

Reconciling merchandise trade

Mark Gehlhar

11A.1 The general procedure

Trade statistics for bilateral trade derive from two independent sources: reported imports and reported exports. Because reported trade flows from these sources are often inconsistent, they cannot be directly used for trade modeling purposes. Consistency can easily be achieved by various methods, but the real challenge is in retaining credibility while achieving this consistency.

The fact that large inconsistencies exist give an impression that bilateral trade statistics are unreliable. However, discrepancies in bilateral trade statistics do not necessarily reflect unreliable reporting by *both* partners. More often than not a discrepancy in reported trade arises when an unreliable reporter trades with a reliable reporting partner. And when a country misrepresents a trade flow it is usually with more than one partners. A systematic pattern of sloppy reporting can therefore be associated with unreliable reporters.

Reconciling bilateral trade can be done by various means. One approach is through verification of the reported customs record with alternative data sources. But alternative sources for bilateral trade are rare and costly to obtain. Another approach is to attempt to explain discrepancies on a case by case basis by obtaining country-specific information on reporting practices. These approaches might be used for a few selected commodities and countries but cannot be used for the whole global data base and for all merchandise trade.

A more practical approach is to rely solely on publicly available data and apply a general procedure to reconcile all countries and commodities. This is the approach taken here. The primary source of publicly available bilateral customs data is the United Nations COMTRADE data base. In what follows, a general procedure¹ for reconciling inconsistent trade flow data is described and illustrated with specific examples from the version 4 GTAP trade data base.

Reconciling trade using this method requires a set of generalized assumptions regarding the reporting of trade statistics. Examples include: importers correctly identify their partners more often than exporters, developed countries are more reliable reporters than developing countries, and the larger reported value is more reliable because of under-invoicing. In reality however, all reporters occasionally misidentify their partner or mis-classify commodities, and when this occurs the larger of the two reported flows is not always more reliable. Also, importers, especially from developed countries, can misrepresent their trade, intentionally or unintentionally. Each country has its own strengths and weaknesses in reporting trade data. The quality of the reported trade statistics begins with the information submitted by private firms to national statistical bureaus². Thus, quality can vary significantly across industries for the same country. The problem is that it is not always apparent when an otherwise ‘good reporter’ is reporting poor statistics for particular commodities. South Africa and Australia for example, are excellent reporters of some commodities but poor reporters of other commodities.

How is reliability revealed? It is not mere coincidence when reported trade flows of the exporter and importer match closely. Consistent reporting is indicative of reliable reporting. The reconciliation method employed here involves a strategy for accepting or rejecting reported trade flows based on each reporters reliability record with its partners. Using this approach, one country’s weakness in reporting can be superseded by its partners strength. Rather than relying on generalizations, capitalizing on different strengths of all reporting countries helps produce the most reliable bilateral global data base.

There is an appropriate level of commodity detail for reconciling trade flows. Because reporting problems are industry-specific, aggregation across industries can mask a country’s reporting problems. Because of this, reconciling trade flows at the GTAP sectoral classification (GSC) may not be appropriate. On the other hand, there are tradeoffs in reconciling at the most detailed level because measuring reporters reliability is a problem at this level. For example, there is a higher incidence of misclassification when variants of the same product are broken down in trade classifications. Wheat can be further disaggregated in standard trade classification³, and a reliable

¹The general procedure has been previously documented in Gehlhar (1996) GTAP Technical paper #10.

²Confidentiality can become a problem when a firm’s international transactions represent a large share of its country’s total trade for a particular industry.

³The trade classification referred to here is the Standard International Trade Classification Revision 3 (SITCr3) at 4 and 5 digit level.

wheat reporter may be mistaken as unreliable if there is misclassification of different wheat types. But if wheat was aggregated, this problem would not arise. Reconciling trade at the most disaggregate level⁴ therefore is not always appropriate. Inter-sector misclassification can be a problem, like wheat classified as rice or maize. This type of misclassification would be mistakenly taken as grounds for discrediting a country's ability to report trade flows.

11A.2 *Specific examples*

The reconciliation procedure can be illustrated with specific examples. For each country a reliable index is calculated by individual commodity. Table 11A.1 provides an example for the case of Argentina's wheat exports. First, to improve comparability in reported trade flows, reported *cif* imports are converted to *fob* values. This is done using bilateral transportation margins (see Chapter 11.C).

Each reporter typically has three types of transactions: one involving a non-reporting partner, one with a reporting partner, but which shows inconsistent reporting, and one with a reporting partner which shows consistent reporting. All three types are represented in Table 11A.1. The first set of transactions are in the top third of Table 11A.1. These transactions provide no information for assessing Argentina's reliability as a reporter. The second type of transactions are reported in the middle third. They are inaccurate because of the significant discrepancy between an importer's and an exporter's trade record⁵. For example, Bolivia reports a value of wheat imports from Argentina of \$2.1 million whereas Argentina reports a value for this same transaction of only \$897 thousand giving an m/x ratio of 2.4. The next transaction shows Brazil reporting only \$4.5 million imports while Argentina reports \$662 million exports giving an m/x ratio of 0.01. This particular transaction provides a special example because it not only is an extreme discrepancy, it accounts for a large share of both Argentina's wheat exports and Brazil's wheat imports. The third set of transactions listed in the bottom portion of Table 11A.1 are deemed 'accurate' transactions. For example, China reports \$39.7 million imports while Argentina reports \$34.2 million exports, giving an acceptable m/x ratio of 1.16.

The reliability index for Argentina's wheat exports (RIX) is calculated as the share of total accurately reported transactions in total reported wheat exports. But noting that Argentina's trade

⁴Commodity distinctions at the 4 and 5 digit level in the SITC classification are aggregated prior to reconciling to improve the measurement of reliability of individual reporters. Different types of rice, milk, and wheat are examples where such aggregation is employed.

⁵Inaccurate transactions are those falling outside the (m/x) range of 0.80 to 1.25. The size of discrepancies found in bilateral trade flows is enormous. This range helps distinguish obvious reporting errors (considered inaccurate) from the less obvious errors (considered accurate).

with non-reporting partners are not included as part of the ‘reported total’ since these transactions provide no information for assessing the reliability of Argentina as a reporter. An unfortunate situation is when a reporter conducts its trade entirely with non-reporting partners. There is then no way to determine the reliability of the reporter in that case. A similar problem arises when a large share of trade is with unreliable reporting partners. Brazil is Argentina’s largest wheat importer and Argentina is also Brazil’s most important partner in wheat import, yet the transactions recorded by both countries are inconsistent with each other and therefore inaccurate. This presents a dilemma because including this transaction in the reported total can substantially reduce the credibility of the more reliable reporter. Therefore, to improve the measurement of reliability, this extreme transaction is not counted in the reported total. This method reduces the chance of a large sloppy reporting partner making other reliable reporters appear unreliable⁶. To calculate Argentina’s RIX, a ‘qualified’ reported total for Argentina wheat exports is calculated, which excludes the extreme inaccurate transaction mentioned above. This amounts to \$263 million of which \$128 million were accurately reported with partners. This gives a reliability index (percentage of accurate to total reported) of 48.8%.

To reconcile Argentina’s bilateral wheat exports, reliability indexes for wheat importers (RIM) from Argentina are calculated in the same manner as the RIX for Argentina. Importer transactions are shown in Table 11A.2. Bolivia’s transactions with partners demonstrates sloppy reporting of bilateral wheat trade. Based on partner trade its reported import flows appear over-inflated with no transaction accurately matched with partners. This does not constitute proof that what Bolivia reports is invalid, rather, it shows a lack of evidence of credible reporting. The same can be said for Brazil and Jordan’s wheat reporting. Chile demonstrates a high degree of credibility, in fact, the only inaccurate transaction is with Argentina. It would then stand to reason that more faith should be placed on Chile’s report as an importer than Argentina’s report as an exporter. The same can be said for Peru, Reunion, and the South African Customs Union (SACU) which demonstrate a higher degree of reliable reporting of wheat than Argentina. Reunion’s high reliability index is a result of the accurate transaction it had with France.

Table 11A.3 shows the reliability indices for each partner of Argentina’s wheat exports. Because non-reporters have no evidence of accurate transactions they have a reliability index set to zero. Some reporters, however, also have a zero reliability index, for example, Bolivia and Brazil. This is because none of their reported trade flows were accurately matched with their partners. Unlike Argentina, excluding the extreme transaction with Argentina (\$4.5 million) did not improve the RIM for Brazil because Brazil has no accurate transactions to start with. The choice of accepting Argentina’s reported wheat flows depends on whether the importers reliability index exceeds 48.8%. Argentina’s reported exports of \$662 million is accepted while Brazil’s reported imports of \$4.5

⁶Australian inorganic chemical exports to the US was used as an example in the previous documentation as the ‘worst’ largest reporting partner.

million is rejected. Because Chile's RIM (75.7%) exceeds Argentina's, Chile's report of \$28.2 million is accepted while Argentina's report of \$21.3 million is rejected.

The above demonstrates a number of counter-examples to the general belief about reporting. A higher reported value is not necessarily more reliable in every case as is shown in the Bolivia case which reported higher values but were not accurately matched with its partners. Reported imports are not always more reliable as shown for the case of Brazil's wheat imports. The level of economic development is not always a good predictor of reliability of trade statistics. Reunion is a more reliable reporter of wheat imports than Argentina is as a wheat export reporter.

11A.3 Comparisons of individual country totals with other sources

The reconciliation method used here could be considered as a 'bottom-up' approach since bilateral commodity trade flows are reconciled at a disaggregate level without controlling totals. Argentina's reported exports of wheat to the world is \$1 billion and Brazil's reported total of imports from the world is \$6.2 million. According to Argentina, Brazil accounts for more than 60% of the total exports of wheat from Argentina. It would obviously be inconsistent to accept what Argentina reports at the same time accepting Brazil's total reported wheat imports. Reconciling bilateral trade flows thus also involves checking for consistency across country trade totals.

How these country trade totals compare among different trade data sources is of interest. FAO, for example, provides country trade totals for individual food and agricultural commodities. Table 11A.4 shows total FAO imports of wheat for Brazil of \$1 billion, but in GTAP, this is only \$916 million. Both figures, however, are substantially higher than what Brazil actually reported. But just as the GTAP reconciling procedure rejected Brazil's reported wheat imports, it seems the FAO figure also confirms this rejection. Although the FAO trade data base is not based on reconciled bilateral trade, food-related trade totals must be consistent with the food balance equation in each country. Brazil wheat consumption could not possibly be satisfied by its reported imports and domestic production. This is the reason why Brazil's wheat import totals were unacceptable for the FAO trade data base.

Tables 11A. 5 and 6 show a comparison of country totals from FAO and from GTAP reconciled data bases for combined agricultural and fisheries data⁷. There are cases where the GTAP reconciled totals fall above FAO totals and cases where GTAP totals are below FAO totals. Unlike

⁷Because frozen and prepared fish are classified as 'other food products' in the GTAP data base, it is not possible to create a total for total agricultural trade that is comparable to FAO's agricultural trade. To make comparisons possible, it is necessary to add agricultural products with fisheries data in both GTAP and FAO.

GTAP totals, FAO totals are not the sum of reconciled bilateral flows. It is no surprise that there would be some differences. Some countries report trade with the world without reporting partner flows. Australia for example does not report bilateral trade for wheat, rice or sugar.

Tables 11A. 7 and 8 show merchandise export and import totals with comparison of FAO's total merchandise trade, the World Bank's balance of payment, and the GTAP reconciled totals by individual GTAP countries. The largest discrepancy is that for Hong Kong. However, this discrepancy is expected because in the GTAP data base Hong Kong's re-export trade is converted to a direct trade basis. There are other discrepancies that may seem a bit worrisome. For example Australia's total in the World Bank's estimates is \$53 billion while in GTAP, it is \$47.4 billion. The export total for South African Customs Union in the World Bank's estimate is \$27.8 billion while in GTAP, it is only \$24 billion, and Sweden's total in the reconciled GTAP data base is lower than other sources.

It should be realized that trade 'totals' from other sources are not the sum of bilateral-commodity trade as in the GTAP data base. A portion of total merchandise trade in these totals includes unclassified commodities and unidentified countries. For example, Australia reported exports of merchandise trade of \$50.4 billion. Of this, \$10.8 billion was unspecified trade either as unclassified commodities or unidentified partners. This leaves only \$39.6 billion in bilateral commodity trade. It stands to reason that total exports for Australia in the GTAP data base would be lower than from other sources.

The larger the share of unspecified trade, the poorer the quality of reported trade is. Of interest is whether the share of unspecified trade has fallen or increased over time. Table 11A.9 displays this share by comparing 1992 with 1995. The South African Customs Union made a big improvement in having unclassified reported exports dropping from 52% down to 27% and for unclassified reported imports dropping from 16% to 5%. Australia made a slight improvement from having unclassified reported exports of 23.4% in 1992 down to 21.5% in 1995. Unclassified reported Australian imports also fell from 11.7% to 5.6%. But the share of unspecified reported trade unfortunately increased in most European countries. Sweden's share of unspecified reported exports increased from only 1% in 1992 to 8% in 1995. Both Denmark and Germany's share of unspecified trade also increased over this period. Denmark's share of unspecified reported exports increased from 7% to 12.5%. For Germany, the problem was more significant on the import side, with the share of unspecified imports increased from 3% to 10%.

11A.4 *Intra-EU trade*

A significant change in the version 4 GTAP trade data is that it includes intra-EU trade which was not included in previous versions of the data base. There is some concern whether the quality of the intra-EU trade has deteriorated over time. Is there evidence of this? Table 11A.10 shows level of intra-EU trade from 1989 to 1995 along with the reported import/export ratio. Historically reported imports and reported exports have been nearly the same for intra-EU trade. From 1992 to 1993, there was a distinct drop in both reported imports and reported exports but reported imports fell more than reported exports. As percentage difference imports have remained lower than reported exports since 1992. This can be seen by the import/export ratio which dropped from 1.00 to 0.94 after 1992. Is this the case for all individual EU countries or is this problem country-specific?

To answer this question it is useful to examine a trade matrix with all EU countries. Table 11A.11 shows bilateral import/export ratios for 1992 and 1995. Looking at individual importers trade with the EU15 aggregate exporter (bottom row) it shows that not all import/export ratios have dropped between 1992 and 1995. In fact several have remained steady or increased slightly. For Italian imports from the EU15 the import/export remained constant at 1.06. But, there was a significant drop in the m/x ratio for Germany, Ireland, the Netherlands and the United Kingdom. For Germany's import from the EU15 the m/x ratio dropped from 1.06 to 0.86. For the UK it dropped from 1.08 to 0.99 and for Ireland it dropped from 0.96 to 0.81. This would indicate import reporting for internal trade has become less important for these countries.

If the problem with intra-EU trade is country-specific it presents a less serious problem than if it were for all intra-EU trade. Intra-EU trade in GTAP is reconciled like all other bilateral trade flows. Under the reconciliation method if importers start to slack-off then a larger share of reported exports are used in constructing the final data base.

11A.5 *Hong Kong re-exports*

While much of the preparation of the bilateral trade for GTAP revolves around the issue of reconciliation of the data base, there is also the problem of re-exports. Re-exports pose a different type of challenge. This is because re-exports cannot be accounted for in a standard input-output table and must therefore be placed on a direct trade basis. To understand the steps involved in this process we first define the types of trade flows which are reported by Hong Kong in United Nations COMTRADE data base. There are two types of export flows: national exports and re-exports. National exports denoted as $NX_{(i,hkg,s)}$ are exports which Hong Kong directly produces or manufactures by transforming raw materials into manufactured products. Re-exports denoted as $RX_{(i,hkg,s)}$ are goods where the standard of identity has not been altered by Hong Kong. They are

imported and subsequently exported to another destination. On the import side, Hong Kong reports general imports denoted as $GM_{(i,r,hkg)}$, which includes imports retained by Hong Kong and imports destined for re-exports. In the last decade, Hong Kong's re-exports and general imports have grown dramatically. National exports, however, have remained flat. Table 11A.12 displays the level of Hong Kong's trade in each of these categories. In 1992, Hong Kong's re-exports were \$89 billion but by 1995 they jumped to \$144 billion. At the same time, national exports remained steady at \$30 billion. General imports reached \$193 billion, up from \$123 billion in 1992. Because Hong Kong data are used instead of Hong Kong's partner data, this can result in significant differences in the reported trade figures, particularly those relating to trade in China. China's reported exports to selected countries is shown in Table 11A.13. There is clear evidence that China under-reports its exports.

General imports are thus also made up of two trade flows which are not reported in the COMTRADE data base. They are retained imports $RM_{(i,r,hkg)}$ and imports destined for re-exports $MRX_{(i,r,hkg)}$. These trade flows, however, can be calculated from reported trade flows. Another trade flow which can be calculated is direct re-exports $DRX_{(i,r,s)}$. Direct re-exports are Hong Kong's re-exports but exported by exporter r instead of Hong Kong itself.

There are two types of data that are not from the U.N. bilateral data base. One is Hong Kong's re-export margins $RXmrg_{(i,r,s)}$. In previous versions of the GTAP data base, the re-export margin was not estimated on a sector and partner basis. A uniform margin was used for all commodities and trade flows. In version 4, these margins are estimated from Hong Kong's own national data source. (For a detailed account of the estimation of Hong Kong's re-export markups, see Chapter 11B.) The second type of data that are not given in the U.N. data base reports the sources of Hong Kong's re-exports. This is referred to here as the source share $SSH_{(i,r,s)}$, which gives the share of sector i in imports from source r for re-export to destination s . This can be obtained from the same source as the re-export margin. The re-export margin and the source share data are used to convert re-exports to direct trade and to obtain retained import flows for Hong Kong.

Direct re-exports are calculated as follows:

$$DRX_{(i,r,s)} = [SSH_{(i,r,s)} * RX_{(i,hkg,s)}] - RXmrg_{(i,r,s)}$$

Here, Hong Kong (hkg) is replaced, as the origin of re-exports, by the original exporters(r). Because reported re-exports by Hong Kong contain the value-added re-export margin it must be subtracted from the re-export flows.

Hong Kong's imports destined for re-exports $MRX_{(i,r,hkg)}$ are direct re-exports summed over destinations.

$$MRX_{(i,r,hkg)} = \sum_{s \in DEST} DRX_{(i,r,s)}$$

This trade flow is then used to obtain retained imports by subtracting it from Hong Kong's general imports:

$$RM_{(i,r,hkg)} = GM_{(i,r,hkg)} - MRX_{(i,r)}.$$

In the GTAP trade data base, Hong Kong's merchandise exports represent only Hong Kong's national exports $NX_{(i,hkg,s)}$. Hong Kong's merchandise imports represent retained imports $RM_{(i,r,hkg)}$ as calculated above. Direct re-exports $DRX_{(i,r,s)}$ are then added to the reconciled merchandise trade flows data.

To be consistent, importers of Hong Kong's re-exports must import the same value as they had before re-exports were converted to direct trade basis. From the above we see that the re-export margin was subtracted from merchandise trade. It now must be added back. But it is added as a service trade flow. This becomes another trade flow which we denote as $VA_{(tt,hkg,s)}$ where the value-added belongs to the trade and transport service sector. This is shown below as:

$$VA_{(i,hkg,s)} = \sum_{r \in EXP} RXmrg_{(i,r,s)}$$

and this is added directly to Hong Kong's trade and transport exports.

Table 11A.1 Reliability Index Calculation: The Case of Argentine Wheat Exports

	Reported Exports (x)	Reported Imports (m)	m / x
Importer	U.S. thousands		
Angola	943	0	na
Bangladesh	4,534	0	na
Iran	25,754	0	na
Kenya	35,926	0	na
Mozambique	6,603	0	na
Netherlands	20	0	na
Tanzania	2,556	0	na
Yemen Rep.	4,016	0	na
Bolivia	879	2,129	2.42
Brazil	661,878	4,457	0.01
Chile	21,289	28,232	1.33
Colombia	10,110	14,736	1.46
Indonesia	60,549	94,750	1.56
Jordan	26,971	14,218	0.53
Paraguay	11,417	5,934	0.52
Reunion	108	142	1.32
Spain	6	8	1.40
Zimbabwe	3,533	9,183	2.60
Egypt	0	3,687	na
Greece	0	3,231	na
Italy	0	1	na
Switzerland	0	169	na
China	34,176	39,705	1.16
Germany	6	7	1.09
Malaysia	657	791	1.20
Peru	71,243	85,564	1.20
South Africa	6,399	5,218	0.82
Turkey	7,250	8,482	1.17
Uruguay	122	139	1.14
Venezuela	8,429	7,164	0.85
(a) Total with world	1,005,374		
(b) Total with non-reporter	80,352		
(c) Largest inaccurate transaction*	661,878		
(d) Total reported (qualified)=(a)-(b)-(c)	263,144		
(e) Total accurate transactions	128,282		
Reliability Index of Exporter (RIX)=100*(e)/(d)	48.8		

* Brazil's transaction is classified as the largest inaccurate case

Table 11A.2 Accuracy of Selected Wheat Importer Transactions

Importer	Exporter	Reported Imports (m)	Reported exports (m)	m/x
\$U.S. thousands				
Bolivia	Argentina	2,129	879	2.42
Bolivia	Canada	6,489	1,540	4.21
Bolivia	Germany	6,487	0	na
Bolivia	USA	25,102	10,029	2.50
Brazil	Argentina	4,457	661,878	0.01
Brazil	Canada	0	112,066	na
Brazil	Germany	0	19,867	na
Brazil	Paraguay	1,437	4,960	0.29
Brazil	USA	0	68,077	na
Brazil	Uruguay	0	10,455	na
Jordan	Argentina	14,218	26,971	0.53
Jordan	Croatia	0	1,287	na
Jordan	France	1,135	6,315	0.18
Jordan	Hungary	0	2,662	na
Jordan	India	0	3,833	na
Jordan	Romania	0	672	na
Jordan	Turkey	4,410	387	11.40
Jordan	USA	33,537	79,664	0.42
Chile	Argentina	28,232	21,289	1.33
Chile	Canada	40,156	41,077	0.98
Chile	France	3	3	0.94
Chile	USA	47,832	52,584	0.91
Peru	Argentina	85,564	71,243	1.2
Peru	Belgium	0	26	na
Peru	Canada	24,274	14,663	1.66
Peru	Chile	0	38	na
Peru	France	0	5,829	na
Peru	Germany	2,763	2,017	1.37
Peru	Lebanon	1	0	na
Peru	USA	65,345	79,898	0.82

Table 11A.2 Accuracy of Selected Wheat Importer Transactions (cont)

Importer	Exporter	Reported Imports (m)	Reported exports (m)	m/x
\$U.S. thousands				
Reunion	Argentina	142	108	1.32
Reunion	France	5,304	4,539	1.17
South African C.U.	Argentina	5,218	6,399	0.82
South African C.U.	Australia	5,263	0	na
South African C.U.	Canada	32,004	26,750	1.20
South African C.U.	Denmark	1,242	2,845	0.44
South African C.U.	France	4,689	5,907	0.79
South African C.U.	Germany	25,295	24,804	1.02
South African C.U.	Hungary	0	6	na
South African C.U.	India	0	4,264	na
South African C.U.	Italy	65	0	na
South African C.U.	Saudi Arabia	1,452	0	na
South African C.U.	UK	2,350	0	na
South African C.U.	USA	77,491	78,705	0.98
South African C.U.	Zimbabwe	536	1,206	0.44

Table 11A.3 Reconciled Transactions: The Case of Argentine Wheat Exports

Importer	Reported by Importer	Reported by Argentina	Importer Reliability Index	Exporter Reliability Index	Reconciled Values		
					<i>fob</i>	<i>cif</i>	<i>cif/ fob</i>
Angola	0	943	0.0	48.8	943	1,008	1.069
Bangladesh	0	4,534	0.0	48.8	4,534	4,847	1.069
Bolivia	2,129	879	0.0	48.8	879	919	1.045
Brazil	4,457	661,878	0.0	48.8	661,878	691,736	1.045
Chile	28,232	21,289	75.7	48.8	28,232	29,506	1.045
China	39,705	34,176	60.4	48.8	39,705	42,442	1.069
Colombia	14,736	10,110	56.0	48.8	14,736	15,401	1.045
Egypt	3,687	0	93.3	48.8	3,687	3,941	1.069
Germany	7	6	19.8	48.8	6	6	1.069
Greece	3,231	0	42.5	48.8	3,231	3,454	1.069
Indonesia	94,750	60,549	1.8	48.8	60,549	64,724	1.069
Iran	0	25,754	0.0	48.8	25,754	27,530	1.069
Italy	1	0	68.4	48.8	1	1	1.069
Jordan	14,218	26,971	0.0	48.8	26,971	28,831	1.069
Kenya	0	35,926	0.0	48.8	35,926	38,403	1.069
Malaysia	791	657	26.9	48.8	657	702	1.069
Mozambique	0	6,603	0.0	48.8	6,603	7,058	1.069
Netherlands	0	20	95.7	48.8	0	0	1.069
Paraguay	5,934	11,417	0.0	48.8	11,417	11,932	1.045
Peru	85,564	71,243	84.8	48.8	85,564	89,424	1.045
Reunion	142	108	97.4	48.8	142	152	1.069
South Africa	5,218	6,399	90.0	48.8	5,218	5,578	1.069
Spain	8	6	93.2	48.8	8	9	1.069
Switzerland	169	0	14.8	48.8	0	0	1.069
Tanzania	0	2,556	0.0	48.8	2,556	2,732	1.069
Turkey	8,482	7,250	19.6	48.8	7,250	7,750	1.069
Uruguay	139	122	100.0	48.8	139	145	1.045
Venezuela	7,164	8,429	88.5	48.8	7,164	7,487	1.045
Yemen Rep	0	4,016	0.0	48.8	4,016	4,293	1.069
Zimbabwe	9,183	3,533	0.2	48.8	3,533	3,777	1.069

Table 11A.4 Comparison of Wheat Totals from FAO and Reconciled GTAP

	Imports		Exports	
	FAO	GTAP	FAO	GTAP
Country	\$U.S. millions			
Argentina	6	6	1,005	1,047
Australia	0	0	1,196	1,250
Brazil	1,031	916	0	0
Canada	4	4	2,952	2,937
Chile	124	122	0	0
China	2,026	1,926	2	2
Colombia	193	154	0	0
Denmark	20	16	219	245
Finland	28	27	2	3
Germany	256	371	684	893
Hong Kong	18	19	0	0
India	3	8	114	92
Indonesia	803	626	0	0
Japan	1,348	1,023	0	1
Korea R	467	459	0	0
Malaysia	239	228	1	0
Mexico	227	224	72	95
Morocco	468	467	2	0
New Zealand	42	33	0	0
Philippines	410	401	0	0
Singapore	31	35	0	0
South Africa	156	166	0	0
Sri Lanka	181	149	0	0
Sweden	12	11	11	32
Taiwan	227	177	0	0
Thailand	136	136	0	4
Turkey	244	203	23	72
United Kingdom	200	194	483	588
United States	251	248	5,458	5,576
Uruguay	0	0	13	13
Venezuela	194	204	0	0
Vietnam	25	4	0	0

Table 11A.5 Comparison of FAO Country Export Totals with Reconciled GTAP Totals

Exporter	FAO Fishery	FAO Agriculture	FAO Ag + Fish	GTAP Ag + Fish
	\$U.S. millions			
Argentina	728	10,131	10,859	11,067
Australia	758	12,709	13,467	13,187
Brazil	179	13,354	13,533	13,523
Canada	2,314	12,789	15,103	14,801
Chile	1,304	2,238	3,542	3,869
China	2,320	11,480	13,800	11,433
Colombia	259	3,341	3,600	3,523
Denmark	2,359	9,824	12,183	12,407
Finland	20	1,254	1,274	1,184
Germany	736	24,682	25,418	27,626
Hong Kong	677	5,765	6,442	925
India	1,125	5,494	6,619	5,996
Indonesia	1,583	5,493	7,076	7,270
Japan	743	1,750	2,493	2,403
Korea R	1,411	1,651	3,062	2,906
Malaysia	325	8,228	8,553	8,312
Mexico	481	5,718	6,199	5,636
Morocco	620	780	1,401	1,503
New Zealand	692	6,136	6,828	6,907
Philippines	533	1,881	2,414	2,514
Singapore	564	4,320	4,884	3,698
South Africa	256	2,284	2,540	2,757
Sri Lanka	32	672	704	602
Sweden	161	1,542	1,703	1,719
Taiwan	2,213	2,883	5,097	4,298
Thailand	4,190	9,022	13,212	13,084
Turkey	71	4,301	4,372	3,722
United Kingdom	1,059	14,612	15,671	17,575
United States	3,230	62,259	65,489	62,800
Uruguay	96	919	1,015	1,068
Venezuela	99	465	564	518
Vietnam	452	1,533	1,985	1,950

Table 11A.6 Comparison of FAO Country Import Totals with Reconciled GTAP Totals

Importer	FAO Fish	FAO Ag	FAO Ag + Fish	GTAP Ag + Fish
\$ U.S. millions				
Argentina	70	1,197	1,268	1,254
Australia	477	2,590	3,067	2,844
Brazil	441	6,237	6,679	6,371
Canada	765	9,080	9,845	9,874
Chile	27	1,070	1,097	1,163
China	941	11,614	12,555	12,494
Colombia	63	1,354	1,418	1,397
Denmark	1,574	4,091	5,665	5,615
Finland	113	1,809	1,922	1,865
Germany	2,378	42,834	45,212	47,743
Hong Kong	1,828	10,575	12,402	9,224
India	14	2,225	2,239	2,475
Indonesia	101	4,884	4,985	4,740
Japan	17,860	41,181	59,041	53,703
Korea R	826	9,606	10,432	10,325
Malaysia	325	3,877	4,202	4,081
Mexico	90	5,335	5,424	5,222
Morocco	8	1,825	1,833	1,684
New Zealand	51	1,005	1,056	965
Philippines	135	2,378	2,513	3,041
Singapore	537	5,249	5,786	5,687
South Africa	135	2,026	2,160	2,220
Sri Lanka	58	659	717	680
Sweden	545	3,884	4,429	4,130
Taiwan	591	6,658	7,249	7,100
Thailand	51	2,876	2,926	3,450
Turkey	805	3,604	4,409	3,565
United Kingdom	1,908	24,322	26,230	26,661
United States	7,148	33,839	40,987	39,723
Uruguay	8	361	368	426
Venezuela	31	1,648	1,680	1,763
Vietnam	0	1,011	1,011	829

Table 11A.7 Comparison of Country Merchandise Export Totals from World Bank, FAO, and GTAP

	WB* b.o.p.	FAO Total Merchandise	GTAP
	\$U.S. millions		
Argentina	20,964	20,963	21,453
Australia	53,132	49,753	47,433
Brazil	46,506	46,506	48,597
Canada	189,854	192,607	180,208
Chile	16,038	16,447	15,049
China	128,110	148,780	193,660
Colombia	10,373	9,764	10,260
Denmark	48,853	49,401	44,870
Finland	40,077	40,489	38,595
Germany	523,217	509,159	474,115
Hong Kong	179,841	173,392	30,869
India	32,790	32,969	33,736
Indonesia	45,479	45,418	48,156
Japan	429,317	444,214	427,398
Korea	123,203	125,058	116,804
Malaysia	74,383	73,887	77,986
Mexico	79,543	48,438	74,765
Morocco	6,871	4,714	6,746
New Zealand	13,485	13,680	13,252
Philippines	17,447	17,371	17,654
Singapore	119,019	118,205	95,070
South Africa	27,879	28,332	24,005
Sri Lanka	3,799	3,902	3,481
Sweden	79,183	79,878	74,027
Taiwan	0	111,473	120,889
Thailand	55,447	56,448	53,719
Turkey	21,975	21,636	21,479
United Kingdom	240,383	236,761	213,697
United States	577,820	583,865	536,543
Uruguay	2,106	2,106	2,424
Venezuela	18,870	18,630	18,194
Vietnam	5,198	5,198	5,474

*From World Bank based on 'balance of payment' estimates

Table 11A.8 Comparison of Country Merchandise Import Totals from World Bank, FAO, and GTAP

Importer	WB* b.o.p.	FAO Total Merchandise	GTAP
U.S. millions			
Argentina	18,727	20,123	19,775
Australia	57,146	55,367	55,249
Brazil	49,663	53,783	53,819
Canada	167,513	164,385	153,589
Chile	14,655	15,348	15,243
China	110,060	132,084	150,468
Colombia	12,921	13,853	13,349
Denmark	42,028	44,197	42,585
Finland	27,543	29,469	29,390
Germany	457,099	442,950	442,952
*Hong Kong	196,782	192,355	93,824
India	41,582	38,030	34,851
Indonesia	39,769	40,629	41,784
Japan	297,243	337,445	324,770
Korea	127,949	135,119	127,964
Malaysia	76,147	77,552	69,591
Mexico	72,454	46,887	62,835
Morocco	9,268	8,536	10,597
New Zealand	12,584	13,990	12,455
Philippines	26,391	28,388	30,338
Singapore	117,394	124,414	115,145
South Africa	27,132	26,838	26,757
Sri Lanka	4,446	5,326	4,323
Sweden	63,210	64,983	58,095
Taiwan	na	103,661	91,496
Thailand	63,415	70,868	68,349
Turkey	35,187	35,709	35,706
United Kingdom	258,769	271,676	254,366
United States	749,810	770,944	754,436
Uruguay	2,682	2,867	3,494
Venezuela	11,580	12,820	12,004
Vietnam	7,543	7,544	8,185

*Hong Kong trade is based on general imports for WB and FAO and retained imports for GTAP

*From World Bank based on 'balance of payment' estimates

Table 11A.9 Comparison of Unclassified Reported Trade by Individual Country Reporters

Reporter Country	Exports 1992	Exports 1995	Imports 1992	Imports 1995
percentage of trade reported as unclassified				
Argentina	0.74	1.05	1.28	2.66
Australia	23.35	21.53	11.70	5.56
Brazil	2.52	2.27	0.72	1.51
Canada	4.80	4.83	5.51	4.67
Chile	8.05	5.77	4.76	3.44
China	1.40	2.43	8.43	14.03
Colombia	0.69	0.99	4.31	6.69
Denmark	7.12	12.51	5.13	8.29
Finland	3.05	3.52	2.63	2.84
Germany	2.20	4.66	3.14	10.24
Hong Kong	4.66	5.19	9.22	8.83
India	5.16	3.77	17.11	18.26
Indonesia	4.00	4.18	5.06	5.21
Japan	7.69	8.45	5.33	5.35
Korea South	3.24	3.37	2.19	2.66
Malaysia	3.51	4.37	6.14	7.45
Mexico	0.14	0.18	0.22	7.83
New Zealand	5.43	5.84	3.13	0.54
Philippines	33.91	39.31	21.43	3.06
Singapore	6.98	6.29	5.57	23.68
South African C.U.	51.66	27.42	16.34	5.08
Sri Lanka	2.31	na	6.29	8.50
Sweden	1.07	8.40	1.65	2.17
Thailand	3.32	4.36	7.91	6.52
Turkey	2.20	2.53	1.01	1.86
United Kingdom	1.65	1.18	2.03	1.70
United States	6.65	6.29	7.72	6.91
Venezuela	1.84	1.28	0.98	2.33

Table 11A.10 Intra-EU Merchandise Trade 1989-1995

Year	Reported Exports (x)	Reported Imports (m)	m/x
\$U.S. billions			
1989	800	792	0.99
1990	968	965	1.00
1991	978	976	1.00
1992	1,034	1,032	1.00
1993	875	819	0.94
1994	1,009	947	0.94
1995	1,224	1,154	0.94

Includes only reported trade that is classified

Table 11A.11 Comparison of 1992 and 1995 Bilateral Intra-EU Trade for Merchandise Trade

Exporter	Year	Importers ratio of reported imports/exports														
		Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Netherlands	Portugal	Spain	Sweden	UK	EU15
Austria	1992		1.01	1.00	1.01	1.06	0.99	0.99	1.08	1.05	0.96	1.08	0.71	1.01	1.06	1.00
	1995		0.99	0.95	1.16	1.09	0.83	0.99	0.54	1.05	0.86	1.10	0.96	1.07	0.86	0.90
Belgium	1992	1.05		1.02	1.09	0.92	1.04	1.15	1.12	1.32	1.15	1.24	0.94	1.07	1.08	1.05
	1995	1.06		0.97	1.04	0.84	0.81	1.07	0.60	1.14	0.80	0.95	0.82	1.04	0.94	0.87
Denmark	1992	1.14	1.11		0.94	1.09	1.03	0.98	1.09	1.13	1.09	1.09	1.13	0.95	1.11	1.05
	1995	1.03	1.19		0.83	1.05	0.80	1.17	0.85	1.16	0.89	0.95	1.11	1.05	0.98	0.94
Finland	1992	1.26	1.09	1.05		1.24	1.14	0.87	1.12	1.30	1.03	1.23	1.19	1.02	1.18	1.13
	1995	1.12	1.09	0.96		1.17	0.87	0.97	0.94	1.02	0.93	1.04	1.00	0.94	0.90	0.95
France	1992	1.13	0.92	0.94	1.13		1.18	0.97	0.98	1.06	0.93	1.02	0.94	1.09	1.02	1.04
	1995	0.98	0.98	0.90	1.10		0.97	0.99	0.78	1.04	0.86	1.01	0.96	0.95	0.98	0.97
Germany	1992	0.92	0.80	0.93	1.00	0.81		1.04	0.99	1.02	0.95	1.03	0.92	0.99	1.02	0.92
	1995	1.14	0.86	0.94	1.00	0.86		1.19	0.89	1.03	0.90	1.10	0.99	1.03	0.98	0.96
Greece	1992	1.45	0.69	1.11	2.29	0.94	1.03		0.90	0.94	0.86	0.80	1.06	1.19	0.97	0.99
	1995	1.12	1.02	0.63	2.97	1.04	0.84		0.56	0.98	0.73	0.82	1.02	1.01	0.99	0.93
Ireland	1992	1.77	0.61	1.05	1.05	1.00	1.11	0.99		1.21	0.74	0.89	1.29	0.78	1.02	1.00
	1995	0.99	0.96	0.82	0.93	0.90	0.91	1.05		1.24	0.72	1.21	1.19	1.08	1.05	0.98
Italy	1992	1.07	0.95	0.99	1.01	0.98	1.03	1.04	0.94		0.87	1.08	1.06	1.12	1.02	1.01
	1995	1.02	1.00	0.87	1.12	0.92	0.85	1.11	0.63		0.79	0.88	0.92	0.90	0.92	0.90
Netherlands	1992	0.98	1.15	0.93	1.06	0.88	1.01	1.13	1.25	1.28		2.00	1.00	1.08	1.46	1.11
	1995	1.21	1.28	1.12	0.87	0.82	0.75	1.13	0.79	1.24		1.29	1.06	1.43	1.16	0.99
Portugal	1992	1.58	0.82	1.03	1.18	1.02	1.06	0.93	1.11	0.97	0.79		0.97	1.09	1.00	1.01
	1995	1.01	0.89	0.91	1.17	0.94	0.90	0.95	0.90	1.03	0.73		0.93	0.98	0.87	0.91
Spain	1992	1.20	0.95	1.04	1.35	1.00	1.08	1.09	1.13	0.91	0.79	1.06		1.09	1.09	1.01
	1995	0.98	0.90	0.80	1.17	0.97	0.98	0.99	0.91	0.99	0.95	0.96		0.91	0.98	0.97
Sweden	1992	1.15	1.05	0.89	0.83	1.10	1.06	1.10	0.97	0.98	0.88	1.04	1.04		1.07	1.01
	1995	1.21	1.28	1.04	0.97	1.07	0.94	1.08	0.73	1.04	1.00	1.14	0.93		0.98	1.02
UK	1992	1.06	0.84	0.98	1.05	0.91	1.00	0.95	0.92	1.00	0.77	1.08	0.92	1.00		0.93
	1995	0.97	0.95	0.84	0.94	0.93	0.90	1.02	0.83	1.02	0.78	0.96	0.90	0.99		0.90
EU15	1992	0.98	0.92	0.95	0.99	0.91	1.06	1.04	0.96	1.06	0.94	1.10	0.96	1.01	1.08	1.00
	1995	1.11	1.01	0.95	0.99	0.90	0.86	1.09	0.81	1.06	0.85	1.00	0.95	1.03	0.99	0.94

Table 11A.12 Hong Kong's Reported Trade in Total Merchandise Trade 1985-1995

Year	National Exports	Re-exports	Total Exports	General Imports
\$U.S. billions				
1985	16.6	13.5	30.1	29.6
1986	19.7	15.7	35.4	35.4
1987	25	23.4	48.4	48.5
1988	27.9	35.3	63.2	63.9
1989	28.7	44.4	73.1	72.2
1990	29	53.2	82.2	82.5
1991	29.7	68.8	98.5	100.3
1992	30.3	89.3	119.6	123.4
1993	28.8	106.4	135.2	138.7
1994	28.7	122.7	151.4	161.8
1995	29.9	143.8	173.7	192.8

Table 11A.13 China Exports of Total Merchandise Trade to Selected Importers

Importer	Reported by China	Reported by Importer	Difference	m / x
Hong Kong	36.0	69.7	33.8	1.94
Japan	28.5	36.0	7.5	1.27
USA	24.7	48.5	23.8	1.96
Germany	5.7	11.1	5.4	1.96
Italy	2.1	3.9	5.4	1.90
France	1.8	5.1	1.5	2.79
Australia	1.6	2.9	1.9	1.76
Canada	1.5	3.4	3.3	2.21