

# *Reconciling COMTRADE Merchandise Trade Data for GTAP*

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### Module 1:

International bilateral commodity margins  
Convert all CIF flows to FOB value bases  
Source: primary data now integrated into COMTRADE-Plus service  
25+ countries

### Module 2:

Re-exports conversion of gross exports and imports to (a) domestic exports, (b) retained imports, (c) redistribute on direct-route bases

### Module 3:

Bilateral flow fusion exchange for mirror matching

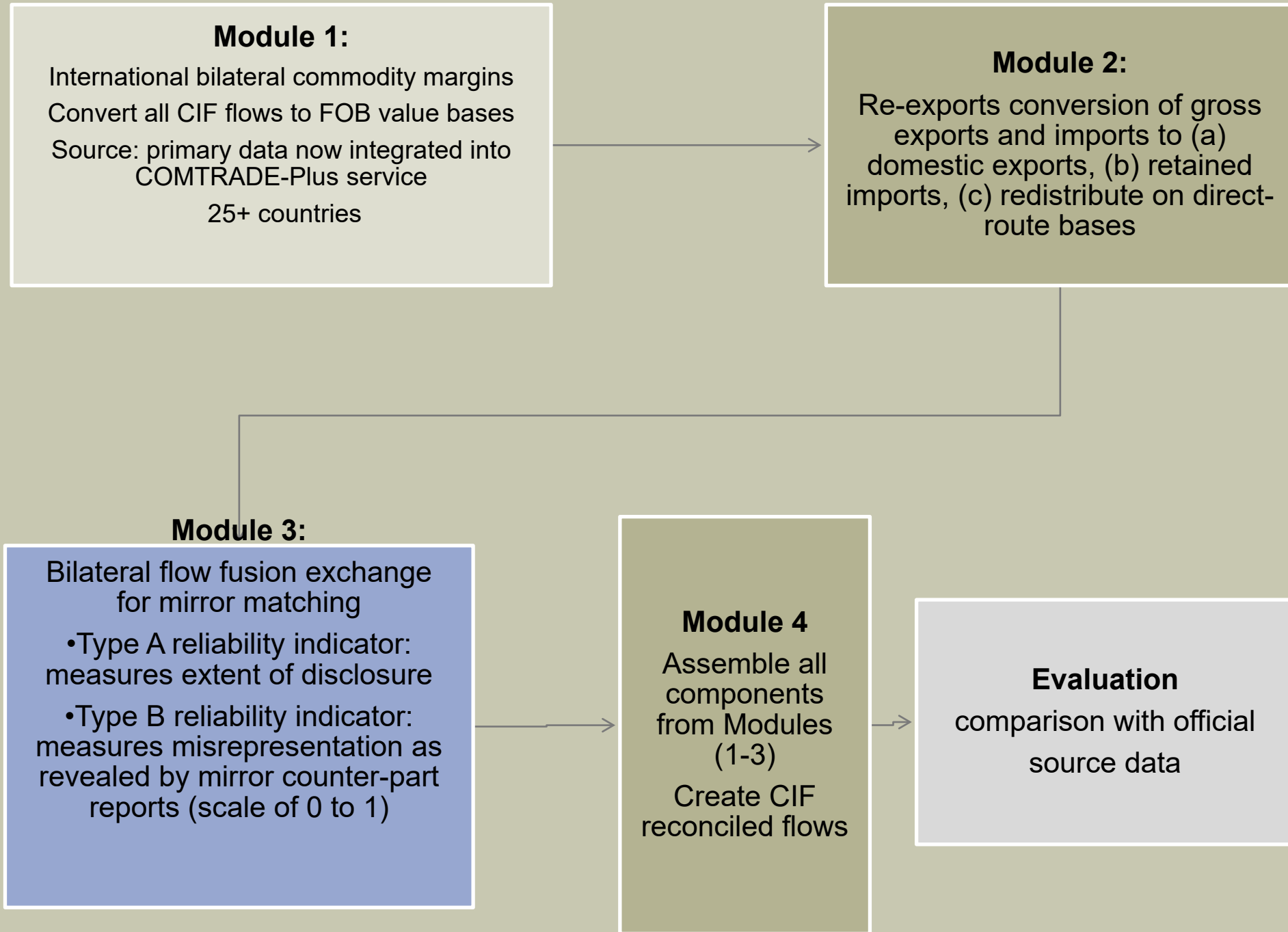
- Type A reliability indicator: measures extent of disclosure
- Type B reliability indicator: measures misrepresentation as revealed by mirror counter-part reports (scale of 0 to 1)

### Module 4

Assemble all components from Modules (1-3)  
Create CIF reconciled flows

### Evaluation

comparison with official source data



# Country reporters submitting both cif and fob valuations to COMTRADE

	Imports (cif)	Imports (fob)	CIF/FOB
<i>\$ US billions</i>			
Angola	17.8	16.3	1.089
Argentina	49.1	46.9	1.047
Australia	221.5	213.7	1.037
Bolivia	9.8	9.1	1.076
Brazil	193.2	185.9	1.039
Chile	69.9	65.8	1.062
Colombia	52.7	50.3	1.048
Czechia	179.3	174.1	1.030
Dominican Republic	22.0	20.4	1.077
Ecuador	22.6	21.5	1.051
Iceland	6.6	6.2	1.067
Luxembourg	22.7	22.3	1.015
Maldives	3.0	2.6	1.126
Mauritius	5.6	5.2	1.068
Mozambique	7.7	7.0	1.092
New Zealand	42.3	40.5	1.044
Paraguay	12.5	11.8	1.067
Peru	42.4	40.2	1.055
Philippines	117.2	111.5	1.052
Serbia	26.7	25.6	1.044
Slovakia	90.9	88.7	1.025
Turkey	210.3	199.9	1.052
USA	2567.5	2497.5	1.028
Uruguay	8.2	7.7	1.066
<b>Total</b>	<b>4,001</b>	<b>3,871</b>	<b>1.034</b>

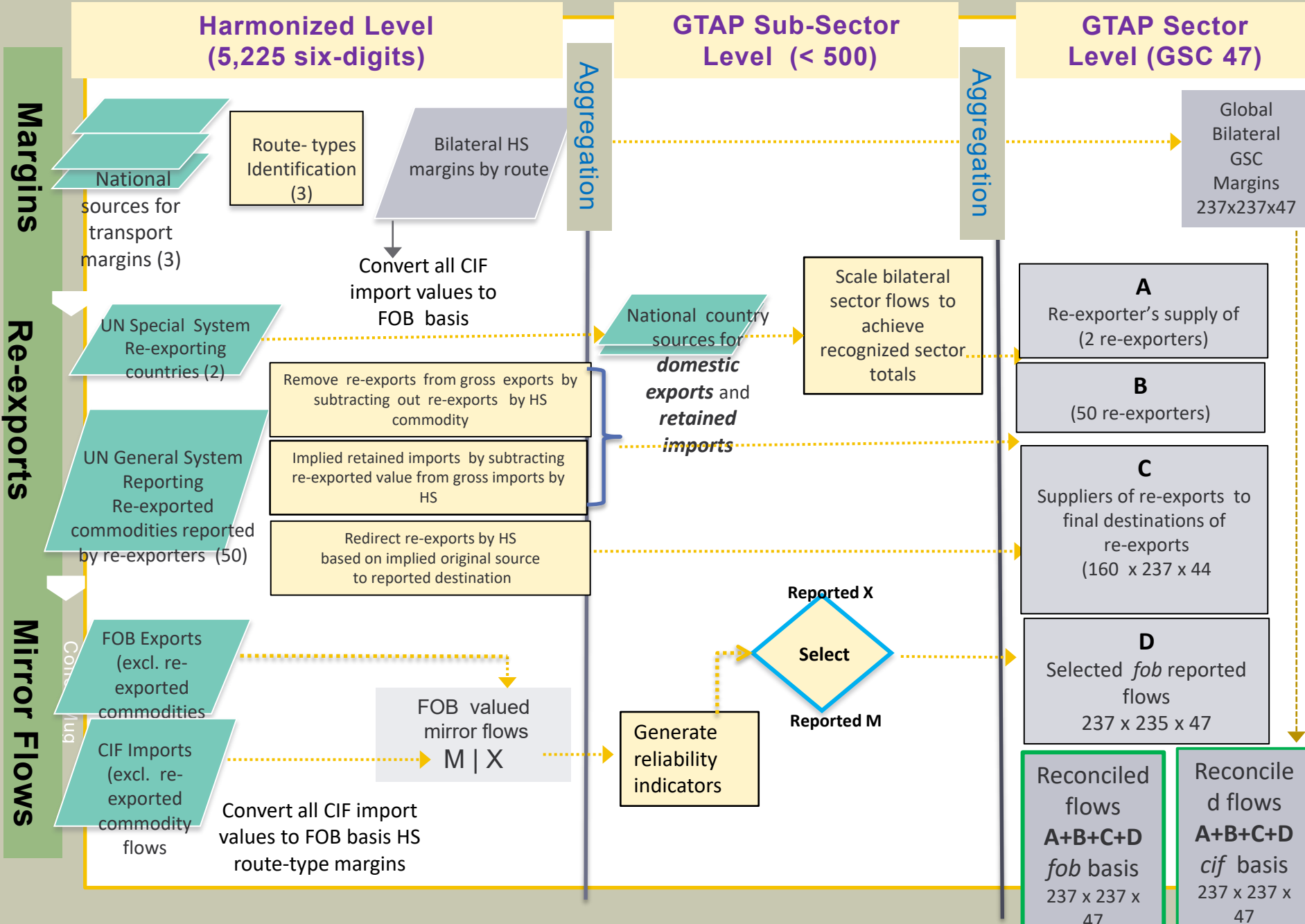


Source: COMTRADE/Plus  
May 2024

Examples: HS-6 Digit Margin Variation within GTAP Sectors from Bilateral Averages

GTAP Sector	HS Margin CIF/FOB	HS-6 Digit	HS Description
V_F	1.018	120991	Seed; vegetable seed, of a kind used for sowing
V_F	1.032	080250	Nuts, edible; pistachios, fresh or dried, whether or not shelled or peeled
V_F	1.060	071340	Vegetables, leguminous; lentils, shelled, whether or not skinned or split, dried
V_F	1.106	080810	Fruit, edible; apples, fresh
V_F	1.140	080300	Fruit, edible; bananas, (including plantains), fresh or dried
V_F	1.239	070511	Vegetables; cabbage (head) lettuce ( <i>lactuca sativa</i> ), fresh or chilled
OXT	1.006	261210	Uranium ores and concentrates
OXT	1.014	710310	Stones; precious (other than diamonds)
OXT	1.101	251621	Sandstone; crude or roughly trimmed
OXT	1.204	250100	Salt (including table salt and denatured salt)
OXT	1.221	260600	Aluminium ores and concentrates
OXT	1.356	252010	Gypsum; anhydrite

# Multi-year Unified Process for GTAP Merchandise Trade Data



# Measurement of Reporting Reliability is Multidimensional

- Reliability attributed to country/commodity extent reporting irregularities
- Irregularity types vary reporter (no ranking of reporters)
- Revealed by constructing more than one indicator
- **Type A** reliability indicator: (new for GTAP reconciliation) measures extent of disclosure (unidentified commodities or partner). A self-reported discrepancy without mirror report.
- **Type B** reliability indicator: (recently modified) for measuring misrepresentation revealed by mirror counterpart reports (scale of 0 to 1)
  - No longer requires “accuracy” threshold
  - No bias favoring largest trading partners based % accuracy



# HS Code Example

## Anatomy of an HS Code

### Apple

HS Code: 08081000

Section 02: Vegetable Products

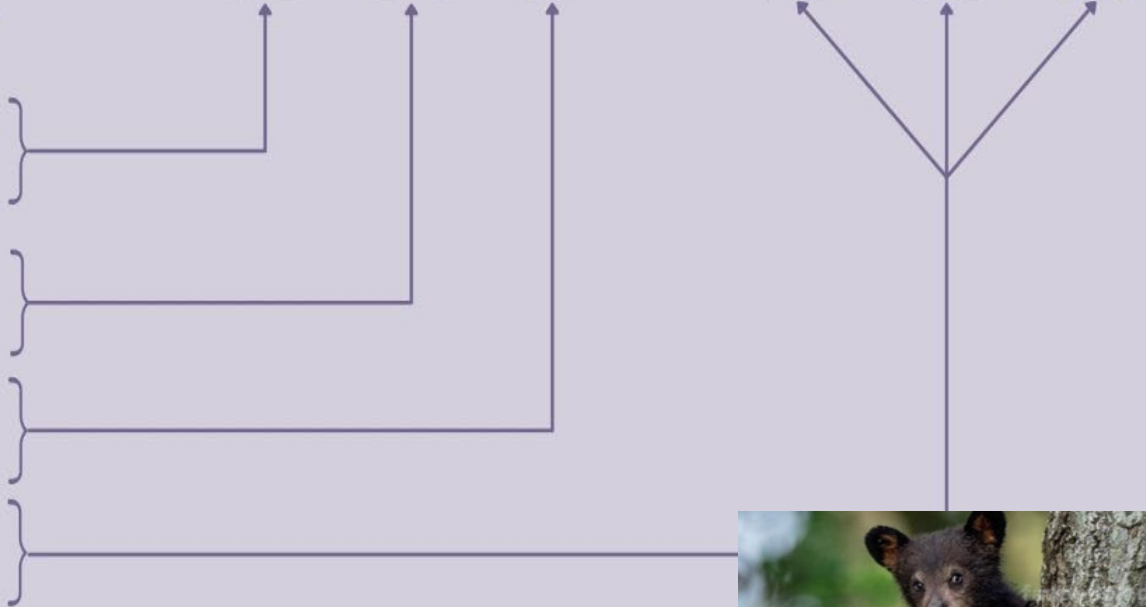
**08 08 10 00 00 00**

Chapter 08: Edible fruit & nuts,  
peel of citrus / melons

Heading 08: Apples, Pears &  
Quinces; fresh

Subheading 10: Apples

Country-Specific Divisions

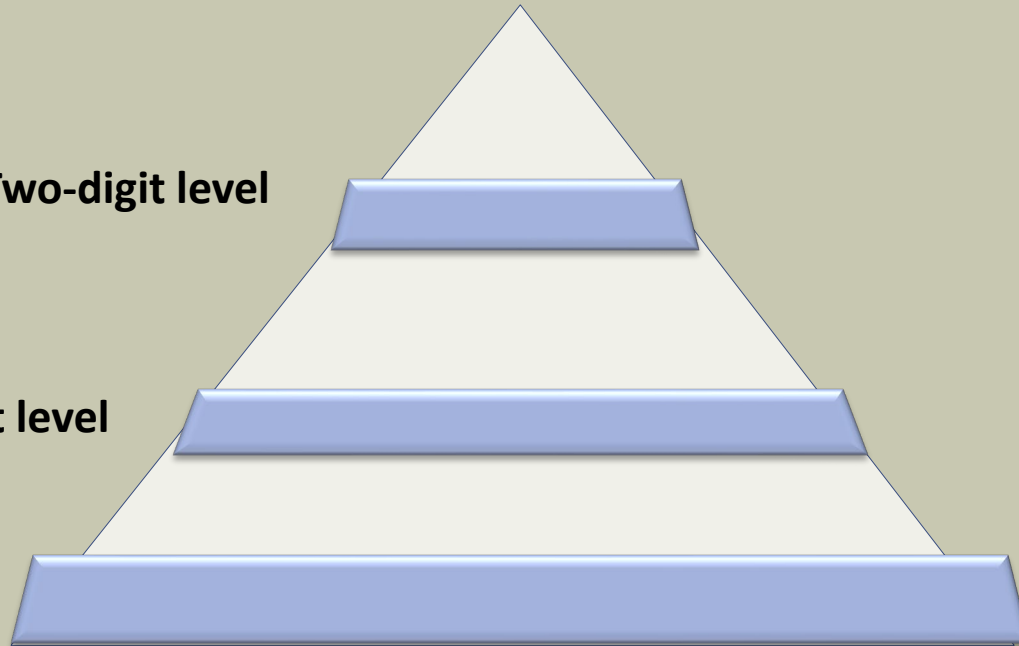


# Total Merchandise

Two-digit level

Four-digit level

Six-digit level



All levels should sum to total merchandise.

But they do not.

Selected Examples of Differences of Country Export Reporting  
2-4-6 Levels of Commodity Non-disclose in Total Merchandise

	2-Digit 99	4-Digit 9999	6-Digit 999999
	\$ US		
Afghanistan	98,734	1,814,292	14,982,643
Denmark	1,502,626,767	2,265,665,842	14,230,433,055
Hungary	311,215,079	606,813,803	3,707,494,169
Saudi Arabia	4,961,955	202,382,226,779	202,382,226,779
Samoa	667	667	1,244,876
USA	48,439,559,478	173,929,423,784	173,929,423,784
Russian Federation	55,642,673,207	55,642,673,207	55,642,673,207
	Percent of 6-Digit		
Afghanistan	0.66	12	100
Denmark	10.56	16	100
Hungary	8.39	16	100
Saudi Arabia	0.00	100	100
Samoa	0.05	0.05	100
USA	27.85	100	100
<b>Russian Federation</b>	<b>100</b>	<b>100</b>	<b>100</b>

Example of Self-Reported Discrepancies:  
Denmark exports 4-digit (3004)  
*Type-A Reporting Indicator*

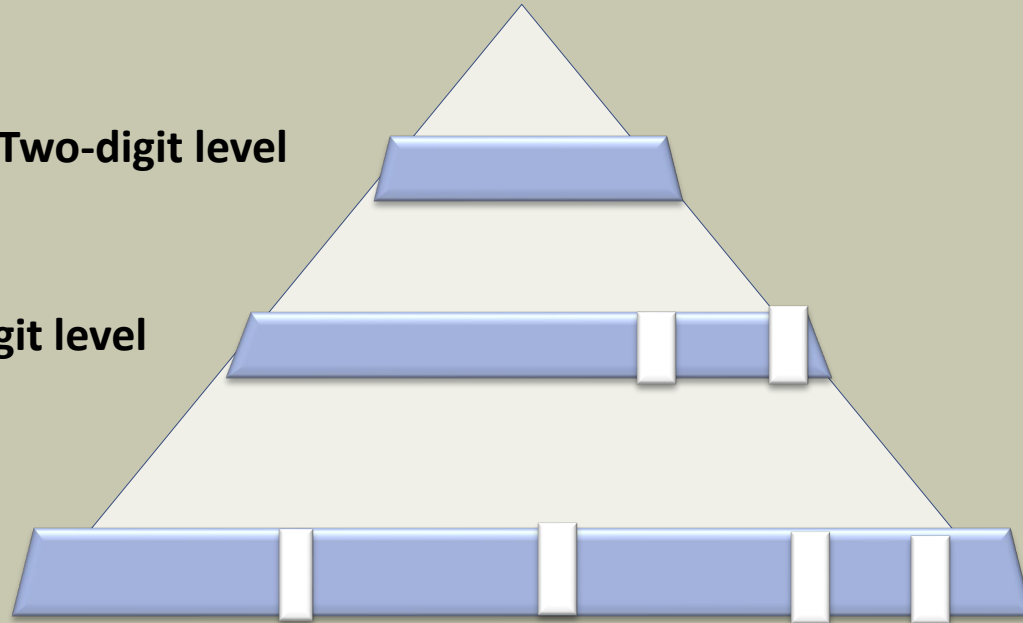
	\$ US	HS Level	HS Abbreviated Description
Total reported 2-digit	<b>17,035,986,376</b>	30	
Total reported 4-digit	<b>15,428,910,473</b>	3004	
	47,345,312	300410	Medicaments; penicillins, streptomycins or their derivatives
	212,754,520	300420	Medicaments; containing antibiotics other than
	99,217,943	300432	Medicaments; containing corticosteroid hormones their derivatives
	79,127,422	300450	Medicaments; containing vitamins or their derivatives
	4,137,877,020	300490	Medicaments; consisting of mixed or unmixed products
		300431	Medicaments; containing insulin
		300439	Medicaments; containing hormones but not insulin)
		300440	Medicaments; containing alkaloids or their derivatives
Total reported 6-digit	<b>4,576,322,217</b>		
Implied nondisclosed	<b>10,852,588,256</b>		
Non-disclosure rate	<b>0.297</b>		

**Total Merchandise**

**Two-digit level**

**Four-digit level**

**Six-digit level**



**Total Merchandise**

**Two-digit level**

**Four-digit level**

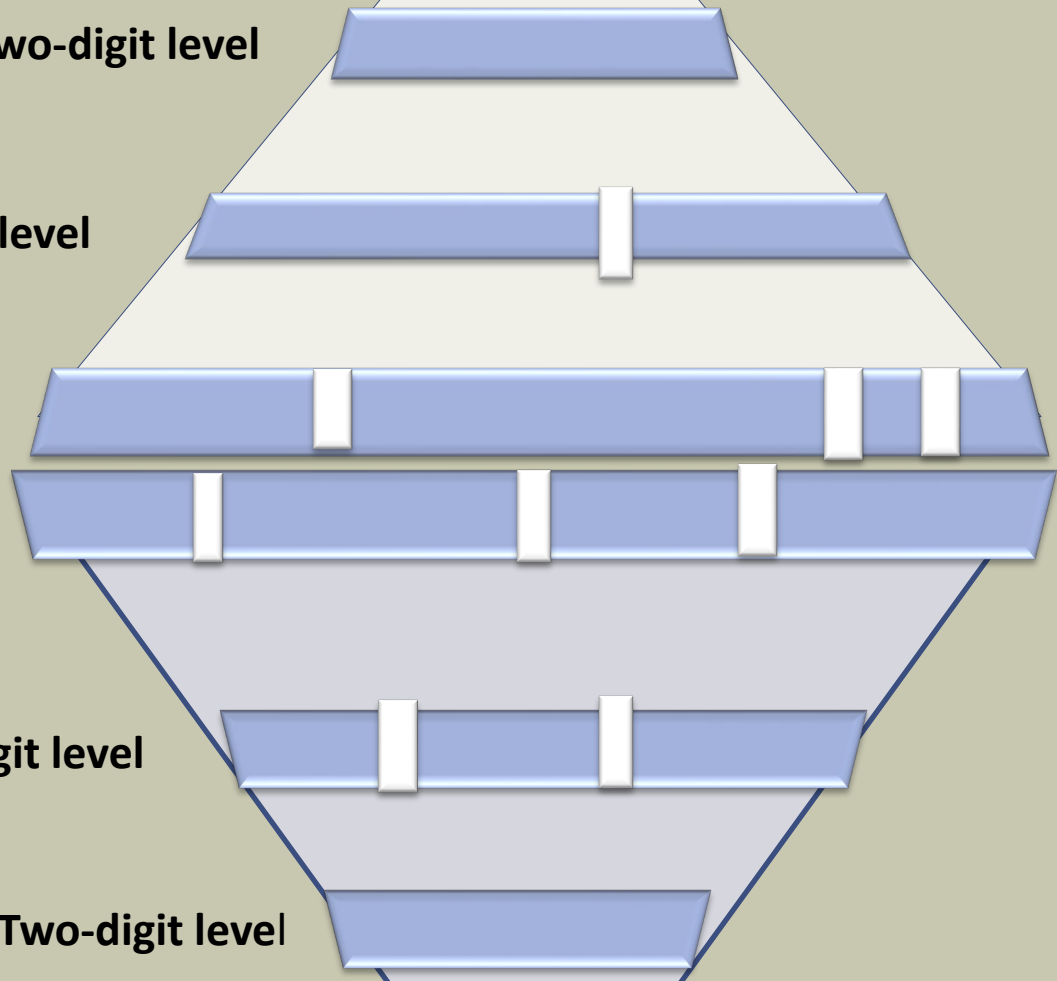
**Six-digit level**

**Six- digit level**





**Four-digit level**

**Two-digit level**

**Total Merchandise**



Example of Self-Reported Discrepancies:  
Denmark exports 4-digit (3004)  
*Type-A Reporting Indicator*  
*With partner fusion exchange*

	\$ US	Reported by Aggregate Partners	HS Level	HS Abbreviated Description
Total reported 2-digit	<b>17,547,074,348</b>	<b>17,035,986,376</b>	30	
Total reported 4-digit	<b>15,428,910,473</b>		3004	
	47,345,312		300410	Medicaments; penicillins, streptomycins or their derivatives
	212,754,520		300420	Medicaments; containing antibiotics other than
	99,217,943		300432	Medicaments; containing corticosteroid hormones their derivatives
	79,127,422		300450	Medicaments; containing vitamins or their derivatives
	4,137,877,020		300490	Medicaments; consisting of mixed or unmixed products
		<b>2,603,263,419</b> 	<b>300431</b>	Medicaments; containing insulin
		<b>6,896,776,456</b> 	<b>300439</b>	Medicaments; containing hormones but not insulin)
		<b>14,776,346</b> 	<b>300440</b>	Medicaments; containing alkaloids or their derivatives
Total reported 6-digit 	<b>4,576,322,217</b>			
Implied nondisclosed	<b>10,852,588,256</b>	<b>9,514,816,221</b>		
Non-disclosure rate	<b>0.297</b>			

# Definitions

- Fundamental requirements of GTAP merchandise trade data:
  - Exports in GTAP are considered domestic goods only
  - Foreign produced goods as exports are not acceptable
  - Imports for re-exports are not acceptable as imports
  - Exports in COMTRADE are exports of foreign goods in the same state as previously imported; they are to be included in the country's exports.
  - The exports in COMTRADE contain both the exports of domestic and foreign goods.

# Step 1: Convert Gross Exports to Domestic Exports (Net Exports)

Exports from New Zealand for HS '621210'

Final Destination \$US millions

Importer	Gross Exports	Re-exports	Domestic Exports
Australia	12.56	12.54	0.02
USA	0.23	0.21	0.02
ROW	0.14	0.11	0.03
Total	12.93	12.86	0.07

# Step 2: Convert Re-exports to Direct Trade Basis by HS

## Implied Source Shares for New Zealand Re-exports of HS '621210'

Origin	\$US millions	
	New Zealand Imports	Source Shares
China	38.46	0.846
Indonesia	2.81	0.062
Thailand	0.75	0.017
ROW	3.44	0.076
Total	45.47	1.000

## Re-directed Bilateral Trade from New Zealand Re-exports of HS '621210'

Origin	Final Destination \$US			
	Australia	USA	ROW	Total
China	10.61	0.18	0.10	10.78
Indonesia	0.78	0.01	0.01	0.79
Thailand	0.21	0.00	0.00	0.21
ROW	0.95	0.02	0.01	0.97
Total	12.54	0.19	0.11	12.86

# Step 3: Convert Gross Imports to Retained Imports (Net Exports)

Bilateral Retained Imports to New Zealand of HS '621210'

Final Destination \$US millions

Imports for

Origin	Gross Imports	Re-exports	Retained Imports
China	38.5	11.7	26.8
Indonesia	2.8	0.9	2.0
Thailand	0.8	0.2	0.5
ROW	3.4	0.1	3.3
Total	45.5	12.9	32.6

# Method of Reconciling Trade Statistics is a form of Medical Science and Artistic Philosophy

- Preserve, protect, and defend the original data
- Do not fix something that is not broken
- Precision in diagnosis leads to more effective treatment

