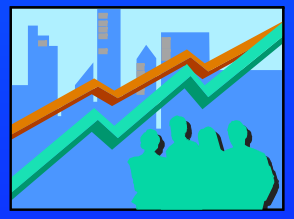
Indicators and Issues for Brain Circulation

KEI October 2005



Human capital in a KBE

1. Stocks of skilled workers
   - education production
     - enrolment participation; degrees awarded
   - inflows and outflows
     - graduates; labour force participation; employment/unemployment
   - employment of skilled workers (occupation, sector).

2. Mobility of skilled workers:
   - occupation to occupation
   - sector to sector
   - country to country

S&T human capital indicators

'Counting' researchers in selected countries

	Researchers (FTE)	Researchers per 1,000 employment	Researchers per 10,000 population
Korea (2003)	151,254	6.8	31.6
US (1999)	1,261,227	8.6	45.2
Japan (2002)	646,547	9.9	50.7
Germany (2002)	264,685	6.8	32.1
France (2001)	177,372	7.2	29.1
Finland (2001)	38,632	16.4	74.5
China (2002)	810,525	1.1	6.3

Source: OECD Main Science and Technology Indicators.

Indicators for stocks and mobility

1. Occupation mobility: demand for skills; flexibility of skills (e.g. occupation distribution of engineers).

2. Sector mobility: university to private sector (e.g. university researcher to private sector).

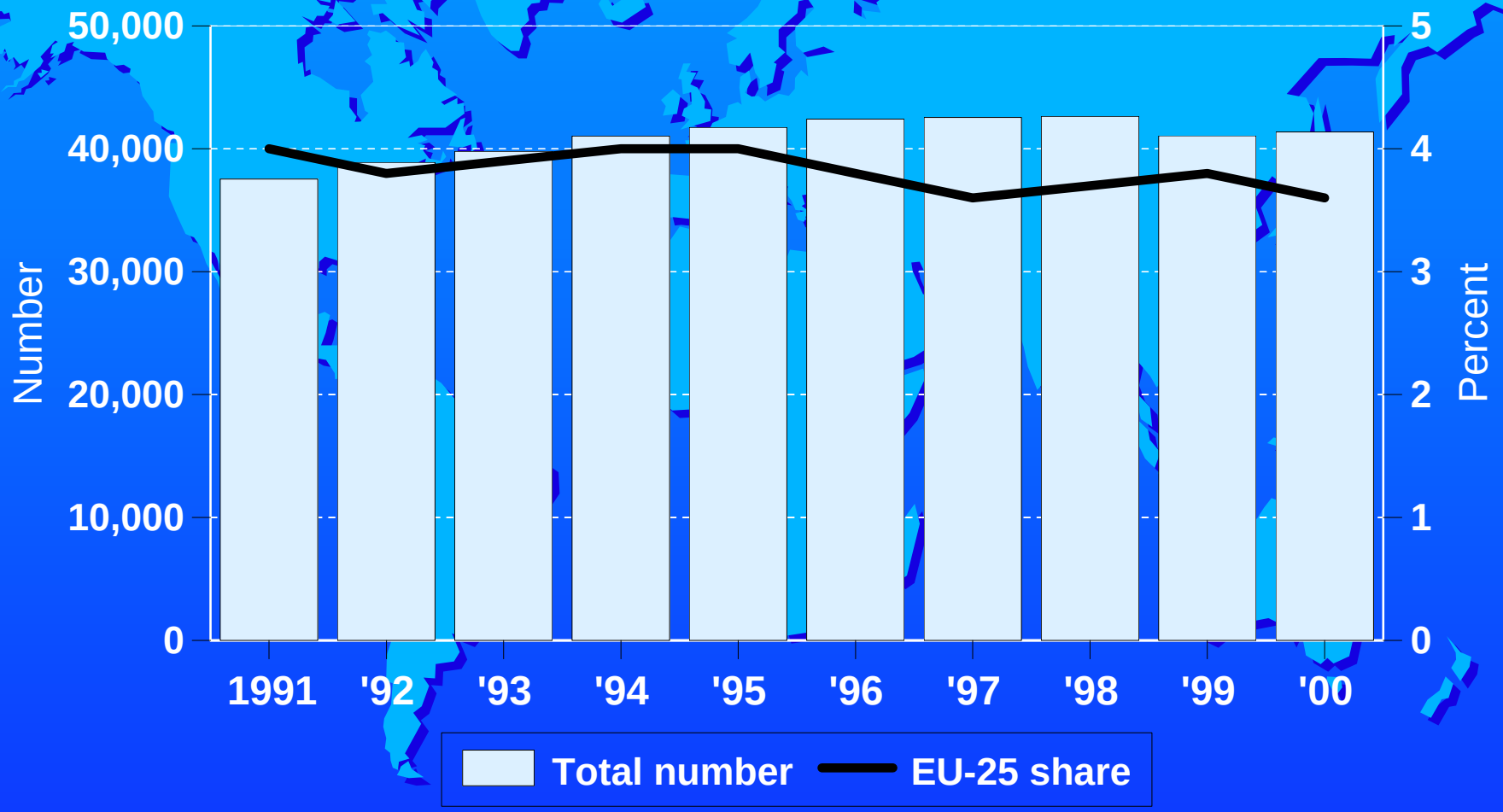
3. International: Italy to the United States (e.g. Italian researcher from public sector in Italy to private sector in the United States).

According to DG Research

"Researchers must move around more...
Raising the contribution to research to 3% GNP means recruiting 500,000 to 700,00 researchers in Europe. The Commission will therefore prioritize making it more attractive for European youth to choose a career in research as well as stimulate 'emigration' of researchers from countries outside the EU and Europe"

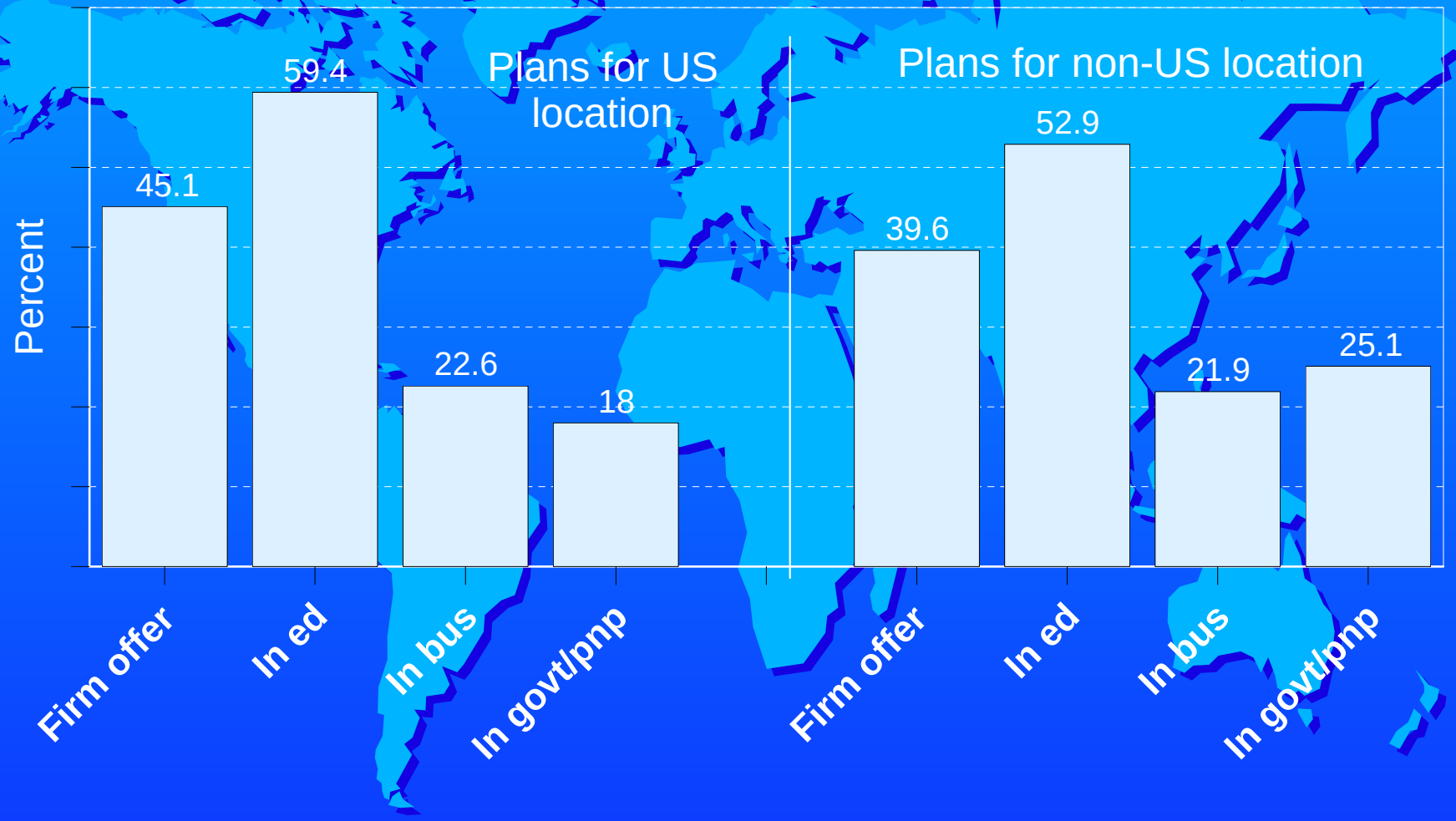
[Liberali: 2005-09-28]

Doctorates awarded in the US showing the share to EU-25, 1991 to 2000.



Source: Based on data of SRS, NSF.

EU-25 US Ph.D. graduates with firm employment offer, 1991 to 2000.

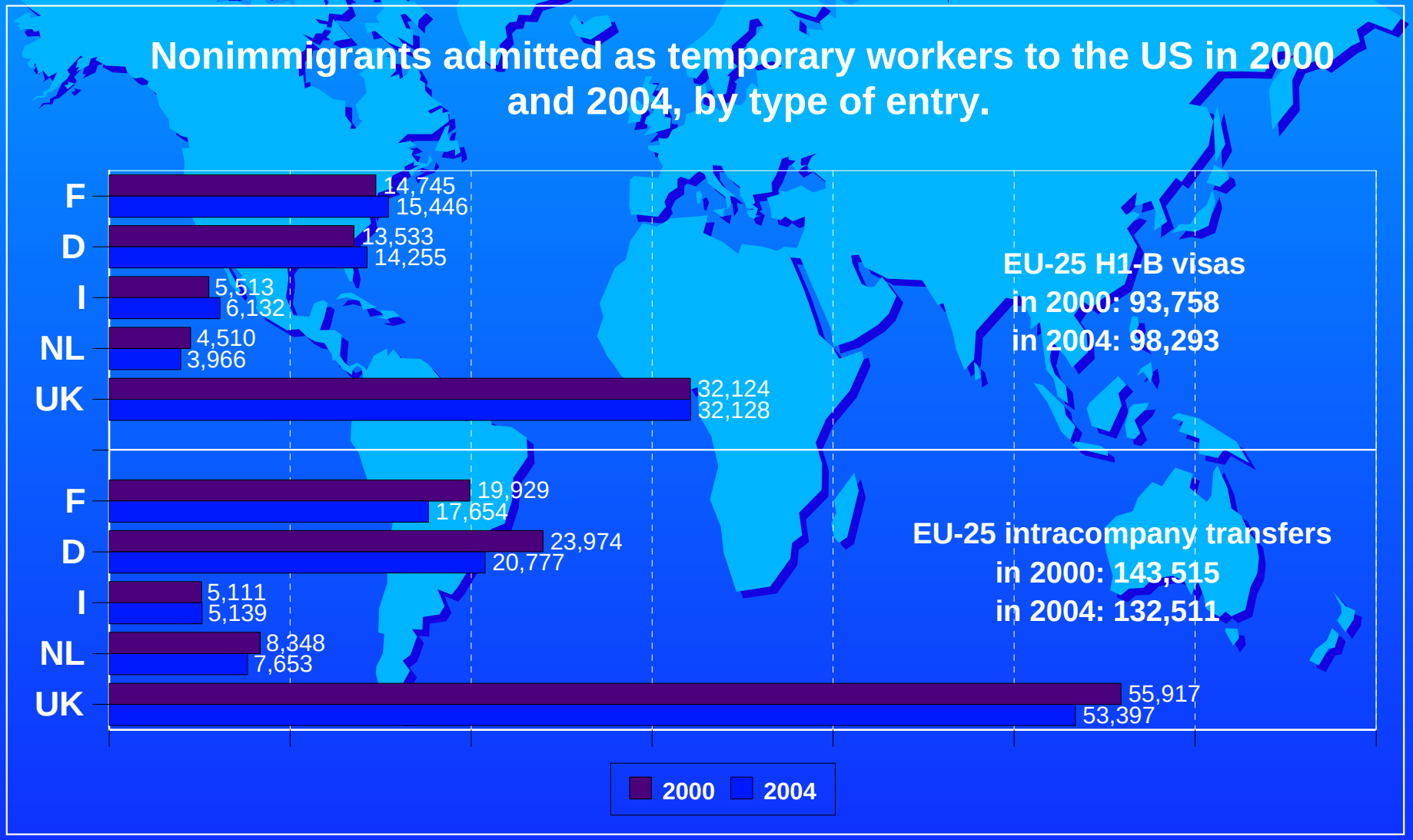


Source: Based on data of SRS, NSF.

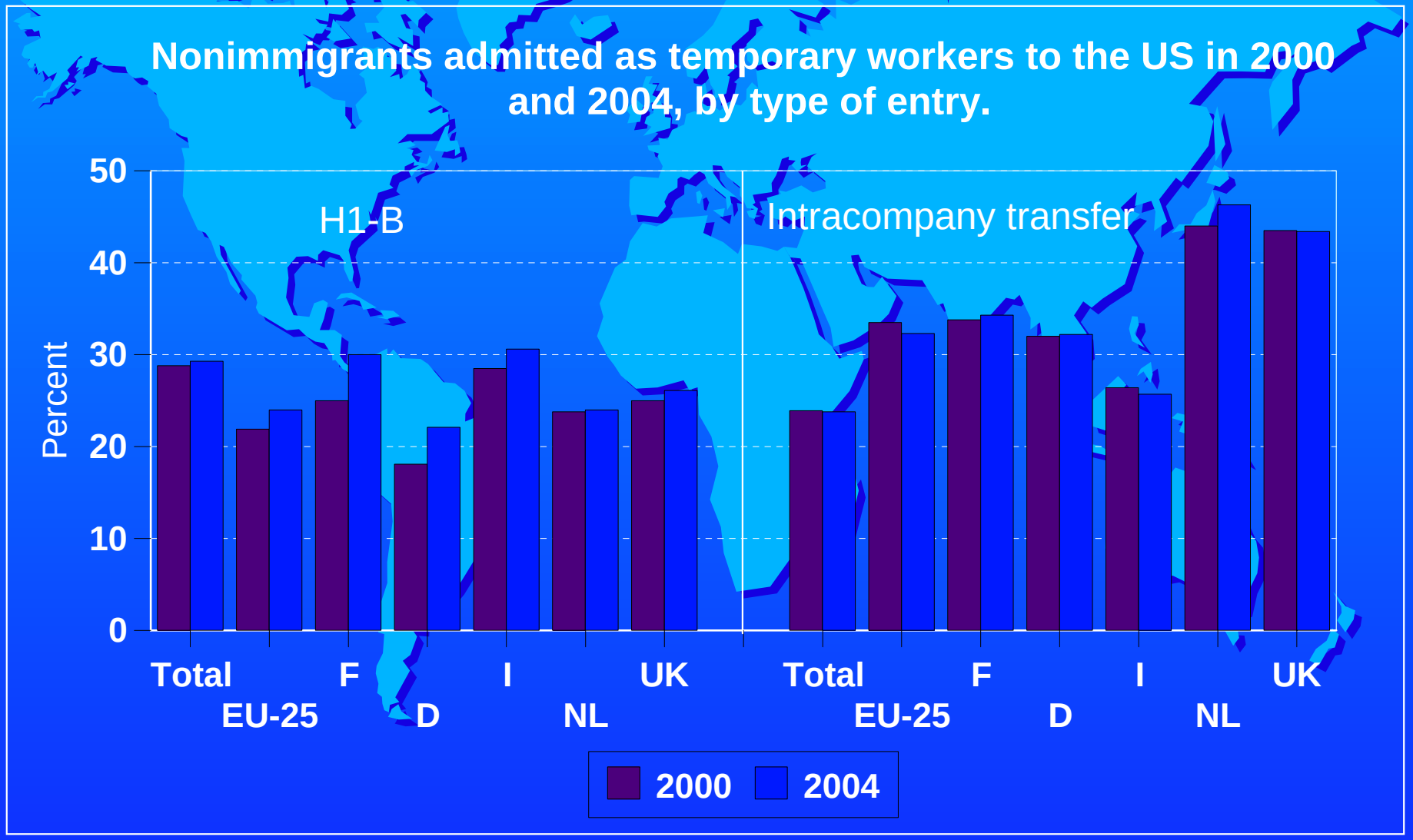
Mobility and MNEs — multinationals have the ability to export and import researchers and skilled workers on a global scale.

- Are MNEs contributing to loss of skilled personnel in ERA? (e.g. reduction of opportunities and growth)
- What is the impact on local employment? (e.g. people portability versus local area spillover).
- Who benefits and how: firm, individual, source of skilled worker?

Just how many highly skilled Europeans are helping to meet US labour demands?



Skilled Europeans are helping meet US labour demands but is it greater than typically estimated?



Movers in home country rate factors 'to leave' home country.

Factors to go outside of home country	EU-25	US
Broader scope of activities	61.5%	19.1%
Better access to leading technologies	51.3%	4.3%
Better career advancement opportunities	38.5%	8.5%
Better access to R&D funding	30.8%	2.1%
Broader job opportunities	28.2%	4.3%
Better earning opportunities	25.6%	0.0%
More favourable tax system	15.4%	4.3%
Better living conditions	10.3%	10.6%
Contract/agreement extended	5.1%	4.3%
Family responsibilities	4.3%	4.7%

Source: MERIT e-survey for DG Research study
Measuring Flows of Qualified Scientists, 2003.

'Movers' identify top 10 reasons for moving.

	EU-25		US	
	Moved abroad	Moved home	Moved abroad	Moved home
Career advancement	87.9%	55.1%	51.9%	70.5%
Employer reputation	74.0%	62.7%	61.1%	67.0%
Access to leading edge technologies	73.3%	46.6%	29.6%	60.7%
R&D funding	69.8%	42.4%	24.1%	60.7%
Professional networking	67.7%	46.6%	46.3%	61.4%
Employment/business opportunities	56.1%	41.5%	25.9%	55.4%
Salary	54.0%	33.9%	18.5%	62.2%
To take up a specific job/position	52.3%	61.9%	53.7%	64.4%
Adventure	48.8%	39.2%	53.7%	18.4%
Education	45.6%	58.5%	20.4%	62.9%

Source: MERIT e-survey for DG Research study
Measuring Flows of Qualified Scientists, 2003.

'Movers' rating skills as important for mobility.

	EU-25		US	
	Men	Women	Men	Women
Communication skills	80.3%	72.3%	79.0%	75.4%
Leadership skills	77.3%	62.7%	74.6%	64.6%
Languages	76.6%	56.6%	50.4%	50.8%
Computer user skills	56.3%	42.2%	54.0%	32.3%
Computer programming skills	25.4%	13.3%	32.7%	10.8%

Source: MERIT e-survey for DG Research study
Measuring Flows of Qualified Scientists, 2003.