



UNITED NATIONS  
DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS  
STATISTICS DIVISION



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**International Workshop on Country Practices in Compilation of  
International Merchandise Trade Statistics, 12-16 November 2007, Addis Ababa**

*Presentation*  
**United Nations Statistics Division**

*Item 17a: Unit value and volume indexes*

# **International Workshop on Country Practices in Compilation of International Merchandise Trade Statistics**

## **Calculation of Export and Import Indicex numbers**

**United Nations Statistics Division  
New York, 2007**

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**The United Nations Statistics Division  
(UNSD) compiles three kinds of imports  
and exports index numbers:**

- 1 Unit value/price and volume index  
numbers of total imports and exports**
- 2 Manufactured goods exports and fuel  
imports unit value and volume index  
numbers**
- 3 Export price indices of primary  
commodities and non-ferrous base  
metals**

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## **1. Unit value /price and volume index numbers of total imports and exports**

- **Source:**  
UNSD Monthly Bulletin of Statistics questionnaire, International Monetary Fund and national publications
- **Processing:**
  - Indices are rebased to a common base. Base years are changed 5 to 10 years interval (1975, 1980, 1990, 2000)
  - Indices are converted to US dollars (UNSD maintains imports and exports weighted exchange rates)
  - Terms of trade and purchasing power of exports in US dollars are calculated
  - Unit value/price index numbers are aggregated by regions
  - Volume index numbers are derived from value and unit value data for selected regions

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## **2. Manufactured goods exports and fuel imports unit value and volume indices**

### **Definition:**

- Manufactured goods exports are defined to comprise sections 5 through 8 of the Standard International Trade Classification (SITC)
- Fuel imports are defined to comprise all products in section 3 of the SITC

### **Source:**

UNSD, MBS Questionnaire, national and international publications

### **Processing:**

- Unit value indices are rebased to a common base (1950, 1958, 1963, 1970, 1975, 1980, 1990, 2000)
- Unit value indices are converted to US dollars

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## 2. Manufactured goods exports and fuel imports unit value and volume indices (continued)

-For countries that do not compile unit value indices conforming to the above definition, but produce sub-indices for some part of manufactured goods exports, UNSD aggregates these Sub-indices to approximate index for SITC sections 5-8

-UNSD computes unit value index numbers from value and quantity data available in COMTRADE to fill-in missing indices

-Unit value index numbers are aggregated for selected regions (country groups); all aggregate unit value indices are current period weighted

-Volume index numbers for each country are derived using value and unit value index numbers (obtained in one of the above mentioned ways) of that country

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2. Manufactured goods exports and fuel imports unit value and volume indices (continued)								
Calculation of unit value index numbers from value and quantity in comtrade								
	Base Year			Current Year				
Code	V <sub>0</sub>	Q <sub>0</sub>	uv	V <sub>1</sub>	Q <sub>1</sub>	uv	Chng	Range <0.2, >5
5110	456	800	0.57	500	1100	0.45	0.80	
5111	562	650	0.86	700	600	1.17	1.35	
5112	675	5000	0.14	1000	4800	0.21	1.54	
5113	77	3	25.67	100	4	25.00	0.97	
5114	22	225	0.10	10	600	0.02	0.17	reject
5220	4000	333	12.01	3000	600	5.00	0.42	
5400	338	365	0.93	1400	200	7.00	7.56	reject

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Code	$P_0Q_1$	$V=P_1Q_1$	$V_0=Q_0P_0$	
5110	627	500	5770	
5111	516	700		
5112	672	1000		
5113	102	100		
5114	-	-		QI Laspeyres $\sum Q_1P_0 / \sum Q_0P_0$
5220	7206	3000		9123/5770=158
5400	-	-		UVI Paasche $\sum P_1Q_1 / \sum P_0Q_1$
Sum	$\sum P_0Q_1$ 9123	$\sum P_1Q_1$ 5300		5300/9123=58

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### 3. Export price indices of primary commodities and non-ferrous base metals

**Definition:**

In general Primary Commodities comprise of goods in sections 0-4 of the SITC with some exception such as manufactured food, tobacco, synthetic fibers, rubber, waste and petroleum products which are excluded. The index shows price movement of raw food and raw materials.

The metals included in the index of non-ferrous base metals are: aluminium, copper, lead, nickel, tin and zinc.

**Source:**

Data used in the computation is obtained from national institutions and statistical publications, FAO, other specialized agencies and councils.

Price series selected for inclusion into the calculation are based on (1) availability (2) most representative.

### 3. Export price indices of primary commodities and non-ferrous base metals (continued)

#### Weight:

The weight of each commodity index is the ratio of the value of export of that commodity to the value of all exports entering the computation of the commodity group, class and total primary commodity index in the selected base year.

#### Method of Computation:

The ideal price series required in the calculation are FOB export prices. In the absence of export prices, CIF import, wholesale, producer's or auction prices are used. Since all these prices, generally, follow similar trend, the resulting index is hardly affected in terms of validity.

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### 3. Export price indices of primary commodities and non-ferrous base metals (continued)

#### Aggregation using weights

There are four stages of aggregation:

#### - Commodity index

Eg. Beef – Denmark, steers for export	Wt. 80	12
Australia, export price index	Wt. 80	34
Ireland, bullocks	Wt. 80	21
Germany, imp pr from Neth.	Wt. 80	16
Germany, imp pr from France	Wt. 80	17
	Total weight 1980	100

#### - Commodity group index (weighted average of commodity indexes)

Eg. Meats - Beef	Weight 1980	52
Pork	"	20
Bacon	"	6
lamb	"	9
Poultry	"	13
Total weight in 1980		100

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### 3. Export price indices of primary commodities and non-ferrous base metals (continued)

- Commodity class index (weighted average of commodity group indexes)

Eg. Food – cereal 28, beverage 14, vegetables 4, meats 13, dairy 11, fruits 4, other 26, Total = 100

- Primary commodities

All classes: food 22+agr. Non food 13+minerals 65, Total=100

Aggregated price index is analyzed by developed and developing areas.

It is interesting to note that drastic change into the weighting pattern after 1970 because of the dramatic increase of crude petroleum price and volume.

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### 3. Export price indices of primary commodities and non-ferrous base metals (continued)

#### Comparison of weighting patterns

	1980	1975	1970	1963
Primary commodities	100	100	100	100
Food	22.4	27.9	41.0	43.7
Agriculture non-food	12.4	13.5	26.6	31.8
Minerals	65.2	58.6	32.4	24.5
Crude petroleum	58.6	49.9	19.8	15.1

The importance of food in primary commodities has decreased by almost half between 1963 and 1980 while that of mineral has more than doubled and crude petroleum increased almost four times during the same period.

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