

Increasing numbers of foreign students in the EU, decreasing job-to-job mobility of HRST

Statistics in focus

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Author
Håkan Wilén

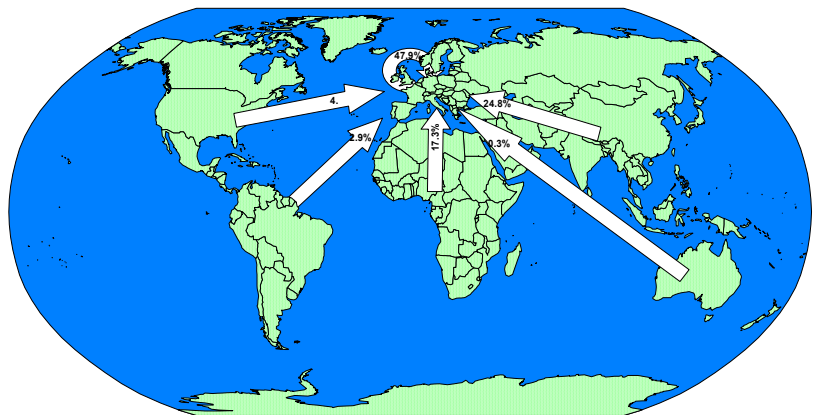
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Figure 1: Foreign tertiary level students studying in the EU-25 according to world region by citizenship, in % of all foreign students in the EU-25 — 2002



Unknown = 2,2%

- The total number of foreign tertiary students in the EU-25 was around 895 000 in 2002, a 19% increase on the 1999 level. Despite absolute growth, in proportional terms, the number of foreign European students has fallen. In 1999, Europeans accounted for 49.6% of total foreign tertiary students, down to 47.9% in 2002.
- In 2002, 13.8% of foreign tertiary students in the US were European. For the same year, 4.6% of foreign students in Europe were from North America. This is equivalent to roughly half the number of Europeans studying at the tertiary level in the US, at 40 700.
- There has been a general rise in the number of tertiary foreign students in the EU, with 18 of 21 countries for which data is available experiencing an increase in the number of foreign tertiary students studying in their institutions in 2002 compared to 1999.
- In 2002, the UK and Germany attracted the highest number of foreign students to their universities and other tertiary education institutions. The UK had around 227 000, and Germany, about 219 000.
- In general, science is not very popular among foreign students. In 13 of 19 countries, foreign tertiary students account for a lower proportion of students in science than they do for the total.
- In Engineering, 11 of the 19 EU countries for which data is available have lower ratios of foreign students than they do for all subjects.
- Finland has the highest proportion of its tertiary students studying S&E (37%), The popularity of these subjects in Finland also extends to tertiary foreign students, as 10% were studying science in 2002 and 28% were studying engineering.
- In the majority of countries, job mobility — the number of people that were employed in both 2002 and 2003, but that have changed jobs — is lower for women HRST than it is for men.
- For every available country, job mobility is at least twice as high for 25-34 year old HRST as it is for 45-64 year olds.



Number of tertiary level foreign students increasing in most EU countries

Tertiary enrolments represent a potential inflow into the stock of human resource in science and technology (HRST), and foreign or mobile students can account for a significant part of national tertiary enrolment levels. In the last few years there has been a general increase in the number of tertiary foreign students in the EU (Table 1). In fact, of those EU countries with available data for both 1999 and 2002 (21 in total), 18 had a higher number of foreign students studying in their institutions at the tertiary level in 2002 than in 1999. And even though the total number of students taking tertiary level education is also on the increase, growth in the number of foreign students has outstripped that of tertiary education overall (compare foreign students as a percentage of all students between 1999 and 2002).

In 2002, the UK and Germany attracted the highest number of foreign students to their universities and other tertiary education institutions. The UK, with around 227 000, and

Germany, with about 219 000, accounted for 25.4% and 24.5% respectively of all reported foreign students for the EU. In both of these countries, foreign students represented around 10% of all students at the tertiary level, slightly up compared to its 1999 level for Germany, but down for the UK.

Tallying the available figures for the EU-25 in 2002, there were around 895 000 foreign students studying at the tertiary education level. This figure compares with around 583 000 foreign tertiary students studying in the US in the same year.

But how popular are science and engineering related disciplines among foreign students? One way of calculating this is to look at the number of foreign students in science as a proportion of the total number of students in science and compare this with the level for all subjects together.

Table 1: Foreign students in tertiary education in 1999 and 2002
Total, science and engineering, in 1000s and as a % of total students, irrespective of nationality

	1999						2002					
	Total		Science		Engineering, manufacturing and construction		Total		Science		Engineering, manufacturing and construction	
	as a % of all students in this field		as a % of all students in this field		as a % of all students in this field		as a % of all students in this field		as a % of all students in this field		as a % of all students in this field	
EU-25	752 207	6.1	:	:	:	:	895 491	6.2	:	:	:	:
BE	36 137	10.2	:	:	:	:	40 354	11.0	3 299	8.4	2 693	6.5
CZ	4 583	2.0	257	1.7	623	1.2	9 753	3.4	1 096	4.5	1 455	2.5
DK	12 325	6.5	1 190	6.2	1 742	10.0	14 480	7.4	1 518	7.7	2 235	11.5
DE	178 195	8.5	21 434	8.3	32 339	9.5	219 039	10.1	32 710	10.6	36 988	11.1
EE	793	1.6	:	:	:	:	454	0.7	:	:	:	:
EL	:	:	:	:	:	:	8 615	1.6	:	:	:	:
ES	32 954	1.8	:	:	:	:	44 860	2.4	:	:	:	:
FR	130 952	:	:	:	:	:	165 437	:	:	:	:	:
IE	7 183	4.8	:	:	:	:	9 206	5.2	:	:	:	:
IT	23 496	1.3	1 528	1.1	3 037	1.0	28 447	1.5	1 539	1.1	3 845	1.3
CY	1 860	17.2	:	:	:	:	3 058	22.0	291	16.3	45	8.6
LV	1 847	2.3	20	0.6	362	2.7	3 261	3.0	95	1.2	43	0.4
LT	477	0.4	11	0.2	86	0.4	684	0.5	5	0.1	104	0.3
LU	652	24.0	:	:	:	:	:	:	:	:	:	:
HU	8 869	3.2	155	1.6	1 694	3.3	11 783	3.3	489	2.7	1 681	3.6
MT	302	5.2	18	6.1	11	2.6	350	4.8	7	1.9	11	2.1
NL	13 619	2.9	940	3.4	1 899	3.7	18 874	3.7	1 218	4.0	2 184	4.0
AT	29 819	11.4	3 911	11.6	5 185	11.7	28 452	12.2	3 726	11.3	4 668	11.9
PL	5 693	0.4	96	0.2	501	0.2	7 401	0.4	145	0.1	456	0.2
PT	:	:	:	:	:	:	15 692	4.0	958	3.0	2 669	3.3
SI	654	0.8	27	0.7	154	1.0	951	1.0	74	1.6	179	1.1
SK	:	:	:	:	:	:	1 643	1.1	71	0.5	199	0.7
FI	4 847	1.9	494	1.9	1 220	1.9	6 760	2.4	696	2.2	1 921	2.6
SE	24 412	7.3	3 087	8.5	4 445	6.9	28 664	7.5	3 766	9.2	5 197	7.5
UK	232 538	11.2	30 146	10.6	38 569	21.1	227 273	10.1	34 662	9.5	36 523	16.2
IS	207	2.4	18	2.0	4	0.8	472	4.1	64	4.5	19	2.7
NO	9 004	4.8	1 048	6.2	758	4.8	9 505	4.8	1 397	6.2	581	4.6
CH	:	:	:	:	:	:	29 301	17.2	4 257	21.6	4 551	18.8
BG	8 412	3.1	158	1.3	982	2.0	7 998	3.5	156	1.4	1 170	2.3
RO	13 279	3.3	142	0.6	925	1.0	10 608	1.8	196	0.7	786	0.7
TR	18 337	1.8	:	:	:	:	16 328	1.4	1 196	1.0	2 325	1.1
US	:	:	:	:	:	:	582 996	3.7	:	:	:	:
JP	:	:	:	:	:	:	74 892	1.9	1 421	1.2	10 910	1.6

EU-25, BE and TR are estimated in 1999.

Should students study both science and engineering in Austria, some double counting may exist.

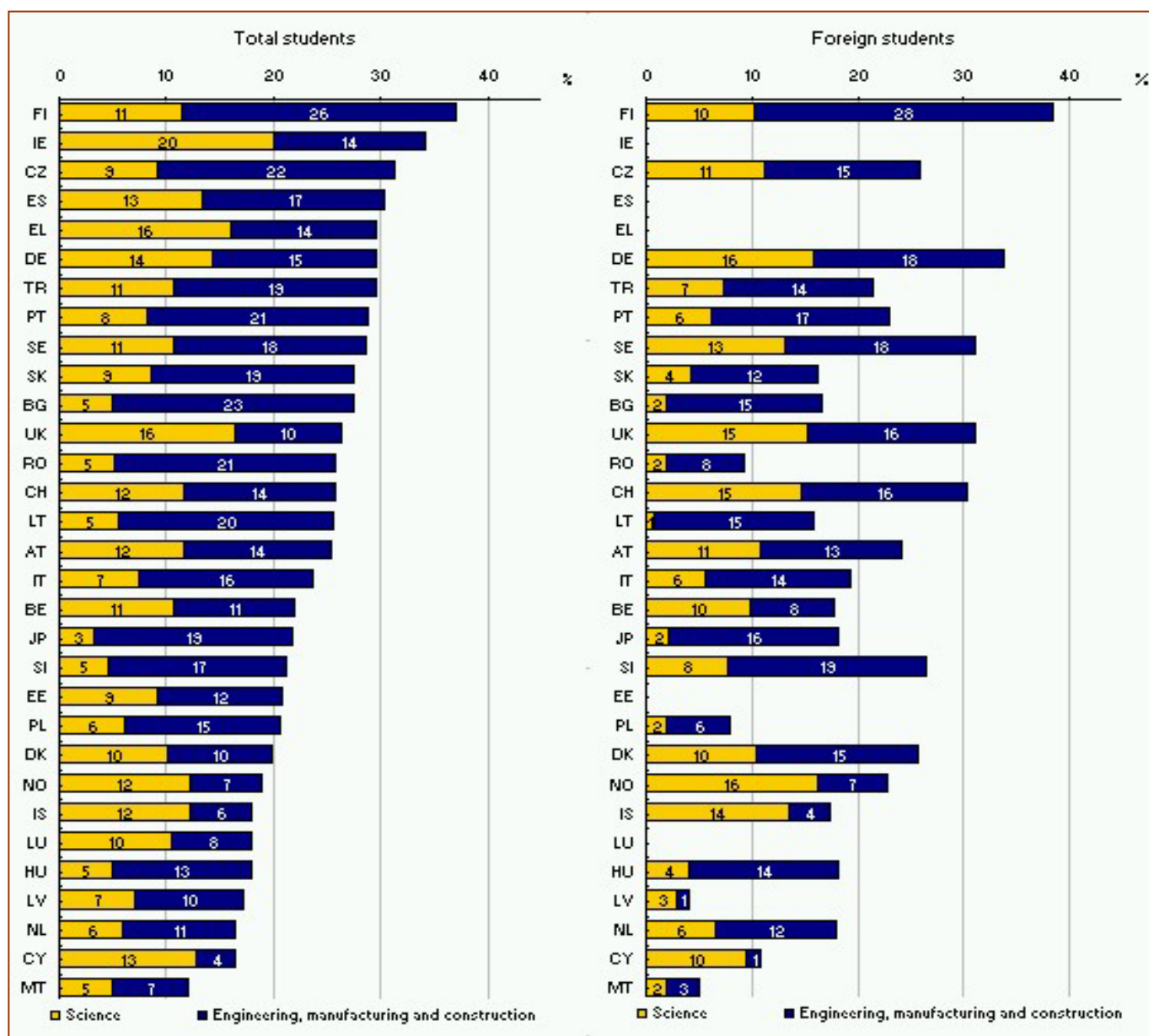
In general, the data seems to suggest that science is not very popular among foreign students. On the whole, foreign tertiary students account for a lower proportion of the students in science than they do for the total. This is the case in 13 of the 19 EU countries for which data is available. In Belgium, for example, while at the overall level foreign students accounted for 11.0% of all students in 2002, in science they only represented 8.4% of all science students. In Engineering this was lower still, at 6.5%.

In fact, in Engineering 11 of the 19 EU countries for which data is available have lower ratios of foreign students than for all subjects. A notable exception is Germany, where in 2002 foreign students were more heavily represented in both science and engineering than overall (10.6% of all

students in science and 11.1% in engineering were foreign, compared to 10.1% overall).

Calculating the number of foreign students in science and engineering as a proportion of total foreign students allows another estimation of the popularity of science and engineering among specific groups. This is illustrated in Figure 2, which for 2002 puts foreign students in S&E alongside the total. Finland has the highest proportion of its tertiary students studying S&E (37% in total), and within this the highest proportion studying engineering, manufacturing and construction (26%). The popularity of these subjects in Finland also extends to tertiary foreign students since 10% were studying science in 2002 and 28% were studying engineering.

Figure 2: Percentage of students following science and engineering at the tertiary level in 2002
Total students and foreign students



Germany, too, which is close to the top of the scale, had 50% of its foreign students studying S&E related disciplines in 2002. Engineering was again more popular than science, accounting for 34% of all foreign students chosen subjects.

This is a trend that extends across the board, underlining the relative popularity of engineering among foreign students as compared with science.

Close to half of foreign students in the EU are from Europe, but this is decreasing slightly

If the number of tertiary foreign students increased between 1999 and 2002, where have they come from and has there been a changing geographic composition over time? Table 2 shows the origin of foreign students according to citizenship and grouped by world region in 1999 and 2002.

The total number of foreign students in the EU-25 was around 895 000 in 2002, excluding only Luxembourg. This represents a 19% increase on its 1999 level, up from 752 000. Though the number of foreign tertiary students from other EU countries has also risen over this time period — up from around 372 000 to roughly 421 000 — in proportional terms, the number of foreign European students has fallen. In 1999, Europeans accounted for 49.6% of total foreign tertiary students, down to 47.9% in 2002 — excluding Portugal, for which no breakdown by nationality is available. This is because there has been

strong growth from other world regions, and in particular Africa (up from 16.1% to 17.3%) and Asia (up from 23.6% to 24.8%).

Slovenia and Estonia have the highest proportions of intra-European migration of students. In both of these countries, Europeans accounted for around 96% of total tertiary foreign students. At the other end of the scale, Greece has proportionately the fewest European students, with 11% — the lion's share come from Asia (86%). In France, meanwhile, 26% of foreign students come from other European countries, 14% from Asia and 53% from Africa. Here, it is worth sounding a note of caution that measuring foreign students according to their nationality can include second generation immigrants that have not acquired the nationality of the country they were born in, which can have a disproportionate effect on the calculated indicators depending on the country in question.

Table 2: Foreign students in tertiary education by world region in 1000s and as a % of total foreign students 1999 and 2002

	Foreign tertiary education students by world region in 1999								Foreign tertiary education students by world region in 2002							
	Total	Europe %	Africa %	North America %	South America %	Asia %	Oceania %	Unknown %	Total	Europe %	Africa %	North America %	South America %	Asia %	Oceania %	Unknown %
EU-25	752 206	49.6	16.1	5.0	2.6	23.6	0.4	2.7	895 491	47.9	17.3	4.6	2.9	24.8	0.3	2.2
BE	36 137	58.1	29.3	1.3	1.9	7.3	0.1	2.0	40 354	59.7	28.8	1.2	1.8	7.0	0.0	1.5
CZ	4 583	56.8	5.1	1.8	1.4	12.9	-	22.0	9 753	66.4	2.3	1.0	0.8	8.4	0.0	21.0
DK	12 325	43.9	2.7	2.6	1.1	10.4	0.3	39.1	14 480	44.5	2.9	2.2	0.9	8.3	0.3	40.9
DE	178 195	49.1	9.6	3.0	2.2	35.0	0.2	1.0	219 039	50.5	9.5	2.5	2.1	34.5	0.2	0.8
EE	793	95.1	0.5	2.3	0.1	2.0	-	-	454	96.0	-	2.2	0.2	1.5	-	-
EL	:	:	:	:	:	:	:	:	8 615	11.4	2.1	0.3	0.1	85.9	0.0	-
ES	32 954	60.4	10.3	7.8	15.9	2.9	0.1	2.6	44 860	61.7	9.7	7.1	18.8	2.6	0.1	0.0
FR	130 952	29.8	49.8	3.8	2.8	13.0	0.1	0.7	165 437	25.6	53.3	3.5	2.9	13.9	0.1	0.7
IE	7 183	48.3	4.4	22.4	0.3	18.2	1.0	5.5	9 206	46.6	5.4	22.0	0.4	24.9	0.8	-
IT	23 496	72.5	8.2	1.4	2.9	10.9	0.1	4.0	28 447	72.5	7.7	1.8	4.7	10.4	0.1	2.9
CY	1 860	36.1	10.7	1.0	-	51.9	0.3	-	3 058	25.7	3.1	1.2	0.1	67.7	0.2	2.1
LV	1 847	28.4	1.4	0.6	0.2	69.4	-	-	3 261	31.5	0.2	0.8	0.1	67.5	-	-
LT	477	27.0	0.4	1.5	0.2	68.3	2.5	-	684	36.8	1.9	3.7	0.3	56.3	1.0	-
LU	652	89.0	-	-	-	-	-	11.0	:	:	:	:	:	:	:	:
HU	8 869	57.7	2.4	5.7	0.2	14.1	0.1	19.8	11 783	80.6	1.4	2.7	0.2	15.1	0.0	-
MT	302	54.3	19.5	6.3	3.3	15.2	1.3	-	350	78.6	7.1	2.0	0.3	11.1	0.6	0.3
NL	13 619	48.7	17.0	2.4	7.9	23.3	0.3	0.4	18 874	57.1	14.2	1.9	5.9	20.1	0.2	0.5
AT	29 819	78.4	3.4	2.1	1.1	12.8	0.1	2.1	28 452	82.2	2.2	1.5	0.9	12.7	0.1	0.4
PL	5 693	64.5	7.3	6.0	1.0	18.5	0.1	2.7	7 401	72.5	3.7	7.7	0.8	15.0	0.1	0.3
PT	:	:	:	:	:	:	:	:	15 692	:	:	:	:	:	:	:
SI	654	92.2	0.5	3.7	0.6	2.1	-	0.9	951	96.3	1.1	0.2	0.6	0.9	-	0.8
SK	:	:	:	:	:	:	:	:	1 643	66.5	7.2	1.0	0.5	24.8	-	-
FI	4 847	49.8	13.6	5.2	1.2	23.8	0.3	6.1	6 760	55.0	11.3	4.3	1.2	25.8	0.5	2.0
SE	24 412	59.9	2.3	4.9	2.0	9.8	0.7	20.4	28 664	60.0	2.3	5.1	2.1	8.9	0.8	20.7
UK	232 537	50.6	7.2	8.1	1.4	31.5	0.9	0.5	227 273	45.4	8.3	8.5	1.2	35.6	0.8	0.3
IS	207	81.6	0.5	8.7	1.9	5.8	1.0	0.5	472	80.1	1.9	9.1	1.3	6.8	0.4	0.4
NO	9 004	43.9	6.8	3.8	1.8	11.2	0.3	32.3	9 505	54.7	8.2	4.4	1.6	11.6	0.3	19.3
CH	:	:	:	:	:	:	:	:	29 301	78.8	6.6	2.5	3.3	8.4	0.2	0.2
BG	8 412	81.6	2.1	0.2	0.1	16.0	-	-	7 998	75.4	1.4	0.3	0.1	22.8	-	-
RO	13 279	76.4	6.3	1.1	0.3	14.1	0.1	1.7	10 608	77.3	6.4	1.1	0.5	14.4	0.0	0.2
TR	18 337	45.2	2.6	0.2	0.0	51.8	0.2	-	16 328	32.9	2.3	0.3	0.0	64.3	0.2	0.0
US	:	:	:	:	:	:	:	:	582 996	13.8	6.5	10.2	6.1	62.5	0.8	0.0
JP	:	:	:	:	:	:	:	:	74 892	2.9	1.0	2.1	1.1	92.2	0.6	0.0

It is nevertheless worth underlining the different trends evident between continents. In 2002, 13.8% of foreign students, equivalent to 80 500, in the USA were European. For the same year, 4.6% of foreign students in Europe

were from North America, which as well as the USA, includes Canada, the Caribbean Islands, Mexico, etc. This is equivalent to roughly half the number of Europeans studying at the tertiary level in the USA, at 40 700.

Job-to-job mobility of employed HRST has generally fallen between 2001 and 2003

Human resources in Science and Technology — HRST, which includes people that have a tertiary education (whether employed, unemployed or inactive) or work in a S&T profession (ISCO 2 or ISCO 3), are shown in Table 3.

The number of HRST has increased in the vast majority of countries between 2001 and 2003. Women appear to be a major factor in this growth, as borne out by the percentage rises in their proportion of overall HRST. In Belgium, for example, women represented 47.2% of all HRST in 2001, but by 2003 this had increased to 49.0%.

However, when it comes to job mobility — the number of HRST, say in 2003, that were employed in both 2003 and 2002, but that have changed employers — women tend to be less mobile in the majority of countries for which data is available. There are a few notable exceptions, however. One of these is Germany, where between 2002 and 2003 around 606 000 employed HRST changed employers. Though women accounted for 296 000 of these, or 48.8%, calculated as a proportion of all employed women HRST, their job mobility rate was 5.9% as compared to 5.6% for men. In the UK, where there were the highest number of job mobile HRST between 2002 and 2003, at around 740 000, women accounted for 309 000 of these (41.8%).

Table 3: Job-to-job mobility of HRST aged 25-64 by gender in 1000s and % — 2001 and 2003

	2001									2003								
	Total			Women			Men			Total			Women			Men		
	HRST	Job mobile HRST	%	HRST	Job mobile HRST	%	HRST	Job mobile HRST	%	HRST	Job mobile HRST	%	HRST	Job mobile HRST	%	HRST	Job mobile HRST	%
	1000s	1000s	%	1000s	1000s	%	1000s	1000s	%	1000s	1000s	%	1000s	1000s	%	1000s	1000s	%
BE	1 852	82	6.6	47.2	38	6.9	52.8	44	6.5	1 897	64	5.2	49.0	28	4.9	51.0	36	5.5
CZ	1 499	:	:	51.0	:	:	49.0	:	:	1 544	58	4.4	50.6	27	4.2	49.4	31	4.6
DK	1 112	115	13.3	50.3	59	14.0	49.7	56	12.7	1 243	100	10.9	51.3	49	10.7	48.7	51	11.2
DE	15 813	758	7.4	45.0	344	7.1	55.0	414	7.6	16 043	606	5.7	45.8	296	5.9	54.2	311	5.6
EE	253	12	8.3	64.1	8 u	8.5 u	35.9	:	:	259	12	7.4	63.4	7 u	7.1 u	36.6	:	:
EL	1 099	:	:	46.6	:	:	53.4	:	:	1 161	:	:	47.9	:	:	52.1	:	:
ES	5 908	224	6.8	47.0	104	7.3	53.0	120	6.4	6 496	237	6.5	47.7	121	7.5	52.3	115	5.7
FR	9 204	550	8.2	48.3	235	7.8	51.7	316	8.4	9 834	564	8.1	49.2	245	7.8	50.8	320	8.3
IE	536	:	:	50.4	:	:	49.6	:	:	629	:	:	50.5	:	:	49.5	:	:
IT	6 686	283	5.5	46.1	132	5.9	53.9	151	5.2	7 103	247	4.6	47.3	130	5.3	52.7	117	3.9
CY	109	5	6.4	43.5	2	6.1	56.5	3	6.6	129	6	7.6	46.7	2	6.8	53.3	4	8.2
LV	328	:	:	62.9	:	:	37.1	:	:	333	15	7.0	60.5	6 u	4.3 u	39.5	10	11.4
LT	513	24	6.9	63.0	14	5.9	37.0	10	8.9	529	17	4.9	63.0	11	4.7	37.0	6	5.2
LU	67	3	6.2	42.3	1 u	4.8 u	57.7	2	7.1	70	2	4.0	43.1	1 u	4.4 u	56.9	1 u	3.7 u
HU	1 148	36	4.0	58.1	17	3.3	41.9	18	4.9	1 262	40	4.1	57.9	20	3.6	42.1	20	4.7
MT	34	2 u	6.2 u	38.1	:	:	61.9	:	:	36	2 u	5.6 u	37.4	:	:	62.6	:	:
NL	3 333	:	:	45.4	:	:	54.6	:	:	3 428	:	:	46.3	:	:	53.7	:	:
AT	1 142	:	:	43.8	:	:	56.2	:	:	1 197	50	5.5	45.1	23	5.5	54.9	27	5.5
PL	3 989	169	5.2	58.3	79	4.1	41.7	91	6.8	4 285	161	4.9	58.4	73	3.7	41.6	88	6.5
PT	750	36	5.7	51.8	18	5.7	48.2	18	5.8	835	37	5.6	52.6	18	5.3	47.4	19	5.8
SI	275	11	4.9	52.8	5 u	4.6 u	47.2	6 u	5.3 u	317	15	5.9	54.9	9 u	6.3 u	45.1	6 u	5.5 u
SK	660	14	2.5	57.9	8	2.4	42.1	6	2.6	679	:	:	58.3	:	:	41.7	:	:
FI	1 196	97	11.6	56.0	52	11.7	44.0	45	11.5	1 140	74	9.5	53.7	38	10.0	46.3	35	9.0
SE	1 865	37	5.5	49.5	17	5.3	50.5	19	5.8	1 950	44	3.1	50.6	19	2.6	49.4	25	3.6
UK	10 035	838	12.2	44.7	332	11.7	55.3	506	12.5	10 697	740	10.2	45.0	309	10.2	55.0	431	10.2
IS	51	6	14.6	52.6	3	13.2	47.4	3	16.3	53	6	13.3	52.5	3	13.0	47.5	3	13.5
NO	1 030	57	7.5	48.2	24	6.9	51.8	33	8.1	1 004	42	5.5	49.5	18	4.9	50.5	24	6.1
CH	1 664	:	:	40.0	:	:	60.0	:	:	1 730	105	8.4	41.5	51	9.3	58.5	54	7.7
RO	1 918	:	:	53.1	:	:	46.9	:	:	1 885	35	3.3	54.0	19	3.2	46.0	16	3.5

Exceptions to the reference year 2003: FR, NL, IS = 2002 data.

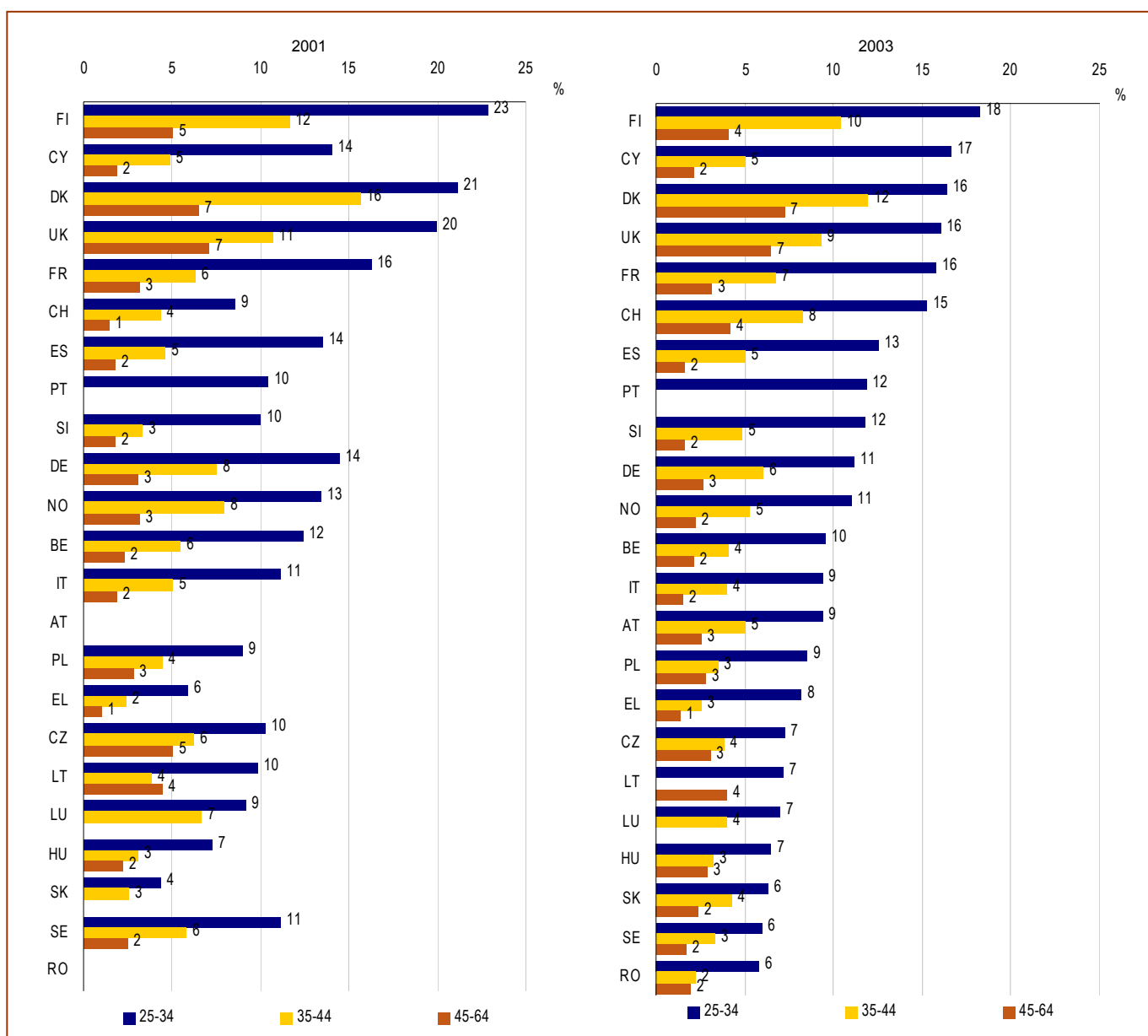
Their mobility rate, though, was the same as for their male counterparts at 10.2%. Both of these countries, show lower mobility rates of employed HRST between 2002 and 2003 than between 2000 and 2001. In the UK, not differentiating for gender, the mobility rate of employed HRST fell from around 12.2% to 10.2%. In Germany, where job-mobility in any case appears to be lower, the number of employed HRST who changed jobs fell from 7.4% to 5.7%. Similar reductions can be seen almost across the board.

Figure 3 breaks down the job-to-job mobility rate for employed HRST according to age. The distribution of mobility rates across age groups comes as no surprise, with 25 to 34 year olds being more mobile than 35-44 year

olds, who, in turn, are more mobile than 45-64 year olds. Mobility for young employed HRST can be as much as eight times as high as the rate for the equivalent population of 45-64 year olds. This is the case in Cyprus in 2003, where job mobility is 17% for 25 to 34 year olds and 2% for those aged between 45 and 64. For every available country, job mobility is at least twice as high for 25-34 year old HRST as it is for 45-64 year olds.

In 2003, Denmark and the UK showed the highest mobility rates amongst 45 to 64 year olds, with rates of around 7% in each country. Each also had a mobility rate of around 16% for 25-34 year old employed HRST.

Figure 3: Job-to-job mobility of HRST by age in % — 2001 and 2003



Exceptions to the reference year 2003: FR, NL, IS = 2002 data. Data for CY, SI, LU should be treated with caution.

➤ ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

The International Standard Classification of Education — ISCED 97

The following programmes are at the tertiary level of education:

- **ISCED level 5A**
programmes that are largely theoretically based and are intended to provide sufficient qualifications for gaining entry into advanced research programmes and professions with high skill requirements
- **ISCED level 5B**
programmes that are generally more practical/technical/occupationally specific than ISCED 5A programmes
- **ISCED level 6**
this level is reserved for tertiary programmes that lead to the award of an advanced research qualification. The programmes are devoted to advanced study and original research

S&E — field of study

- **Science**
Life sciences (42), Physical sciences (44), Mathematics and statistics (46), Computing (48)
- **Engineering, Manufacturing and Construction**
Engineering and engineering trades (52), Manufacturing and processing (54), Architecture and building (58).

The International Standard Classification of Occupations — ISCO

- **ISCO 1 (legislators, senior officials and managers)**
occupations whose main tasks consist of ... planning, directing and co-ordinating the policies and activities of enterprises and organisations, or departments.
- **ISCO 2 (professionals)**
occupations whose main tasks require a high level of professional knowledge and experience in the fields of physical and life sciences, or social sciences and humanities.
- **ISCO 3 (technicians and associate professionals)**
occupations whose main tasks require technical knowledge and experience in one or more fields of physical and life sciences, or social sciences and humanities.

Human resources in science and technology — HRST

HRST and their sub-groups are measured using characteristics of educational attainment and occupation and follow the guidelines of the *Canberra Manual*.

- **HRST: Human Resources in Science and Technology — Occupation**
Individuals who are employed in a S&T occupation (ISCO '88 COM codes 2 or 3)
or, Individuals who have successfully completed education at the third level in a S&T field of study (ISCED '97 version levels 5a, 5b or 6)

Note that according to the *Canberra Manual*, the six broad S&T fields of study are: Natural sciences, Engineering and technology, Medical sciences, Agricultural sciences, Social sciences and humanities, and Other fields (*Canberra manual*, Paragraph 71)

Reference manual

Manual on the measurement of human resources devoted to S&T — Canberra Manual, Eurostat/OECD, 1994.

Job-to-job Mobility

Mobility is calculated by using information from the retrospective questions that are included in the European Union Labour Force Survey questionnaire Survey — EU LFS questionnaire. The wording of these questions is such that the information can be easily compared with the current year.

The following formula is used to calculate job-to-job mobility, the conditions of HRST (ISCO and ISCED) already having been applied to the data:

$$\frac{\text{Employed in year } t, \text{ employed in } t-1 \text{ and with current employer} < 12 \text{ months}}{\text{Employed in year } t, \text{ employed in } t-1} \times 100$$

Job-to-job mobility is calculated using information collected via the retrospective questions included in the EU LFS. As such, in addition to sampling error and proxy responses, the reliability of the information can be prone to memory distortion and differing country collection methods.

Data source

The indicators in this Statistics in Focus are calculated using data from Eurostat's Education database or from the European Union Labour Force Survey — EU LFS. The most recent data were extracted in June 2004.

Quality of the data

These HRST indicators can either be found in, or calculated from, Eurostat's HRST domain of NewCronos, Theme 9, or Eurostat's Education domain, Theme 3.

The guidelines on the sample size reliability of the data established by the EU LFS are applied to the HRST database and therefore countries for which quality levels do not permit publication appear as not available and are flagged as unreliable.

Foreign students

Foreign students are measured according to their citizenship. Overestimation of foreign students may therefore exist in countries where permanently resident second generation migrants with foreign nationalities constitute an important group of students. The indicators presented in this Statistics in Focus concern foreign students of whom a sub-set can be considered to be internationally mobile students.

According to the classification used by the UNESCO-UIS/OECD/EUROSTAT for Education Statistics, foreign students from Turkey and Cyprus are classified under the aggregate Asia.

Statistical abbreviations and symbols

- u data should be treated with caution
- :
- real zero

Further information:

➤ **Reference publications**

Title Statistics on Science and Technology in Europe, 2003 edition

Catalogue No KS-57-03-104-EN-C Price EUR 35

➤ **Databases**

[EUROSTAT website/Science and technology/Human Resources in Science & Technology](http://ec.europa.eu/eurostat/scienceandtechnology/humanresources)

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European Statistical Data Support:

Eurostat set up with the members of the 'European statistical system' a network of support centres, which will exist in nearly all Member States as well as in some EFTA countries.

Their mission is to provide help and guidance to Internet users of European statistical data.

The complete details concerning this support network can be found on our Internet site: www.europa.eu.int/comm/eurostat/

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