

Trade in high-tech products

China on the rise

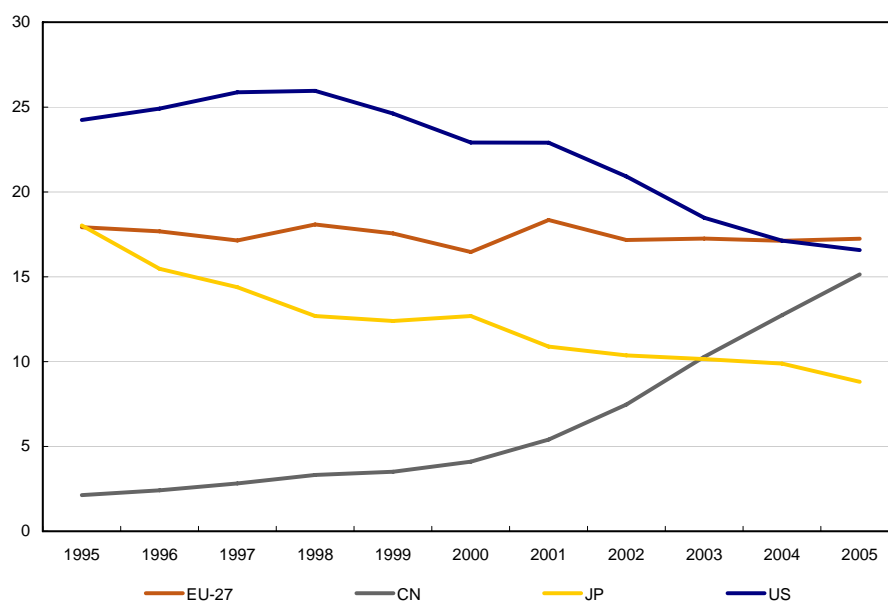
This issue of Statistics in Focus presents a detailed analysis of the trade in high-tech products, concentrating mainly on world market share aspects.

In 2005, the EU was the world leader in trade in high-tech products, closely followed by the United States. However, China's share of world trade has grown rapidly and, after having overtaken Japan, it is now catching up with the EU and the United States.

At European level, Germany led followed by France and the United Kingdom.

The EU is the leading trader in high-tech products in 2005

Figure 1: World market shares of high-tech exports, EU-27, China, Japan and the United States, 1995 to 2005



EU-27: Excludes intra-EU trade
CN: Excludes HK.

Source: Eurostat's high-tech statistics

Figure 1 shows the trends in global market share of high-tech products for the world's four main economies between 1995 and 2005. Intra EU-trade is not included in the calculation of market share for the purposes of this graph (see methodological notes on page 7).

In 1995, the United States was by far the leading exporter of high-tech products, with 24% of the world total, followed by the EU and Japan (both 18%). At this time, China accounted for only 2% of total world exports of high-tech products.

However, while China's share has grown rapidly, especially since 2000, the EU remained relatively stable; the shares of Japan and the United States declined throughout that period. China is clearly catching up with the EU and the United States.

In 2005, the world's main exporter of high-tech products was the EU, with 17.2% of the world total. The United States and China ranked second and third respectively, with 16.6% and 15.1%. Since 2004, Japan has fallen below the 10% threshold.

During the entire period from 1995 onwards, the world's four major economies together have consistently accounted for around 60% of total world exports of high-tech products. In other words, China has progressed at the expense of the world's three other major economies.

Statistics in focus

SCIENCE AND
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In 2005, apart from the world's four leading economies, only ten other countries (entities) had a share of more than 1% each of the world total exports of high-tech products (see Figure 2).

Of these, Singapore, Hong Kong, South Korea and 'other Asian countries' (see methodological notes) each accounted for more than 5%. Behind this group of countries came Malaysia, Mexico, Canada, Switzerland, Philippines and Thailand, with shares of around 2% of the world total.

Brazil, Indonesia, Israel, India, the Russian Federation and Australia did not reach 1% of total world exports of high-tech products.

In 2005, the 21 top exporting countries (entities) together accounted for 99% of world total exports of high-tech products.

The EU was not only the world's main exporter but also the world's main importer of high-tech products. In fact, the EU made up nearly one fifth (19.1%) of total world imports in this field (see Figure 3).

In terms of high-tech imports, the EU was ahead of the United States (17.9%) and China (13.8%). Japan (5.8%) was in fifth place behind Hong Kong (7.3%). Singapore also displayed a share above 5%.

One of the main points to highlight in these two figures is that there is very little difference between the rankings of the main traders in terms of either exports or imports.

High-tech products dominate exports of foreign-funded firms in China

Figures from the Ministry of Commerce show that foreign-funded enterprises in China exported high-tech products worth US\$192 billion in 2005, accounting for 43.2 percent of its total exports.

In the same period, foreign-funded enterprises imported high-tech products worth US\$157.98 billion, accounting for 40.8 percent of China's total imports according to Ministry sources.

The government has promulgated a series of policies to encourage the flow of foreign investment into the high-tech sector. Figures show that during China's 10th Five-Year Plan (2001-2005), more than US\$70 billion of foreign investment was ploughed into the high-tech sector.

Exports of high-tech products as a proportion of all exports by foreign-funded enterprises have risen 18.2 percentage points in the past five years, according to the Ministry.

Source: Xinhua News Agency, January 2006

Figure 2: World market shares for high-tech exports, EU-27 and 20 main exporting countries, 2005

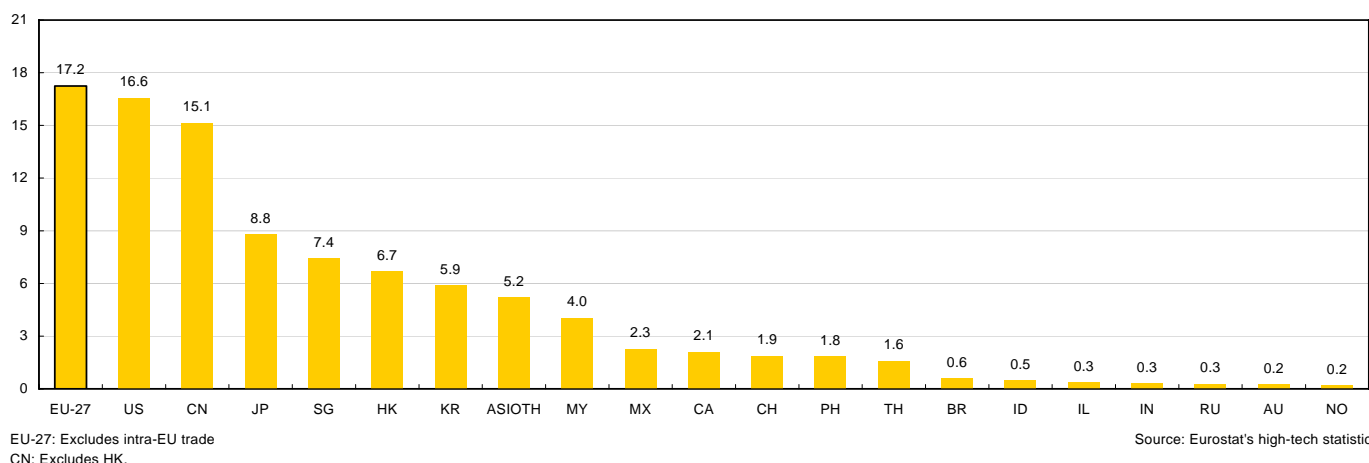
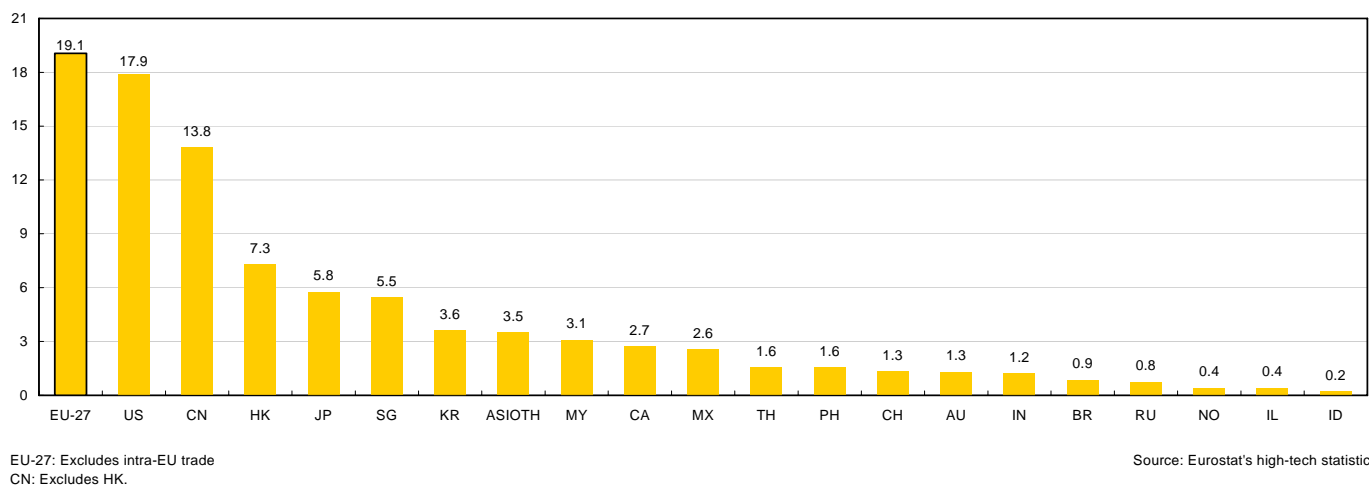


Figure 3: World market shares for high-tech imports, EU-27 and 20 main exporting countries, 2005



As already mentioned, the EU was the leading exporter and importer of high-tech products in the world in 2005, with EUR 198 billion in exports and EUR 230 billion in imports (Table 4).

Apart from the EU, the only countries where high-tech exports exceeded EUR 100 billion were the United States, China and Japan. Ten other countries recorded a value over EUR 10 billion.

In terms of imports, after the EU, only the United States and China passed the EUR 100 billion mark. Only four of the leading countries failed to reach EUR 10 billion of trade in high-tech imports.

Looking at the trade balance, the ranking was totally different. Japan was the leading net exporter of high-tech products with EUR 32 billion. It was followed by South Korea and Singapore with EUR 24 billion and EUR 20 billion respectively.

The EU recorded the largest high-tech trade deficit (EUR 32 billion) followed by the United States, with a deficit of EUR 26 billion.

When comparing high-tech trade to the total trade of the country, the ranking also differs.

In terms of exports, the Philippines was well in the lead, with a share of 63.1%. Two other countries - Singapore and Malaysia - displayed shares of over 40%.

At the other end of the scale, in Russia less than 2% of total exports were high-tech products. In China, the United States and Japan, high-tech exports accounted for more than 20% of total exports while this share was lower in the EU (19%).

With over 40% of total imports, the leading countries for high-tech imports were the same as for exports: namely the Philippines, Singapore and Malaysia. China recorded a share of over 30%, while the United States, Japan and the EU failed to reach 20%.

The EU's high-tech exports increased slightly between 2000 and 2005, whereas high-tech imports declined over the same period, thus reducing the EU's high-tech deficit.

The country with the largest growth in high-tech trade between 2000 and 2005 was China. High-tech exports and imports surged ahead at an annual average growth rate of 30.8% and 26.0% respectively. India (28.5%) and Russia (23.5%) also experienced a sizeable increase in high-tech imports over the same period.

In Japan and the United States, high-tech exports and imports both declined between 2000 and 2005.

Table 4: High-tech trade in million EUR and as a percentage of total trade in 2005 and annual average growth rate 2000-2005, EU-27 and world main exporting countries

	Exports			Balance Million EUR	Imports		
	Million EUR	as a % of total exports	AAGR 2000-2005		Million EUR	as a % of total imports	AAGR 2000-2005
EU-27	197 837 i	18.8 i	1.7 i	-31 669 i	229 505 i	19.5 i	-1.3 i
US	190 077	26.1	-5.6	-25 772	215 849	15.5	-5.1
CN	173 656	28.4	30.8	7 289	166 367	31.4	26.0
JP	101 117	21.1	-6.3	31 724	69 393	16.7	-3.4
SG	85 290	46.2	1.1	19 614	65 676	40.8	1.0
HK	76 784	32.7	9.1	-10 932	87 716	36.4	7.2
KR	67 553	29.5	2.8	23 870	43 683	20.8	-0.2
ASIOTH	59 544	39.1	-2.4	17 373	42 170	28.9	-4.6
MY	46 283	40.8	-1.9	9 061	37 223	40.4	0.5
MX	26 071	15.1	-5.0	-4 948	31 020	17.4	-1.8
CA	24 154	8.3	-7.6	-8 562	32 716	12.9	-6.7
CH	21 445	21.2	4.0	5 482	15 963	16.4	-1.4
PH	20 932	63.1	-5.3	2 262	18 670	46.9	6.8
TH	18 180	20.5	-0.6	-691	18 871	19.9	2.1
BR	6 540	6.9	-0.1	-3 757	10 297	17.4	-2.2
ID	5 394	7.8	-2.9	2 629	2 765	6.0	12.1
IL	4 004	11.6	-13.8	-971	4 975	13.7	-5.8
IN	3 454	4.2	7.1	-11 522	14 976	12.4	28.5
RU	3 097	1.6	-2.6	-5 951	9 048	11.4	23.5
AU	2 688	3.2	-2.2	-13 093	15 782	16.5	1.1
NO	2 444	2.9	3.4	-2 687	5 131	11.5	-2.7

EU-27: Excludes intra-EU trade
CN: Excludes HK.

Source: Eurostat's high-tech statistics

Germany, France and the United Kingdom lead among EU Member States

Figures 5 and 6 show the world market share of high-tech products, but this time intra-EU trade is included (see methodological notes on page 7).

Germany was by far the leading European trader in high-tech products. It accounted for 7.9% and 7.2% respectively of the world total of high-tech exports and imports.

Behind Germany came France, the United Kingdom and the Netherlands with shares of between 4% and 5%. The high value for the Netherlands is explained by the 'Rotterdam effect'¹.

These four leading Member States together accounted for over one fifth of total world high-tech exports and imports.

Only three other EU Member States - Ireland, Italy and Belgium - plus Switzerland exceeded 1% of world high-tech exports. For Belgium, this is partly explained by the 'Antwerp effect'¹.

¹ Goods arriving in the ports of Rotterdam and Antwerp and destined for the rest of EU are recorded respectively as Dutch and Belgian imports and subsequently as dispatches from the Netherlands or Belgium to another EU country.

High-tech exports from nine Member States, the candidate countries and Iceland did not reach 0.1% of the world total.

The distribution was similar when high-tech imports are taken into consideration. However, apart from the four leading EU Member States, four others plus Switzerland achieved a share above 1%. Seven Member States failed to reach 0.1%.

Trade and competitiveness

Open and Fair Trade

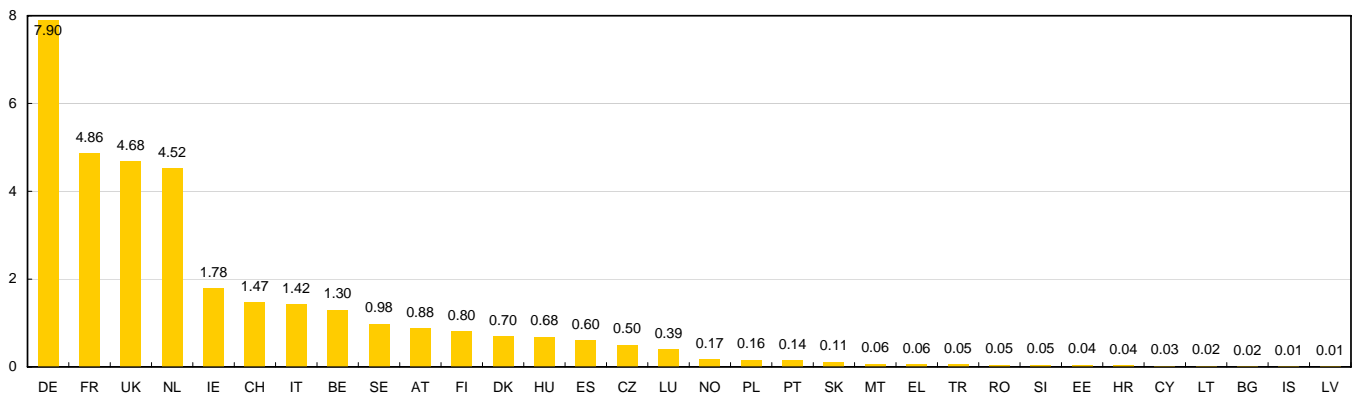
Europe has to focus on what it does best. The EU has a strong global export profile in high-quality and high-tech products and services, which now account for about half of European exports and one third of world demand. However, this is an unstable equilibrium, and the EU position is at risk because European industry is losing ground in high technology products. Continued innovation and investment in this comparative advantage is crucial. Better observance and enforcement of intellectual property rights at international level is therefore of the utmost importance.

For more information, see:

http://ec.europa.eu/trade/issues/sectoral/competitiveness/index_en.htm

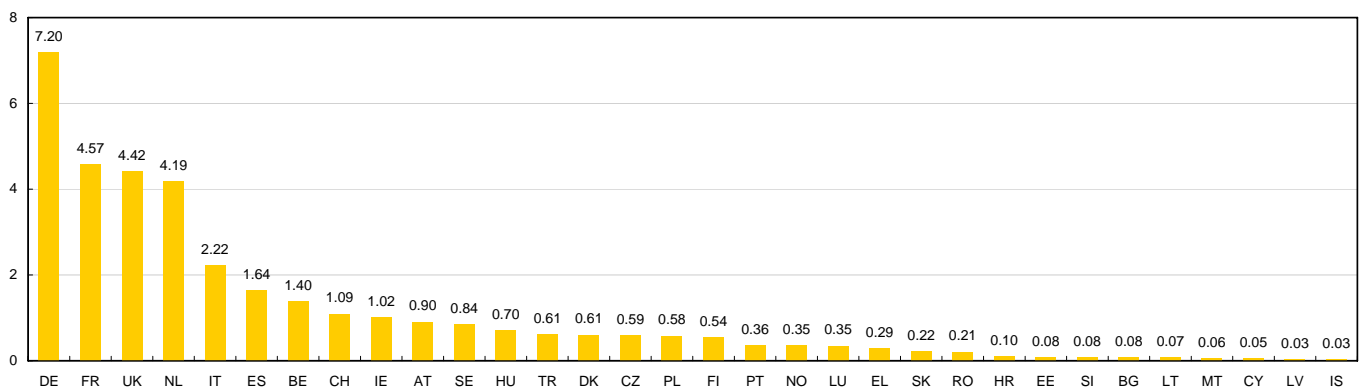
Source: European Commissions, Trade Issues, 2006

Figure 5: World market shares for high-tech exports, EU Member states and selected countries, 2005



Source: Eurostat's high-tech statistics

Figure 6: World market shares for high-tech imports, EU Member States and selected countries, 2005



Source: Eurostat's high-tech statistics

As Table 7 shows, in 2005 Germany was the only Member State where high-tech exports and imports passed the EUR 100 billion mark. France, the United Kingdom and the Netherlands exported and imported more than EUR 60 billion each of high-tech products. Apart from being the major traders in high-tech products at European level, these four Member States also enjoy a positive high-tech trade balance.

Six other EU Member States - Denmark, Ireland, Luxembourg, Malta, Finland and Sweden - were also net exporters of high-tech products, as was Switzerland. Of all EU Member States, Ireland showed the highest positive balance (EUR 11.2 billion).

However, at European level, the high-tech trade balance was negative (EUR -31.7 billion). It should be noted that EU aggregates (imports, exports and balance) do not correspond to the sum of the individual Member States since intra EU-trade is excluded.

The high-tech trade balance was most negative for Spain (EUR -15.1 billion) and Italy (EUR -11.6 billion).

Malta had the highest figures for high-tech trade as a share of total trade in 2005, with 50.8% and 29.6% for exports and imports respectively.

High-tech exports accounted for more than 30% of total exports in the case of Luxembourg (38.0%) and Cyprus (31.6%), but no country managed to reach the 30% mark for high-tech imports.

At European level, between 2000 and 2005, high-tech exports grew at an annual average rate of 1.7%, while high-tech imports declined (-1.3%). This means that the EU high-tech trade balance improved over the same period.

Cyprus experienced the highest growth in high-tech exports (94.8%), while the biggest increase in high-tech imports was in Slovakia (23.3%).

Although high-tech imports decreased in only six Member States, their weight pushed the EU aggregate into negative territory. Malta saw the biggest declines in both high-tech exports and imports.

Table 7: High-tech trade in million EUR and as a percentage of total trade in 2005 and annual average growth rate 2000-2005, EU-27 and selected countries

	Exports			Balance	Imports		
	Million EUR	as a % of total exports	AAGR 2000-2005		Million EUR	as a % of total exports	AAGR 2000-2005
EU-27	197 837 i	18.8 i	1.7 i	-31 669 i	229 505 i	19.5 i	-1.3 i
BE	18 943	7.1	1.4	-1 433	20 376	8.0	0.6
BG	268	2.9	25.6	-828	1 096	8.8	17.0
CZ	7 324	11.7	24.5	-1 226	8 550	13.9	12.1
DK	10 166	14.9	4.9	1 322	8 844	14.6	3.3
DE	115 405	14.8	3.7	10 304	105 101	16.8	0.8
EE	638	10.3	-5.9	-574	1 212	14.8	9.6
IE	26 036	29.5	-5.2	11 175	14 860	27.0	-6.2
EL	826	6.0	-2.7	-3 364	4 189	9.6	0.9
ES	8 747	5.7	1.9	-15 148	23 895	10.3	3.3
FR	71 042	19.1	-4.7	4 259	66 783	16.5	-4.8
IT	20 822	6.9	-1.3	-11 608	32 430	10.5	-0.6
CY	372	31.6	94.8	-315	687	13.5	14.5
LV	133	3.2	24.0	-369	502	7.2	11.0
LT	304	3.2	25.3	-709	1 013	8.1	21.6
LU	5 739	38.0	25.2	662	5 078	28.9	17.5
HU	9 941	19.7	7.1	-309	10 249	19.2	8.1
MT	930	50.8	-11.5	75	855	29.6	-12.7
NL	66 133	20.3	2.8	4 970	61 163	20.9	1.2
AT	12 876	12.8	4.6	-307	13 184	12.9	1.6
PL	2 299	3.2	18.7	-6 155	8 454	10.4	4.6
PT	2 089	6.8	7.3	-3 240	5 329	10.8	2.8
RO	691	3.1	5.8	-2 317	3 009	9.2	10.3
SI	660	4.3	9.2	-502	1 162	7.1	3.6
SK	1 641	6.4	34.8	-1 583	3 224	11.6	23.3
FI	11 701	22.1	0.0	3 832	7 870	16.6	1.9
SE	14 264	13.6	-4.2	2 023	12 242	13.7	-3.5
UK	68 406	22.1	-5.2	3 888	64 518	15.6	-6.9
IS	163	6.6	35.9	-252	415	10.4	3.1
NO	2 444	2.9	3.4	-2 687	5 131	11.5	-2.7
CH	21 445	21.2	4.0	5 482	15 963	16.4	-1.4
HR	563	8.0	6.6	-825	1 388	9.3	8.6
TR	796	1.4	-7.9	-8 117	8 913	9.5	1.0

EU-27: Excludes intra-EU trade
 Exceptions to the reference period 2000-2005:
 2002-2005: HR

Source: Eurostat's high-tech statistics

Electronics and telecommunications: the most traded high-tech products

Figure 8 shows total high-tech exports and imports in EUR million and their distribution by group of products, for each country.

“Electronics and telecommunications” accounted for the largest share of high-tech exports from 17 Member States plus Norway in 2005. This was also the leading group in terms of exported high-tech products from Japan and the United States.

France, the second largest EU exporter of high-tech products, recorded its highest share of high-tech exports in the “Aerospace” sector, with 47%. Iceland posted a similar result (with 60%). “Aerospace” also accounted for a sizeable share in Lithuania (18%), Spain (16%), the United Kingdom (14%), Germany (13%) and Romania (13%).

Luxembourg, Ireland, the Czech Republic, the Netherlands, Slovakia and China had high export shares in the “Computer and office machinery” category, while “Pharmacy” featured prominently in Belgium, Denmark, Greece, Slovenia and Switzerland.

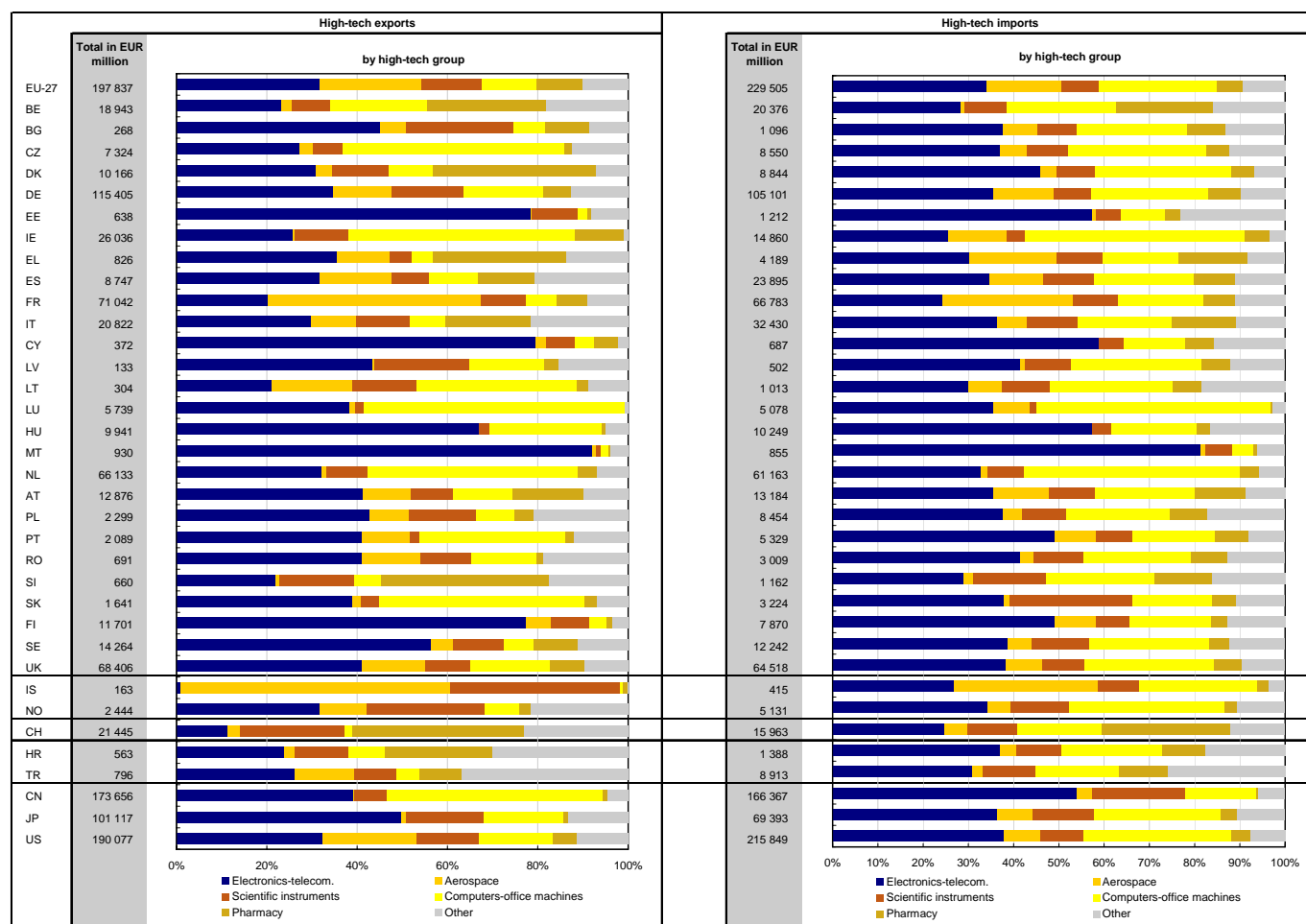
The breakdown of high-tech imports by group of products was less diversified across countries than high-tech exports.

The largest share of high-tech imports was in the field of “Electronics and telecommunications”; this was the case for the EU Member States (except Ireland, France, Luxembourg and the Netherlands), as well as for Norway and the candidate countries. The EU’s three main competitors - China, Japan and the United States – also had a large share of this market.

“Computers and office machinery” made up the main high-tech products imported in Ireland (49%), Luxembourg (52%) and the Netherlands (48%). In France and Iceland, “Aerospace” products dominated (with 29% and 32% respectively).

Switzerland was the only country where “Pharmacy” accounted for the largest share of high-tech imports (29%), although it also made up a significant share in Belgium (21%).

Figure 8: Total high-tech exports and imports and distribution by group of products ⁽¹⁾, EU-27 and selected countries — 2005



EU-27: Excludes intra-EU trade

(1) “Other” includes “Electrical machinery”, “Chemistry”, “Non-electrical machinery” and “Armament”.

Source: Eurostat’s high-tech statistics

➤ ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

High-tech products

In order to analyse the competitive and trade performance of high-tech trade markets, two main approaches are used to identify technology-intensive industries and products: the sectoral approach and the product approach.

In this publication, the product approach - which was devised to complement the sectoral approach - is used. It paves the way to a more detailed analysis of trade and competitiveness. The product list is based on the calculations of R&D intensity by groups of products (R&D expenditure/total sales). Exports and imports of these products comprise high-tech trade.

High-technology groups of products are:

List of high-technology groups of products	SITC Rev. 3
Aerospace	7921+7922+7923+7924+7925+79291+79293+(714-71489-71499)+87411
Computers-office machines	75113+75131+75132+75134+(752-7529)+75997
Electronics-telecommunications	76381+76383+(764-76493-76499)+7722+77261+77318+77625+7763+7764+7768+ 89879
Pharmacy	5413+5415+5416+5421+5422
Scientific instruments	774+8711+8713+8714+8719+ 87211+(874-87411-8742)+88111+88121+88411+88419+89961+89963+89966+89967
Electrical machinery	77862+77863+77864+77865+77867+77868+7787+77884
Chemistry	52222+52223+52229+52269+525+531+57433+591
Non-electrical machinery	71489+71499+7187+72847+71877+72847+7311+73131+73135+73142+73144+73151+73153+73161+73163+73164+73165+73312+73314+73316+7359+73733+73735
Armament	891

European totals

The EU totals reported refer only to extra-EU trade (i.e. they exclude intra-EU trade). This makes it possible to consider the EU as an entity and compare it with other countries. Nevertheless, figures for the individual EU Member States include intra-EU trade.

World market share

The world market share is a ratio in which the numerator is the sum of the total exports/imports of high-tech products from countries (entities). The denominator is calculated as the sum of high-tech exports/imports from all countries/entities in the world. This means that the denominator for world market shares when counting EU as a single block is lower, because it excludes intra-EU trade.

Thus Figures 1 to 3 exclude intra-EU trade and Figures 5 and 6 include intra-EU trade.

Country abbreviations (Non-EU countries)

ASIOTH Other Asian Countries	JP Japan
AU Australia	KR South Korea
BR Brazil	MX Mexico
CA Canada	MY Malaysia
CH Switzerland	NO Norway
CN China	PH Philippines
HK Hong Kong	RU Russia
HR Croatia	SG Singapore
ID Indonesia	TH Thailand
IL Israel	TR Turkey
IN India	US United States
IS Iceland	

In the present case, "Other Asian countries" includes mainly Taiwan. China does not include Hong Kong.

Sources

All high-tech trade data are extracted from the **COMEXT** database — Eurostat's database of official statistics on EU external trade and trade between EU Member States.

Trade data reported by countries other than EU, EFTA and candidate countries are extracted from the UN Statistics Division's **Comtrade** database and included in the **COMEXT** database as a separate dataset. This trade includes re-exported imports. That means some countries show large figures due to that a large number of goods pass through the country and is counted as both imports and exports.

It should therefore be noted that the data used in this publication originate from two different sources with partly differing methodology. For more information regarding EU methodology, please refer to:





http://europa.eu.int/estatref/info/sdds/en/ext/ext_sm.htm

This issue of *Statistics in Focus* presents the data available in Eurostat's reference database on 26 October 2007.

Further information:

Data:

Science and technology

-  **High-tech industry and knowledge-intensive services**
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