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U.S. Exports Face High Tariffs in Some Key Markets

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From 1996 to 2000, U.S. food and agricultural exports averaged about $60.6 billion per year. The existence of import tariffs in foreign markets was one of several factors affecting the size of this trade. Tariffs, which are taxes levied by a government on imported goods, drive a wedge between a country's domestic prices and those prevailing in international trade. By altering the relative prices of imported and domestically produced goods, tariffs decrease the volume of imports, as domestic production tends to increase and consumption decreases as a result of higher domestic prices.

Countries impose tariffs for a variety of reasons, the most common being to protect domestic producers from foreign competition. Tariffs are also used as a relatively easy way to generate revenue, particularly by developing countries. Regardless of their purpose, tariffs are the main trade-distorting policy instrument used by governments. In fact, high tariff protection for agricultural products is the major distorting feature of international trade today.

Tariffs imposed on U.S. food and agricultural exports in foreign markets have a dampening effect on the volume and value of this trade. Measuring the trade-restricting effects of tariffs is extremely complicated, however, as it is a function of numerous factors, including the manner in which producers and consumers respond to changes in relative prices. This article focuses on identifying major markets in which U.S. agricultural exports face high tariffs and attempts to compute the average tariff faced by U.S. agricultural exports in these markets. The effects of U.S. tariffs on other countries' exports are not addressed here.

High tariff protection for agricultural products is the major distorting feature of international trade today.

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Food Exports Overtake Bulk Commodity Exports

After achieving a record level of over $67 billion in 1996, U.S. agricultural exports steadily decreased over the next 3 years to $54 billion in 1999. The slowdown in the world economy, particularly in Asia, factored heavily in the decline. Lower prices for agricultural goods and a strong U.S. dollar also contributed to the contraction in the value of U.S. agricultural exports. In 2000, however, exports began to recover and increased to almost $58 billion.

The most striking characteristic of U.S. agricultural trade is the rapid growth in exports of high-value processed foods and beverages. Since 1997, this category has been the largest component of U.S. agricultural exports (fig. 1). In 2000, exports of processed products were valued at $22.5 billion, accounting for 39 percent of total agricultural and food exports, compared with 33 percent in 1996. (Trade data in this article come from the U.S. Department of Commerce (see box). Other agricultural export totals may differ depending on which commodities and foods are included.) Bulk commodities accounted for 32 percent of trade in 2000, followed by semi-processed products at 19 percent and fresh horticultural products at 10 percent. While the drop in bulk commodity exports is largely due to decreased global demand and, correspondingly, decreased global prices, another important factor is that these commodities are increasingly being exported in a more highly processed form.

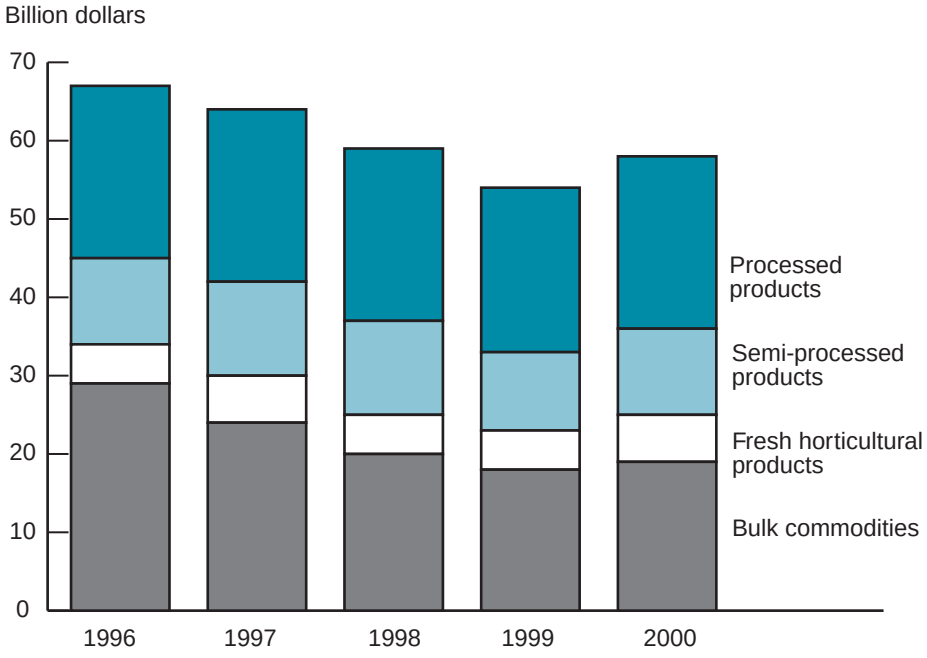
From 1998 to 2000, soybeans were the top U.S. export earner at almost $6 billion per year (table 1). Other billion-dollar products included traditional bulk commodities, such as corn, wheat, cotton, and tobacco, as well as semi-processed goods, such as soymeal and hides and skins. Billion-dollar high-value categories include frozen beef, frozen poultry, fresh or chilled beef, tobacco products, miscellaneous food preparations, and pet foods. Almonds, the highest earning commodity in the fresh horticultural products category, averaged over $700 million in export revenue during the 5-year period.

Wine was the fastest growing export category among the top 50 and grew by almost 15 percent per year. Wine was one of few categories that increased in export value each year. Fresh pork, frozen beef, cocoa products, candy, and frozen potatoes also registered impressive export growth. Beer, wheat, corn, other distilled spirits (liqueurs, cordials, etc.), and animal fats suffered large average yearly decreases in export value.

Twenty countries accounted for 85 percent of total U.S. exports during the 1996-2000 period. Japan was the top export destination, with average annual imports of almost $12 billion (table 2). Nine other destinations—the European Union (EU), Canada, Mexico, Korea, Taiwan, Hong Kong, China, Russia, and Egypt—all averaged over $1 billion in sales per year. Of the top 10 destinations, only 2 showed positive sales growth during the period—Canada, with an annual growth rate of almost 5 percent, and Mexico, which grew at nearly 6 percent per year. Exports to the Dominican Republic, Turkey, and Saudi Arabia also grew during this period. The EU was the only top 10 destination in which sales dropped each year. U.S. agricultural exports to the EU decreased from almost $11 billion in 1996 to $7 billion in 2000, an average annual decline of almost 11 percent.

Among the top 20 export destinations for U.S. agricultural exports, only Mexico, Hong Kong, Indonesia, Colombia, the Dominican Republic, Thailand, and Venezuela imported each of the 215 agricultural categories at least once during the 5 years. Brazil imported the smallest

Figure 1
High-Value Processed Foods Increase Share of U.S. Agricultural Exports



Source: Compiled from official trade statistics of the U.S. Department of Commerce, Bureau of the Census.

assortment of agricultural goods, only 190 of the 215. Egypt imported 205 different agricultural goods from the United States, but 51 percent consisted of a single category, wheat, while another 25 percent consisted of corn. Other countries in which U.S. imports consisted primarily of two or three goods included Indonesia (56 percent in soybeans and raw cotton), Venezuela (55 percent in corn, wheat, and soymeal), Israel (53 percent in soybeans, wheat, and tobacco products), Colombia (52 percent in corn, wheat, and soymeal), and the Dominican Republic (50 percent in tobacco, corn, and soymeal). In general, developing countries displayed a high degree of concentration in their purchases of U.S. food and agricultural goods, with a large share of total import value comprising relatively few bulk or semi-processed commodities. Industrial countries, however, tended to be more diversified in their imports and accounted for the overwhelming share of U.S. high-value product exports.

The most lucrative markets for U.S. food and agricultural exports during 1996-2000 were corn and tobacco products to Japan and soybean and tobacco products to the EU (table 3). In aggregate, these four markets earned an average of over $6 billion per year.

Tariffs Facing U.S. Agricultural Exports in Selected Markets

Though U.S. agricultural exports face tariffs in all countries, this examination of tariffs is limited to 12 of the top 20 destinations. As the tariff database (AMAD) covers only World Trade Organization (WTO) members, four non-WTO members—China, Taiwan, Russia, and Saudi Arabia—are excluded. (China will become a full member on

Data, Methodology, and Definitions

This analysis uses official trade statistics of the U.S. Department of Commerce, Bureau of the Census and tariff data from the Agricultural Market Access Database (AMAD). Commodity coverage was based on the definition of agriculture as specified in the WTO Agreement on Agriculture. The trade database contains trade flows between the United States and 113 countries. It is the same trade reported by the United States to the United Nations for inclusion in the International Bilateral Agricultural Trade (IBAT) database. It was aggregated to conform with the IBAT's 232 agricultural category definitions. These categories are largely composed of aggregations of commodities at the 6-digit Harmonized System (HS) level. The HS provides a nomenclature for classifying internationally traded goods. Up to the 6-digit level, tariff schedules across countries use identical categories for commodity aggregations, with the categories established regularly by the World Customs Organization. Beyond the 6-digit level, however, this correspondence may not exist. Because commodity definitions at an 8-digit or higher level of disaggregation may vary from country to country, specific comparisons across countries are increasingly difficult at progressively higher levels of detail.

The Organization for Economic Cooperation and Development (OECD) maintains the AMAD. This database contains detailed tariff and tariff-rate quota information at the tariff-line level for World Trade Organization (WTO) members. The WTO is the institutional and legal foundation of the multilateral trading system. It provides the principal contractual obligations determining how governments frame and implement domestic trade legislation and regulations. As of July 26, 2001, WTO membership totaled 142 countries or customs territories. The term "tariff-line" refers to the category to which the WTO member's legally established tariff applies. Tariff-lines are bound within the WTO at various levels of specificity. For instance, the tariff schedule for Turkey contains tariffs bound at the 4-, 6-, and 8-digit HS levels.

Tariffs rates used throughout this article are the final bound most-favored-nation (MFN) tariffs established by WTO members. Bound tariffs are the maximum MFN rate (nondiscriminatory tariffs extended among WTO members) that a country can charge on imports. However, countries may choose to apply a tariff below the bound rate, and often do, particularly for imports from trading partners that have been granted preferential rates or exemptions.

In order to match a country's tariffs to the IBAT trade figures, sometimes a number of 6-, 8-, or 10-digit tariffs had to be aggregated to the corresponding IBAT level. This was done through a simple, unweighted average. In cases where the tariff was not in ad valorem form, however, an ad valorem equivalent (AVE) had to first be calculated.

For more information on the tariffs found in the AMAD and the methodology used to calculate AVEs, see Gibson et al., *Profiles of Tariffs in Global Agricultural Markets.*

Table 1
Wine Is Fastest Growing U.S. Agricultural Export But Soybeans Are Top Earner

Product	1996	1998	2000	1996-00		
				Average	Market share	Growth rate
	Million dollars				Percent	
Soybeans	7,458	4,885	5,313	5,943	9.8	-8.1
Corn	8,626	4,619	4,714	5,701	9.4	-14.0
Tobacco products	5,268	4,842	4,035	4,609	7.6	-6.4
Wheat	6,307	3,714	3,388	4,234	7.0	-14.4
Cotton (not carded)	2,742	2,566	1,936	2,188	3.6	-8.3
Food preparations: mixtures	1,724	1,814	1,966	1,873	3.1	3.3
Poultry (frozen)	2,092	1,647	1,521	1,696	2.8	-7.7
Soybean meal	1,430	1,605	1,171	1,428	2.4	-4.9
Tobacco (unmanufactured)	1,396	1,467	1,235	1,396	2.3	-3.0
Beef (fresh or chilled)	1,273	1,300	1,665	1,393	2.3	6.9
Pet food	1,115	1,268	1,404	1,251	2.1	5.9
Hides and skins (bovine)	1,390	1,027	1,376	1,228	2.0	-.3
Beef (frozen)	1,108	958	1,498	1,178	1.9	7.8
Feed: waste and residues	1,120	802	759	883	1.5	-9.3
Crude vegetable material	670	806	833	773	1.3	5.6
Almonds	897	715	631	719	1.2	-8.4
Bakery products	659	701	733	702	1.2	2.7
Edible offal: (fresh or frozen)	721	597	694	650	1.1	-.9
Starches (nonedible)	449	494	723	626	1.0	12.6
Sorghum	758	550	627	620	1.0	-4.6
Rice (milled)	735	612	512	617	1.0	-8.6
Pork (fresh or chilled)	462	475	748	549	.9	12.8
Animal fats	586	642	381	529	.9	-10.2
Soybean oil	323	904	250	501	.8	-6.3
Wine	309	516	538	457	.8	14.9
Pork (frozen)	465	447	504	447	.7	2.1
Hay	418	378	467	418	.7	2.8
Fresh grapes	367	335	455	390	.6	5.5
Fresh apples	409	350	388	388	6	-1.3
Potatoes (preparations)	324	405	357	374	6	2.4
Rice (unmilled)	296	596	324	373	.6	2.2
Crude animal material	378	359	402	366	.6	1.5
Orange juice	340	363	354	360	.6	1.0
Cocoa products	335	315	453	360	6	7.8
Live animals (breeding)	297	356	450	348	6	11.0
Potatoes (frozen)	285	346	376	337	6	7.2
Whiskey	297	311	367	329	.5	5.4
Vegetables (preparations): other	308	337	320	326	.5	1.0
Beans, peas, and lentils (dried)	311	386	286	324	.5	-2.1
Corn oil	272	401	238	307	.5	-3.3
Stone fruit (fresh)	278	261	351	306	.5	6.0
Vegetables (fresh): other	258	290	338	293	.5	6.9
Oranges	289	357	304	292	.5	1.3
Distilled spirits (other)	402	235	237	288	.5	-12.4
Essential oils	267	287	301	288	.5	3.0
Candy	246	275	326	285	.5	7.3
Nonalcoholic beverages	232	289	288	279	.5	5.6
Other nuts and fruit (dried and fresh)	266	279	295	278	.5	2.7
Poultry (fresh or chilled)	219	307	263	275	.5	4.7
Beer	367	256	171	264	.4	-17.3
Subtotal	57,545	48,046	47,264	50,041	NA	-4.8
Share of U.S. total	85%	82%	81%	83%	NA	-1.1
Total U.S. agricultural exports	67,636	58,699	58,117	60,591	NA	-3.7

Note: NA = not applicable.
Souce: Compiled from official trade statistics of the U.S. Department of Commerce, Bureau of the Census.

December 11, 2001; Taiwan will become a full member on January 1, 2002.) Canada, Mexico, Israel, and Hong Kong impose tariffs on U.S. exports that are zero or nearly zero, so these countries are also excluded from the discussion.

U.S. exports to the 50 markets listed in table 4 ranged from $556 million to $8.7 billion during the 1996-2000 period. The market share column in the table shows the percent of total exports of a commodity that went to a particular country. For example, 31 percent of total U.S. corn exports during this period went to Japan. Japan accounted for over 50 percent of the total export value of eight of the commodities found in table 4. Exports of fresh or chilled pork and hay were the most dependent on a single market, relying on the Japanese consumer for 78 and 71 percent of all export sales, respectively. Japan also purchased 56 percent of fresh or chilled beef and 54 percent of frozen beef exports, while the EU bought 59 percent of U.S. almond exports and 52 percent of U.S. wine exports.

Table 4 also displays the average (mean) tariff rate faced by U.S. exports in these markets. In some cases, the average is computed from only 1 rate, while in others it is computed from over 50 rates. For example, the 18.5 percent tariff on corn exported to Japan is the simple average of five tariff rates ranging in size from 0 to 68 percent. Different rates are levied on imports of hybrid seed, other seed, corn for feed, popcorn, and other corn for food. In Japan's case, all tariffs on corn imports are single-tier rates. Tariff-rate quotas (TRQ) are not applied to corn imports in Japan.

A TRQ is a two-tiered tariff under which a limited volume (the quota amount) of goods can be imported at a lower in-quota tariff rate, with any additional imports subject to a higher over-quota tariff. TRQs were established under the 1995 Uruguay Round trade agreement for goods that had previously been subject to highly protectionist nontariff barriers, such as quotas or import licensing. TRQs are designed to provide a limited amount of market access for imports (the greater of 5 percent of domestic consumption or the level that existed before the Uruguay Round) at low or minimal tariff rates.

Tariff averages are calculated using only the single-tier rates and the in-quota rates of the TRQs. The over-quota tariffs are not included in the calculation as it is assumed that very little trade takes place at these higher rates. For example, Korea has a TRQ for feed corn with an in-quota rate of 1.8 percent, under which a significant quantity of imports enter. The high over-

Table 2
Canada and Mexico Continue To Gain as U.S. Export Destinations for Agricultural Products

Country	1996	1998	2000	1996-00		
				Average	Market share	Growth rate
	Million dollars				Percent	
Japan	13,370	10,984	11,785	11,871	19.6	-3.1
European Union	10,892	9,360	6,964	9,000	14.9	-10.6
Canada	7,135	8,150	8,630	7,988	13.2	4.9
Mexico	5,497	6,272	6,826	5,933	9.8	5.6
Korea	4,010	2,257	2,766	2,917	4.8	-8.9
Taiwan	3,045	1,876	2,119	2,356	3.9	-8.7
Hong Kong	1,635	1,588	1,390	1,548	2.6	-4.0
China	2,094	1,354	1,779	1,543	2.5	-4.0
Russia	1,746	1,015	865	1,129	1.9	-16.1
Egypt	1,300	979	1,062	1,090	1.8	-4.9
Philippines	924	716	883	835	1.4	-1.1
Turkey	712	796	805	756	1.2	3.1
Saudi Arabia	746	703	749	741	1.2	.1
Indonesia	854	455	679	660	1.1	-5.6
Israel	686	468	597	580	1.0	-3.4
Colombia	635	595	420	531	.9	-9.8
Dominican Republic	420	507	526	513	.8	5.7
Thailand	616	421	515	503	.8	-4.4
Venezuela	474	510	414	478	.8	-3.3
Brazil	633	483	262	432	.7	-19.8
Subtotal	57,425	49,488	50,036	51,403	NA	-3.4
Share of U.S. total	85%	84%	86%	85%	NA	.3
Total U.S. agricultural exports	67,636	58,699	58,117	60,591	NA	-3.7

Note: NA = not applicable.
Source: Compiled from official trade statistics of the U.S. Department of Commerce, Bureau of the Census.

Table 3
Billion-Dollar Export Markets Include Corn and Tobacco to Japan, Soybeans and Tobacco to EU

Country	Product	1996	1998	2000	Total 1996-00	Average 1996-00
				Million dollars		
Japan	Corn	2,462	1,490	1,427	8,727	1,745
Japan	Tobacco products	1,559	1,659	2,096	8,717	1,743
European Union	Soybeans	2,349	1,555	1,148	8,426	1,685
European Union	Tobacco products	1,576	1,263	473	5,247	1,049
Japan	Soybeans	1,145	874	774	4,712	942
Mexico	Soybeans	859	759	721	3,911	782
Japan	Beef (fresh or chilled)	810	695	869	3,873	775
European Union	Tobacco (unmanufactured)	656	689	550	3,236	647
Japan	Beef (frozen)	683	592	648	3,162	632
Mexico	Corn	1,025	611	541	3,072	614
European Union	Feed: waste and residues	802	540	457	2,981	596
Korea	Corn	1,262	466	210	2,965	593
Taiwan	Corn	962	377	457	2,954	591
Egypt	Wheat	775	523	496	2,797	559
Japan	Wheat	654	472	422	2,590	518
Russia	Poultry (frozen)	858	502	347	2,560	512
Taiwan	Soybeans	777	276	385	2,479	496
China	Soybeans	414	274	1,008	2,454	491
Korea	Hides and skins (bovine)	565	291	504	2,236	447
Japan	Pork (fresh or chilled)	405	354	559	2,136	427
European Union	Almonds	583	437	320	2,127	425
Mexico	Cotton (not carded)	262	616	484	2,008	402
Canada	Food preparations: mixtures	289	392	419	1,865	373
Mexico	Sorghum	310	355	483	1,788	358
Canada	Bakery products	321	355	399	1,777	355
Hong Kong	Poultry (frozen)	383	301	356	1,725	345
Japan	Edible offal: (fresh or frozen)	429	291	342	1,710	342
Canada	Pet food	305	341	355	1,656	331
Korea	Soybeans	439	305	259	1,600	320
Mexico	Beef (fresh or chilled)	113	330	494	1,571	314
China	Cotton (not carded)	730	126	59	1,519	304
Japan	Hay	281	288	318	1,481	296
Korea	Beef (frozen)	212	134	507	1,437	287
Egypt	Corn	312	188	345	1,387	277
Philippines	Wheat	329	223	246	1,344	269
Japan	Pork (frozen)	320	226	234	1,255	251
Japan	Pet food	203	236	319	1,246	249
European Union	Wine	147	264	293	1,183	237
Canada	Beef (fresh or chilled)	273	220	227	1,176	235
Korea	Wheat	328	216	181	1,162	232
Mexico	Wheat	326	215	218	1,154	231
Saudi Arabia	Tobacco products	195	198	268	1,099	220
Japan	Cotton (not carded)	323	254	139	1,063	213
European Union	Pet food	240	233	155	1,046	209
European Union	Corn	413	160	69	1,034	207
Japan	Tobacco (unmanufactured)	231	211	195	1,014	203
Canada	Vegetables (fresh): other	166	196	238	991	198
Canada	Orange juice	183	200	195	975	195
Indonesia	Soybeans	213	139	164	972	194
Japan	Food preparations: mixtures	167	209	167	958	192
Subtotal		29,624	22,122	22,539	120,556	24,111
Share of U.S. total		44%	38%	39%	40%	40%
Total U.S. agricultural exports		67,636	58,699	58,117	302,953	60,591

Source: Compiled from official trade statistics of the U.S. Department of Commerce, Bureau of the Census.

Table 4
Considerable Scope Exists to Reduce Tariffs Even Where Significant Trade Is Already Occurring

Country	Product	Total exports 1996-00	Market share	Tariff average	Tariff range	Type of tariff Single-tier	In-quota
		Million dollars	*Percent*			*Number*	
Japan	Corn	8,727	31	18.5	0-68	5	NA
Japan	Tobacco products	8,717	38	9.1	0-30	8	NA
European Union	Soybeans	8,426	28	0.0	0.0	2	NA
European Union	Tobacco products	5,247	23	37.6	10-75	8	NA
Japan	Soybeans	4,712	16	0.0	0.0	1	NA
Japan	Beef (fresh or chilled)	3,873	56	50.0	50.0	3	NA
European Union	Tobacco (unmanufactured)	3,236	46	14.1	11-18	5	NA
Japan	Beef (frozen)	3,162	54	50.0	50.0	3	NA
European Union	Feed: waste and residues	2,981	68	16.9	0-185	11	NA
Korea	Corn	2,965	10	1.7	0-3	NA	4
Egypt	Wheat	2,797	13	5.0	5.0	2	NA
Japan	Wheat	2,590	12	5.0	0-20	NA	4
Korea	Hides and skins (bovine)	2,236	36	5.0	5.0	27	NA
Japan	Pork (fresh or chilled)	2,136	78	60.1	0-248	9	NA
European Union	Almonds	2,127	59	1.0	0-2	2	2
Japan	Edible offal: (fresh or frozen)	1,710	53	58.9	0-523	21	NA
Korea	Soybeans	1,600	5	5.0	5.0	NA	1
Japan	Hay	1,481	71	0.0	0.0	5	NA
Korea	Beef (frozen)	1,437	24	41.6	41.6	NA	3
Egypt	Corn	1,387	5	5.0	5.0	2	NA
Philippines	Wheat	1,344	6	26.7	20-30	3	NA
Japan	Pork (frozen)	1,255	56	60.4	0-227	9	NA
Japan	Pet food	1,246	20	18.3	0-98	14	NA
European Union	Wine	1,183	52	5.7	0-40	28	NA
Korea	Wheat	1,162	5	4.2	2-9	6	NA
Japan	Cotton (not carded)	1,063	10	0.0	0.0	2	NA
European Union	Pet food	1,046	17	72.6	0-231	23	6
European Union	Corn	1,034	4	24.0	0-38	2	1
Japan	Tobacco (unmanufactured)	1,014	15	0.0	0.0	3	NA
Indonesia	Soybeans	972	3	27.0	27.0	5	NA
Japan	Food preparations: mixtures	958	10	20.3	5-53	44	24
European Union	Wheat	922	4	3.2	0-13	1	3
Korea	Cotton (not carded)	911	8	2.8	2-7	6	NA
Indonesia	Cotton (not carded)	888	8	33.5	27-40	2	NA
European Union	Food preparations: mixtures	885	9	9.6	0-33	22	NA
Japan	Sorghum	882	28	1.0	0-3	3	NA
Japan	Potatoes (frozen)	854	51	10.4	9-14	3	NA
European Union	Crude vegetable matter	800	21	1.5	0-16	54	NA
European Union	Soymeal	795	11	0.0	0.0	1	NA
Colombia	Corn	784	3	137.0	80-194	NA	4
European Union	Whiskey	745	45	0.2	0-0.3	4	NA
Philippines	Soymeal	712	10	5.0	5.0	1	NA
European Union	Live animals (breeding)	693	40	2.3	0-12	5	NA
Japan	Hides and skins (bovine)	625	10	0.0	0.0	5	NA
Turkey	Cotton (not carded)	623	6	5.5	5-6	2	NA
Thailand	Soybeans	615	2	20.0	20.0	NA	2
European Union	Essential oils	613	43	3.2	0-17	40	NA
Japan	Grapefruit	596	53	10.0	10.0	2	NA
Turkey	Tobacco products	580	3	145.1	130-167	6	NA
European Union	Starches (nonedible)	556	18	14.7	0-38	15	NA

Note: NA = not applicable. Does not include markets in non-WTO members (China, Russia, Saudi Arabia, and Taiwan) and countries where the U.S. faces agricultural tariffs that are already zero or near zero (Canada, Mexico, Israel, and Hong Kong).
Sources: Compiled from official trade statistics of the U.S. Department of Commerce, Bureau of the Census and tariff information in the Agricultural Market Database (AMAD).

quota rate of 328 percent, however, inhibits trade in excess of the quota amount. Even without including the over-quota rates in the calculation, the averages for some products are very high.

Although most trade takes place at tariffs under 10 percent, high trade flows take place in some categories subject to high average tariffs. For example, imports of tobacco products by Turkey, corn by Colombia, pet food by the EU, and pork, beef, and edible offal by Japan are subject to average tariffs of over 50 percent and they are among the largest markets for U.S. exports. As shown in table 4, these commodity groupings are subject to a range of tariffs. Thus, high tariffs on some subcategories within a grouping may impede trade, but low tariffs on other subcategories result in significant trade.

Some countries apply tariffs at levels significantly below their bound most-favored-nation (MFN) rates. While bound tariffs are the maximum rates that a country can charge on imports from WTO member countries without incurring a penalty, the importing country may choose to apply a tariff below the bound rate. For example, a country may charge a tariff below the bound level on imports from trading partners that have been granted preferential rates or exemptions (such as under the North American Free Trade Agreement (NAFTA) between the United States, Canada, and Mexico), or a country may charge lower tariffs during times of domestic production shortfalls.

The agricultural tariffs of many developing countries were bound at high levels, often over 100 percent, as a matter of insurance. This practice allows these countries to apply tariff rates at levels significantly below the bound levels when global prices are high, while preserving the option to increase tariffs, up to the bound level, when prices are low. The tariff averages in table 4 are calculated using bound tariffs and may not reflect the actual rate being charged on imports, particularly in many developing countries.

Tariffs on perishable products may vary throughout the year, with high tariffs during domestic production seasons and low tariffs at other times. While a product's tariff average might appear prohibitively high, a significant amount of trade may occur during times of the year when the tariff is low.

The wide range of tariffs levied on individual commodities within the same category indicates the extent to which countries tailored their tariff schedules to provide protection for specific products. For example, tariffs on tobacco product imports by the EU range from 10 to 75 percent. The low-trade category "cigarettes containing cloves" is assessed the lowest rate of 10 percent, while the categories "other cigarettes" and "smoking tobacco" (primarily pipe tobacco) are levied rates of 58 and 75 percent, respectively. The lowest assessed category may not be produced in the EU, or is produced in small quantities, while imports of the two higher assessed categories are likely competing with domestic production.

How To Compare Tariffs Across Countries?

The furthest one can reduce a set of data, and hopefully still retain any useful information, is to summarize the data with a single measure. With tariff schedules, it is common to calculate an average tariff to reflect the overall restrictiveness of a country's trade policy. Tariff averages, however, should be interpreted with caution, as they can be biased upward by a few high tariffs. Also, different methods of calculating the average can yield significantly different results.

To compare the levels of tariff protection faced by U.S. agricultural exports in the markets of major trading partners, we calculated average tariff measures using three different methods. Table 5 displays averages calculated using single-tier and over-quota tariffs, as opposed to single-tier and in-quota tariffs, as used in table 4. The over-quota rate is used because, in most cases, it represents the marginal, binding constraint on additional trade. As such, this rate gives a more accurate account of the level of protection provided by the tariff schedule. The first tariff measure shown in table 5 is a simple, unweighted average of the tariffs levied by each country on the 215 agricultural categories exported by the United States. A simple average gives an equal weight to all goods, so a tariff on kumquats receives the same weight as a tariff on wheat, even though wheat may be traded in significantly greater quantities.

The second measure uses the country's actual agricultural imports from the United States as weights. Weighted averages are generally calculated to emphasize certain tariffs over others. In this case, the higher the value of U.S. exports to the country, the greater the weight given to the tariff. This method is equivalent to calculating the average duty paid on U.S. agricultural imports in each country. Multiplying these averages by the value of total U.S. exports to each country would give an approximation of the total duties that country collected on imports from the United States, assuming the items were assessed the bound MFN rates. Weighting based on import values frequently biases average tariff estimates downward, because items with the highest tariffs will receive virtually no weight as little or no imports are likely to enter under such tariffs.

The third measure uses total U.S. exports as weights, rather than just exports to the country in question. The advantage of this approach is that it provides equal weights in

doing calculations for each country, thus providing a more consistent way to both measure and compare the relative levels of tariff protection at each border faced by the U.S. agricultural export sector. In this case, the trade-restricting effects of extremely high tariffs in each country are explicitly taken into account, as high tariffs will receive a weight based on the level of total U.S. exports, not exports to that country.

Tariff Averages Reveal Considerable Scope for Reductions

Based on the simple average, the most protected market found in table 5 appears to be Egypt, with an average tariff of well over 100 percent. However, when Egypt's tariffs are weighted by the value of product imported from the United States, its tariff average goes from highest to second lowest within the group. The reasons for this variation are straightforward and are probably linked more to religious or public health concerns than to protection of domestic production. Egypt has tariffs of over 1,000 percent on alcoholic beverages as well as high tariffs on tobacco and tobacco products, live pigs, pork, and pork products. On the other hand, Egypt has tariffs of only 5 percent on its largest imports from the United States, wheat and corn, which accounted for almost 77 percent of total U.S. agricultural exports to Egypt. The high tariffs bias the simple average upward while the high weights given to wheat and corn bias the import-weighted average downward. Under the third approach, the average tariff is higher than the average based on actual imports but lower than the simple average. For the mix of products that the United States exported globally over the 1996-2000 period, the average tariff faced in the Egyptian market was 92 percent, among the highest found in major markets.

Most countries demonstrate the same pattern displayed by Egypt with regard to the difference between the first two tariff measures. The simple average is biased upward by the presence of a few extremely high tariffs, while the average weighted by actual imports is biased downward by the trade-chilling effects of these high tariffs. Some countries, however, do not adhere to the pattern.

In Canada and Mexico, tariffs levied on U.S. agricultural goods are, in most cases, considerably less than the bound MFN rates. For these countries, the averages instead demonstrate the level of tariff protection that U.S. exports would face if NAFTA did not exist and U.S. exports were levied the MFN rates. In Hong Kong and the Dominican Republic, the three tariff measures are all the same. Hong Kong allows all food and agricultural products to enter duty-free and the Dominican Republic levies a straight 40-percent tariff across-the-board for these products.

In Brazil, Colombia, Korea, Thailand, and Venezuela, the simple

Table 5
Country Agricultural Tariff Averages Can Vary Significantly Depending on Method of Calculation

Country	Simple unweighted tariff average	Weighted by imports from U.S.	Weighted by total U.S. exports	Average U.S. imports 1996-00
	Percent			*Million dollars*
Japan	47.2	44.3	56.5	11,871
European Union	25.0	16.2	29.6	9,000
Canada[1]	16.1	17.0	33.9	7,988
Mexico[1]	46.2	53.4	52.1	5,933
Korea	69.4	156.4	128.4	2,917
Hong Kong	0.0	0.0	0.0	1,548
Egypt	136.6	12.6	91.8	1,090
Philippines	36.2	25.7	32.5	835
Turkey	56.4	50.4	67.9	756
Indonesia	49.3	38.3	43.6	660
Israel	86.4	76.3	88.9	580
Colombia	94.8	132.8	107.6	531
Dominican Republic	40.0	40.0	40.0	513
Thailand	38.7	50.9	47.5	503
Venezuela	59.9	93.4	72.4	478
Brazil	36.5	38.6	40.3	432

[1]Tariffs used in calculating these averages are those faced by non-NAFTA countries.
Sources: Compiled from official statistics of the U.S. Department of Commerce, Bureau of the Census and tariff information in the Agricultural Market Access Database (AMAD).

average tariff is also less than the average weighted by U.S. imports. These countries frequently apply tariff rates well below the bound MFN rates. In this case, one might expect the import-weighted tariffs to be below the simple tariffs. This example gives some indication of the trade-creating effect of lowering tariffs. Countries that apply tariffs that are lower than bound levels stimulate imports. This effect, in turn, could give the higher bound rates a larger weight in the second calculation than they would receive in the simple average approach.

When tariffs are weighted by total U.S. exports, one might expect the averages to be higher than when weighting by actual U.S. exports to each country, as the total U.S. exports approach would explicitly take the high tariffs into account. Again, the results are mixed. A comparison of the averages weighted by total U.S. exports and the simple averages is revealing. In this case, one would expect the weighted measures to be higher if the tariffs levied on products important to the U.S. agricultural export sector are higher than the average. With the exception of Egypt, Indonesia, and the Philippines, this is indeed the case.

For example, in Japan, the largest market for U.S. agricultural exports, the simple average tariff equals 47 percent, and the average weighted by U.S. exports equals 57 percent. Thus, the simple, unweighted average, which is generally considered to be biased upward, is actually less than the average calculated using U.S. export weights. For the mix of agricultural products the United States exports, the more important the export category, in terms of value, the greater the chance that the tariff it faces in the Japanese market will be higher than the average. Using total U.S. exports as a weighting scheme shows that many of the United States major trading partners appear to have bound their agricultural tariffs such that the rates on products important to the U.S. agricultural export sector are higher than the simple average tariff would indicate.

Countries have traditionally measured the benefits of negotiating tariff reductions by calculating the extent to which they increased access to partners' markets. Our results indicate that there appears to be considerable scope for negotiating tariff cuts in markets of interest to U.S. agriculture. In many of the largest markets, U.S. agricultural exports already face relatively low or moderate tariffs. The United States could increase its exports by negotiating further reductions in these tariffs.

In other important markets, such as the EU, Japan, and rapidly growing developing countries, however, U.S. exports face high bound tariffs. Exports occur only because TRQs provide some market access or because countries apply tariffs below bound rates. In many of these markets, especially where over-quota tariffs are bound at prohibitively high levels or the applied tariff is significantly below the bound rate, increased trade will probably result only via deep cuts in bound rates. In lieu of this, increasing the quota or negotiating cuts from applied rates, as the United States has proposed, are alternative methods to expand trade in these markets.

Focusing on tariffs where large volumes of trade already take place discounts the amount of potential trade that could occur in markets where no trade currently takes place. It is difficult, however, to determine the level of trade that might result from reducing prohibitively high tariffs when no trade currently takes place. More work is needed in this area. As this analysis demonstrates, one indication of how much trade might be expected in those markets where no trade is currently taking place is suggested by the amount of trade taking place in markets where tariffs are already being applied at rates below the bound MFN rates.

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