# CHANGING PATTERNS OF COMPARATIVE ADVANTAGES IN MANUFACTURED GOODS

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## Abstract

*This article presents an empirical study of the changing patterns of comparative advantages in manufactured goods for a group of EU and non-EU countries. After computing the comparative advantages indices for each country, an econometric analysis is applied to assess how two country-specific attributes, and in particular technology endowments, affect the patterns of comparative advantage for product category. The shifts in the structure of comparative advantages are examined for 31 manufactured product categories in 2001 and 2017. Some policy implications conclude the work.*

**Keywords**: comparative advantages dynamics, manufacturing, technology endowments, technology intensity

**JEL code**: F11, F14, P52, Z32

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## 1. Introduction

Shifts over time of comparative advantages in manufactures from technology-rich towards technology-poor countries were first detected by Hoffmeyer (1958). Afterwards these changes were analysed by Posner (1961), Freeman (1963), Hirsch (1965, 1967), Hufbauer (1966), Vernon (1966) and others. Most analyses, however, were restricted to a description of some examples of shifts occurring in particular products and countries. Aquino (1981) proposed a simple OLS methodology for analysing the degree, speed and timing of the shifts in comparative advantages for 25 manufactured products over the years 1962–1974. The author found that several cases of comparative advantage shifts could be detected by the behaviour of the technology-elasticity.

Balassa and Noland (1989) econometrically examined the changing comparative advantages of Japan and the United States across 167 manufactured product categories over the period 1967–1983. In particular, comparative advantages were estimated as a function of inter-industry differences in factor intensities. Japan's patterns of specialization in manufactures were found to have changed significantly, shifting from specialization in unskilled-labour intensive goods to human capital and R&D intensive products. The United States maintained their specialization in physical capital, human capital and R&D intensive goods. Dalum et al. (1998) examined whether 20 OECD countries were characterised by a high degree of stability of their export specialisation patterns at the country level or not and whether these countries have become more or less specialised over a period of nearly three decades from 1965 to 1992. The results showed that the national specialisation patterns were rather sticky, although there was a tendency for countries to de-specialise in the medium to long term. Hiley (1999) investigated the changes in revealed comparative advantages of Asian countries. The author registered a profound change in the structure of manufacturing, involving the transition from simple consumer goods and resource-based processing activities towards more sophisticated industrial structures. Brasili et al. (2000) analysed the dynamics of trade patterns in the six largest industrialised countries and in eight fast growing Asian economies. For each of these countries the authors investigated the shape of the sectoral distribution of an index of trade specialisation and its evolution over time and found that the advanced countries had a highly persistent trade pattern, whereas the emerging countries showed a rapidly changing trade specialisation. Although emerging countries appeared more specialised than the industrialised countries, both groups showed a tendency toward a reduced polarisation and a more symmetric distribution of the specialisation index. De Benedictis (2005) examined through non-parametric statistical techniques, the Italian export composition and its evolution over three decades starting in the 1970s. The analysis found that several sectors

characterised by comparative disadvantage in the 1980s showed a comparative advantage in the last period of the study. The sectoral composition of exports examined at a high level of disaggregation was found not so similar to that of the new industrialised countries exporting labour-intensive products. More recently, Kim and Kim (2015) investigated the shifts of revealed comparative advantages in manufacturing of the major ASEAN countries for the period 2000-2010 and found that South Korea exported products which were less human capital intensive and more R&D intensive for most of the period. Indonesia, Thailand, and Vietnam were found to have exported products which were less physical (and human) capital intensive and less R&D intensive for the entire period. Malaysia and Philippines exported products which were less physical (and human skilled) capital intensive. Singapore exported products which were more R&D intensive for the entire period. Whang (2017) showed that revealed comparative advantages in manufacturing are positively associated with the rate of decline of the labour share in agriculture. Quantitative experiments indicated that a small difference in a country's comparative advantage can account for a large variation in structural transformation for open economies, which does not require nearly as much differential productivity growth as in closed-economy models.

To broaden the debate on the changing patterns of comparative advantages in manufactured goods, we first carry out a descriptive analysis of the main changes of comparative advantages between 2001 and 2017 for Italy and the other main industrial counties. Afterwards, we perform an econometric analysis of shifts of comparative advantages in 31 manufactured products from technology rich countries towards medium and low technology countries in the framework of the orthodox version (OV) of the product cycle model (PCM) as developed by Hoffmeyer (1958), Freeman (1963), Hufbauer (1966), Hirsch (1965, 1967) and others.


## 2. The theoretical framework

The orthodox version of the PCM identifies the decline over time in the technology of products as the main source of the changes in the patterns of international specialization in manufactures: new products are technology-intensive and technology-rich countries have a comparative advantage in their production; as products grow older their technology-intensity decreases and comparative advantages switch towards countries relatively well-endowed with factors other than highly qualified labour.

The logical structure of the OV of the PCM rests upon two fundamental postulates:

1) at any moment in time technology-rich countries have a comparative advantage in technology-intensive products,

2) the technology-intensity of products decreases as they grow older.

The first postulate is the central prediction of the skill explanation of the pattern of comparative advantage in manufactures at *any moment in time.* To be true, the skill theory is usually formulated in terms of skill-intensities and skill-endowments while the terms technology-intensities and technology-endowments are used here; for our purposes, however, these two couples of concepts seem to be fairly equivalent.

The second postulate is the crucial element of the OV of the PCM, since it allows us to derive from the *static* skill theory a *dynamic* theory explaining the changes over time in the patterns of comparative advantages in manufactures.

From the above two postulates the prediction follows logically that the comparative advantage in each individual product shifts over time towards countries less and less endowed with technological know-how. PCM is then essentially a dynamization of the skill theory, the dynamic agent being the postulate that the technology-intensity of each product decreases as the product grows older.

The proposition that at *any moment in time* technology-rich (or skill-rich) countries have a comparative advantage in technology-intensive (or skill intensive) products has been the subject of quite a large number of empirical analyses, almost always with positive results. The empirical analysis of the proposition that the technology-intensity of products decreases as they grow older has however received relatively slight attention.

### 3. Modelling comparative advantages

The estimation of the impact of a country's technology-endowment upon the comparative advantage in a given manufactured product unquestionably requires the preliminary specification of the 'true' model explaining the pattern of comparative advantages in each single product, *at any moment in time.* To this purpose, we consider the following model specification in line with Aquino (1981):

$$B_{jit} = a_{it} T_{jt}^{e_{it}^T} S_{jt}^{e_{it}^C} \qquad (1)$$

where $B_{ijt}$ is the Balassa index of revealed comparative advantage of country $j$ in product $i$ in year $t$; $T_{jt}$ and $S_{jt}$ measure, respectively, country $j$'s technology-endowment and home market size; $a_{it}$, $e_{it}^T$, $e_{it}^C$ are the parameters of the model.

The analysis is carried out for 23 countries and 31 groups of tradable products in 2001 and 2017. To assume that model (1) is the 'true' model explaining the pattern of comparative advantage in each manufactured product at any moment in time implies that:

1) the pattern of comparative advantages in each product can be satisfactorily explained in terms of country-attributes,
2) the only country-attributes influencing significantly comparative advantage in manufactures are technology-endowments and home market-size;
3) the constant-elasticity specification is the 'true' specification of the model.

These are all strong assumptions and the evaluation of the results must of course be taken with caution. Model (1) however, looks fairly close to the best specification we can choose given the present state of knowledge about the main determinants of comparative advantages in manufactures. The importance of inter-country differences in technology-endowments (or skill endowments) in shaping the pattern of comparative advantage in manufactured products has emerged quite clearly from an impressive amount of researches carried out, among the others, by Levchenko and Zhang (2016); Baldwin (2014; 1979), Vollrath (1991), Hirsch (1974), Keesing (1971) and; scale economies were already emphasized by Adam Smith (1776) in his example of the British pin factory and afterwards by Ohlin (1933) as an important factor of specialization. Ohlin, however, saw them simply as introducing an element of random variability in the pattern of specialization; Drèze (1960) put forward the most insightful suggestion so far about the role of scale economies having a *systematic* role in shaping the pattern of international specialization. He argued that, with scale economies, larger countries have a comparative advantage in products for which international demand is standardized; Hufbauer (1966, 1970) and Katrak (1973) found some empirical support for the more simplistic thesis that larger countries have a comparative advantage in products characterized by larger scale economies.

Some doubts can arise about the theoretical reason for adopting the constant elasticity specification of the model. For example, one could try a parabolic specification in the technology-endowment variable to catch the fact that for medium-technology products the comparative advantage is expected first to increase with the technology endowment of the country, to reach a

maximum for the medium-technology countries, and then to decrease for higher values of the technology-endowment variable. Indeed, a specification of this kind was tried in Aquino (1981), but for most products its explanatory power turned out to be poorer than that of the constant-elasticity specification.

## 4.     Some aspects of international trade patterns

Considering the classification of tradable goods at the two-digits level of the SITC (standard international trade classification), we can notice that just 4 out of 97 classes of products accounted for a little less than 47% of total world trade in 2017: electrical machinery and equipment (14.6%); machinery and mechanical appliances (11.8%); mineral fuels and oils (11.1%); vehicles other than railway or tramway rolling stock (9.1%) (Table A.1, Appendix).

From 2001 to 2017 machinery and mechanical appliances registered a decline of 2.7 percentage points; mineral fuels and oils an increase of 1.1 percentage points; vehicles other than railway or tramway rolling stock a decline of 0.9 percentage points; electrical machinery and equipment an increase of 0.4 percentage points (Table A.1, Appendix).

## 4.1     Main changes in comparative advantages and disadvantages of Italy from 2001 to 2017

From a country perspective,  in 2001, the share of the main four classes of tradable products in Italian exports was less than a third than in world total exports for mineral fuels; about half for electrical machinery; about the same for vehicles other than railway or tramway rolling stock; substantially higher for non-electrical machinery. The simplest measure of comparative advantages or disadvantages of a country in a certain product, proposed by Balassa (1965), is given by the ratio between the share of the product in that country's total exports and the share of the same product in total world export, usually multiplied by 100. The greater the value of the index above 100 the stronger is the comparative advantage, the smaller the value below 100 the stronger is the comparative disadvantage.

According to this index (Table A.1, Appendix[4]), Italy had in 2001 a strong comparative disadvantage in electrical machinery and a substantial comparative advantage in non electrical

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[4] The last column of Table A.1 reports the percentage variation of the Balassa index in each class of products from 2001 to 2017.

machinery; from 2001 to 2017 Italian exports registered a substantial increase both for the disadvantage in electrical machinery (from 52 to 41) and for the advantage in non-electrical machinery (from 139 to 167). For vehicles other than railway there was a shift from a slight comparative disadvantage (90) to a slight advantage (106).

Considering the other products with a share in Italian total exports greater than 1%, from 2001 to 2017 Italy registered a substantial decline in comparative advantages for furniture (-39.2%, from 322 to 196), footwear (-31.5%, from 402 to 275), ceramic products (-27.6%, from 496 to 359), articles of stone (-44.2%, from 380 to 212), articles of apparel and clothing accessories, knitted or crocheted (-16.3%, from 161 to 135). Substantial increases were registered for pharmaceutical products (+23.8%, from 136 to 168), iron and steel (+30.9%, from 95 to 124), articles of leather (+76.5%, from 232 to 409), articles of paper (+53.5%, from 100 to 153).

## 4.2 Main changes of comparative advantages and disadvantages of the other countries from 2001 to 2017

On the base of the Balassa index, we have computed the comparative advantages of other 22 industrial and developing countries in 97 groups of tradable products from 2001 to 2017. We have considered the following countries: Germany, France, the United Kingdom, Spain, Belgium, Czech Republic, Hungary, Ireland, India, the Netherlands, Poland, Japan, Korea Republic, China, the United States Turkey, Bangladesh, the Philippines, Vietnam, Indonesia, Portugal and Greece. However, in order to save space, Table A.2 in the Appendix illustrates the comparative advantages of Germany, France, the United Kingdom, Spain, China and the United States[5] and their percentage variation from 2001 to 2017.

The country that has registered the strongest changes in comparative advantages from 2001 to 2017 seems to have been China. Declines in China's comparative advantages have been registered in particular for articles of apparel and clothing accessories, both not knitted or crocheted (-41.4%, from 425 to 249) and knitted or crocheted (-34.6%, from 378 to 247);  toys and games (-23.4%, from 482 to 369); footwear (-46.9%, from 492 to 261); articles of leather (-55.4%, from 646 to 288). Strong increases in comparative advantages were registered by China in machinery, both electrical (from 136 to 181) and non-electrical (from 87 to 142); furniture (from 225 to 285); organic chemicals (from 71 to 101); iron and steel (from 46 to 90).

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[5] The comparative advantages of Belgium, Czech Republic, Hungary, Ireland, Japan, Korea Rep., Netherlands and Poland are available upon request.

The US experienced from 2001 to 2017 a decline of comparative advantages in machinery, both on non-electrical (from 136 to 110) and, even more, electrical (from 118 to 77); optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments (from 192 to 164). Comparative advantages of the US strengthened in aircrafts (+42.9%, from 319 to 456), while the comparative disadvantage in mineral fuels decreased (from 18 to 80).

Germany registered an increase in its comparative advantages in vehicles other than railway or tramway rolling stock, and parts and accessories thereof (+13.5%, from 192 to 218) and in machinery, mechanical appliances, nuclear reactors, boilers, parts thereof (+12.6%, from 127 to 143), while it increased its comparative disadvantage in electrical machinery (from 83 to 71).

The UK increased its comparative advantage in vehicles other than railway or tramway (from 85 to 148), in aircrafts (+45.3%, from 172 to 250) and in beverages (+13.9%, from 288 to 328); while she decreased its comparative advantage in natural or cultured pearls, precious or semi-precious stones (-23.8%, from 264 to 201); in electrical machinery (from 109 to 44) and in organic chemicals (from 140 to 101).

France increased its comparative advantage in aircrafts (+71.2%, from 309 to 529), beverages (+18.8%, from 446 to 530), perfumery, cosmetic or toilet preparations (+7.1%, from 435 to 466), articles of leather (+102.5%, from 158 to 320). France decreased its comparative advantage in vehicles other than railway or tramway (-17.4%, from 144 to 119) and increased its comparative disadvantage in electrical machinery and equipment and parts thereof, sound recorders and reproducers, television receivers (from 82 to 55).

Spain registered a relatively modest increase (+6.7%) in its strong comparative advantages in sugars and sugar confectionery (from 956 to 1020) and a great increase (+140.7%%, from 151 to 363) in its comparative advantage in coffee, tea, mate and spices. Spain increased her comparative disadvantage in explosives and pyrotechnic products (from 20 to 9), in vegetable plaiting materials (from 14 to 9), in lac, gums, resins and other vegetable saps and extracts (from 60 to 37), in fur skins and artificial fur (from 50 to 23).

## 5.     An econometric analysis of comparative advantage dynamics

In this section we present the results of our estimates of the technology-elasticities and the scale-elasticities of model (1). A significantly positive (negative) value of $e_{it}^T$ would identify the products in which technology-rich (technology-poor) countries have a comparative advantage. Analogously, a significantly positive value of the scale-elasticity $e_{it}^M$ identifies the products in

which the countries with a larger home market have a comparative advantage. Hence, the main shifts of comparative advantage can be revealed by the behaviour of the technology-elasticity as shown in Figure A.1 Appendix (continuous lines), taken from Aquino (1981). For example, a decline over time of $e_{it}^{T}$ from positive towards negative values would reflect a shift of comparative advantage in product $i$ towards countries with a lower technology-endowment.

## 5.1 Comparative advantage shifts and technology endowments in 2001 and 2017

For our comparative advantage equation, we use the Balassa index computed for each country in a specific product as dependent variable, and i) the size of the home market measured on the basis of total GDP in US dollars at current prices and exchange rates and ii) a technology endowment variable[6] proxied by GDP per capita as explanatory variables. Data on GDP have been taken from Datastream, trade data necessary to construct the Balassa indices have been collected from Intracen database (ITC and UN COMTRADE statistics).

The values of GDP per capita in 2001 and 2017 are given in Table 1. The sample includes 23 countries whose GDP per capita ranged in 2001 from a minimum of 403 dollars for Bangladesh and Vietnam to a maximum of 37274 dollars for the US. Excluding the US, other countries with a high GDP per capita are Japan (33846 dollars), Ireland (28227 dollars), the United Kingdom (27428 dollars), the Netherlands (26584 dollars), Germany (23687 dollars), Belgium (23122 dollars), France (22434 dollars), Italy (20401 dollars). Countries with a very low GDP per capita in 2001 are Bangladesh and Vietnam (403 dollars), India (447 dollars), Indonesia (748 dollars), Philippines (957 dollars), China (1053 dollars). Countries with low to medium values of GDP per capita are Turkey (3120 dollars), Poland (4981 dollars), Hungary (5283 dollars), Czech Republic (6609 dollars), Korea Rep (11253 dollars), Portugal (11729 dollars), Greece (12538 dollars) and Spain (15324 dollars).

A very strong convergence of GDP per capita has occurred over the period from 2001 to 2017. For most of the countries with the highest GDP per capita in 2001 the increase in GDP per capita has been smaller than two-fold, while the countries with the lowest GDP per capita in 2001 have registered increases substantially greater than three-fold, with a maximum of an 8-fold increase for China. As a consequence, the ratio of the maximum to the minimum value of GDP per capita has decreased from 93 in 2001 to 36 in 2017.

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[6] Other measures of technology-endowments could be the past expenditures on R&D activities, the number of innovations per capita and the total wage cost per working hour. However, the reliability of this kind of data is rather limited.

**Table 1 GDP per capita in US dollars, current prices and exchange rates**

| | 2001 | 2017 | 2017/2001 |
|---|---|---|---|
| Belgium | 23122 | 43324 | 1.9 |
| **China** | **1053** | **8827** | 8.4 |
| Czech | 6609 | 20368 | 3.1 |
| France | 22434 | 38477 | 1.7 |
| Germany | 23687 | 44470 | 1.9 |
| Hungary | 5283 | 14225 | 2.7 |
| Ireland | 28227 | 69331 | 2.5 |
| **Italy** | **20401** | **31953** | 1.6 |
| Japan | 33846 | 38428 | 1.1 |
| Korea | 11253 | 29743 | 2.6 |
| Netherlands | 26584 | 48223 | 1.8 |
| Poland | 4981 | 13812 | 2.8 |
| Spain | 15324 | 28157 | 1.8 |
| **UK** | **27428** | **39720** | 1.4 |
| **USA** | **37274** | **59532** | 1.6 |
| India | 447 | 1940 | 4.3 |
| Turkey | 3120 | 10541 | 3.4 |
| **Bangladesh** | **403** | **1517** | 3.8 |
| Philippines | 957 | 2989 | 3.1 |
| Indonesia | 748 | 3847 | 5.1 |
| Vietnam | 403 | 2343 | 5.8 |
| Portugal | 11729 | 21136 | 1.8 |
| Greece | 12538 | 18613 | 1.5 |
| MAX/MIN | 93 | 36 | |

*Source: own elaborations*

Table 2 reports the estimation results of model (1) for 2001 and 2017 for a group of selected products.

The coefficient of the variable GDP per capita turned out to be significantly different from zero for several product categories. However, it is useful to clarify that "… explaining the pattern of specialization in each group of products at any moment in time, does *not* mean that the estimated coefficients can be expected to be statistically significant for all industries and all years. … It does imply instead that, at any moment in time, there are some products (high-technology products) whose pattern of comparative advantage is significantly and positively related to technology-endowments, some products (low-technology products) whose pattern of specialization is significantly and negatively related to technology-endowments, and some other products (medium-technology products) whose pattern of specialization is not related in a statistically significant way

to technology-endowments" (Aquino, 1981, p.47). The same concept applies to scale-elasticities estimates.

On the basis of our econometric results, high-technology products – identified by significantly positive estimates of the technology-elasticity in both 2001 and 2017- are machinery, mechanical appliances; vehicles other than railway or tramway rolling stock; pharmaceutical products; plastics; articles of iron or steel; furniture; optical, photographic, cinematographic measuring; organic chemicals; ceramic products; aircraft, spacecraft, and parts thereof; fur-skins and artificial fur.

Low-technology products – identified by significantly negative estimates of the technology-elasticity in both 2001 and 2017 - are articles of leather, saddlery and harness; articles of apparel and clothing accessories knitted; fish, crustaceans, molluscs;

The statistically not significant estimates would identify medium-technology products which, on the basis of our estimation results, would be articles of apparel and clothing accessories not knitted; preparations of cereals, flour, starch or milk; glass and glassware; man-made filaments; strip and the like of man-made textile materials; Tools, implements, cutlery, spoons and forks, of base metal; toys, games and sports requisites; knitted or crocheted fabrics; man-made staple fibres; nickel and zinc.

For the following products, the significance of technology-elasticity has increased from 2001 to 2017: electrical machinery and equipment; iron and steel; miscellaneous chemical products; dairy produce; birds' eggs; honey; edible products of animal origin; clocks and watches; railway or tramway locomotives, rolling stock, suggesting an increase in the technology content of these products.

**Table 2 OLS estimates of the technology-elasticity and the scale-elasticity**

| HSN Code | | 2001 | | 2017 | |
|---|---|---|---|---|---|
| | | GDP per capita | GDP | GDP per capita | GDP |
| '84 | Machinery, mechanical appliances | 0.406*** (0.130) | 0.006 (0.134) | 0.717*** (0.189) | 0.042 (0.160) |
| '87 | Vehicles other than railway or tramway rolling stock | 0.642*** (0.169) | -0.028 (0.174) | 0.718*** (0.200) | 0.102 (0.170) |
| '85 | Electrical machinery and equipment | 0.243 (0.195) | 0.012 (0.202) | 0.408* (0.232) | 0.011 (0.197) |
| '30 | Pharmaceutical products | 0.442** (0.207) | 0.328 (0.214) | 0.729*** (0.236) | 0.364* (0.200) |
| '39 | Plastics | 0.442** (0.207) | 0.328 (0.214) | 0.619*** (0.117) | 0.006 (0.099) |
| '73 | Articles of iron or steel | 0.350** (0.147) | 0.047 (0.152) | 0.494** (0.195) | 0.065 (0.165) |
| '94 | Furniture | 0.601** (0.214) | -0.224 (0.221) | 0.485*** (0.157) | -0.163 (0.133) |

| | | | | | |
|---|---|---|---|---|---|
| '72 | Iron and steel | 0.308 (0.204) | 0.134 (0.211) | 0.445** (0.184) | 0.118 (0.156) |
| '62 | Articles of apparel and clothing accessories not knitted | -0.328 (0.193) | -0.010 (0.199) | -0.270 (0.253) | 0.030 (0.214) |
| '90 | Optical, photographic, cinematographic, measuring… | 0.362* (0.191) | -0.037 (0.197) | 0.504** (0.209) | -0.085 (0.177) |
| '42 | Articles of leather; saddlery and harness … | -0.508*** (0.176) | 0.451** (0.182) | -0.400** (0.179) | 0.206 (0.152) |
| '61 | Articles of apparel and clothing accessories knitted | -0.250* (0.140) | -0.002 (0.144) | -0.323** (0.152) | 0.050 (0.129) |
| '29 | Organic chemicals | 0.488* (0.272) | 0.224 (0.281) | 0.607** (0.257) | 0.295 (0.218) |
| '69 | Ceramic products | 0.243** (0.119) | -0.254** (0.123) | 0.278** (0.130) | -0.029 (0.111) |
| '38 | Miscellaneous chemical products | 0.232 (0.152) | 0.239 (0.157) | 0.331* (0.188) | 0.258 (0.160) |
| '19 | Preparations of cereals, flour, starch or milk | 0.200 (0.154) | 0.105 (0.159) | 0.265 (0.178) | -0.015 (0.151) |
| '89 | Ships, boats and floating structures | 0.368* (0.191) | 0.173 (0.197) | -0.031 (0.257) | 0.291 (0.218) |
| '88 | Aircraft, spacecraft, and parts thereof | 0.627*** (0.200) | 0.184 (0.207) | 0.533** (0.224) | 0.228 (0.190) |
| '04 | Dairy produce; birds' eggs; honey; edible products of animal origin | 0.236 (0.228) | 0.140 (0.235) | 0.831*** (0.202) | 0.024 (0.171) |
| '70 | Glass and glassware | 0.220 (0.203) | 0.126 (0.210) | 0.268 (0.195) | -0.012 (0.165) |
| '54 | Man-made filaments; strip and the like of man-made textile materials | 0.220 (0.203) | 0.126 (0.210) | 0.268 (0.195) | -0.012 (0.165) |
| '82 | Tools, implements, cutlery, spoons and forks, of base metal | 0.223 (0.179) | 0.075 (0.185) | 0.292 (0.199) | 0.150 (0.169) |
| '95 | Toys, games and sports requisites | -0.065 (0.183) | 0.264 (0.189) | 0.126 (0.199) | 0.153 (0.169) |
| '91 | Clocks and watches | 0.312 (0.296) | 0.427 (0.305) | 0.809*** (0.235) | 0.301 (0.199) |
| '60 | Knitted or crocheted fabrics | 0.058 (0.176) | 0.001 (0.182) | 0.204 (0.244) | -0.041 (0.207) |
| '86 | Railway or tramway locomotives, rolling stock ... | 0.412 (0.303) | 0.333 (0.313) | 0.939*** (0.244) | 0.364* (0.207) |
| '55 | Man-made staple fibres | -0.173 (0.164) | 0.149 (0.169) | -0.238 (0.187) | 0.159 (0.158) |
| '43 | Furskins and artificial fur | 0.948*** (0.290) | -0.505 (0.299) | 0.621** (0.290) | -0.348 (0.246) |
| '03 | Fish, crustaceans, molluscs | -0.401* (0.201) | -0.229 (0.208) | -0.491** (0.186) | -0.051 (0.157) |
| '75 | Nickel | -0.009 (0.355) | 0.698* (0.367) | -0.095 (0.374) | 0.093 (0.318) |
| '79 | Zinc | 0.484 (0.312) | 0.027 (0.322) | 0.033 (0.268) | 0.169 (0.227) |

*Note*: standard errors in parenthesis; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

It is interesting to analyse the main shifts of comparative advantages revealed by the technology-elasticity behaviour from 2001 to 2017. The empirical evidence suggests an increasing

technology-elasticity[7] for some products and a decreasing technology-elasticity for other products (Table 3).

**Table 3 Changes of technology-elasticities from 2001 to 2017**

| |
|---|
| ***Increasing technology-elasticity*** |
| Machinery, mechanical appliances |
| Vehicles other than railway or tramway rolling stock |
| Electrical machinery and equipment |
| Pharmaceutical products |
| Plastics |
| Articles of iron or steel |
| Iron and steel |
| Optical, photographic, cinematographic, measuring… |
| Articles of leather; saddlery and harness … |
| Organic chemicals |
| Ceramic products |
| Miscellaneous chemical products |
| Preparations of cereals, flour, starch or milk |
| Dairy produce; birds' eggs; honey; edible products of animal origin |
| Glass and glassware |
| Man-made filaments; strip and the like of man-made textile materials |
| Tools, implements, cutlery, spoons and forks, of base metal |
| Toys, games and sports requisites |
| Clocks and watches |
| Knitted or crocheted fabrics |
| Railway or tramway locomotives, rolling stock  ... |
| ***Decreasing technology-elasticity*** |
| Furniture |
| Articles of apparel and clothing accessories knitted |
| Ships, boats and floating structures |
| Aircraft, spacecraft, and parts thereof |
| Man-made staple fibres |
| Furskins and artificial fur |
| Fish, crustaceans, molluscs |
| Nickel |
| Zinc |

*Source: own elaborations*

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[7] An increase in the technology elasticity is here represented mainly by an increase in its statistical significance rather than by an increase in its value.

**Table 4 Classification of tradable products, according to the value and the dynamics of the technology elasticity from 2001 to 2017**

| |
|---|
| One product with a positive technology elasticity, substantially decreased from 2001 to 2017:<br>  ▪  Ships, boats and floating structures |
| Two products with a significantly positive technology elasticity, substantially decreased from 2001 to 2017:<br>  ▪  Aircraft, spacecraft, and parts thereof<br>  ▪  Furskins and artificial fur |
| Ten products with a positive technology elasticity, substantially increased from 2001 to 2017:<br>  ▪  Electrical machinery and equipment<br>  ▪  Pharmaceutical products<br>  ▪  Plastics<br>  ▪  Furniture<br>  ▪  Iron and steel<br>  ▪  Optical, photographic, cinematographic, measuring…<br>  ▪  Miscellaneous chemical products<br>  ▪  Dairy produce; birds' eggs; honey; edible products of animal origin<br>  ▪  Clocks and watches<br>  ▪  Railway or tramway locomotives, rolling stock ... |
| Two products with a significantly positive technology elasticity, slightly increased from 2001 to 2017:<br>  ▪  Machinery, mechanical appliances<br>  ▪  Organic chemicals |
| Three products with a significantly positive technology elasticity, substantial unchanged from 2001 to 2017:<br>  ▪  Vehicles other than railway or tramway rolling stock<br>  ▪  Articles of iron or steel<br>  ▪  Ceramic products |
| Four products with a slightly positive technology elasticity, substantial unchanged from 2001 to 2017:<br>  ▪  Preparations of cereals, flour, starch or milk<br>  ▪  Glass and glassware<br>  ▪  Man-made filaments; strip and the like of man-made textile materials<br>  ▪  Tools, implements, cutlery, spoons and forks, of base metal |
| One product with a slightly negative technology elasticity, substantial unchanged from 2001 to 2017:<br>  ▪  Man-made staple fibres |
| One product with a negative technology elasticity, substantial unchanged from 2001 to 2017:<br>  ▪  Articles of apparel and clothing accessories not knitted |
| Two products with a significantly negative technology elasticity, substantially increased from 2001 to 2017:<br>  ▪  Articles of apparel and clothing accessories knitted<br>  ▪  Fish, crustaceans, molluscs |
| One product with a significantly negative technology elasticity, decreased from 2001 to 2017:<br>  ▪  Articles of leather; saddlery and harness |
| Four products with a zero technology elasticity, unchanged from 2001 to 2017:<br>  ▪  Toys, games and sports requisites<br>  ▪  Knitted or crocheted fabrics<br>  ▪  Nickel<br>  ▪  Zinc |

*Source: own elaborations*

An increase over time of the technology-elasticity would reflect a shift of comparative advantage in each product towards countries with a higher technology-endowment. A decline over time of the technology-elasticity would reflect a shift of comparative advantage towards countries with a lower technology-endowment.

There are three products for which the sign of GDP per capita has a negative and significant value, both in 2001 and in 2017: articles of leather, saddlery and harness; apparel and clothing accessories knitted; fish, crustaceans and molluscs. This finding would indicate that a raise in technology endowment by 1% would reduce the specialization in these products by approximately 0.4-0.5%, 0.2-0.3% and 0.4-0.5%, respectively. Articles of leather, saddlery and harness, however, show an increasing technology-elasticity over the 2001-2017 period.

More specifically, on the basis of the results of the econometric analysis, the main tradable products can be classified as reported in Tables 3 and 4.

With reference to scale-elasticities, a significantly positive value identifies the product in which the countries with a larger home market have a comparative advantage. The results show that the country market-size does not have a significant influence on comparative advantages and disadvantages for most products. Indeed, the scale-elasticity turns out to be significantly positive only for pharmaceutical products and railway or tramway locomotives in 2017, articles of leather and nickel in 2001.

The scale-elasticity is significantly negative only for ceramic products in 2001, indicating that countries with a larger home market have a comparative disadvantage in these products, while it is not significant for the remaining industries.

According to Hufbauer (1970) and Katrak (1973), a significantly positive scale-elasticity would identify a product characterized by relatively larger scale economies. According to Drèze (1960), instead, this would identify a product which not only has relatively larger scale economies, but is also characterized by a relatively low degree of standardization of international demand, i.e. a product for which only the countries with a larger home market can take the full benefits of scale economies.

## 6.     Conclusions

The present study has examined the main changes in the patterns of comparative advantages in manufactures from 2001 to 2017. The results indicate that there was a significant reduction in the international technological endowment differences across countries. The technology endowment, the main explanatory variable of comparative advantages in manufactures, has been measured by GDP per capita. Particularly strong has been the convergence of China towards the technology level of the main industrial countries. The ratio of GDP per capita of China to the GDP per capita of the US increased from 0.03 in 2001 to 0.15 in 2017: a five-fold increase in less than 20 years! A strong

convergence was also registered, in decreasing order, by Vietnam (3.6-fold), Indonesia (3.2-fold), India (2.7-fold), Turkey (2.1-fold), Philippines (1.9-fold), Czech Republic (1.9-fold), Poland (1.7. - fold) and Hungary (1.7-fold).

The results regarding the behaviour of the technology elasticity have been rather surprising. For most of the products considered the results of the econometric analysis have shown increases of the technology elasticities, suggesting a shift over time of comparative advantages towards technologically more advanced countries, i.e. a reversal of the pattern detected for past periods. This stems most likely from the fact that current international specialization on the lines of comparative advantages takes place more and more at the level of different productive phases of increasingly complex products and productive processes (international fragmentation of production) rather than at the final-product level. The main policy implication of this result seems to be that the effects of tariffs on imports are becoming more and more controversial. For example, given that a substantial share of total cost of many products exported by the US is represented by parts or components produced in China and/or Vietnam, a tariff on the US imports from China and/or Vietnam can hurt significantly the competitiveness of American exports.

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**Figure A.1 Changes over time of technology-elasticities, 1962-1974**
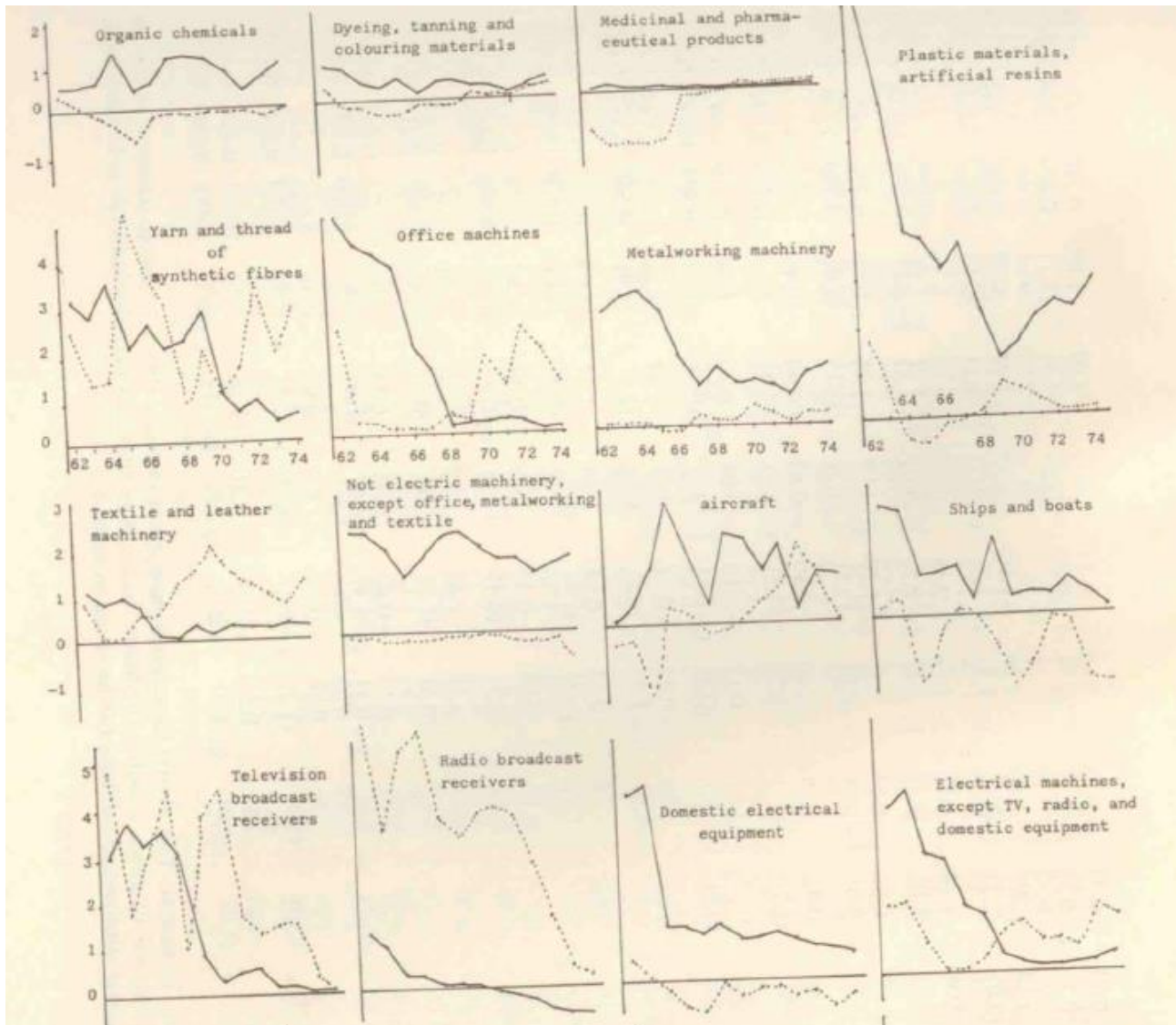


*Source*: Aquino (1981)

**Table A.1 World Export Market Share and Italy's Comparative advantages in 2001 and 2017**

| Code | Product label | Exported value in 2001 $US | Exported value in 2017 $US | ITALY'S MARKET SHARES | | | WORLD MARKET SHARES | | | ITALY'S COMP. ADVANTAGES | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2001 | 2017 | 2001-2017 | 2001 | 2017 | 2001-2017 | 2001 | 2017 | 2001-2017 | Δ% 01-17 |
| 'TOT. | All products | 244252016 | 503053928 | 100.00 | 100.00 | 0 | 100 | 100 | 0 | 100 | 100 | 0 | 0 |
| '84 | Machinery. mechanical appliances | 49481412 | 99474833 | 20.26 | 19.77 | -0.48 | 14.55 | 11.84 | -2.71 | 139 | 167 | 28 | 19.9 |
| '87 | Vehicles other than railway or tramway rolling stock | 19838649 | 43701266 | 8.12 | 8.69 | 0.56 | 9.06 | 8.19 | -0.87 | 90 | 106 | 16 | 18.3 |
| '85 | Electrical machinery and equipment | 17857330 | 30116915 | 7.31 | 5.99 | -1.32 | 14.19 | 14.59 | 0.40 | 52 | 41 | -10 | -20.4 |
| '30 | Pharmaceutical products | 6346637 | 25686968 | 2.60 | 5.11 | 2.51 | 1.92 | 3.04 | 1.12 | 136 | 168 | 32 | 23.8 |
| '39 | Plastics | 9125992 | 20561454 | 3.74 | 4.09 | 0.35 | 3.08 | 3.38 | 0.31 | 121 | 121 | -1 | -0.5 |
| '73 | Articles of iron or steel | 7458576 | 17496054 | 3.05 | 3.48 | 0.42 | 1.47 | 1.61 | 0.14 | 208 | 216 | 8 | 4.0 |
| '27 | Mineral fuels and oils | 4667018 | 16262839 | 1.91 | 3.23 | 1.32 | 10.00 | 11.12 | 1.11 | 19 | 29 | 10 | 52.3 |
| '94 | Furniture | 9922840 | 13655145 | 4.06 | 2.71 | -1.35 | 1.26 | 1.38 | 0.13 | 322 | 196 | -126 | -39.2 |
| '72 | Iron and steel | 4249606 | 13204024 | 1.74 | 2.62 | 0.88 | 1.83 | 2.11 | 0.28 | 95 | 124 | 29 | 30.9 |
| '62 | Articles of apparel and clothing accessories | 7898735 | 12612996 | 3.23 | 2.51 | -0.73 | 1.68 | 1.30 | -0.38 | 193 | 193 | 0 | 0.0 |
| '90 | Optical Photographic Cinematographic. .. | 5126989 | 12438012 | 2.10 | 2.47 | 0.37 | 3.16 | 3.28 | 0.13 | 66 | 75 | 9 | 13.2 |
| '71 | Natural or cultured pearls. precious stones ... | 5339225 | 12145684 | 2.19 | 2.41 | 0.23 | 1.94 | 3.62 | 1.67 | 112 | 67 | -46 | -40.7 |
| '64 | Footwear. gaiters and the like | 7572451 | 11315309 | 3.10 | 2.25 | -0.85 | 0.77 | 0.82 | 0.05 | 402 | 275 | -126 | -31.5 |
| '22 | Beverages. spirits and vinegar | 3251159 | 9620609 | 1.33 | 1.91 | 0.58 | 0.60 | 0.65 | 0.05 | 221 | 292 | 71 | 32.2 |
| '42 | Articles of leather; saddlery and harness … | 2303158 | 9176852 | 0.94 | 1.82 | 0.88 | 0.41 | 0.45 | 0.04 | 232 | 409 | 177 | 76.5 |
| '61 | Articles of apparel and clothing accessories | 5273719 | 8717723 | 2.16 | 1.73 | -0.43 | 1.34 | 1.28 | -0.05 | 161 | 135 | -26 | -16.3 |
| '29 | Organic chemicals | 4084769 | 7234967 | 1.67 | 1.44 | -0.23 | 2.42 | 2.17 | -0.26 | 69 | 66 | -3 | -3.8 |
| '48 | Paper and paperboard | 3981521 | 7079665 | 1.63 | 1.41 | -0.22 | 1.63 | 0.92 | -0.72 | 100 | 153 | 53 | 53.5 |
| '76 | Aluminium and articles thereof | 2810671 | 6401157 | 1.15 | 1.27 | 0.12 | 1.04 | 1.01 | -0.03 | 111 | 127 | 16 | 14.3 |
| '33 | Essential oils ; perfumery. cosmetic… | 1579136 | 5513092 | 0.65 | 1.10 | 0.45 | 0.56 | 0.73 | 0.17 | 116 | 151 | 34 | 29.6 |
| '69 | Ceramic products | 3917602 | 5444846 | 1.60 | 1.08 | -0.52 | 0.32 | 0.30 | -0.02 | 496 | 359 | -137 | -27.6 |
| '38 | Miscellaneous chemical products | 2026452 | 5267206 | 0.83 | 1.05 | 0.22 | 0.92 | 1.07 | 0.15 | 90 | 98 | 7 | 8.2 |
| '19 | Preparations of cereals. flour. starch or milk | 1897437 | 5218233 | 0.78 | 1.04 | 0.26 | 0.28 | 0.40 | 0.12 | 274 | 258 | -16 | -5.9 |
| '40 | Rubber and articles thereof | 2373486 | 4855912 | 0.97 | 0.97 | -0.01 | 0.89 | 1.05 | 0.16 | 109 | 92 | -17 | -15.6 |
| '89 | Ships. boats and floating structures | 2135636 | 4795817 | 0.87 | 0.95 | 0.08 | 0.74 | 0.77 | 0.03 | 118 | 124 | 6 | 4.8 |
| '99 | Commodities not elsewhere specified | 3991992 | 4738865 | 1.63 | 0.94 | -0.69 | 2.99 | 1.82 | -1.17 | 55 | 52 | -3 | -5.5 |
| '88 | Aircraft. spacecraft. and parts thereof | 2752800 | 4561914 | 1.13 | 0.91 | -0.22 | 1.92 | 1.86 | -0.06 | 59 | 49 | -10 | -16.8 |
| '41 | Raw hides and skins (other than fur skins) and leather | 3871352 | 4419964 | 1.58 | 0.88 | -0.71 | 0.38 | 0.15 | -0.23 | 421 | 596 | 175 | 41.6 |
| '08 | Edible fruit and nuts | 1974499 | 4162832 | 0.81 | 0.83 | 0.02 | 0.47 | 0.66 | 0.18 | 170 | 126 | -45 | -26.3 |
| '74 | Copper and articles thereof | 1152644 | 3880481 | 0.47 | 0.77 | 0.30 | 0.59 | 0.83 | 0.25 | 81 | 93 | 12 | 14.8 |
| '20 | Preparations of vegetables. fruit and nuts | 1579689 | 3636119 | 0.65 | 0.72 | 0.08 | 0.33 | 0.35 | 0.02 | 198 | 206 | 8 | 3.8 |
| '83 | Miscellaneous articles of base metal | 2055631 | 3560761 | 0.84 | 0.71 | -0.13 | 0.37 | 0.38 | 0.01 | 229 | 186 | -43 | -18.7 |
| '04 | Dairy produce; birds' eggs; honey; edible products of animal origin | 969436 | 3504399 | 0.40 | 0.70 | 0.30 | 0.48 | 0.48 | 0.00 | 82 | 144 | 61 | 74.8 |
| '32 | Tanning or dyeing extracts; dyes. pigments  ... | 1348541 | 3213348 | 0.55 | 0.64 | 0.09 | 0.57 | 0.45 | -0.11 | 98 | 141 | 43 | 44.4 |
| '68 | Articles of stone. plaster. cement or similar materials | 2497867 | 3106668 | 1.02 | 0.62 | -0.41 | 0.27 | 0.29 | 0.02 | 380 | 212 | -168 | -44.2 |
| '70 | Glass and glassware | 1743374 | 2579865 | 0.71 | 0.51 | -0.20 | 0.50 | 0.41 | -0.09 | 143 | 126 | -17 | -11.7 |
| '21 | Miscellaneous edible preparations | 638166 | 2549189 | 0.26 | 0.51 | 0.25 | 0.29 | 0.39 | 0.11 | 91 | 129 | 38 | 41.8 |
| '02 | Meat and edible meat offal | 861517 | 2441758 | 0.35 | 0.49 | 0.13 | 0.67 | 0.71 | 0.04 | 53 | 68 | 16 | 29.6 |
| '15 | Animal or vegetable fats and oils | 909588 | 2396935 | 0.37 | 0.48 | 0.10 | 0.31 | 0.56 | 0.25 | 120 | 84 | -35 | -29.4 |

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| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| '51 | Wool. fine or coarse animal hair | 2584430 | 2236340 | 1.06 | 0.44 | -0.61 | 0.19 | 0.08 | -0.11 | 559 | 592 | 33 | 6.0 |
| '34 | Soap. washing preparations | 968395 | 2232399 | 0.40 | 0.44 | 0.05 | 0.30 | 0.33 | 0.03 | 133 | 133 | 1 | 0.4 |
| '44 | Wood and articles of wood | 1283901 | 2060946 | 0.53 | 0.41 | -0.12 | 1.05 | 0.78 | -0.27 | 50 | 53 | 3 | 5.5 |
| '18 | Cocoa and cocoa preparations | 324112 | 2036510 | 0.13 | 0.40 | 0.27 | 0.20 | 0.28 | 0.08 | 68 | 145 | 77 | 112.7 |
| '54 | Man-made filaments; strip and the like of man-made textile materials | 1823701 | 2003434 | 0.75 | 0.40 | -0.35 | 0.48 | 0.27 | -0.21 | 156 | 150 | -6 | -4.1 |
| '82 | Tools. implements. cutlery. spoons and forks. of base metal | 1055304 | 1910633 | 0.43 | 0.38 | -0.05 | 0.43 | 0.37 | -0.05 | 101 | 102 | 1 | 0.8 |
| '95 | Toys. games and sports requisites | 1145084 | 1872254 | 0.47 | 0.37 | -0.10 | 0.71 | 0.66 | -0.05 | 66 | 56 | -10 | -14.7 |
| '07 | Edible vegetables and certain roots and tubers | 819441 | 1732553 | 0.34 | 0.34 | 0.01 | 0.37 | 0.41 | 0.04 | 92 | 84 | -8 | -8.6 |
| '09 | Coffee. tea. mate and spices | 302520 | 1693462 | 0.12 | 0.34 | 0.21 | 0.20 | 0.30 | 0.09 | 61 | 114 | 53 | 86.6 |
| '56 | Wadding. felt and nonwovens; special yarns; twine cordage ropes… | 882558 | 1646753 | 0.36 | 0.33 | -0.03 | 0.15 | 0.14 | -0.01 | 237 | 228 | -9 | -3.9 |
| '28 | Inorganic chemicals; organic or inorganic compounds of precious met. | 943584 | 1641670 | 0.39 | 0.33 | -0.06 | 0.67 | 0.64 | -0.03 | 58 | 51 | -7 | -11.4 |
| '96 | Miscellaneous manufactured articles | 705231 | 1530895 | 0.29 | 0.30 | 0.02 | 0.22 | 0.29 | 0.07 | 130 | 104 | -26 | -20.0 |
| '52 | Cotton | 2474982 | 1432594 | 1.01 | 0.28 | -0.73 | 0.60 | 0.32 | -0.28 | 169 | 89 | -79 | -47.1 |
| '91 | Clocks and watches | 456306 | 1347079 | 0.19 | 0.27 | 0.08 | 0.31 | 0.28 | -0.02 | 61 | 94 | 34 | 55.0 |
| '16 | Preparations of meat or fish | 334307 | 1208236 | 0.14 | 0.24 | 0.10 | 0.26 | 0.28 | 0.02 | 53 | 87 | 33 | 62.5 |
| '49 | Printed books. newspapers. pictures … | 1291807 | 1188373 | 0.53 | 0.24 | -0.29 | 0.42 | 0.21 | -0.21 | 126 | 113 | -13 | -10.3 |
| '60 | Knitted or crocheted fabrics | 838306 | 1100212 | 0.34 | 0.22 | -0.12 | 0.24 | 0.20 | -0.04 | 142 | 111 | -32 | -22.2 |
| '59 | Impregnated. coated. covered or laminated textile fabrics; | 794649 | 1079344 | 0.33 | 0.21 | -0.11 | 0.20 | 0.14 | -0.06 | 159 | 149 | -10 | -6.6 |
| '25 | Salt; earths and stone; plastering materials. lime and cement | 485171 | 1072534 | 0.20 | 0.21 | 0.01 | 0.27 | 0.24 | -0.03 | 73 | 89 | 16 | 22.1 |
| '24 | Tobacco and tobacco substitutes | 202342 | 1071438 | 0.08 | 0.21 | 0.13 | 0.34 | 0.24 | -0.11 | 24 | 90 | 66 | 271.9 |
| '86 | Railway or tramway locomotives. rolling stock ... | 459228 | 1001762 | 0.19 | 0.20 | 0.01 | 0.19 | 0.21 | 0.02 | 97 | 95 | -2 | -2.6 |
| '23 | Residues and waste from the food industries | 206993 | 989991 | 0.08 | 0.20 | 0.11 | 0.34 | 0.40 | 0.06 | 25 | 49 | 25 | 99.4 |
| '55 | Man-made staple fibres | 1383893 | 989422 | 0.57 | 0.20 | -0.37 | 0.37 | 0.21 | -0.16 | 153 | 96 | -58 | -37.6 |
| '06 | Live trees and other plants; bulbs. roots and the like | 444756 | 939416 | 0.18 | 0.19 | 0.00 | 0.14 | 0.12 | -0.02 | 131 | 156 | 26 | 19.5 |
| '10 | Cereals | 347799 | 850604 | 0.14 | 0.17 | 0.03 | 0.56 | 0.58 | 0.02 | 25 | 29 | 3 | 13.7 |
| '63 | Other made-up textile articles | 542094 | 839609 | 0.22 | 0.17 | -0.06 | 0.31 | 0.36 | 0.05 | 72 | 47 | -26 | -35.5 |
| '35 | Albuminoidal substances; glues; enzymes | 311552 | 835811 | 0.13 | 0.17 | 0.04 | 0.17 | 0.16 | -0.01 | 73 | 102 | 29 | 40.0 |
| '93 | Arms and ammunition | 308337 | 603517 | 0.13 | 0.12 | -0.01 | 0.08 | 0.08 | 0.01 | 164 | 143 | -21 | -12.6 |
| '12 | Oil seeds and oleaginous fruits | 138146 | 580234 | 0.06 | 0.12 | 0.06 | 0.33 | 0.56 | 0.23 | 17 | 21 | 4 | 20.7 |
| '43 | Fur skins and artificial fur | 210921 | 542051 | 0.09 | 0.11 | 0.02 | 0.07 | 0.05 | -0.01 | 129 | 206 | 76 | 59.0 |
| '58 | Special woven fabrics; tufted textile fabrics | 348240 | 510030 | 0.14 | 0.10 | -0.04 | 0.12 | 0.07 | -0.05 | 115 | 145 | 30 | 26.1 |
| '03 | Fish. crustaceans. molluscs | 288029 | 481158 | 0.12 | 0.10 | -0.02 | 0.69 | 0.68 | -0.01 | 17 | 14 | -3 | -17.8 |
| '65 | Headgear | 256290 | 445008 | 0.10 | 0.09 | -0.02 | 0.05 | 0.05 | 0.01 | 222 | 164 | -58 | -26.0 |
| '47 | Pulp of wood or of other fibrous cellulosic material | 36252 | 428993 | 0.01 | 0.09 | 0.07 | 0.31 | 0.27 | -0.04 | 5 | 31 | 27 | 553.6 |
| '31 | Fertilisers | 75961 | 424077 | 0.03 | 0.08 | 0.05 | 0.25 | 0.29 | 0.04 | 13 | 29 | 16 | 130.0 |
| '17 | Sugars and sugar confectionery | 230799 | 412857 | 0.09 | 0.08 | -0.01 | 0.27 | 0.27 | 0.00 | 35 | 30 | -5 | -14.6 |
| '11 | Products of the milling industry; malt; wheat gluten | 204728 | 391294 | 0.08 | 0.08 | -0.01 | 0.09 | 0.10 | 0.01 | 93 | 77 | -16 | -16.7 |
| '97 | Works of art. collectors' pieces and antiques | 85610 | 346063 | 0.04 | 0.07 | 0.03 | 0.17 | 0.16 | -0.01 | 21 | 44 | 23 | 111.7 |
| '75 | Nickel | 37596 | 276159 | 0.02 | 0.05 | 0.04 | 0.14 | 0.11 | -0.02 | 11 | 48 | 37 | 326.6 |
| '50 | Silk | 311516 | 271331 | 0.13 | 0.05 | -0.07 | 0.04 | 0.01 | -0.02 | 348 | 462 | 114 | 32.9 |
| '53 | Other vegetable textile fibres | 271620 | 228457 | 0.11 | 0.05 | -0.07 | 0.04 | 0.02 | -0.02 | 249 | 188 | -61 | -24.4 |
| '79 | Zinc | 39552 | 213213 | 0.02 | 0.04 | 0.03 | 0.09 | 0.11 | 0.02 | 18 | 39 | 21 | 111.5 |
| '26 | Ores. slag and ash | 54351 | 209073 | 0.02 | 0.04 | 0.02 | 0.40 | 1.47 | 1.07 | 6 | 3 | -3 | -48.7 |
| '57 | Carpets and other textile floor coverings | 106997 | 202345 | 0.04 | 0.04 | 0.00 | 0.13 | 0.09 | -0.04 | 33 | 46 | 13 | 38.2 |
| '81 | Other base metals | 114474 | 170966 | 0.05 | 0.03 | -0.01 | 0.11 | 0.11 | 0.00 | 43 | 30 | -13 | -30.4 |
| '13 | Lac; gums. resins and other vegetable saps and extracts | 86110 | 163520 | 0.04 | 0.03 | 0.00 | 0.04 | 0.04 | 0.01 | 100 | 80 | -20 | -20.3 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| '05 | Products of animal origin. not elsewhere included | 50609 | 155979 | 0.02 | 0.03 | 0.01 | 0.05 | 0.06 | 0.00 | 38 | 54 | 16 | 41.7 |
| '92 | Musical instruments | 157372 | 148571 | 0.06 | 0.03 | -0.03 | 0.06 | 0.04 | -0.02 | 110 | 82 | -28 | -25.3 |
| '78 | Lead | 12298 | 142151 | 0.01 | 0.03 | 0.02 | 0.03 | 0.05 | 0.02 | 19 | 57 | 37 | 190.7 |
| '37 | Photographic or cinematographic goods | 357423 | 101001 | 0.15 | 0.02 | -0.13 | 0.27 | 0.08 | -0.19 | 54 | 24 | -30 | -54.9 |
| '67 | Prepared feathers and down; artificial flowers ... | 26026 | 63546 | 0.01 | 0.01 | 0.00 | 0.04 | 0.05 | 0.01 | 27 | 27 | 0 | 0.4 |
| '01 | Live animals | 21295 | 51404 | 0.01 | 0.01 | 0.00 | 0.15 | 0.12 | -0.02 | 6 | 8 | 2 | 38.7 |
| '66 | Umbrellas. walking sticks. seat-sticks. whips. riding-crops… | 50851 | 50356 | 0.02 | 0.01 | -0.01 | 0.02 | 0.02 | 0.00 | 92 | 51 | -41 | -44.4 |
| '45 | Cork | 58734 | 47234 | 0.02 | 0.01 | -0.01 | 0.02 | 0.01 | -0.01 | 106 | 93 | -14 | -13.0 |
| '80 | Tin | 8918 | 44613 | 0.00 | 0.01 | 0.01 | 0.02 | 0.03 | 0.01 | 15 | 26 | 11 | 74.2 |
| '36 | Explosives; pyrotechnic products; matches… | 17340 | 39793 | 0.01 | 0.01 | 0.00 | 0.02 | 0.02 | 0.00 | 29 | 32 | 3 | 11.3 |
| '46 | Manufactures of straw. esparto or other plaiting materials | 4568 | 8593 | 0.00 | 0.00 | 0.00 | 0.02 | 0.01 | -0.01 | 10 | 13 | 3 | 32.3 |
| '14 | Vegetable plaiting materials | 1312 | 5388 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 7 | 20 | 13 | 193.7 |

*Sources*: ITC calculations based on UN COMTRADE statistics. Unit: US Dollar thousand.

**Table A.2 Comparative advantages in other industrial countries. 2001-2017**

| Code | Product label | FRANCE | | | GERMANY | | | SPAIN | | | UK | | | CHINA | | | USA | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2001 | 2017 | Δ% | 2001 | 2017 | Δ% | 2001 | 2017 | Δ% | 2001 | 2017 | Δ% | 2001 | 2017 | Δ% | 2001 | 2017 | Δ% |
| 'TOTAL | All products | 100 | 100 | 0.0 | 100 | 100 | 0.0 | 100 | 100 | 0.0 | 100 | 100 | 0.0 | 100 | 100 | 0.0 | 100 | 100 | 0.0 |
| '84 | Machinery. mechanical appl. | 91 | 98 | 7.3 | 192 | 218 | 13.0 | 254 | 212 | -16.6 | 131 | 125 | -4.7 | 136 | 181 | 33.0 | 136 | 110 | -19.3 |
| '87 | Vehicles other than railway or tramway rolling stock | 309 | 529 | 70.9 | 127 | 143 | 12.6 | 61 | 63 | 3.2 | 85 | 148 | 73.0 | 87 | 142 | 64.1 | 118 | 77 | -34.8 |
| '85 | Electrical machinery and equipment | 144 | 119 | -17.5 | 83 | 71 | -14.2 | 29 | 50 | 71.2 | 81 | 71 | -11.9 | 225 | 285 | 26.6 | 18 | 80 | 358.6 |
| '30 | Pharmaceutical products | 82 | 55 | -33.0 | 152 | 192 | 25.7 | 51 | 36 | -30.1 | 241 | 243 | 1.2 | 425 | 249 | -41.3 | 319 | 456 | 43.0 |
| '39 | Plastics | 217 | 197 | -9.0 | 125 | 153 | 22.9 | 54 | 244 | 353.6 | 264 | 201 | -24.1 | 378 | 247 | -34.7 | 90 | 103 | 14.7 |
| '73 | Articles of iron or steel | 110 | 121 | 10.8 | 141 | 130 | -7.9 | 115 | 112 | -2.0 | 109 | 44 | -60.0 | 77 | 95 | 23.4 | 192 | 164 | -14.4 |
| '27 | Mineral fuels and oils | 446 | 530 | 18.7 | 156 | 155 | -0.8 | 91 | 117 | 28.1 | 172 | 250 | 45.0 | 82 | 92 | 12.4 | 118 | 118 | -0.7 |
| '94 | Furniture | 435 | 466 | 7.1 | 133 | 146 | 9.6 | 616 | 444 | -27.8 | 129 | 124 | -4.0 | 20 | 36 | 82.7 | 103 | 108 | 4.5 |
| '72 | Iron and steel | 86 | 92 | 7.6 | 131 | 131 | 0.1 | 63 | 201 | 216.2 | 11 | 195 | 1652.3 | 154 | 157 | 1.9 | 89 | 96 | 7.3 |
| '62 | Articles of apparel and clothing accessories | 143 | 135 | -5.8 | 14 | 17 | 14.8 | 134 | 142 | 5.9 | 80 | 77 | -3.2 | 482 | 369 | -23.5 | 107 | 158 | 48.0 |
| '90 | Optical. photographic. cinematographic. measuring… | 25 | 25 | -0.8 | 105 | 86 | -18.2 | 126 | 105 | -16.8 | 288 | 339 | 17.6 | 71 | 101 | 41.7 | 108 | 108 | -0.3 |
| '71 | Natural or cultured pearls. precious stones ... | 172 | 217 | 26.6 | 160 | 162 | 1.4 | 649 | 519 | -19.9 | 140 | 101 | -27.8 | 492 | 261 | -46.9 | 157 | 167 | 6.1 |
| '64 | Footwear. gaiters and the like | 127 | 98 | -23.0 | 101 | 80 | -20.7 | 60 | 109 | 81.4 | 71 | 75 | 5.9 | 46 | 90 | 95.6 | 284 | 306 | 8.0 |
| '22 | Beverages. spirits and vinegar | 36 | 42 | 17.2 | 130 | 152 | 16.8 | 161 | 284 | 75.9 | 643 | 946 | 47.2 | 32 | 14 | -55.5 | 236 | 207 | -12.4 |
| '42 | Articles of leather; saddlery and harness | 115 | 91 | -20.9 | 92 | 87 | -5.2 | 305 | 309 | 1.1 | 154 | 132 | -13.9 | 646 | 288 | -55.5 | 78 | 74 | -4.7 |
| '61 | Articles of apparel and clothing accessories | 158 | 320 | 102.8 | 109 | 113 | 3.8 | 57 | 132 | 132.7 | 196 | 182 | -7.4 | 452 | 325 | -28.2 | 140 | 149 | 7.0 |
| '29 | Organic chemicals | 259 | 280 | 8.2 | 121 | 113 | -6.5 | 254 | 224 | -11.9 | 80 | 75 | -6.3 | 98 | 131 | 33.7 | 37 | 49 | 31.8 |
| '48 | Paper and paperboard | 158 | 118 | -25.3 | 182 | 198 | 8.5 | 81 | 66 | -18.4 | 42 | 78 | 83.5 | 53 | 99 | 86.7 | 91 | 111 | 21.5 |
| '76 | Aluminium and articles thereof | 118 | 131 | 11.4 | 32 | 24 | -22.9 | 162 | 196 | 21.0 | 55 | 65 | 19.2 | 68 | 87 | 26.8 | 117 | 146 | 24.7 |
| '33 | Essential oils ; perfumery. cosmetic… | 62 | 88 | 43.4 | 113 | 102 | -9.3 | 78 | 129 | 64.4 | 257 | 401 | 56.0 | 206 | 292 | 41.5 | 102 | 82 | -19.4 |
| '69 | Ceramic products | 212 | 183 | -13.5 | 47 | 57 | 21.1 | 96 | 126 | 31.1 | 39 | 63 | 61.5 | 34 | 88 | 158.6 | 108 | 115 | 6.4 |
| '38 | Miscellaneous chemical products | 88 | 102 | 15.4 | 107 | 100 | -6.1 | 106 | 130 | 23.5 | 146 | 176 | 20.4 | 128 | 298 | 133.1 | 125 | 125 | 0.1 |
| '19 | Preparations of cereals. flour. starch or milk | 170 | 226 | 33.4 | 162 | 150 | -7.2 | 192 | 114 | -40.5 | 68 | 75 | 10.3 | 46 | 22 | -53.4 | 331 | 484 | 46.3 |
| '40 | Rubber | 55 | 70 | 27.5 | 32 | 54 | 65.8 | 140 | 82 | -41.2 | 72 | 64 | -11.2 | 164 | 202 | 23.0 | 66 | 74 | 13.5 |
| '89 | Ships. boats and floating structures | 81 | 55 | -32.2 | 149 | 175 | 17.7 | 578 | 374 | -35.3 | 106 | 156 | 47.6 | 212 | 368 | 73.4 | 66 | 50 | -24.3 |
| '99 | Commodities not elsewhere specified | 43 | 87 | 102.1 | 63 | 88 | 38.9 | 181 | 159 | -12.2 | 85 | 54 | -36.4 | 54 | 67 | 24.3 | 69 | 81 | 18.3 |
| '88 | Aircraft. spacecraft | 136 | 107 | -21.3 | 63 | 80 | 27.0 | 36 | 32 | -10.8 | 131 | 155 | 18.4 | 99 | 171 | 72.5 | 164 | 155 | -5.4 |
| '41 | Raw hides and skins and leather | 129 | 93 | -28.0 | 99 | 93 | -6.2 | 318 | 296 | -7.0 | 50 | 76 | 50.9 | 281 | 235 | -16.2 | 167 | 212 | 27.1 |
| '08 | Edible fruit and nuts | 180 | 155 | -13.8 | 171 | 154 | -10.2 | 88 | 124 | 40.7 | 55 | 76 | 37.3 | 229 | 209 | -8.8 | 133 | 139 | 4.7 |
| '74 | Copper | 150 | 158 | 5.7 | 160 | 176 | 10.0 | 222 | 122 | -44.9 | 33 | 60 | 83.3 | 195 | 179 | -8.6 | 41 | 83 | 102.1 |
| '20 | Preparations of vegetables and fruit | 141 | 178 | 26.5 | 31 | 64 | 106.2 | 168 | 200 | 19.4 | 148 | 121 | -18.4 | 160 | 103 | -35.5 | 97 | 112 | 15.9 |
| '83 | Miscellaneous articles of base metal | 115 | 148 | 29.2 | 113 | 123 | 8.6 | 76 | 60 | -21.7 | 60 | 100 | 65.4 | 82 | 78 | -5.8 | 92 | 155 | 68.2 |
| '04 | Dairy produce; birds' eggs; honey; edible products of animal origin | 114 | 129 | 13.5 | 117 | 119 | 1.4 | 19 | 18 | -2.8 | 27 | 66 | 147.3 | 142 | 86 | -39.3 | 109 | 140 | 28.1 |
| '32 | Tanning or dyeing extracts; pigments ... | 91 | 68 | -24.7 | 77 | 62 | -19.6 | 275 | 205 | -25.4 | 57 | 50 | -12.5 | 270 | 258 | -4.6 | 50 | 56 | 12.2 |
| '68 | Articles of stone. plaster. cement or similar materials | 62 | 190 | 206.4 | 55 | 71 | 28.5 | 137 | 144 | 5.0 | 43 | 99 | 130.7 | 154 | 175 | 13.3 | 75 | 68 | -9.4 |
| '70 | Glass and glassware | 62 | 69 | 10.5 | 99 | 111 | 12.6 | 81 | 87 | 8.3 | 128 | 45 | -64.7 | 180 | 120 | -33.3 | 39 | 26 | -32.5 |
| '21 | Miscellaneous edible preparations | 209 | 167 | -20.3 | 107 | 148 | 37.4 | 150 | 137 | -9.1 | 73 | 67 | -8.1 | 442 | 229 | -48.2 | 104 | 92 | -11.6 |
| '02 | Meat | 109 | 108 | -0.7 | 49 | 57 | 16.1 | 192 | 194 | 1.1 | 140 | 238 | 69.8 | 300 | 144 | -52.2 | 386 | 417 | 7.9 |
| '15 | Animal or vegetable fats and oils | 259 | 358 | 38.1 | 112 | 126 | 12.4 | 58 | 68 | 16.9 | 31 | 35 | 13.2 | 173 | 97 | -44.1 | 57 | 51 | -9.6 |
| '51 | Wool. fine or coarse animal hair | 152 | 152 | 0.1 | 122 | 170 | 40.0 | 124 | 245 | 97.8 | 76 | 70 | -8.3 | 83 | 226 | 174.1 | 88 | 92 | 3.9 |
| '34 | Soap. washing preparations | 112 | 52 | -53.6 | 139 | 153 | 10.1 | 111 | 104 | -6.5 | 96 | 90 | -6.4 | 14 | 11 | -26.3 | 113 | 82 | -27.2 |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| '44 | Wood and articles of wood | 75 | 70 | -6.4 | 73 | 79 | 9.1 | 163 | 119 | -26.8 | 32 | 58 | 78.8 | 80 | 69 | -14.8 | 70 | 75 | 7.4 |
| '18 | Cocoa and cocoa preparations | 93 | 56 | -39.8 | 105 | 132 | 26.1 | 229 | 134 | -41.4 | 27 | 87 | 217.2 | 40 | 34 | -14.3 | 92 | 81 | -12.7 |
| '54 | Man-made filaments; strip and man-made textile mat. | 95 | 102 | 7.5 | 121 | 105 | -13.0 | 126 | 109 | -14.0 | 51 | 66 | 29.4 | 7 | 15 | 107.7 | 24 | 60 | 154.0 |
| '82 | Tools implements cutlery spoons and forks of base metal | 53 | 54 | 2.2 | 121 | 165 | 36.1 | 66 | 96 | 46.1 | 152 | 64 | -57.9 | 59 | 92 | 55.0 | 149 | 138 | -7.6 |
| '95 | Toys. games and sports requisites | 163 | 219 | 34.3 | 98 | 85 | -13.6 | 52 | 66 | 28.1 | 92 | 79 | -14.2 | 877 | 572 | -34.8 | 72 | 65 | -10.8 |
| '07 | Edible vegetables. roots and tubers | 109 | 92 | -15.9 | 52 | 79 | 53.8 | 187 | 173 | -7.4 | 148 | 176 | 19.0 | 34 | 36 | 3.7 | 64 | 88 | 37.4 |
| '09 | Coffee. tea. mate and spices | 117 | 116 | -1.1 | 61 | 40 | -33.9 | 151 | 363 | 140.7 | 13 | 70 | 438.5 | 81 | 156 | 91.6 | 125 | 86 | -31.0 |
| '56 | Wadding felt nonwovens; special yarns; twine cordage | 127 | 137 | 8.7 | 58 | 80 | 38.1 | 60 | 88 | 46.7 | 76 | 57 | -25.0 | 28 | 29 | 6.1 | 143 | 143 | 0.1 |
| '28 | Inorganic chemicals; organic or inorganic compounds of precious metals | 128 | 180 | 40.6 | 66 | 62 | -6.1 | 87 | 94 | 7.5 | 29 | 48 | 65.3 | 197 | 75 | -61.8 | 62 | 38 | -39.0 |
| '96 | Miscellaneous manufactured articles | 47 | 49 | 4.0 | 49 | 56 | 13.8 | 81 | 41 | -49.4 | 28 | 29 | 4.3 | 238 | 298 | 25.2 | 109 | 99 | -9.4 |
| '52 | Cotton | 42 | 39 | -6.9 | 195 | 133 | -31.8 | 226 | 134 | -40.9 | 129 | 130 | 1.4 | 494 | 357 | -27.8 | 141 | 164 | 16.3 |
| '91 | Clocks and watches | 29 | 85 | 189.4 | 122 | 131 | 6.9 | 52 | 95 | 81.9 | 85 | 59 | -30.9 | 280 | 312 | 11.5 | 81 | 77 | -5.0 |
| '16 | Preparations of meat or fish | 66 | 68 | 2.9 | 68 | 65 | -5.1 | 77 | 72 | -6.8 | 139 | 280 | 101.1 | 8 | 9 | 11.3 | 98 | 118 | 20.3 |
| '49 | Printed books. newspapers. pictures | 106 | 78 | -26.1 | 29 | 39 | 36.3 | 154 | 202 | 31.4 | 84 | 45 | -46.7 | 44 | 77 | 75.2 | 40 | 13 | -66.2 |
| '60 | Knitted or crocheted fabrics | 261 | 212 | -18.9 | 47 | 29 | -37.8 | 104 | 91 | -13.1 | 45 | 45 | -0.5 | 50 | 47 | -6.8 | 68 | 54 | -21.5 |
| '59 | Impregnated. coated. covered or laminated textile fabri.; | 79 | 75 | -4.4 | 70 | 67 | -3.9 | 111 | 91 | -18.1 | 16 | 16 | -1.6 | 52 | 38 | -28.1 | 95 | 108 | 14.1 |
| '25 | Salt; earths and stone; plastering materials. cement | 86 | 83 | -3.2 | 18 | 23 | 30.4 | 85 | 81 | -4.3 | 106 | 70 | -33.7 | 247 | 126 | -48.8 | 86 | 103 | 19.3 |
| '24 | Tobacco and tobacco substitutes | 103 | 165 | 60.2 | 39 | 50 | 28.4 | 129 | 158 | 21.9 | 78 | 43 | -45.5 | 186 | 60 | -67.9 | 21 | 11 | -46.2 |
| '86 | Railway or tramway locomotives. rolling stock ... | 34 | 65 | 93.0 | 14 | 20 | 42.8 | 136 | 113 | -16.9 | 46 | 75 | 64.4 | 100 | 47 | -52.8 | 131 | 171 | 31.1 |
| '23 | Residues from the food industries | 50 | 43 | -14.2 | 63 | 103 | 64.8 | 66 | 77 | 16.7 | 90 | 110 | 21.7 | 36 | 77 | 113.1 | 35 | 18 | -48.2 |
| '55 | Man-made staple fibres | 90 | 49 | -45.6 | 110 | 119 | 8.0 | 110 | 68 | -38.8 | 100 | 146 | 46.4 | 140 | 137 | -2.7 | 50 | 51 | 0.8 |
| '06 | Live trees and other plants; bulbs. roots… | 105 | 102 | -3.0 | 72 | 43 | -40.8 | 137 | 78 | -42.8 | 85 | 76 | -10.7 | 32 | 29 | -9.1 | 55 | 68 | 24.0 |
| '10 | Cereals | 104 | 69 | -33.4 | 77 | 99 | 29.0 | 29 | 37 | 24.1 | 69 | 40 | -41.7 | 103 | 21 | -79.9 | 161 | 58 | -63.7 |
| '63 | Other made-up textile articles | 63 | 96 | 51.6 | 32 | 19 | -39.4 | 53 | 64 | 21.2 | 21 | 26 | 25.8 | 1035 | 594 | -42.7 | 44 | 38 | -12.8 |
| '35 | Albuminoidal substances; glues; enzymes | 103 | 118 | 15.1 | 30 | 38 | 28.5 | 86 | 113 | 31.1 | 32 | 38 | 18.1 | 447 | 176 | -60.7 | 37 | 48 | 29.0 |
| '93 | Arms and ammunition | 212 | 290 | 36.8 | 105 | 120 | 15.2 | 89 | 179 | 102.7 | 22 | 18 | -18.4 | 36 | 15 | -58.2 | 69 | 113 | 62.6 |
| '12 | Oil seeds and oleaginous fruits | 73 | 91 | 24.7 | 22 | 21 | -1.8 | 39 | 50 | 29.2 | 53 | 43 | -19.4 | 215 | 117 | -45.4 | 51 | 46 | -11.0 |
| '43 | Fur skins and artificial fur | 74 | 39 | -47.2 | 69 | 72 | 4.8 | 50 | 23 | -54.6 | 78 | 59 | -24.5 | 22 | 29 | 30.2 | 43 | 41 | -4.7 |
| '58 | Special woven fabrics; tufted textile fabrics | 87 | 50 | -42.9 | 94 | 37 | -60.3 | 120 | 107 | -10.5 | 7 | 11 | 73.3 | 55 | 18 | -67.0 | 57 | 43 | -24.8 |
| '03 | Fish. crustaceans. molluscs | 82 | 62 | -24.5 | 46 | 52 | 12.4 | 93 | 63 | -32.4 | 89 | 84 | -5.3 | 263 | 190 | -27.9 | 22 | 22 | 1.5 |
| '65 | Headgear | 215 | 342 | 59.3 | 30 | 61 | 101.3 | 108 | 202 | 87.7 | 65 | 35 | -46.1 | 1163 | 501 | -56.9 | 14 | 11 | -21.1 |
| '47 | Pulp of wood or of other fibrous cellulosic material | 82 | 40 | -50.9 | 94 | 121 | 28.7 | 289 | 286 | -0.8 | 198 | 85 | -57.0 | 72 | 146 | 104.2 | 20 | 32 | 58.5 |
| '31 | Fertilisers | 40 | 32 | -18.8 | 66 | 24 | -63.9 | 97 | 80 | -17.4 | 25 | 20 | -18.8 | 42 | 25 | -41.8 | 146 | 132 | -9.7 |
| '17 | Sugars and sugar confectionery | 128 | 106 | -17.5 | 40 | 21 | -48.0 | 956 | 1020 | 6.7 | 7 | 10 | 45.1 | 847 | 420 | -50.4 | 24 | 26 | 4.9 |
| '11 | Products of the milling industry; malt; wheat gluten | 0 | 4 | 1244.1 | 65 | 33 | -49.0 | 35 | 36 | 3.1 | 212 | 63 | -70.2 | 58 | 58 | -0.5 | 84 | 53 | -37.4 |
| '97 | Works of art. collectors' pieces and antiques | 23 | 24 | 4.8 | 54 | 40 | -24.4 | 116 | 86 | -25.9 | 50 | 95 | 90.6 | 382 | 193 | -49.5 | 76 | 74 | -3.1 |
| '75 | Nickel | 46 | 109 | 136.0 | 62 | 45 | -27.1 | 41 | 51 | 24.5 | 13 | 3 | -74.3 | 47 | 6 | -88.0 | 77 | 59 | -23.3 |
| '50 | Silk | 63 | 18 | -71.5 | 93 | 136 | 45.7 | 70 | 89 | 26.7 | 58 | 63 | 8.8 | 14 | 7 | -54.1 | 54 | 29 | -46.5 |
| '53 | Other vegetable textile fibres | 9 | 4 | -56.0 | 53 | 50 | -5.3 | 43 | 81 | 87.0 | 21 | 13 | -39.8 | 437 | 148 | -66.1 | 159 | 208 | 31.3 |
| '79 | Zinc | 58 | 145 | 149.6 | 72 | 59 | -17.7 | 85 | 56 | -34.2 | 38 | 36 | -5.1 | 9 | 2 | -74.8 | 104 | 129 | 24.1 |
| '26 | Ores. slag and ash | 126 | 63 | -50.1 | 86 | 54 | -37.1 | 30 | 45 | 48.9 | 141 | 13 | -90.4 | 70 | 5 | -92.7 | 114 | 89 | -21.9 |
| '57 | Carpets and other textile floor coverings | 64 | 58 | -10.7 | 6 | 3 | -54.4 | 92 | 132 | 44.0 | 53 | 84 | 58.3 | 90 | 18 | -79.5 | 92 | 45 | -50.9 |
| '81 | Other base metals | 72 | 83 | 15.3 | 38 | 44 | 16.5 | 29 | 21 | -29.7 | 31 | 15 | -53.1 | 15 | 5 | -64.3 | 27 | 24 | -12.2 |
| '13 | Lac; gums. resins and other vegetable saps and extracts | 114 | 189 | 66.2 | 118 | 87 | -25.6 | 60 | 37 | -38.5 | 43 | 68 | 58.3 | 45 | 25 | -43.6 | 16 | 26 | 66.7 |
| '05 | Products of animal origin. not elsewhere included | 73 | 75 | 2.1 | 98 | 70 | -27.7 | 219 | 57 | -74.2 | 36 | 45 | 23.3 | 89 | 20 | -77.4 | 38 | 36 | -6.5 |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| '92 | Musical instruments | 41 | 26 | -35.4 | 35 | 62 | 77.9 | 9 | 69 | 679.7 | 15 | 20 | 35.3 | 15 | 16 | 9.8 | 45 | 35 | -21.0 |
| '78 | Lead | 30 | 47 | 59.4 | 66 | 59 | -11.4 | 18 | 18 | -1.4 | 89 | 46 | -48.2 | 5 | 6 | 11.7 | 42 | 24 | -42.4 |
| '37 | Photographic or cinematographic goods | 107 | 26 | -75.9 | 48 | 19 | -60.6 | 24 | 28 | 18.5 | 101 | 45 | -55.2 | 9 | 12 | 31.5 | 18 | 21 | 15.9 |
| '67 | Prepared feathers and down; artificial flowers ... | 99 | 173 | 75.0 | 16 | 21 | 30.4 | 7 | 12 | 76.4 | 13 | 24 | 85.8 | 262 | 10 | -96.2 | 38 | 29 | -25.1 |
| '01 | Live animals | 79 | 18 | -76.7 | 29 | 27 | -5.3 | 59 | 35 | -41.0 | 32 | 20 | -37.8 | 5 | 4 | -14.7 | 9 | 6 | -29.0 |
| '66 | Umbrellas  walking sticks seat-sticks whips riding-crops | 36 | 38 | 8.1 | 27 | 37 | 38.7 | 54 | 47 | -13.4 | 37 | 61 | 64.6 | 1 | 2 | 115.9 | 39 | 47 | 21.0 |
| '45 | Cork | 65 | 97 | 47.8 | 48 | 31 | -36.6 | 37 | 47 | 27.7 | 35 | 16 | -54.3 | 8 | 7 | -16.0 | 9 | 13 | 46.0 |
| '80 | Tin | 27 | 26 | -4.5 | 14 | 27 | 100.2 | 27 | 41 | 50.7 | 44 | 23 | -48.1 | 199 | 104 | -47.9 | 25 | 16 | -37.7 |
| '36 | Explosives; pyrotechnic products; matches… | 21 | 32 | 56.6 | 32 | 12 | -61.4 | 20 | 9 | -54.2 | 8 | 13 | 61.5 | 361 | 7 | -97.9 | 9 | 5 | -40.8 |
| '46 | Straw. esparto or  other plaiting materials | 11 | 8 | -25.3 | 27 | 23 | -16.2 | 64 | 45 | -29.6 | 11 | 14 | 31.8 | 470 | 8 | -98.3 | 12 | 9 | -28.3 |
| '14 | Vegetable plaiting materials | 32 | 43 | 36.3 | 57 | 11 | -81.3 | 14 | 9 | -34.9 | 4 | 16 | 344.4 | 13 | 9 | -30.3 | 10 | 7 | -26.9 |

*Sources*: ITC and own calculations based on UN COMTRADE statistics. Unit: US Dollar thousand.