TECHNICAL NOTES

TRADE COMPETITIVENESS MAP

Benchmarking national and sectoral trade performance

TRADE PERFORMANCE HS

Trade and Market Intelligence Section

Division of Market Development

International Trade Centre

Table of Contents

NOTES AND DISCLAIMER

This reference material provides a collection and comprehensive explanations of trade indicators featured in the ITC's Trade Competitiveness Map developed by the Trade and Market Intelligence Section - TMI. This document was prepared by Mr. Kerfalla CONTE, which stemmed from collective efforts among various TMI's team members under the overarching guidance of Mr. Mondher MIMOUNI, the section's Chief.

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Please note that the trade statistics in Trade Competitiveness Map undergo annual updates. These updates may generate varying figures or trends from what is seen in this technical note; however, the principles and applications of Trade Competitiveness indicators remain the same. Comments and suggestions for amelioration are welcome. Please contact the Trade and Market Intelligence Section at email: marketanalysis@intracen.org

1. Summary

The International Trade Centre (ITC) developed the Trade Performance HS – TP HS within the Trade Competitiveness Map with the aim of assessing and monitoring the multi-faceted dimensions of export competitiveness by industry and by county.

At present, the TP HS covers basically all member countries of the United Nations and 99 product categories grouped in 21 different export industries. With this module, the user can investigate the level of competitiveness and diversification of a particular export industry using comparisons with other countries. In particular, it brings out comparative advantages/disadvantages in world market and sheds light on the factors causing these situations.

For each country and each industry, the TP HS provides several indicators that show the static and dynamic picture of exports in the world markets. Moreover, for ease of analysis, the user can decide on the favourite currency and unit of measure among those available.

2. Introduction

The trade performance of individual countries tends to be a good indicator of economic performance since well performing countries tend to record higher rates of GDP growth. Most developing countries have joined the World Trade Organization (WTO) and have taken initiatives aimed at opening their economies.

Nevertheless, the outcome has not always been systematically positive with export performance sometimes remaining disappointing. It is difficult to establish an all-embracing definition of successful trade performance.

Trade champions contrast with certain specialised exporters that suffer from deterioration in their terms of trade. For example, some developing countries record high growth rates by specialising in niche markets and concentrating their export

markets, while other developing countries record more moderate rates of growth with a well diversified array of products and partner countries. In other cases, successful performance is the result of a favourable product or market penetration since the beginning. Successful performance can also be gauged in terms of a country's ability to adapt its export profile to changing patterns of world demand. The last approach is the most dynamic and demand-driven trade policy stance.

The Trade Performance HS (TP HS thereafter) designed by ITC aims to tackle the complex and multidimensional nature of trade patterns. This index is computed using the world's largest trade database, COMTRADE (of the United Nations Statistics Division), covering around 180 countries[1], where more than 95% of world trade in 5,000 products is reported at the 6-digit level of the Harmonized System (HS). Since COMTRADE captures around 95 % of world trade, the TP HS is calculated not only for countries that report their own trade data, but also for over one hundred primarily low-income countries that do not report national trade statistics.

Given that such an amount of information would be overwhelming to the final user, products are grouped into 21 industries. For each country and each industry, the TP HS provides several indicators that show general trade profile and changes in export competitiveness in recent years.

[1] In the case of non-reporting countries, the trade is reconstituted on the basis of partner country statistics (mirror statistics). This approach does not capture trade among non-reporting countries.

3. Motivation for developing the Trade Performance HS

Generally, trade performance is characterised by rough indicators, such as the level of openness (total trade in goods and services divided by GDP) or growth of exports over a given period (such as the World Bank's *World Development Indicators*).

Recent research on the relationship between trade and growth suggests that openness alone is not a sufficient criterion for determining high levels of growth. Other factors, such as the type of product available, the level of market and economic diversification, the positioning on quality ladders, are also significant in explaining growth. In addition, it is important to determine the reasons for country differences in export growth and to determine the redistributive process of market shares among competitors.

Departing from the rough indicators referred to above, microeconomic, and generally qualitative indicators are used to characterise the competitiveness of nations. In this light, the "Microeconomic index of competitiveness" (Porter and Christensen, 1999), is based on the micro-foundations of a country's competitiveness. Launched in 1998 as part of the Global Competitiveness Report, this index is based on a survey of some 4,000 businessmen and government officials in 58 countries, including OECD countries[2]. Regressing income per capita on this index explains more than 80% of the variance of income in the sample. A quantitative method was developed to complement the qualitative approach, which may be criticised on the ground of being limited to a small number of developing countries.

It appears that the relative position of a country or product on the international market, and its development over time, is a good indicator of competitiveness. Trade statistics capture these changes. Trade statistics have the advantage of being available for a substantial number of countries. For those countries which do

[2] Indicators range from the overall infrastructure quality to administrative infrastructure, information infrastructure, capital availability, human resources etc.

not report trade statistics, their trade profile can be (partially) completed by using mirror statistics. Lastly, trade data is broken down at the industry and product levels, which provides a disaggregated insight into trade performances.

On this basis, developing countries can be ranked according to their trade performance, based on various criteria. A ranking can be provided by country, sector, or a combination of different criteria.

It must be stressed that the performance of individual countries cannot be determined on the basis of a restricted sample of countries or products. The derivation of the relative export performance is achieved by including a significant number of countries, together with a detailed product breakdown.

4. Data used

The raw trade data used for calculating the indicators are defined at the 6-digit level of the Harmonized System, 1996 edition, which includes more than 5'000 product items. The data are extracted from COMTRADE (http://comtrade.un.org), the United Nations Commodity Trade Statistics Database, maintained by the Statistics Division of the U.N.

Around 100 countries have reported their trade data systematically over the last five years in the 1996 edition of the HS. For the other countries (around 90), we are using mirror estimates, which are derived from partner countries' statistics. Since COMTRADE captures around 95 % of world trade, mirror estimates usually give fairly reliable results. See *Box 1* for a description of problems encountered using trade data.

Box 1: Foreign Trade Statistics: what Users Should Take into Consideration

Foreign trade statistics provide a differentiated picture of trade flows among countries. They are comprehensive in terms of product coverage (more than 5,000 products under the Harmonized System), geographical coverage (over 100 countries covering 95 per cent of world trade) and time series (data under the Harmonized System are available for the last decade). Moreover, they are readily available at moderate costs. This makes them an attractive source for market research and the assessment of trade performance. Against this background, ITC has developed a number of tools for international marketing and trade promotion, based on trade statistics. The Trade Performance HS – TP HS and Trade Maps are cases in point. All of these tools strive to present trade statistics in an analytical and user friendly format. Notwithstanding the attractiveness of this comprehensive source of information, users should factor in the following weak points of foreign trade statistics.

i) Trade data are never complete. Smuggling and non-reporting represent a serious problem in a number of countries. In addition, trade statistics as any source of information are not free of mistakes and omissions.

ii) Most countries include imports for re-exports and re-exports in their trade statistics. A low income country may be an exporter of airplanes simply because its national airline has sold second hand planes.

iii) According to international conventions for reporting trade statistics, the export value refers to the total or contract value, which may, of course, be very different from local value added for many processing activities. For instance, the local value added remains below 20 per cent of the export value.

iv) Detailed trade statistics are available only for merchandise trade and not for services, although the latter may account for a sizeable share of national exports.

v) Even at the lowest level of disaggregation, product groups in the trade nomenclatures do not necessarily reflect trade names and often contain a wide spread of different products. Moreover, the product nomenclature is sometimes

misleading. The labels of aggregated product groups are often very general and provide at times only limited guidance on the leading items within the group of products concerned.

vi) Exchange rates' fluctuations are not always properly recorded in international trade statistics. Values are normally aggregated over the period of one year in local currency and converted into US dollars.

vii) For countries that do not report trade data to the United Nations, ITC uses partner country data, an approach referred to as mirror statistics. Mirror statistics are a second best solution (better than having no data at all). At the same time, they have a number of shortcomings when compared to the first best solution of nationally reported data. First and foremost, they do not cover trade with other non-reporting countries. As a result, mirror statistics hardly cover South trade. For an assessment of intra African trade, for instance, mirror statistics are not a suitable source of information. Second, there is the problem of transhipments, which may hide the actual source of supply. Third, mirror statistics invert the reporting standards by valuing exports in CIF terms (i.e. including transport cost and insurance) and imports in FOB terms (excluding these items).

In view of the above shortcomings, trade statistics should never be the sole source of insight but need to be complemented by other sources, and in particular cross-checked by product specialists and industry insiders. Overall, ITC's experience suggests that trade statistics represent a very useful source of information and a valid point of departure for strategic market research, if analysed with a healthy mix of scepticism and pragmatism vis-à-vis their strength and shortcomings.

5. Content of the TP HS

For each country and each industry, the TP HS provides indicators on a country's general trade profile, on an industry's competitiveness and on the evolution of a country's/industry's position on the world market. Altogether, the TP HS consists of 14 quantitative indicators of trade performance. For ease of reference, these indicators are presented in absolute terms, but the user can sort the result in order to obtain a ranking among the countries/industries.

6. Description of indicators

This section examines the rationale and the calculation of each indicator entering in the TP HS module for the export side. General profile indicators and change-related indicators are surveyed respectively. All indicators are calculated for each of the HS classification industry.

The following table summarizes the indicators of TP HS module.

GENERAL PROFILE	CHANGE RELATED (LAST 5-YEAR PERIOD)
Exports in value	**Growth of exports in value (% p.a.)**
Exports as share of total exports (%)	**Growth of exports in volume (% p.a.)**
Exports as share of world exports (%)	**Growth of world exports in volume (% p.a.)**
Number of exported products	**Growth of world exports in value (% p.a.)**
Share of top 3 exported products (%)	**Growth of share in world exports (% p.a.)**
Share of top 3 export markets (%)	
Net trade	
Specialisation (Balassa index / RCA index)	
Specialisation (Lafay index)	

EXPORTS IN VALUE

- **What does it tell us?**

This index shows, for the selected industry, the value of total exports in the chosen year. High values indicate great importance in the national export portfolio.

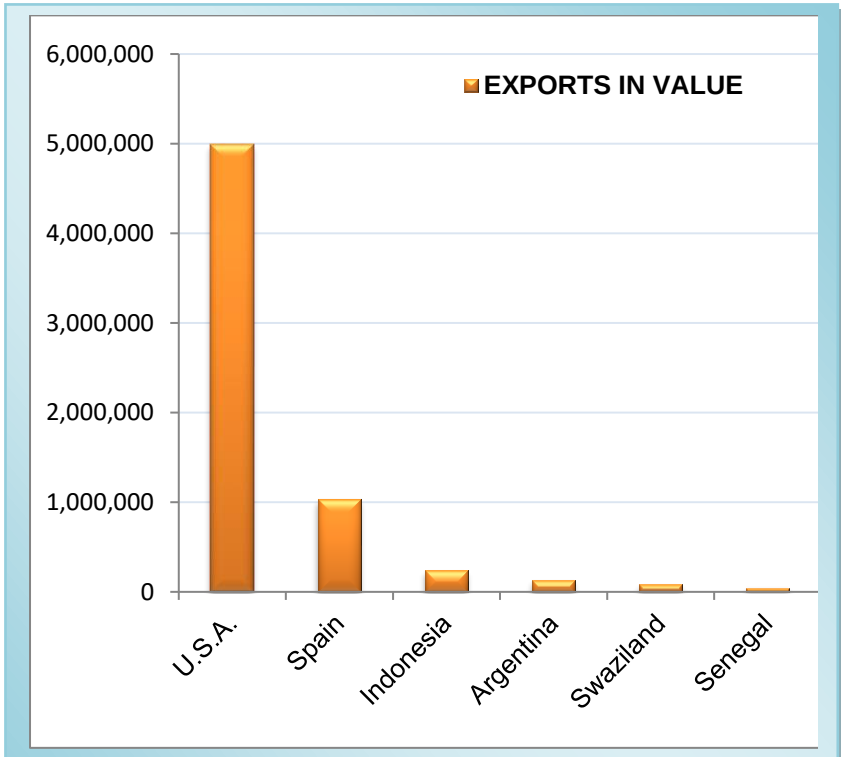
Exports are given in FOB terms (free on board) if the country is a direct reporter to the United Nations' COMTRADE database, otherwise in CIF terms (cost, insurance, freight) as mirror statistics (based on the partners' declarations of imports) are used.

- **Definition:**

The sum of exports of a selected industry in the chosen year.

- **Range of values:**

Takes value between 0 and +∞, with higher values indicating greater importance of the industry under review.



Example:
The above figure depicts the "Miscellaneous edible preparations" industry's exports (value in thousand US$) for selected economies in a given year (t).

TECHNICAL NOTES

- **Mathematical definition:**

$$X_{di} = \sum_{j} X_{dij}$$

where d is the country under study**,** i refers to a specific industry, j country's export destinations, and X are the exports.

- **Data sources:**

Trade data can be obtained from the United Nations Commodity Trade database (COMTRADE) or from the ITC Trade Map.

RANK	COUNTRY	EXPORTS IN VALUE	MIRROR EXPORT
1	United States of America	4,994,065	
13	Spain	1,033,900	Yes
33	Indonesia	238,492	
42	Argentina	130,765	
54	Swaziland	83,997	Yes
65	Senegal	45,025	

Sample calculation:
The table above shows, for the industry under review, total exports data of some countries and their ranking on the world markets.
The current trade data is from ITC Trade Map. All the data is in compatible units (thousands current US dollars).

SHARE IN NATIONAL EXPORTS (%)

- **What does it tell us?**

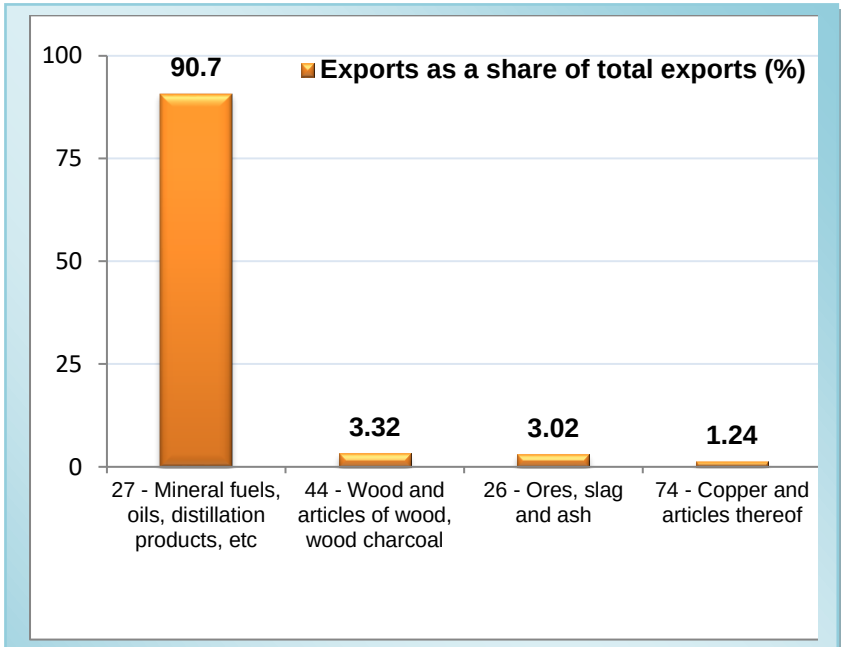
This indicator refers to the share of industry's exports in relation to total country exports; hence, it shows the importance of the industry under review in national exports, as well as in the national balance of trade.

- **Definition:**

The percentage ratio between total industry's exports to total country's exports.

- **Range of values:**

Takes value between 0 and 100 per cent, with higher values indicating greater importance of the industry under review in the selected country's export portfolio.



Example:
The above figure depicts the exports' shares of some industries of Congo in relation to its total exports each year (t).

TECHNICAL NOTES

- **Mathematical definition:**

$$\frac{X_{di}}{X_d} * 100$$

where d is the country under study**,** i is the industry under review, and X are the exports.

- **Data sources:**

Trade data can be obtained from the United Nations Commodity Trade database (COMTRADE) or from the ITC Trade Map.

INDUSTRY	EXPORTS	EXPORTS AS A SHARE OF TOTAL EXPORTS (%)
27 - Mineral fuels, oils, distillation products, etc	6,402,843	90.7
44 - Wood and articles of wood, wood charcoal	234,297	3.32
26 - Ores, slag and ash	213,353	3.02
74 - Copper and articles thereof	87,369	1.24

Sample calculation:
The table above shows some industries' exports data for Congo. The current trade data is from ITC Trade Map. All the data is in compatible units (thousands current US dollars).
The value of the share in national exports is the result of the ratio of the industry's exports to total exports, multiplied by 100 to alter the expression in percentage terms.

EXPORTS IN WORLD EXPORTS (%)

- **What does it tell us?**

This indicator refers, for each industry, to the share of selected country's exports in relation to total world exports; hence, it indicates how important a specific national industry is in terms of global export and world's supply.

- **Definition:**

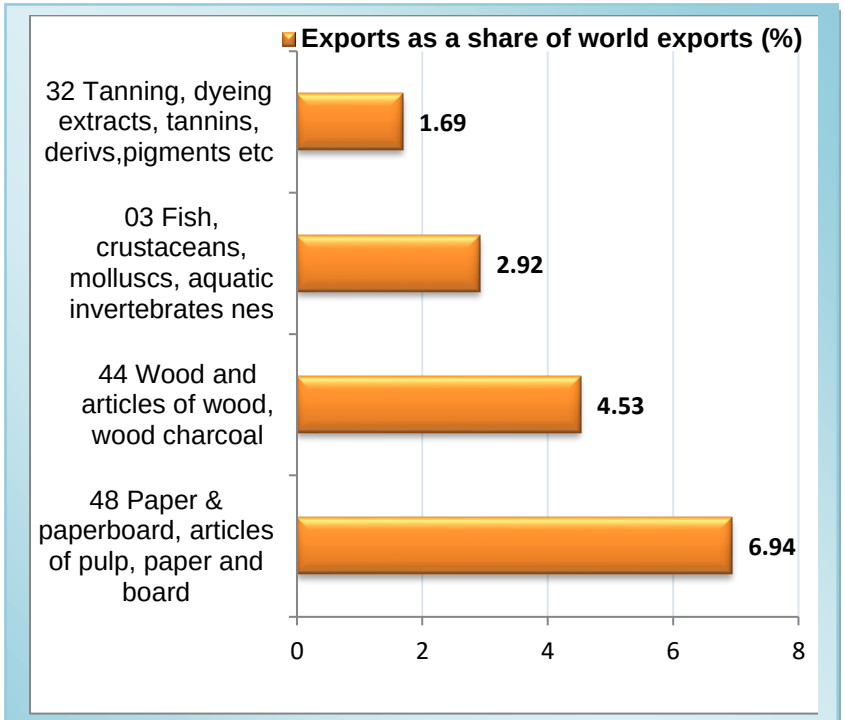
The percentage ratio between country's exports to total world's exports.

- **Range of values:**

Takes value between 0 and 100 per cent, with higher values indicating greater importance of the selected country in the world's supply.

- **Strengths-limitations:**

The more a country exports in a particular industry, the higher is its world market share. This indicator thus favours the biggest exporters but introduces at the same time a bias towards large countries, as large countries tend to export more in absolute terms than smaller countries.



Example:
The above figure depicts the world market shares of some Swedish industries each year (t).

TECHNICAL NOTES

- **Mathematical definition:**

$$\frac{X_{di}}{X_{wi}} * 100$$

where d is the country under study**,** i is the industry under review, w is the set of all exporting countries and X are the exports.

- **Data sources:**

Trade data can be obtained from the United Nations Commodity Trade database (COMTRADE) or from the ITC Trade Map.

INDUSTRY	EXPORTS	WORLD EXPORTS	EXPORTS AS A SHARE OF WORLD EXPORTS (%)
48 - Paper & paperboard, articles of pulp, paper and board	10,142,155	146,140,562	6.94
44 - Wood and articles of wood, wood charcoal	3,959,934	87,415,762	4.53
03 - Fish, crustaceans, molluscs, aquatic invertebrates nes	1,874,360	64,190,411	2.92
32 - Tanning, dyeing extracts, tannins, derivs,pigments etc	927,980	54,910,059	1.69
16 - Meat, fish and seafood food preparations nes	272,870	33,276,829	0.82

Sample calculation:
The table above shows some industries' exports data for Sweden each year (t). The current trade data is from ITC Trade Map. All the data is in compatible units (thousands current US dollars).
The value of the share in world exports is the result of the ratio of the industry's exports to total world exports, multiplied by 100 to alter the expression in percentage terms.

GROWTH OF EXPORTS IN VALUE (% P.A.)

- **What does it tell us?**

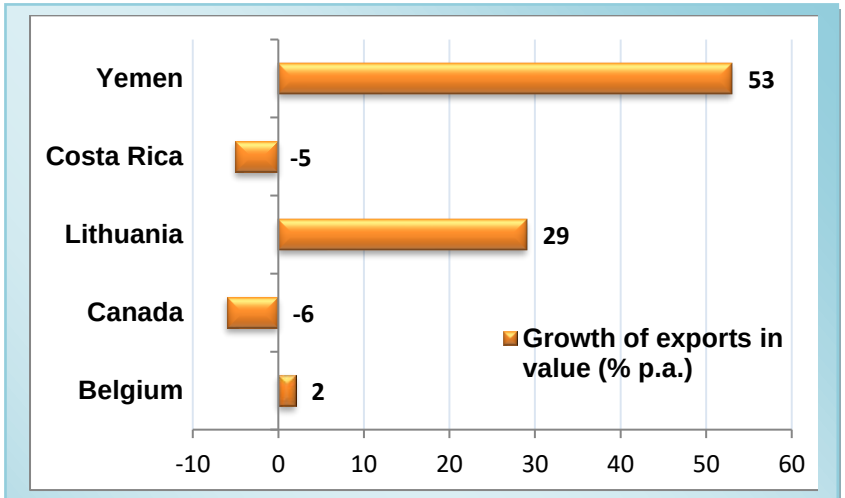
The export growth in value shows the development of industry's exports from time t0 time t (last five years). A positive value shows that the exports (in value) have increased: a positive growth rate suggests that the country under review is competitive on the world markets.

- **Definition:**

The weighted trend (compound growth rates) measures, for each industry, the annual percentage growth of exports in value over the most recent 5-year period.

- **Range of values:**

It takes values between -∞ and +∞ (per cent), with positive values indicating a positive trend.



Example:
The above figure shows the exports (in value) growth rate of some countries in the "Plastics and articles thereof" industry in a given 5-year period (t_0, t).

TECHNICAL NOTES

- **Mathematical definition:**

$$\left(\left(\frac{{X_{di}}^{t}}{{X_{di}}^{t_0}}\right)^{1/(t-t_0)} - 1\right) * 100$$

where t and t0 are respectively the last and the first years considered, d is the country under study**,** i is the industry under review, and X are the exports in value.

- **Data sources:**

Trade data can be obtained from the United Nations Commodity Trade database (COMTRADE) or from the ITC Trade Map.

COUNTRY	EXPORTS IN VALUE (t)	GROWTH OF EXPORTS IN VALUE (% p.a.)
Belgium	24,191,505	2
Canada	9,089,918	-6
Lithuania	1,036,799	29
Costa Rica	146,122	-5
Yemen	13,098	53

Sample calculation:
The table above presents some countries' exports in value data for selected economies for the period under review. The current trade data is from ITC Trade Map. All of the data is in compatible units (thousands current US dollars).
The value of the exports growth is the result of the ratio of industry's exports in the last year of the period under analysis to the exports of the first year considered, normalised for a given factor, and multiplied by 100 to alter the expression in percentage terms.

GROWTH OF EXPORTS IN VOLUME (% P.A.)

- **What does it tell us?**

The export growth in volume shows the average annual percentage growth of export quantities over the last 5 years. A positive value shows that the exports (in volume) have increased.

- **Definition:**

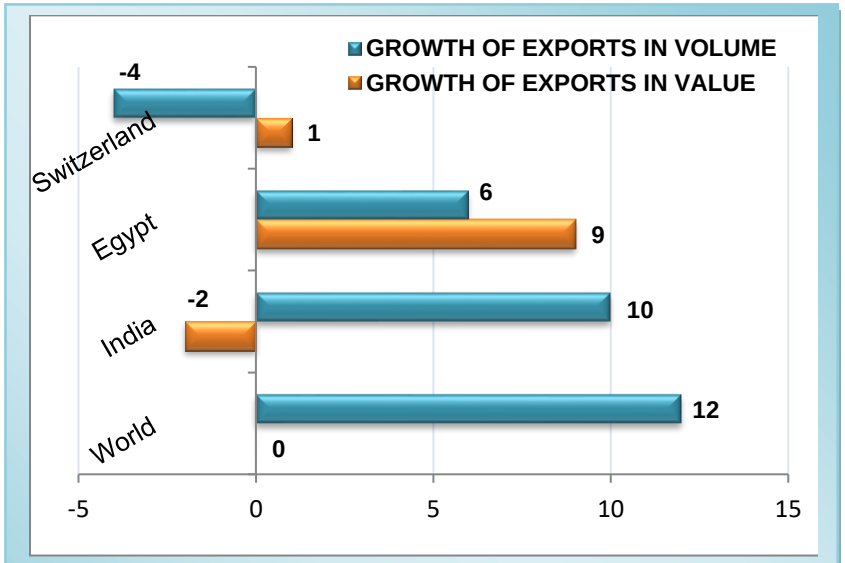
The weighted trend (compound growth rates) measures, for each industry, the annual percentage growth of exports in volume over the most recent 5-year period.

- **Range of values:**

It takes values between -∞ and +∞ (per cent), with positive values indicating a positive trend.

- **Strengths-limitations:**

To avoid a misleading conclusion on a country's results in terms of competitiveness, the user should consider at the same time this index and the "growth of exports in value" since they are not linked: it is possible that an industry could increase exports in volume and, at the same time, decrease exports in value because of, for example, the prices dynamic.



Example:
The above figure shows the exports (in volume) growth rate of some countries in the "Carpets and other textile floor coverings" industry in a given 5-year period (t_0, t).

TECHNICAL NOTES

• **Mathematical definition:**

$$\left(\left(\frac{{X_{di}}^{t}}{{X_{di}}^{t_0}}\right)^{1/(t-t_0)} - 1\right) * 100$$

where t and 0 are respectively the last and the first years considered, d is the country under study**,** i is the industry under review, and X are the exports in volume.

• **Data sources:**

Trade data can be obtained from the United Nations Commodity Trade database (COMTRADE) or from the ITC Trade Map.

COUNTRY	EXPORTS IN VALUE	GROWTH OF EXPORTS IN VALUE (% p.a.)	GROWTH OF EXPORTS IN VOLUME (% p.a.)
World	11,067,696	0	12
India	978,183	-2	10
Egypt	272,308	9	6
Switzerland	118,247	1	-4

Sample calculation:
The table above presents some Countries' exports in volume data for selected economies in the period under review. The current trade data is from ITC Trade Map. All of the data is in compatible units (thousands current US dollars).
The value of the exports growth is the result of the ratio of the industry's exports in the last year of the period being reviewed to the exports of the first year considered, normalised for a given factor and multiplied by 100 to alter the expression in percentage terms.

GROWTH OF WORLD EXPORTS IN VALUE (% P.A.)

- **What does it tell us?**

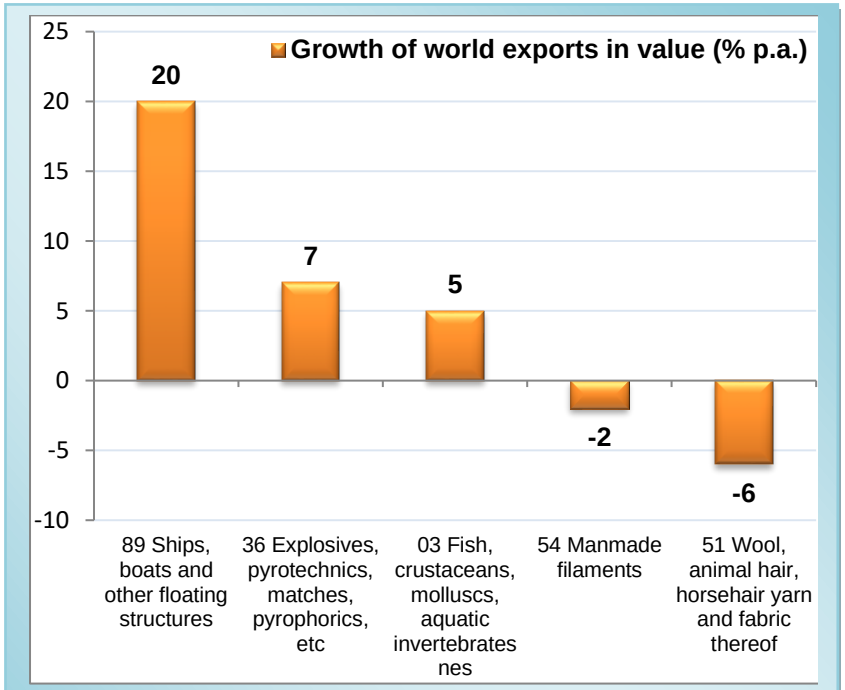
This index shows the average annual percentage growth of world exports (in value) of the industry under review over the most recent 5-year period. A positive growth rate suggests that the industry under review is in expansion and has a particular future export potential.

- **Definition:**

The weighted trend (compound growth rates) measures, for each industry, the annual percentage growth of world's exports in value over the most recent 5-year period.

- **Range of values:**

It takes values between -∞ and +∞ (per cent), with positive values indicating a positive trend.



Example:
The above figure shows the world exports (in value) growth rate of some industries in a given 5-year period (t_0, t).

TECHNICAL NOTES

- **Mathematical definition:**

$$\left(\left(\frac{{X_{wi}}^{t}}{{X_{wi}}^{t_0}}\right)^{1/(\mathrm{t}-t_0)} - 1\right) * 100$$

where t and 0 are respectively the last and the first years considered, w is the set of all exporting countries**,** i is the industry under analysis, and X are the exports in value.

- **Data sources:**

Trade data can be obtained from the United Nations Commodity Trade database (COMTRADE) or from the ITC Trade Map.

INDUSTRY	GROWTH OF WORLD EXPORTS IN VALUE (% P.A.)
89 - Ships, boats and other floating structures	20
36 - Explosives, pyrotechnics, matches, pyrophorics, etc	7
03 - Fish, crustaceans, molluscs, aquatic invertebrates nes	5
54 - Manmade filaments	-2
51 - Wool, animal hair, horsehair yarn and fabric thereof	-6

Sample calculation:
The table above presents some world industries' exports in value data for selected economies in the period being reviewed. The current trade data is from ITC Trade Map. All of the data is in compatible units (thousands current US dollars).
The value of the exports growth is the result of the ratio of the industry's exports in the last year of the period under analysis to the exports of the first year considered, normalised for a given factor and multiplied by 100 to alter the expression in percentage terms.

GROWTH OF WORLD EXPORTS IN VOLUME (% P.A.)

- **What does it tell us?**

This index shows the average annual percentage growth of world exports (in volume) of the industry under review over the last 5 years. A positive growth rate suggests that the industry being reviewed is in expansion because of an increase of the world demand.

- **Definition:**

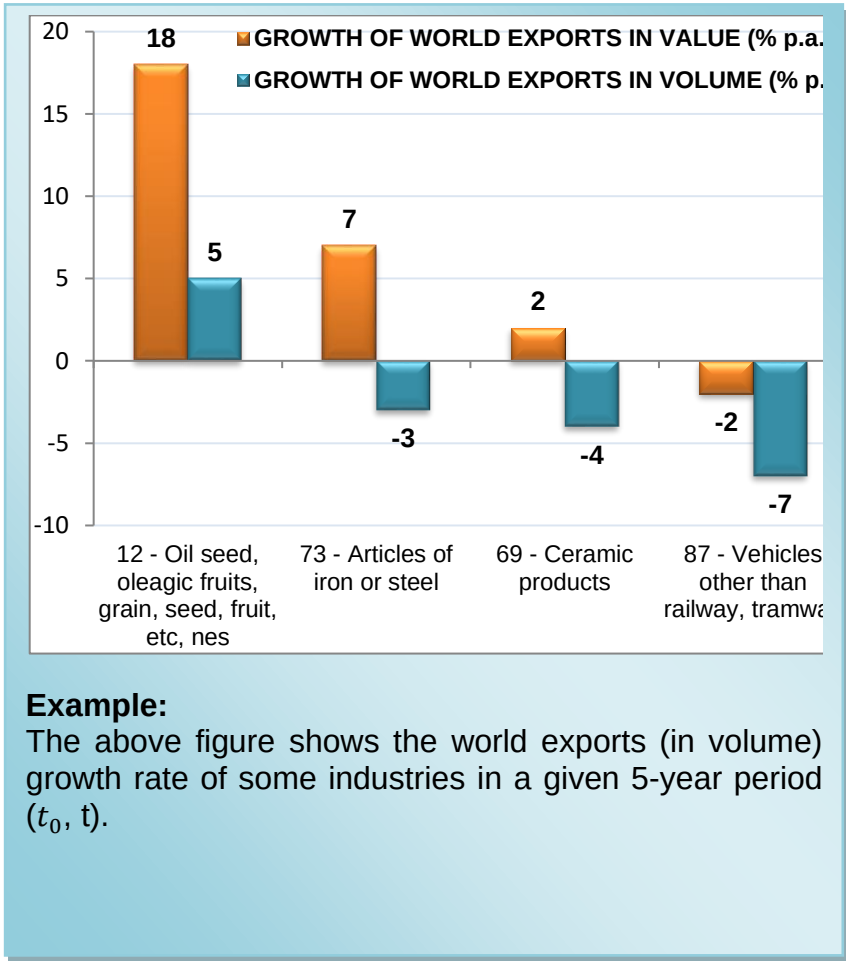
The weighted trend (compound growth rates) measures, for each industry, the annual percentage growth of world's exports in volume over the most recent 5-year period.

- **Range of values:**

It takes values between -∞ and +∞ (per cent), with positive values indicating a positive trend.

- **Strengths-limitations:**

The user should consider at the same time this index and the "growth of world exports in value", since they are not linked: it is possible that an industry could increase world exports in volume and, at the same time, decrease exports in value because of, for example, the prices dynamic.



Example:
The above figure shows the world exports (in volume) growth rate of some industries in a given 5-year period (t_0, t).

TECHNICAL NOTES

- **Mathematical definition:**

$$\left(\left(\frac{{X_{wi}}^{t}}{{X_{wi}}^{t_0}}\right)^{1/(\mathrm{t}-t_0)} - 1\right) * 100$$

where t and 0 are respectively the last and the first years considered, w is the set of all exporting countries**,** i is the industry under review, and X are the exports in volume.

- **Data sources:**

Trade data can be obtained from the United Nations Commodity Trade database (COMTRADE) or from the ITC Trade Map.

INDUSTRY	GROWTH OF WORLD EXPORTS IN VALUE (% p.a.)	GROWTH OF WORLD EXPORTS IN VOLUME (% p.a.)
12 - Oil seed, oleagic fruits, grain, seed, fruit, etc, nes	18	5
73 - Articles of iron or steel	7	-3
65 - Headgear and parts thereof	5	-5
69 - Ceramic products	2	-4
87 - Vehicles other than railway, tramway	-2	-7

Sample calculation:
The table above shows some world industries' growth of exports rate for selected economies in the period under analysis.
The value of the exports growth is the result of the ratio of the industry's exports in the last year of the period being reviewed to the exports of the first year considered, normalised for a given factor, and multiplied by 100 to alter the expression in percentage terms.

GROWTH OF SHARE IN WORLD EXPORTS (% P.A.)

- **What does it tell us?**

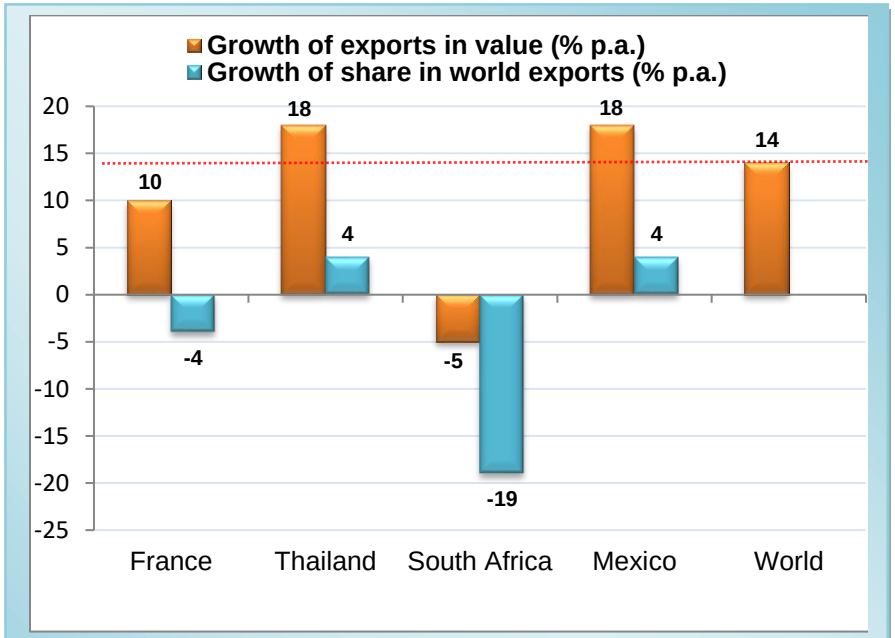
This indicator refers, for each industry, to the average annual percentage growth of the selected country's share in world exports over the most recent 5-year period. It allows us to assess the industry's competitiveness progress on the world market, and can also indicate long term comparative advantage (disadvantage).

- **Definition:**

The weighted trend (compound growth rates) measures the annual percentage growth of the selected country's share in world exports over the most recent 5-year period.

- **Range of values:**

It takes values between -∞ and +∞ (per cent), with positive values indicating a positive trend.



Example:
The above figure shows the share in world exports growth rate of some countries for the "Milling products, malt, starches, ..., wheat gluten" industry in a given 5-year period (t_0, t).
The red line indicates the world exports (in value) growth rate.

TECHNICAL NOTES

- **Mathematical definition:**

$$\left(\left(\frac{{X_{di}}^{t}}{{X_{wi}}^{t_0}}\right)^{1/(\mathrm{t}-t_0)} - 1\right) * 100$$

where t and 0 are respectively the last and the first years considered, w is the set of all exporting countries**,** d and i are the country and industry in exam, and X are the exports in volume.

- **Data sources:**

Trade data can be obtained from the United Nations Commodity Trade database (COMTRADE) or from the ITC Trade Map.

COUNTRY	EXPORTS IN VALUE	GROWTH OF EXPORTS IN VALUE (% P.A.)	GROWTH OF SHARE IN WORLD EXPORTS (% P.A.)
World	12,954,483	14	10
France	1,229,798	10	-4
Thailand	608,931	18	4
South Africa	109,692	-5	-19
Mexico	99,866	18	4

Sample calculation:
The table above presents some countries' exports data for the "Milling products, malt, starches, inulin, wheat gluten" industry in the period under analysis. The current trade data is from ITC Trade Map. All of the data is in compatible units (thousands current US dollars).
The value of the growth of share in world exports is the result of the ratio of a country's exports in the last year of the period being reviewed to the world's exports of the first year considered, normalised for a given factor, and multiplied by 100 to alter the expression in percentage terms.

NUMBER OF EXPORTED PRODUCTS

- **What does it tell us?**

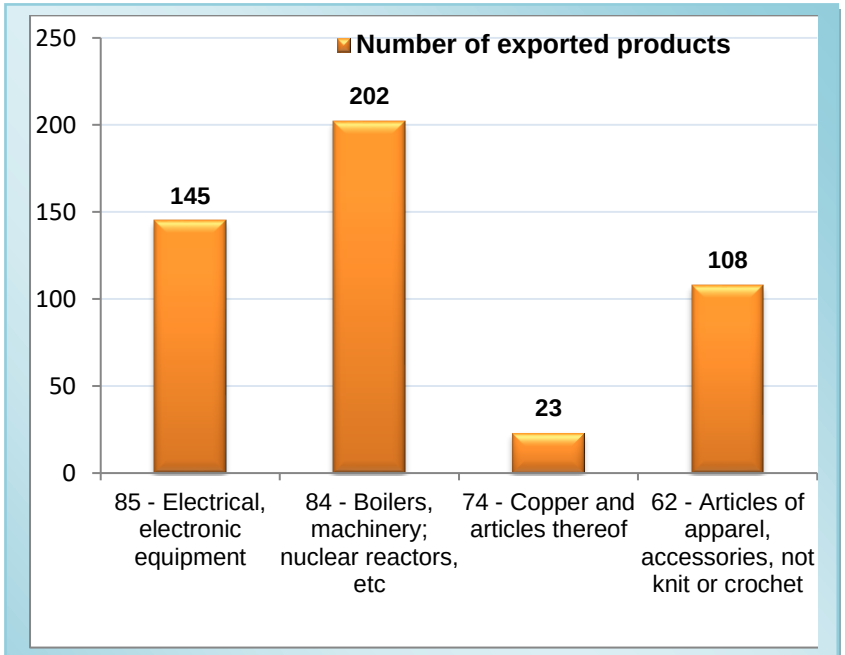
This index simply shows how many products within an industry are exported by the country under analysis. It indicates the product's variety (supply diversification) as well as the level of development of the industry.

- **Definition:**

Sum of different exported products' categories within a specific industry in the chosen year.

- **Range of values:**

Takes value between 0 and +∞, with higher values indicating greater products diversification, and hence importance of the industry being examined.



Example:
The above figure shows the different sizes in supply (through the number of exported products) of some exporting industries of Philippines in a given year (t).

TECHNICAL NOTES

• **Mathematical definition:**

$$P_{di}$$

where d is the country under study**,** i refers to a specific industry and P is the sum of the different products categories exported.

• **Data sources:**

Trade data can be obtained from the United Nations Commodity Trade database (COMTRADE) or from the ITC Trade Map.

INDUSTRY	EXPORTS IN VALUE	NUMBER OF EXPORTED PRODUCTS
85 - Electrical, electronic equipment	15,546,643	145
84 - Boilers, machinery; nuclear reactors, etc	8,683,450	202
74 - Copper and articles thereof	813,304	23
62 - Articles of apparel, accessories, not knit or crochet	802,819	108

Sample calculation:
The table above shows exports data and the number of products exported of some exporting industries for the country under analysis.
The current trade data is from ITC Trade Map. All of the data is in compatible units (thousands current US dollars).

SHARE OF TOP 3 EXPORTED PRODUCTS (%)

- **What does it tell us?**

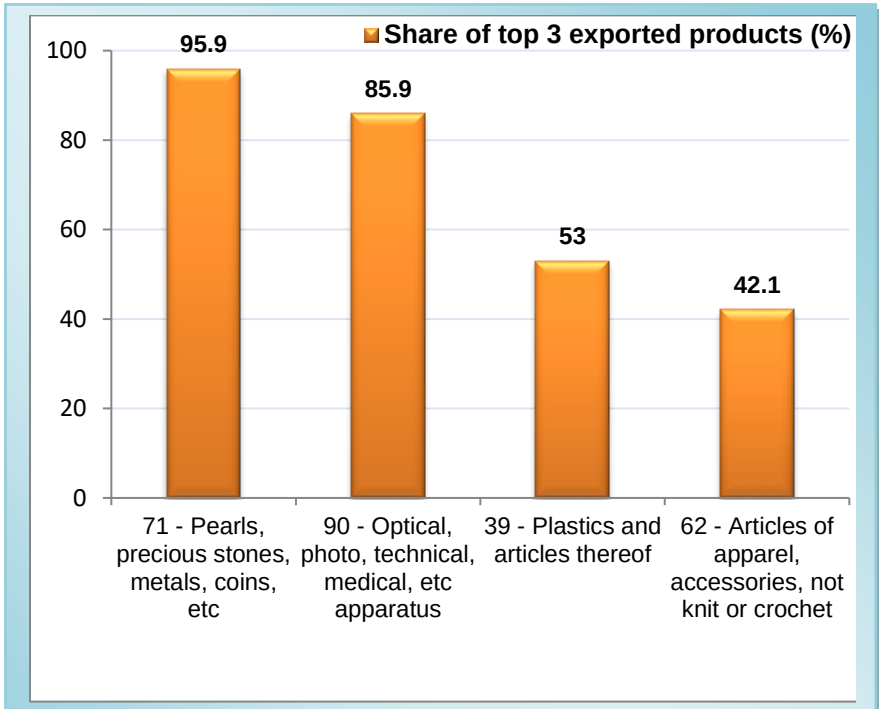
This index shows the share of the three most exported products within the selected industry in a specific year. It gives a simple picture of products' differentiation: high values indicate only some differentiation and variety of products' supply, hence high supply concentration (the country/industry exports a limited variety of products).

- **Definition:**

The ratio of the sum of the top 3 exported products' exports to total industry's exports (expressed in percentage).

- **Range of values:**

Takes value between 0 and 100 per cent, with lower values indicating greater products' differentiation.



Example:
The above figure depicts the share of the top 3 exported products for different exporting industries of Sierra Leone in the chosen year (t).

TECHNICAL NOTES

- **Mathematical definition:**

$$\frac{X_{p_3,i}}{X_i} * 100$$

where p_3 refers to the top 3 exported product, i is the industry being analysed and X are the exports.

- **Data sources:**

Trade data can be obtained from the United Nations Commodity Trade database (COMTRADE) or from the ITC Trade Map.

INDUSTRY	EXPORTS IN VALUE	NUMBER OF EXPORTED PRODUCTS	SHARE OF TOP 3 EXPORTED PRODUCTS (%)
71 - Pearls, precious stones, metals, coins, etc	71,098	16	95.9
90 - Optical, photo, technical, medical, etc apparatus	3,340	28	85.9
39 - Plastics and articles thereof	1,597	31	53
62 - Articles of apparel, accessories, not knit or crochet	604	43	42.1

Sample calculation:
The table above shows some of Sierra Leone's industries' exports data, as well as the number of exported products in a given year (t) for each of those industries. The current trade data is from ITC Trade Map.
The value of the share of the top 3 exported products is the result of the ratio of the top 3 exported products' exports to total industry's exports, multiplied by 100 to alter the expression in percentage terms.

NUMBER OF EXPORT MARKETS

- **What does it tell us?**

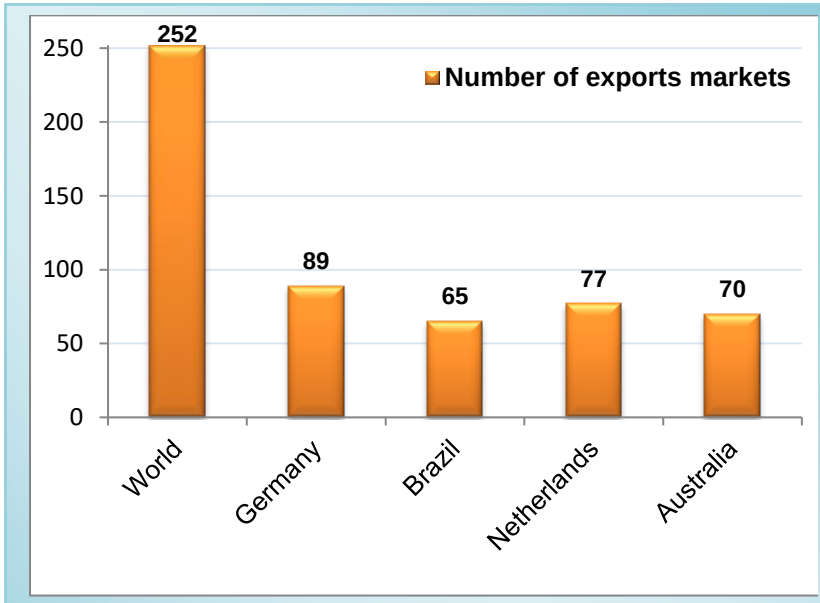
This index simply shows how many products within an industry are exported by the country being reviewed. It indicates the product's variety (supply diversification) as well as the level of development of the industry.

- **Definition:**

Sum of the destination markets for a country's export each year.

- **Range of values:**

Takes value between 0 and +∞, with higher values indicating greater products' diversification, and hence greater importance of the industry under analysis.



Example:
The above figure shows the supply's differentiation (through the number of destination markets) of some exporting countries for the "Animal origin, nes" industry in a given year (t).

TECHNICAL NOTES

- **Mathematical definition:**

$$m_{di}$$

where d is the country under study**,** i refers to a specific industry and m is the sum of the different destination markets.

- **Data sources:**

Trade data can be obtained from the United Nations Commodity Trade database (COMTRADE) or from the ITC Trade Map.

COUNTRY	EXPORTS IN VALUE	NUMBER OF EXPORTS MARKETS	SHARE OF TOP 3 EXPORT MARKETS (%)
World	6,248,134	252	25.7
Germany	700,309	89	27.6
Brazil	391,108	65	70.7
Netherlands	305,246	77	54.9
Hong Kong , SAR China	78,989	51	80.1
Australia	76,195	70	65.4

Sample calculation:
The table above presents exports data and number of destination markets of some Countries for the "Animal origin, nes" industry in a given year.
The current trade data is from ITC Trade Map. All of the data is in compatible units (thousands current US dollars).

SHARE OF TOP 3 EXPORT MARKETS (%)

- **What does it tell us?**

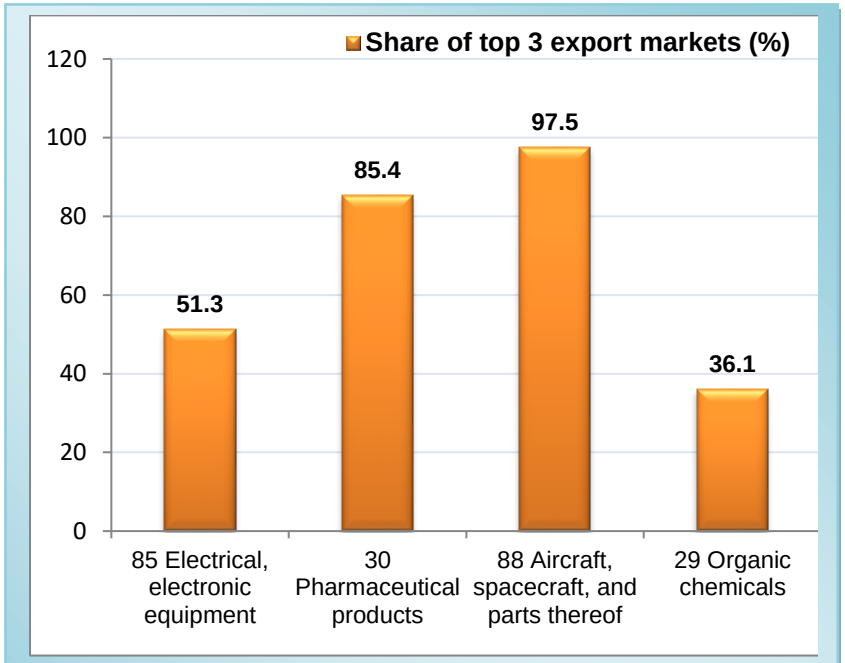
This index shows, for the country under review, the share of the top three export markets of each active industry. It gives a simple picture of destination markets' diversification, with high values indicating high supply's concentration as well as great importance of the top 3 markets for the country's exports.

- **Definition:**

The ratio of the sum of the top 3 destination markets' exports to total industry's exports (expressed in percentage).

- **Range of values:**

Takes value between 0 and 100 per cent, with lower values indicating greater destination markets' diversification.



Example:
The above figure depicts the share of the top 3 destination markets for the exports of some Israeli industries in a given year (t).

TECHNICAL NOTES

- **Mathematical definition:**

$$\frac{X_{m_3,i}}{X_i} * 100$$

where m_3 refers to the top 3 export markets, i is the industry under review and X are the exports.

- **Data sources:**

Trade data can be obtained from the United Nations Commodity Trade database (COMTRADE) or from the ITC Trade Map.

INDUSTRY	EXPORTS IN VALUE	SHARE OF TOP 3 EXPORT MARKETS (%)
85 - Electrical, electronic equipment	8,447,459	51.3
30 - Pharmaceutical products	4,524,284	85.4
88 - Aircraft, spacecraft, and parts thereof	1,757,689	97.5
29 - Organic chemicals	1,252,582	36.1

Sample calculation:
The table above shows some of Israel's industries' exports data in a given year (t). The current trade data is from ITC Trade Map.
The value of the share of the top 3 export markets is the result of the ratio of the top 3 export markets' exports to total industries' exports, multiplied by 100 to alter the expression in percentage terms.

NET TRADE

- **What does it tell us?**

This index shows, for the selected industry, the balance of trade in the chosen year. A positive value indicates that the country exports more than it imports and that it has a surplus, while a negative value means that the country is a net importing country (imports being higher than exports).

- **Definition:**

The algebraic sum of exports less imports.

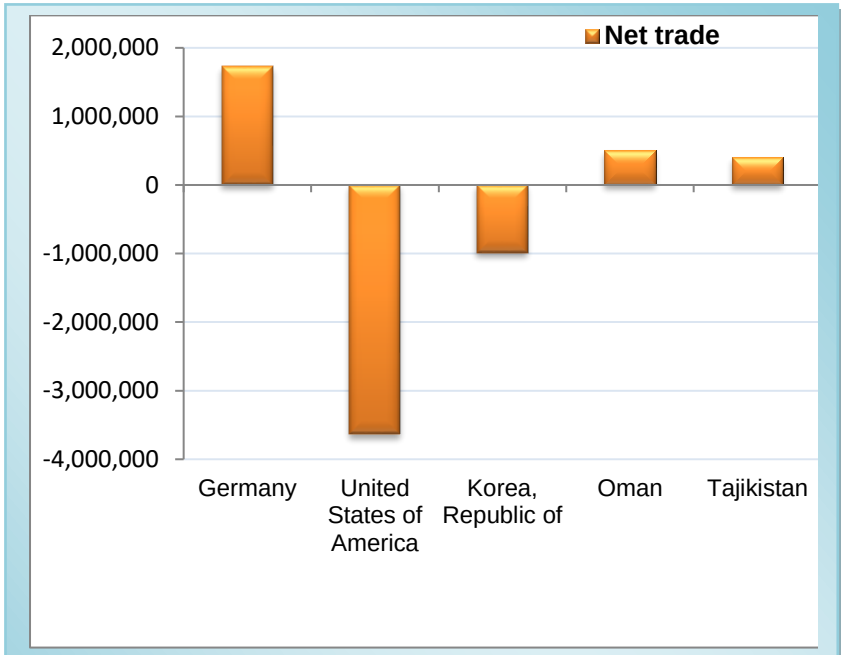
- **Range of values:**

Takes values between -∞ and +∞.

- **Strengths-limitations:**

Net exports eliminate re-exports, which would otherwise introduce a bias into the raw data. Hence, net exports provide a very simple but reliable correction for dealing with the globalisation of production processes and the induced vertical specialisation of countries at various stages of production.

For non-reporting countries, mirror estimates are used and net exports should be considered as indicative only.



Example:
The above figure shows the balance of trade for the "Aluminium and articles thereof" industry of some countries in a given year (t).

TECHNICAL NOTES

- **Mathematical definition:**

$$X_{di} - M_{di}$$

where d is the country under study**,** i refers to a specific industry, X are the exports and M the imports.

- **Data sources:**

Trade data can be obtained from the United Nations Commodity Trade database (COMTRADE) or from the ITC Trade Map.

COUNTRY	EXPORTS IN VALUE	IMPORTS IN VALUE	NET TRADE
Germany	12,081,563	10,352,230	1,729,333
United States of America	8,362,995	12,003,366	-3,640,371
Republic of Korea	1,453,035	2,446,602	-993,567
Oman	683,514	177,133	506,381
Tajikistan	416,435	13,104	403,331

Sample calculation:
The table above shows some countries' exports and imports data in the "Aluminium and articles thereof" industry. The current trade data is from ITC Trade Map. All of the data is in compatible units (thousands current US dollars).
The value of the net exports is simply obtained by subtracting imports from exports.

SPECIALISATION (Balassa Index / RCA Index)

- **What does it tell us?**

This index helps the user identify industries where the targeted country has an obvious advantage in international competition. This is of special importance in order to promote trade of products that are more likely to be competitive.

- **Definition:**

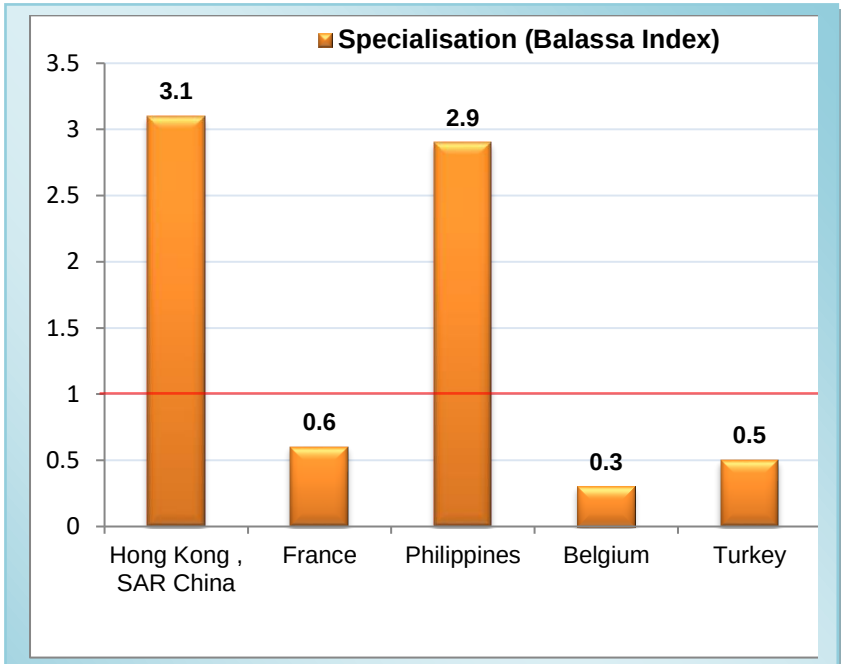
The ratio of the industry's share in the country's exports relative to its share in world trade.

- **Range of values:**

Takes values between 0 and +∞. If it takes a value of more (less) than one, the country under review is (not) specialized in exporting selected industry's products.

- **Strengths-limitations:**

This index should be used in industries where trade is not distorted by export incentives and trade barriers, because they are likely to obscure whether a country has a real comparative advantage (disadvantage) in these goods.



Example:
The above figure shows the Balassa index for the "Electrical, electronic equipment" industry of some countries in a given year (t).
The red line indicates the level of specialisation on the world average. If a country exceeds this line, it means that its industry has competitive advantage on the world markets due to its specialization.

TECHNICAL NOTES

- **Mathematical definition:**

$$RCA_{d,i} = \frac{X_{d,i}}{X_d} \Big/ \frac{X_{w,i}}{X_w}$$

where d is the country under study, w is the set of all exporting countries, i refers to a specific industry and X are the exports.

- **Data sources:**

Trade data can be obtained from the United Nations Commodity Trade database (COMTRADE) or from the ITC Trade Map.

COUNTRY	EXPORTS IN VALUE	SPECIALISATION (BALASSA INDEX)
Hong Kong , SAR China	141,848,748	3.1
France	38,306,405	0.6
Philippines	15,546,643	2.9
Belgium	15,065,943	0.3
Turkey	6,650,125	0.5

Sample calculation:
The table above shows some countries' exports data in the "Electrical, electronic equipment" industry. The current trade data is from ITC Trade Map. All the data is in compatible units (thousands current US dollars).
The value of the Balassa Index is the result of the ratio of the share of national industry's exports in total national exports to the share of world industry's export in total world's exports.

SPECIALISATION (Lafay Index)

- **What does it tell us?**

This index tries to reveal comparative advantage (disadvantage) of the industry under review.

- **Definition:**

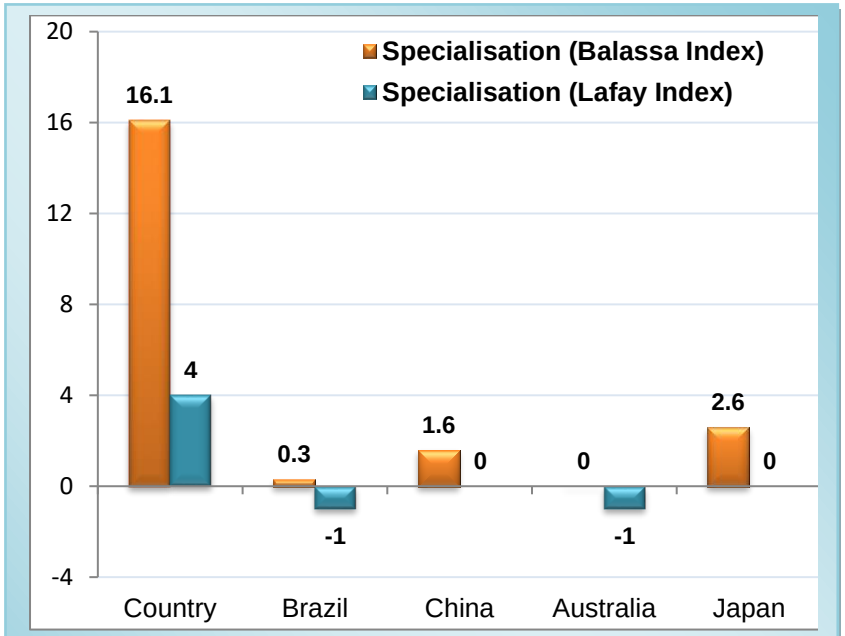
Comparison, expressed in thousands of GDP, of the industry's balance of trade to a theoretical balance corresponding to the absence of specialisation.

- **Range of values:**

Takes values between -∞ and +∞. If it takes a value of more (less) than zero, the country being reviewed has (not) a comparative advantage to world's competitors in exporting selected industry's products.

- **Strengths-limitations:**

Since it takes account of both exports and imports, this index is more suitable for a country with intra-industry trade.



Example:
The above figure shows the Lafay index (in blue) and the Balassa Index (in orange) for the "Oil seed, oleagic fruits, grain, seed, fruit, etc, nes" industry of some countries each year (t).
The Lafay index, taking account of both exports and imports, corrects a possible bias of the Balassa index that could mislead the user on countries' trade competitiveness.

TECHNICAL NOTES

- **Mathematical definition:**

$$\text{Lafay}_i = K * \left[\left(X_{d,i} - M_{d,i} \right) - \left(X_d - M_d \right) * \left(\frac{X_{d,i} + M_{d,i}}{X_d + M_d} \right) \right]$$

where d is the country under study, i refers to a specific industry, X are the exports, M are the imports and K is a constant

$K = \frac{1000}{X_d + M_d}$

- **Data sources:**

Trade data can be obtained from the United Nations Commodity Trade database (COMTRADE) or from the ITC Trade Map.

COUNTRY	EXPORTS IN VALUE	SPECIALISATION (BALASSA INDEX)	SPECIALISATION (LAFAY INDEX)
Brazil	11,565,088	16.1	4
China	1,843,542	0.3	-1
Australia	1,159,188	1.6	0
Japan	120,262	0	-1
Sudan	76,315	2.6	0

Sample calculation:
The table above shows some countries' exports data in the "Oil seed, oleagic fruits, grain, seed, fruit, etc, nes" industry. The current trade data is from ITC Trade Map. All the data is in compatible units (thousands current US dollars).
The value of the Lafay index is the result of the expression next to this box.