NTBs from “past” to “present.” From these few examples we estimate one rate of change for all NTB protection in every sector and every country from “past” to “present”—namely a 51 percent decline in the level of protection. Admittedly, this is a very rough approach, but the data limitations for NTBs left us with few options; we thus caution our readers that any estimates concerning NTB liberalization and the impact thereof should be taken with a tablespoon of salt.

Table A.47 shows our concordance between the various “past” estimates of NTBs and GTAP sectors. The concordance between the Japanese (Sazanami, Urata, and Kawai 1995) and Chinese (Shuguang, Yansheng, and Zhongxin 1998) estimates were made by matching similarly named sectors. The EU concordance was created loosely from the International Standard Industrial Classification (ISIC) codes listed in Messerlin (2001). For the US concordance we first matched similar sectors from the early estimates (Linkins and Acre 1994) to later estimates made with the same methodology (USITC 2004). The later estimates were made using the United States International Trade Commission (USITC) classification system. We matched the US estimates with a concordance created by Donnelly et al. (2004) from the USITC classification system first to GTAP database 4 and earlier codes, and then to GTAP database 7 codes with a separate concordance from Donnelly et al. (2004).

The US and EU estimates have a time dimension; specifically, there are estimates of ad valorem equivalents of NTBs from about 1990 and 2000. The Chinese and Japanese estimates are for only one year. To estimate an average change in tariff equivalents of NTBs we consider the change across the US

and EU estimates and the change from the Japanese and Chinese estimates to the matched estimates derived from the Kee, Nicita, and Olarreaga (2005) database. Table A.48 provides these paired “past” and “present” estimates for the four countries, made possible by our concordance in table A.47. We then calculate a weighted average (weighted by total 1990 imports for each country) from the average percent change in the tariff equivalents of NTBs for each of the four countries. We apply this figure, namely, a 51.1 percent change from “past” to “present,” to every “present” GTAP sector estimate to calculate “past” NTB rates.<sup>8</sup> Specifically, multiplying a “present” tariff equivalent of an NTB by 1 divided by  $1 - 0.511$  gives the “past” NTB estimate. The estimates of past and present NTB rates for the 18 countries are displayed in tables A.49 through A.66.

### Transportation Costs

The GTAP7 database contains 2004 (i.e., “present”) estimates of transportation costs. The manner that transportation costs are modeled in GTAP does not allow us to simply insert “past” estimates of transportation costs. We must therefore determine how much to shock present transportation costs to simulate past transportation costs. To do this, we use a database from Hummels (2007) that contains the transportation costs and value of US imports from over 100 countries from 1974 to 2004. The database is disaggregated at the leaf level (i.e., the most disaggregated level, which is either 4-digit or 5-digit depending on the good) of the Standard International Trade Classification (SITC) revision 2. We calculate both “past” and “present” ad valorem equivalents of transportation costs (transportation charges divided by import value) from the database; comparing the two tells us how much to shock the transportation costs already in GTAP to simulate “past” costs.

Using a concordance from HS 1996 through SITC revision 2 to GTAP developed by the Centre D'Etudes Prospectives et D'Informations Internationales (CEPII), we collapse the SITC leaf level codes into GTAP sectors for each of the 17 US partner countries in our analysis for available data from 1979 to 1981 and 2002 to 2004.<sup>9</sup> We take the sum of the value of transportation charges (i.e., freight and insurance) and import values for the underlying SITC codes by GTAP sector. We then divide the transportation charges by import value to determine the ad valorem equivalent of transportation costs. To control for variability we take the simple average of available data from 1979 to 1981 for “past” estimates

8. We were also able to observe the percent change in the ad valorem equivalents of Norwegian NTBs from past to present. Interestingly, the average percent change, namely a 51 percent decline, was nearly identical to our estimate. This does prove that our estimate is right, but it is an interesting result. The Norwegian data are presented in Deardorff and Stern (1997) and were originally calculated by Holmoy and Haegeland (1994).

9. The concordance created by CEPII has, at times, multiple GTAP sectors paired with one SITC code. In these instances, we consider the mode (i.e., most frequent) GTAP sector. If more than one mode exists we use the first listed mode. For the purposes of filling in gaps in the data later we also collapse the SITC rev.2 data into GTAP sectors for several other years. The leaf level of SITC codes refers to the end code for any commodity type; most codes terminate at the 5-digit level, others at only the 4-digit level.

and the simple average of available data from 2002 to 2004 for “present” estimates. There are many gaps in the calculations because the United States does not always import under every GTAP code from each of the 17 partners. We fill in missing data with a preference for estimates from the same country but a different year first, then from a nearby country with the same or nearby year, and lastly, with estimates from a similar sector. The estimates of transportation costs are shown in tables A.67 through A.83.

Comparable data for the transportation costs on US exports (i.e., imports of the 17 partner countries) would be cumbersome to evaluate if possible to find. We therefore make the assumption that the change in transportation costs from “past” to “present” on US imports is identical to the change in transportation costs on US exports from “past” to “present.”

**Table A.1 US trade with 17 major partners and the world,  
1980 and 2006** (billions of US dollars)

<b>Country</b>	<b>1980 imports</b>	<b>1980 exports</b>	<b>2006 imports</b>	<b>2006 exports</b>
Australia	2.8	4.1	8.5	17.7
Brazil	4.0	4.3	27.9	19.2
Canada	40.8	33.8	305.9	229.1
China	1.2	3.8	305.8	55.2
European Union	42.8	60.3	339.7	211.0
Hong Kong	5.0	2.7	8.3	17.7
Indonesia	5.5	1.4	14.3	3.1
India	1.2	1.7	23.0	10.1
Japan	32.9	20.7	152.2	59.6
Korea	4.4	4.4	47.6	32.5
Mexico	12.8	14.9	199.5	134.0
Malaysia	2.7	1.3	37.5	12.5
Philippines	1.9	2.0	10.1	7.6
Singapore	2.0	3.0	18.1	24.7
Thailand	0.9	1.1	23.7	8.1
Taiwan	7.4	4.2	39.8	22.9
Venezuela	5.5	4.6	38.4	9.0
<i>Subtotal</i>	173.6	168.2	1,600.3	874.0
<i>World</i>	250.3	216.9	1,913.4	1,028.2

Source: UN Comtrade Database via WITS.

**Table A.2 US trade by GTAP sector, 2006** (billions of US dollars)

GTAP code	GTAP sector	Imports	Exports
1	Paddy rice	0.0	0.5
2	Wheat	0.3	4.2
3	Cereal grains nec	0.6	8.0
4	Vegetables, fruit, nuts	11.5	9.1
5	Oil seeds	0.5	7.4
6	Sugar cane, sugar beet	0.0	0.0
7	Plant-based fibers	0.0	4.5
8	Crops nec	7.1	3.0
9	Bovine cattle, sheep and goats	1.9	0.4
10	Animal products nec	1.8	3.1
12	Wool, silkworm cocoons	0.0	0.0
13	Forestry	0.6	1.7
14	Fishing	1.9	0.8
15	Coal	2.0	3.5
16	Oil	233.2	0.9
17	Gas	28.8	2.2
18	Minerals nec	5.3	7.0
19	Bovine meat products	3.5	2.4
20	Meat products nec	2.0	5.5
21	Vegetable oils and fats	3.0	3.3
22	Dairy products	1.9	1.5
23	Processed rice	0.3	0.8
24	Sugar	1.7	0.2
25	Food products nec	30.5	18.9
26	Beverages and tobacco products	17.8	4.3
27	Textiles	46.1	15.0
28	Wearing apparel	60.3	3.2
29	Leather products	29.0	2.8
30	Wood products	59.4	10.7
31	Paper products, publishing	28.5	24.7
32	Petroleum, coal products	76.8	25.6
33	Chemical, rubber, plastic products	187.5	160.8
34	Mineral products nec	22.9	8.8
35	Ferrous metals	34.6	14.7
36	Metals nec	52.7	33.4
37	Metal products	38.9	21.5
38	Motor vehicles and parts	223.4	97.9
39	Transport equipment nec	38.5	89.9
40	Electronic equipment	247.2	135.8
41	Machinery and equipment nec	267.0	229.2
42	Manufactures nec	72.3	29.3
<i>Total</i>		1,841.6	996.6

nec = not elsewhere classified

Note: Table A.2 totals differ from table A.1 estimates because GTAP codes 11 (Raw milk), 43 (Electricity), and 44 (Gas) are not listed.

Source: UN Comtrade Database via WITS (2008).

**Table A.3 Past and present applied tariff rates in Australia (percent)**

GTAP code	GTAP sector	Past applied tariff (1992)	Past rate used	Present applied tariff (2004)	Past HS lines	Present HS lines
1	Paddy rice	0.0	0.0	0.0	2	2
2	Wheat	0.0	0.0	0.0	2	2
3	Cereal grains, other	0.0	0.0	0.0	10	10
4	Vegetables, fruit, nuts	1.5	1.5	0.7	86	94
5	Oil seeds	1.3	1.3	0.6	16	15
6	Sugar cane, sugar beet	0.0	0.0	0.0	2	1
7	Plant-based fibers	0.0	0.0	0.0	8	6
8	Crops, other	50.2	50.2	0.2	71	61
9	Bovine cattle, sheep and goats, horses	0.0	0.0	0.0	8	7
10	Animal products, other	0.0	0.0	0.2	46	53
12	Wool, silkworm cocoons	2.7	2.7	0.7	6	7
13	Forestry	0.3	0.3	0.4	29	23
14	Fishing	0.0	0.0	0.1	41	45
15	Coal	0.0	0.0	0.0	6	6
16	Oil	0.0	0.0	0.0	2	4
17	Gas	0.0	0.0	0.0	2	2
18	Minerals, other	1.3	1.3	0.5	96	91
19	Bovine meat products	0.0	0.0	0.0	30	29
20	Meat products, other	1.9	1.9	0.7	38	49
21	Vegetable oils and fats	3.5	3.5	1.7	46	49
22	Dairy products	9.4	9.4	3.8	23	26
23	Processed rice	0.0	0.0	0.0	2	2
24	Sugar containing products	7.7	7.7	0.7	9	7
25	Food products, other	16.3	16.3	1.7	256	271
26	Beverages and tobacco products	579.9	100.0	2.8	58	86
27	Textiles	26.1	26.1	9.0	757	672
28	Wearing apparel	31.8	31.8	18.5	327	279
29	Leather products	20.9	20.9	6.5	97	99
30	Wood products	10.2	10.2	3.9	103	124
31	Paper products	8.9	8.9	3.3	191	299
32	Petroleum, coal products	0.6	0.6	0.0	23	86
33	Chemical, rubber, plastic products	6.1	6.1	2.1	1017	1120
34	Mineral products, other	9.1	9.1	3.3	176	176
35	Ferrous metals	7.6	7.6	4.1	187	223
36	Metals, other	3.1	3.1	1.2	169	182
37	Metal products	13.7	13.7	4.5	219	228
38	Motor vehicles and parts	17.8	17.8	6.3	135	131
39	Transport equipment, other	7.8	7.8	2.3	96	98
40	Electronic equipment	9.3	9.3	1.1	134	140
41	Machinery and equipment, other	9.0	9.0	2.8	997	987
42	Manufactures, other	9.8	9.8	2.3	188	182

Notes: Past applied rates are the average of applied rates from 1991 and 1993 (including ad valorem equivalents of specific tariffs). Present applied rates are the average of applied rates from 2003, 2004, and 2005 (including ad valorem equivalents of specific tariffs). The past rate for GTAP 26 was capped at a 100 percent tariff rate.

Source: TRAINS Database via WITS (2008).

**Table A.4 Past and present applied tariff rates in Brazil (percent)**

GTAP code	GTAP sector	Past applied tariff (1992)	Past rate used	Present applied tariff (2004)	Past HS lines	Present HS lines
1	Paddy rice	18.3	18.3	9.2	4	5
2	Wheat	24.2	24.2	5.3	3	4
3	Cereal grains, other	18.0	18.0	4.8	16	21
4	Vegetables, fruit, nuts	21.3	21.3	10.2	116	121
5	Oil seeds	16.0	16.0	5.1	19	29
6	Sugar cane, sugar beet	18.3	18.3	9.0	2	1
7	Plant-based fibers	3.3	3.3	7.0	17	10
8	Crops, other	21.0	21.0	7.8	120	81
9	Bovine cattle, sheep and goats, horses	5.8	5.8	1.7	18	15
10	Animal products, other	15.0	15.0	6.3	119	72
12	Wool, silkworm cocoons	7.8	7.8	8.4	18	8
13	Forestry	17.0	17.0	5.4	56	24
14	Fishing	23.1	23.1	10.0	58	72
15	Coal	3.3	3.3	0.0	7	6
16	Oil	12.5	12.5	0.0	3	3
17	Gas	11.7	11.7	0.0	2	2
18	Minerals, other	11.8	11.8	4.6	244	123
19	Bovine meat products	19.5	19.5	10.7	78	42
20	Meat products, other	26.2	26.2	12.1	81	52
21	Vegetable oils and fats	16.1	16.1	10.2	85	68
22	Dairy products	33.4	33.4	18.6	58	39
23	Processed rice	18.3	18.3	12.9	4	5
24	Sugar containing products	25.2	25.2	17.0	21	7
25	Food products, other	33.5	33.5	13.2	595	374
26	Beverages and tobacco products	64.0	64.0	19.5	192	39
27	Textiles	43.8	43.8	16.7	1040	719
28	Wearing apparel	60.3	60.3	19.9	285	243
29	Leather products	36.2	36.2	17.0	165	118
30	Wood products	25.5	25.5	12.4	292	121
31	Paper products	22.1	22.1	12.3	296	233
32	Petroleum, coal products	11.0	11.0	1.1	55	41
33	Chemical, rubber, plastic products	28.9	28.9	9.7	3462	3360
34	Mineral products, other	30.0	30.0	11.7	363	238
35	Ferrous metals	23.9	23.9	11.4	362	270
36	Metals, other	15.7	15.7	8.2	277	245
37	Metal products	37.4	37.4	16.9	444	271
38	Motor vehicles and parts	52.8	52.8	25.9	193	131
39	Transport equipment, other	34.3	34.3	11.8	155	107
40	Electronic equipment	43.8	43.8	14.8	296	443
41	Machinery and equipment, other	37.1	37.1	14.4	2259	1721
42	Manufactures, other	58.9	58.9	17.8	541	198

Notes: Past applied rates are the average of applied rates from 1989, 1990, and 1991. Present applied rates are the average of applied rates from 2003, 2004, and 2005.

Source: TRAINS Database via WITS (2008).



**Table A.5 Past and present applied tariff rates in Canada (percent)**

GTAP code	GTAP sector	Past applied tariff (1992)	Past rate used	Present applied tariff (2004)	Past HS lines	Present HS lines
1	Paddy rice	0.0	0.0	0.0	2	2
2	Wheat	1.1	31.8	31.8	2	4
3	Cereal grains, other	4.0	4.0	2.9	13	13
4	Vegetables, fruit, nuts	2.9	13.1	13.1	186	191
5	Oil seeds	0.0	0.0	0.0	16	15
6	Sugar cane, sugar beet	22.5	22.5	0.0	2	1
7	Plant-based fibers	0.0	0.0	0.0	8	6
8	Crops, other	2.2	2.2	1.5	105	96
9	Bovine cattle, sheep and goats, horses	0.1	0.1	0.0	11	7
10	Animal products, other	1.0	1.0	6.8	52	65
12	Wool, silkworm cocoons	2.1	2.1	0.0	7	7
13	Forestry	0.3	0.3	0.3	33	25
14	Fishing	0.7	0.7	0.4	42	46
15	Coal	0.0	0.0	0.0	6	6
16	Oil	14.3	14.3	3.3	3	2
17	Gas	6.3	6.3	6.3	2	2
18	Minerals, other	1.9	1.9	0.4	119	97
19	Bovine meat products	1.6	17.2	17.2	35	43
20	Meat products, other	6.6	33.5	33.5	57	121
21	Vegetable oils and fats	8.0	8.0	15.5	60	66
22	Dairy products	12.9	119.4	119.4	28	79
23	Processed rice	0.7	0.7	0.0	2	2
24	Sugar containing products	10.3	10.3	3.4	16	15
25	Food products, other	6.4	6.4	13.9	396	557
26	Beverages and tobacco products	21.0	47.2	47.2	85	114
27	Textiles	17.0	17.0	8.9	704	1152
28	Wearing apparel	23.0	23.0	16.2	260	285
29	Leather products	14.6	14.6	7.8	96	215
30	Wood products	7.5	7.5	3.0	137	132
31	Paper products	6.5	6.5	0.1	274	196
32	Petroleum, coal products	4.9	4.9	2.2	25	33
33	Chemical, rubber, plastic products	8.6	8.6	2.8	1199	1479
34	Mineral products, other	8.0	8.0	2.6	242	213
35	Ferrous metals	7.9	7.9	0.4	242	349
36	Metals, other	5.6	5.6	1.1	329	240
37	Metal products	9.4	9.4	4.0	316	332
38	Motor vehicles and parts	8.0	8.0	4.5	102	124
39	Transport equipment, other	10.7	10.7	5.8	110	112
40	Electronic equipment	5.5	5.5	0.9	189	257
41	Machinery and equipment, other	6.9	6.9	2.0	1596	1478
42	Manufactures, other	9.4	9.4	4.3	266	247

Notes: Past applied rates are the average of applied rates from 1989, and 1993 (including ad valorem equivalents of specific tariffs). Present applied rates are the average of applied rates from 2003, 2004, and 2005 (including ad valorem equivalents of specific tariffs).

Source: TRAINS Database via WITS (2008).

**Table A.6 Past and present applied tariff rates in China (percent)**

GTAP code	GTAP sector	Past applied tariff (1992)	Past rate used	Present applied tariff (2004)	Past HS lines	Present HS lines
1	Paddy rice	0.0	56.3	56.3	2	7
2	Wheat	0.0	56.3	56.3	2	4
3	Cereal grains, other	2.4	2.4	8.9	10	15
4	Vegetables, fruit, nuts	48.0	48.0	14.8	105	173
5	Oil seeds	43.0	43.0	9.1	16	31
6	Sugar cane, sugar beet	47.5	47.5	20.0	2	1
7	Plant-based fibers	15.5	15.5	10.1	9	7
8	Crops, other	30.9	30.9	9.5	104	128
9	Bovine cattle, sheep and goats, horses	10.9	10.9	4.3	11	12
10	Animal products, other	37.8	37.8	10.7	88	137
12	Wool, silkworm cocoons	35.8	35.8	16.0	9	13
13	Forestry	31.1	31.1	8.7	39	52
14	Fishing	32.0	32.0	11.6	61	101
15	Coal	18.8	18.8	3.9	7	7
16	Oil	8.8	8.8	3.0	2	2
17	Gas	15.0	15.0	1.0	2	2
18	Minerals, other	21.5	21.5	2.5	109	117
19	Bovine meat products	46.4	46.4	16.6	31	34
20	Meat products, other	51.5	51.5	18.3	51	92
21	Vegetable oils and fats	30.0	30.0	14.5	46	57
22	Dairy products	51.7	51.7	14.8	21	24
23	Processed rice	0.0	56.3	56.3	2	5
24	Sugar containing products	41.3	41.3	34.7	9	10
25	Food products, other	47.7	47.7	17.3	305	396
26	Beverages and tobacco products	111.0	111.0	27.7	31	36
27	Textiles	64.6	64.6	11.5	701	801
28	Wearing apparel	86.9	86.9	17.9	286	301
29	Leather products	62.1	62.1	15.4	73	97
30	Wood products	45.1	45.1	5.8	116	180
31	Paper products	29.6	29.6	6.3	158	169
32	Petroleum, coal products	20.8	20.8	6.2	30	38
33	Chemical, rubber, plastic products	28.4	28.4	7.8	1209	1579
34	Mineral products, other	44.0	44.0	12.9	184	199
35	Ferrous metals	13.9	13.9	5.3	195	257
36	Metals, other	15.6	15.6	4.8	188	228
37	Metal products	42.5	42.5	11.0	252	278
38	Motor vehicles and parts	64.9	64.9	18.4	140	195
39	Transport equipment, other	24.7	24.7	8.5	92	142
40	Electronic equipment	40.5	40.5	8.3	193	257
41	Machinery and equipment, other	31.6	31.6	9.6	1081	1463
42	Manufactures, other	62.1	62.1	15.7	210	235

Notes: Past applied rates are the average of applied rates from 1992 and 1993. Present applied rates are the average of applied rates from 2003, 2004, and 2005 (including ad valorem equivalents of specific tariffs).

Source: TRAINS Database via WITS (2008).

**Table A.7 Past and present applied tariff rates in the European Union (percent)**

GTAP code	GTAP sector	Past applied tariff (1992)	Past rate used	Present applied tariff (2004)	Past HS lines	Present HS lines
1	Paddy rice	12.0	80.4	80.4	15	21
2	Wheat	20.0	20.0	13.2	5	18
3	Cereal grains, other	3.6	21.4	21.4	18	23
4	Vegetables, fruit, nuts	9.4	9.4	10.4	194	443
5	Oil seeds	0.0	0.0	0.0	31	31
6	Sugar cane, sugar beet	0.0	179.9	179.9	3	2
7	Plant-based fibers	0.0	0.0	0.0	9	8
8	Crops, other	9.2	9.2	7.8	161	157
9	Bovine cattle, sheep and goats, horses	3.4	15.3	15.3	17	58
10	Animal products, other	1.5	1.5	4.2	72	81
12	Wool, silkworm cocoons	0.3	0.3	0.0	9	10
13	Forestry	1.2	1.2	0.6	38	47
14	Fishing	10.8	10.8	8.5	89	153
15	Coal	0.0	0.0	0.0	8	8
16	Oil	0.0	0.0	0.0	3	3
17	Gas	1.5	1.5	0.0	2	2
18	Minerals, other	0.3	0.3	0.1	114	113
19	Bovine meat products	10.9	47.8	47.8	83	137
20	Meat products, other	11.3	11.3	18.8	196	273
21	Vegetable oils and fats	6.7	6.7	11.3	113	125
22	Dairy products	14.5	113.3	113.3	139	220
23	Processed rice	101.0	101.0	42.5	15	21
24	Sugar containing products	10.0	31.6	31.6	11	12
25	Food products, other	15.9	15.9	21.0	811	1747
26	Beverages and tobacco products	38.3	38.3	23.4	98	257
27	Textiles	9.8	9.8	7.0	943	1245
28	Wearing apparel	12.2	12.2	10.8	380	469
29	Leather products	8.2	8.2	6.4	157	235
30	Wood products	5.5	5.5	2.9	189	216
31	Paper products	7.2	7.2	0.8	252	258
32	Petroleum, coal products	1.9	1.9	1.0	54	76
33	Chemical, rubber, plastic products	7.1	7.1	4.6	1468	2746
34	Mineral products, other	5.5	5.5	3.5	303	348
35	Ferrous metals	5.4	5.4	3.7	461	646
36	Metals, other	4.4	4.4	2.8	262	293
37	Metal products	5.4	5.4	2.8	379	509
38	Motor vehicles and parts	8.3	8.3	6.4	137	153
39	Transport equipment, other	4.5	4.5	2.3	161	197
40	Electronic equipment	7.0	7.0	2.3	252	408
41	Machinery and equipment, other	4.7	4.7	2.1	1610	2066
42	Manufactures, other	5.5	5.5	2.7	271	284

Notes: Past applied rates are the average of applied rates from 1988, 1990, and 1991 (including ad valorem equivalents of specific tariffs), except for GTAP sector 23 where applied rates from 1995 to 1997 are used. Present applied rates are the average of applied rates from 2002, 2003, and 2005 (including ad valorem equivalents of specific tariffs).

Source: TRAINS Database via WITS (2008).

**Table A.8 Past and present applied tariff rates in Hong Kong (percent)**

GTAP code	GTAP sector	Past applied tariff (1992)	Past rate used	Present applied tariff (2004)	Past HS lines	Present HS lines
1	Paddy rice	0.0	0.0	0.0	2	2
2	Wheat	0.0	0.0	0.0	2	2
3	Cereal grains, other	0.0	0.0	0.0	10	10
4	Vegetables, fruit, nuts	0.0	0.0	0.0	85	113
5	Oil seeds	0.0	0.0	0.0	16	15
6	Sugar cane, sugar beet	0.0	0.0	0.0	2	1
7	Plant-based fibers	0.0	0.0	0.0	8	6
8	Crops, other	0.0	0.0	0.0	65	112
9	Bovine cattle, sheep and goats, horses	0.0	0.0	0.0	8	9
10	Animal products, other	0.0	0.0	0.0	46	91
12	Wool, silkworm cocoons	0.0	0.0	0.0	6	7
13	Forestry	0.0	0.0	0.0	29	31
14	Fishing	0.0	0.0	0.0	41	104
15	Coal	0.0	0.0	0.0	6	6
16	Oil	0.0	0.0	0.0	2	2
17	Gas	0.0	0.0	0.0	2	2
18	Minerals, other	0.0	0.0	0.0	96	109
19	Bovine meat products	0.0	0.0	0.0	30	32
20	Meat products, other	0.0	0.0	0.0	38	90
21	Vegetable oils and fats	0.0	0.0	0.0	46	52
22	Dairy products	0.0	0.0	0.0	21	32
23	Processed rice	0.0	0.0	0.0	2	4
24	Sugar containing products	0.0	0.0	0.0	7	10
25	Food products, other	0.0	0.0	0.0	245	354
26	Beverages and tobacco products	0.0	0.0	0.0	29	45
27	Textiles	0.0	0.0	0.0	570	687
28	Wearing apparel	0.0	0.0	0.0	241	503
29	Leather products	0.0	0.0	0.0	68	113
30	Wood products	0.0	0.0	0.0	89	113
31	Paper products	0.0	0.0	0.0	151	163
32	Petroleum, coal products	0.0	0.0	0.0	15	34
33	Chemical, rubber, plastic products	0.0	0.0	0.0	957	1525
34	Mineral products, other	0.0	0.0	0.0	161	176
35	Ferrous metals	0.0	0.0	0.0	181	213
36	Metals, other	0.0	0.0	0.0	169	189
37	Metal products	0.0	0.0	0.0	215	244
38	Motor vehicles and parts	0.0	0.0	0.0	54	97
39	Transport equipment, other	0.0	0.0	0.0	82	83
40	Electronic equipment	0.0	0.0	0.0	119	176
41	Machinery and equipment, other	0.0	0.0	0.0	854	1045
42	Manufactures, other	0.0	0.0	0.0	179	232

Notes: Past applied rates are from 1988. Present applied rates are from 2005.

Source: TRAINS Database via WITS (2008).

**Table A.9 Past and present applied tariff rates in India (percent)**

GTAP code	GTAP sector	Past applied tariff (1992)	Past rate used	Present applied tariff (2004)	Past HS lines	Present HS lines
1	Paddy rice	0.0	80.0	80.0	2	3
2	Wheat	0.0	100.0	100.0	2	6
3	Cereal grains, other	0.0	28.0	28.0	10	22
4	Vegetables, fruit, nuts	90.1	90.1	34.0	85	133
5	Oil seeds	64.1	64.1	35.0	16	31
6	Sugar cane, sugar beet	100.0	100.0	30.0	2	1
7	Plant-based fibers	40.0	40.0	22.9	8	17
8	Crops, other	85.9	85.9	34.2	65	224
9	Bovine cattle, sheep and goats, horses	55.0	55.0	30.0	8	17
10	Animal products, other	52.2	52.2	21.9	46	115
12	Wool, silkworm cocoons	74.1	74.1	19.3	6	10
13	Forestry	58.3	58.3	21.3	29	90
14	Fishing	55.4	55.4	29.7	41	56
15	Coal	40.0	40.0	23.3	6	9
16	Oil	30.0	30.0	10.0	2	2
17	Gas	60.0	60.0	10.0	2	2
18	Minerals, other	57.4	57.4	15.9	96	215
19	Bovine meat products	92.7	92.7	29.5	30	36
20	Meat products, other	100.3	100.3	35.7	38	59
21	Vegetable oils and fats	100.4	100.4	63.6	46	137
22	Dairy products	57.4	57.4	34.2	21	38
23	Processed rice	0.0	75.0	75.0	2	4
24	Sugar containing products	62.1	62.1	70.0	7	12
25	Food products, other	79.4	79.4	32.7	244	430
26	Beverages and tobacco products	233.7	233.7	87.6	29	84
27	Textiles	94.3	94.3	25.7	570	1516
28	Wearing apparel	100.0	100.0	30.4	241	420
29	Leather products	87.1	87.1	21.7	68	160
30	Wood products	73.7	73.7	21.5	89	188
31	Paper products	84.2	84.2	19.3	151	287
32	Petroleum, coal products	52.3	52.3	15.6	15	41
33	Chemical, rubber, plastic products	81.7	81.7	22.2	957	2837
34	Mineral products, other	86.7	86.7	22.2	161	302
35	Ferrous metals	115.7	115.7	27.7	181	604
36	Metals, other	72.8	72.8	19.3	169	305
37	Metal products	77.6	77.6	21.7	215	412
38	Motor vehicles and parts	77.0	77.0	35.8	54	145
39	Transport equipment, other	50.9	50.9	26.0	82	139
40	Electronic equipment	101.9	101.9	14.2	119	238
41	Machinery and equipment, other	75.2	75.2	20.3	854	1781
42	Manufactures, other	98.0	98.0	22.1	179	347

Notes: Past applied rates are from 1990 (including ad valorem equivalents of specific tariffs). Present applied rates are the average of applied rates from 2004 and 2005 (including ad valorem equivalents of specific tariffs).

Source: TRAINS Database via WITS (2008).

**Table A.10 Past and present applied tariff rates in Indonesia (percent)**

GTAP code	GTAP sector	Past applied tariff (1992)	Past rate used	Present applied tariff (2004)	Past HS lines	Present HS lines
1	Paddy rice	0.0	0.0	0.0	4	3
2	Wheat	0.8	0.8	1.1	5	5
3	Cereal grains, other	6.5	6.5	3.0	13	11
4	Vegetables, fruit, nuts	26.3	26.3	5.0	124	125
5	Oil seeds	12.0	12.0	4.7	28	18
6	Sugar cane, sugar beet	10.0	10.0	5.0	2	1
7	Plant-based fibers	4.4	4.4	3.6	9	6
8	Crops, other	16.0	16.0	5.0	155	109
9	Bovine cattle, sheep and goats, horses	7.5	7.5	2.2	14	13
10	Animal products, other	10.2	10.2	2.9	100	89
12	Wool, silkworm cocoons	5.8	5.8	5.0	7	7
13	Forestry	14.8	14.8	4.6	115	91
14	Fishing	27.0	27.0	5.4	82	80
15	Coal	5.0	5.0	5.0	6	7
16	Oil	3.8	3.8	2.5	3	4
17	Gas	5.0	5.0	5.0	2	2
18	Minerals, other	5.5	5.5	3.8	119	107
19	Bovine meat products	28.5	28.5	5.1	41	32
20	Meat products, other	29.1	29.1	4.9	71	73
21	Vegetable oils and fats	18.2	18.2	3.3	73	124
22	Dairy products	25.5	25.5	4.8	37	41
23	Processed rice	1.3	1.3	0.0	4	11
24	Sugar containing products	10.7	10.7	8.4	15	10
25	Food products, other	26.2	26.2	4.9	512	449
26	Beverages and tobacco products	32.8	81.0	81.0	68	73
27	Textiles	30.8	30.8	9.1	1308	806
28	Wearing apparel	47.6	47.6	13.6	535	392
29	Leather products	33.0	33.0	8.0	129	109
30	Wood products	29.3	29.3	7.3	203	216
31	Paper products	21.7	21.7	4.3	217	260
32	Petroleum, coal products	5.0	5.0	3.6	42	48
33	Chemical, rubber, plastic products	10.6	10.6	5.6	1646	1776
34	Mineral products, other	25.8	25.8	5.8	308	241
35	Ferrous metals	9.9	9.9	7.7	255	512
36	Metals, other	8.3	8.3	4.8	263	243
37	Metal products	22.1	22.1	9.9	347	384
38	Motor vehicles and parts	55.2	55.2	21.0	201	250
39	Transport equipment, other	13.2	13.2	5.0	137	191
40	Electronic equipment	17.5	17.5	4.5	179	270
41	Machinery and equipment, other	15.0	15.0	3.9	1328	1851
42	Manufactures, other	35.8	35.8	10.9	302	278

Notes: Past applied rates are the average of applied rates from 1989 and 1991 (not including ad valorem equivalents of specific tariffs). Present applied rates are the average of applied rates from 2002, 2004, and 2005 (not including ad valorem equivalents of specific tariffs), except for GTAP sectors 1 and 23 where applied rates from 2000 to 2002 are used.

Source: TRAINS Database via WITS (2008).

**Table A.11 Past and present applied tariff rates in Japan (percent)**

GTAP code	GTAP sector	Past applied tariff (1992)	Past rate used	Present applied tariff (2004)	Past HS lines	Present HS lines
1	Paddy rice	0.0	517.0	517.0	2	4
2	Wheat	3.3	134.8	134.8	4	8
3	Cereal grains, other	4.3	17.6	17.6	26	29
4	Vegetables, fruit, nuts	8.7	28.0	28.0	121	159
5	Oil seeds	1.4	25.9	25.9	19	22
6	Sugar cane, sugar beet	0.0	0.0	0.0	2	1
7	Plant-based fibers	0.0	0.0	0.0	9	6
8	Crops, other	2.6	2.6	11.3	127	120
9	Bovine cattle, sheep and goats, horses	38.1	62.6	62.6	15	15
10	Animal products, other	2.7	2.7	2.2	76	118
12	Wool, silkworm cocoons	1.1	39.2	39.2	9	8
13	Forestry	1.7	1.7	1.7	70	58
14	Fishing	5.8	5.8	4.3	102	111
15	Coal	0.8	0.8	0.7	11	11
16	Oil	0.0	0.0	0.0	2	3
17	Gas	2.5	2.5	2.1	2	2
18	Minerals, other	0.1	0.1	0.3	113	100
19	Bovine meat products	12.8	23.2	23.2	48	54
20	Meat products, other	8.7	8.7	14.6	106	126
21	Vegetable oils and fats	10.3	10.3	5.8	73	79
22	Dairy products	25.1	64.0	64.0	56	145
23	Processed rice	0.0	378.5	378.5	2	4
24	Sugar containing products	63.8	63.8	34.3	18	18
25	Food products, other	15.4	15.4	16.6	720	960
26	Beverages and tobacco products	27.4	27.4	13.6	66	69
27	Textiles	7.3	7.3	6.0	1488	1614
28	Wearing apparel	12.8	12.8	9.5	578	545
29	Leather products	15.1	15.1	12.7	220	254
30	Wood products	4.3	4.3	2.5	195	227
31	Paper products	2.4	2.4	0.1	178	174
32	Petroleum, coal products	1.7	1.7	1.3	71	68
33	Chemical, rubber, plastic products	3.9	3.9	2.3	1330	1364
34	Mineral products, other	2.3	2.3	1.1	192	184
35	Ferrous metals	3.8	3.8	0.4	248	386
36	Metals, other	3.4	3.4	1.8	243	252
37	Metal products	2.3	2.3	1.1	238	251
38	Motor vehicles and parts	0.2	0.2	0.0	65	59
39	Transport equipment, other	1.0	1.0	0.0	91	93
40	Electronic equipment	0.2	0.2	0.0	141	166
41	Machinery and equipment, other	1.0	1.0	0.3	1139	1097
42	Manufactures, other	3.0	3.0	1.9	251	235

Notes: Past applied rates are the average of applied rates from 1988, 1990, and 1991 (including ad valorem equivalents of specific tariffs). Present applied rates are the average of applied rates from 2003, 2004, and 2005 (including ad valorem equivalents of specific tariffs).

Source: TRAINS Database via WITS (2008).

**Table A.12 Past and present applied tariff rates in Korea (percent)**

GTAP code	GTAP sector	Past applied tariff (1992)	Past rate used	Present applied tariff (2004)	Past HS lines	Present HS lines
1	Paddy rice	5.0	5.0	5.0	3	3
2	Wheat	3.0	3.0	2.5	3	6
3	Cereal grains, other	6.9	290.9	290.9	12	20
4	Vegetables, fruit, nuts	37.8	76.4	76.4	117	149
5	Oil seeds	15.4	104.0	104.0	17	20
6	Sugar cane, sugar beet	5.4	5.4	3.0	2	1
7	Plant-based fibers	4.0	4.0	1.9	15	13
8	Crops, other	14.7	36.3	36.3	151	181
9	Bovine cattle, sheep and goats, horses	12.3	12.3	21.1	14	15
10	Animal products, other	11.6	11.6	12.8	137	149
12	Wool, silkworm cocoons	4.3	4.3	8.4	11	8
13	Forestry	7.3	7.3	4.2	93	77
14	Fishing	19.6	19.6	17.7	116	158
15	Coal	1.0	1.0	1.0	10	11
16	Oil	5.6	5.6	5.0	12	11
17	Gas	2.0	2.0	1.0	2	2
18	Minerals, other	4.9	4.9	2.4	180	178
19	Bovine meat products	18.6	18.6	22.2	37	40
20	Meat products, other	24.9	24.9	22.5	69	100
21	Vegetable oils and fats	15.3	15.3	21.6	86	90
22	Dairy products	36.2	60.3	60.3	37	47
23	Processed rice	5.0	5.0	5.0	3	3
24	Sugar containing products	10.3	10.3	17.1	12	15
25	Food products, other	22.0	49.9	49.9	513	673
26	Beverages and tobacco products	44.0	44.0	35.4	63	69
27	Textiles	14.2	14.2	9.2	934	966
28	Wearing apparel	16.1	16.1	12.3	421	405
29	Leather products	13.9	13.9	8.3	154	163
30	Wood products	14.0	14.0	6.0	198	231
31	Paper products	12.3	12.3	0.4	216	252
32	Petroleum, coal products	8.3	8.3	5.5	76	97
33	Chemical, rubber, plastic products	13.8	13.8	6.3	2344	2585
34	Mineral products, other	14.7	14.7	7.6	331	319
35	Ferrous metals	10.3	10.3	0.9	248	306
36	Metals, other	11.3	11.3	5.2	276	281
37	Metal products	14.4	14.4	7.2	392	409
38	Motor vehicles and parts	17.0	17.0	8.1	167	169
39	Transport equipment, other	8.3	8.3	3.9	197	196
40	Electronic equipment	14.7	14.7	3.8	277	326
41	Machinery and equipment, other	14.5	14.5	6.4	1714	2031
42	Manufactures, other	14.4	14.4	7.0	417	403

Notes: Past applied rates are the average of applied rates from 1989, 1990, and 1992 (including ad valorem equivalents of specific tariffs). Present applied rates are from 2004 (including ad valorem equivalents of specific tariffs).

Source: TRAINS Database via WITS (2008).



**Table A.13 Past and present applied tariff rates in Malaysia (percent)**

GTAP code	GTAP sector	Past applied tariff (1992)	Past rate used	Present applied tariff (2004)	Past HS lines	Present HS lines
1	Paddy rice	0.0	0.0	0.0	4	4
2	Wheat	1.5	1.5	1.5	3	4
3	Cereal grains, other	2.6	2.6	2.6	10	11
4	Vegetables, fruit, nuts	7.5	7.5	7.5	125	141
5	Oil seeds	5.0	5.0	5.0	20	21
6	Sugar cane, sugar beet	5.0	5.0	5.0	2	1
7	Plant-based fibers	1.8	1.8	1.8	8	7
8	Crops, other	4.4	4.4	4.4	100	95
9	Bovine cattle, sheep and goats, horses	1.6	1.6	1.6	17	15
10	Animal products, other	3.9	3.9	3.9	73	81
12	Wool, silkworm cocoons	2.3	2.3	2.3	6	7
13	Forestry	11.5	11.5	11.5	782	411
14	Fishing	9.1	9.1	9.1	68	72
15	Coal	4.5	4.5	4.5	6	7
16	Oil	3.8	3.8	3.8	3	4
17	Gas	18.9	18.9	0.0	2	2
18	Minerals, other	3.4	3.4	3.4	120	115
19	Bovine meat products	0.6	0.6	0.6	33	32
20	Meat products, other	6.2	6.2	6.2	77	90
21	Vegetable oils and fats	4.3	4.3	4.3	144	170
22	Dairy products	11.3	11.3	11.3	85	58
23	Processed rice	0.5	0.5	0.5	6	10
24	Sugar containing products	0.0	0.0	0.0	26	12
25	Food products, other	15.3	15.3	15.3	513	572
26	Beverages and tobacco products	17.7	17.7	17.7	67	72
27	Textiles	19.9	19.9	19.9	1198	867
28	Wearing apparel	25.8	25.8	25.8	329	329
29	Leather products	29.3	29.3	29.3	131	127
30	Wood products	24.8	24.8	24.8	395	262
31	Paper products	11.8	11.8	11.8	338	433
32	Petroleum, coal products	7.8	7.8	7.8	39	49
33	Chemical, rubber, plastic products	8.6	8.6	8.6	2140	1881
34	Mineral products, other	19.6	19.6	19.6	231	249
35	Ferrous metals	8.3	8.3	8.3	484	581
36	Metals, other	6.7	6.7	6.7	231	240
37	Metal products	16.4	16.4	16.4	383	432
38	Motor vehicles and parts	24.1	24.1	24.1	198	320
39	Transport equipment, other	11.4	11.4	11.4	152	210
40	Electronic equipment	15.6	15.6	15.6	227	276
41	Machinery and equipment, other	7.2	7.2	7.2	1362	1307
42	Manufactures, other	12.1	12.1	12.1	292	308

Notes: Past applied rates are the average of applied rates from 1991 and 1993 (including ad valorem equivalents of specific tariffs), except for GTAP sectors 6 and 17 where applied rates from 1996 and 1997 are used. Present applied rates are the average of applied rates from 2003 and 2005 (including ad valorem equivalents of specific tariffs from 1991 and 1993).

Source: TRAINS Database via WITS (2008).

**Table A.14 Past and present applied tariff rates in Mexico (percent)**

GTAP code	GTAP sector	Past applied tariff (1992)	Past rate used	Present applied tariff (2004)	Past HS lines	Present HS lines
1	Paddy rice	15.0	15.0	14.5	2	2
2	Wheat	67.0	67.0	67.0	2	3
3	Cereal grains, other	28.1	28.1	19.8	16	18
4	Vegetables, fruit, nuts	18.4	18.4	15.7	119	129
5	Oil seeds	4.0	4.0	4.0	26	26
6	Sugar cane, sugar beet	23.0	23.0	10.0	2	1
7	Plant-based fibers	8.3	8.3	8.1	10	9
8	Crops, other	12.7	12.7	12.6	119	154
9	Bovine cattle, sheep and goats, horses	8.0	8.0	7.0	17	17
10	Animal products, other	9.9	9.9	11.5	78	105
12	Wool, silkworm cocoons	8.3	8.3	8.5	11	12
13	Forestry	11.3	11.3	11.4	38	40
14	Fishing	17.7	17.7	14.7	48	52
15	Coal	8.3	8.3	8.3	6	6
16	Oil	10.0	10.0	10.0	2	3
17	Gas	5.0	5.0	0.0	2	2
18	Minerals, other	8.9	8.9	8.9	113	118
19	Bovine meat products	30.5	30.5	17.0	35	35
20	Meat products, other	66.5	66.5	18.4	63	77
21	Vegetable oils and fats	19.9	19.9	15.6	58	62
22	Dairy products	32.0	32.0	17.6	42	42
23	Processed rice	15.0	15.0	15.0	2	3
24	Sugar containing products	5.0	5.0	15.0	11	14
25	Food products, other	18.2	18.2	17.1	372	411
26	Beverages and tobacco products	33.7	33.7	28.5	59	60
27	Textiles	16.8	16.8	16.1	842	882
28	Wearing apparel	33.6	33.6	33.7	359	363
29	Leather products	24.8	24.8	23.7	113	141
30	Wood products	16.5	16.5	17.6	141	158
31	Paper products	9.3	9.3	9.2	301	306
32	Petroleum, coal products	7.6	7.6	6.7	31	41
33	Chemical, rubber, plastic products	10.2	10.2	9.9	3176	3389
34	Mineral products, other	15.3	15.3	15.3	347	352
35	Ferrous metals	9.7	9.7	9.0	365	414
36	Metals, other	10.0	10.0	9.9	249	268
37	Metal products	15.7	15.7	15.7	555	576
38	Motor vehicles and parts	15.4	15.4	24.1	270	284
39	Transport equipment, other	12.2	12.2	11.9	119	130
40	Electronic equipment	13.0	13.0	9.0	398	434
41	Machinery and equipment, other	10.6	10.6	10.1	2469	2464
42	Manufactures, other	15.6	15.6	14.1	279	306

Notes: Past applied rates are from 1998 (not including ad valorem equivalents of specific tariffs). Present applied rates are from 2006 (not including ad valorem equivalents of specific tariffs).

Source: TRAINS Database via WITS (2008).

**Table A.15 Past and present applied tariff rates in the Philippines (percent)**

GTAP code	GTAP sector	Past applied tariff (1992)	Past rate used	Present applied tariff (2004)	Past HS lines	Present HS lines
1	Paddy rice	36.7	36.7	37.5	2	4
2	Wheat	10.0	10.0	3.7	2	5
3	Cereal grains, other	28.3	28.3	7.4	10	12
4	Vegetables, fruit, nuts	35.5	35.5	10.2	90	118
5	Oil seeds	24.8	24.8	4.8	16	18
6	Sugar cane, sugar beet	36.7	36.7	3.7	2	1
7	Plant-based fibers	12.5	12.5	3.1	9	7
8	Crops, other	26.6	26.6	4.4	90	101
9	Bovine cattle, sheep and goats, horses	16.3	16.3	5.8	9	14
10	Animal products, other	23.8	23.8	7.4	50	94
12	Wool, silkworm cocoons	17.2	17.2	2.0	6	7
13	Forestry	19.0	19.0	2.6	36	95
14	Fishing	24.4	24.4	6.0	63	74
15	Coal	12.2	12.2	3.9	6	7
16	Oil	11.7	11.7	3.3	2	4
17	Gas	13.3	13.3	6.3	2	2
18	Minerals, other	13.1	13.1	2.4	101	109
19	Bovine meat products	23.1	23.1	7.0	31	32
20	Meat products, other	32.6	32.6	29.2	47	108
21	Vegetable oils and fats	26.6	26.6	5.6	61	113
22	Dairy products	20.2	20.2	3.9	34	49
23	Processed rice	36.7	50.0	50.0	2	12
24	Sugar containing products	36.7	36.7	28.6	7	19
25	Food products, other	29.9	29.9	8.6	303	431
26	Beverages and tobacco products	33.9	33.9	7.3	30	71
27	Textiles	29.6	29.6	8.0	610	779
28	Wearing apparel	36.5	36.5	12.8	241	363
29	Leather products	29.8	29.8	7.9	81	108
30	Wood products	30.0	30.0	9.0	113	198
31	Paper products	23.4	23.4	5.2	210	327
32	Petroleum, coal products	12.7	12.7	3.2	20	46
33	Chemical, rubber, plastic products	15.5	15.5	3.8	1059	1646
34	Mineral products, other	26.3	26.3	5.9	195	242
35	Ferrous metals	14.5	14.5	3.4	243	497
36	Metals, other	17.3	17.3	2.7	178	241
37	Metal products	28.3	28.3	6.7	234	380
38	Motor vehicles and parts	26.3	26.3	11.6	73	747
39	Transport equipment, other	15.5	15.5	5.6	96	200
40	Electronic equipment	19.6	19.6	2.9	140	304
41	Machinery and equipment, other	18.3	18.3	2.9	969	2213
42	Manufactures, other	29.2	29.2	6.0	197	275

Notes: Past applied rates are the average of applied rates from 1989, 1990, and 1992 (not including ad valorem equivalents of specific tariffs). Present applied rates are the average of applied rates from 2003, 2004, and 2005 (not including ad valorem equivalents of specific tariffs).

Source: TRAINS Database via WITS (2008).

**Table A.16 Past and present applied tariff rates in Singapore** (percent)

GTAP code	GTAP sector	Past applied tariff (1992)	Past rate used	Present applied tariff (2004)	Past HS lines	Present HS lines
1	Paddy rice	0.0	0.0	0.0	2	4
2	Wheat	0.0	0.0	0.0	3	4
3	Cereal grains, other	0.0	0.0	0.0	10	11
4	Vegetables, fruit, nuts	0.0	0.0	0.0	96	112
5	Oil seeds	0.0	0.0	0.0	16	18
6	Sugar cane, sugar beet	0.0	0.0	0.0	2	1
7	Plant-based fibers	0.0	0.0	0.0	8	7
8	Crops, other	0.0	0.0	0.0	79	99
9	Bovine cattle, sheep and goats, horses	0.0	0.0	0.0	8	12
10	Animal products, other	0.0	0.0	0.0	61	77
12	Wool, silkworm cocoons	0.0	0.0	0.0	6	7
13	Forestry	0.0	0.0	0.0	33	94
14	Fishing	0.0	0.0	0.0	52	73
15	Coal	0.0	0.0	0.0	6	7
16	Oil	0.0	0.0	0.0	2	3
17	Gas	0.0	0.0	0.0	2	2
18	Minerals, other	0.0	0.0	0.0	101	107
19	Bovine meat products	0.0	0.0	0.0	30	31
20	Meat products, other	0.0	0.0	0.0	52	69
21	Vegetable oils and fats	0.0	0.0	0.0	48	113
22	Dairy products	0.0	0.0	0.0	25	41
23	Processed rice	0.0	0.0	0.0	14	12
24	Sugar containing products	0.0	0.0	0.0	8	9
25	Food products, other	0.2	0.2	0.0	309	414
26	Beverages and tobacco products	3.4	3.4	3.4	58	78
27	Textiles	0.2	0.2	0.0	628	768
28	Wearing apparel	4.2	4.2	0.0	354	360
29	Leather products	0.3	0.3	0.0	74	107
30	Wood products	0.9	0.9	0.0	115	197
31	Paper products	0.0	0.0	0.0	157	251
32	Petroleum, coal products	1.4	1.4	0.0	35	46
33	Chemical, rubber, plastic products	0.0	0.0	0.0	1080	1614
34	Mineral products, other	0.0	0.0	0.0	165	235
35	Ferrous metals	0.0	0.0	0.0	193	489
36	Metals, other	0.0	0.0	0.0	184	239
37	Metal products	0.0	0.0	0.0	223	371
38	Motor vehicles and parts	8.8	8.8	0.0	63	748
39	Transport equipment, other	1.1	1.1	0.0	95	202
40	Electronic equipment	0.0	0.0	0.0	169	295
41	Machinery and equipment, other	0.0	0.0	0.0	953	886
42	Manufactures, other	0.1	0.1	0.0	197	271

Notes: Past applied rates are from 1989 (including ad valorem equivalents of specific tariffs from 2003 and 2005) except for GTAP sector 17 where the applied rate from 1995 is used. Present applied rates are the average of applied rates from 2003 and 2005 (including ad valorem equivalents of specific tariffs).

Source: TRAINS Database via WITS (2008).

**Table A.17 Past and present applied tariff rates in Taiwan (percent)**

GTAP code	GTAP sector	Past applied tariff (1992)	Past rate used	Present applied tariff (2004)	Past HS lines	Present HS lines
1	Paddy rice	0.0	250.3	250.3	2	2
2	Wheat	6.5	6.5	7.0	2	4
3	Cereal grains, other	4.0	4.0	1.8	10	11
4	Vegetables, fruit, nuts	31.4	31.4	29.7	126	182
5	Oil seeds	16.8	27.9	27.9	17	20
6	Sugar cane, sugar beet	20.0	20.0	14.3	2	1
7	Plant-based fibers	0.0	0.0	0.0	11	10
8	Crops, other	13.3	13.3	6.5	158	252
9	Bovine cattle, sheep and goats, horses	6.9	6.9	4.2	8	10
10	Animal products, other	6.9	6.9	7.2	138	200
12	Wool, silkworm cocoons	3.3	3.3	1.7	13	14
13	Forestry	6.4	6.4	3.6	44	66
14	Fishing	34.5	34.5	21.5	86	148
15	Coal	0.0	0.0	0.0	6	6
16	Oil	5.6	5.6	1.3	3	3
17	Gas	6.3	6.3	0.0	2	2
18	Minerals, other	1.1	1.1	0.4	128	139
19	Bovine meat products	33.0	33.0	25.0	44	63
20	Meat products, other	27.9	52.2	52.2	62	190
21	Vegetable oils and fats	10.3	25.8	25.8	61	71
22	Dairy products	23.5	23.5	21.5	40	59
23	Processed rice	0.0	178.8	178.8	2	3
24	Sugar containing products	27.7	98.8	98.8	12	14
25	Food products, other	41.7	41.7	24.8	426	789
26	Beverages and tobacco products	39.9	39.9	11.7	53	95
27	Textiles	8.2	8.2	7.9	765	860
28	Wearing apparel	13.4	13.4	12.3	376	392
29	Leather products	4.8	4.8	4.5	78	165
30	Wood products	7.2	7.2	3.6	128	184
31	Paper products	7.2	7.2	3.5	210	289
32	Petroleum, coal products	4.3	4.3	2.6	41	48
33	Chemical, rubber, plastic products	6.6	6.6	3.7	1630	1975
34	Mineral products, other	11.5	11.5	7.1	240	284
35	Ferrous metals	9.5	9.5	5.1	227	661
36	Metals, other	4.1	4.1	1.8	258	269
37	Metal products	11.6	11.6	7.7	313	341
38	Motor vehicles and parts	25.0	25.0	24.1	127	142
39	Transport equipment, other	5.9	5.9	4.6	119	135
40	Electronic equipment	8.3	8.3	3.5	201	293
41	Machinery and equipment, other	7.9	7.9	4.2	1366	1564
42	Manufactures, other	7.4	7.4	4.7	295	318

Notes: Past applied rates are the average of applied rates from 1989 and 1992 (including ad valorem equivalents of specific tariffs). Present applied rates are the average of applied rates from 2002 and 2003 (including ad valorem equivalents of specific tariffs).

Source: TRAINS Database via WITS (2008).

**Table A.18 Past and present applied tariff rates in Thailand (percent)**

GTAP code	GTAP sector	Past applied tariff (1992)	Past rate used	Present applied tariff (2004)	Past HS lines	Present HS lines
1	Paddy rice	29.4	29.4	24.4	2	2
2	Wheat	58.1	58.1	15.6	2	2
3	Cereal grains, other	52.3	52.3	34.4	10	10
4	Vegetables, fruit, nuts	57.2	57.2	37.2	86	98
5	Oil seeds	34.9	34.9	26.8	13	22
6	Sugar cane, sugar beet	40.0	40.0	30.5	2	1
7	Plant-based fibers	26.9	26.9	4.3	8	7
8	Crops, other	43.5	43.5	25.1	65	74
9	Bovine cattle, sheep and goats, horses	21.3	21.3	8.0	11	10
10	Animal products, other	33.7	33.7	9.7	52	85
12	Wool, silkworm cocoons	27.5	27.5	2.2	6	7
13	Forestry	23.0	23.0	12.1	30	31
14	Fishing	56.6	56.6	11.1	42	50
15	Coal	25.0	25.0	1.0	6	6
16	Oil	20.0	20.0	0.5	2	2
17	Gas	0.0	0.0	0.4	2	2
18	Minerals, other	16.3	16.3	2.2	96	107
19	Bovine meat products	60.0	60.0	34.3	28	32
20	Meat products, other	57.8	57.8	32.8	39	61
21	Vegetable oils and fats	14.1	14.1	16.3	42	77
22	Dairy products	37.7	37.7	21.7	20	30
23	Processed rice	29.2	29.2	17.9	2	2
24	Sugar containing products	43.9	43.9	25.4	5	10
25	Food products, other	50.3	50.3	26.0	254	314
26	Beverages and tobacco products	18.5	56.3	56.3	30	38
27	Textiles	45.6	45.6	13.2	583	623
28	Wearing apparel	97.2	97.2	37.1	247	271
29	Leather products	89.8	89.8	20.7	81	92
30	Wood products	47.4	47.4	14.7	101	125
31	Paper products	12.4	12.4	10.5	155	210
32	Petroleum, coal products	5.3	5.3	6.1	14	25
33	Chemical, rubber, plastic products	33.4	33.4	7.0	1002	1080
34	Mineral products, other	37.3	37.3	14.5	165	195
35	Ferrous metals	8.2	8.2	6.4	182	309
36	Metals, other	21.1	21.1	5.0	181	221
37	Metal products	35.0	35.0	16.8	217	262
38	Motor vehicles and parts	52.2	52.2	37.5	48	96
39	Transport equipment, other	23.0	23.0	12.8	83	100
40	Electronic equipment	43.8	43.8	9.3	117	175
41	Machinery and equipment, other	34.9	34.9	8.3	852	907
42	Manufactures, other	43.5	43.5	14.8	183	214

Notes: Past applied rates are the average of applied rates from 1989 and 1991 (including ad valorem equivalents of specific tariffs). Present applied rates are the average of applied rates from 2003 and 2005 (including ad valorem equivalents of specific tariffs).

Source: TRAINS Database via WITS (2008).

**Table A.19 Past and present applied tariff rates in the United States** (percent)

GTAP code	GTAP sector	Past applied tariff (1992)	Past rate used	Present applied tariff (2004)	Past HS lines	Present HS lines
1	Paddy rice	7.1	7.1	5.9	3	3
2	Wheat	4.6	4.6	2.9	3	3
3	Cereal grains, other	1.8	1.8	0.6	12	12
4	Vegetables, fruit, nuts	6.0	6.0	4.2	184	203
5	Oil seeds	1.7	1.7	7.4	16	19
6	Sugar cane, sugar beet	1.0	1.0	0.4	2	1
7	Plant-based fibers	0.1	0.1	1.3	10	17
8	Crops, other	3.3	3.3	3.3	113	137
9	Bovine cattle, sheep and goats, horses	1.5	1.5	0.5	12	11
10	Animal products, other	1.1	1.1	0.9	53	82
12	Wool, silkworm cocoons	1.3	1.3	0.9	18	19
13	Forestry	0.7	0.7	0.4	34	30
14	Fishing	0.7	0.7	0.2	44	48
15	Coal	0.0	0.0	0.0	6	6
16	Oil	0.0	0.0	0.0	3	3
17	Gas	0.0	0.0	0.0	2	2
18	Minerals, other	1.4	1.4	0.4	109	108
19	Bovine meat products	2.1	2.1	2.4	42	59
20	Meat products, other	4.6	4.6	3.5	67	77
21	Vegetable oils and fats	5.5	5.5	4.1	60	64
22	Dairy products	8.9	20.7	20.7	75	239
23	Processed rice	6.7	6.7	4.2	3	3
24	Sugar containing products	2.4	16.2	16.2	14	27
25	Food products, other	5.3	5.3	5.0	526	737
26	Beverages and tobacco products	8.2	8.2	12.5	76	94
27	Textiles	11.4	11.4	8.2	900	981
28	Wearing apparel	13.9	13.9	11.0	537	585
29	Leather products	10.9	10.9	7.9	195	262
30	Wood products	3.5	3.5	1.2	205	220
31	Paper products	1.9	1.9	0.1	227	291
32	Petroleum, coal products	0.8	0.8	1.3	26	41
33	Chemical, rubber, plastic products	5.3	5.3	3.0	1742	2088
34	Mineral products, other	5.5	5.5	3.3	283	311
35	Ferrous metals	5.1	5.1	0.6	307	361
36	Metals, other	3.6	3.6	2.3	251	271
37	Metal products	4.6	4.6	2.6	380	415
38	Motor vehicles and parts	3.0	3.0	3.9	97	156
39	Transport equipment, other	4.8	4.8	2.2	123	125
40	Electronic equipment	4.5	4.5	1.1	192	350
41	Machinery and equipment, other	4.0	4.0	2.3	1333	1571
42	Manufactures, other	5.4	5.4	2.7	361	356

Notes: Past applied rates are the average of applied rates from 1989, 1990, and 1991 (including ad valorem equivalents of specific tariffs). Present applied rates are the average of applied rates from 2003, 2004, and 2005 (including ad valorem equivalents of specific tariffs).

Source: TRAINS Database via WITS (2008).

**Table A.20 Past and present applied tariff rates in Venezuela (percent)**

GTAP code	GTAP sector	Past applied tariff (1992)	Past rate used	Present applied tariff (2004)	Past HS lines	Present HS lines
1	Paddy rice	10.0	10.0	15.0	3	3
2	Wheat	10.8	10.8	10.8	5	5
3	Cereal grains, other	10.0	10.0	11.5	19	21
4	Vegetables, fruit, nuts	10.6	10.6	14.3	96	121
5	Oil seeds	10.0	10.0	10.8	24	29
6	Sugar cane, sugar beet	10.0	10.0	10.0	2	2
7	Plant-based fibers	10.0	10.0	10.0	13	9
8	Crops, other	11.6	11.6	9.4	75	86
9	Bovine cattle, sheep and goats, horses	9.4	9.4	7.5	20	13
10	Animal products, other	12.0	12.0	8.0	56	61
12	Wool, silkworm cocoons	20.0	20.0	10.0	8	9
13	Forestry	10.5	10.5	7.6	29	28
14	Fishing	20.3	20.3	17.0	13	49
15	Coal	9.2	9.2	5.0	6	6
16	Oil	10.0	10.0	10.0	2	2
17	Gas	0.0	0.0	5.0	2	2
18	Minerals, other	7.6	7.6	5.3	111	105
19	Bovine meat products	23.7	23.7	19.3	36	35
20	Meat products, other	24.7	24.7	19.2	59	57
21	Vegetable oils and fats	16.4	16.4	17.9	56	53
22	Dairy products	23.4	23.4	18.3	36	40
23	Processed rice	20.0	20.0	20.0	2	2
24	Sugar containing products	24.3	24.3	17.9	10	10
25	Food products, other	25.6	25.6	18.3	312	330
26	Beverages and tobacco products	34.7	34.7	18.4	40	42
27	Textiles	22.1	22.1	17.6	645	666
28	Wearing apparel	39.7	39.7	19.7	246	245
29	Leather products	31.0	31.0	15.9	84	80
30	Wood products	32.7	32.7	14.9	97	113
31	Paper products	15.9	15.9	13.0	191	206
32	Petroleum, coal products	2.1	2.1	7.4	45	45
33	Chemical, rubber, plastic products	10.9	10.9	8.7	1664	1564
34	Mineral products, other	19.8	19.8	13.5	186	187
35	Ferrous metals	8.2	8.2	8.6	188	243
36	Metals, other	8.6	8.6	7.8	196	202
37	Metal products	20.0	20.0	14.9	289	268
38	Motor vehicles and parts	22.2	22.2	17.7	89	106
39	Transport equipment, other	11.1	11.1	9.8	104	96
40	Electronic equipment	13.8	13.8	9.3	162	175
41	Machinery and equipment, other	11.7	11.7	9.8	1357	1271
42	Manufactures, other	22.7	22.7	15.2	204	199

Notes: Past applied rates are from 1992 (not including ad valorem equivalents of specific tariffs), except for GTAP sectors 16 and 23 where applied rates from 1995 to 1997 are used. Present applied rates are the average of applied rates from 2004 and 2005 (not including ad valorem equivalents of specific tariffs).

Source: TRAINS Database via WITS (2008).



**Table A.21 Australia: Post-Tokyo Round and post-Uruguay Round bound rates, GTAP sectors**  
(percent)

GTAP code	GTAP sector	HS6 lines	Simple average of ad valorem bound rates		Bound rates with proxy ad valorem equivalents of specific bound rates			
					Tokyo calculated	Tokyo used	Uruguay calculated	Uruguay used
			Tokyo	Uruguay	(Used = higher of MFN applied, Uruguay, Tokyo)		(Used = higher of MFN applied, Uruguay)	
1	Paddy rice	2	2.0	1.0	2.0	2.0	1.0	1.0
2	Wheat	2	0.0	0.0	0.0	0.0	0.0	0.0
3	Cereal grains, other	10	1.6	0.8	1.6	1.6	0.8	0.8
4	Vegetables, fruit, nuts	85	3.5	2.0	3.8	3.8	2.2	2.2
5	Oil seeds	16	2.0	1.5	3.1	3.1	1.6	1.6
6	Sugar cane, sugar beet	2	0.0	0.0	0.0	0.0	0.0	0.0
7	Plant-based fibers	8	1.4	0.4	1.1	1.1	0.3	0.3
8	Crops, other	64	2.9	1.8	33.7	50.2	1.9	1.9
9	Bovine cattle, sheep and goats	8	1.5	0.8	1.2	1.2	0.6	0.6
10	Animal products, other	46	1.1	0.5	1.1	1.1	0.6	0.6
12	Wool, silkworm cocoons	6	4.7	3.2	5.2	5.2	3.6	3.6
13	Forestry	28	1.1	0.7	1.3	1.3	0.9	0.9
14	Fishing	41	1.2	0.5	0.5	0.5	0.5	0.5
15	Coal	6	1.3	0.3	1.3	1.3	0.3	0.3
16	Oil	2	1.0	0.5	1.0	1.0	0.5	0.5
17	Gas	2	5.0	2.0	5.0	5.0	2.0	2.0
18	Minerals, other	96	3.8	2.3	4.0	4.0	2.5	2.5
19	Bovine meat products	30	0.2	0.1	0.1	0.1	0.0	0.0
20	Meat products, other	38	4.2	2.9	5.7	5.7	3.9	3.9
21	Vegetable oils and fats	46	4.1	3.0	3.6	3.6	2.9	2.9
22	Dairy products	21	5.0	2.1	9.3	9.4	5.4	5.4
23	Processed rice	2	2.0	1.0	2.0	2.0	1.0	1.0
24	Sugar containing products	7	5.5	3.8	9.1	9.1	2.1	2.1
25	Food products, other	245	7.6	4.0	5.6	16.3	3.9	3.9
26	Beverages and tobacco products	29	14.2	8.4	416.8	100.0	7.8	7.8
27	Textiles	569	35.6	19.0	35.8	35.8	18.9	18.9
28	Wearing apparel	241	64.3	39.2	64.5	64.5	39.4	39.4
29	Leather products	68	27.2	14.3	37.0	37.0	17.8	17.8
30	Wood products	89	19.7	6.8	19.7	19.7	7.1	7.1
31	Paper products	151	16.9	7.4	15.8	15.8	7.1	7.1
32	Petroleum, coal products	15	3.8	1.5	4.0	4.0	1.6	1.6
33	Chemical, rubber, plastic products	959	11.2	9.3	11.0	11.0	9.3	9.3
34	Mineral products, other	161	15.7	10.0	15.3	15.3	10.0	10.0
35	Ferrous metals	167	11.6	5.9	11.5	11.5	5.8	5.8
36	Metals, other	168	5.2	1.6	5.6	5.6	1.8	1.8
37	Metal products	215	20.7	12.3	21.0	21.0	12.9	12.9
38	Motor vehicles and parts	54	30.9	15.9	30.9	30.9	15.9	15.9
39	Transport equipment, other	82	15.3	9.2	15.5	15.5	9.3	9.3
40	Electronic equipment	119	19.4	10.9	19.6	19.6	11.1	11.1
41	Machinery and equipment, other	853	16.4	8.4	16.4	16.4	8.4	8.4
42	Manufactures, other	178	16.1	10.5	16.1	16.1	10.6	10.6

Notes: Ad valorem bound rates are directly from WTO/GATT schedules. Where specific rates exist, the average of applied tariff ad valorem equivalents from 1991 and 1993 was spliced into the Tokyo schedule, and from 2003, 2004 and 2005 into the Uruguay schedule. The "used" Tokyo rate for GTAP 26 is capped at 100 percent to control for overstated liberalization.

Sources: WTO (2008); TRAINS Database via WITS (2008).

**Table A.22 Brazil: Post-Tokyo Round and post-Uruguay Round bound rates, GTAP sectors (percent)**

GTAP code	GTAP sector	HS6 lines	Bound rates with proxy ad valorem equivalents of specific bound rates					
			Simple average of ad valorem bound rates		Tokyo calculated <i>(Used = higher of MFN applied, Uruguay, Tokyo)</i>	Tokyo used	Uruguay calculated <i>(Used = higher of MFN applied, Uruguay)</i>	Uruguay used
			Tokyo	Uruguay				
1	Paddy rice	2	52.5	55.0	52.5	55.0	55.0	55.0
2	Wheat	2	26.3	32.1	26.3	32.1	32.1	32.1
3	Cereal grains, other	10	43.9	45.0	43.9	45.0	45.0	45.0
4	Vegetables, fruit, nuts	85	49.8	32.7	49.8	49.8	32.7	32.7
5	Oil seeds	16	34.0	30.0	34.0	34.0	30.0	30.0
6	Sugar cane, sugar beet	2	55.0	35.0	55.0	55.0	35.0	35.0
7	Plant-based fibers	8	50.0	37.9	50.0	50.0	37.9	37.9
8	Crops, other	64	44.6	26.5	44.6	44.6	26.5	26.5
9	Bovine cattle, sheep and goats	8	16.4	17.4	16.4	17.4	17.4	17.4
10	Animal products, other	46	47.6	31.1	47.6	47.6	31.1	31.1
12	Wool, silkworm cocoons	6	38.9	26.0	38.9	38.9	26.0	26.0
13	Forestry	28	55.1	34.3	55.1	55.1	34.3	34.3
14	Fishing	41	55.4	35.0	55.4	55.4	35.0	35.0
15	Coal	6	15.0	15.0	15.0	15.0	15.0	15.0
16	Oil	2	ND	ND	12.5	12.5	0.0	0.0
17	Gas	2	ND	ND	11.7	11.7	0.0	0.0
18	Minerals, other	96	46.8	31.7	46.8	46.8	31.7	31.7
19	Bovine meat products	30	26.3	43.0	26.3	43.0	43.0	43.0
20	Meat products, other	38	55.8	42.9	55.8	55.8	42.9	42.9
21	Vegetable oils and fats	46	62.2	34.5	62.2	62.2	34.5	34.5
22	Dairy products	21	66.4	45.3	66.4	66.4	45.3	45.3
23	Processed rice	2	52.5	55.0	52.5	55.0	55.0	55.0
24	Sugar containing products	7	75.6	35.0	75.6	75.6	35.0	35.0
25	Food products, other	245	71.5	36.4	71.5	71.5	36.4	36.4
26	Beverages and tobacco products	29	91.2	37.9	91.2	91.2	37.9	37.9
27	Textiles	569	89.6	34.9	89.6	89.6	34.9	34.9
28	Wearing apparel	241	104.1	35.0	104.1	104.1	35.0	35.0
29	Leather products	68	78.7	35.0	78.7	78.7	35.0	35.0
30	Wood products	89	86.0	33.2	86.0	86.0	33.2	33.2
31	Paper products	151	63.3	32.1	63.3	63.3	32.1	32.1
32	Petroleum, coal products	15	50.0	35.0	50.0	50.0	35.0	35.0
33	Chemical, rubber, plastic products	959	46.9	27.8	46.9	46.9	27.8	27.8
34	Mineral products, other	161	67.1	34.9	67.1	67.1	34.9	34.9
35	Ferrous metals	167	42.9	33.5	42.9	42.9	33.5	33.5
36	Metals, other	168	44.0	30.1	44.0	44.0	30.1	30.1
37	Metal products	215	62.9	34.5	62.9	62.9	34.5	34.5
38	Motor vehicles and parts	54	81.4	32.2	81.4	81.4	32.2	32.2
39	Transport equipment, other	82	61.1	32.1	61.1	61.1	32.1	32.1
40	Electronic equipment	119	63.1	32.9	63.1	63.1	32.9	32.9
41	Machinery and equipment, other	853	56.2	31.8	56.2	56.2	31.8	31.8
42	Manufactures, other	178	84.4	34.4	84.4	84.4	34.4	34.4

ND = no data

Notes: No proxy for specific tariffs was used. Where no bound rate ad valorem data was available from the WTO/GATT schedules the average of applied rates from 1989, 1990, and 1991 was spliced into the Tokyo schedule and from 2003, 2004, and 2005 into the Uruguay schedule.

Sources: WTO (2008); TRAINS Database via WITS (2008).

**Table A.23 Canada: Post-Tokyo Round and post-Uruguay Round bound rates, GTAP sectors**  
(percent)

GTAP code	GTAP sector	HS6 lines	Bound rates with proxy ad valorem equivalents of specific bound rates					
			Simple average of ad valorem bound rates		Tokyo calculated		Uruguay calculated	
			Tokyo	Uruguay	<i>(Used = higher of MFN applied, Uruguay, Tokyo)</i>		<i>(Used = higher of MFN applied, Uruguay)</i>	
1	Paddy rice	2	0.0	0.0	0.0	0.0	0.0	0.0
2	Wheat	2	73.9	62.8	73.8	73.8	62.8	62.8
3	Cereal grains, other	10	10.4	7.6	7.3	7.3	6.1	6.1
4	Vegetables, fruit, nuts	85	1.1	0.4	1.4	14.7	14.7	14.7
5	Oil seeds	16	0.0	0.0	0.0	0.0	0.0	0.0
6	Sugar cane, sugar beet	2	22.5	0.0	27.5	27.5	0.0	0.0
7	Plant-based fibers	8	0.0	0.0	0.0	0.0	0.0	0.0
8	Crops, other	64	2.5	1.5	33.6	33.6	1.8	1.8
9	Bovine cattle, sheep and goats	8	0.0	0.0	0.0	0.1	0.0	0.0
10	Animal products, other	46	19.5	19.0	17.1	17.6	17.6	17.6
12	Wool, silkworm cocoons	6	2.1	1.3	2.5	2.5	1.6	1.6
13	Forestry	28	0.4	0.3	0.6	0.6	0.4	0.4
14	Fishing	41	0.6	0.4	0.6	0.7	0.4	0.4
15	Coal	6	0.0	0.0	0.0	0.0	0.0	0.0
16	Oil	2	5.1	6.7	5.1	14.3	6.7	6.7
17	Gas	2	6.3	0.0	6.3	6.3	0.0	6.3
18	Minerals, other	96	2.0	1.3	2.0	2.0	1.3	1.3
19	Bovine meat products	30	16.2	7.6	11.4	18.0	18.0	18.0
20	Meat products, other	38	40.0	33.0	18.3	33.5	14.6	33.5
21	Vegetable oils and fats	46	9.4	5.8	9.3	18.2	18.2	18.2
22	Dairy products	21	209.7	168.2	207.4	207.4	177.7	177.7
23	Processed rice	2	ND	ND	0.0	0.7	0.0	0.0
24	Sugar containing products	7	10.0	8.5	9.1	10.3	5.3	5.3
25	Food products, other	245	8.7	5.6	8.2	13.9	10.6	13.9
26	Beverages and tobacco products	29	13.9	7.3	570.1	570.1	49.1	49.1
27	Textiles	569	17.4	11.0	18.4	18.4	11.0	11.0
28	Wearing apparel	241	23.1	16.7	23.2	23.2	16.8	16.8
29	Leather products	68	14.8	10.6	17.9	17.9	13.4	13.4
30	Wood products	89	7.5	4.1	7.8	7.8	4.2	4.2
31	Paper products	151	6.5	0.1	6.3	6.5	0.2	0.2
32	Petroleum, coal products	15	5.1	2.5	4.8	4.9	2.0	2.2
33	Chemical, rubber, plastic products	959	9.2	4.5	9.1	9.1	4.5	4.5
34	Mineral products, other	161	8.4	4.0	8.1	8.1	3.8	3.8
35	Ferrous metals	167	7.9	1.0	7.8	7.9	1.1	1.1
36	Metals, other	168	5.8	2.5	5.8	5.8	2.6	2.6
37	Metal products	215	9.6	5.6	9.8	9.8	5.8	5.8
38	Motor vehicles and parts	54	8.4	5.4	8.4	8.4	5.4	5.4
39	Transport equipment, other	82	10.8	5.4	10.9	10.9	5.3	5.8
40	Electronic equipment	119	6.2	2.1	6.3	6.3	2.2	2.2
41	Machinery and equipment, other	853	7.5	4.1	7.5	7.5	4.1	4.1
42	Manufactures, other	178	9.8	5.4	9.7	9.7	5.2	5.2

ND = no data

Notes: Ad valorem bound rates are directly from WTO/GATT schedules. Where specific rates exist, the average of applied tariff ad valorem equivalents from 1989 and 1993 was spliced into the Tokyo schedule, and from 2003, 2004, and 2005 into the Uruguay schedule.

Sources: WTO (2008); TRAINS Database via WITS (2008).

**Table A.24 China: Initial accession and final accession bound rates, GTAP sectors (percent)**

GTAP code	GTAP sector	HS6 lines	Bound rates with proxy ad valorem equivalents of specific bound rates					
			Simple average of ad valorem bound rates		Accession calculated	Accession used	Final calculated	Final used
			Accession	Final	<i>(Used = higher of MFN applied, accession, final)</i>		<i>(Used = higher of MFN applied, final)</i>	
1	Paddy rice	2	74.0	65.0	74.0	74.0	65.0	65.0
2	Wheat	2	74.0	65.0	74.0	74.0	65.0	65.0
3	Cereal grains, other	10	12.2	9.9	12.2	12.2	9.9	9.9
4	Vegetables, fruit, nuts	89	18.4	14.3	18.4	18.4	14.3	14.8
5	Oil seeds	16	10.7	9.9	10.7	10.7	9.9	9.9
6	Sugar cane, sugar beet	2	10.0	10.0	10.0	20.0	10.0	20.0
7	Plant-based fibers	8	12.1	9.4	12.1	12.1	9.4	10.1
8	Crops, other	63	11.4	9.1	11.4	11.4	9.1	9.5
9	Bovine cattle, sheep and goats	8	4.4	4.4	4.4	4.4	4.4	4.4
10	Animal products, other	48	12.2	11.3	12.2	12.2	11.3	11.3
12	Wool, silkworm cocoons	6	19.2	19.2	19.2	19.2	19.2	19.2
13	Forestry	25	10.3	9.3	10.3	10.3	9.3	9.3
14	Fishing	41	14.8	11.1	14.8	14.8	11.1	11.6
15	Coal	6	4.1	4.1	4.1	4.1	4.1	4.1
16	Oil	2	3.0	3.0	3.0	3.0	3.0	3.0
17	Gas	2	4.0	3.0	4.0	4.0	3.0	3.0
18	Minerals, other	94	2.9	2.9	2.9	2.9	2.9	2.9
19	Bovine meat products	30	22.2	16.1	22.2	22.2	16.1	16.6
20	Meat products, other	43	20.3	17.3	20.3	20.3	17.3	18.3
21	Vegetable oils and fats	47	19.3	10.9	19.3	19.3	10.9	14.5
22	Dairy products	24	28.6	12.2	28.6	28.6	12.2	14.8
23	Processed rice	2	42.0	37.5	42.0	56.3	37.5	56.3
24	Sugar containing products	7	47.1	35.1	47.1	47.1	35.1	35.1
25	Food products, other	248	22.1	16.9	22.1	22.1	16.9	17.3
26	Beverages and tobacco products	31	42.9	24.9	42.9	42.9	24.9	27.7
27	Textiles	583	18.6	9.9	18.6	18.6	9.9	11.5
28	Wearing apparel	241	23.8	16.4	23.8	23.8	16.4	17.9
29	Leather products	68	18.2	15.8	18.2	18.2	15.8	15.8
30	Wood products	94	10.5	5.1	10.5	10.5	5.1	5.8
31	Paper products	151	10.8	5.4	10.8	10.8	5.4	6.3
32	Petroleum, coal products	15	6.4	6.4	6.4	6.4	6.4	6.4
33	Chemical, rubber, plastic products	987	9.2	7.4	9.2	9.2	7.4	7.8
34	Mineral products, other	170	14.5	12.6	14.5	14.5	12.6	12.9
35	Ferrous metals	215	6.4	5.2	6.4	6.4	5.2	5.3
36	Metals, other	168	5.3	4.9	5.3	5.3	4.9	4.9
37	Metal products	223	11.7	10.9	11.7	11.7	10.9	11.0
38	Motor vehicles and parts	54	26.7	14.2	26.7	26.7	14.2	18.4
39	Transport equipment, other	82	10.2	8.5	10.2	10.2	8.5	8.5
40	Electronic equipment	138	12.6	7.9	12.6	12.6	7.9	8.3
41	Machinery and equipment, other	887	11.8	9.5	11.8	11.8	9.5	9.6
42	Manufactures, other	179	18.6	15.4	18.6	18.6	15.4	15.7

Notes: No proxy of specific bound rates was used. Ad valorem rates are from the WTO schedule.

Sources: WTO (2008); TRAINS Database via WITS (2008).

**Table A.25 European Union: Post-Tokyo Round and post-Uruguay Round bound rates, GTAP sectors (percent)**

GTAP code	GTAP sector	HS6 lines	Bound rates with proxy ad valorem equivalents of specific bound rates					
			Simple average of ad valorem bound rates		Tokyo calculated		Uruguay calculated	
			Tokyo	Uruguay	Tokyo used		Uruguay used	
					<i>(Used = higher of MFN applied, Uruguay, Tokyo)</i>		<i>(Used = higher of MFN applied, Uruguay)</i>	
1	Paddy rice	2	12.0	7.7	12.0	80.4	52.8	80.4
2	Wheat	2	20.0	12.8	20.0	20.0	8.9	13.2
3	Cereal grains, other	10	7.0	3.2	4.7	26.4	26.4	26.4
4	Vegetables, fruit, nuts	85	9.8	7.1	10.1	10.4	9.7	10.4
5	Oil seeds	16	0.0	0.0	0.0	0.0	0.0	0.0
6	Sugar cane, sugar beet	2	ND	ND	0.0	179.9	179.9	179.9
7	Plant-based fibers	8	0.0	0.0	0.0	0.0	0.0	0.0
8	Crops, other	64	7.2	3.1	7.3	9.2	2.9	7.8
9	Bovine cattle, sheep and goats	8	5.1	3.1	3.1	18.8	18.8	18.8
10	Animal products, other	46	1.7	1.0	2.1	4.5	4.5	4.5
12	Wool, silkworm cocoons	6	0.2	0.0	0.2	0.3	0.0	0.0
13	Forestry	28	1.2	0.4	1.7	1.7	0.5	0.6
14	Fishing	41	10.8	9.1	10.8	10.8	9.1	9.1
15	Coal	6	ND	0.0	0.0	0.0	0.0	0.0
16	Oil	2	0.0	0.0	0.0	0.0	0.0	0.0
17	Gas	2	1.5	0.7	1.5	1.5	0.7	0.7
18	Minerals, other	96	0.1	0.0	0.2	0.3	0.1	0.1
19	Bovine meat products	30	12.8	7.6	13.4	49.4	49.4	49.4
20	Meat products, other	38	12.1	7.1	12.6	18.8	18.0	18.8
21	Vegetable oils and fats	46	7.3	4.5	7.5	12.7	12.7	12.7
22	Dairy products	21	11.5	7.4	12.0	125.4	125.4	125.4
23	Processed rice	2	ND	ND	101.0	101.0	42.2	42.5
24	Sugar containing products	7	10.0	8.0	10.0	46.0	46.0	46.0
25	Food products, other	245	14.8	11.3	15.8	21.0	19.8	21.0
26	Beverages and tobacco products	29	36.6	20.8	38.1	38.3	24.9	24.9
27	Textiles	569	2.1	1.5	2.1	9.8	1.5	7.0
28	Wearing apparel	241	5.0	2.5	5.1	12.2	2.6	10.8
29	Leather products	68	6.0	4.6	7.7	8.2	5.9	6.4
30	Wood products	89	5.8	2.2	5.6	5.6	2.0	2.9
31	Paper products	151	7.2	3.5	6.8	7.2	3.3	3.3
32	Petroleum, coal products	15	2.0	1.0	1.7	1.9	0.7	1.0
33	Chemical, rubber, plastic products	959	7.1	4.5	7.1	7.1	4.7	4.7
34	Mineral products, other	161	5.5	3.3	5.4	5.5	3.3	3.5
35	Ferrous metals	167	5.3	0.5	5.3	5.4	0.6	3.7
36	Metals, other	168	4.4	2.8	4.5	4.5	2.9	2.9
37	Metal products	215	5.3	2.8	5.4	5.4	2.8	2.8
38	Motor vehicles and parts	54	8.3	6.3	8.3	8.3	6.3	6.4
39	Transport equipment, other	82	4.5	2.4	4.5	4.5	2.4	2.4
40	Electronic equipment	119	6.8	3.9	6.6	7.0	3.9	3.9
41	Machinery and equipment, other	853	4.6	2.1	4.6	4.7	2.2	2.2
42	Manufactures, other	178	5.6	2.7	5.6	5.6	2.7	2.7

ND = no data

Notes: Ad valorem bound rates are directly from WTO/GATT schedules. Where specific rates exist, the average of applied tariff ad valorem equivalents from 1988, 1990, and 1991 was spliced into the Tokyo schedule (1990-92 for GTAP 6, 1995-97 for GTAP 23), and from 2002, 2003, and 2005 into the Uruguay schedule.

Sources: WTO (2008); TRAINS Database via WITS (2008).

**Table A.26 Hong Kong: Post-Tokyo Round and post-Uruguay Round bound rates, GTAP sectors**  
(percent)

GTAP code	GTAP sector	HS6 lines	Bound rates with proxy ad valorem equivalents of specific bound rates					
			Simple average of ad valorem bound rates		Tokyo calculated		Uruguay calculated	Uruguay used
			Tokyo	Uruguay	(Used = higher of MFN applied, Uruguay, Tokyo)		(Used = higher of MFN applied, Uruguay)	
1	Paddy rice	2	0.0	0.0	0.0	0.0	0.0	0.0
2	Wheat	2	0.0	0.0	0.0	0.0	0.0	0.0
3	Cereal grains, other	10	0.0	0.0	0.0	0.0	0.0	0.0
4	Vegetables, fruit, nuts	85	0.0	0.0	0.0	0.0	0.0	0.0
5	Oil seeds	16	0.0	0.0	0.0	0.0	0.0	0.0
6	Sugar cane, sugar beet	2	0.0	0.0	0.0	0.0	0.0	0.0
7	Plant-based fibers	8	0.0	0.0	0.0	0.0	0.0	0.0
8	Crops, other	64	0.0	0.0	0.0	0.0	0.0	0.0
9	Bovine cattle, sheep and goats	8	0.0	0.0	0.0	0.0	0.0	0.0
10	Animal products, other	46	0.0	0.0	0.0	0.0	0.0	0.0
12	Wool, silkworm cocoons	6	0.0	0.0	0.0	0.0	0.0	0.0
13	Forestry	28	0.0	0.0	0.0	0.0	0.0	0.0
14	Fishing	41	0.0	0.0	0.0	0.0	0.0	0.0
15	Coal	6	0.0	0.0	0.0	0.0	0.0	0.0
16	Oil	2	0.0	0.0	0.0	0.0	0.0	0.0
17	Gas	2	0.0	0.0	0.0	0.0	0.0	0.0
18	Minerals, other	96	0.0	0.0	0.0	0.0	0.0	0.0
19	Bovine meat products	30	0.0	0.0	0.0	0.0	0.0	0.0
20	Meat products, other	38	0.0	0.0	0.0	0.0	0.0	0.0
21	Vegetable oils and fats	46	0.0	0.0	0.0	0.0	0.0	0.0
22	Dairy products	21	0.0	0.0	0.0	0.0	0.0	0.0
23	Processed rice	2	0.0	0.0	0.0	0.0	0.0	0.0
24	Sugar containing products	7	0.0	0.0	0.0	0.0	0.0	0.0
25	Food products, other	245	0.0	0.0	0.0	0.0	0.0	0.0
26	Beverages and tobacco products	29	0.0	0.0	0.0	0.0	0.0	0.0
27	Textiles	569	0.0	0.0	0.0	0.0	0.0	0.0
28	Wearing apparel	241	0.0	0.0	0.0	0.0	0.0	0.0
29	Leather products	68	0.0	0.0	0.0	0.0	0.0	0.0
30	Wood products	89	0.0	0.0	0.0	0.0	0.0	0.0
31	Paper products	151	0.0	0.0	0.0	0.0	0.0	0.0
32	Petroleum, coal products	15	0.0	0.0	0.0	0.0	0.0	0.0
33	Chemical, rubber, plastic products	959	0.0	0.0	0.0	0.0	0.0	0.0
34	Mineral products, other	161	0.0	0.0	0.0	0.0	0.0	0.0
35	Ferrous metals	167	0.0	0.0	0.0	0.0	0.0	0.0
36	Metals, other	168	0.0	0.0	0.0	0.0	0.0	0.0
37	Metal products	215	0.0	0.0	0.0	0.0	0.0	0.0
38	Motor vehicles and parts	54	0.0	0.0	0.0	0.0	0.0	0.0
39	Transport equipment, other	82	0.0	0.0	0.0	0.0	0.0	0.0
40	Electronic equipment	119	0.0	0.0	0.0	0.0	0.0	0.0
41	Machinery and equipment, other	853	0.0	0.0	0.0	0.0	0.0	0.0
42	Manufactures, other	178	0.0	0.0	0.0	0.0	0.0	0.0

Notes: Hong Kong tariff bindings are limited. Where no bindings were made the applied rate from 1998 was spliced into the existing Tokyo schedule and the average of applied rates from 2003, 2004, and 2005 into the Uruguay schedule.

Sources: WTO (2008); TRAINS Database via WITS (2008).

**Table A.27 India: Post-Tokyo Round and post-Uruguay Round bound rates, GTAP sectors (percent)**

GTAP code	GTAP sector	HS6 lines	Simple average of ad valorem bound rates		Bound rates with proxy ad valorem equivalents of specific bound rates			
					Tokyo calculated	Tokyo used	Uruguay calculated	Uruguay used
			Tokyo	Uruguay	(Used = higher of MFN applied, Uruguay, Tokyo)		(Used = higher of MFN applied, Uruguay)	
1	Paddy rice	2	0.0	80.0	0.0	80.0	80.0	80.0
2	Wheat	2	0.0	95.0	0.0	100.0	95.0	100.0
3	Cereal grains, other	10	0.0	88.0	0.0	88.0	88.0	88.0
4	Vegetables, fruit, nuts	85	122.2	97.8	123.3	123.3	96.4	96.4
5	Oil seeds	16	62.5	100.0	64.3	100.0	100.0	100.0
6	Sugar cane, sugar beet	2	140.0	125.0	140.0	140.0	125.0	125.0
7	Plant-based fibers	8	53.1	62.5	54.3	65.7	62.5	62.5
8	Crops, other	64	112.5	98.2	127.3	127.3	98.2	98.2
9	Bovine cattle, sheep and goats	8	110.0	100.0	100.0	100.0	100.0	100.0
10	Animal products, other	46	65.8	83.0	77.6	81.9	81.9	81.9
12	Wool, silkworm cocoons	6	71.7	75.0	66.0	75.0	75.0	75.0
13	Forestry	28	70.9	77.5	81.1	81.1	74.6	74.6
14	Fishing	41	113.3	108.3	113.3	113.3	35.2	35.2
15	Coal	6	ND	31.3	40.0	40.0	20.4	23.3
16	Oil	2	ND	ND	30.0	30.0	9.2	10.0
17	Gas	2	ND	ND	60.0	60.0	10.0	10.0
18	Minerals, other	96	102.9	36.3	103.6	103.6	34.5	34.5
19	Bovine meat products	30	131.8	103.3	134.1	134.1	103.3	103.3
20	Meat products, other	38	135.6	122.3	133.8	135.0	118.0	118.0
21	Vegetable oils and fats	46	130.5	190.9	134.5	190.9	190.9	190.9
22	Dairy products	21	94.5	70.4	91.8	91.8	70.4	70.4
23	Processed rice	2	0.0	75.0	0.0	75.0	75.0	75.0
24	Sugar containing products	7	115.7	135.7	115.7	135.7	135.7	135.7
25	Food products, other	245	128.2	118.4	128.3	128.3	99.0	99.0
26	Beverages and tobacco products	29	133.3	141.6	262.0	262.0	141.6	141.6
27	Textiles	569	121.9	29.7	122.4	122.4	26.9	26.9
28	Wearing apparel	241	145.0	38.8	145.0	145.0	26.3	30.4
29	Leather products	68	24.6	28.3	145.0	145.0	22.6	22.6
30	Wood products	89	101.0	39.4	104.7	104.7	28.4	28.4
31	Paper products	151	102.8	35.6	89.7	89.7	29.8	29.8
32	Petroleum, coal products	15	25.0	25.0	25.0	25.0	13.3	15.6
33	Chemical, rubber, plastic products	959	117.3	42.8	119.0	119.0	39.3	39.3
34	Mineral products, other	161	129.0	39.1	128.6	128.6	34.6	34.6
35	Ferrous metals	167	140.4	39.6	146.8	146.8	38.7	38.7
36	Metals, other	168	108.9	39.3	109.8	109.8	27.7	27.7
37	Metal products	215	119.4	36.6	112.8	112.8	22.5	22.5
38	Motor vehicles and parts	54	132.3	40.0	132.3	132.3	50.3	50.3
39	Transport equipment, other	82	72.4	29.9	71.2	71.2	32.4	32.4
40	Electronic equipment	119	106.6	10.0	111.8	111.8	16.2	16.2
41	Machinery and equipment, other	853	94.3	31.2	93.9	93.9	29.9	29.9
42	Manufactures, other	178	103.4	43.2	103.4	103.4	21.3	22.1

ND = no data

Notes: Ad valorem bound rates are directly from WTO/GATT schedules. Where specific rates exist, the applied tariff ad valorem equivalents from 1990 was spliced into the Tokyo schedule, and the average from 2004 and 2005 into the Uruguay schedule.

Sources: WTO (2008); TRAINS Database via WITS (2008).

**Table A.28 Indonesia: Post-Tokyo Round and post-Uruguay Round bound rates, GTAP sectors**  
(percent)

GTAP code	GTAP sector	HS6 lines	Bound rates with proxy ad valorem equivalents of specific bound rates					
			Simple average of ad valorem bound rates		Tokyo calculated		Uruguay calculated	
			Tokyo	Uruguay	Tokyo used		Uruguay used	
					<i>(Used = higher of MFN applied, Uruguay, Tokyo)</i>		<i>(Used = higher of MFN applied, Uruguay)</i>	
1	Paddy rice	2	180.0	160.0	180.0	180.0	160.0	160.0
2	Wheat	2	30.0	27.0	30.0	30.0	27.0	27.0
3	Cereal grains, other	10	68.0	40.0	68.0	68.0	40.0	40.0
4	Vegetables, fruit, nuts	85	82.1	45.7	82.1	82.1	45.7	45.7
5	Oil seeds	16	44.1	39.2	44.1	44.1	39.2	39.2
6	Sugar cane, sugar beet	2	50.0	40.0	50.0	50.0	40.0	40.0
7	Plant-based fibers	8	50.0	38.4	50.0	50.0	38.4	38.4
8	Crops, other	64	68.4	41.9	68.4	68.4	41.9	41.9
9	Bovine cattle, sheep and goats	8	45.5	40.0	45.5	45.5	40.0	40.0
10	Animal products, other	46	54.9	40.0	54.9	54.9	40.0	40.0
12	Wool, silkworm cocoons	6	58.3	40.0	58.3	58.3	40.0	40.0
13	Forestry	28	51.7	42.1	51.7	51.7	42.1	42.1
14	Fishing	41	49.8	40.0	49.8	49.8	40.0	40.0
15	Coal	6	50.0	40.0	50.0	50.0	40.0	40.0
16	Oil	2	50.0	40.0	50.0	50.0	40.0	40.0
17	Gas	2	50.0	40.0	50.0	50.0	40.0	40.0
18	Minerals, other	96	50.0	40.0	50.0	50.0	40.0	40.0
19	Bovine meat products	30	68.5	45.8	68.5	68.5	45.8	45.8
20	Meat products, other	38	73.9	43.2	73.9	73.9	43.2	43.2
21	Vegetable oils and fats	46	55.6	40.0	55.6	55.6	40.0	40.0
22	Dairy products	21	96.0	73.5	96.0	96.0	73.5	73.5
23	Processed rice	2	180.0	160.0	180.0	180.0	160.0	160.0
24	Sugar containing products	7	93.6	71.4	93.6	93.6	71.4	71.4
25	Food products, other	245	69.7	42.3	69.7	69.7	42.3	42.3
26	Beverages and tobacco products	29	124.1	88.6	124.1	124.1	88.6	88.6
27	Textiles	569	50.3	40.0	50.3	50.3	40.0	40.0
28	Wearing apparel	241	50.0	40.0	50.0	50.0	40.0	40.0
29	Leather products	68	50.0	40.0	50.0	50.0	40.0	40.0
30	Wood products	89	50.0	40.0	50.0	50.0	40.0	40.0
31	Paper products	151	50.0	40.0	50.0	50.0	40.0	40.0
32	Petroleum, coal products	15	50.0	40.0	50.0	50.0	40.0	40.0
33	Chemical, rubber, plastic products	959	50.3	40.0	50.3	50.3	40.0	40.0
34	Mineral products, other	161	50.0	40.0	50.0	50.0	40.0	40.0
35	Ferrous metals	167	50.0	40.0	50.0	50.0	40.0	40.0
36	Metals, other	168	50.0	40.0	50.0	50.0	40.0	40.0
37	Metal products	215	50.0	40.0	50.0	50.0	40.0	40.0
38	Motor vehicles and parts	54	50.0	40.0	50.0	55.2	40.0	40.0
39	Transport equipment, other	82	50.0	40.0	50.0	50.0	40.0	40.0
40	Electronic equipment	119	50.0	40.0	50.0	50.0	40.0	40.0
41	Machinery and equipment, other	853	50.0	40.0	50.0	50.0	40.0	40.0
42	Manufactures, other	178	50.0	40.0	50.0	50.0	40.0	40.0

Notes: No proxy of specific bound rates was used. Ad valorem rates are from the WTO/GATT schedules.

Sources: WTO (2008); TRAINS Database via WITS (2008).



**Table A.29 Japan: Post-Tokyo Round and post-Uruguay Round bound rates, GTAP sectors (percent)**

GTAP code	GTAP sector	HS6 lines	Bound rates with proxy ad valorem equivalents of specific bound rates					
			Simple average of ad valorem bound rates		Tokyo calculated	Tokyo used	Uruguay calculated	Uruguay used
			Tokyo	Uruguay	<i>(Used = higher of MFN applied, Uruguay, Tokyo)</i>		<i>(Used = higher of MFN applied, Uruguay)</i>	
1	Paddy rice	2	ND	ND	0.0	517.0	517.0	517.0
2	Wheat	2	ND	ND	3.3	134.8	134.8	134.8
3	Cereal grains, other	10	2.9	3.3	5.1	18.4	18.4	18.4
4	Vegetables, fruit, nuts	85	9.2	5.4	9.6	31.9	31.9	31.9
5	Oil seeds	16	0.0	0.0	0.8	29.6	29.6	29.6
6	Sugar cane, sugar beet	2	0.0	0.0	0.0	0.0	0.0	0.0
7	Plant-based fibers	8	0.0	0.0	0.0	0.0	0.0	0.0
8	Crops, other	64	2.4	1.4	2.7	11.3	1.6	11.3
9	Bovine cattle, sheep and goats	8	0.0	0.0	3.3	62.6	0.0	62.6
10	Animal products, other	46	3.1	2.0	3.8	3.8	2.5	2.5
12	Wool, silkworm cocoons	6	0.0	0.0	1.4	54.9	54.9	54.9
13	Forestry	28	2.1	1.5	3.0	3.0	2.1	2.1
14	Fishing	41	5.6	3.5	5.6	5.8	3.5	4.3
15	Coal	6	1.0	0.7	1.0	1.0	0.7	0.7
16	Oil	2	0.0	0.0	0.0	0.0	0.0	0.0
17	Gas	2	4.6	2.1	4.6	4.6	2.1	2.1
18	Minerals, other	96	0.1	0.0	0.0	0.3	0.0	0.3
19	Bovine meat products	30	25.0	13.6	26.6	26.6	26.4	26.4
20	Meat products, other	38	11.2	7.1	12.1	20.3	20.3	20.3
21	Vegetable oils and fats	46	5.1	2.8	9.8	10.3	5.1	5.8
22	Dairy products	21	32.7	24.8	33.9	72.3	72.3	72.3
23	Processed rice	2	ND	ND	0.0	378.5	378.5	378.5
24	Sugar containing products	7	13.3	6.8	63.4	63.8	36.0	36.0
25	Food products, other	245	17.5	11.6	17.4	17.4	16.1	16.6
26	Beverages and tobacco products	29	22.8	12.6	30.4	30.4	17.6	17.6
27	Textiles	569	8.6	5.5	8.7	8.7	5.9	6.0
28	Wearing apparel	241	14.5	9.4	14.5	14.5	9.4	9.5
29	Leather products	68	18.0	12.6	18.3	18.3	13.6	13.6
30	Wood products	89	5.9	2.2	5.4	5.4	2.0	2.5
31	Paper products	151	3.3	0.0	3.0	3.0	0.0	0.1
32	Petroleum, coal products	15	2.7	1.4	2.0	2.0	1.3	1.3
33	Chemical, rubber, plastic products	959	4.9	2.4	5.0	5.0	2.4	2.4
34	Mineral products, other	161	4.0	1.2	4.0	4.0	1.2	1.2
35	Ferrous metals	167	5.2	0.4	5.2	5.2	0.4	0.4
36	Metals, other	168	5.0	1.9	5.1	5.1	2.1	2.1
37	Metal products	215	4.9	1.1	4.9	4.9	1.1	1.1
38	Motor vehicles and parts	54	2.4	0.0	2.4	2.4	0.0	0.0
39	Transport equipment, other	82	4.2	0.0	4.2	4.2	0.0	0.0
40	Electronic equipment	119	3.0	0.0	3.0	3.0	0.0	0.0
41	Machinery and equipment, other	853	3.8	0.2	3.8	3.8	0.2	0.3
42	Manufactures, other	178	4.7	1.9	4.7	4.7	1.9	1.9

ND = no data

Notes: Ad valorem bound rates are directly from WTO/GATT schedules. Where specific rates exist, the average of applied tariff ad valorem equivalents from 1988, 1990, and 1991 was spliced into the Tokyo schedule, and from 2003, 2004, and 2005 into the Uruguay schedule.

Sources: WTO (2008); TRAINS Database via WITS (2008).

**Table A.30 Korea: Post-Tokyo Round and post-Uruguay Round bound rates, GTAP sectors (percent)**

GTAP code	GTAP sector	HS6 lines	Simple average of ad valorem bound rates		Bound rates with proxy ad valorem equivalents of specific bound rates			
			Tokyo	Uruguay	Tokyo calculated	Tokyo used	Uruguay calculated	Uruguay used
					(Used = higher of MFN applied, Uruguay, Tokyo)		(Used = higher of MFN applied, Uruguay)	
1	Paddy rice	2	ND	ND	5.0	5.0	5.0	5.0
2	Wheat	2	11.1	6.1	11.1	11.1	6.1	6.1
3	Cereal grains, other	10	332.5	298.5	332.5	332.5	298.5	298.5
4	Vegetables, fruit, nuts	85	87.4	73.3	87.7	89.9	89.9	89.9
5	Oil seeds	16	52.8	44.2	52.7	122.0	122.0	122.0
6	Sugar cane, sugar beet	2	10.0	6.6	10.0	10.0	6.6	6.6
7	Plant-based fibers	8	10.0	2.0	10.0	10.0	2.0	2.0
8	Crops, other	64	54.4	44.1	58.1	60.0	60.0	60.0
9	Bovine cattle, sheep and goats	8	34.8	29.2	45.9	45.9	41.3	41.3
10	Animal products, other	46	21.5	12.9	21.6	21.6	20.8	20.8
12	Wool, silkworm cocoons	6	10.0	2.9	8.8	12.7	12.7	12.7
13	Forestry	28	13.9	7.4	15.6	15.6	9.0	9.0
14	Fishing	41	26.8	14.9	26.8	26.8	14.9	17.7
15	Coal	6	2.8	1.0	2.8	2.8	1.0	1.0
16	Oil	2	10.0	5.0	10.0	10.0	5.0	5.0
17	Gas	2	5.0	5.0	5.0	5.0	5.0	5.0
18	Minerals, other	96	8.5	4.1	8.2	8.2	3.9	3.9
19	Bovine meat products	30	28.0	22.9	29.3	29.3	24.0	24.0
20	Meat products, other	38	36.5	28.7	40.3	40.3	31.5	31.5
21	Vegetable oils and fats	46	26.5	18.5	26.1	32.8	32.8	32.8
22	Dairy products	21	80.7	64.4	80.6	80.6	64.6	64.6
23	Processed rice	2	ND	ND	5.0	5.0	5.0	5.0
24	Sugar containing products	7	22.8	16.2	20.5	25.9	25.9	25.9
25	Food products, other	245	89.5	74.3	84.7	84.7	70.7	70.7
26	Beverages and tobacco products	29	92.3	48.5	92.3	92.3	48.5	48.5
27	Textiles	569	27.2	15.9	27.1	27.1	15.6	15.6
28	Wearing apparel	241	45.3	27.3	45.4	45.4	27.4	27.4
29	Leather products	68	30.3	12.6	33.7	33.7	14.0	14.0
30	Wood products	89	26.5	9.1	26.9	26.9	9.0	9.0
31	Paper products	151	22.9	0.2	22.2	22.2	0.3	0.4
32	Petroleum, coal products	15	13.1	7.2	12.3	12.3	6.8	6.8
33	Chemical, rubber, plastic products	959	21.3	6.8	21.3	21.3	6.8	6.8
34	Mineral products, other	161	24.6	12.4	24.7	24.7	12.4	12.4
35	Ferrous metals	167	16.2	1.8	16.1	16.1	2.1	2.1
36	Metals, other	168	19.7	8.0	19.7	19.7	8.2	8.2
37	Metal products	215	25.2	12.5	25.2	25.2	12.5	12.5
38	Motor vehicles and parts	54	36.7	24.4	36.7	36.7	24.4	24.4
39	Transport equipment, other	82	14.0	6.0	14.6	14.6	6.3	6.3
40	Electronic equipment	119	25.4	10.8	25.8	25.8	11.7	11.7
41	Machinery and equipment, other	853	22.3	10.5	22.4	22.4	10.5	10.5
42	Manufactures, other	178	30.9	11.2	30.7	30.7	11.1	11.1

ND = no data

Notes: Ad valorem bound rates are directly from WTO/GATT schedules. Where specific rates exist, the average of applied tariff ad valorem equivalents from 1989, 1990, and 1991 was spliced into the Tokyo schedule, and tariff equivalents from 2004 into the Uruguay schedule.

Sources: WTO (2008); TRAINS Database via WITS (2008).

**Table A.31 Malaysia: Post-Tokyo Round and post-Uruguay Round bound rates, GTAP sectors**  
(percent)

GTAP code	GTAP sector	HS6 lines	Bound rates with proxy ad valorem equivalents of specific bound rates					
			Simple average of ad valorem bound rates		Tokyo calculated	Tokyo used	Uruguay calculated	Uruguay used
			Tokyo	Uruguay	<i>(Used = higher of MFN applied, Uruguay, Tokyo)</i>		<i>(Used = higher of MFN applied, Uruguay)</i>	
1	Paddy rice	2	45.0	40.0	45.0	45.0	40.0	40.0
2	Wheat	2	4.0	2.5	4.0	4.0	2.5	2.5
3	Cereal grains, other	10	4.6	2.0	4.6	4.6	2.0	2.6
4	Vegetables, fruit, nuts	85	6.5	7.3	9.7	10.6	10.6	10.6
5	Oil seeds	16	6.7	4.1	6.7	6.7	4.1	5.0
6	Sugar cane, sugar beet	2	5.0	5.0	5.0	5.0	5.0	5.0
7	Plant-based fibers	8	2.0	3.6	2.0	3.6	3.6	3.6
8	Crops, other	64	7.7	4.2	7.7	59.2	59.2	59.2
9	Bovine cattle, sheep and goats	8	5.3	4.4	5.3	5.3	4.4	4.4
10	Animal products, other	46	10.2	8.3	10.2	10.2	8.3	8.3
12	Wool, silkworm cocoons	6	5.6	4.2	5.6	5.6	4.2	4.2
13	Forestry	28	12.5	9.2	13.0	13.0	9.7	11.5
14	Fishing	41	12.3	7.1	12.3	12.3	7.1	9.1
15	Coal	6	5.0	5.0	5.0	5.0	5.0	5.0
16	Oil	2	5.0	5.0	5.0	5.0	5.0	5.0
17	Gas	2	ND	ND	32.8	32.8	32.8	32.8
18	Minerals, other	96	3.8	8.2	3.8	8.2	8.2	8.2
19	Bovine meat products	30	14.8	11.1	14.8	14.8	11.4	11.4
20	Meat products, other	38	61.9	53.9	61.7	61.7	53.7	53.7
21	Vegetable oils and fats	46	8.4	6.8	8.4	8.4	6.8	6.8
22	Dairy products	21	16.1	9.9	15.3	15.3	10.0	11.3
23	Processed rice	2	38.8	33.8	38.8	38.8	33.8	33.8
24	Sugar containing products	7	9.2	8.5	9.2	9.2	8.5	8.5
25	Food products, other	245	18.6	10.7	19.4	19.4	11.5	15.3
26	Beverages and tobacco products	29	21.0	7.5	22.7	782.6	782.6	782.6
27	Textiles	569	24.3	18.3	24.8	24.8	18.3	19.9
28	Wearing apparel	241	32.4	20.8	32.4	32.4	20.8	25.8
29	Leather products	68	29.0	22.6	29.1	29.3	22.5	29.2
30	Wood products	89	30.3	21.7	30.4	30.4	21.6	24.8
31	Paper products	151	12.2	17.0	12.4	17.0	17.0	17.0
32	Petroleum, coal products	15	10.0	6.7	10.0	10.0	6.7	7.8
33	Chemical, rubber, plastic products	959	12.7	12.7	12.6	12.8	12.8	12.8
34	Mineral products, other	161	18.0	19.4	18.5	19.6	19.4	19.6
35	Ferrous metals	167	16.0	26.6	15.4	26.6	26.6	26.6
36	Metals, other	168	8.1	9.5	8.2	9.5	9.5	9.5
37	Metal products	215	23.2	23.2	23.6	23.6	23.3	23.3
38	Motor vehicles and parts	54	24.6	18.6	24.6	24.6	18.6	24.1
39	Transport equipment, other	82	11.5	10.8	11.5	11.5	10.8	11.4
40	Electronic equipment	119	20.4	10.9	20.4	20.4	10.9	15.6
41	Machinery and equipment, other	853	9.8	10.7	9.8	10.7	10.7	10.7
42	Manufactures, other	178	12.7	14.3	12.8	14.3	14.3	14.3

ND = No data

Notes: Ad valorem bound rates are directly from WTO/GATT schedules. Where specific rates exist, the average of applied tariff ad valorem equivalents from 1991 and 1993 was spliced into the Tokyo schedule (1996 for GTAP 17), and tariff equivalents from 1996 into the Uruguay schedule.

Sources: WTO (2008); TRAINS Database via WITS (2008).

**Table A.32 Mexico: Accession and post-Uruguay Round bound rates, GTAP sectors (percent)**

GTAP code	GTAP sector	HS6 lines	Bound rates with proxy ad valorem equivalents of specific bound rates					
			Simple average of ad valorem bound rates		Accession calculated	Accession used	Uruguay calculated	Uruguay used
			Accession	Uruguay	(Used = higher of MFN applied, Uruguay, accession)		(Used = higher of MFN applied, Uruguay)	
1	Paddy rice	2	30.0	27.0	30.0	30.0	27.0	27.0
2	Wheat	2	50.0	35.0	67.0	67.0	67.0	67.0
3	Cereal grains, other	10	46.0	37.4	55.8	55.8	53.3	53.3
4	Vegetables, fruit, nuts	85	48.1	36.3	50.7	50.7	39.7	39.7
5	Oil seeds	16	42.3	31.0	43.0	43.0	32.4	32.4
6	Sugar cane, sugar beet	2	50.0	36.0	50.0	50.0	36.0	36.0
7	Plant-based fibers	8	45.0	33.3	44.3	44.3	33.0	33.0
8	Crops, other	64	45.7	28.7	46.6	46.6	29.2	29.2
9	Bovine cattle, sheep and goats	8	35.8	24.9	27.3	27.3	18.6	18.6
10	Animal products, other	46	38.3	23.7	41.5	41.5	26.1	26.1
12	Wool, silkworm cocoons	6	43.3	26.8	42.0	42.0	24.7	24.7
13	Forestry	28	50.0	33.0	50.0	50.0	33.9	33.9
14	Fishing	41	50.0	34.8	50.0	50.0	34.8	34.8
15	Coal	6	50.0	34.2	50.0	50.0	34.2	34.2
16	Oil	2	50.0	42.5	50.0	50.0	42.5	42.5
17	Gas	2	50.0	35.0	50.0	50.0	35.0	35.0
18	Minerals, other	96	50.0	35.2	50.0	50.0	35.2	35.2
19	Bovine meat products	30	38.0	32.2	53.2	53.2	48.5	48.5
20	Meat products, other	38	49.7	40.7	49.6	60.6	42.3	60.6
21	Vegetable oils and fats	46	48.9	42.2	53.8	53.8	47.3	47.3
22	Dairy products	21	47.7	37.3	61.9	61.9	51.0	51.0
23	Processed rice	2	50.0	45.0	50.0	50.0	45.0	45.0
24	Sugar containing products	7	50.0	37.9	50.0	50.0	37.9	37.9
25	Food products, other	245	49.9	37.4	49.8	49.8	38.9	38.9
26	Beverages and tobacco products	29	51.5	44.0	59.1	59.1	52.6	52.6
27	Textiles	569	49.8	34.9	49.7	49.7	34.9	34.9
28	Wearing apparel	241	50.0	35.1	50.0	50.0	35.1	35.1
29	Leather products	68	50.0	35.0	50.0	50.0	35.0	35.0
30	Wood products	89	50.0	35.0	50.0	50.0	35.0	35.0
31	Paper products	151	50.0	35.7	50.0	50.0	35.7	35.7
32	Petroleum, coal products	15	50.0	35.0	50.0	50.0	35.0	35.0
33	Chemical, rubber, plastic products	959	49.9	35.6	49.9	49.9	35.5	35.5
34	Mineral products, other	161	50.0	35.6	50.0	50.0	35.5	35.5
35	Ferrous metals	167	50.0	35.2	50.0	50.0	35.2	35.2
36	Metals, other	168	50.0	35.0	50.0	50.0	35.0	35.0
37	Metal products	215	50.0	35.3	50.0	50.0	35.3	35.3
38	Motor vehicles and parts	54	50.0	42.5	50.0	50.0	42.5	42.5
39	Transport equipment, other	82	50.0	35.2	50.0	50.0	35.2	35.2
40	Electronic equipment	119	50.0	35.2	50.0	50.0	35.1	35.1
41	Machinery and equipment, other	853	50.0	35.8	50.0	50.0	35.8	35.8
42	Manufactures, other	178	50.0	34.9	50.0	50.0	34.9	34.9

Notes: Ad valorem bound rates are directly from WTO/GATT schedules. Where specific rates exist, the applied tariff ad valorem equivalents from 2000 was spliced into the Tokyo schedule, and the average from 2003, 2004, and 2005 into the Uruguay schedule.

Sources: WTO (2008); TRAINS Database via WITS (2008).

**Table A.33 Philippines: Post-Tokyo Round and post-Uruguay Round bound rates, GTAP sectors**  
(percent)

GTAP code	GTAP sector	HS6 lines	Bound rates with proxy ad valorem equivalents of specific bound rates					
			Simple average of ad valorem bound rates		Tokyo calculated	Tokyo used	Uruguay calculated	Uruguay used
			Tokyo	Uruguay	(Used = higher of MFN applied, Uruguay, Tokyo)		(Used = higher of MFN applied, Uruguay)	
1	Paddy rice	2	ND	ND	43.3	43.3	37.5	37.5
2	Wheat	2	40.0	25.0	40.0	40.0	25.0	25.0
3	Cereal grains, other	10	58.0	39.0	58.0	58.0	39.0	39.0
4	Vegetables, fruit, nuts	85	53.0	39.1	53.0	53.0	39.1	39.1
5	Oil seeds	16	49.4	39.3	49.4	49.4	39.3	39.3
6	Sugar cane, sugar beet	2	50.0	40.0	50.0	50.0	40.0	40.0
7	Plant-based fibers	8	20.0	10.0	20.0	20.0	10.0	10.0
8	Crops, other	64	44.2	32.9	44.2	44.2	32.9	32.9
9	Bovine cattle, sheep and goats	8	31.3	20.8	31.3	31.3	20.8	20.8
10	Animal products, other	46	42.8	29.1	42.8	42.8	29.1	29.1
12	Wool, silkworm cocoons	6	25.0	15.0	25.0	25.0	15.0	15.0
13	Forestry	28	25.4	23.5	25.4	25.4	23.5	23.5
14	Fishing	41	42.0	23.0	42.0	42.0	23.0	23.0
15	Coal	6	ND	ND	14.4	14.4	3.9	3.9
16	Oil	2	ND	ND	13.3	13.3	3.3	3.3
17	Gas	2	ND	ND	16.7	16.7	6.3	6.3
18	Minerals, other	96	13.6	16.3	13.6	16.3	16.3	16.3
19	Bovine meat products	30	57.2	35.6	57.2	57.2	35.6	35.6
20	Meat products, other	38	82.4	39.1	82.4	82.4	39.1	39.1
21	Vegetable oils and fats	46	51.1	37.5	51.1	51.1	37.5	37.5
22	Dairy products	21	38.8	27.3	38.8	38.8	27.3	27.3
23	Processed rice	2	ND	ND	43.3	50.0	50.0	50.0
24	Sugar containing products	7	72.9	44.3	72.9	72.9	44.3	44.3
25	Food products, other	245	50.4	37.0	50.4	50.4	37.0	37.0
26	Beverages and tobacco products	29	56.6	39.7	56.6	56.6	39.7	39.7
27	Textiles	569	38.8	26.3	38.8	38.8	26.3	26.3
28	Wearing apparel	241	49.3	30.9	49.3	49.3	30.9	30.9
29	Leather products	68	37.1	37.2	37.1	37.2	37.2	37.2
30	Wood products	89	20.5	26.1	20.5	30.0	26.1	26.1
31	Paper products	151	26.8	24.2	26.8	26.8	24.2	24.2
32	Petroleum, coal products	15	20.0	20.0	20.0	20.0	20.0	20.0
33	Chemical, rubber, plastic products	959	15.9	20.2	15.9	20.2	20.2	20.2
34	Mineral products, other	161	19.9	19.3	19.9	26.3	19.3	19.3
35	Ferrous metals	167	15.0	23.8	15.0	23.8	23.8	23.8
36	Metals, other	168	21.2	27.1	21.2	27.1	27.1	27.1
37	Metal products	215	27.6	31.5	27.6	31.5	31.5	31.5
38	Motor vehicles and parts	54	23.0	18.0	23.0	26.3	18.0	18.0
39	Transport equipment, other	82	20.4	20.0	20.4	20.4	20.0	20.0
40	Electronic equipment	119	25.8	23.4	25.8	25.8	23.4	23.4
41	Machinery and equipment, other	853	23.5	23.5	23.5	23.5	23.5	23.5
42	Manufactures, other	178	36.8	37.3	36.8	37.3	37.3	37.3

ND = no data

Notes: No proxy for specific tariffs was used. Where no bound rate ad valorem data was available from the WTO/GATT schedules the average of applied rates from 1988, 1989 and 1990 was spliced into the Tokyo schedule and from 2003, 2004 and 2005 into the Uruguay schedule.

Sources: WTO (2008); TRAINS Database via WITS (2008).

**Table A.34 Singapore: Post-Tokyo Round and post-Uruguay Round bound rates, GTAP sectors**  
(percent)

GTAP code	GTAP sector	HS6 lines	Bound rates with proxy ad valorem equivalents of specific bound rates					
			Simple average of ad valorem bound rates		Tokyo calculated	Tokyo used	Uruguay calculated	Uruguay used
			Tokyo	Uruguay	(Used = higher of MFN applied, Uruguay, Tokyo)		(Used = higher of MFN applied, Uruguay)	
1	Paddy rice	2	27.0	10.0	27.0	27.0	10.0	10.0
2	Wheat	2	27.0	10.0	27.0	27.0	10.0	10.0
3	Cereal grains, other	10	27.0	10.0	27.0	27.0	10.0	10.0
4	Vegetables, fruit, nuts	85	27.0	9.9	27.0	27.0	9.8	9.8
5	Oil seeds	16	27.0	10.0	27.0	27.0	10.0	10.0
6	Sugar cane, sugar beet	2	27.0	10.0	27.0	27.0	10.0	10.0
7	Plant-based fibers	8	23.0	10.0	23.5	23.5	10.0	10.0
8	Crops, other	64	27.0	10.0	25.6	25.6	9.5	9.5
9	Bovine cattle, sheep and goats	8	27.0	10.0	27.0	27.0	10.0	10.0
10	Animal products, other	46	26.8	10.0	26.8	26.8	10.0	10.0
12	Wool, silkworm cocoons	6	27.0	10.0	27.0	27.0	10.0	10.0
13	Forestry	28	23.6	10.0	24.1	24.1	10.0	10.0
14	Fishing	41	20.5	10.0	20.5	20.5	10.0	10.0
15	Coal	6	20.0	10.0	20.0	20.0	10.0	10.0
16	Oil	2	ND	ND	0.0	0.0	0.0	0.0
17	Gas	2	ND	ND	0.0	0.0	0.0	0.0
18	Minerals, other	96	18.3	8.3	18.3	18.3	8.3	8.3
19	Bovine meat products	30	27.0	8.0	27.0	27.0	7.9	7.9
20	Meat products, other	38	27.0	9.7	27.0	27.0	9.6	9.6
21	Vegetable oils and fats	46	27.0	10.0	27.0	27.0	10.0	10.0
22	Dairy products	21	26.8	8.0	26.7	26.7	8.3	8.3
23	Processed rice	2	27.0	10.0	27.0	27.0	10.0	10.0
24	Sugar containing products	7	27.0	10.0	27.0	27.0	10.0	10.0
25	Food products, other	245	24.5	9.7	24.3	24.3	9.6	9.6
26	Beverages and tobacco products	29	27.0	10.0	13.8	13.8	7.3	7.3
27	Textiles	569	20.3	10.0	20.3	20.3	10.0	10.0
28	Wearing apparel	241	20.0	10.0	20.0	20.0	10.0	10.0
29	Leather products	68	20.0	10.0	20.0	20.0	10.0	10.0
30	Wood products	89	17.5	7.5	17.1	17.1	7.1	7.1
31	Paper products	151	10.2	0.2	10.2	10.2	0.2	0.2
32	Petroleum, coal products	15	ND	ND	0.0	1.4	0.0	0.0
33	Chemical, rubber, plastic products	959	15.5	5.4	15.5	15.5	5.4	5.4
34	Mineral products, other	161	18.6	8.6	18.7	18.7	8.7	8.7
35	Ferrous metals	167	10.5	0.5	10.5	10.5	0.5	0.5
36	Metals, other	168	20.0	10.0	20.0	20.0	10.0	10.0
37	Metal products	215	19.3	9.3	19.1	19.1	9.1	9.1
38	Motor vehicles and parts	54	20.0	10.0	20.0	20.0	10.0	10.0
39	Transport equipment, other	82	18.0	8.0	18.0	18.0	8.0	8.0
40	Electronic equipment	119	18.9	8.9	19.2	19.2	9.2	9.2
41	Machinery and equipment, other	853	16.5	6.5	16.5	16.5	6.5	6.5
42	Manufactures, other	178	18.5	8.2	18.4	18.4	8.1	8.1

ND = no data

Notes: Ad valorem bound rates are directly from WTO/GATT schedules. Where specific rates exist, the applied tariff ad valorem equivalents from 2001 was spliced into the Tokyo schedule, and the average from 2003 and 2005 into the Uruguay schedule.

Sources: WTO (2008); TRAINS Database via WITS (2008).

**Table A.35 Taiwan: Initial accession and final accession bound rates, GTAP sectors (percent)**

GTAP code	GTAP sector	HS6 lines	Bound rates with proxy ad valorem equivalents of specific bound rates					
			Simple average of ad valorem bound rates		Accession calculated	Accession used	Final calculated	Final used
			Accession	Final	<i>(Used = higher of MFN applied, accession, final)</i>		<i>(Used = higher of MFN applied, Final)</i>	
1	Paddy rice	2	0.0	0.0	0.0	250.3	0.0	250.3
2	Wheat	2	6.5	6.5	6.5	7.0	6.5	7.0
3	Cereal grains, other	10	2.5	2.0	2.5	2.5	2.0	2.0
4	Vegetables, fruit, nuts	89	21.9	19.6	29.6	29.7	26.5	29.7
5	Oil seeds	16	0.9	0.9	33.6	33.6	30.2	30.2
6	Sugar cane, sugar beet	2	14.5	13.0	19.0	19.0	16.0	16.0
7	Plant-based fibers	8	0.0	0.0	0.0	0.0	0.0	0.0
8	Crops, other	63	6.5	5.9	7.2	7.2	6.5	6.5
9	Bovine cattle, sheep and goats	8	4.3	4.0	5.3	5.3	4.9	4.9
10	Animal products, other	48	6.8	6.2	8.3	8.3	7.5	7.5
12	Wool, silkworm cocoons	6	1.7	1.7	2.0	2.0	2.0	2.0
13	Forestry	25	3.6	3.6	3.4	3.6	3.4	3.6
14	Fishing	41	22.0	18.3	22.6	22.6	19.2	21.5
15	Coal	6	0.0	0.0	0.0	0.0	0.0	0.0
16	Oil	2	3.6	3.6	3.6	3.6	3.6	3.6
17	Gas	2	4.5	4.5	4.5	4.5	4.5	4.5
18	Minerals, other	94	0.5	0.5	0.5	0.5	0.5	0.5
19	Bovine meat products	30	27.4	22.8	24.8	25.0	20.5	25.0
20	Meat products, other	43	45.0	38.9	47.4	52.2	41.1	52.2
21	Vegetable oils and fats	47	19.3	16.7	28.9	28.9	25.7	25.8
22	Dairy products	24	11.0	10.1	22.5	22.5	19.9	21.5
23	Processed rice	2	0.0	0.0	0.0	178.8	0.0	178.8
24	Sugar containing products	7	102.3	87.5	102.3	102.3	87.5	98.8
25	Food products, other	248	18.1	16.3	20.6	24.8	18.7	24.8
26	Beverages and tobacco products	31	11.6	11.1	11.6	11.7	11.1	11.7
27	Textiles	583	8.3	7.6	8.3	8.3	7.6	7.9
28	Wearing apparel	241	12.6	11.3	12.6	12.6	11.3	12.3
29	Leather products	68	5.5	5.2	7.6	7.6	7.2	7.2
30	Wood products	94	4.4	3.8	4.4	4.4	3.8	3.8
31	Paper products	151	4.8	4.7	4.7	4.7	4.7	4.7
32	Petroleum, coal products	15	2.6	2.4	2.3	2.6	2.1	2.6
33	Chemical, rubber, plastic products	987	3.9	3.6	3.9	3.9	3.6	3.7
34	Mineral products, other	170	7.8	6.2	7.8	7.8	6.2	7.1
35	Ferrous metals	215	6.3	6.0	6.7	6.7	6.0	6.0
36	Metals, other	168	2.0	1.5	2.2	2.2	1.7	1.8
37	Metal products	223	8.3	7.1	8.4	8.4	7.2	7.7
38	Motor vehicles and parts	54	25.4	13.1	25.4	25.4	13.1	24.1
39	Transport equipment, other	82	4.8	3.9	4.9	4.9	4.0	4.6
40	Electronic equipment	138	4.0	3.1	4.2	4.2	3.3	3.5
41	Machinery and equipment, other	887	4.9	4.2	4.9	4.9	4.2	4.2
42	Manufactures, other	179	4.9	4.6	4.9	4.9	4.5	4.7

Notes: Ad valorem bound rates are directly from WTO/GATT schedules. Where specific rates exist, the applied tariff ad valorem equivalents from 2002 was spliced into the Tokyo schedule, and from 2003 into the Uruguay schedule.

Sources: WTO (2008); TRAINS Database via WITS (2008).

**Table A.36 Thailand: Post-Tokyo Round and post-Uruguay Round bound rates, GTAP sectors**  
(percent)

GTAP code	GTAP sector	HS6 lines	Bound rates with proxy ad valorem equivalents of specific bound rates					
			Simple average of ad valorem bound rates		Tokyo calculated		Uruguay calculated	
			Tokyo	Uruguay	Tokyo used	Tokyo used	Uruguay used	Uruguay used
					(Used = higher of MFN applied, Uruguay, Tokyo)	(Used = higher of MFN applied, Uruguay)		
1	Paddy rice	2	58.0	52.0	58.0	58.0	52.0	52.0
2	Wheat	2	63.5	27.0	66.0	66.0	27.0	27.0
3	Cereal grains, other	10	53.2	36.2	59.3	59.3	36.2	36.2
4	Vegetables, fruit, nuts	85	62.8	42.6	63.1	63.1	43.6	43.6
5	Oil seeds	16	41.8	33.8	42.8	42.8	34.5	34.5
6	Sugar cane, sugar beet	2	40.0	30.0	40.0	40.0	30.0	30.5
7	Plant-based fibers	8	21.7	19.5	21.7	26.9	19.5	19.5
8	Crops, other	64	45.1	35.5	46.5	46.5	37.1	37.1
9	Bovine cattle, sheep and goats	8	17.8	12.8	22.0	22.0	17.4	17.4
10	Animal products, other	46	32.3	25.0	34.0	34.0	25.2	25.2
12	Wool, silkworm cocoons	6	27.5	20.5	27.0	27.5	19.2	19.2
13	Forestry	28	25.4	17.1	27.9	27.9	18.2	18.2
14	Fishing	41	59.3	11.9	59.3	59.3	11.9	11.9
15	Coal	6	25.0	12.0	25.0	25.0	12.0	12.0
16	Oil	2	ND	ND	20.0	20.0	0.5	0.5
17	Gas	2	ND	ND	0.0	0.4	0.4	0.4
18	Minerals, other	96	11.0	26.4	10.9	26.5	26.5	26.5
19	Bovine meat products	30	53.0	34.3	54.6	60.0	34.8	34.8
20	Meat products, other	38	57.3	33.6	56.2	57.8	33.8	33.8
21	Vegetable oils and fats	46	52.8	42.7	48.5	48.5	44.7	44.7
22	Dairy products	21	52.8	38.5	54.4	54.4	40.0	40.0
23	Processed rice	2	58.0	52.0	58.0	58.0	52.0	52.0
24	Sugar containing products	7	87.3	67.3	87.3	87.3	67.3	67.3
25	Food products, other	245	53.9	27.9	53.9	53.9	29.6	29.6
26	Beverages and tobacco products	29	61.4	51.2	55.2	56.3	55.6	56.3
27	Textiles	569	66.0	28.4	65.5	65.5	28.4	28.4
28	Wearing apparel	241	97.8	30.0	98.0	98.0	31.8	37.1
29	Leather products	68	76.8	29.1	90.2	90.2	30.3	30.3
30	Wood products	89	49.6	19.3	49.7	49.7	19.8	19.8
31	Paper products	151	38.4	30.1	38.9	38.9	29.7	29.7
32	Petroleum, coal products	15	25.0	20.0	25.0	25.0	20.0	20.0
33	Chemical, rubber, plastic products	959	39.5	29.7	39.9	39.9	29.6	29.6
34	Mineral products, other	161	51.3	29.9	52.1	52.1	30.0	30.0
35	Ferrous metals	167	26.1	30.0	20.3	30.0	30.0	30.0
36	Metals, other	168	19.9	16.5	20.1	21.1	16.2	16.2
37	Metal products	215	37.9	25.5	37.4	37.4	26.1	26.1
38	Motor vehicles and parts	54	131.6	69.5	131.6	131.6	69.5	69.5
39	Transport equipment, other	82	31.9	23.8	31.7	31.7	23.3	23.3
40	Electronic equipment	119	48.5	28.0	48.4	48.4	28.2	28.2
41	Machinery and equipment, other	853	35.3	23.9	35.2	35.2	23.9	23.9
42	Manufactures, other	178	50.8	28.9	51.2	51.2	28.9	28.9

ND = no data

Notes: Ad valorem bound rates are directly from WTO/GATT schedules. Where specific rates exist, the average of applied tariff ad valorem equivalents from 1989 and 1991 was spliced into the Tokyo schedule, and from 2003 and 2005 into the Uruguay schedule.

Sources: WTO (2008); TRAINS Database via WITS (2008).



**Table A.37 United States: Post-Tokyo Round and post-Uruguay Round bound rates, GTAP sectors**  
(percent)

GTAP code	GTAP sector	HS6 lines	Bound rates with proxy ad valorem equivalents of specific bound rates					
			Simple average of ad valorem bound rates		Tokyo calculated		Uruguay calculated	Uruguay used
			Tokyo	Uruguay	(Used = higher of MFN applied, Uruguay, Tokyo)		(Used = higher of MFN applied, Uruguay)	
1	Paddy rice	2	ND	ND	7.1	7.1	5.9	5.9
2	Wheat	2	6.3	2.8	5.2	5.2	3.0	3.0
3	Cereal grains, other	10	0.5	0.2	1.8	1.8	0.6	0.6
4	Vegetables, fruit, nuts	85	8.7	5.9	7.0	7.0	4.8	4.8
5	Oil seeds	16	34.8	24.6	25.3	25.3	21.4	21.4
6	Sugar cane, sugar beet	2	ND	ND	1.3	1.3	0.4	0.4
7	Plant-based fibers	8	0.0	0.0	0.2	1.3	1.3	1.3
8	Crops, other	64	1.2	0.7	3.6	3.6	3.6	3.6
9	Bovine cattle, sheep and goats	8	0.9	0.4	1.1	1.5	0.2	0.5
10	Animal products, other	46	0.9	0.4	1.2	1.2	0.5	0.9
12	Wool, silkworm cocoons	6	1.2	0.2	1.2	1.3	0.6	0.9
13	Forestry	28	0.6	0.3	0.8	0.8	0.4	0.4
14	Fishing	41	0.3	0.2	0.7	0.7	0.2	0.2
15	Coal	6	0.0	0.0	0.0	0.0	0.0	0.0
16	Oil	2	0.0	0.0	0.0	s	0.0	0.0
17	Gas	2	0.0	0.0	0.0	0.0	0.0	0.0
18	Minerals, other	96	1.2	0.3	1.4	1.4	0.4	0.4
19	Bovine meat products	30	7.3	5.9	5.5	5.5	4.3	4.3
20	Meat products, other	38	4.9	3.0	4.3	4.6	2.5	3.5
21	Vegetable oils and fats	46	4.1	3.1	5.8	5.8	4.2	4.2
22	Dairy products	21	13.3	11.9	10.5	21.8	21.8	21.8
23	Processed rice	2	17.5	11.2	9.8	9.8	6.3	6.3
24	Sugar containing products	7	5.0	4.6	2.7	16.2	16.2	16.2
25	Food products, other	245	6.8	4.6	6.6	6.6	5.3	5.3
26	Beverages and tobacco products	29	4.6	2.1	8.6	13.4	13.4	13.4
27	Textiles	569	11.5	8.0	11.5	11.5	8.0	8.2
28	Wearing apparel	241	13.5	10.6	13.8	13.9	10.9	11.0
29	Leather products	68	9.9	8.1	14.3	14.3	11.8	11.8
30	Wood products	89	3.7	1.3	3.8	3.8	1.3	1.3
31	Paper products	151	1.9	0.0	1.9	1.9	0.0	0.1
32	Petroleum, coal products	15	0.6	0.4	0.2	1.3	0.0	1.3
33	Chemical, rubber, plastic products	959	5.2	3.0	5.3	5.3	3.0	3.0
34	Mineral products, other	161	5.7	3.2	5.8	5.8	3.3	3.3
35	Ferrous metals	167	4.8	0.6	4.9	5.1	0.6	0.6
36	Metals, other	168	4.0	2.5	3.8	3.8	2.4	2.4
37	Metal products	215	4.5	2.5	4.6	4.6	2.6	2.6
38	Motor vehicles and parts	54	4.7	3.9	4.7	4.7	3.9	3.9
39	Transport equipment, other	82	4.5	8.3	4.6	8.3	8.3	8.3
40	Electronic equipment	119	4.6	2.4	4.8	4.8	2.7	2.7
41	Machinery and equipment, other	853	3.7	1.6	3.7	4.0	2.2	2.3
42	Manufactures, other	178	5.2	2.6	5.6	5.6	2.8	2.8

ND = no data

Notes: Ad valorem bound rates are directly from WTO/GATT schedules. Where specific rates exist, the average of applied tariff ad valorem equivalents from 1989, 1990, and 1991 was spliced into the Tokyo schedule, and from 2003, 2004, and 2005 into the Uruguay schedule.

Sources: WTO (2008); TRAINS Database via WITS (2008).

**Table A.38 Venezuela: Accession and post-Uruguay Round bound rates, GTAP sectors (percent)**

GTAP code	GTAP sector	HS6 lines	Bound rates with proxy ad valorem equivalents of specific bound rates					
			Simple average of ad valorem bound rates		Accession calculated	Accession used	Uruguay calculated	Uruguay used
			Accession	Uruguay	<i>(Used = higher of MFN applied, Uruguay, accession)</i>		<i>(Used = higher of MFN applied, Uruguay)</i>	
1	Paddy rice	2	135.0	122.0	135.0	135.0	122.0	122.0
2	Wheat	2	130.4	117.4	130.4	130.4	117.4	117.4
3	Cereal grains, other	10	105.5	91.8	105.5	105.5	91.8	91.8
4	Vegetables, fruit, nuts	85	49.6	34.3	49.6	49.6	34.3	34.3
5	Oil seeds	16	127.4	114.6	127.4	127.4	114.6	114.6
6	Sugar cane, sugar beet	2	50.0	35.0	50.0	50.0	35.0	35.0
7	Plant-based fibers	8	50.0	36.9	50.0	50.0	36.9	36.9
8	Crops, other	64	55.0	39.8	55.0	55.0	39.8	39.8
9	Bovine cattle, sheep and goats	8	50.0	27.5	50.0	50.0	27.5	27.5
10	Animal products, other	46	50.0	35.1	50.0	50.0	35.1	35.1
12	Wool, silkworm cocoons	6	50.0	36.7	50.0	50.0	36.7	36.7
13	Forestry	28	50.0	33.2	50.0	50.0	33.2	33.2
14	Fishing	41	50.0	34.9	50.0	50.0	34.9	34.9
15	Coal	6	50.0	35.0	50.0	50.0	35.0	35.0
16	Oil	2	50.0	35.0	50.0	50.0	35.0	35.0
17	Gas	2	50.0	35.0	50.0	50.0	35.0	35.0
18	Minerals, other	96	50.0	35.0	50.0	50.0	35.0	35.0
19	Bovine meat products	30	71.5	54.4	71.5	71.5	54.4	54.4
20	Meat products, other	38	80.9	68.6	80.9	80.9	68.6	68.6
21	Vegetable oils and fats	46	94.5	84.2	94.5	94.5	84.2	84.2
22	Dairy products	21	103.8	92.4	103.8	103.8	92.4	92.4
23	Processed rice	2	135.0	122.0	135.0	135.0	122.0	122.0
24	Sugar containing products	7	122.4	108.0	122.4	122.4	108.0	108.0
25	Food products, other	245	64.8	51.7	64.8	64.8	51.7	51.7
26	Beverages and tobacco products	29	56.4	45.4	56.4	56.4	45.4	45.4
27	Textiles	569	50.0	35.1	50.0	50.0	35.1	35.1
28	Wearing apparel	241	50.0	35.0	50.0	50.0	35.0	35.0
29	Leather products	68	50.0	35.0	50.0	50.0	35.0	35.0
30	Wood products	89	50.0	35.0	50.0	50.0	35.0	35.0
31	Paper products	151	50.0	35.0	50.0	50.0	35.0	35.0
32	Petroleum, coal products	15	50.0	35.0	50.0	50.0	35.0	35.0
33	Chemical, rubber, plastic products	959	50.4	35.4	50.4	50.4	35.4	35.4
34	Mineral products, other	161	50.0	35.0	50.0	50.0	35.0	35.0
35	Ferrous metals	167	50.0	35.0	50.0	50.0	35.0	35.0
36	Metals, other	168	50.0	35.0	50.0	50.0	35.0	35.0
37	Metal products	215	50.0	35.0	50.0	50.0	35.0	35.0
38	Motor vehicles and parts	54	47.2	36.4	47.2	47.2	36.4	36.4
39	Transport equipment, other	82	50.0	35.0	50.0	50.0	35.0	35.0
40	Electronic equipment	119	50.0	35.0	50.0	50.0	35.0	35.0
41	Machinery and equipment, other	853	50.0	35.0	50.0	50.0	35.0	35.0
42	Manufactures, other	178	50.0	35.0	50.0	50.0	35.0	35.0

Notes: No proxy of specific bound rates was used. Ad valorem rates are from the WTO/GATT schedules.

Sources: WTO (2008); TRAINS Database via WITS (2008).

**Table A.39 United States preferential tariff treatment of Australia** (percent)

<b>GTAP code</b>	<b>GTAP sector</b>	<b>Past rate: Before preferences (1990) (same as 1990 MFN applied rate)</b>	<b>Past rate: Before preferences used (higher of past and present preferential rates)</b>	<b>Present rate: Includes preferences (2006) (lower of Aus-US FTA and 2006 MFN rate)</b>
1	Paddy rice	7.1	7.1	5.9
2	Wheat	6.3	6.3	2.8
3	Cereal grains, other	0.5	0.5	0.0
4	Vegetables, fruit, nuts	8.0	8.0	0.4
5	Oil seeds	0.0	0.0	0.0
6	Sugar cane, sugar beet	1.0	1.0	0.4
7	Plant-based fibers	0.0	0.0	0.0
8	Crops, other	1.0	1.0	0.2
9	Bovine cattle, sheep and goats	0.9	0.9	0.4
10	Animal products, other	0.9	0.9	0.1
12	Wool, silkworm cocoons	0.1	0.1	0.0
13	Forestry	0.6	0.6	0.2
14	Fishing	0.3	0.3	0.0
15	Coal	0.0	0.0	0.0
16	Oil	0.0	0.0	0.0
17	Gas	0.0	0.0	0.0
18	Minerals, other	1.2	1.2	0.1
19	Bovine meat products	2.2	2.2	0.8
20	Meat products, other	4.8	4.8	0.6
21	Vegetable oils and fats	4.1	4.1	1.6
22	Dairy products	13.6	13.6	12.3
23	Processed rice	17.5	17.5	11.2
24	Sugar containing products	4.5	4.9	4.9
25	Food products, other	5.7	5.7	3.1
26	Beverages and tobacco products	4.1	4.1	2.6
27	Textiles	11.1	11.1	4.6
28	Wearing apparel	13.4	13.4	7.6
29	Leather products	10.4	10.4	0.7
30	Wood products	3.6	3.6	0.0
31	Paper products	1.9	1.9	0.0
32	Petroleum, coal products	0.6	0.6	0.0
33	Chemical, rubber, plastic products	4.7	4.7	0.0
34	Mineral products, other	5.6	5.6	1.0
35	Ferrous metals	5.1	5.1	0.0
36	Metals, other	3.6	3.6	0.0
37	Metal products	4.6	4.6	0.1
38	Motor vehicles and parts	3.0	3.0	0.0
39	Transport equipment, other	4.8	4.8	0.0
40	Electronic equipment	4.5	4.5	0.1
41	Machinery and equipment, other	4.0	4.0	0.1
42	Manufactures, other	5.1	5.1	0.0

Notes: Ad valorem equivalents of specific tariffs are only considered in GTAP sectors 1 and 6 where no ad valorem estimates existed. The 2006 MFN applied rate is used in GTAP sectors 1, 2, 6, 7, 12, 17, 22, 23, and 24.

Source: TRAINS Database via WITS (2008).

**Table A.40 United States preferential tariff treatment of Canada** (percent)

<b>GTAP code</b>	<b>GTAP sector</b>	<b>Past rate: Before preferences (1990) (same as 1990 MFN applied rate)</b>	<b>Past rate: Before preferences used (higher of past and present preferential rates)</b>	<b>Present rate: Includes preferences (2006) (lower of CUSFTA and 2006 MFN rate)</b>
1	Paddy rice	7.1	7.1	0.0
2	Wheat	6.3	6.3	0.0
3	Cereal grains, other	0.5	0.5	0.0
4	Vegetables, fruit, nuts	8.0	8.0	0.0
5	Oil seeds	0.0	0.0	0.0
6	Sugar cane, sugar beet	1.0	1.0	0.4
7	Plant-based fibers	0.0	0.0	0.0
8	Crops, other	1.0	1.0	0.4
9	Bovine cattle, sheep and goats	0.9	0.9	0.0
10	Animal products, other	0.9	0.9	0.0
12	Wool, silkworm cocoons	0.1	0.1	0.0
13	Forestry	0.6	0.6	0.0
14	Fishing	0.3	0.3	0.0
15	Coal	0.0	0.0	0.0
16	Oil	0.0	0.0	0.0
17	Gas	0.0	0.0	0.0
18	Minerals, other	1.2	1.2	0.0
19	Bovine meat products	2.2	2.2	0.0
20	Meat products, other	4.8	4.8	0.0
21	Vegetable oils and fats	4.1	4.1	0.1
22	Dairy products	13.6	13.6	12.3
23	Processed rice	17.5	17.5	0.0
24	Sugar containing products	4.5	7.1	7.1
25	Food products, other	5.7	5.7	1.3
26	Beverages and tobacco products	4.1	4.1	0.2
27	Textiles	11.1	11.1	0.0
28	Wearing apparel	13.4	13.4	0.0
29	Leather products	10.4	10.4	0.0
30	Wood products	3.6	3.6	0.0
31	Paper products	1.9	1.9	0.0
32	Petroleum, coal products	0.6	0.6	0.0
33	Chemical, rubber, plastic products	4.7	4.7	0.0
34	Mineral products, other	5.6	5.6	0.0
35	Ferrous metals	5.1	5.1	0.0
36	Metals, other	3.6	3.6	0.0
37	Metal products	4.6	4.6	0.0
38	Motor vehicles and parts	3.0	3.0	0.0
39	Transport equipment, other	4.8	4.8	0.0
40	Electronic equipment	4.5	4.5	0.0
41	Machinery and equipment, other	4.0	4.0	0.0
42	Manufactures, other	5.1	5.1	0.0

Notes: Ad valorem equivalents of specific tariffs are only considered in GTAP sector 6 where no ad valorem estimates existed. The 2006 MFN applied rate is used in GTAP sectors 6, 7, and 22.

Source: TRAINS Database via WITS (2008).

**Table A.41 United States preferential tariff treatment of Mexico (percent)**

<b>GTAP code</b>	<b>GTAP sector</b>	<b>Past rate: Before preferences (1990) (same as 1990 MFN applied rate)</b>	<b>Past rate: Before preferences used (higher of past and present preferential rates)</b>	<b>Present rate: Includes preferences (2006) (lower of Mex-US FTA and 2006 MFN rate)</b>
1	Paddy rice	7.1	7.1	5.9
2	Wheat	6.3	6.3	0.0
3	Cereal grains, other	0.5	0.5	0.0
4	Vegetables, fruit, nuts	8.0	8.0	0.4
5	Oil seeds	0.0	13.0	13.0
6	Sugar cane, sugar beet	1.0	1.0	0.4
7	Plant-based fibers	0.0	0.0	0.0
8	Crops, other	1.0	1.0	0.5
9	Bovine cattle, sheep and goats	0.9	0.9	0.0
10	Animal products, other	0.9	0.9	0.0
12	Wool, silkworm cocoons	0.1	0.1	0.0
13	Forestry	0.6	0.6	0.0
14	Fishing	0.3	0.3	0.0
15	Coal	0.0	0.0	0.0
16	Oil	0.0	0.0	0.0
17	Gas	0.0	0.0	0.0
18	Minerals, other	1.2	1.2	0.0
19	Bovine meat products	2.2	2.2	0.0
20	Meat products, other	4.8	4.8	0.0
21	Vegetable oils and fats	4.1	4.1	0.1
22	Dairy products	13.6	13.6	2.8
23	Processed rice	17.5	17.5	0.0
24	Sugar containing products	4.5	4.5	2.2
25	Food products, other	5.7	5.7	0.6
26	Beverages and tobacco products	4.1	4.1	0.1
27	Textiles	11.1	11.1	0.0
28	Wearing apparel	13.4	13.4	0.0
29	Leather products	10.4	10.4	0.4
30	Wood products	3.6	3.6	0.0
31	Paper products	1.9	1.9	0.0
32	Petroleum, coal products	0.6	0.6	0.0
33	Chemical, rubber, plastic products	4.7	4.7	0.0
34	Mineral products, other	5.6	5.6	0.2
35	Ferrous metals	5.1	5.1	0.0
36	Metals, other	3.6	3.6	0.0
37	Metal products	4.6	4.6	0.0
38	Motor vehicles and parts	3.0	3.0	0.0
39	Transport equipment, other	4.8	4.8	0.0
40	Electronic equipment	4.5	4.5	0.0
41	Machinery and equipment, other	4.0	4.0	0.0
42	Manufactures, other	5.1	5.1	0.0

Notes: Ad valorem equivalents of specific tariffs are only considered in GTAP sectors 1 and 6 where no ad valorem estimates existed. The 2006 MFN applied rate is used in GTAP sectors 1, 6, and 15.

Source: TRAINS Database via WITS (2008).

**Table A.42 United States preferential tariff treatment of Singapore (percent)**

<b>GTAP code</b>	<b>GTAP sector</b>	<b>Past rate: Before preferences (1990) (same as 1990 MFN applied rate)</b>	<b>Past rate: Before preferences used (higher of past and present preferential rates)</b>	<b>Present rate: Includes preferences (2006) (lower of Sng-US FTA and 2006 MFN rate)</b>
1	Paddy rice	7.1	7.1	5.9
2	Wheat	6.3	6.3	2.8
3	Cereal grains, other	0.5	0.5	0.0
4	Vegetables, fruit, nuts	8.0	8.0	0.0
5	Oil seeds	0.0	0.0	0.0
6	Sugar cane, sugar beet	1.0	1.0	0.4
7	Plant-based fibers	0.0	0.0	0.0
8	Crops, other	1.0	3.5	3.5
9	Bovine cattle, sheep and goats	0.9	0.9	0.5
10	Animal products, other	0.9	0.9	0.1
12	Wool, silkworm cocoons	0.1	0.1	0.0
13	Forestry	0.6	0.6	0.0
14	Fishing	0.3	0.3	0.0
15	Coal	0.0	0.0	0.0
16	Oil	0.0	0.0	0.0
17	Gas	0.0	0.0	0.0
18	Minerals, other	1.2	1.2	0.0
19	Bovine meat products	2.2	2.2	0.0
20	Meat products, other	4.8	4.8	3.2
21	Vegetable oils and fats	4.1	4.1	0.0
22	Dairy products	13.6	13.6	8.7
23	Processed rice	17.5	17.5	3.5
24	Sugar containing products	4.5	4.9	4.9
25	Food products, other	5.7	5.7	2.7
26	Beverages and tobacco products	4.1	19.6	19.6
27	Textiles	11.1	11.1	0.0
28	Wearing apparel	13.4	13.4	0.1
29	Leather products	10.4	10.4	3.6
30	Wood products	3.6	3.6	0.2
31	Paper products	1.9	1.9	0.0
32	Petroleum, coal products	0.6	0.6	0.1
33	Chemical, rubber, plastic products	4.7	4.7	0.6
34	Mineral products, other	5.6	5.6	1.2
35	Ferrous metals	5.1	5.1	0.2
36	Metals, other	3.6	3.6	0.5
37	Metal products	4.6	4.6	0.3
38	Motor vehicles and parts	3.0	3.0	0.0
39	Transport equipment, other	4.8	4.8	0.6
40	Electronic equipment	4.5	4.5	0.0
41	Machinery and equipment, other	4.0	4.0	0.1
42	Manufactures, other	5.1	5.1	0.7

Notes: Ad valorem equivalents of specific tariffs are only considered in GTAP sectors 1 and 6 where no ad valorem estimates existed. The MFN applied rate is used in GTAP sectors 1, 2, 6, 9, 12, 15, 16, 17, 20, and 24.

Source: TRAINS Database via WITS (2008).

**Table A.43 Australia preferential tariff treatment of the United States (percent)**

<b>GTAP code</b>	<b>GTAP sector</b>	<b>Past rate: Before preferences (1991) (same as 1990 MFN applied rate)</b>	<b>Past rate: Before preferences used (higher of past and present preferential rates)</b>	<b>Present rate: Includes preferences (2006) (lower of Aus-US FTA and 2006 MFN rate)</b>
1	Paddy rice	0.0	0.0	0.0
2	Wheat	0.0	0.0	0.0
3	Cereal grains, other	0.0	0.0	0.0
4	Vegetables, fruit, nuts	1.5	1.5	0.0
5	Oil seeds	1.3	1.3	0.0
6	Sugar cane, sugar beet	0.0	0.0	0.0
7	Plant-based fibers	0.0	0.0	0.0
8	Crops, other	0.3	0.3	0.0
9	Bovine cattle, sheep and goats	0.0	0.0	0.0
10	Animal products, other	0.0	0.0	0.0
12	Wool, silkworm cocoons	2.8	2.8	0.0
13	Forestry	0.3	0.3	0.0
14	Fishing	0.0	0.0	0.0
15	Coal	0.0	0.0	0.0
16	Oil	0.0	0.0	0.0
17	Gas	0.0	0.0	0.0
18	Minerals, other	1.4	1.4	0.0
19	Bovine meat products	0.0	0.0	0.0
20	Meat products, other	2.0	2.0	0.0
21	Vegetable oils and fats	3.5	3.5	0.0
22	Dairy products	1.5	1.5	0.0
23	Processed rice	0.0	0.0	0.0
24	Sugar containing products	3.8	3.8	0.0
25	Food products, other	4.0	4.0	0.0
26	Beverages and tobacco products	8.5	8.5	0.0
27	Textiles	24.5	24.5	5.9
28	Wearing apparel	49.4	49.4	12.4
29	Leather products	22.7	22.7	0.6
30	Wood products	11.3	11.3	0.0
31	Paper products	9.0	9.0	0.0
32	Petroleum, coal products	0.8	0.8	0.0
33	Chemical, rubber, plastic products	6.4	6.4	0.0
34	Mineral products, other	9.8	9.8	0.1
35	Ferrous metals	8.3	8.3	0.0
36	Metals, other	3.3	3.3	0.0
37	Metal products	14.8	14.8	0.0
38	Motor vehicles and parts	17.4	17.4	0.3
39	Transport equipment, other	8.7	8.7	0.0
40	Electronic equipment	10.1	10.1	0.0
41	Machinery and equipment, other	9.9	9.9	0.0
42	Manufactures, other	10.8	10.8	0.0

Notes: Ad valorem equivalents of specific tariffs are only considered in GTAP sectors 1 and 6 where no ad valorem estimates existed. The 2006 MFN applied rate is used in GTAP sectors 1, 2, 6, 12, and 16.

Source: TRAINS Database via WITS (2008).

**Table A.44 Canada preferential tariff treatment of the United States (percent)**

<b>GTAP code</b>	<b>GTAP sector</b>	<b>Past rate: Before preferences (1989) (same as 1990 MFN applied rate)</b>	<b>Past rate: Before preferences used (higher of past and present preferential rates)</b>	<b>Present rate: Includes preferences (2006) (lower of CUSFTA and 2006 MFN rate)</b>
1	Paddy rice	0.0	0.0	0.0
2	Wheat	1.1	1.1	0.0
3	Cereal grains, other	0.8	0.8	0.0
4	Vegetables, fruit, nuts	2.7	2.7	0.0
5	Oil seeds	0.0	0.0	0.0
6	Sugar cane, sugar beet	22.5	22.5	0.0
7	Plant-based fibers	0.0	0.0	0.0
8	Crops, other	2.1	2.1	0.0
9	Bovine cattle, sheep and goats	0.0	0.0	0.0
10	Animal products, other	1.0	1.0	0.0
12	Wool, silkworm cocoons	2.1	2.1	0.0
13	Forestry	0.3	0.3	0.0
14	Fishing	0.7	0.7	0.0
15	Coal	0.0	0.0	0.0
16	Oil	5.1	5.1	0.0
17	Gas	6.3	6.3	0.0
18	Minerals, other	1.9	1.9	0.0
19	Bovine meat products	2.0	2.0	0.0
20	Meat products, other	8.3	8.3	0.0
21	Vegetable oils and fats	8.1	8.1	0.0
22	Dairy products	15.9	15.9	0.0
23	Processed rice	0.7	0.7	0.0
24	Sugar containing products	10.0	10.0	0.0
25	Food products, other	6.6	6.6	0.0
26	Beverages and tobacco products	10.8	10.8	0.0
27	Textiles	18.4	18.4	0.0
28	Wearing apparel	23.0	23.0	0.0
29	Leather products	14.7	14.7	0.0
30	Wood products	7.6	7.6	0.0
31	Paper products	6.5	6.5	0.0
32	Petroleum, coal products	5.0	5.0	0.0
33	Chemical, rubber, plastic products	8.6	8.6	0.0
34	Mineral products, other	8.2	8.2	0.0
35	Ferrous metals	7.9	7.9	0.0
36	Metals, other	5.6	5.6	0.0
37	Metal products	9.5	9.5	0.0
38	Motor vehicles and parts	8.1	8.1	0.0
39	Transport equipment, other	10.8	10.8	0.0
40	Electronic equipment	5.6	5.6	0.0
41	Machinery and equipment, other	7.0	7.0	0.0
42	Manufactures, other	9.6	9.6	0.0

Notes: Ad valorem equivalents of specific tariffs are only considered in GTAP sectors 2 and 23 where no ad valorem estimates existed.

Source: TRAINS Database via WITS (2008).



**Table A.45 Mexico preferential tariff treatment of the United States** (percent)

<b>GTAP code</b>	<b>GTAP sector</b>	<b>Past rate: Before preferences (1990) (same as 1990 MFN applied rate)</b>	<b>Past rate: Before preferences used (higher of past and present preferential rates)</b>	<b>Present rate: Includes preferences (2006) (lower of Mex-US FTA and 2006 MFN rate)</b>
1	Paddy rice	15.0	15.0	0.0
2	Wheat	5.0	5.0	0.0
3	Cereal grains, other	10.3	10.3	2.4
4	Vegetables, fruit, nuts	14.6	14.6	0.2
5	Oil seeds	1.8	1.8	0.0
6	Sugar cane, sugar beet	10.0	10.0	10.0
7	Plant-based fibers	9.6	9.6	0.0
8	Crops, other	11.4	11.4	0.0
9	Bovine cattle, sheep and goats	7.2	7.2	0.0
10	Animal products, other	10.2	10.2	0.0
12	Wool, silkworm cocoons	8.3	8.5	8.5
13	Forestry	11.1	11.1	0.0
14	Fishing	18.5	18.5	0.0
15	Coal	10.0	10.0	0.0
16	Oil	10.0	10.0	0.0
17	Gas	5.0	5.0	0.0
18	Minerals, other	9.8	9.8	0.0
19	Bovine meat products	9.3	9.3	0.0
20	Meat products, other	14.4	14.4	0.0
21	Vegetable oils and fats	14.5	14.5	0.0
22	Dairy products	14.8	14.8	1.0
23	Processed rice	15.0	15.0	0.0
24	Sugar containing products	10.7	10.7	0.0
25	Food products, other	16.8	16.8	0.3
26	Beverages and tobacco products	17.2	17.2	0.0
27	Textiles	15.4	15.4	0.0
28	Wearing apparel	19.2	19.2	0.0
29	Leather products	16.0	16.0	0.0
30	Wood products	16.5	16.5	0.0
31	Paper products	9.2	9.2	0.0
32	Petroleum, coal products	8.0	8.0	0.0
33	Chemical, rubber, plastic products	11.6	11.6	0.0
34	Mineral products, other	15.5	15.5	0.0
35	Ferrous metals	10.2	10.2	0.0
36	Metals, other	10.6	10.6	0.0
37	Metal products	16.0	16.0	0.0
38	Motor vehicles and parts	15.7	15.7	0.0
39	Transport equipment, other	12.7	12.7	0.0
40	Electronic equipment	14.7	14.7	0.0
41	Machinery and equipment, other	13.5	13.5	0.0
42	Manufactures, other	16.9	16.9	0.0

Notes: The 2006 MFN applied rate is used in GTAP sectors 6 and 12.

Source: TRAINS Database via WITS (2008).

**Table A.46 Singapore preferential tariff treatment of the United States (percent)**

<b>GTAP code</b>	<b>GTAP sector</b>	<b>Past rate: Before preferences (1990) (same as 1990 MFN applied rate)</b>	<b>Past rate: Before preferences used (higher of past and present preferential rates)</b>	<b>Present rate: Includes preferences (2006) (lower of Sng-US FTA and 2006 MFN rate)</b>
1	Paddy rice	0.0	0.0	0.0
2	Wheat	0.0	0.0	0.0
3	Cereal grains, other	0.0	0.0	0.0
4	Vegetables, fruit, nuts	0.0	0.0	0.0
5	Oil seeds	0.0	0.0	0.0
6	Sugar cane, sugar beet	0.0	0.0	0.0
7	Plant-based fibers	0.0	0.0	0.0
8	Crops, other	0.0	0.0	0.0
9	Bovine cattle, sheep and goats	0.0	0.0	0.0
10	Animal products, other	0.0	0.0	0.0
12	Wool, silkworm cocoons	0.0	0.0	0.0
13	Forestry	0.0	0.0	0.0
14	Fishing	0.0	0.0	0.0
15	Coal	0.0	0.0	0.0
16	Oil	0.0	0.0	0.0
17	Gas	0.0	0.0	0.0
18	Minerals, other	0.0	0.0	0.0
19	Bovine meat products	0.0	0.0	0.0
20	Meat products, other	0.0	0.0	0.0
21	Vegetable oils and fats	0.0	0.0	0.0
22	Dairy products	0.0	0.0	0.0
23	Processed rice	0.0	0.0	0.0
24	Sugar containing products	0.0	0.0	0.0
25	Food products, other	0.2	0.2	0.0
26	Beverages and tobacco products	0.0	0.0	0.0
27	Textiles	0.2	0.2	0.0
28	Wearing apparel	4.2	4.2	0.0
29	Leather products	0.3	0.3	0.0
30	Wood products	0.9	0.9	0.0
31	Paper products	0.0	0.0	0.0
32	Petroleum, coal products	1.4	1.4	0.0
33	Chemical, rubber, plastic products	0.0	0.0	0.0
34	Mineral products, other	0.0	0.0	0.0
35	Ferrous metals	0.0	0.0	0.0
36	Metals, other	0.0	0.0	0.0
37	Metal products	0.0	0.0	0.0
38	Motor vehicles and parts	8.8	8.8	0.0
39	Transport equipment, other	1.1	1.1	0.0
40	Electronic equipment	0.0	0.0	0.0
41	Machinery and equipment, other	0.0	0.0	0.0
42	Manufactures, other	0.1	0.1	0.0

Notes: Ad valorem equivalents of specific tariffs are only considered in GTAP sectors 17 where no ad valorem estimates existed. The MFN applied rate is used in GTAP sectors 6 and 12.

Source: TRAINS Database via WITS (2008).

**Table A.47 Authors' concordance between past estimates of ad valorem equivalents of NTBs and GTAP sectors**

Japan estimates by Sazanami, Urata, and Kawai (1995)		United States estimates from Linkins and Arce (1994) and USITC (2004)	
Sector listed in study	GTAP code	Sector listed in study	GTAP code
Wheat	2	Peanuts	5
Soybeans	5	Sugar	6
Oilseeds other than soybeans	5	Cream	11
Citrus fruits	4	Meat	19
Canned or bottled vegetables and fruits	4	Canned tuna	20
Leaf tobacco	26	Butter	22
Tobacco products	26	Cheese	22
Dressed carcasses and poultry	19/20	Dry/condensed milk products	22
Processed meat products	19/20	Sugar-containing products	24
Dairy products	22	Tobacco	26
Milled rice	23	Broadwoven fabric mills	27
Bread	25	Narrow fabric mills	27
Confectionary goods	25	Yarn mills and textile finishing	27
Beer	26	Thread mills	27
Whiskey and brandy	26	Floor coverings	27
Tea and roasted coffee	26	Felt and textile goods, nec	27
Sparkling and still beverages	26	Coated fabrics, not rubberized	27
Cotton yarn	27	Tire cord and fabric	27
Knit fabrics	27	Cordage and twine	27
Clothing	28	Nonwoven fabric	27
Leather footwear	28	Curtains and draperies	27
Plywood	30	House furnishings, nec	27
Paper	31	Canvas and related products	27
Copper ore	36/37	Fabricated textile products, nec	27
Sheet glass	36/37	Lace and knit fabric goods	28
Clay refractories	36/37	Women's hosiery, except socks	28
Ferroalloys	36/37	Hosiery, nec	28
Lead	36/37	Apparel made from purchased materials	28
Regenerated aluminum	36/37	Textile bags	28
Other nonferrous metals	36/37	Pleating, stitching, trimmings, and embroidery	28
Natural gas	17	Women's handbags and purses	28
Nitric fertilizers	33	Luggage	29
Soda ash	33	<b>European Union estimates by Messerlin (2001)</b>	
Caustic soda	33	Sector listed in study	GTAP code
Titanium oxide	33	Cereals (excluding rice)	3
Methane derivatives	33	Other agriculture	4
Industrial oil and fat	33	Meat (bovine and ovine)	19
Polyethylene	33	Dairy products	22
Pharmaceuticals	33	Sugar	24
Cosmetics, toilet preparations	33	Food products	25
Gasoline	32	Beverages	26
Chemical machinery	41	Textiles	27
Medical instruments	41	Apparel	28
Radio and television sets	40	Footwear	28
Electric computing equipment	40	Leather and leather products	29
Communication equipment	40	Iron and steel	35
Semiconductor devices	40	Motor vehicles	38
		Other industries	42

**Table A.47 Authors' concordance between past estimates of ad valorem equivalents of NTBs and GTAP sectors** (*continued*)

China estimates by Shuguang, Yansheng, and Zhongxin (1998)	
Sector listed in study	GTAP code
Wheat	2
Rapeseed oil	21
Sugar	24
Soft drinks	26
Synthetic fiber	27
Plywood	30
Crude oil	32
Gasoline	32
Diesel fuel	32
Natural rubber	33
Synthetic rubber	33
Ammonium phosphate	33
Plastics	33
Rolled-steel final products	37
Autos (sedans)	38
Motorcycles	39
Color televisions	40
Videocassette recorders	40
Microcomputers	40
Color tubes	40
Program-controlled switchboards	40
Air conditioners	41
Wool and wool tops	27/28
Copper and copper products	36/37
Aluminum and aluminum products	36/37

Notes: When there is more than one matched GTAP code per country the simple average of NTBs for all sectors matched to that GTAP code are considered. When two GTAP codes are listed (with a slash mark), the simple average of the two GTAP codes is used.

Sources: Listed studies and authors' concordance.

**Table A.48 Estimates of ad valorem equivalents (AVE) of nontariff barriers (NTBs) from various studies**

GTAP code	GTAP sector			Percent change	Percentage point change
United States (Linkins and Arce 1994 and USITC 2004)					
		1991 NTB AVE	2002 NTB AVE		
5	Oilseeds	10.0	0.0	-100.0	-10.0
6	Raw sugar	124.8	107.1	-14.2	-17.7
11	Raw milk	60.3	0.0	-100.0	-60.3
19	Bovine meat	6.5	1.1	-83.1	-5.4
20	Meat nec	2.6	0.0	-100.0	-2.6
22	Dairy products	40.9	19.0	-53.5	-21.9
24	Sugar products	10.0	0.0	-99.6	-10.0
26	Beverages and tobacco	13.2	6.9	-47.7	-6.3
27	Textiles	4.5	2.4	-46.5	-2.1
28	Apparel	5.9	2.4	-60.2	-3.6
29	Leather products	2.6	0.0	-100.0	-2.6
	Average			-73.2	
European Union (Messerlin 2001)					
		1990 NTB AVE	1999 NTB AVE		
3	Cereals (excluding rice)	63.0	5.0	-92.1	-58.0
4	Vegetable, fruits, nuts	10.5	11.2	6.7	0.7
19	Bovine meat	74.0	64.8	-12.4	-9.2
22	Dairy products	104.0	100.3	-3.6	-3.7
24	Sugar products	117.0	125.0	6.8	8.0
25	Food products nec	15.0	5.0	-66.7	-10.0
26	Beverages and tobacco	5.0	5.0	0.0	0.0
27	Textiles	11.0	8.0	-27.3	-3.0
28	Apparel	12.0	19.0	58.3	7.0
29	Leather products	5.0	5.0	0.0	0.0
35	Ferrous metals	15.0	4.0	-73.3	-11.0
38	Motor vehicles	6.1	4.0	-34.4	-2.1
42	Other industries	2.0	2.0	0.0	0.0
	Average			-18.3	
China (Shuguang, Yansheng, and Zhongxin 1998 and Kee, Nicita, and Olarreaga 2005)					
		1994 NTB AVE	2001 NTB AVE		
2	Wheat	72.4	34.4	-52.4	-38.0
21	Vegetable oils and fats	88.6	14.1	-84.1	-74.5
24	Sugar products	111.4	39.9	-64.1	-71.5
26	Beverages and tobacco	40.6	6.3	-84.6	-34.3
27	Textiles	7.0	4.1	-41.1	-2.9
27/28	Textiles/apparel	4.2	3.0	-28.3	-1.2
30	Wood products	26.1	1.9	-92.7	-24.2
32	Petroleum and related products	20.5	42.0	104.5	21.5
33	Chemicals, plastic, rubber	27.5	5.8	-79.0	-21.7
36/37	Metals/metal products	8.4	4.3	-49.0	-4.1

*table continues on next page*

**Table A.48 Estimates of ad valorem equivalents (AVE) of nontariff barriers (NTBs) from various studies (continued)**

GTAP code	GTAP sector			Percent change	Percentage point change
China (Shuguang, Yansheng, and Zhongxin 1998 and Kee, Nicita, and Olarreaga 2005)					
		1994 NTB AVE	2001 NTB AVE		
37	Metal products	23.8	0.4	-98.3	-23.4
38	Motor vehicles	24.2	17.4	-28.0	-6.8
39	Transport equipment	11.2	5.3	-53.1	-5.9
40	Electrical equipment	19.7	4.9	-75.3	-14.8
41	Machinery nec	14.7	5.6	-62.2	-9.1
	Average			-52.5	
Japan (Sazanami, Urata, and Kawai 1995 and Kee, Nicita, and Olarreaga 2005)					
		1989 NTB AVE	2001 NTB AVE		
2	Wheat	477.8	28.8	-94.0	-449.0
4	Vegetable, fruits, nuts	117.8	35.0	-70.3	-82.8
5	Oilseeds	526.1	30.5	-94.2	-495.6
17	Gas	113.4	53.0	-53.2	-60.4
19/20	Bovine meat/meat nec	63.2	37.4	-40.8	-25.8
22	Dairy products	211.0	69.5	-67.0	-141.5
23	Processed rice	737.1	27.1	-96.3	-710.0
25	Food products nec	266.0	34.3	-87.1	-231.7
26	Beverages and tobacco products	246.1	22.6	-90.8	-223.6
27	Textiles	17.2	15.5	-9.9	-1.7
28	Apparel	144.8	0.6	-99.6	-144.2
30	Wood products	19.1	1.3	-93.1	-17.8
31	Paper products	18.8	2.3	-87.6	-16.5
32	Petroleum and related products	223.5	13.6	-93.9	-209.9
33	Chemicals, plastic, rubber	157.2	6.9	-95.6	-150.3
36/37	Metals/metal products	68.0	2.8	-95.9	-65.5
40	Electrical equipment	256.5	13.3	-94.8	-243.2
41	Machinery nec	45.8	7.1	-84.6	-38.7
	Average			-80.5	
Four-country weighted average of averages (based on total 1990 imports, not shown)				-51.1	

**Table A.49 Past and present ad valorem equivalents of nontariff barriers in Australia** (percent)

GTAP code	GTAP sector	Tariff lines (HS6 level)	NTB AVE past (circa 1990)	NTB AVE present (circa 2000)	Assumed change from 1990 to 2000
1	Paddy rice	2	15.6	7.6	-0.51
2	Wheat	2	59.5	29.1	-0.51
3	Cereal grains, other	6	47.4	23.2	-0.51
4	Vegetables, fruit, nuts	78	74.8	36.6	-0.51
5	Oil seeds	11	90.5	44.3	-0.51
6	Sugar cane, sugar beet	2	8.4	4.1	-0.51
7	Plant-based fibers	7	0.0	0.0	-0.51
8	Crops, other	57	68.7	33.6	-0.51
9	Bovine cattle, sheep and goats, horses	8	54.3	26.6	-0.51
10	Animal products, other	39	42.1	20.6	-0.51
12	Wool, silkworm cocoons	4	0.0	0.0	-0.51
13	Forestry	21	41.1	20.1	-0.51
14	Fishing	39	51.4	25.1	-0.51
15	Coal	6	0.0	0.0	-0.51
16	Oil	1	11.6	5.7	-0.51
17	Gas	2	141.9	69.4	-0.51
18	Minerals, other	70	1.4	0.7	-0.51
19	Bovine meat products	26	88.7	43.4	-0.51
20	Meat products, other	25	106.7	52.2	-0.51
21	Vegetable oils and fats	42	90.7	44.4	-0.51
22	Dairy products	18	109.8	53.7	-0.51
23	Processed rice	2	72.0	35.2	-0.51
24	Sugar containing products	7	103.4	50.6	-0.51
25	Food products, other	233	90.2	44.1	-0.51
26	Beverages and tobacco products	26	64.7	31.7	-0.51
27	Textiles	540	0.0	0.0	-0.51
28	Wearing apparel	233	2.1	1.0	-0.51
29	Leather products	59	1.4	0.7	-0.51
30	Wood products	73	0.0	0.0	-0.51
31	Paper products	134	0.0	0.0	-0.51
32	Petroleum, coal products	12	64.0	31.3	-0.51
33	Chemical, rubber, plastic products	870	6.1	3.0	-0.51
34	Mineral products, other	140	0.0	0.0	-0.51
35	Ferrous metals	142	0.0	0.0	-0.51
36	Metals, other	166	0.0	0.0	-0.51
37	Metal products	204	1.2	0.6	-0.51
38	Motor vehicles and parts	54	16.6	8.1	-0.51
39	Transport equipment, other	81	0.0	0.0	-0.51
40	Electronic equipment	95	45.7	22.4	-0.51
41	Machinery and equipment, other	824	16.0	7.8	-0.51
42	Manufactures, other	170	2.3	1.1	-0.51
Simple average			38.8	19.0	

Sources: Kee, Nicita, and Olarreaga (2005); Linkins and Arce (1994); USITC (2004); Shuguang, Yansheng, and Zhongxin (1998); Sazanami, Urata, and Kawai (1995); Messerlin (2001); authors' calculations.

**Table A.50 Past and present ad valorem equivalents of nontariff barriers in Brazil (percent)**

GTAP code	GTAP sector	Tariff lines (HS6 level)	NTB AVE past (circa 1990)	NTB AVE present (circa 2000)	Assumed change from 1990 to 2000
1	Paddy rice	2	181.8	89.0	-0.51
2	Wheat	2	111.2	54.4	-0.51
3	Cereal grains, other	6	69.6	34.0	-0.51
4	Vegetables, fruit, nuts	78	62.8	30.7	-0.51
5	Oil seeds	11	42.0	20.6	-0.51
6	Sugar cane, sugar beet	2	3.1	1.5	-0.51
7	Plant-based fibers	7	110.1	53.9	-0.51
8	Crops, other	57	50.6	24.8	-0.51
9	Bovine cattle, sheep and goats, horses	8	27.0	13.2	-0.51
10	Animal products, other	39	40.1	19.6	-0.51
12	Wool, silkworm cocoons	4	0.0	0.0	-0.51
13	Forestry	21	48.7	23.8	-0.51
14	Fishing	39	62.8	30.7	-0.51
15	Coal	6	0.0	0.0	-0.51
16	Oil	1	45.1	22.0	-0.51
17	Gas	2	117.9	57.7	-0.51
18	Minerals, other	70	8.5	4.2	-0.51
19	Bovine meat products	26	51.8	25.3	-0.51
20	Meat products, other	25	67.1	32.8	-0.51
21	Vegetable oils and fats	42	63.8	31.2	-0.51
22	Dairy products	18	90.1	44.1	-0.51
23	Processed rice	2	150.2	73.5	-0.51
24	Sugar containing products	7	125.7	61.5	-0.51
25	Food products, other	233	59.9	29.3	-0.51
26	Beverages and tobacco products	26	80.7	39.5	-0.51
27	Textiles	540	6.5	3.2	-0.51
28	Wearing apparel	233	2.4	1.2	-0.51
29	Leather products	59	27.8	13.6	-0.51
30	Wood products	73	24.8	12.2	-0.51
31	Paper products	134	7.2	3.5	-0.51
32	Petroleum, coal products	12	109.3	53.5	-0.51
33	Chemical, rubber, plastic products	870	37.4	18.3	-0.51
34	Mineral products, other	140	12.3	6.0	-0.51
35	Ferrous metals	142	19.6	9.6	-0.51
36	Metals, other	166	7.5	3.7	-0.51
37	Metal products	204	26.4	12.9	-0.51
38	Motor vehicles and parts	54	19.8	9.7	-0.51
39	Transport equipment, other	81	55.1	26.9	-0.51
40	Electronic equipment	95	14.2	6.9	-0.51
41	Machinery and equipment, other	824	55.2	27.0	-0.51
42	Manufactures, other	170	29.2	14.3	-0.51
Simple average			51.8	25.4	

Sources: Kee, Nicita, and Olarreaga (2005); Linkins and Arce (1994); USITC (2004); Shuguang, Yansheng, and Zhongxin (1998); Sazanami, Urata, and Kawai (1995); Messerlin (2001); authors' calculations.



**Table A.51 Past and present ad valorem equivalents of nontariff barriers in Canada (percent)**

GTAP code	GTAP sector	Tariff lines (HS6 level)	NTB AVE past (circa 1990)	NTB AVE present (circa 2000)	Assumed change from 1990 to 2000
1	Paddy rice	2	58.2	28.5	-0.51
2	Wheat	2	12.0	5.9	-0.51
3	Cereal grains, other	6	115.5	56.5	-0.51
4	Vegetables, fruit, nuts	78	98.8	48.3	-0.51
5	Oil seeds	11	62.5	30.6	-0.51
6	Sugar cane, sugar beet	2	3.2	1.6	-0.51
7	Plant-based fibers	7	0.0	0.0	-0.51
8	Crops, other	57	45.8	22.4	-0.51
9	Bovine cattle, sheep and goats, horses	8	33.3	16.3	-0.51
10	Animal products, other	39	21.0	10.3	-0.51
12	Wool, silkworm cocoons	4	0.0	0.0	-0.51
13	Forestry	21	51.1	25.0	-0.51
14	Fishing	39	47.4	23.2	-0.51
15	Coal	6	0.0	0.0	-0.51
16	Oil	1	0.0	0.0	-0.51
17	Gas	2	105.2	51.4	-0.51
18	Minerals, other	70	0.0	0.0	-0.51
19	Bovine meat products	26	67.6	33.1	-0.51
20	Meat products, other	25	24.1	11.8	-0.51
21	Vegetable oils and fats	42	9.3	4.6	-0.51
22	Dairy products	18	105.1	51.4	-0.51
23	Processed rice	2	119.6	58.5	-0.51
24	Sugar containing products	7	0.0	0.0	-0.51
25	Food products, other	233	28.9	14.1	-0.51
26	Beverages and tobacco products	26	8.7	4.3	-0.51
27	Textiles	540	0.0	0.0	-0.51
28	Wearing apparel	233	1.7	0.8	-0.51
29	Leather products	59	9.6	4.7	-0.51
30	Wood products	73	6.6	3.2	-0.51
31	Paper products	134	0.0	0.0	-0.51
32	Petroleum, coal products	12	4.6	2.2	-0.51
33	Chemical, rubber, plastic products	870	1.6	0.8	-0.51
34	Mineral products, other	140	0.0	0.0	-0.51
35	Ferrous metals	142	35.5	17.4	-0.51
36	Metals, other	166	0.0	0.0	-0.51
37	Metal products	204	3.1	1.5	-0.51
38	Motor vehicles and parts	54	21.2	10.4	-0.51
39	Transport equipment, other	81	16.4	8.0	-0.51
40	Electronic equipment	95	0.0	0.0	-0.51
41	Machinery and equipment, other	824	2.5	1.2	-0.51
42	Manufactures, other	170	1.7	0.8	-0.51
Simple average			27.4	13.4	

Sources: Kee, Nicita, and Olarreaga (2005); Linkins and Arce (1994); USITC (2004); Shuguang, Yansheng, and Zhongxin (1998); Sazanami, Urata, and Kawai (1995); Messerlin (2001); authors' calculations.

**Table A.52 Past and present ad valorem equivalents of nontariff barriers in China (percent)**

GTAP code	GTAP sector	Tariff lines (HS6 level)	NTB AVE past (circa 1994)	NTB AVE present (circa 2001)	Assumed change from 1990 to 2000
1	Paddy rice	2	130.5	63.8	-0.51
2	Wheat	2	70.4	34.4	-0.51
3	Cereal grains, other	6	33.4	16.4	-0.51
4	Vegetables, fruit, nuts	78	0.0	0.0	-0.51
5	Oil seeds	11	0.0	0.0	-0.51
6	Sugar cane, sugar beet	2	0.0	0.0	-0.51
7	Plant-based fibers	7	0.0	0.0	-0.51
8	Crops, other	57	5.5	2.7	-0.51
9	Bovine cattle, sheep and goats, horses	8	0.0	0.0	-0.51
10	Animal products, other	39	17.3	8.5	-0.51
12	Wool, silkworm cocoons	4	27.3	13.3	-0.51
13	Forestry	21	35.6	17.4	-0.51
14	Fishing	39	0.0	0.0	-0.51
15	Coal	6	57.9	28.3	-0.51
16	Oil	1	0.3	0.1	-0.51
17	Gas	2	134.7	65.9	-0.51
18	Minerals, other	70	23.0	11.3	-0.51
19	Bovine meat products	26	0.0	0.0	-0.51
20	Meat products, other	25	0.2	0.1	-0.51
21	Vegetable oils and fats	42	28.8	14.1	-0.51
22	Dairy products	18	28.7	14.1	-0.51
23	Processed rice	2	128.2	62.7	-0.51
24	Sugar containing products	7	81.7	39.9	-0.51
25	Food products, other	233	0.5	0.2	-0.51
26	Beverages and tobacco products	26	12.8	6.3	-0.51
27	Textiles	540	8.4	4.1	-0.51
28	Wearing apparel	233	0.9	0.4	-0.51
29	Leather products	59	12.0	5.9	-0.51
30	Wood products	73	3.9	1.9	-0.51
31	Paper products	134	26.6	13.0	-0.51
32	Petroleum, coal products	12	85.8	42.0	-0.51
33	Chemical, rubber, plastic products	870	11.8	5.8	-0.51
34	Mineral products, other	140	0.3	0.1	-0.51
35	Ferrous metals	142	45.4	22.2	-0.51
36	Metals, other	166	18.4	9.0	-0.51
37	Metal products	204	0.8	0.4	-0.51
38	Motor vehicles and parts	54	35.6	17.4	-0.51
39	Transport equipment, other	81	10.7	5.3	-0.51
40	Electronic equipment	95	10.0	4.9	-0.51
41	Machinery and equipment, other	824	11.3	5.6	-0.51
42	Manufactures, other	170	5.0	2.4	-0.51
Simple average			26.9	13.2	

Sources: Kee, Nicita, and Olarreaga (2005); Shuguang, Yansheng, and Zhongxin (1998); authors' calculations.

**Table A.53 Past and present ad valorem equivalents of nontariff barriers in the European Union**  
(percent)

GTAP code	GTAP sector	Tariff lines (HS6 level)	NTB AVE past (circa 1990)	NTB AVE present (circa 2000)	Assumed change from 1990 to 2000
1	Paddy rice	2	89.6	43.8	-0.51
2	Wheat	2	47.8	23.4	-0.51
3	Cereal grains, other	6	100.8	49.3	-0.51
4	Vegetables, fruit, nuts	78	90.8	44.4	-0.51
5	Oil seeds	11	66.6	32.6	-0.51
6	Sugar cane, sugar beet	2	6.8	3.3	-0.51
7	Plant-based fibers	7	60.6	29.6	-0.51
8	Crops, other	57	43.2	21.1	-0.51
9	Bovine cattle, sheep and goats, horses	8	68.8	33.7	-0.51
10	Animal products, other	39	15.9	7.8	-0.51
12	Wool, silkworm cocoons	4	30.4	14.9	-0.51
13	Forestry	21	25.2	12.3	-0.51
14	Fishing	39	55.9	27.3	-0.51
15	Coal	6	0.0	0.0	-0.51
16	Oil	1	0.0	0.0	-0.51
17	Gas	2	0.0	0.0	-0.51
18	Minerals, other	70	0.0	0.0	-0.51
19	Bovine meat products	26	84.5	41.3	-0.51
20	Meat products, other	25	68.4	33.5	-0.51
21	Vegetable oils and fats	42	70.9	34.7	-0.51
22	Dairy products	18	171.3	83.8	-0.51
23	Processed rice	2	114.1	55.8	-0.51
24	Sugar containing products	7	129.1	63.1	-0.51
25	Food products, other	233	84.4	41.3	-0.51
26	Beverages and tobacco products	26	44.4	21.7	-0.51
27	Textiles	540	73.9	36.2	-0.51
28	Wearing apparel	233	30.5	14.9	-0.51
29	Leather products	59	37.2	18.2	-0.51
30	Wood products	73	0.0	0.0	-0.51
31	Paper products	134	0.0	0.0	-0.51
32	Petroleum, coal products	12	0.0	0.0	-0.51
33	Chemical, rubber, plastic products	870	0.4	0.2	-0.51
34	Mineral products, other	140	0.0	0.0	-0.51
35	Ferrous metals	142	0.0	0.0	-0.51
36	Metals, other	166	0.0	0.0	-0.51
37	Metal products	204	0.0	0.0	-0.51
38	Motor vehicles and parts	54	0.0	0.0	-0.51
39	Transport equipment, other	81	0.0	0.0	-0.51
40	Electronic equipment	95	0.0	0.0	-0.51
41	Machinery and equipment, other	824	0.1	0.1	-0.51
42	Manufactures, other	170	4.8	2.4	-0.51
Simple average			39.4	19.3	

Note: European Union NTB AVEs are taken as the simple average of NTB AVEs in France, Germany, and the United Kingdom.

Sources: Kee, Nicita, and Olarreaga (2005); Linkins and Arce (1994); USITC (2004); Shuguang, Yansheng, and Zhongxin (1998); Sazanami, Urata, and Kawai (1995); Messerlin (2001); authors' calculations.

**Table A.54 Past and present ad valorem equivalents of nontariff barriers in Hong Kong (percent)**

GTAP code	GTAP sector	Tariff lines (HS6 level)	NTB AVE past (circa 1990)	NTB AVE present (circa 2000)	Assumed change from 1990 to 2000
1	Paddy rice	2	194.0	94.9	-0.51
2	Wheat	2	0.0	0.0	-0.51
3	Cereal grains, other	6	0.0	0.0	-0.51
4	Vegetables, fruit, nuts	78	0.0	0.0	-0.51
5	Oil seeds	11	0.0	0.0	-0.51
6	Sugar cane, sugar beet	2	0.0	0.0	-0.51
7	Plant-based fibers	7	0.0	0.0	-0.51
8	Crops, other	57	3.5	1.7	-0.51
9	Bovine cattle, sheep and goats, horses	8	83.3	40.7	-0.51
10	Animal products, other	39	22.4	11.0	-0.51
12	Wool, silkworm cocoons	4	0.0	0.0	-0.51
13	Forestry	21	0.0	0.0	-0.51
14	Fishing	39	54.9	26.8	-0.51
15	Coal	6	0.0	0.0	-0.51
16	Oil	1	0.0	0.0	-0.51
17	Gas	2	0.0	0.0	-0.51
18	Minerals, other	70	0.0	0.0	-0.51
19	Bovine meat products	26	71.6	35.0	-0.51
20	Meat products, other	25	25.2	12.3	-0.51
21	Vegetable oils and fats	42	3.9	1.9	-0.51
22	Dairy products	18	152.1	74.4	-0.51
23	Processed rice	2	173.8	85.0	-0.51
24	Sugar containing products	7	0.0	0.0	-0.51
25	Food products, other	233	11.5	5.6	-0.51
26	Beverages and tobacco products	26	0.0	0.0	-0.51
27	Textiles	540	0.0	0.0	-0.51
28	Wearing apparel	233	0.0	0.0	-0.51
29	Leather products	59	0.0	0.0	-0.51
30	Wood products	73	0.0	0.0	-0.51
31	Paper products	134	0.0	0.0	-0.51
32	Petroleum, coal products	12	0.0	0.0	-0.51
33	Chemical, rubber, plastic products	870	2.3	1.1	-0.51
34	Mineral products, other	140	0.0	0.0	-0.51
35	Ferrous metals	142	44.3	21.7	-0.51
36	Metals, other	166	0.0	0.0	-0.51
37	Metal products	204	5.5	2.7	-0.51
38	Motor vehicles and parts	54	8.2	4.0	-0.51
39	Transport equipment, other	81	29.6	14.5	-0.51
40	Electronic equipment	95	4.2	2.1	-0.51
41	Machinery and equipment, other	824	0.8	0.4	-0.51
42	Manufactures, other	170	1.4	0.7	-0.51
Simple average			21.8	10.7	

Sources: Kee, Nicita, and Olarreaga (2005); Linkins and Arce (1994); USITC (2004); Shuguang, Yansheng, and Zhongxin (1998); Sazanami, Urata, and Kawai (1995); Messerlin (2001); authors' calculations.

**Table A.55 Past and present ad valorem equivalents of nontariff barriers in India (percent)**

GTAP code	GTAP sector	Tariff lines (HS6 level)	NTB AVE past (circa 1990)	NTB AVE present (circa 2000)	Assumed change from 1990 to 2000
1	Paddy rice	2	156.0	76.3	-0.51
2	Wheat	2	67.4	33.0	-0.51
3	Cereal grains, other	6	68.7	33.6	-0.51
4	Vegetables, fruit, nuts	78	53.0	25.9	-0.51
5	Oil seeds	11	83.0	40.6	-0.51
6	Sugar cane, sugar beet	2	0.0	0.0	-0.51
7	Plant-based fibers	7	37.7	18.5	-0.51
8	Crops, other	57	21.1	10.3	-0.51
9	Bovine cattle, sheep and goats, horses	8	97.4	47.7	-0.51
10	Animal products, other	39	24.8	12.2	-0.51
12	Wool, silkworm cocoons	4	0.0	0.0	-0.51
13	Forestry	21	26.0	12.7	-0.51
14	Fishing	39	56.6	27.7	-0.51
15	Coal	6	0.0	0.0	-0.51
16	Oil	1	13.9	6.8	-0.51
17	Gas	2	138.7	67.9	-0.51
18	Minerals, other	70	22.8	11.1	-0.51
19	Bovine meat products	26	49.9	24.4	-0.51
20	Meat products, other	25	89.6	43.8	-0.51
21	Vegetable oils and fats	42	58.1	28.4	-0.51
22	Dairy products	18	86.7	42.4	-0.51
23	Processed rice	2	111.7	54.7	-0.51
24	Sugar containing products	7	21.6	10.5	-0.51
25	Food products, other	233	60.6	29.6	-0.51
26	Beverages and tobacco products	26	38.4	18.8	-0.51
27	Textiles	540	18.4	9.0	-0.51
28	Wearing apparel	233	56.7	27.7	-0.51
29	Leather products	59	69.3	33.9	-0.51
30	Wood products	73	49.0	24.0	-0.51
31	Paper products	134	32.2	15.7	-0.51
32	Petroleum, coal products	12	111.6	54.6	-0.51
33	Chemical, rubber, plastic products	870	18.8	9.2	-0.51
34	Mineral products, other	140	23.8	11.6	-0.51
35	Ferrous metals	142	0.4	0.2	-0.51
36	Metals, other	166	19.8	9.7	-0.51
37	Metal products	204	44.1	21.6	-0.51
38	Motor vehicles and parts	54	24.7	12.1	-0.51
39	Transport equipment, other	81	47.2	23.1	-0.51
40	Electronic equipment	95	31.2	15.3	-0.51
41	Machinery and equipment, other	824	16.4	8.0	-0.51
42	Manufactures, other	170	41.8	20.5	-0.51
Simple average			48.5	23.7	

Sources: Kee, Nicita, and Olarreaga (2005); Linkins and Arce (1994); USITC (2004); Shuguang, Yansheng, and Zhongxin (1998); Sazanami, Urata, and Kawai (1995); Messerlin (2001); authors' calculations.

**Table A.56 Past and present ad valorem equivalents of nontariff barriers in Indonesia** (percent)

GTAP code	GTAP sector Name	Tariff lines (HS6 level)	NTB AVE past (circa 1990)	NTB AVE present (circa 2000)	Assumed change from 1990 to 2000
1	Paddy rice	2	128.7	63.0	-0.51
2	Wheat	2	86.4	42.3	-0.51
3	Cereal grains, other	6	95.2	46.6	-0.51
4	Vegetables, fruit, nuts	78	72.4	35.4	-0.51
5	Oil seeds	11	59.5	29.1	-0.51
6	Sugar cane, sugar beet	2	20.9	10.2	-0.51
7	Plant-based fibers	7	0.0	0.0	-0.51
8	Crops, other	57	65.7	32.2	-0.51
9	Bovine cattle, sheep and goats, horses	8	70.8	34.6	-0.51
10	Animal products, other	39	28.2	13.8	-0.51
12	Wool, silkworm cocoons	4	0.0	0.0	-0.51
13	Forestry	21	38.7	18.9	-0.51
14	Fishing	39	46.0	22.5	-0.51
15	Coal	6	0.0	0.0	-0.51
16	Oil	1	0.9	0.5	-0.51
17	Gas	2	134.6	65.9	-0.51
18	Minerals, other	70	0.3	0.2	-0.51
19	Bovine meat products	26	59.7	29.2	-0.51
20	Meat products, other	25	81.4	39.8	-0.51
21	Vegetable oils and fats	42	47.0	23.0	-0.51
22	Dairy products	18	105.2	51.5	-0.51
23	Processed rice	2	193.8	94.8	-0.51
24	Sugar containing products	7	0.0	0.0	-0.51
25	Food products, other	233	40.0	19.6	-0.51
26	Beverages and tobacco products	26	42.7	20.9	-0.51
27	Textiles	540	0.0	0.0	-0.51
28	Wearing apparel	233	0.0	0.0	-0.51
29	Leather products	59	0.0	0.0	-0.51
30	Wood products	73	0.0	0.0	-0.51
31	Paper products	134	3.7	1.8	-0.51
32	Petroleum, coal products	12	71.1	34.8	-0.51
33	Chemical, rubber, plastic products	870	5.6	2.8	-0.51
34	Mineral products, other	140	0.0	0.0	-0.51
35	Ferrous metals	142	2.5	1.2	-0.51
36	Metals, other	166	13.8	6.8	-0.51
37	Metal products	204	1.5	0.7	-0.51
38	Motor vehicles and parts	54	0.7	0.4	-0.51
39	Transport equipment, other	81	0.9	0.4	-0.51
40	Electronic equipment	95	0.0	0.0	-0.51
41	Machinery and equipment, other	824	0.7	0.4	-0.51
42	Manufactures, other	170	0.0	0.0	-0.51
Simple average			37.0	18.1	

Sources: Kee, Nicita, and Olarreaga (2005); Linkins and Arce (1994); USITC (2004); Shuguang, Yansheng, and Zhongxin (1998); Sazanami, Urata, and Kawai (1995); Messerlin (2001); authors' calculations.

**Table A.57 Past and present ad valorem equivalents of nontariff barriers in Japan (percent)**

GTAP code	GTAP sector	Tariff lines (HS6 level)	NTB AVE past (circa 1989)	NTB AVE present (circa 2001)	Assumed change from 1990 to 2000
1	Paddy rice	2	158.7	77.6	-0.51
2	Wheat	2	72.6	35.5	-0.51
3	Cereal grains, other	6	96.0	47.0	-0.51
4	Vegetables, fruit, nuts	78	71.9	35.2	-0.51
5	Oil seeds	11	62.2	30.5	-0.51
6	Sugar cane, sugar beet	2	19.3	9.4	-0.51
7	Plant-based fibers	7	0.0	0.0	-0.51
8	Crops, other	57	34.7	17.0	-0.51
9	Bovine cattle, sheep and goats, horses	8	77.3	37.8	-0.51
10	Animal products, other	39	34.9	17.1	-0.51
12	Wool, silkworm cocoons	4	0.0	0.0	-0.51
13	Forestry	21	16.6	8.1	-0.51
14	Fishing	39	48.0	23.5	-0.51
15	Coal	6	0.0	0.0	-0.51
16	Oil	1	0.0	0.0	-0.51
17	Gas	2	108.4	53.0	-0.51
18	Minerals, other	70	2.7	1.3	-0.51
19	Bovine meat products	26	76.4	37.4	-0.51
20	Meat products, other	25	78.6	38.5	-0.51
21	Vegetable oils and fats	42	42.6	20.8	-0.51
22	Dairy products	18	145.9	71.4	-0.51
23	Processed rice	2	56.2	27.5	-0.51
24	Sugar containing products	7	93.0	45.5	-0.51
25	Food products, other	233	70.1	34.3	-0.51
26	Beverages and tobacco products	26	46.1	22.6	-0.51
27	Textiles	540	31.5	15.4	-0.51
28	Wearing apparel	233	1.2	0.6	-0.51
29	Leather products	59	0.0	0.0	-0.51
30	Wood products	73	2.7	1.3	-0.51
31	Paper products	134	4.8	2.3	-0.51
32	Petroleum, coal products	12	27.9	13.6	-0.51
33	Chemical, rubber, plastic products	870	14.1	6.9	-0.51
34	Mineral products, other	140	7.3	3.6	-0.51
35	Ferrous metals	142	0.0	0.0	-0.51
36	Metals, other	166	0.4	0.2	-0.51
37	Metal products	204	9.9	4.8	-0.51
38	Motor vehicles and parts	54	3.9	1.9	-0.51
39	Transport equipment, other	81	23.2	11.4	-0.51
40	Electronic equipment	95	27.1	13.3	-0.51
41	Machinery and equipment, other	824	14.4	7.1	-0.51
42	Manufactures, other	170	9.7	4.7	-0.51
Simple average			38.8	19.0	

Sources: Kee, Nicita, and Olarreaga (2005); Sazanami, Urata, and Kawai (1995); authors' calculations.

**Table A.58 Past and present ad valorem equivalents of nontariff barriers in Korea (percent)**

GTAP code	GTAP sector	Tariff lines (HS6 level)	NTB AVE past (circa 1989)	NTB AVE present (circa 2001)	Assumed change from 1990 to 2000
1	Paddy rice	2	158.7	77.6	-0.51
2	Wheat	2	72.6	35.5	-0.51
3	Cereal grains, other	6	96.0	47.0	-0.51
4	Vegetables, fruit, nuts	78	71.9	35.2	-0.51
5	Oil seeds	11	62.2	30.5	-0.51
6	Sugar cane, sugar beet	2	19.3	9.4	-0.51
7	Plant-based fibers	7	0.0	0.0	-0.51
8	Crops, other	57	34.7	17.0	-0.51
9	Bovine cattle, sheep and goats, horses	8	77.3	37.8	-0.51
10	Animal products, other	39	34.9	17.1	-0.51
12	Wool, silkworm cocoons	4	0.0	0.0	-0.51
13	Forestry	21	16.6	8.1	-0.51
14	Fishing	39	48.0	23.5	-0.51
15	Coal	6	0.0	0.0	-0.51
16	Oil	1	0.0	0.0	-0.51
17	Gas	2	108.4	53.0	-0.51
18	Minerals, other	70	2.7	1.3	-0.51
19	Bovine meat products	26	76.4	37.4	-0.51
20	Meat products, other	25	78.6	38.5	-0.51
21	Vegetable oils and fats	42	42.6	20.8	-0.51
22	Dairy products	18	145.9	71.4	-0.51
23	Processed rice	2	56.2	27.5	-0.51
24	Sugar containing products	7	93.0	45.5	-0.51
25	Food products, other	233	70.1	34.3	-0.51
26	Beverages and tobacco products	26	46.1	22.6	-0.51
27	Textiles	540	31.5	15.4	-0.51
28	Wearing apparel	233	1.2	0.6	-0.51
29	Leather products	59	0.0	0.0	-0.51
30	Wood products	73	2.7	1.3	-0.51
31	Paper products	134	4.8	2.3	-0.51
32	Petroleum, coal products	12	27.9	13.6	-0.51
33	Chemical, rubber, plastic products	870	14.1	6.9	-0.51
34	Mineral products, other	140	7.3	3.6	-0.51
35	Ferrous metals	142	0.0	0.0	-0.51
36	Metals, other	166	0.4	0.2	-0.51
37	Metal products	204	9.9	4.8	-0.51
38	Motor vehicles and parts	54	3.9	1.9	-0.51
39	Transport equipment, other	81	23.2	11.4	-0.51
40	Electronic equipment	95	27.1	13.3	-0.51
41	Machinery and equipment, other	824	14.4	7.1	-0.51
42	Manufactures, other	170	9.7	4.7	-0.51
Simple average			38.8	19.0	

Note: No Korean NTB data are available in Kee et al. (2005). Estimated AVE of Japanese NTBs are used as a proxy.

Sources: Kee, Nicita, and Olarreaga (2005); Sazanami, Urata, and Kawai (1995); authors' calculations.



**Table A.59 Past and present ad valorem equivalents of nontariff barriers in Malaysia (percent)**

GTAP code	GTAP sector	Tariff lines (HS6 level)	NTB AVE past (circa 1990)	NTB AVE present (circa 2000)	Assumed change from 1990 to 2000
1	Paddy rice	2	45.8	22.4	-0.51
2	Wheat	2	63.6	31.1	-0.51
3	Cereal grains, other	6	92.6	45.3	-0.51
4	Vegetables, fruit, nuts	78	86.3	42.2	-0.51
5	Oil seeds	11	77.0	37.7	-0.51
6	Sugar cane, sugar beet	2	9.7	4.7	-0.51
7	Plant-based fibers	7	47.5	23.2	-0.51
8	Crops, other	57	53.5	26.2	-0.51
9	Bovine cattle, sheep and goats, horses	8	56.5	27.6	-0.51
10	Animal products, other	39	49.3	24.1	-0.51
12	Wool, silkworm cocoons	4	2.9	1.4	-0.51
13	Forestry	21	64.9	31.8	-0.51
14	Fishing	39	57.6	28.2	-0.51
15	Coal	6	79.6	38.9	-0.51
16	Oil	1	1.8	0.9	-0.51
17	Gas	2	137.5	67.3	-0.51
18	Minerals, other	70	88.7	43.4	-0.51
19	Bovine meat products	26	100.7	49.3	-0.51
20	Meat products, other	25	74.9	36.6	-0.51
21	Vegetable oils and fats	42	109.1	53.4	-0.51
22	Dairy products	18	128.1	62.7	-0.51
23	Processed rice	2	156.3	76.5	-0.51
24	Sugar containing products	7	139.1	68.1	-0.51
25	Food products, other	233	77.1	37.7	-0.51
26	Beverages and tobacco products	26	56.0	27.4	-0.51
27	Textiles	540	57.0	27.9	-0.51
28	Wearing apparel	233	43.0	21.0	-0.51
29	Leather products	59	93.2	45.6	-0.51
30	Wood products	73	84.3	41.2	-0.51
31	Paper products	134	56.8	27.8	-0.51
32	Petroleum, coal products	12	87.5	42.8	-0.51
33	Chemical, rubber, plastic products	870	50.4	24.7	-0.51
34	Mineral products, other	140	74.8	36.6	-0.51
35	Ferrous metals	142	70.7	34.6	-0.51
36	Metals, other	166	84.7	41.4	-0.51
37	Metal products	204	71.6	35.0	-0.51
38	Motor vehicles and parts	54	40.8	20.0	-0.51
39	Transport equipment, other	81	112.2	54.9	-0.51
40	Electronic equipment	95	50.4	24.7	-0.51
41	Machinery and equipment, other	824	60.9	29.8	-0.51
42	Manufactures, other	170	77.6	38.0	-0.51
Simple average			72.5	35.5	

Sources: Kee, Nicita, and Olarreaga (2005); Linkins and Arce (1994); USITC (2004); Shuguang, Yansheng, and Zhongxin (1998); Sazanami, Urata, and Kawai (1995); Messerlin (2001); authors' calculations.

**Table A.60 Past and present ad valorem equivalents of nontariff barriers in Mexico (percent)**

GTAP code	GTAP sector	Tariff lines (HS6 level)	NTB AVE past (circa 1990)	NTB AVE present (circa 2000)	Assumed change from 1990 to 2000
1	Paddy rice	2	83.2	40.7	-0.51
2	Wheat	2	79.4	38.8	-0.51
3	Cereal grains, other	6	89.9	44.0	-0.51
4	Vegetables, fruit, nuts	78	60.0	29.3	-0.51
5	Oil seeds	11	60.0	29.4	-0.51
6	Sugar cane, sugar beet	2	6.8	3.3	-0.51
7	Plant-based fibers	7	0.0	0.0	-0.51
8	Crops, other	57	43.9	21.5	-0.51
9	Bovine cattle, sheep and goats, horses	8	58.4	28.6	-0.51
10	Animal products, other	39	77.8	38.1	-0.51
12	Wool, silkworm cocoons	4	23.5	11.5	-0.51
13	Forestry	21	46.4	22.7	-0.51
14	Fishing	39	37.1	18.2	-0.51
15	Coal	6	20.4	10.0	-0.51
16	Oil	1	10.6	5.2	-0.51
17	Gas	2	121.5	59.4	-0.51
18	Minerals, other	70	2.5	1.2	-0.51
19	Bovine meat products	26	81.1	39.7	-0.51
20	Meat products, other	25	61.1	29.9	-0.51
21	Vegetable oils and fats	42	70.1	34.3	-0.51
22	Dairy products	18	105.4	51.5	-0.51
23	Processed rice	2	95.0	46.5	-0.51
24	Sugar containing products	7	87.8	43.0	-0.51
25	Food products, other	233	52.2	25.5	-0.51
26	Beverages and tobacco products	26	51.8	25.4	-0.51
27	Textiles	540	38.8	19.0	-0.51
28	Wearing apparel	233	25.5	12.5	-0.51
29	Leather products	59	66.7	32.6	-0.51
30	Wood products	73	38.8	19.0	-0.51
31	Paper products	134	18.7	9.2	-0.51
32	Petroleum, coal products	12	89.2	43.7	-0.51
33	Chemical, rubber, plastic products	870	29.8	14.6	-0.51
34	Mineral products, other	140	19.4	9.5	-0.51
35	Ferrous metals	142	1.8	0.9	-0.51
36	Metals, other	166	7.7	3.8	-0.51
37	Metal products	204	42.8	20.9	-0.51
38	Motor vehicles and parts	54	20.4	10.0	-0.51
39	Transport equipment, other	81	17.0	8.3	-0.51
40	Electronic equipment	95	22.5	11.0	-0.51
41	Machinery and equipment, other	824	24.0	11.8	-0.51
42	Manufactures, other	170	55.9	27.4	-0.51
Simple average			47.4	23.2	

Sources: Kee, Nicita, and Olarreaga (2005); Linkins and Arce (1994); USITC (2004); Shuguang, Yansheng, and Zhongxin (1998); Sazanami, Urata, and Kawai (1995); Messerlin (2001); authors' calculations.

**Table A.61 Past and present ad valorem equivalents of nontariff barriers in the Philippines**  
(percent)

GTAP code	GTAP sector	Tariff lines (HS6 level)	NTB AVE past (circa 1990)	NTB AVE present (circa 2000)	Assumed change from 1990 to 2000
1	Paddy rice	2	132.2	64.7	-0.51
2	Wheat	2	99.5	48.7	-0.51
3	Cereal grains, other	6	100.2	49.0	-0.51
4	Vegetables, fruit, nuts	78	60.2	29.4	-0.51
5	Oil seeds	11	38.1	18.6	-0.51
6	Sugar cane, sugar beet	2	6.3	3.1	-0.51
7	Plant-based fibers	7	59.4	29.1	-0.51
8	Crops, other	57	47.7	23.3	-0.51
9	Bovine cattle, sheep and goats, horses	8	50.8	24.9	-0.51
10	Animal products, other	39	52.7	25.8	-0.51
12	Wool, silkworm cocoons	4	54.8	26.8	-0.51
13	Forestry	21	47.9	23.4	-0.51
14	Fishing	39	45.0	22.0	-0.51
15	Coal	6	73.2	35.8	-0.51
16	Oil	1	3.6	1.8	-0.51
17	Gas	2	141.0	69.0	-0.51
18	Minerals, other	70	83.0	40.6	-0.51
19	Bovine meat products	26	54.9	26.9	-0.51
20	Meat products, other	25	81.9	40.1	-0.51
21	Vegetable oils and fats	42	62.4	30.5	-0.51
22	Dairy products	18	100.3	49.1	-0.51
23	Processed rice	2	137.0	67.0	-0.51
24	Sugar containing products	7	126.0	61.6	-0.51
25	Food products, other	233	58.8	28.8	-0.51
26	Beverages and tobacco products	26	98.6	48.3	-0.51
27	Textiles	540	27.5	13.5	-0.51
28	Wearing apparel	233	19.2	9.4	-0.51
29	Leather products	59	71.7	35.1	-0.51
30	Wood products	73	92.3	45.2	-0.51
31	Paper products	134	74.4	36.4	-0.51
32	Petroleum, coal products	12	107.8	52.8	-0.51
33	Chemical, rubber, plastic products	870	55.2	27.0	-0.51
34	Mineral products, other	140	74.0	36.2	-0.51
35	Ferrous metals	142	67.8	33.2	-0.51
36	Metals, other	166	91.5	44.8	-0.51
37	Metal products	204	74.3	36.3	-0.51
38	Motor vehicles and parts	54	36.6	17.9	-0.51
39	Transport equipment, other	81	97.3	47.6	-0.51
40	Electronic equipment	95	48.8	23.9	-0.51
41	Machinery and equipment, other	824	67.6	33.1	-0.51
42	Manufactures, other	170	71.0	34.7	-0.51
Simple average			70.5	34.5	

Sources: Kee, Nicita, and Olarreaga (2005); Linkins and Arce (1994); USITC (2004); Shuguang, Yansheng, and Zhongxin (1998); Sazanami, Urata, and Kawai (1995); Messerlin (2001); authors' calculations.

**Table A.62 Past and present ad valorem equivalents of nontariff barriers in Singapore (percent)**

GTAP code	GTAP sector	Tariff lines (HS6 level)	NTB AVE past (circa 1990)	NTB AVE present (circa 2000)	Assumed change from 1990 to 2000
1	Paddy rice	2	194.0	94.9	-0.51
2	Wheat	2	0.0	0.0	-0.51
3	Cereal grains, other	6	0.0	0.0	-0.51
4	Vegetables, fruit, nuts	78	0.0	0.0	-0.51
5	Oil seeds	11	0.0	0.0	-0.51
6	Sugar cane, sugar beet	2	0.0	0.0	-0.51
7	Plant-based fibers	7	0.0	0.0	-0.51
8	Crops, other	57	3.5	1.7	-0.51
9	Bovine cattle, sheep and goats, horses	8	83.3	40.7	-0.51
10	Animal products, other	39	22.4	11.0	-0.51
12	Wool, silkworm cocoons	4	0.0	0.0	-0.51
13	Forestry	21	0.0	0.0	-0.51
14	Fishing	39	54.9	26.8	-0.51
15	Coal	6	0.0	0.0	-0.51
16	Oil	1	0.0	0.0	-0.51
17	Gas	2	0.0	0.0	-0.51
18	Minerals, other	70	0.0	0.0	-0.51
19	Bovine meat products	26	71.6	35.0	-0.51
20	Meat products, other	25	25.2	12.3	-0.51
21	Vegetable oils and fats	42	3.9	1.9	-0.51
22	Dairy products	18	152.1	74.4	-0.51
23	Processed rice	2	173.8	85.0	-0.51
24	Sugar containing products	7	0.0	0.0	-0.51
25	Food products, other	233	11.5	5.6	-0.51
26	Beverages and tobacco products	26	0.0	0.0	-0.51
27	Textiles	540	0.0	0.0	-0.51
28	Wearing apparel	233	0.0	0.0	-0.51
29	Leather products	59	0.0	0.0	-0.51
30	Wood products	73	0.0	0.0	-0.51
31	Paper products	134	0.0	0.0	-0.51
32	Petroleum, coal products	12	0.0	0.0	-0.51
33	Chemical, rubber, plastic products	870	2.3	1.1	-0.51
34	Mineral products, other	140	0.0	0.0	-0.51
35	Ferrous metals	142	44.3	21.7	-0.51
36	Metals, other	166	0.0	0.0	-0.51
37	Metal products	204	5.5	2.7	-0.51
38	Motor vehicles and parts	54	8.2	4.0	-0.51
39	Transport equipment, other	81	29.6	14.5	-0.51
40	Electronic equipment	95	4.2	2.1	-0.51
41	Machinery and equipment, other	824	0.8	0.4	-0.51
42	Manufactures, other	170	1.4	0.7	-0.51
Simple average			21.8	10.7	

Note: No Singapore NTB data is available in Kee et al. (2005). Estimated AVE of Hong Kong NTBs are used as a proxy.

Sources: Kee, Nicita, and Olarreaga (2005); Linkins and Arce (1994); USITC (2004); Shuguang, Yansheng, and Zhongxin (1998); Sazanami, Urata, and Kawai (1995); Messerlin (2001); authors' calculations.

**Table A.63 Past and present ad valorem equivalents of nontariff barriers in Taiwan** (percent)

GTAP code	GTAP sector	Tariff lines (HS6 level)	NTB AVE past (circa 1990)	NTB AVE present (circa 2000)	Assumed change from 1990 to 2000
1	Paddy rice	2	45.8	22.4	-0.51
2	Wheat	2	63.6	31.1	-0.51
3	Cereal grains, other	6	92.6	45.3	-0.51
4	Vegetables, fruit, nuts	78	86.3	42.2	-0.51
5	Oil seeds	11	77.0	37.7	-0.51
6	Sugar cane, sugar beet	2	9.7	4.7	-0.51
7	Plant-based fibers	7	47.5	23.2	-0.51
8	Crops, other	57	53.5	26.2	-0.51
9	Bovine cattle, sheep and goats, horses	8	56.5	27.6	-0.51
10	Animal products, other	39	49.3	24.1	-0.51
12	Wool, silkworm cocoons	4	2.9	1.4	-0.51
13	Forestry	21	64.9	31.8	-0.51
14	Fishing	39	57.6	28.2	-0.51
15	Coal	6	79.6	38.9	-0.51
16	Oil	1	1.8	0.9	-0.51
17	Gas	2	137.5	67.3	-0.51
18	Minerals, other	70	88.7	43.4	-0.51
19	Bovine meat products	26	100.7	49.3	-0.51
20	Meat products, other	25	74.9	36.6	-0.51
21	Vegetable oils and fats	42	109.1	53.4	-0.51
22	Dairy products	18	128.1	62.7	-0.51
23	Processed rice	2	156.3	76.5	-0.51
24	Sugar containing products	7	139.1	68.1	-0.51
25	Food products, other	233	77.1	37.7	-0.51
26	Beverages and tobacco products	26	56.0	27.4	-0.51
27	Textiles	540	57.0	27.9	-0.51
28	Wearing apparel	233	43.0	21.0	-0.51
29	Leather products	59	93.2	45.6	-0.51
30	Wood products	73	84.3	41.2	-0.51
31	Paper products	134	56.8	27.8	-0.51
32	Petroleum, coal products	12	87.5	42.8	-0.51
33	Chemical, rubber, plastic products	870	50.4	24.7	-0.51
34	Mineral products, other	140	74.8	36.6	-0.51
35	Ferrous metals	142	70.7	34.6	-0.51
36	Metals, other	166	84.7	41.4	-0.51
37	Metal products	204	71.6	35.0	-0.51
38	Motor vehicles and parts	54	40.8	20.0	-0.51
39	Transport equipment, other	81	112.2	54.9	-0.51
40	Electronic equipment	95	50.4	24.7	-0.51
41	Machinery and equipment, other	824	60.9	29.8	-0.51
42	Manufactures, other	170	77.6	38.0	-0.51
Simple average			72.5	35.5	

Note: No Taiwan NTB data is available in Kee et al (2005). Estimated AVE of Malaysia NTBs are used as a proxy.

Sources: Kee, Nicita, and Olarreaga (2005); Linkins and Arce (1994); USITC (2004); Shuguang, Yansheng, and Zhongxin (1998); Sazanami, Urata, and Kawai (1995); Messerlin (2001); authors' calculations.

**Table A.64 Past and present ad valorem equivalents of nontariff barriers in Thailand (percent)**

GTAP code	GTAP sector	Tariff lines (HS6 level)	NTB AVE past (circa 1990)	NTB AVE present (circa 2000)	Assumed change from 1990 to 2000
1	Paddy rice	2	93.9	46.0	-0.51
2	Wheat	2	69.5	34.0	-0.51
3	Cereal grains, other	6	82.4	40.3	-0.51
4	Vegetables, fruit, nuts	78	68.2	33.3	-0.51
5	Oil seeds	11	44.3	21.7	-0.51
6	Sugar cane, sugar beet	2	9.8	4.8	-0.51
7	Plant-based fibers	7	1.3	0.7	-0.51
8	Crops, other	57	50.3	24.6	-0.51
9	Bovine cattle, sheep and goats, horses	8	80.2	39.2	-0.51
10	Animal products, other	39	26.1	12.7	-0.51
12	Wool, silkworm cocoons	4	0.0	0.0	-0.51
13	Forestry	21	1.3	0.6	-0.51
14	Fishing	39	51.4	25.1	-0.51
15	Coal	6	0.0	0.0	-0.51
16	Oil	1	0.0	0.0	-0.51
17	Gas	2	0.0	0.0	-0.51
18	Minerals, other	70	1.3	0.7	-0.51
19	Bovine meat products	26	55.2	27.0	-0.51
20	Meat products, other	25	61.2	29.9	-0.51
21	Vegetable oils and fats	42	45.1	22.1	-0.51
22	Dairy products	18	110.3	53.9	-0.51
23	Processed rice	2	38.7	18.9	-0.51
24	Sugar containing products	7	122.6	60.0	-0.51
25	Food products, other	233	57.5	28.1	-0.51
26	Beverages and tobacco products	26	14.0	6.9	-0.51
27	Textiles	540	0.0	0.0	-0.51
28	Wearing apparel	233	0.0	0.0	-0.51
29	Leather products	59	2.6	1.3	-0.51
30	Wood products	73	0.0	0.0	-0.51
31	Paper products	134	0.0	0.0	-0.51
32	Petroleum, coal products	12	0.0	0.0	-0.51
33	Chemical, rubber, plastic products	870	3.3	1.6	-0.51
34	Mineral products, other	140	2.0	1.0	-0.51
35	Ferrous metals	142	0.0	0.0	-0.51
36	Metals, other	166	0.0	0.0	-0.51
37	Metal products	204	0.0	0.0	-0.51
38	Motor vehicles and parts	54	1.0	0.5	-0.51
39	Transport equipment, other	81	0.1	0.0	-0.51
40	Electronic equipment	95	0.0	0.0	-0.51
41	Machinery and equipment, other	824	2.9	1.4	-0.51
42	Manufactures, other	170	1.0	0.5	-0.51
Simple average			26.8	13.1	

Sources: Kee, Nicita, and Olarreaga (2005); Linkins and Arce (1994); USITC (2004); Shuguang, Yansheng, and Zhongxin (1998); Sazanami, Urata, and Kawai (1995); Messerlin (2001); authors' calculations.

**Table A.65 Past and present ad valorem equivalents of nontariff barriers in the United States**  
(percent)

GTAP code	GTAP sector	Tariff lines (HS6 level)	NTB AVE past (circa 1991)	NTB AVE present (circa 2000)	Assumed change from 1990 to 2000
1	Paddy rice	2	51.6	25.3	-0.51
2	Wheat	2	18.3	9.0	-0.51
3	Cereal grains, other	6	85.9	42.0	-0.51
4	Vegetables, fruit, nuts	78	75.3	36.8	-0.51
5	Oil seeds	11	28.6	14.0	-0.51
6	Sugar cane, sugar beet	2	0.0	0.0	-0.51
7	Plant-based fibers	7	0.0	0.0	-0.51
8	Crops, other	57	19.2	9.4	-0.51
9	Bovine cattle, sheep and goats, horses	8	38.3	18.7	-0.51
10	Animal products, other	39	26.5	12.9	-0.51
12	Wool, silkworm cocoons	4	41.9	20.5	-0.51
13	Forestry	21	40.7	19.9	-0.51
14	Fishing	39	46.2	22.6	-0.51
15	Coal	6	0.0	0.0	-0.51
16	Oil	1	0.0	0.0	-0.51
17	Gas	2	124.2	60.8	-0.51
18	Minerals, other	70	0.0	0.0	-0.51
19	Bovine meat products	26	72.0	35.2	-0.51
20	Meat products, other	25	59.4	29.1	-0.51
21	Vegetable oils and fats	42	7.7	3.8	-0.51
22	Dairy products	18	134.4	65.8	-0.51
23	Processed rice	2	36.3	17.7	-0.51
24	Sugar containing products	7	0.0	0.0	-0.51
25	Food products, other	233	48.0	23.5	-0.51
26	Beverages and tobacco products	26	21.0	10.3	-0.51
27	Textiles	540	15.9	7.8	-0.51
28	Wearing apparel	233	35.8	17.5	-0.51
29	Leather products	59	8.6	4.2	-0.51
30	Wood products	73	22.8	11.1	-0.51
31	Paper products	134	0.0	0.0	-0.51
32	Petroleum, coal products	12	0.0	0.0	-0.51
33	Chemical, rubber, plastic products	870	7.4	3.6	-0.51
34	Mineral products, other	140	0.1	0.1	-0.51
35	Ferrous metals	142	0.0	0.0	-0.51
36	Metals, other	166	0.0	0.0	-0.51
37	Metal products	204	2.8	1.4	-0.51
38	Motor vehicles and parts	54	22.8	11.2	-0.51
39	Transport equipment, other	81	36.3	17.8	-0.51
40	Electronic equipment	95	7.7	3.8	-0.51
41	Machinery and equipment, other	824	8.8	4.3	-0.51
42	Manufactures, other	170	6.6	3.2	-0.51
Simple average			28.1	13.7	

Sources: Kee, Nicita, and Olarreaga (2005); Linkins and Arce (1994); USITC (2004); authors' calculations.

**Table A.66 Past and present ad valorem equivalents of nontariff barriers in Venezuela (percent)**

GTAP code	GTAP sector	Tariff lines (HS6 level)	NTB AVE past (circa 1990)	NTB AVE present (circa 2000)	Assumed change from 1990 to 2000
1	Paddy rice	2	48.6	23.8	-0.51
2	Wheat	2	63.7	31.2	-0.51
3	Cereal grains, other	6	77.0	37.7	-0.51
4	Vegetables, fruit, nuts	78	65.0	31.8	-0.51
5	Oil seeds	11	57.2	28.0	-0.51
6	Sugar cane, sugar beet	2	9.6	4.7	-0.51
7	Plant-based fibers	7	55.6	27.2	-0.51
8	Crops, other	57	43.7	21.4	-0.51
9	Bovine cattle, sheep and goats, horses	8	43.4	21.2	-0.51
10	Animal products, other	39	45.0	22.0	-0.51
12	Wool, silkworm cocoons	4	2.4	1.2	-0.51
13	Forestry	21	51.4	25.1	-0.51
14	Fishing	39	47.5	23.3	-0.51
15	Coal	6	0.0	0.0	-0.51
16	Oil	1	1.9	0.9	-0.51
17	Gas	2	145.3	71.1	-0.51
18	Minerals, other	70	6.6	3.2	-0.51
19	Bovine meat products	26	59.3	29.0	-0.51
20	Meat products, other	25	71.7	35.1	-0.51
21	Vegetable oils and fats	42	79.0	38.6	-0.51
22	Dairy products	18	116.2	56.9	-0.51
23	Processed rice	2	91.2	44.6	-0.51
24	Sugar containing products	7	175.5	85.9	-0.51
25	Food products, other	233	63.9	31.2	-0.51
26	Beverages and tobacco products	26	48.5	23.7	-0.51
27	Textiles	540	1.6	0.8	-0.51
28	Wearing apparel	233	4.2	2.0	-0.51
29	Leather products	59	22.7	11.1	-0.51
30	Wood products	73	22.8	11.2	-0.51
31	Paper products	134	3.9	1.9	-0.51
32	Petroleum, coal products	12	60.3	29.5	-0.51
33	Chemical, rubber, plastic products	870	28.9	14.1	-0.51
34	Mineral products, other	140	8.0	3.9	-0.51
35	Ferrous metals	142	4.7	2.3	-0.51
36	Metals, other	166	16.9	8.2	-0.51
37	Metal products	204	4.7	2.3	-0.51
38	Motor vehicles and parts	54	20.8	10.2	-0.51
39	Transport equipment, other	81	15.2	7.4	-0.51
40	Electronic equipment	95	0.0	0.0	-0.51
41	Machinery and equipment, other	824	5.5	2.7	-0.51
42	Manufactures, other	170	14.6	7.2	-0.51
Simple average			41.6	20.3	

Sources: Kee, Nicita, and Olarreaga (2005); Linkins and Arce (1994); USITC (2004); Shuguang, Yansheng, and Zhongxin (1998); Sazanami, Urata, and Kawai (1995); Messerlin (2001); authors' calculations.



**Table A.67 Ad valorem equivalents (AVEs) of transportation costs on US imports from Australia** (AVEs in percent, imports in millions of US dollars)

GTAP code	GTAP sector	Circa 1980 AVE	1980 imports	Circa 2003 AVE	2003 imports
1	Paddy rice	10.6 <sup>J</sup>	ND	8.9 <sup>J</sup>	ND
2	Wheat	12.4 <sup>J</sup>	ND	2.8 <sup>J</sup>	ND
3	Cereal grains nec	25.6	0	19.5	0
4	Vegetables, fruit, nuts	31.9	5	15.2	43
5	Oil seeds	22.4	0	16.1	5
6	Sugar cane, sugar beet	14.8	0	22.3 <sup>8</sup>	ND
7	Plant-based fibers	19.3 <sup>85</sup>	0	5.7	1
8	Crops nec	10.0	4	22.3	8
9	Bovine cattle, sheep and goats	22.6	2	16.3	10
10	Animal products nec	7.6	4	6.5	14
12	Wool, silkworm cocoons	8.3	25	2.6	12
13	Forestry	23.6	0	23.3	1
14	Fishing	3.6	88	3.6	124
15	Coal	50.2	2	24.1	11
16	Oil	13.6	8	7.2	267
17	Gas	20.3 <sup>84</sup>	0	3.0	21
18	Minerals nec	13.7	157	11.0	242
19	Bovine meat products	14.3	888	6.5	1,148
20	Meat products nec	9.7	2	14.2	14
21	Vegetable oils and fats	29.4	0	9.0	3
22	Dairy products	11.3	28	2.0	83
23	Processed rice	0.0	0	21.5	0
24	Sugar containing products	12.9	150	12.3	41
25	Food products nec	10.2	7	5.3	73
26	Beverages and tobacco products	33.3	5	6.0	627
27	Textiles	9.7	24	3.9	229
28	Wearing apparel	7.5	5	5.6	16
29	Leather products	9.9	0	6.5	17
30	Wood products	24.5	1	9.3	37
31	Paper products, publishing	10.8	2	12.5	45
32	Petroleum, coal products	20.3	16	10.8	21
33	Chemical, rubber, plastic products	4.3	102	3.5	568
34	Mineral products nec	28.9	3	3.4	61
35	Ferrous metals	16.8	54	7.4	93
36	Metals nec	7.2	700	2.6	359
37	Metal products	7.1	15	7.5	54
38	Motor vehicles and parts	5.1	7	2.9	345
39	Transport equipment nec	4.6	48	3.5	210
40	Electronic equipment	3.3	4	1.9	87
41	Machinery and equipment nec	6.0	46	3.1	673
42	Manufactures nec	2.7	13	2.4	122
Weighted average of AVEs		10.9		5.2	
Total imports			2,418		5,685

ND = no data, J = Japan rate, 85 = 1985 rate, 84 = 1984 rate, 8 = crops not elsewhere classified (nec) rate

Notes: Ad valorem equivalents of transport costs are taken as the sum of transport charges divided by import values at the 5 digit SITC revision 2 level under each GTAP code. Uncoded circa 1980 AVEs are the simple average of available AVE estimates from 1979, 1980, and 1981; likewise for the circa 2003 AVEs with available 2002, 2003, and 2004 estimates. A concordance between SITC revision 2 and GTAP is derived from CEPII (2007). For duplicate SITC codes in the CEPII mapping the mode GTAP sector was used. Weighted averages are weighted by shares of 1980 or 2003 imports; rates used to fill in missing data are not considered.

Source: Hummels (2007); authors' calculations.

**Table A.68 Ad valorem equivalents (AVEs) of transportation costs on US imports from Brazil** (AVEs in percent, imports in millions of US dollars)

GTAP code	GTAP sector	Circa 1980 AVE	1980 imports	Circa 2003 AVE	2003 imports
1	Paddy rice	15.2 <sup>87</sup>	0	18.3	0
2	Wheat	12.4 <sup>J</sup>	ND	2.8 <sup>J</sup>	ND
3	Cereal grains nec	31.7	1	8.1	1
4	Vegetables, fruit, nuts	8.3	61	13.5	148
5	Oil seeds	9.0	0	27.2	0
6	Sugar cane, sugar beet	16.7	8	7.8 <sup>8</sup>	ND
7	Plant-based fibers	25.0	1	31.3	0
8	Crops nec	5.3	967	7.8	568
9	Bovine cattle, sheep and goats	31.9	0	8.3	67
10	Animal products nec	10.2	2	6.5	21
12	Wool, silkworm cocoons	5.8	1	2.2	0
13	Forestry	12.3	11	22.3	3
14	Fishing	5.0	62	10.7	194
15	Coal	10.2	0	4.6 <sup>01</sup>	1
16	Oil	3.4	10	4.1	500
17	Gas	0.0 <sup>84</sup>	0	4.0	19
18	Minerals nec	21.3	51	21.0	224
19	Bovine meat products	40.1	0	2.3	0
20	Meat products nec	5.3	82	5.8	151
21	Vegetable oils and fats	7.9	53	7.8	18
22	Dairy products	5.3	0	17.2	6
23	Processed rice	20.3 <sup>86</sup>	0	22.0	0
24	Sugar containing products	7.9	414	9.7	72
25	Food products nec	7.1	429	9.6	440
26	Beverages and tobacco products	10.7	67	12.4	27
27	Textiles	10.2	85	7.0	327
28	Wearing apparel	6.6	16	7.9	136
29	Leather products	7.5	255	4.8	1,144
30	Wood products	27.7	81	14.9	1,235
31	Paper products, publishing	12.3	33	9.0	623
32	Petroleum, coal products	10.2	29	6.3	101
33	Chemical, rubber, plastic products	9.3	72	7.3	986
34	Mineral products nec	17.3	14	21.1	493
35	Ferrous metals	14.1	273	7.6	1,003
36	Metals nec	2.0	75	2.9	518
37	Metal products	8.6	31	8.5	226
38	Motor vehicles and parts	11.1	180	5.0	1,581
39	Transport equipment nec	5.3	52	0.2	1,937
40	Electronic equipment	3.1	82	1.1	1,198
41	Machinery and equipment nec	5.4	106	5.2	1,521
42	Manufactures nec	2.1	40	5.2	110
Weighted average of AVEs		8.1		6.6	
Total Imports			3,646		15,600

ND = no data, 87 = 1987 rate, J = Japan rate, 84 = 1984 rate, 86 = 1986 rate, 8 = crops not elsewhere classified (nec) rate, 01 = 2001 rate

Notes: Ad valorem equivalents of transport costs are taken as the sum of transport charges divided by import values at the 5 digit SITC revision 2 level under each GTAP code. Uncoded circa 1980 AVEs are the simple average of available AVE estimates from 1979, 1980, and 1981; likewise for the circa 2003 AVEs with available 2002, 2003, and 2004 estimates. A concordance between SITC revision 2 and GTAP is derived from CEPII (2007). For duplicate SITC codes in the CEPII mapping the mode GTAP sector was used. Weighted averages are weighted by shares of 1980 or 2003 imports; rates used to fill in missing data are not considered.

Source: Hummels (2007); authors' calculations.

**Table A.69 Ad valorem equivalents (AVE) of transportation costs on US imports from Canada** (AVEs in percent, imports in millions of US dollars)

GTAP code	GTAP sector	Circa 1980 AVE	1980 imports	Circa 2003 AVE	2003 imports
1	Paddy rice	0.0	0	5.3	0
2	Wheat	0.0	1	3.6	130
3	Cereal grains nec	0.8	33	6.7	227
4	Vegetables, fruit, nuts	0.0	62	3.2	768
5	Oil seeds	0.0	23	2.5	155
6	Sugar cane, sugar beet	0.1	6	2.4 <sup>8</sup>	ND
7	Plant-based fibers	0.9	0	6.5	0
8	Crops nec	0.1	50	2.4	395
9	Bovine cattle, sheep and goats	0.1	205	1.5	469
10	Animal products nec	0.2	118	2.0	570
12	Wool, silkworm cocoons	0.2	0	1.2	0
13	Forestry	1.9	53	4.3	285
14	Fishing	0.2	155	0.9	1,448
15	Coal	3.4	3	8.9	105
16	Oil	0.0	2,196	2.8	14,101
17	Gas	0.1	3,235	0.0	18,255
18	Minerals nec	8.9	415	15.1	756
19	Bovine meat products	0.0	100	0.5	897
20	Meat products nec	0.2	140	1.0	1,010
21	Vegetable oils and fats	0.2	4	3.2	526
22	Dairy products	1.6	5	1.6	57
23	Processed rice	1.6	0	2.7	0
24	Sugar containing products	0.2	1	3.3	15
25	Food products nec	0.4	603	2.1	5,041
26	Beverages and tobacco products	0.4	392	3.0	924
27	Textiles	0.2	83	1.4	2,151
28	Wearing apparel	0.5	54	1.0	1,440
29	Leather products	0.2	59	1.9	100
30	Wood products	2.3	2,608	3.2	14,979
31	Paper products, publishing	1.1	4,807	3.4	10,455
32	Petroleum, coal products	0.8	1,381	3.9	2,022
33	Chemical, rubber, plastic products	0.8	2,860	2.4	1,8945
34	Mineral products nec	2.4	356	4.3	1,942
35	Ferrous metals	5.5	1,649	2.9	2,221
36	Metals nec	0.1	3,800	0.9	8,301
37	Metal products	0.2	644	1.9	4,221
38	Motor vehicles and parts	0.0	7,963	0.5	55,892
39	Transport equipment nec	0.1	1,155	0.3	8,613
40	Electronic equipment	0.1	1,006	0.5	5,745
41	Machinery and equipment nec	0.1	2,509	1.2	15,907
42	Manufactures nec	0.4	761	1.2	1,401
Weighted average of AVEs		0.8		1.5	
Total imports			39,496		200,472

ND = no data, 8 = crops not elsewhere classified (nec) rate

Notes: Ad valorem equivalents of transport costs are taken as the sum of transport charges divided by import values at the 5 digit SITC revision 2 level under each GTAP code. Uncoded circa 1980 AVEs are the simple average of available AVE estimates from 1979, 1980, and 1981; likewise for the circa 2003 AVEs with available 2002, 2003, and 2004 estimates. A concordance between SITC revision 2 and GTAP is derived from CEPII (2007). For duplicate SITC codes in the CEPII mapping the mode GTAP sector was used. Weighted averages are weighted by shares of 1980 or 2003 imports; rates used to fill in missing data are not considered.

Source: Hummels (2007); authors' calculations.

**Table A.70 Ad valorem equivalents (AVE) of transportation costs on US imports from China** (AVEs in percent, imports in millions of US dollars)

GTAP code	GTAP sector	Circa 1980 AVE	1980 imports	Circa 2003 AVE	2003 imports
1	Paddy rice	16.1 <sup>82</sup>	0	19.2	0
2	Wheat	38.6 <sup>86</sup>	0	12.5	0
3	Cereal grains nec	16.7	0	17.5	0
4	Vegetables, fruit, nuts	10.3	3	10.1	99
5	Oil seeds	13.1	0	13.6	10
6	Sugar cane, sugar beet	15.4	0	10.3 <sup>8</sup>	ND
7	Plant-based fibers	7.8	0	29.0	0
8	Crops nec	12.7	27	10.3	149
9	Bovine cattle, sheep and goats	10.2	0	9.2	31
10	Animal products nec	6.4	46	4.7	227
12	Wool, silkworm cocoons	3.5	6	2.1	5
13	Forestry	14.7	2	12.8	34
14	Fishing	4.2	5	4.6	464
15	Coal	81.3 <sup>83</sup>	0	31.9	8
16	Oil	7.2	19	6.8	62
17	Gas	ND	ND	5.6	2
18	Minerals nec	30.2	58	24.3	213
19	Bovine meat products	21.7 <sup>78</sup>	0	11.3	0
20	Meat products nec	9.2	0	5.2	1
21	Vegetable oils and fats	13.7	3	9.2	9
22	Dairy products	24.6 <sup>85</sup>	0	4.6	2
23	Processed rice	18.0	0	9.9	18
24	Sugar containing products	13.4	0	15.9	1
25	Food products nec	13.4	28	10.2	1,365
26	Beverages and tobacco products	32.4	2	13.9	26
27	Textiles	4.9	127	6.7	4,902
28	Wearing apparel	8.3	237	5.5	9,372
29	Leather products	8.4	25	6.1	12,592
30	Wood products	24.0	58	15.8	10,375
31	Paper products, publishing	9.5	2	9.1	1,727
32	Petroleum, coal products	11.4	114	11.4	188
33	Chemical, rubber, plastic products	8.3	100	9.9	9,555
34	Mineral products nec	11.1	44	16.4	2,936
35	Ferrous metals	184.4	0	8.9	392
36	Metals nec	3.3	45	5.1	278
37	Metal products	14.2	21	10.1	5,763
38	Motor vehicles and parts	31.8	0	9.5	1,426
39	Transport equipment nec	21.8	0	10.5	1,210
40	Electronic equipment	4.8	1	2.9	40,889
41	Machinery and equipment nec	11.4	7	7.1	23,518
42	Manufactures nec	6.2	56	7.8	20,950
Weighted Average of AVEs		10.5		7.1	
Total Imports			1,036		148,803

ND = no data, 82 = 1982 rate, 86 = 1986 rate, 83 = 1983 rate, 78 = 1978 rate, 85 = 1985 rate, 8 = crops not elsewhere classified (nec) rate

Notes: Ad valorem equivalents of transport costs are taken as the sum of transport charges divided by import values at the 5-digit SITC revision 2 level under each GTAP code. Uncoded circa 1980 AVEs are the simple average of available AVE estimates from 1979, 1980, and 1981; likewise for the circa 2003 AVEs with available 2002, 2003, and 2004 estimates. A concordance between SITC revision 2 and GTAP is derived from CEPII (2007). For duplicate SITC codes in the CEPII mapping the mode GTAP sector was used. Weighted averages are weighted by shares of 1980 or 2003 imports; rates used to fill in missing data are not considered.

Source: Hummels (2007); authors' calculations.

**Table A.71 Ad valorem equivalents (AVE) of transportation costs on US imports from the European Union<sup>a</sup>** (AVEs in percent, imports in millions of US dollars)

GTAP code	GTAP sector	Circa 1980 AVE	1980 imports	Circa 2003 AVE	2003 imports
1	Paddy rice	11.4 <sup>UK</sup>	0	13.0 <sup>UK</sup>	1
2	Wheat	32.9 <sup>UK84</sup>	0	19.5	6
3	Cereal grains nec	11.8	0	26.7	7
4	Vegetables, fruit, nuts	12.7	1	5.4	2
5	Oil seeds	9.5	0	6.3	0
6	Sugar cane, sugar beet	6.0	42	5.1 <sup>8</sup>	0
7	Plant-based fibers	30.4	0	19.1	0
8	Crops nec	5.8	81	5.1	141
9	Bovine cattle, sheep and goats	11.9	24	4.4	68
10	Animal products nec	4.3	23	5.3	6
12	Wool, silkworm cocoons	4.0	3	4.5	1
13	Forestry	9.3	2	6.5	11
14	Fishing	4.3	11	20.1	49
15	Coal	40.0	0	19.4 <sup>G97</sup>	0
16	Oil	39.8	1,922	5.7	1,982
17	Gas	19.2	0	7.7	318
18	Minerals nec	7.3	227	17.8	88
19	Bovine meat products	26.7	0	2.4	7
20	Meat products nec	7.3	3	3.5	12
21	Vegetable oils and fats	6.6	4	3.9	14
22	Dairy products	7.3	29	4.2	100
23	Processed rice	10.7 <sup>UK</sup>	0	8.3 <sup>UK</sup>	0
24	Sugar containing products	20.4	0	17.3	0
25	Food products nec	7.9	97	6.7	558
26	Beverages and tobacco products	12.2	665	8.0	1,185
27	Textiles	6.0	235	5.3	916
28	Wearing apparel	3.9	97	3.5	164
29	Leather products	4.4	74	3.5	225
30	Wood products	12.3	91	8.4	856
31	Paper products, publishing	7.2	280	6.7	1,341
32	Petroleum, coal products	7.7	78	8.2	706
33	Chemical, rubber, plastic products	5.3	2,243	2.2	19,806
34	Mineral products nec	7.7	373	5.5	1,054
35	Ferrous metals	11.2	688	7.8	1,009
36	Metals nec	2.9	904	2.5	1,606
37	Metal products	5.8	448	4.0	1,872
38	Motor vehicles and parts	3.5	5,069	1.5	29,809
39	Transport equipment nec	1.9	1,114	0.7	5,152
40	Electronic equipment	2.5	777	1.4	4,356
41	Machinery and equipment nec	3.5	4,818	2.5	24,147
42	Manufactures nec	2.9	655	1.7	2,245
Weighted average of AVEs		4.2		2.4	
Total imports			21,077		99,820

a. European Union rates are the simple average of rates for Germany and the United Kingdom.

UK = United Kingdom rate only, UK84 = United Kingdom 1984 rate, 8 = crops not elsewhere classified (nec) rate, G97 = Germany 1997 rate

Notes: Ad valorem equivalents of transport costs are taken as the sum of transport charges divided by import values at the 5 digit SITC revision 2 level under each GTAP code. Uncoded circa 1980 AVEs are the simple average of available AVE estimates from 1979, 1980, and 1981; likewise for the circa 2003 AVEs with available 2002, 2003, and 2004 estimates. A concordance between SITC revision 2 and GTAP is derived from CEPII (2007). For duplicate SITC codes in the CEPII mapping the mode GTAP sector was used. Weighted averages are weighted by shares of 1980 or 2003 imports; rates used to fill in missing data are not considered.

Source: Hummels (2007); authors' calculations.

**Table A.72 Ad valorem equivalents (AVE) of transportation costs on US imports from Hong Kong** (AVEs in percent, imports in millions of US dollars)

GTAP code	GTAP sector	Circa 1980 AVE	1980 imports	Circa 2003 AVE	2003 imports
1	Paddy rice	13.9 <sup>83</sup>	0	15.6 <sup>99</sup>	0
2	Wheat	12.4 <sup>J</sup>	ND	8.1 <sup>T01</sup>	0
3	Cereal grains nec	12.1	0	28.1	0
4	Vegetables, fruit, nuts	11.3	1	7.3	1
5	Oil seeds	9.3	0	7.0	0
6	Sugar cane, sugar beet	10.0	2	4.0 <sup>8</sup>	ND
7	Plant-based fibers	25.9	0	29.3	0
8	Crops nec	10.8	1	4.0	8
9	Bovine cattle, sheep and goats	5.8	0	6.8	0
10	Animal products nec	4.7	3	6.5	2
12	Wool, silkworm cocoons	6.6	0	3.4 <sup>00</sup>	0
13	Forestry	9.3	3	13.7	1
14	Fishing	14.2	11	5.1	42
15	Coal	6.6	0	38.7	0
16	Oil	8.7 <sup>84</sup>	3	0.7 <sup>T</sup>	ND
17	Gas	47.2 <sup>T86</sup>	ND	24.5 <sup>J</sup>	ND
18	Minerals nec	6.3	1	11.4	3
19	Bovine meat products	15.7 <sup>87</sup>	0	10.6 <sup>00</sup>	0
20	Meat products nec	5.6	0	15.2	0
21	Vegetable oils and fats	10.6	0	8.3	1
22	Dairy products	17.3	0	9.2	0
23	Processed rice	11.6	0	13.5	0
24	Sugar containing products	7.6	0	7.2	0
25	Food products nec	9.3	42	8.5	58
26	Beverages and tobacco products	17.0	0	10.4	5
27	Textiles	5.8	129	4.3	1,367
28	Wearing apparel	7.2	1,451	5.3	2,487
29	Leather products	9.3	117	7.9	117
30	Wood products	15.5	75	14.2	129
31	Paper products, publishing	9.1	30	7.3	334
32	Petroleum, coal products	10.1	3	12.8	0
33	Chemical, rubber, plastic products	12.0	118	10.6	292
34	Mineral products nec	5.9	199	13.3	52
35	Ferrous metals	9.6	1	5.9	2
36	Metals nec	2.6	21	5.4	31
37	Metal products	8.5	94	8.1	127
38	Motor vehicles and parts	9.7	2	6.9	15
39	Transport equipment nec	8.3	16	3.7	52
40	Electronic equipment	3.0	626	3.0	985
41	Machinery and equipment nec	5.0	747	6.2	832
42	Manufactures nec	8.4	812	3.5	1,069
Weighted average of AVEs		6.7		5.3	
Total imports			4,506		8,013

ND = no data, 83 = 1983 rate, J = Japan rate, 84 = 1984 rate, T86, Taiwan 1986 rate, 87 = 1987 rate, 99 = 1999 rate, T01 = Taiwan 2001 rate, 8 = crops not elsewhere classified (nec) rate, 00 = 2000 rate, T = Taiwan rate

Notes: Ad valorem equivalents of transport costs are taken as the sum of transport charges divided by import values at the 5 digit SITC revision 2 level under each GTAP code. Uncoded circa 1980 AVEs are the simple average of available AVE estimates from 1979, 1980, and 1981; likewise for the circa 2003 AVEs with available 2002, 2003, and 2004 estimates. A concordance between SITC revision 2 and GTAP is derived from CEPII (2007). For duplicate SITC codes in the CEPII mapping the mode GTAP sector was used. Weighted averages are weighted by shares of 1980 or 2003 imports; rates used to fill in missing data are not considered.

Source: Hummels (2007); authors' calculations.

**Table A.73 Ad valorem equivalents (AVE) of transportation costs on US imports from India**  
(AVEs in percent, imports in millions of US dollars)

GTAP code	GTAP sector	Circa 1980 AVE	1980 imports	Circa 2003 AVE	2003 imports
1	Paddy rice	15.4	0	11.2	11
2	Wheat	12.4 <sup>J</sup>	ND	8.1 <sup>T01</sup>	ND
3	Cereal grains nec	35.5	0	15.7	0
4	Vegetables, fruit, nuts	4.5	38	4.3	213
5	Oil seeds	15.9	0	14.2	24
6	Sugar cane, sugar beet	23.4	0	9.0 <sup>8</sup>	ND
7	Plant-based fibers	23.7	0	25.4	1
8	Crops nec	9.7	82	9.0	107
9	Bovine cattle, sheep and goats	46.2	0	10.0	0
10	Animal products nec	11.8	13	8.1	10
12	Wool, silkworm cocoons	19.4	0	28.8	0
13	Forestry	14.8	8	14.5	17
14	Fishing	10.0	21	3.9	417
15	Coal	48.4 <sup>P</sup>	ND	20.8	0
16	Oil	4.5 <sup>82</sup>	323	7.2 <sup>I</sup>	ND
17	Gas	47.2 <sup>T86</sup>	ND	0.2	4
18	Minerals nec	35.3	11	19.0	70
19	Bovine meat products	ND	ND	10.4	0
20	Meat products nec	7.7	0	10.2	0
21	Vegetable oils and fats	10.4	5	7.0	23
22	Dairy products	11.9	0	2.9	17
23	Processed rice	17.0	0	12.0	28
24	Sugar containing products	29.2	0	24.7	3
25	Food products nec	11.1	71	9.4	200
26	Beverages and tobacco products	25.9	1	9.3	17
27	Textiles	15.2	204	7.6	1,641
28	Wearing apparel	13.8	143	7.2	1,940
29	Leather products	11.9	43	8.2	233
30	Wood products	31.9	7	14.1	183
31	Paper products, publishing	17.7	2	11.5	41
32	Petroleum, coal products	27.9	28	17.7	1
33	Chemical, rubber, plastic products	10.7	24	5.6	1,292
34	Mineral products nec	15.1	6	16.4	242
35	Ferrous metals	18.4	11	8.9	235
36	Metals nec	2.8	1	3.6	44
37	Metal products	20.0	57	11.5	435
38	Motor vehicles and parts	11.5	2	6.6	178
39	Transport equipment nec	9.2	35	10.1	19
40	Electronic equipment	3.6	10	4.1	79
41	Machinery and equipment nec	13.6	30	7.0	862
42	Manufactures nec	1.1	239	0.6	4,004
Weighted average of AVEs		11.1		5.4	
Total imports			1,417		12,594

ND = no data, J = Japan rate, P = Philippines rate, 82 = 1982 rate, T86 = Taiwan 1986 rate, T01 = Taiwan 2001 rate, 8 = crops not elsewhere classified (nec) rate, I = Indonesia rate

Notes: Ad valorem equivalents of transport costs are taken as the sum of transport charges divided by import values at the 5 digit SITC revision 2 level under each GTAP code. Uncoded circa 1980 AVEs are the simple average of available AVE estimates from 1979, 1980, and 1981; likewise for the circa 2003 AVEs with available 2002, 2003, and 2004 estimates. A concordance between SITC revision 2 and GTAP is derived from CEPII (2007). For duplicate SITC codes in the CEPII mapping the mode GTAP sector was used. Weighted averages are weighted by shares of 1980 or 2003 imports; rates used to fill in missing data are not considered.

Source: Hummels (2007); authors' calculations.

**Table A.74 Ad valorem equivalents (AVE) of transportation costs on US imports from Indonesia** (AVEs in percent, imports in millions of US dollars)

GTAP code	GTAP sector	Circa 1980 AVE	1980 imports	Circa 2003 AVE	2003 imports
1	Paddy rice	16.0 <sup>P</sup>	ND	24.1 <sup>T99</sup>	ND
2	Wheat	12.4 <sup>J</sup>	ND	8.1 <sup>T01</sup>	ND
3	Cereal grains nec	25.3	0	3.5 <sup>99</sup>	0
4	Vegetables, fruit, nuts	7.6	0	4.2	2
5	Oil seeds	14.7	0	15.1	0
6	Sugar cane, sugar beet	5.2	0	7.1 <sup>8</sup>	ND
7	Plant-based fibers	123.8 <sup>84</sup>	0	12.7	0
8	Crops nec	9.6	294	7.1	427
9	Bovine cattle, sheep and goats	3.3	0	6.6	0
10	Animal products nec	6.4	0	2.5	9
12	Wool, silkworm cocoons	30.6 <sup>P83</sup>	ND	41.9 <sup>99</sup>	0
13	Forestry	14.1	11	11.6	36
14	Fishing	16.9	9	8.1	184
15	Coal	48.4 <sup>P</sup>	ND	45.5	60
16	Oil	6.6	3,699	7.2	177
17	Gas	3.8	14	6.5	10
18	Minerals nec	1.4	0	23.1	0
19	Bovine meat products	22.2 <sup>P83</sup>	ND	96.7 <sup>97</sup>	0
20	Meat products nec	8.5 <sup>82</sup>	0	15.3	0
21	Vegetable oils and fats	8.7	26	9.4	26
22	Dairy products	0.0 <sup>84</sup>	0	11.1	0
23	Processed rice	30.0 <sup>82</sup>	0	22.3	0
24	Sugar containing products	29.0	1	0.1	0
25	Food products nec	7.7	2	6.7	407
26	Beverages and tobacco products	8.0	0	3.8	10
27	Textiles	10.1	1	7.8	461
28	Wearing apparel	12.6	5	6.0	1,949
29	Leather products	17.4	2	6.7	591
30	Wood products	20.3	20	18.0	899
31	Paper products, publishing	4.9	1	16.4	116
32	Petroleum, coal products	8.8	425	14.4	23
33	Chemical, rubber, plastic products	8.4	448	10.0	987
34	Mineral products nec	6.8	16	28.5	132
35	Ferrous metals	5.4	0	13.7	24
36	Metals nec	1.2	104	4.6	30
37	Metal products	9.8	0	8.9	98
38	Motor vehicles and parts	15.3	0	7.6	61
39	Transport equipment nec	12.1	0	6.1	53
40	Electronic equipment	1.2	51	2.9	1,480
41	Machinery and equipment nec	9.7	0	5.0	541
42	Manufactures nec	10.4	2	5.2	403
Weighted average of AVEs		7.1		8.1	
Total imports			5,131		9,198

ND = no data, P = Philippines rate, J = Japan rate, 84 = 1984 rate, P83 = Philippines 1983 rate, 82 = 1982 rate, T99 = Taiwan 1999 rate, T01 = Taiwan 2001 rate, 99 = 1999 rate, 8 = crops not elsewhere classified (nec) rate, 97 = 1997 rate

Notes: Ad valorem equivalents of transport costs are taken as the sum of transport charges divided by import values at the 5 digit SITC revision 2 level under each GTAP code. Uncoded circa 1980 AVEs are the simple average of available AVE estimates from 1979, 1980, and 1981; likewise for the circa 2003 AVEs with available 2002, 2003, and 2004 estimates. A concordance between SITC revision 2 and GTAP is derived from CEPII (2007). For duplicate SITC codes in the CEPII mapping the mode GTAP sector was used. Weighted averages are weighted by shares of 1980 or 2003 imports; rates used to fill in missing data are not considered.

Source: Hummels (2007); authors' calculations.



**Table A.75 Ad valorem equivalents (AVE) of transportation costs on US imports from Japan** (AVEs in percent, imports in millions of US dollars)

GTAP code	GTAP sector	Circa 1980 AVE	1980 imports	Circa 2003 AVE	2003 imports
1	Paddy rice	10.6	0	8.9	0
2	Wheat	12.4	0	2.8	0
3	Cereal grains nec	9.1	0	40.4	0
4	Vegetables, fruit, nuts	15.5	2	19.4	4
5	Oil seeds	9.7	0	7.6	0
6	Sugar cane, sugar beet	9.2	1	2.9 <sup>8</sup>	ND
7	Plant-based fibers	18.2	0	26.7	0
8	Crops nec	14.3	7	2.9	23
9	Bovine cattle, sheep and goats	12.3	1	13.7	3
10	Animal products nec	4.6	2	2.3	0
12	Wool, silkworm cocoons	3.0	0	9.0 <sup>01</sup>	0
13	Forestry	10.5	103	4.6	8
14	Fishing	2.1	84	3.5	157
15	Coal	4.0 <sup>83</sup>	0	1.3	0
16	Oil	6.3 <sup>86</sup>	21	16.9 <sup>97</sup>	0
17	Gas	23.5 <sup>83</sup>	0	24.5	0
18	Minerals nec	10.5	11	7.9	21
19	Bovine meat products	18.6	0	2.1	4
20	Meat products nec	5.1	1	4.9	3
21	Vegetable oils and fats	7.8	6	4.9	18
22	Dairy products	21.0	0	18.6	0
23	Processed rice	13.1	0	12.9	0
24	Sugar containing products	99.0	0	11.2	0
25	Food products nec	8.7	168	7.1	283
26	Beverages and tobacco products	24.1	10	6.2	59
27	Textiles	5.6	384	4.5	691
28	Wearing apparel	6.0	191	3.1	79
29	Leather products	6.4	36	6.4	9
30	Wood products	9.3	89	6.4	146
31	Paper products, publishing	9.8	116	6.4	479
32	Petroleum, coal products	13.3	53	18.0	136
33	Chemical, rubber, plastic products	7.1	1,377	3.4	11,958
34	Mineral products nec	10.8	457	5.5	697
35	Ferrous metals	8.3	3,002	9.7	613
36	Metals nec	3.1	559	4.4	352
37	Metal products	6.8	1,005	4.3	2,147
38	Motor vehicles and parts	8.2	10,886	2.5	44,176
39	Transport equipment nec	5.1	1,502	1.8	3,626
40	Electronic equipment	3.0	4,942	1.9	20,937
41	Machinery and equipment nec	4.5	4,825	2.9	25,850
42	Manufactures nec	5.1	675	2.1	1,800
Weighted average of AVEs		6.4		2.7	
Total imports			30,516		114,277

ND = no data, 83 = 1983 rate, 86 = 1986 rate, 8 = crops not elsewhere classified (nec) rate, 01 = 2001 rate, 97 = 1997 rate

Notes: Ad valorem equivalents of transport costs are taken as the sum of transport charges divided by import values at the 5 digit SITC revision 2 level under each GTAP code. Uncoded circa 1980 AVEs are the simple average of available AVE estimates from 1979, 1980, and 1981; likewise for the circa 2003 AVEs with available 2002, 2003, and 2004 estimates. A concordance between SITC revision 2 and GTAP is derived from CEPII (2007). For duplicate SITC codes in the CEPII mapping the mode GTAP sector was used. Weighted averages are weighted by shares of 1980 or 2003 imports; rates used to fill in missing data are not considered.

Source: Hummels (2007); authors' calculations.

**Table A.76 Ad valorem equivalents (AVE) of transportation costs on US imports from Korea** (AVEs in percent, imports in millions of US dollars)

GTAP code	GTAP sector	Circa 1980 AVE	1980 imports	Circa 2003 AVE	2003 imports
1	Paddy rice	8.4 <sup>84</sup>	0	12.1	0
2	Wheat	5.6 <sup>82</sup>	0	11.3 <sup>97</sup>	0
3	Cereal grains nec	24.8	0	6.7	0
4	Vegetables, fruit, nuts	18.5	0	11.0	14
5	Oil seeds	7.1	0	7.6	0
6	Sugar cane, sugar beet	7.4	1	7.4 <sup>8</sup>	ND
7	Plant-based fibers	14.9 <sup>86</sup>	0	5.1	0
8	Crops nec	9.1	15	7.4	9
9	Bovine cattle, sheep and goats	18.3	0	5.4	1
10	Animal products nec	2.9	0	5.4	0
12	Wool, silkworm cocoons	3.1	0	10.0	0
13	Forestry	7.4	15	7.5	6
14	Fishing	7.9	5	6.1	18
15	Coal	37.5 <sup>83</sup>	2	27.1	0
16	Oil	6.3 <sup>86</sup>	ND	4.8	0
17	Gas	0.0 <sup>84</sup>	0	9.5	0
18	Minerals nec	21.4	0	11.4	2
19	Bovine meat products	33.2	0	4.1 <sup>01</sup>	0
20	Meat products nec	9.9	0	5.9	0
21	Vegetable oils and fats	3.5	1	6.6	1
22	Dairy products	7.9 <sup>84</sup>	0	22.0	0
23	Processed rice	19.4	0	9.9	0
24	Sugar containing products	22.9	0	8.9	0
25	Food products nec	8.4	72	10.0	145
26	Beverages and tobacco products	8.4	10	8.5	53
27	Textiles	7.1	159	7.9	1,677
28	Wearing apparel	6.9	974	5.6	1,291
29	Leather products	5.9	665	5.0	78
30	Wood products	10.9	144	9.0	77
31	Paper products, publishing	10.0	26	9.1	183
32	Petroleum, coal products	4.6	1	19.9	4
33	Chemical, rubber, plastic products	9.2	170	7.7	1,874
34	Mineral products nec	8.7	67	23.5	134
35	Ferrous metals	10.0	369	11.7	309
36	Metals nec	2.6	24	4.3	79
37	Metal products	9.0	237	8.5	741
38	Motor vehicles and parts	8.6	11	3.5	8,509
39	Transport equipment nec	13.1	12	2.2	600
40	Electronic equipment	3.0	721	1.3	15,198
41	Machinery and equipment nec	5.4	203	5.1	3,826
42	Manufactures nec	8.2	285	3.8	583
Weighted average of AVEs		6.8		3.6	
Total imports			4,188		35,412

ND = no data, 84 = 1984 rate, 82 = 1982 rate, 86 = 1986 rate, J86 = Japan 1986 rate, 97 = 1997 rate, 8 = crops not elsewhere classified (nec) rate, 01 = 2001 rate

Notes: Ad valorem equivalents of transport costs are taken as the sum of transport charges divided by import values at the 5 digit SITC revision 2 level under each GTAP code. Uncoded circa 1980 AVEs are the simple average of available AVE estimates from 1979, 1980, and 1981; likewise for the circa 2003 AVEs with available 2002, 2003, and 2004 estimates. A concordance between SITC revision 2 and GTAP is derived from CEPII (2007). For duplicate SITC codes in the CEPII mapping the mode GTAP sector was used. Weighted averages are weighted by shares of 1980 or 2003 imports; rates used to fill in missing data are not considered.

Source: Hummels (2007); authors' calculations.

**Table A.77 Ad valorem equivalents (AVE) of transportation costs on US imports from Malaysia** (AVEs in percent, imports in millions of US dollars)

GTAP code	GTAP sector	Circa 1980 AVE	1980 imports	Circa 2003 AVE	2003 imports
1	Paddy rice	15.1 <sup>T</sup>	ND	8.2	0
2	Wheat	12.4 <sup>J</sup>	ND	1.8 <sup>T</sup>	ND
3	Cereal grains nec	33.4 <sup>T</sup>	ND	4.0	0
4	Vegetables, fruit, nuts	11.4	0	11.9	0
5	Oil seeds	11.8	0	5.9	0
6	Sugar cane, sugar beet	13.9	0	8.4 <sup>8</sup>	ND
7	Plant-based fibers	61.8	0	22.2	0
8	Crops nec	7.4	12	8.4	4
9	Bovine cattle, sheep and goats	21.0	0	10.8	0
10	Animal products nec	6.4	0	9.9	6
12	Wool, silkworm cocoons	30.6 <sup>P83</sup>	ND	41.9 <sup>99</sup>	ND
13	Forestry	8.7	10	9.6	3
14	Fishing	6.8	2	7.2	14
15	Coal	48.4 <sup>P</sup>	0	45.5 <sup>I</sup>	ND
16	Oil	5.9	705	4.1	83
17	Gas	3.6	8	3.0	12
18	Minerals nec	2.7	5	20.6	5
19	Bovine meat products	8.4 <sup>T85</sup>	ND	10.4 <sup>I</sup>	ND
20	Meat products nec	7.5	0	10.1	0
21	Vegetable oils and fats	8.8	115	10.1	181
22	Dairy products	265.0 <sup>83</sup>	0	3.0	0
23	Processed rice	9.8	0	8.9	0
24	Sugar containing products	8.9	0	26.0	0
25	Food products nec	9.5	11	6.0	119
26	Beverages and tobacco products	30.9	0	16.5	5
27	Textiles	5.0	4	6.6	203
28	Wearing apparel	7.8	36	5.8	574
29	Leather products	6.9	3	8.8	2
30	Wood products	18.1	51	16.4	772
31	Paper products, publishing	12.6	0	7.6	31
32	Petroleum, coal products	7.5	124	20.4	44
33	Chemical, rubber, plastic products	7.8	209	8.0	988
34	Mineral products nec	5.2	3	18.7	52
35	Ferrous metals	10.1	1	9.5	10
36	Metals nec	1.3	271	4.0	32
37	Metal products	10.1	11	8.5	103
38	Motor vehicles and parts	19.5	1	9.2	29
39	Transport equipment nec	3.4	0	4.0	29
40	Electronic equipment	1.2	897	1.7	19,543
41	Machinery and equipment nec	2.6	46	4.1	1,080
42	Manufactures nec	5.3	6	5.9	175
Weighted average of AVEs		4.4		3.0	
Total imports			2,533		24,101

ND = no data, T = Thailand rate, J = Japan rate, P83 = Philippines 1983 rate, P = Philippines rate, T85 = Thailand 1985 rate, 83 = 1983 rate, 8 = crops not elsewhere classified (nec) rate, 99 = 1999 rate, I = Indonesia rate

Notes: Ad valorem equivalents of transport costs are taken as the sum of transport charges divided by import values at the 5 digit SITC revision 2 level under each GTAP code. Uncoded circa 1980 AVEs are the simple average of available AVE estimates from 1979, 1980, and 1981; likewise for the circa 2003 AVEs with available 2002, 2003, and 2004 estimates. A concordance between SITC revision 2 and GTAP is derived from CEPII (2007). For duplicate SITC codes in the CEPII mapping the mode GTAP sector was used. Weighted averages are weighted by shares of 1980 or 2003 imports; rates used to fill in missing data are not considered.

Source: Hummels (2007); authors' calculations.

**Table A.78 Ad valorem equivalents (AVE) of transportation costs on US imports from Mexico** (AVEs in percent, imports in millions of US dollars)

GTAP code	GTAP sector	Circa 1980 AVE	1980 imports	Circa 2003 AVE	2003 imports
1	Paddy rice	12.0	0	9.2	0
2	Wheat	0.0	1	2.6	5
3	Cereal grains nec	5.6	0	5.3	3
4	Vegetables, fruit, nuts	0.0	410	5.8	2,796
5	Oil seeds	2.4	28	2.2	6
6	Sugar cane, sugar beet	0.4	1	5.1	0
7	Plant-based fibers	0.0	2	23.8	0
8	Crops nec	0.3	321	3.9	218
9	Bovine cattle, sheep and goats	0.0	90	0.6	491
10	Animal products nec	0.5	11	2.3	25
12	Wool, silkworm cocoons	2.6	0	1.4	0
13	Forestry	1.5	16	5.2	22
14	Fishing	0.1	333	1.6	357
15	Coal	0.0	0	23.6	1
16	Oil	2.2	5,924	2.8	13,656
17	Gas	0.1	441	1.3	17
18	Minerals nec	11.4	184	30.3	128
19	Bovine meat products	0.1	1	1.7	26
20	Meat products nec	0.4	0	4.5	16
21	Vegetable oils and fats	0.1	6	2.0	25
22	Dairy products	0.0	1	2.8	23
23	Processed rice	0.0	0	4.2	0
24	Sugar containing products	14.8	17	14.5	20
25	Food products nec	0.5	148	3.4	1,344
26	Beverages and tobacco products	1.0	81	3.8	1,725
27	Textiles	0.5	88	1.2	2,566
28	Wearing apparel	0.2	212	0.8	6,196
29	Leather products	0.5	76	1.4	411
30	Wood products	0.2	134	0.8	4,555
31	Paper products, publishing	0.5	82	2.5	807
32	Petroleum, coal products	9.5	193	4.4	119
33	Chemical, rubber, plastic products	2.1	232	2.2	4,110
34	Mineral products nec	1.6	153	3.8	1,755
35	Ferrous metals	1.1	50	3.7	1,178
36	Metals nec	1.2	349	0.7	1,129
37	Metal products	0.3	91	1.2	2,602
38	Motor vehicles and parts	0.2	206	0.5	27,662
39	Transport equipment nec	0.0	20	1.1	244
40	Electronic equipment	0.2	1,165	0.3	21,818
41	Machinery and equipment nec	0.2	797	0.5	31,242
42	Manufactures nec	0.2	293	0.9	1,232
Weighted average of AVEs		1.6		1.1	
Total imports			12,156		128,532

Notes: Ad valorem equivalents of transport costs are taken as the sum of transport charges divided by import values at the 5 digit SITC revision 2 level under each GTAP code. circa 1980 AVEs are the simple average of available AVE estimates from 1979, 1980, and 1981; likewise for the circa 2003 AVEs with available 2002, 2003, and 2004 estimates. A concordance between SITC revision 2 and GTAP is derived from CEPII (2007). For duplicate SITC codes in the CEPII mapping the mode GTAP sector was used. Weighted averages are weighted by shares of 1980 or 2003 imports.

Source: Hummels (2007); authors' calculations.

**Table A.79 Ad valorem equivalents (AVE) of transportation costs on US imports from the Philippines** (AVEs in percent, imports in millions of US dollars)

GTAP code	GTAP sector	Circa 1980 AVE	1980 imports	Circa 2003 AVE	2003 imports
1	Paddy rice	16.0	0	24.1 <sup>T99</sup>	ND
2	Wheat	12.4 <sup>J</sup>	ND	8.1 <sup>T01</sup>	ND
3	Cereal grains nec	27.3	0	13.1 <sup>01</sup>	0
4	Vegetables, fruit, nuts	11.7	49	12.6	45
5	Oil seeds	16.8	0	60.0	0
6	Sugar cane, sugar beet	16.3	0	24.4 <sup>8</sup>	ND
7	Plant-based fibers	25.2	16	32.9	0
8	Crops nec	9.8	39	24.4	7
9	Bovine cattle, sheep and goats	4.9	0	43.2	0
10	Animal products nec	5.9	0	9.8	0
12	Wool, silkworm cocoons	30.6 <sup>83</sup>	0	10.1 <sup>T00</sup>	0
13	Forestry	16.4	36	29.0	4
14	Fishing	41.7	5	22.5	60
15	Coal	48.4	0	53.0	0
16	Oil	25.9 <sup>T</sup>	ND	0.7 <sup>T</sup>	ND
17	Gas	47.2 <sup>T86</sup>	ND	24.5 <sup>J</sup>	ND
18	Minerals nec	12.1	31	59.3	0
19	Bovine meat products	22.2 <sup>83</sup>	0	3.5 <sup>T</sup>	ND
20	Meat products nec	13.8	0	10.4	0
21	Vegetable oils and fats	7.3	225	9.0	129
22	Dairy products	8.6	0	6.8	0
23	Processed rice	14.8	0	20.2	0
24	Sugar containing products	10.0	169	7.5	60
25	Food products nec	20.8	113	14.2	348
26	Beverages and tobacco products	39.4	2	10.3	7
27	Textiles	12.0	24	6.2	421
28	Wearing apparel	7.4	203	5.7	1,585
29	Leather products	10.4	41	11.4	37
30	Wood products	25.3	160	17.8	291
31	Paper products, publishing	19.3	1	11.8	16
32	Petroleum, coal products	5.7	16	3.4 <sup>00</sup>	0
33	Chemical, rubber, plastic products	15.4	13	9.7	164
34	Mineral products nec	7.8	19	13.8	100
35	Ferrous metals	11.5	1	8.4	17
36	Metals nec	3.1	76	3.8	1
37	Metal products	8.0	2	11.3	35
38	Motor vehicles and parts	20.2	1	7.0	32
39	Transport equipment nec	14.9	0	3.4	12
40	Electronic equipment	1.5	400	1.3	5,081
41	Machinery and equipment nec	2.8	44	5.0	1,171
42	Manufactures nec	12.8	38	8.2	105
Weighted average of AVEs		9.6		4.5	
Total imports			1,724		9,731

ND = no data, J = Japan rate, 83 = 1983 rate, T = Taiwan, T86 = Taiwan rate, T99 = Taiwan 1999 rate, T01 = Taiwan 2001 rate, 01 = 2001 rate, 8 = crops not elsewhere classified (nec) rate, T00 = Taiwan 2000 rate, 00 = 2000 rate

Notes: Ad valorem equivalents of transport costs are taken as the sum of transport charges divided by import values at the 5 digit SITC revision 2 level under each GTAP code. Uncoded circa 1980 AVEs are the simple average of available AVE estimates from 1979, 1980, and 1981; likewise for the circa 2003 AVEs with available 2002, 2003, and 2004 estimates. A concordance between SITC revision 2 and GTAP is derived from CEPII (2007). For duplicate SITC codes in the CEPII mapping the mode GTAP sector was used. Weighted averages are weighted by shares of 1980 or 2003 imports; rates used to fill in missing data are not considered.

Source: Hummels (2007); authors' calculations.

**Table A.80 Ad valorem equivalents (AVE) of transportation costs on US imports from Singapore** (AVEs in percent, imports in millions of US dollars)

GTAP code	GTAP sector	Circa 1980 AVE	1980 imports	Circa 2003 AVE	2003 imports
1	Paddy rice	18.2	0	6.8	0
2	Wheat	12.4 <sup>J</sup>	ND	7.7 <sup>01</sup>	0
3	Cereal grains nec	27.1 <sup>84</sup>	0	7.2	0
4	Vegetables, fruit, nuts	7.1	0	8.7	0
5	Oil seeds	11.8	0	20.6	1
6	Sugar cane, sugar beet	13.9	0	7.0 <sup>8</sup>	ND
7	Plant-based fibers	25.3	0	36.0	0
8	Crops nec	9.3	2	7.0	18
9	Bovine cattle, sheep and goats	13.5	0	178.4	0
10	Animal products nec	3.2	4	11.5	0
12	Wool, silkworm cocoons	15.6	0	ND	ND
13	Forestry	9.3	18	8.3	1
14	Fishing	41.3	6	34.0	12
15	Coal	48.4 <sup>P</sup>	ND	45.5 <sup>I</sup>	ND
16	Oil	10.1 <sup>84</sup>	14	5.1	0
17	Gas	197.1	0	27.2	0
18	Minerals nec	9.7	0	8.1	0
19	Bovine meat products	8.4 <sup>T85</sup>	ND	3.9	3
20	Meat products nec	10.4	0	4.3	0
21	Vegetable oils and fats	7.9	2	8.5	2
22	Dairy products	14.2	0	11.5	0
23	Processed rice	9.9	0	26.8 <sup>01</sup>	0
24	Sugar containing products	8.9 <sup>M</sup>	ND	7.6	0
25	Food products nec	10.1	16	6.2	81
26	Beverages and tobacco products	16.3	0	11.1	1
27	Textiles	5.8	16	5.5	127
28	Wearing apparel	7.3	111	5.3	144
29	Leather products	11.9	4	5.0	3
30	Wood products	10.5	32	11.8	10
31	Paper products, publishing	8.1	5	5.8	138
32	Petroleum, coal products	9.6	71	23.8	0
33	Chemical, rubber, plastic products	6.7	47	1.6	1,909
34	Mineral products nec	5.0	23	11.4	5
35	Ferrous metals	7.2	0	4.3	4
36	Metals nec	1.1	19	7.3	20
37	Metal products	5.0	12	7.8	29
38	Motor vehicles and parts	5.1	4	4.5	40
39	Transport equipment nec	3.0	31	1.8	171
40	Electronic equipment	1.9	1,043	1.5	9,090
41	Machinery and equipment nec	3.8	259	2.4	1,264
42	Manufactures nec	7.1	25	1.8	27
Weighted average of AVEs		3.6		1.9	
Total imports			1,766		13,100

ND = no data, J = Japan rate, 84 = 1984 rate, P = Philippines rate, T85 = Thailand 1985 rate, M = Malaysia rate, 01 = 2001 rate, 8 = crops not elsewhere classified (nec) rate, I = Indonesia rate

Notes: Ad valorem equivalents of transport costs are taken as the sum of transport charges divided by import values at the 5 digit SITC revision 2 level under each GTAP code. Uncoded circa 1980 AVEs are the simple average of available AVE estimates from 1979, 1980, and 1981; likewise for the circa 2003 AVEs with available 2002, 2003, and 2004 estimates. A concordance between SITC revision 2 and GTAP is derived from CEPII (2007). For duplicate SITC codes in the CEPII mapping the mode GTAP sector was used. Weighted averages are weighted by shares of 1980 or 2003 imports; rates used to fill in missing data are not considered.

Source: Hummels (2007); authors' calculations.

**Table A.81 Ad valorem equivalents (AVE) of transportation costs on US imports from Taiwan** (AVEs in percent, imports in millions of US dollars)

GTAP code	GTAP sector	Circa 1980 AVE	1980 imports	Circa 2003 AVE	2003 imports
1	Paddy rice	7.4	0	24.1 <sup>99</sup>	0
2	Wheat	12.4 <sup>J</sup>	ND	8.1 <sup>01</sup>	0
3	Cereal grains nec	26.1	0	6.6	0
4	Vegetables, fruit, nuts	15.4	2	15.0	7
5	Oil seeds	8.9	0	10.8	1
6	Sugar cane, sugar beet	9.0	0	12.9 <sup>8</sup>	ND
7	Plant-based fibers	46.8	0	17.9	0
8	Crops nec	12.3	7	12.9	22
9	Bovine cattle, sheep and goats	9.9	0	9.1	2
10	Animal products nec	5.2	6	2.2	21
12	Wool, silkworm cocoons	3.4	0	10.1 <sup>00</sup>	0
13	Forestry	9.6	19	8.5	2
14	Fishing	10.0	14	10.2	34
15	Coal	22.0	0	ND	ND
16	Oil	25.9	0	0.7	0
17	Gas	47.2 <sup>86</sup>	0	24.5 <sup>J</sup>	ND
18	Minerals nec	45.2	3	8.8	1
19	Bovine meat products	29.2	0	3.5	0
20	Meat products nec	6.9	2	23.3	0
21	Vegetable oils and fats	12.8	1	5.9	4
22	Dairy products	9.8	0	6.3	0
23	Processed rice	15.0	0	14.2	0
24	Sugar containing products	12.2	0	8.0	5
25	Food products nec	9.7	165	7.9	170
26	Beverages and tobacco products	19.1	0	14.1	10
27	Textiles	8.8	230	6.8	1,256
28	Wearing apparel	7.2	1,219	5.8	1,117
29	Leather products	7.6	1,037	8.1	160
30	Wood products	13.0	453	11.6	841
31	Paper products, publishing	11.4	23	8.1	86
32	Petroleum, coal products	16.7	0	24.9	1
33	Chemical, rubber, plastic products	9.1	288	6.7	2,705
34	Mineral products nec	9.7	181	13.5	213
35	Ferrous metals	9.9	44	7.3	188
36	Metals nec	5.6	4	4.7	76
37	Metal products	8.8	395	7.0	2,535
38	Motor vehicles and parts	8.9	18	8.6	858
39	Transport equipment nec	12.3	135	4.1	783
40	Electronic equipment	4.4	1,227	2.0	12,478
41	Machinery and equipment nec	5.9	712	4.5	5,472
42	Manufactures nec	9.6	625	6.8	952
Weighted average of AVEs		7.8		4.5	
Total imports			6,813		29,999

ND = no data, J = Japan rate, 86 = 1986 rate, 99 = 1999 rate, 01 = 2001 rate, 8 = crops not elsewhere classified (nec) rate, 00 = 2000 rate

Notes: Ad valorem equivalents of transport costs are taken as the sum of transport charges divided by import values at the 5 digit SITC revision 2 level under each GTAP code. Uncoded circa 1980 AVEs are the simple average of available AVE estimates from 1979, 1980, and 1981; likewise for the circa 2003 AVEs with available 2002, 2003, and 2004 estimates. A concordance between SITC revision 2 and GTAP is derived from CEPII (2007). For duplicate SITC codes in the CEPII mapping the mode GTAP sector was used. Weighted averages are weighted by shares of 1980 or 2003 imports; rates used to fill in missing data are not considered.

Source: Hummels (2007); authors' calculations.

**Table A.82 Ad valorem equivalents (AVE) of transportation costs on US imports from Thailand** (AVEs in percent, imports in millions of US dollars)

GTAP code	GTAP sector	Circa 1980 AVE	1980 imports	Circa 2003 AVE	2003 imports
1	Paddy rice	15.1	0	23.5	2
2	Wheat	12.4 <sup>J</sup>	ND	1.8	0
3	Cereal grains nec	33.4	0	18.3	0
4	Vegetables, fruit, nuts	18.0	2	15.9	22
5	Oil seeds	11.1	0	12.9	0
6	Sugar cane, sugar beet	18.8	0	13.9 <sup>8</sup>	ND
7	Plant-based fibers	50.2	1	8.8	0
8	Crops nec	14.8	2	13.9	53
9	Bovine cattle, sheep and goats	16.1	2	9.0	15
10	Animal products nec	3.4	2	5.9	3
12	Wool, silkworm cocoons	30.6 <sup>P83</sup>	ND	41.9 <sup>99</sup>	0
13	Forestry	22.6	5	10.7	8
14	Fishing	16.0	17	5.2	609
15	Coal	48.4 <sup>P</sup>	ND	45.5 <sup>I</sup>	ND
16	Oil	5.9 <sup>M</sup>	ND	0.0	0
17	Gas	130.6 <sup>84</sup>	0	23.5	0
18	Minerals nec	16.7	19	41.1	1
19	Bovine meat products	8.4 <sup>85</sup>	0	10.4 <sup>I</sup>	ND
20	Meat products nec	16.0	1	18.0	0
21	Vegetable oils and fats	12.6	0	9.8	1
22	Dairy products	15.2 <sup>82</sup>	0	4.2	0
23	Processed rice	26.1	0	21.5	130
24	Sugar containing products	8.0	30	15.3	6
25	Food products nec	17.3	80	7.9	1,184
26	Beverages and tobacco products	11.7	7	15.4	29
27	Textiles	8.5	16	6.8	655
28	Wearing apparel	7.3	60	6.0	1,441
29	Leather products	11.0	11	7.0	362
30	Wood products	15.9	19	13.7	575
31	Paper products, publishing	13.9	1	11.8	49
32	Petroleum, coal products	6.1 <sup>84</sup>	15	7.5	8
33	Chemical, rubber, plastic products	9.7	56	9.0	1,292
34	Mineral products nec	11.4	2	27.6	303
35	Ferrous metals	10.5	0	16.3	63
36	Metals nec	1.3	273	3.6	20
37	Metal products	10.8	6	8.3	355
38	Motor vehicles and parts	11.2	0	7.0	104
39	Transport equipment nec	11.6	0	2.9	47
40	Electronic equipment	1.3	84	3.2	4,267
41	Machinery and equipment nec	7.4	7	5.5	1,433
42	Manufactures nec	2.9	105	2.8	1,354
Weighted average of AVEs		6.2		6.4	
Total imports			823		14,390

ND = no data, J = Japan rate, P83 = Philippines 1983 rate, P = Philippines rate, M = Malaysia rate, 84 = 1984 rate, 85 = 1985 rate, 82 = 1982 rate, 83 = 1983 rate, 8 = crops not elsewhere classified (nec) rate, 99 = 1999 rate, I = Indonesia rate

Notes: Ad valorem equivalents of transport costs are taken as the sum of transport charges divided by import values at the 5 digit SITC revision 2 level under each GTAP code. Uncoded circa 1980 AVEs are the simple average of available AVE estimates from 1979, 1980, and 1981; likewise for the circa 2003 AVEs with available 2002, 2003, and 2004 estimates. A concordance between SITC revision 2 and GTAP is derived from CEPII (2007). For duplicate SITC codes in the CEPII mapping the mode GTAP sector was used. Weighted averages are weighted by shares of 1980 or 2003 imports; rates used to fill in missing data are not considered.

Source: Hummels (2007); authors' calculations.



**Table A.83 Ad valorem equivalents (AVE) of transportation costs on US imports from Venezuela** (AVEs in percent, imports in millions of US dollars)

GTAP code	GTAP sector	Circa 1980 AVE	1980 imports	Circa 2003 AVE	2003 imports
1	Paddy rice	0.0 <sup>83</sup>	0	18.3 <sup>B</sup>	ND
2	Wheat	12.4 <sup>J</sup>	ND	2.8 <sup>J</sup>	ND
3	Cereal grains nec	31.7 <sup>B</sup>	ND	6.4	0
4	Vegetables, fruit, nuts	57.0	0	34.9	2
5	Oil seeds	4.8	0	4.3	3
6	Sugar cane, sugar beet	72.8	0	4.9 <sup>B</sup>	ND
7	Plant-based fibers	25.0 <sup>B</sup>	ND	14.1 <sup>99</sup>	0
8	Crops nec	3.6	12	4.9	13
9	Bovine cattle, sheep and goats	15.5	1	14.4	0
10	Animal products nec	14.8	0	16.9	0
12	Wool, silkworm cocoons	5.8 <sup>B</sup>	ND	2.2 <sup>B</sup>	ND
13	Forestry	12.9	3	64.5	0
14	Fishing	5.5	16	5.0	78
15	Coal	10.2 <sup>B</sup>	ND	16.0	156
16	Oil	4.2	1,695	4.0	8,314
17	Gas	15.2	2	4.8	587
18	Minerals nec	0.4	19	22.5	5
19	Bovine meat products	40.1 <sup>B</sup>	ND	2.3 <sup>B</sup>	ND
20	Meat products nec	5.3 <sup>B</sup>	ND	6.4	0
21	Vegetable oils and fats	24.3	0	58.6	0
22	Dairy products	5.3 <sup>B</sup>	ND	10.0	0
23	Processed rice	20.3 <sup>B86</sup>	ND	22.0 <sup>B</sup>	ND
24	Sugar containing products	0.0 <sup>84</sup>	0	11.7	3
25	Food products nec	7.2	8	6.8	29
26	Beverages and tobacco products	13.2	0	10.1	4
27	Textiles	15.9	0	8.3	1
28	Wearing apparel	12.6	0	9.4	1
29	Leather products	16.3	0	8.5	0
30	Wood products	11.6	0	14.0	7
31	Paper products, publishing	8.1	1	12.1	8
32	Petroleum, coal products	4.6	3,364	6.0	1,699
33	Chemical, rubber, plastic products	13.7	1	6.0	1,525
34	Mineral products nec	13.4	2	26.7	108
35	Ferrous metals	21.0	108	8.6	268
36	Metals nec	3.5	8	2.8	341
37	Metal products	9.1	1	4.8	32
38	Motor vehicles and parts	11.0	6	4.3	162
39	Transport equipment nec	1.3	7	3.7	4
40	Electronic equipment	2.1	1	4.3	2
41	Machinery and equipment nec	6.2	4	5.2	26
42	Manufactures nec	1.2	3	1.5	18
Weighted average of AVEs		4.8		4.9	
Total imports			5,261		13,398

ND = no data, 83 = 1983 rate, J = Japan rate, B = Brazil rate, B86 = Brazil 1986 rate, 84 = 1984 rate, 8 = crops not elsewhere classified (nec) rate, 99 = 1999 rate

Notes: Ad valorem equivalents of transport costs are taken as the sum of transport charges divided by import values at the 5 digit SITC revision 2 level under each GTAP code. Uncoded circa 1980 AVEs are the simple average of available AVE estimates from 1979, 1980, and 1981; likewise for the circa 2003 AVEs with available 2002, 2003, and 2004 estimates. A concordance between SITC revision 2 and GTAP is derived from CEPII (2007). For duplicate SITC codes in the CEPII mapping the mode GTAP sector was used. Weighted averages are weighted by shares of 1980 or 2003 imports; rates used to fill in missing data are not considered.

Source: Hummels (2007); authors' calculations.