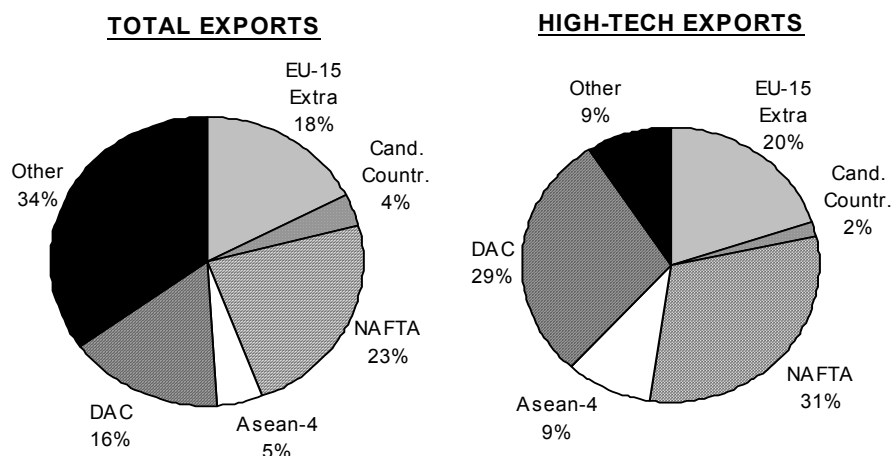


# High-Tech trade, Employment and Value Added in High-Tech Industries & Knowledge-Intensive Services

Guido Strack

Figure 1: Share of the world market in total and high-tech exports - 2001



<i>Billion EUR</i>	Total Exports	Total Imports	High-Tech Exports	High-Tech Imports
EU-15 (Extra)	985.3	1,028.0	195.5	218.6
Candidate Countries	196.6	246.2	16.3	32.7
NAFTA	1,283.6	1,777.5	297.2	322.2
ASEAN-4	269.7	220.5	91.3	63.9
DAC	894.6	795.9	283.7	203.4
Other	1,959.5	1,937.8	88.2	168.0
<b>EU-15 Intra</b>	<b>1,552.7</b>		<b>253.7</b>	

Source : Eurostat, UN

- ◆ NAFTA, the Developed Asian Countries and the EU are the biggest exporting trading blocks of high-tech products in the world, accounting for more than 80% of the world's trillion euro worth of trade in these products in 2001. Trade in high-tech products made up about 17% of world trade in that year.
- ◆ The Acceding Countries' 35% average annual increase of exports of high-tech products between 1996 and 2001 was more than twice as high as the EU-15's, with 15%. However, the EU-15's annual average increase of exports in turn was higher than the US (13%) and Japan's (9%).
- ◆ There are varying degrees of high-tech intensity in the European countries' trade baskets. While within the EU, Ireland and Luxembourg were those countries whose trade was the most high-tech-intensive, Malta had the highest proportion of high-tech products in its trade basket among the European countries in 2001.
- ◆ With 37% of total manufacturing employment, the proportion of employment in high-tech and medium high-tech industries in the EU is lower than in the US and Japan but higher than in the Acceding Countries.
- ◆ Employment has risen by more than 3% per year on average in the knowledge-intensive services (KIS) across the EU between 1995 and 2000
- ◆ While Belgium, Ireland and Finland are the leading Member States in high-tech manufacturing labour productivity, Germany has the highest labour productivity for knowledge-intensive services (KIS)

## Statistics in focus

### SCIENCE AND TECHNOLOGY

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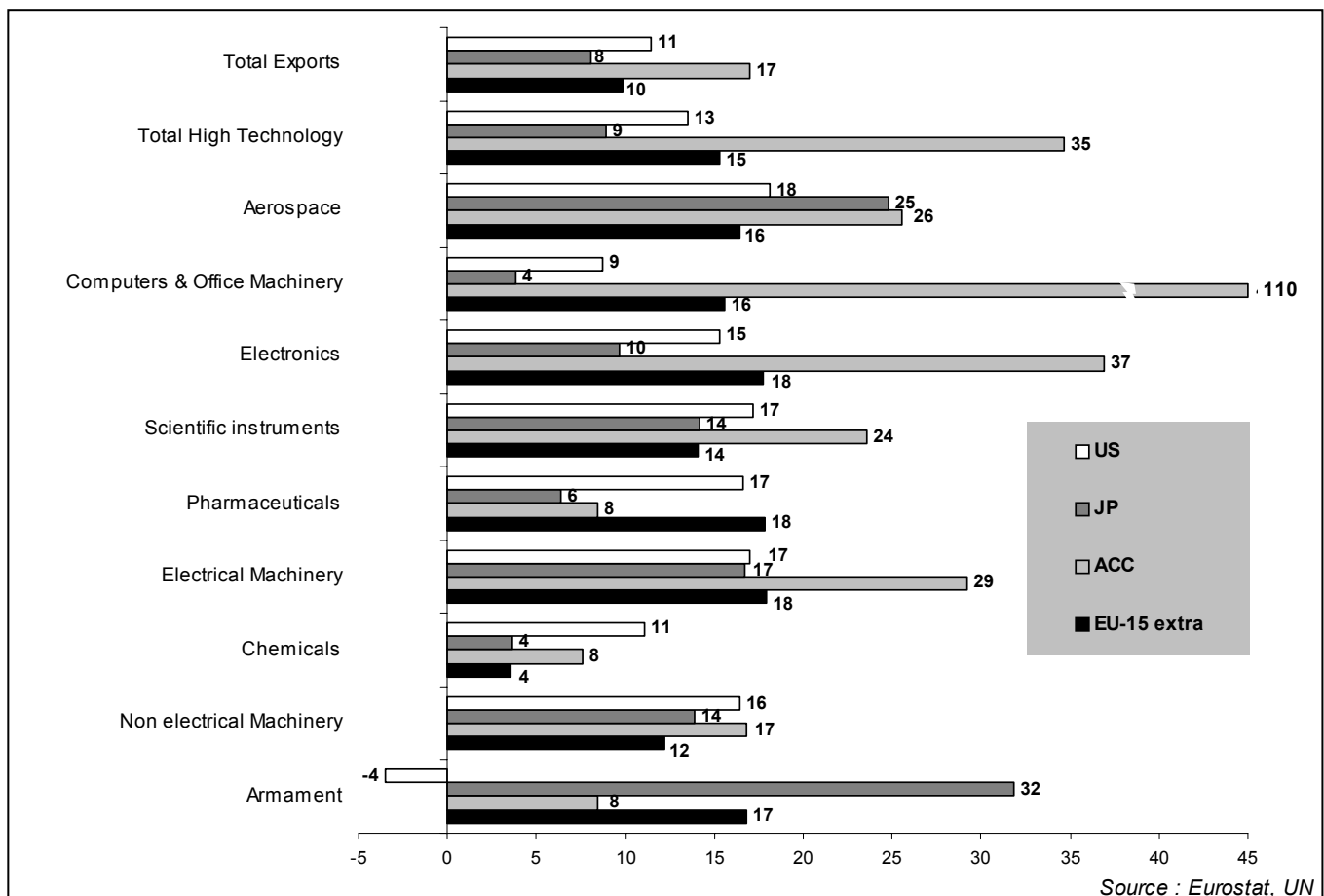


High-tech products are defined as goods whose production has involved a high intensity of R&D (see also methodological notes on page 7). In 2001, world trade in high-tech products amounted to almost one trillion euro (see figure 1). NAFTA was by far the biggest trading block in high-tech products (with 297.2 billion EUR of exports and 322.2 billion EUR of imports), followed by the Developed Asian Countries (or DACs: Japan, Korea, Singapore and Taiwan) and the EU-15. It is worth noting that for the DACs and the Asean-4 countries, the share of high-tech exports in total exports lies above 30%,

suggesting a certain degree of specialisation in these products. Likewise, NAFTA and, to a lesser extent, the EU's high-tech products export shares were higher than their respective share of total world trade. Trade of high-tech products within the Union (so-called EU intra trade), exceeded the EU's extra-trade in absolute figures, despite its being less high-tech intensive (high-tech products only take up about 16% of total EU intra-trade). The candidate countries contributed only 2% of high-tech world exports while their share in total world exports was twice as big.

## Acceding Countries' exports of high-tech rose much faster than that of the Triad countries' between 1996 and 2001

Figure 2: Annual average growth rate (%) of high-tech exports by product groups, 1996-2001



Remarkably, the Acceding Countries' high-tech exports grew more than twice as fast as their total exports in the five years to 2001 with an annual average growth rate of 35% (see figure 2). This increase is far higher than that of the Triad: the EU (15%), the US (13%) and Japan (8%).

Splitting up high-tech exports into its nine defined subgroups, the Acceding Countries' exports of 'Computers and office machinery' (110% annual average growth), 'Electronics and telecommunications' (36.9%), 'Electrical machinery' (29.2%), 'Aerospace' (25.5%) and 'Scientific instruments' (23.5%) in particular have grown the fastest among these countries' high-tech exports over this period. Exports of 'Chemical products', despite being the slowest-growing high-tech export products

for the Acceding Countries, still increased with an average 8% annually over these five years.

'Aerospace', 'Electrical Machinery', 'Pharmaceuticals' and 'Scientific instruments' were the US's fastest growing high-tech product exports between 1996 and 2001, increasing at an average annual rate of between 17 and 18%. This contrasts with Japan, where 'Armaments' happened to be the fastest growing export class of high-tech products (with an annual average growth rate of more than 30%). In the EU, 'Armaments' too, together with 'Electronics' and 'Electric machinery' showed the strongest growth amongst the high-tech product exports (between 17 and 18% annual average growth).

## Varying degrees of high-tech intensity in trade among the European countries.

Table 1: Values and composition of high-tech trade - 2001

	High-tech exports 2001 <sup>(1)</sup>			By group of high-tech products 0% 20% 40% 60% 80% 100%	High-tech imports 2001 <sup>(1)</sup>			Balance (Billion EUR)
	Billion EUR	as % of Total exports	AAGR 1996-2001 in %		Billion EUR	as % of Total imports	AAGR 1996-2001 in %	
EU15-extra	195.5	19.8	15.3		218.6	21.3	15.9	-23.1
BE <sup>(2)</sup>	19.1	9.0	21.0		21.6	10.8	39.5	-2.5
DK	8.1	14.0	22.8		7.8	15.4	11.8	0.3
DE	100.7	15.8	16.2		98.8	18.2	16.0	1.9
EL	0.6	5.5	21.7		3.2	10.1	17.2	-2.5
ES	7.9	6.1	10.4		18.2	10.6	14.4	-10.3
FR	92.4	25.6	15.0		86.6	23.6	16.4	5.8
IE	37.7	40.8	22.1		22.2	39.3	25.1	15.5
IT	23.2	8.6	10.8		32.2	12.4	12.6	-9.0
LU <sup>(2)</sup>	3.0	27.9	61.9		3.6	25.8	37.9	-0.5
NL	57.4	22.3	18.4		52.8	22.7	17.3	4.7
AT	11.6	14.6	20.5		12.6	15.1	18.3	-1.0
PT	1.9	6.8	22.5		5.0	11.4	17.3	-3.2
FI	10.2	21.1	19.1		6.6	18.2	12.7	3.6
SE	12.0	14.2	6.9		11.5	16.3	8.0	0.5
UK	80.4	26.4	12.9		72.5	19.5	12.0	7.9
ACC	14.5	9.7	36.2		25.8	13.8	23.1	-11.3
CZ	3.4	9.2	25.1		6.1	15.0	19.9	-2.7
EE	0.7	14.6	67.8		0.6	11.0	28.7	0.0
CY	0.0	1.5	-9.8		0.5	10.9	9.6	-0.5
LV	0.1	2.2	10.6		0.3	8.5	21.1	-0.3
LT	0.1	2.9	26.0		0.6	7.8	24.3	-0.4
HU	7.0	20.7	121.1		7.7	20.5	45.0	-0.7
MT	1.2	59.4	15.1		1.1	34.7	13.6	0.1
PL	1.0	2.6	22.4		6.5	11.6	19.7	-5.5
SI	0.5	4.8	14.3		0.9	8.2	11.3	-0.4
SK	0.5	3.7	22.3		1.5	9.1	22.1	-1.0
BG <sup>(3)</sup>	0.1	1.6	1.6		0.6	8.3	22.3	-0.5
RO	0.6	5.0	57.9		1.9	10.7	24.8	-1.2
TR	1.1	3.2	43.1		5.4	11.6	16.2	-4.3
JP	111.2	24.7	8.9		72.0	18.5	12.5	39.2
US	233.8	28.6	13.5		243.3	18.5	15.6	-9.5

Source : Eurostat, UN

- Aerospace    □ Computers & Office machinery    ■ Electronics    □ Instruments
- Pharmaceuticals and Chemicals    ■ Electrical & Non-electrical Machinery & Armament

(1) EU Member States: including both intra and extra-EU trade

(3) Bulgaria: data for 2000

(2) Annual average growth rate between 1999 and 2001

At around 20%, the average high-tech intensity of the EU's extra-trade is lower than that of Japan and the US. Of these two countries' total exports, a quarter or more are considered high-tech. In further contrast with the EU, the US and Japan's imports are less high-tech intensive than their exports (21.3% for the EU vs. 18.5% for Japan and the US). While the EU and the US experienced a trade deficit in high-tech products (respectively 23 and 10 billion EUR) in 2001, Japan benefited from almost 40 billion EUR of trade surplus in these products in that year.

Comparing the European countries, Malta, Ireland, Luxembourg, the UK, France, the Netherlands, Finland and Hungary had a high-tech export share above the EU-15's average in 2001. In absolute figures, Germany was the biggest high-tech exporting country of the EU. Hungary and Estonia bore the fastest growth in high-tech exports between

1996 and 2001 (respectively more than 120% and 65% annual average growth), spearheading the 'Acceding Countries' remarkable growth in high-tech exports discussed in the previous paragraph. Luxembourg's high-tech exports likewise rose more than 60% annually between 1999 and 2001.

The integrated bar chart shows the breakdown of high-tech exports according to aggregated product classes. 'Electronics' and 'Computers and office machinery' are the most important product classes in terms of high-tech exports for most EU countries, even more so for the 'Acceding Countries'. France stands out thanks to a significant share of aerospace in its high-tech export basket while Malta, Estonia and Finland seem to be the most specialised 'Electronics' exporters. Ireland, Malta, Luxembourg, France, the Netherlands and Hungary also lead in terms of import share of high-tech products in Europe (between 20 and 40% of these countries'

imports are high-tech products, the EU's average being 21.3%). Hungary experienced the highest increase of high-tech imports of all European countries between 1996 and 2001 (45% annual average growth), while Belgium and

Luxembourg saw a similar pace of increases between 1999 and 2001 (around 38-39%). Ireland had the largest high-tech trade surplus of the EU in 2001.

### Proportion of EU employment in high-tech and medium high-tech industries lower than in the US and Japan, but higher than in the Acceding Countries

Table 2: Employment in manufacturing industries for the EU, Candidate countries, Japan and the US - 2000

	Total manufacturing		High-tech & Medium high-tech manufacturing		High-tech manufacturing		Medium high-tech manufacturing		Medium low-tech manufacturing		Low-tech manufacturing	
	Thousands of persons employed	AAGR 1995-2000 (%)	% of Tot. manuf.	AAGR 1995-2000 (%)	% of Tot. manuf.	AAGR 1995-2000 (%)	% of Tot. manuf.	AAGR 1995-2000 (%)	% of Tot. manuf.	AAGR 1995-2000 (%)	% of Tot. manuf.	AAGR 1995-2000 (%)
EU15	28482	0.2	37.0	0.2	9.7	0.4	27.3	0.1	25.0	0.5	38.1	-0.4
BE	677	0.3	34.2	0.8	7.9	2.6	26.3	0.3	26.9	0.1	38.9	-0.6
DK	488	0.2	33.0	-0.7	9.1	-2.7	23.9	0.1	22.1	-0.2	44.9	-1.0
DE	7551	0.0	47.7	-0.7	9.4	-0.5	38.3	-0.7	24.0	-1.3	28.4	0.3
EL	223	0.2	19.8	0.2	5.6	2.1	14.2	-0.5	24.6	-1.3	55.6	-2.3
ES	2595	-0.3	25.9	3.4	4.5	1.4	21.3	3.9	28.1	4.1	46.0	2.8
FR	4027	-0.1	37.6	0.2	13.0	1.3	24.6	-0.3	25.1	1.1	37.3	-0.2
IE	256	-0.1	44.6	5.7	25.9	6.3	18.7	4.8	15.4	4.3	40.0	1.8
IT	4821	-0.3	30.9	0.5	7.1	-1.2	23.8	1.1	27.5	1.7	41.6	-1.0
LU	34	0.3	19.3	1.4	4.8	4.0	14.6	0.8	52.4	-0.5	28.3	0.5
NL	915	0.0	33.5	2.4	10.6	2.2	22.9	2.6	24.7	1.5	41.8	1.3
AT	629	0.4	33.6	0.8	9.0	0.5	24.6	1.0	26.4	0.3	40.1	-0.5
PT	938	0.5	17.2	-0.1	3.5	-1.6	13.7	0.3	21.0	0.3	61.8	-3.5
FI	436	0.2	35.7	3.0	13.3	5.0	22.4	1.9	23.9	4.4	40.4	-0.3
SE	792	-0.1	44.3	2.4	12.9	2.0	31.3	2.7	22.7	-0.2	33.0	-0.8
UK	4100	0.7	36.7	-1.1	12.9	0.1	23.8	-1.7	23.6	-1.0	39.7	-1.7
ACC <sup>(1)</sup>	5265	:	30.0	:	6.2	:	23.8	:	24.5	:	45.5	:
CZ	1236	:	35.5	:	5.9	:	29.6	:	27.9	:	36.7	:
EE	118	:	17.5	:	7.2	:	10.2	:	16.0	:	66.5	:
CY	34	:	11.2	:	2.5	:	8.7	:	21.1	:	67.7	:
LV	153	:	12.9	:	2.8	:	10.1	:	12.4	:	74.6	:
HU	753	:	36.0	:	10.7	:	25.3	:	20.0	:	44.0	:
MT	29	:	25.0	:	16.9	:	8.1	:	27.7	:	47.3	:
PL	2290	:	26.4	:	4.8	:	21.6	:	25.1	:	48.6	:
SI	242	:	30.8	:	8.5	:	22.4	:	25.4	:	43.8	:
SK	410	:	34.5	:	5.8	:	28.7	:	25.5	:	40.0	:
BG	566	:	26.6	:	4.4	:	22.2	:	19.6	:	53.8	:
RO	1734	:	24.8	:	2.8	:	21.9	:	19.8	:	55.4	:
JP <sup>(e)</sup>	12483	-1.9	40.4	-1.1	13.4	-1.2	27.0	-1.0	18.3	-2.4	41.3	-2.5
US <sup>(e)</sup>	19533	0.0	41.0	0.7	17.9	0.6	23.2	0.7	21.3	0.7	37.6	-1.0

(1) ACC is sum of 9 Acceding Countries (excluding Lithuania);

Source: Eurostat and OECD (for JP and US)

(e) Estimated employment data for 2000

Despite having a larger industrial workforce than Japan or the US, the EU had a smaller proportion of people working in the high-tech and medium high-tech sectors of manufacturing industries than its two Triad counterparts (37% compared to respectively 40% and 41%). However, at Member State level, Germany, Ireland and Sweden exceed the shares of the US and Japan with more than 44% of total manufacturing workers being active in the high-tech and medium high-tech sectors of the manufacturing industry.

Employment in high-tech and medium high-tech industries

stagnated in the EU (+0.2% annual average growth rate) in the second half of the 1990s, just as in the US (+0.7%). In Japan, employment in these sectors even declined over the same period. Compared to total manufacturing however, in the US and Japan the high-tech and medium high-tech industries did marginally better in terms of employment growth. In the EU, employment in the high-tech and medium high-tech industries grew in line with employment in total manufacturing. Ireland, Spain, Finland, Sweden and the Netherlands were the only Member States experiencing an average employment growth of more than 2% per year in the high-tech and medium

high-tech manufacturing industries between 1995 and 2000.

As shown in table 2, several candidate countries had higher shares of employment in high-tech and medium high-tech industries than some of their EU peers in 2000. In Hungary, the Czech Republic and Slovakia, more than 34% of the

manufacturing workforce was devoted to high-tech and medium high-tech production. On average, about 30% of the Acceding Countries' total manufacturing workforce was concentrated in the high-tech and medium high-tech industries in 2000.

### Rising employment in knowledge-intensive services all across the EU between 1995 and 2000

Table 3: Employment in knowledge intensive services for the EU, US and Japan - 2000

	Knowledge-intensive services <sup>(e)</sup>		Knowledge-intensive high-tech services		Knowledge-intensive market services		Knowledge-intensive financial services <sup>(e)</sup>		Other Knowledge-intensive services <sup>(e)</sup>	
	Thousands of pers. employed	AAGR in % 1995-2000	% of KIS	AAGR in % 1995-2000	% of KIS	AAGR in % 1995-2000	% of KIS	AAGR in % 1995-2000	% of KIS	AAGR in % 1995-2000
EU15	61285	3.1	8.0 e	3.8 e	25.9 e	5.6 e	10.5	0.8	55.6	2.4
BE	1838	3.1	7.2	5.4	22.9	6.1	10.4	-0.3	59.4	3.1
DK	1272	2.2	8.5	6.4	21.1	4.1	8.1	2.9	62.2	1.1
DE	11181	1.7	7.4	-2.6	25.3	5.1	12.1	-1.2	55.2	1.7
EL	1053	2.8	5.5 e	4.1 e	27.3 e	4.2 e	12.2	3.4	54.9	1.9
ES	5534	5.6	6.2	8.2	31.0	9.0	11.0	4.1	51.8	3.9
FR	9487	3.5	8.5	3.1	25.5	5.0	8.9	1.6	57.0	3.2
IE	464	5.0	10.1	4.8	25.4	8.4	12.9	7.5	51.2	3.0
IT	6880	2.1	8.8	4.5	25.2	7.0	12.0	-1.2	53.9	0.5
LU	132	4.0	7.7	6.8	21.3 e	6.3 e	26.9	1.6	42.7	4.3
NL	4097	5.0	7.6	10.9	28.7	6.7	8.8	5.2	54.9	3.5
AT	1100	5.2	9.3	7.6	22.4	7.0	13.4	4.1	54.7	4.6
PT	1196	4.9	4.5	2.7	23.4	4.6	9.8	-0.9	62.1	6.5
FI	741	4.5	10.9	5.4	22.9	8.3	5.5	2.3	60.3	3.6
SE	2096	1.8	9.9	5.3	22.1 e	4.9 e	4.3	0.8	63.6	0.5
UK	14214	3.0	8.3	6.4	26.0	4.3	11.0	1.1	54.7	2.5
JP	10860	-11.2	:	:	:	:	:	:	:	:
US	57123	3.4	:	:	:	:	:	:	:	:

(e) : estimates

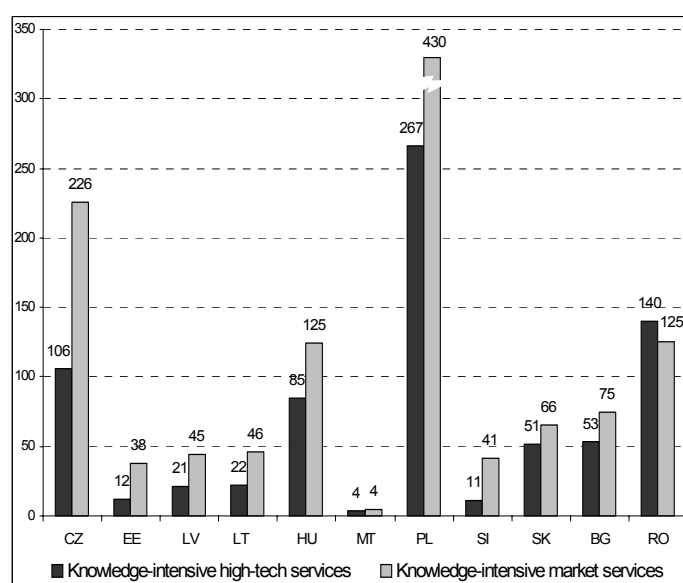
Source: Eurostat and OECD (for JP and the US)

Knowledge-intensive services (KIS) have shown a healthy 3.1% annual average growth in employment during the second half of the 1990s in the EU. This is mainly thanks to an increase in employment in knowledge-intensive market services (such as transport, renting and other business activities), and to a lesser extent, to increases in knowledge-intensive high-tech services (such as post and telecommunications, computer and related services and research and development). The former represents about a quarter of total employment in KIS across the EU, while the latter's share is 8%. Knowledge-intensive financial services (comprising financial intermediation and insurance), have experienced an 0.8 % average annual increase in employment over this period while employment in other knowledge-intensive services such as e.g. education, health and social work, has increased by 2.4% between 1995 and 2000. At Member State level, the annual average growth in KIS employment between 1995 and 2000 was quite mixed, from a moderate 1.7% in Germany to a strong 5.6% in Spain.

The US experienced a very similar growth rate in KIS' employment as the EU from 1995 to 2000. Conversely, Japan's KIS saw an annual average decrease of 11% in employment over the same period.

All candidate countries bar Romania had higher numbers of

Figure 3: Employment in selected knowledge intensive Services in Candidate countries\* - 2000 (thousands of persons employed)



(\*) Data for Cyprus and Turkey are not available

Source: Eurostat

people employed in knowledge-intensive market services than in knowledge-intensive high-tech services in 2000 (see figure 3). Malta shows similar employment figures for both categories. Excluding Cyprus, 577 thousand persons were

employed in knowledge-intensive high-tech services and a little more than 1 million in knowledge-intensive market services in the Acceding Countries.

### Labour productivity: Belgium, Ireland and Finland leading Member States in high-tech manufacturing, Germany in KIS

Among the Triad countries, labour productivity in the EU is lower than in Japan and the US in manufacturing as well as in Knowledge-intensive services (KIS). The Acceding Countries' average labour productivity in turn, is lower than the EU's (see table 4).

Among Member States, Ireland stands out in productivity of both manufacturing and services, even beating the US and Japan in some categories. In Belgium and Finland labour productivity exceeded 100 thousand EUR per person employed in high-tech manufacturing in the EU, with Ireland leading with 154 thousand EUR per person employed. In knowledge-intensive high-tech services, Luxembourg has a

slightly higher labour productivity than Ireland, and Germany follows closely behind. Overall, Germany showed the highest labour productivity for KIS.

Slovenia has the highest labour productivity among Central European candidate countries in the high-tech and medium high-tech manufacturing industries. In lower tech industries, it is Poland that achieves the highest labour productivity among its Central European counterparts. In knowledge-intensive high-tech services, Estonia, the Czech Republic, Hungary, Poland and Slovenia show similar labour productivity levels, achieving between 20 and 23 thousand EUR per person employed.

Table 4: Value added and labour productivity in manufacturing industries and services - 2000

	Value Added (MIO EUR) and Labour Productivity (Thousand EUR per person employed) in manufacturing and KIS															
	TOTAL manufacturing		High-tech manufacturing		Medium high-tech manufacturing		Medium low-tech manufacturing		Low-tech manufacturing		KIS <sup>(3)</sup>		High-tech services		Market services	
	Value added	Labour Product.	Value added	Labour Product.	Value added	Labour Product.	Value added	Labour Product.	Value added	Labour Product.	Value added	Labour Product.	Value added	Labour Product.	Value added	Labour Product.
EU15	1468402	52	201121	73	453370	58	358638	50	455273	42	3016747	49	330534	68	848176	53
BE	44482	66	5534	103	13884	78	12140	67	12924	49	69822	38	8938	68	17081	41
DK	24599	50	3511	79	5903	51	5231	48	9954	45	58944	46	5995	56	15745	59
DE <sup>(1)</sup>	405409	54	46320	65	172378	60	95319	53	91392	43	948622	85	88356	107	283147	100
EL	8901	40	552	44	1280	40	2944	53	4125	33	56062	53	:	:	:	:
ES	100442	39	6666	57	26230	47	31032	43	36514	31	161908	29	17275	50	51091	30
FR	210339	52	37521	72	57891	59	52374	52	62553	42	397640	42	45988	57	113613	47
IE	33812	132	10201	154	11659	244	2017	51	9935	97	27215	59	5600	120	5617	48
IT	204184	42	19988	58	55417	48	58710	44	70069	35	233797	34	34683	57	59139	34
LU	2339	68	72	44	344	69	1266	70	657	68	8067	61	1264	124	1698	60
NL	56861	62	6762	69	14961	72	14039	62	21099	55	146732	36	16174	52	44872	38
AT	35558	57	4018	71	9750	63	9885	60	11905	47	46508	42	5401	53	12508	51
PT	18127	19	1134	35	3378	26	4661	18	8954	14	28435	24	3516	65	6594	24
FI	30748	71	7301	126	5745	59	6120	59	11582	66	29700	40	4135	51	7757	46
SE <sup>(1)</sup>	48951	62	7816	76	16171	65	9583	37	15381	19	89815	43	11352	55	23421	51
UK	243650	59	43725	82	58379	60	53317	55	88229	54	713480	50	81857	69	205893	56
ACC <sup>(2)</sup>	66258	13	5547	16	17938	13	19803	14	29403	11	:	:	12266	21	16484	16
CZ	13391	11	877	12	4360	12	4079	12	4074	9	:	:	2206	21	2580	11
EE	854	7	64	7	106	9	168	9	516	7	:	:	241	20	347	9
CY	975	29	35	42	76	26	226	32	638	28	:	:	:	:	:	:
LV	1068	7	36	8	90	6	169	9	773	7	:	:	382	18	501	11
LT	:	:	:	:	:	:	:	:	:	:	:	:	326	15	338	7
HU	9342	12	1333	17	3146	16	2193	15	2669	8	:	:	1957	23	1183	10
MT	930	32	353	73	76	33	132	17	368	27	:	:	175	50	327	76
PL	33107	14	1882	17	6926	14	9222	16	15078	14	:	:	6149	23	9993	23
SI	3532	15	475	23	881	16	837	14	1339	13	:	:	233	22	640	16
SK	3059	7	173	7	856	7	1154	11	876	5	:	:	595	12	574	9
BG	1819	3	121	5	384	3	570	5	744	2	:	:	528	10	225	3
RO	6433	4	319	7	1421	4	1621	5	3071	3	:	:	1408	10	656	5
JP	1151672	92	234821	140	327801	97	253403	111	335646	65	1710510	158	:	:	:	:
US	1683499	87	378766	108	450857	100	334167	80	519709	71	4913689	86	:	:	:	:

(1) Sweden and Germany: estimated values for knowledge-intensive high-tech and market services

Sources: Eurostat and OECD for JP and US

(2) ACC is the sum of 9 Acceding Countries for which data are available (excluding Lithuania in manufacturing and Cyprus in Services)

## ➤ ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

### Sources

Data in this present Statistics in Focus (SIF) are based on the Structural Business Statistics (SBS) and the COMEXT/UN Comtrade databases. The first source was used to extract information related to employment and value added in high-tech industries and knowledge-intensive services. Not available data wherever possible were estimated based on adjacent years. Furthermore, employment figures in sectors not covered by the SBS data were estimated using the EU Labour Force Survey (LFS) spring data employment shares as reference data. COMEXT (EU countries) and UN Comtrade databases (all other countries) were used for trade data.

### Definitions

**COMEXT:** Eurostat's reference database on external trade statistics. Data for countries are broken down by detailed product group and aggregated according to the high-tech classification of those industries these products are originating from.

**High-tech trade** covers exports and imports of those products whose production has involved a high intensity of Research and Development (R&D). These products are grouped in the following main categories agreed upon by Eurostat and the OECD: Aerospace, Computers, Electronics and telecommunications, Pharmaceuticals, Scientific instruments, Electrical and Non-electrical machinery, Chemistry and Armaments (for a full list of these products, see also p. 357 of the EU Commission DG Research's 'Third European Report on Science and Technology Indicators'). For visibility purposes, a number of high-tech product groups have been combined in the bar chart of Table 1: Chemicals + Pharmaceuticals, Electrical + Non-electrical machinery + Armament.

**Structural Business Statistics (SBS):** collected within the framework of Council regulation on structural business statistics. This Regulation governs the transmission of data to Eurostat from the reference year 1995 onwards. In principle, it covers all market activities in section C to K and M to O of the NACE Rev.1, but, in practice, the data available are confined to sections C to K, excluding section J (financial services). For further methodological notes, please refer to Eurostat's reference database NewCronos-Theme 4, Domain SBS, Collection enterpr.

### NACE

The data in this publication are based on the statistical classification of economic activities in the European Community, NACE Rev.1.1.

**Number of persons employed** is defined as the total number of persons working in the observation unit (including working proprietors and partners working regularly in the unit and unpaid family workers), as well as persons working outside the unit who belong to it and are paid by it.

**Value added at factor cost** is the gross income from operating activities after adjusting for operating subsidies and indirect taxes.

**Labour productivity** refers to the value added at factor costs per person employed.

### Statistical abbreviations and symbols

AAGR: Annual average growth rate;

e estimated data;

: not available;

The Acceding Countries are: Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia.

The Candidate Countries comprise the Acceding Countries, Bulgaria, Romania and Turkey.

ASEAN-4: Indonesia, Malaysia, the Philippines and Thailand.

DAC: the Developed Asian Countries are South Korea, Japan, Singapore and Taiwan.

NAFTA (North-American Free Trade Agreement): Canada, Mexico and the US.

### High-tech classification of manufacturing industries

Eurostat and OECD use the following breakdown of the manufacturing industry according to global technological intensity and based on NACE rev. 1.1 at 3-digit level (Please note that in LFS-based reports, due to restrictions of the data source, Eurostat also uses a different but derived classification based on NACE at 2-digit level):

<b>High-technology</b>	Aerospace (35.3); Pharmaceuticals (24.4); Computers, office machinery (30); Electronics-communications (32); Scientific instruments (33)
<b>Medium-high-technology</b>	Electrical machinery (31); Motor vehicles (34); Chemicals - excl. pharmaceuticals (24 excl. 24.4); Other transport equipment (35.2+35.4+35.5); Non-electrical machinery (29)
<b>Medium-low-technology</b>	Coke, refined petroleum products and nuclear fuel (23); Rubber and plastic products (25); Non metallic mineral products (26); Shipbuilding (35.1); Basic metals (27); fabricated metal products (28)
<b>Low-technology</b>	Other manufacturing and recycling (36+37); Wood, pulp, paper products, printing and publishing (20+21+22); Food, beverages and tobacco (15+16); Textile and clothing (17+18+19)

### Classification of knowledge intensive services (KIS)

Following a similar logic as for manufacturing, Eurostat defines the following sectors as knowledge-intensive services (KIS):

<b>Knowledge-intensive high-tech services</b>	Post and Telecommunications (64); Computer and related activities (72); Research and development (73)
<b>Knowledge-intensive market services (excl. financial intermediation and high-tech services)</b>	Water transport (61); Air transport (62); Real estate activities (70); Renting of machinery and equipment without operator, and of personal and household goods (71); Other business activities (74)
<b>Knowledge-intensive financial services</b>	Financial intermediation, except insurance and pension funding (65); Insurance and pension funding, except compulsory social security (66); Activities auxiliary to financial intermediation (67)
<b>Other knowledge-intensive services</b>	Education (80); Health and social work (85); Recreational, cultural and sporting activities (92)

# Further information:

## ➤ Databases

New Cronos, Theme 9

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