11C

Bilateral transportation margins

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11C.1 Estimating transportation margins

Actual transportation cost data to produce a complete set of bilateral margins for the GTAP data base are not available. Because of this, transportation margins have to be estimated. Bilateral margins in previous versions of the GTAP data base were obtained by the use of a margins function (see Gehlhar, *et al.* 1997). Relationships between bilateral distance, volume of trade, and the transport margin were estimated at the sector level. Using these relationships, margins for all bilateral trade flows could then be inferred by using the actual distance and trade volume information for specific trading routes. When comparing actual transport margins with these inferred margins generated from the margins function, it was observed that the inferred margins tended to be too low (or even negative) for short-distance/high-volume trade routes and too high for long-distance/low-volume trade routes. In some cases, these margins had to be re-adjusted to a more plausible level.

There are good economic reasons why the sectoral margins produced from this simple margins function may not be consistent with observed margins. Most of the GTAP sectors comprise of a diverse set of commodities and the composition of traded commodities within a sector varies by partner for many reasons. There can be significant differences in transport margins among commodities in the same sector. Typically there is a mixture of bulky lower-valued items and less-bulky higher-valued items. In some cases transport cost acts as a prohibitive tariff barrier on these bulky commodities. Some commodities are predominantly traded within a region and among close-

distanced partners. Because of differences in transportation margins and the fact that the set of traded commodities within a sector can change dramatically by partner, a positive relationship between distance and the aggregate margin imposed by the margins function may not always be appropriate. With more bulky commodities traded on shorter-distance trade routes, the aggregate sectoral margins would not necessarily be lower for trade with neighboring partners. This phenomenon is not reflected in the inferred margins because changing sectoral composition over different trading partners is not taken into account. The objective of revising the approach for estimating bilateral margins is two-fold: to produce sectoral margins that are closer to the observed aggregate margins, and to make the overall procedure of estimating global bilateral margins more transparent.

11C.2 Primary data for transportation margins

Improvement in the estimated of transportation margins must begin with the raw data. Obtaining accurate transportation cost data at the detailed commodity level is most important. In the past, the primary source of transportation cost data was the United Nations COMTRADE data base. Transportation costs used for estimation are represented by the difference between the *cif* value reported by the importing country and the *fob* value reported by the exporting country. The problem is that this *cif-fob* difference can represent discrepancies in the reported value of the merchandise rather than transportation cost. At a detailed commodity level, *c.i.f./fob* from the COMTRADE data base bears little resemblance to actual transport margins. At the GTAP sector level of aggregation, the variation in the *cif/fob* is less extreme but this is still an inaccurate representation of the actual transportation cost as obtained directly from COMTRADE. Previous versions employed various procedures[1] to reduce the problems associated with transport margins reporting. Trimming the extreme observations in the *cif/fob* calculation and selecting a set of most reliable reporters was done to improve accuracy. In addition, an adjusted *cif/fob* ratio was used. This was done by first taking the difference between the *cif* unit value[2] and the *fob* unit value to create an implied unit transport cost. This measure was then used to recalculate the *cif/fob* ratio by adjusting either the *cif or fob* value. But the problem is that quantities were not reported for several manufactured commodities. In summary these procedures did little to improve detailed commodity level in order to extract transport cost information.

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[1] Systematic reporting biases were estimated simultaneously with margin estimates.

[2] The *cif* unit value is the reported *cif* value divided by reported quantity for a given transaction.

A more direct way of obtaining transportation cost information is from country trade sources. Trade information submitted to the United Nations is in a standardized form of a more simplified version than what individual countries actually maintain. Each country maintains their own system of recording and compiling trade statistics. Some countries have additional information that is not included in the United Nations trade system. A critical statistic for obtaining credible transportation data is the "customs import value" (civ). This statistic is available in the United States trade recording system. This value is defined as the price actually paid for the merchandise excluding import duties, freight, insurance, and other charges incurred in the importing of merchandise to its destination. The statistic as defined thus would be comparable to the foreign partners *fob* value. The "import charges" are the difference between the *cif* value and the *c.i.v* value. These charges represent the aggregate cost of all freight, insurance, and other charges incurred in transporting merchandise from alongside the carrier at the port of exportation and alongside the carrier at the first port of entry. Import charge as measured here can be regarded as representing "actual" transport cost. These data are available at the detailed bilateral commodity level. The use of transport cost obtained by a *cif/c.i.v* ratio as opposed to a *cif/fob* ratio can eliminate problems associated with the inconsistencies existing in reported merchandise trade between partners. We will refer to these transport cost data as the *cif/*civ transport cost data, to be distinguished from the *cif/fob* transport cost data as used in the previous data base.

11C.3 cif/civ transport cost data

We now examine commodity-specific transportation cost data as it has been recorded in the US trade system. Table 11C.1 displays selected commodities classified according to SITC level of detail[3] for food and agricultural sectors. The transport margin represented in table 11C.1 is the *cif/c.i.v* ratio. Starting with the dairy product sector we find a wide range of margins from 1.20 for fluid milk/cream to 1.04 for whey protein concentrates. Cheese and butter margins fall within this interval. Fluid products typically have higher margins compared with products in a dried form. For perishable items such as fluid milk, cheese, and butter, specialized refrigeration facilities are necessary in transporting these items. Fluid milk is traded primarily between neighboring countries. For example, dairy product exports from New Zealand to the United Kingdom consist almost entirely of dairy products in the dry powder form. Fluid milk exports from New Zealand are confined to Australia and other nearby South East Asian countries.

[3] Although the SITC 5-digit classification would seem to be more detailed relative to the GTAP sectoral classification, the SITC commodity level is highly aggregate relative to the US HS 10-digit classification which contains over 14,000 imported categories.

The next set of food commodities in table 11C.1 belong to the fisheries sector. Live fish has a transport margin of 1.46. This high margin is not surprising given the obvious fact that water must be used to ship live fish. Across various fish and seafood commodities we find differences in the transportation margin. But these differences most likely reflect the changing unit price of the fish themselves rather than changing unit transport cost. For example, fresh lobster has the lowest transport margin which also reflects the higher price of the product relative to unit transport cost. The transport margin also changes over the stages of processing. Bulk grains have a higher margin than processed bakery food products. Fresh apricots have a margin of 1.48 while dried apricots have a margin of 1.05. Likewise grapes have a margin of 1.31 while the margin for raisins is much lower at 1.06. Among agricultural sectors, fresh fruits, vegetables, and nuts (sector 4) has the widest range of transport margins across the sectoral commodity set. Of significance is the difference in the higher margins for fresh fruits and vegetables compared with the lower margin for nuts. The bulkiness and the use of specialized shipping in transporting fresh produce contributes to the higher margin.

In the beverage and tobacco sector, again we find a set of diverse products with different margins. Mineral water, not surprisingly, has a relatively high margin compared with other beverages. Distilled liquor, including whiskies and scotch, has the lowest margin among the beverages. This, however, is reflective of the differences in the unit price rather than differences in the unit transport cost. Tobacco products generally have lower margins than beverages overall.

We next turn to the margins for selected mineral and energy commodities. These are shown in table 11C.2. Some of the highest margins in commodity trade are found in the minerals sector. This is because of the extraordinary bulkiness and costly methods of transporting this material. In particular the crude stones used in construction stand out from the other minerals. For example limestone, natural sand, and gypsum have margins above 1.40. In contrast, ores have far lower margins that fall below 1.10. Margins on precious metal ores by and large differ from stone minerals because of unit price differences.

Among the energy commodities, we find coal having the highest transport margins. Bituminous coal, the most common form of traded coal, has a margin of 1.23 . Anthracite, a more lightly traded form of coal, has a margin of 1.92. Trade in the oil sector is comprised basically of crude petroleum which has a margin of 1.06. In the petroleum product sector, there are a wide range of products, but differences in transport margins across commodities are not as great as in the primary sectors. In the gas sector, there are variations in the transport margins among different types of gas. Of particular interest is the difference in the margin for liquid natural gas (1.12) and gaseous natural gas which has a negligible margin (1.000).

Table 11C.3 displays selected examples of transport margins for products within the nonfood manufacturing sectors. Among these sectors, the chemicals, rubber, and plastic (sector 33) have the most diverse set of product categories, and we find distinct patterns on margins for subgroups of these commodities. For example, we see that anhydrous ammonia, sodium hydroxide, potassium chloride have margins of 1.18, 1.19, and 1.16, respectively, while pharmaceutical products have

some of the lowest margins in this sector, falling below 1.02. Margins on rubber tires fall in between these two subcategories.

One of the fastest-growing sectors in world trade is now included in the GTAP version 4 data base in a disaggregated form, namely electronic equipment. This sector is comprised of both finished electronic products and electronic components. Computer chips are of particular interest because of the low transportation margin in comparison with other products in this sector. Margins in motor vehicle trade tend to be more uniform across products, falling in the range of 1.02 to 1.06. Other manufactures (sector 42) includes a diverse set of products. There are significant variations but rarely do margins exceed 1.10 in this sector. The lowest margin is, not surprisingly, found in jewelry (1.008).

11C.4 The role of distance in transport cost

Do transportation margins for specific commodities vary by distance and by partner? To answer this question we must use the *cif/civ* bilateral margins on a regional and product basis. Table 11C.4 shows the *cif/*civ US bilateral transportation margins on selected commodities. The trade-weighted average for fresh apples is 1.22. The bilateral range shows significant differences with the lowest margin for Canada of 1.02 and the highest margin for Chile of 1.67. Clearly, the close distance between the US and Canada has some bearing on the low transportation margin. However, it is not clear why the margins for South America are higher than for Japan and New Zealand. It is likely that South American apples are cheaper than apples from New Zealand and Japan, and that differences in transport costs to ship apples are not significant over these trade routes.

Fresh tomato trade takes place mainly within regions because of high transport cost associated with shipping a bulk perishable product. The US trade-weighted transport margin for fresh tomatoes is 1.11. This is higher than that for the NAFTA partners. The margin for tomatoes from the Netherlands, for example, is a hefty 1.75. Distance certainly plays a role in determining the size of the transportation margin for fresh tomatoes.

Generally live animal trade is confined to intra-regional trade. Live horse trade is an exception[4]. The transport margin for live horses between the US and NAFTA partners are clearly lower than that for other partners. Trade with Australia, for example, has the highest margin at 1.61. This clearly demonstrates the importance of distance in determining transportation margins in live animal trade.

Although margins on wine for NAFTA partners are below the world-average of 1.08, the relationship between distance and transport margin here is not clear. Wine from Chile and Eastern Europe is well above the world average, while margins for New Zealand and Australia, the furthest

[4] Horses are internationally traded primarily for breeding purposes where buyers seek selective traits from various sources.

in distance, are below the average. Wine is a highly differentiated product. Perhaps price differentials, based on product variety, are the main reason for the peculiar variations in transport margins as described above.

Next we examine transport margins for the mineral and energy commodities. For coal, we find that the transportation margin for Canada (1.30) is higher than the average for all US partners (1.23). The margins for South America are lower than the average. For crude oil, we again find that the margin for Canada is higher than the average. In fact, the margin on crude petroleum for Norway and the United Kingdom are both lower than the Canadian margins. To understand this, we note that there are many factors that affect the transportation margin for crude petroleum (e.g., mode of transport) with distance playing a minor role.

The margin on Canadian iron ore is below the average while iron ore imported from Australia is significantly higher at 1.84. Transport distance plays a role here. Gypsum, with its high transport margin, is traded only on short distances. The transportation margin for Mexican gypsum is 2.16, the highest margin despite the relatively short distance to the US For industrial diamonds, the last commodity shown in table 11C.5, there appears to be no relation between distance and the minuscule margin.

Table 11C.6 displays transport margins for specific commodities of manufactured products. Low margin products typically reveal no relationship between distance and transport margin. Computer chips (and diamonds) are good examples of this, having extremely low margins. The US trade-weighted average on computer chips is 1.0061. But the margin on US imports of computer chips from Canada are well above this average at 1.019. There are numerous varieties of computer chips, priced differently and sourced from different suppliers around the world. Most likely , the mode of transporting computer chip in international trade is common across all shipping routes. What varies is the quality and price of the computer chips rather than transport cost. Unit transport cost is dwarfed by the variations in unit price of the chips, as reflected in the margins.

For passenger autos, the average margin is 1.022. We see that transport margins for autos between the US and its NAFTA partners have a lower value than the world average. This has something to do with distance. But the role of distance is less clear when considering other US trading partners. For example, the transport margin for autos from the United Kingdom is lower than the margin on autos from Mexico. Consider also the variations in transport margins among European trading partners. For example, the margin on German autos is 1.0245 while the margin for Italian autos is 1.019.

For footwear trade, the role of distance is also unclear. The transport margin for footwear from Australia (1.040) is nearly the same as the margin on footwear from Brazil (1.039). But countries in the same region of the world have different margins. For example the margin on footwear from the Philippines is 1.043 while the margin on footwear from Indonesia is 1.039. There are clearly other factors besides distance that determine bilateral transport margins.

11C.5 Applying cif/civ margins to global bilateral margins

There are greater variations in transportation margins across commodities for a given partner than variations in margins across different partners for a given commodity. Therefore, obtaining accurate commodity-specific cost information is critical for producing a global set of transport margins. The significant difference between the version 4 and other versions of the GTAP transportation margins data is that the primary source of transportation margin data in the version 4 is the (*cif/civ*) ratio based at a commodity level rather than the (*cif/fob*) ratio based at a sector level. Starting with accurate detailed commodity transport cost data allows for the aggregated sector margins to reflect commodity composition changes across different partners. The commodity-specific transport cost data is applied at the detailed SITC level, which is possible because trade data is now also reconciled at the SITC commodity level (see chapter 11A).

Transportation cost data from the US is used exclusively here. The Unites States transport cost data provides an excellent "representative" sample of global transportation cost. The US has the most extensive trading partner set of any country in the world. Furthermore, US trade is more evenly dispersed across its set of partners.

The procedure for applying these commodity-specific transportation margins is relatively simple. The average, trade-weighted, margin is applied to all trade flows except on intra-regional trade and for select commodities. For commodities where the NAFTA trade-weighted average margin is lower than the non-NAFTA margin, the NAFTA margin is applied to intra-regional trade flows. For example, the trade-weighted margin on US fresh tomatoes exported to Canada and Mexico is 1.06. This is lower than the average fresh tomato margin on all US partners of 1.11. So the margin for fresh tomato exports from the Netherlands to Germany, an intra-regional flow, is set at 1.05. On the other hand, the transport margin for fresh tomato exports from Morocco to the Netherlands, a non-regional transaction, is set at 1.11. There would be no adjustments made when there is little evidence that intra-regional margins are different from the global margins (for example, the case of coal).

This approach greatly simplifies the estimation and adds to the level of transparency for the estimation of bilateral transport margins. The combination of accurate, detailed transportation cost data at a commodity level and a simplified procedure for adjustment are the main objectives of the revision in the version 4 transportation cost margin data.

11C.6 Selected examples of bilateral margins in the GTAP data base

In the version 4 data base, there are many cases where it is not apparent why bilateral transportation margins for a given sector change. It is important to distinguish between *detailed, commodity-specific margins* on the one hand, and the aggregate *sector margins* found in the data base, on the other hand. This section provides specific examples demonstrating how the detailed trade and transport data are key elements in determining bilateral sector margins.

Table 11C.7 shows transport margins from selected partners for US imports of 'fruits, vegetable, and nuts' (GTAP sector 4). We find a wide range of aggregated, bilateral margins for this sector, moving from a high of 1.32 on imports from Chile to a low of 1.04 for imports from India. Does this mean that it is more expensive to ship products from Chile than from India? Not necessarily. Product composition plays a big role here.

The margins on disaggregated commodities are also shown in table 11C.7. Commodity margins for neighboring partner trade are lower, reflecting the lower cost associated with close-distanced shipping. Thus Mexico, being a neighboring country to the US, shows lower margins on its specific commodity margins. Despite this, Mexico has a higher transportation margin than India. How can this be ? In order to account for this we must examine detailed commodity trade flows and the associated commodity-specific margins.

What must be recognized is that the commodity composition on bilateral flows can vary significantly across partners at the GTAP commodity level. In this example, we break down the fruit and vegetable sector into the important commodities for the particular trading partners at hand. We see that 65% of US fruit and vegetable imports from Chile consist of fresh grapes. Pears and stone fruit account for 19%, and 'other fruits and vegetables' account for 13%. For imports from Colombia, bananas alone account for 97% of the total. Fruit and vegetable imports from Mexico are less concentrated in individual commodities than for other countries. Fresh tomatoes, the largest single commodity, makes up just 26% of the total fruit and vegetable imports to the United States. Like Colombia, India is a 'speciality' supplier with cashew nuts making up 93% of imports to the United States. New Zealand's exports of fruits and vegetables consist primarily of fresh apples which makes up 84% of the fruit and vegetables. From this, we now have the relevant information for understanding why the sectoral margins change across suppliers.

Chile's higher margin of 1.32 can be accounted for by the large share (85%) of grapes, pears, and stone fruit which all have extra-regional transportation margins above 1.30. For Colombia, the aggregate transportation margin (1.25) is simply a reflection of the large banana component (97%) in this bilateral flow. When bilateral trade is highly concentrated in a few commodities there can be large swings in the sector margin. This is the case for India. India's exports to the US in fruit and vegetables category are dominated by cashew nuts (93%) which have a margin of 1.03. The fact that

India is a long-distance partner for the US might raise the question whether using an average margin for cashew nuts was appropriate for US-India trade. In 1995, the actual transportation margin for cashew nuts from India to the US is 1.03, and the actual aggregate transportation margin for 'fruit and vegetables' from India to the United States is 1.04. It is often the case that bilateral variation in specific commodity margins is far less than cross-commodity variation within the same sector. The primary purpose of incorporating detailed trade and transport information in this procedure was to allow the aggregate margins to more closely approximate the actual margins.

In previous versions of the GTAP data base it was not possible to capture differences in sector transport cost on *reverse* trade flows. We now 'turn the table' and look at the US exports of fruit and vegetable trade to these same partners. This is shown in table 11C.8. To show this, it is necessary to break out a slightly different set of commodities because of their greater importance as US export commodities. We see that the transportation margin for exports to Chile is now only 1.07. The reason for this is that commodities are more heavily weighted towards peas and beans. These commodities are less bulky and cost less to ship than bulky fresh produce which Chile exports to the United States. Exports to Colombia have a slightly different margin at 1.22, than do imports from Colombia at 1.25. The commodity mix is weighted more heavily towards apples, pears, and stone fruit which have relatively high margins. The same can be said for Mexico, where the transportation cost is higher because of the share of these particular commodities.

For India, we again find a low transportation cost. For exports to India, the transportation cost remains low at 1.03 with trade in almonds dominating (93%) this bilateral trade flow. Exports to New Zealand are weighted heavily by grapes and other fresh fruits and vegetables leaving the transportation margin (1.23) slightly higher than imports from New Zealand (1.21).

Another important issue for bilateral transportation margins is that certain commodities have prohibitively high transport cost which lessens their share in world trade. This is an important factor in bilateral transport margins in the mineral sector, to which we now turn. Because there is inadequate empirical evidence to suggest that intra-regional trade of mineral has lower transportation margins than extra-regional trade, we set the commodity-specific margins at the same level for all trade routes. As an example, we examine Germany's exports, which are shown in table 11C.9. From this table we find a wide range of bilateral transportation margins. Crude minerals such as gypsum, sulfur, clay and salt are generally confined to trade within Europe. These minerals constitute a high share of minerals exports from Germany to Denmark. This is the reason for a relatively high transportation margin on this trade flow (1.31). It stands to reason that transportation margins for trade with non-European countries might be less than trade with other European countries. Japan's mineral imports from Germany are mainly precious and semi-precious stones which have a very low transportation margin. German exports to Turkey consist mainly of clay and barium sulphate which have transport margins above 1.20. The United Kingdom's mineral imports from Germany are different from Denmark's in that there is a higher share of silver and platinum ores. These ores have a lower transportation cost than other crude minerals, which explains why the

transport margin is low for Germany-UK trade. Like Japan, the United States imports a greater share of precious stones and ores from Germany rather than crude minerals.

Future work in this area will be geared towards making adjustments for the mode of transportation across trade routes and for specific commodities. International shipping is carried out primarily by rail freight, ocean freight, and air transportation. For trade within some regions rail remains an efficient method for bulk transportation. There are also new innovations in ocean shipping which will greatly improve efficiencies. For specific containerized products, air transportation is becoming increasingly important.

References

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Table 11C.1 *cif*/civ US transport cost margins of selected food and agriculture commodities

SITC code	Abbreviated description	Margin *c.i.f/civ*	Corresponding GTAP sector
2213	Milk/Cream Fluid	1.1984	22
2221	Milk Powder	1.0389	22
2224	Milk Condensed	1.0522	22
2241	Whey Protein Concentrates	1.0379	22
2300	Butter	1.0924	22
2499	Cheese	1.0610	22
3411	Fish, Ornamental, Live	1.4572	14
3412	Rainbow Trout, fresh	1.0650	14
3414	Tuna, Long finned fresh	1.3013	14
3417	Mackerel, fresh	1.1942	14
3620	Rock Lobster, fresh	1.0188	14
4300	Barley	1.0778	3
4490	Corn	1.0628	3
4510	Rye	1.0858	3
4849	Pastry	1.0477	25
4850	Dough Mix	1.0325	25
5440	Tomatoes	1.1139	4
5487	Sugar Beet, fresh	1.1070	6
5488	Sugar Cane. fresh	1.0638	6
5712	Tangerines	1.1832	4
5721	Lemons	1.3836	4
5722	Grapefruit	2.3599	4
5730	Bananas	1.2522	4
5740	Apples	1.2155	4
5751	Grapes	1.3073	4
5752	Raisins	1.0577	25
5773	Cashew Nuts	1.0322	4
5774	Almonds	1.0256	4
5779	Pecans	1.0179	4
5793	Apricots, fresh	1.4845	4
5799	Apricots, dried	1.0531	25
5910	Orange Juice	1.0659	25
5991	Pineapple Juice	1.1931	25
5993	Grape Juice	1.1024	25
5994	Apple Juice	1.0534	25
6111	Cane Sugar Raw	1.0983	24
11101	Water, Mineral & Aerated	1.2029	26
11217	Wine	1.0792	26
11230	Beer	1.0934	26
11241	Whiskies and Scotch	1.0380	26
12220	Cigarettes	1.0246	26
12232	Pipe Tobacco	1.0344	26

Source: US Bureau of Census Foreign Trade Division

Table 11C.2 *cif/civ* US transport cost margins of selected mineral and energy commodities

SITC code	Abbreviated description	Margin *c.i.f/civ*	Corresponding GTAP sector
27312	Marble and Travertine	1.1832	18
27313	Granite	1.1735	18
27322	Limestone	1.5050	18
27323	Gypsum; Anhydrite	1.8005	18
27324	Plasters	1.1387	18
27331	Natural Sand	1.4582	18
27340	Gravel	1.5375	18
27420	Unroasted Iron Pyrites	1.1495	18
27711	Industrial Diamonds	1.0025	18
27721	Diamonds Powders	1.0088	18
28140	Roasted Iron Pyrites	1.3180	18
28150	Iron Ore Concentrates	1.2153	18
28610	Uranium Ores	1.0183	18
28740	Lead Ores	1.0078	18
28750	Zinc Ores	1.0787	18
28792	Tungsten Ores	1.0375	18
28793	Cobalt Ores	1.0040	18
28911	Silver Ores	1.0069	18
28919	Precious Metal Ores	1.0029	18
32110	Anthracite Coal	1.9178	15
32121	Metallurgical Bituminous Coal	1.2265	15
32230	Peat	1.0894	15
32500	Coke of coal	1.1359	15
33300	Crude Petroleum	1.0625	16
33411	Leaded Gasoline	1.0558	32
33412	Jet Motor Fuel	1.0755	32
33419	No. 2 and 3 Fuel Oil	1.0604	32
33421	Jet Motor Fuel Kerosene type	1.0687	32
33429	No. 4 Fuel Oil	1.0848	32
33440	No. 5 Fuel Oil	1.1023	32
33511	Petroleum Jelly	1.0284	32
33512	Paraffin Waxes	1.0834	32
33521	Mineral Tars	1.2850	32
33522	Benzene	1.0648	32
34210	Propane. Liquid	1.0789	17
34250	Butanes	1.1001	17
34310	Natural Gas Liquefied	1.1173	17
34320	Natural Gas, Gaseous	1.0000	17
34410	Ethylene, Liquefied	1.2290	17
34420	Ethane Liquid	1.0579	17
34490	Propane	1.1061	17
35100	Electrical energy	1.0000	43

Source: US Bureau of Census Foreign Trade Division

Table 11C.3 *cif/civ* US transport cost margins of selected manufactures

SITC code	Abbreviated description	Margin *c.i.f/civ*	Corresponding GTAP sector
52261	Anhydrous Ammonia	1.1750	33
52263	Sodium Hydroxide	1.1887	33
52513	Uranium Oxide enriched in U235	1.0053	33
53113	Basic Dyes	1.0274	33
54163	Human Blood Plasma	1.0084	33
54293	Medicaments, Antigens or Hyaluronic Acid	1.0107	33
55330	Shampoos	1.0305	33
56231	Potassium Chloride	1.1597	33
56291	Fertilizers containing N,P,K	1.0722	33
62520	Radial Tires	1.0572	33
62592	Retreaded Tires of Rubber	1.1093	33
76381	Video Cassette, Cartridge Player	1.0115	40
76423	Loudspeakers	1.0485	40
77621	TV Camera, Cathode Ray Tubes	1.0205	40
77641	Computer chips/integrated circuits	1.0061	40
78120	Passenger Motor Vehicles	1.0216	38
78219	Trucks, Diesel Engine	1.0166	38
78421	Bodies for Autos	1.0584	38
78425	Bodies for Tractors	1.0219	38
78435	Drive axles	1.0232	38
78683	Trailers and Semi-Trailers	1.0414	38
78685	Farm Wagons and Carts	1.1109	39
78689	Parts of Farm Wagons and Carts	1.0594	39
79220	Airplanes	1.0149	39
79328	Cruise Ships	1.2009	39
88423	Sunglasses	1.0447	42
88574	Alarm Clocks	1.0450	42
89122	Shotgun Cartridges	1.0540	42
89124	Cartridges for Rifle or Pistols	1.0398	42
89129	Guided Missiles	1.0199	42
89422	Doll's Stuffed	1.0723	42
89424	Electric Train Assembly Kits	1.0482	42
89425	Stuffed Toys	1.0911	42
89426	Toy Musical Instruments	1.0566	42
89431	Video games	1.0147	42
89471	Fishing Rods	1.0388	42
89473	Cross-Country Skis	1.0288	42
89475	Golf Clubs	1.0337	42
89476	Tennis Rackets, Strung	1.0636	42
89478	Exercise Cycles	1.0951	42
89731	Silver Jewelry	1.0081	42
89931	Candles	1.0849	42

Source: US Bureau of Census Foreign Trade Division

Table 11C.4 US bilateral *cif*/civ transportation margins by selected agricultural commodities

Trading partner	Commodity	Margins *c.i.f/civ*
World	Fresh Apples	1.2155
Canada	Fresh Apples	1.0169
Chile	Fresh Apples	1.6582
Argentina	Fresh Apples	1.4224
Japan	Fresh Apples	1.1680
New Zealand	Fresh Apples	1.1922
Republic of South Africa	Fresh Apples	1.3669
World	Fresh Tomatoes	1.1139
Canada	Fresh Tomatoes	1.0339
Mexico	Fresh Tomatoes	1.0700
Netherlands	Fresh Tomatoes	1.7456
World	Live Horses	1.0646
Canada	Live Horses	1.0301
Mexico	Live Horses	1.0581
Chile	Live Horses	1.0994
United Kingdom	Live Horses	1.0414
Hong Kong	Live Horses	1.3328
Taiwan	Live Horses	1.1333
Japan	Live Horses	1.1937
Australia	Live Horses	1.6124
World	Wine	1.0792
Canada	Wine	1.0216
Mexico	Wine	1.0546
Chile	Wine	1.1158
France	Wine	1.0626
Germany	Wine	1.0840
Hungary	Wine	1.1403
Slovenia	Wine	1.2249
Romania	Wine	1.2002
Bulgaria	Wine	1.2196
Australia	Wine	1.0679
New Zealand	Wine	1.0597
Republic of South Africa	Wine	1.0702

Source: US Bureau of Census Foreign Trade Division

Table 11C.5 US bilateral *cif/civ* margins for mineral and energy commodities

Trading partner	Commodity	Margins *c.i.f/civ*
World	Coal	1.2265
Canada	Coal	1.2994
Columbia	Coal	1.2069
Venezuela	Coal	1.1743
Indonesia	Coal	1.2930
Australia	Coal	1.3635
World	Crude Petroleum	1.0625
Canada	Crude Petroleum	1.0642
Mexico	Crude Petroleum	1.0349
Venezuela	Crude Petroleum	1.0642
Norway	Crude Petroleum	1.0456
United Kingdom	Crude Petroleum	1.0494
Saudi Arabia	Crude Petroleum	1.0760
Indonesia	Crude Petroleum	1.0841
China	Crude Petroleum	1.0881
Cameroon	Crude Petroleum	1.0741
Nigeria	Crude Petroleum	1.0566
Gabon	Crude Petroleum	1.0734
Angola	Crude Petroleum	1.0658
Zaire	Crude Petroleum	1.0717
Republic of South Africa	Crude Petroleum	1.0597
World	Iron Ores	1.1663
Canada	Iron Ores	1.1598
Brazil	Iron Ores	1.2411
Australia	Iron Ores	1.8425
Mauritania	Iron Ores	1.3265
World	Gypsum	1.8005
Canada	Gypsum	1.6920
Mexico	Gypsum	2.1643
World	Industrial Diamonds	1.0023
Canada	Industrial Diamonds	1.0051
Mexico	Industrial Diamonds	1.0042
Brazil	Industrial Diamonds	1.0028
Belgium	Industrial Diamonds	1.0011
Switzerland	Industrial Diamonds	1.0008
Russia	Industrial Diamonds	1.0004
Armenia	Industrial Diamonds	1.0033
Israel	Industrial Diamonds	1.0015
India	Industrial Diamonds	1.0057
Ghana	Industrial Diamonds	1.0009
Republic of South Africa	Industrial Diamonds	1.0014
Namibia	Industrial Diamonds	1.0019
Botswana	Industrial Diamonds	1.0018

Source: US Bureau of Census Foreign Trade Division

Table 11C.6 US bilateral *cif/civ* margins by selected manufactures

Trading partner	Product	Margin *cif/civ*
World	Computer chips	1.0061
Canada	Computer chips	1.0190
Mexico	Computer chips	1.0010
Costa Rica	Computer chips	1.0091
Brazil	Computer chips	1.0346
Sweden	Computer chips	1.0061
Norway	Computer chips	1.0170
Finland	Computer chips	1.0181
Denmark	Computer chips	1.0192
United Kingdom	Computer chips	1.0040
Ireland	Computer chips	1.0012
France	Computer chips	1.0033
Germany	Computer chips	1.0036
Belarus	Computer chips	1.0353
Israel	Computer chips	1.0050
Malaysia	Computer chips	1.0097
Singapore	Computer chips	1.0065
Philippines	Computer chips	1.0089
South Korea	Computer chips	1.0036
Taiwan	Computer chips	1.0073
Japan	Computer chips	1.0065
Republic of South Africa	Computer chips	1.0074
World	Passenger Autos	1.0217
Canada	Passenger Autos	1.0099
Mexico	Passenger Autos	1.0155
Sweden	Passenger Autos	1.0213
United Kingdom	Passenger Autos	1.0185
Belgium	Passenger Autos	1.0147
Germany	Passenger Autos	1.0245
Italy	Passenger Autos	1.0192
South Korea	Passenger Autos	1.0420
Japan	Passenger Autos	1.0319
Australia	Passenger Autos	1.0230
World	Footwear	1.0444
Brazil	Footwear	1.0394
Italy	Footwear	1.0381
Thailand	Footwear	1.0465
Indonesia	Footwear	1.0550
China	Footwear	1.0488
South Korea	Footwear	1.0417
Australia	Footwear	1.0409
United Kingdom	Footwear	1.0301
Portugal	Footwear	1.0389
Philippines	Footwear	1.0434

Source: US Bureau of Census Foreign Trade Division

Table 11C.7 Bilateral transportation margins for US imports of fruits, vegetables, and nuts

Commodities	Chile	Colombia	Mexico	India	New Zealand
			Transport margins		
Tomatoes fresh	1.12	1.12	1.07	1.12	1.12
Bananas	1.25	1.25	1.16	1.25	1.25
Apples fresh	1.22	1.22	1.18	1.22	1.22
Grapes fresh	1.31	1.31	1.20	1.31	1.31
Cashew nuts	1.03	1.03	1.03	1.03	1.03
Pears and quinces	1.40	1.40	1.30	1.40	1.40
Stone fruit	1.48	1.48	1.32	1.48	1.48
Other fruit, vegetable, and nuts	1.21	1.12	1.09	1.11	1.12
Total fruit, vegetable and nuts	1.32	1.25	1.09	1.04	1.21
			share of sector imports		
Tomatoes fresh	0.00	0.00	0.26	0.00	0.00
Bananas	0.00	0.97	0.03	0.00	0.00
Apples fresh	0.03	0.00	0.00	0.00	0.84
Grapes fresh	0.65	0.00	0.04	0.00	0.00
Cashew nuts	0.00	0.00	0.00	0.93	0.00
Pears and quinces	0.03	0.00	0.00	0.00	0.04
Stone fruit	0.16	0.00	0.00	0.00	0.01
Other fruit, vegetable, and nuts	0.13	0.03	0.67	0.07	0.11
Total fruit, vegetable and nuts	1.00	1.00	1.00	1.00	1.00

Table 11C.8 Bilateral transportation margins for US exports of fruits, vegetables, and nuts

Commodities	Chile	Colombia	Mexico	India	New Zealand
			Transport margins		
Peas	1.10	1.10	1.07	1.10	1.10
Chickpeas	1.06	1.06	1.04	1.06	1.06
Beans	1.08	1.08	1.05	1.08	1.08
Apples	1.22	1.22	1.14	1.22	1.22
Grapes	1.31	1.31	1.20	1.31	1.31
Almonds	1.03	1.03	1.02	1.03	1.03
Pears and quinces	1.40	1.40	1.26	1.41	1.41
Stone fruit	1.48	1.48	1.32	1.48	1.48
Other fruit, vegetable and nuts	1.06	1.18	1.08	1.10	1.21
Total fruit, vegetable and nuts	1.07	1.22	1.14	1.03	1.23
			share of sector exports		
Peas	0.198	0.042	0.011	0.048	0.003
Chickpeas	0.094	0.132	0.003	0.018	0.007
Beans	0.135	0.069	0.086	0.002	0.055
Apples	0.018	0.393	0.372	0.000	0.007
Grapes	0.000	0.047	0.079	0.000	0.337
Almonds	0.075	0.046	0.044	0.931	0.090
Pears and quinces	0.000	0.104	0.100	0.000	0.000
Stone fruit	0.000	0.109	0.048	0.000	0.024
Other fruit, vegetable and nuts	0.479	0.058	0.258	0.001	0.477
Total fruit, vegetable and nuts	1.000	1.000	1.000	1.000	1.000

Table 11C.9 Bilateral transportation margins for German exports of minerals

Commodities	Denmark	Japan	Turkey	U.K.	US
			Transport margins		
Gypsum	1.821	1.821	1.821	1.821	1.821
Sulphur	1.300	1.300	1.300	1.300	1.300
Clay	1.212	1.212	1.212	1.212	1.212
Salt	1.253	1.253	1.253	1.253	1.253
Barium Sulphate	1.243	1.243	1.243	1.243	1.243
Silver and Platinum Ores	1.053	1.053	1.053	1.053	1.053
Precious and semi-precious stones	1.002	1.002	1.002	1.002	1.002
Other Minerals	1.262	1.072	1.153	1.185	1.045
Total Minerals	1.307	1.039	1.221	1.174	1.058
			Share of sector exports		
Gypsum	0.100	0.010	0.010	0.020	0.000
Sulphur	0.110	0.000	0.030	0.170	0.060
Clay	0.140	0.060	0.420	0.090	0.030
Salt	0.320	0.000	0.050	0.060	0.010
Barium Sulphate	0.080	0.020	0.330	0.090	0.050
Silver and Platinum Ores	0.000	0.000	0.000	0.400	0.090
Precious and semi-precious stones	0.020	0.720	0.020	0.010	0.510
Other Minerals	0.220	0.190	0.140	0.160	0.250
Total Minerals	1.000	1.000	1.000	1.000	1.000