

# Knowledge worker flows

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## Indicators and Issues for Brain Circulation

Symposium on International Migration and Development  
Turin Italy 28-30 June 2006.

# Five policy themes of globalization

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- **Changing economic landscape**
- **Growing future jobs**
- **New mindsets and changing attitudes**
- **Regional identities and struggles**
- **Emergence of China and India**

(DAVOS, January 2006)

# Some of the EU pressing policy priorities include the need to . . .

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- **Promote greater coherency between innovation policies.**
- **Improve regulatory environment**
- **Increase the average research investment level to 3% by 2010.**
- **Improve the R&D capacity for innovation capability.**

# Forecasting S&E human resources supply and demand an inexact science at best and today . . .

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- **Europe needs to increase its supply of researchers from 500,000 to 800,000 FTEs by 2010.** (Gago Report, EU)
- **Recent predictions for the U.S. — S&E occupation growth will rise faster than overall growth with one estimate at 70% faster.** (NSF, U.S.)
- **Globalization means countries take on roles of source, transit or destination for skilled workers. Multinational corporations are recruiting in a competitive global labour market.** (Dr. Chubin, NSB, U.S.)

# Multinational companies and their growing role in global R&D . . .

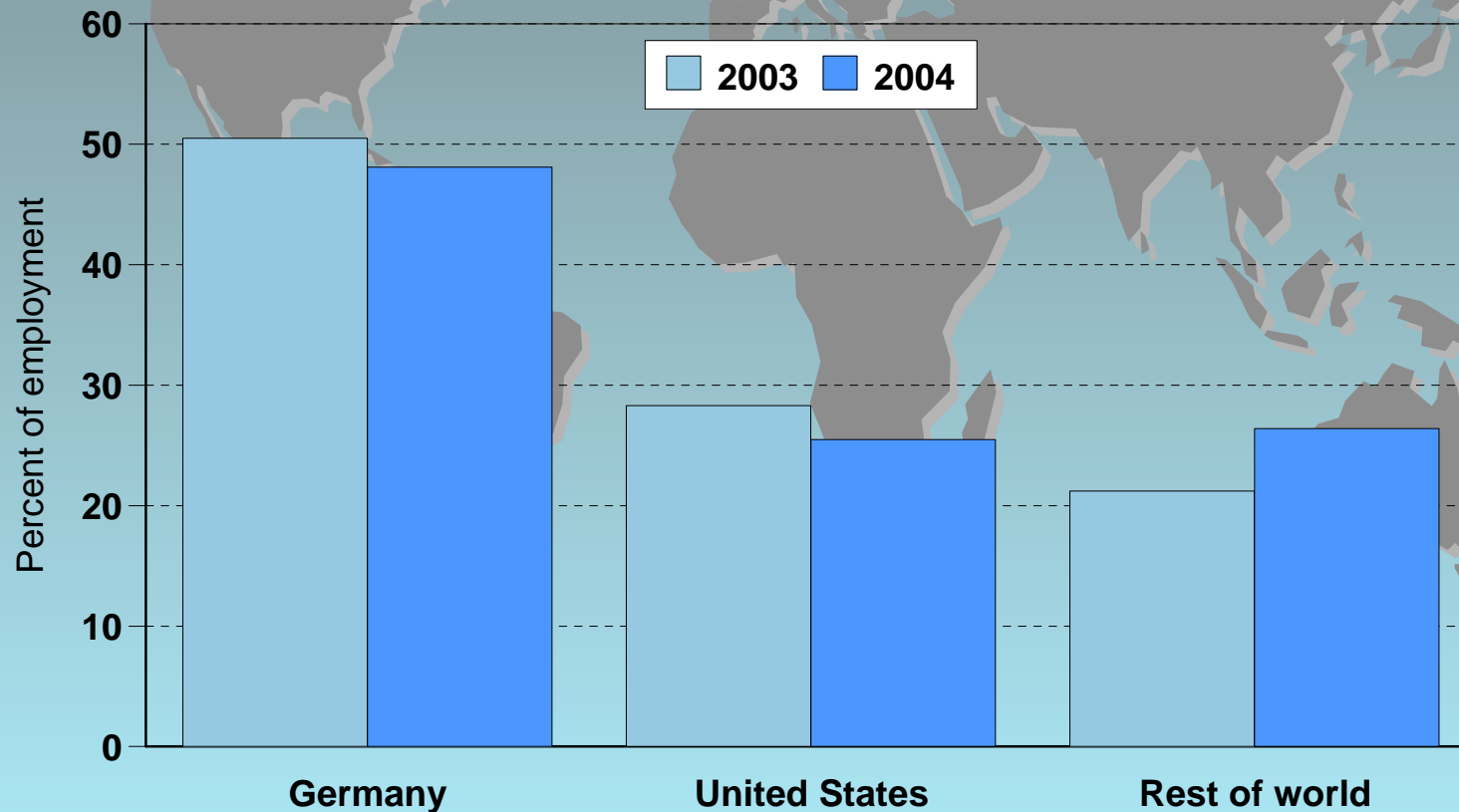
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- **Multinationals account for 46% of global R&D expenditures and 69% of global business R&D.**
- **Four of the top ten multinationals (as measured by R&D expenditures) are "based" in the EU — for now: Daimler Chrysler (Germany), Siemens (Germany), Volkswagen (Germany) and Nokia (Finland).**
- **Relocation of R&D overseas is no longer driven solely by the need for local adaptation or to tap established networks.**
- **Top reasons for relocation now include**
  - **availability and access to research talent**
  - **reduction of R&D costs.**

# Multinationals' employment patterns are changing —

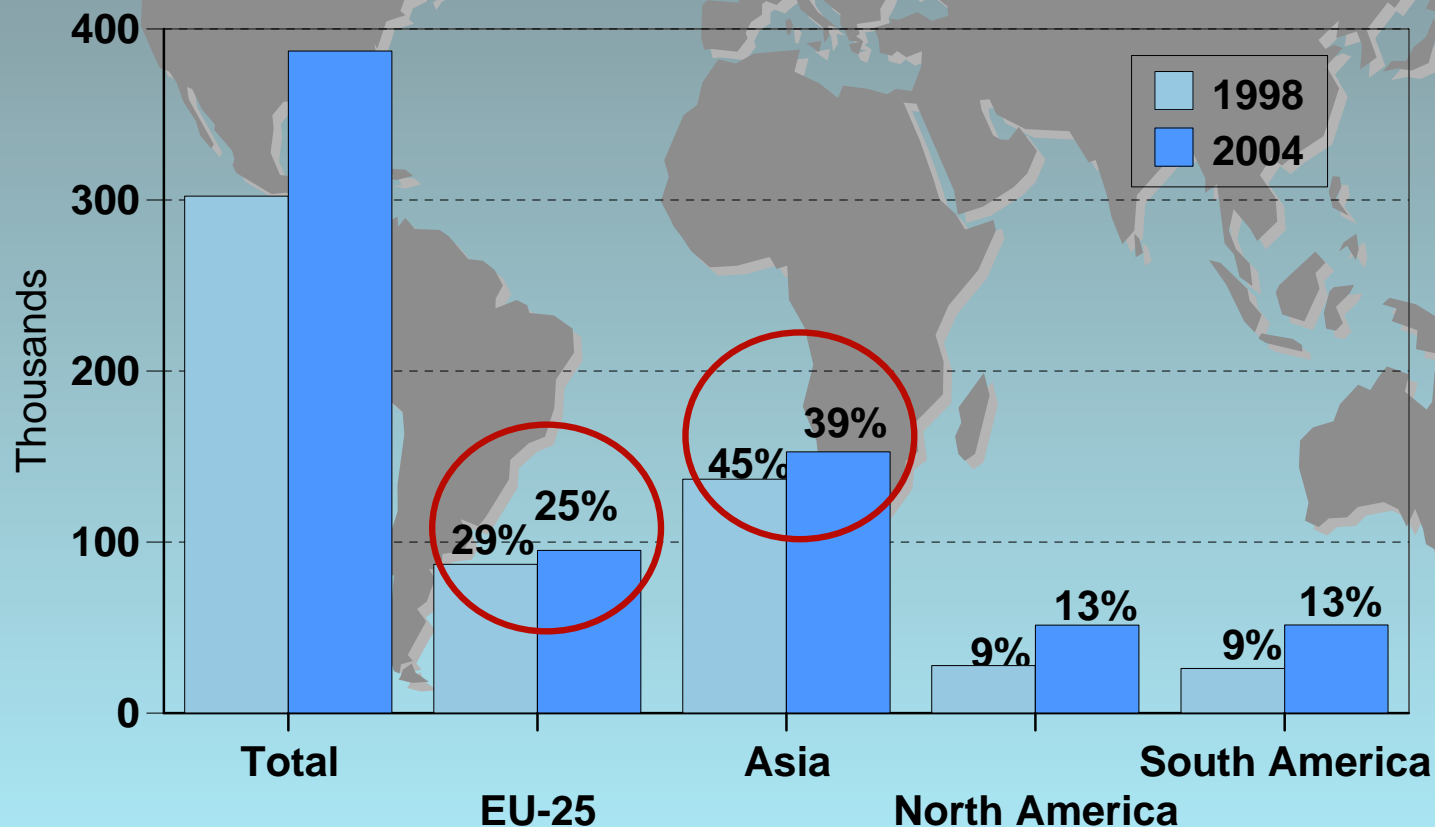
*"DAIMLERCHRYSLER has manufacturing facilities in 17 countries and is owned by European, US and other international investors."*

- The number of DaimlerChrysler employees rose from 362,063 in 2003 to 384,723 in 2004 but the share of employment in Germany and the U.S. fell.



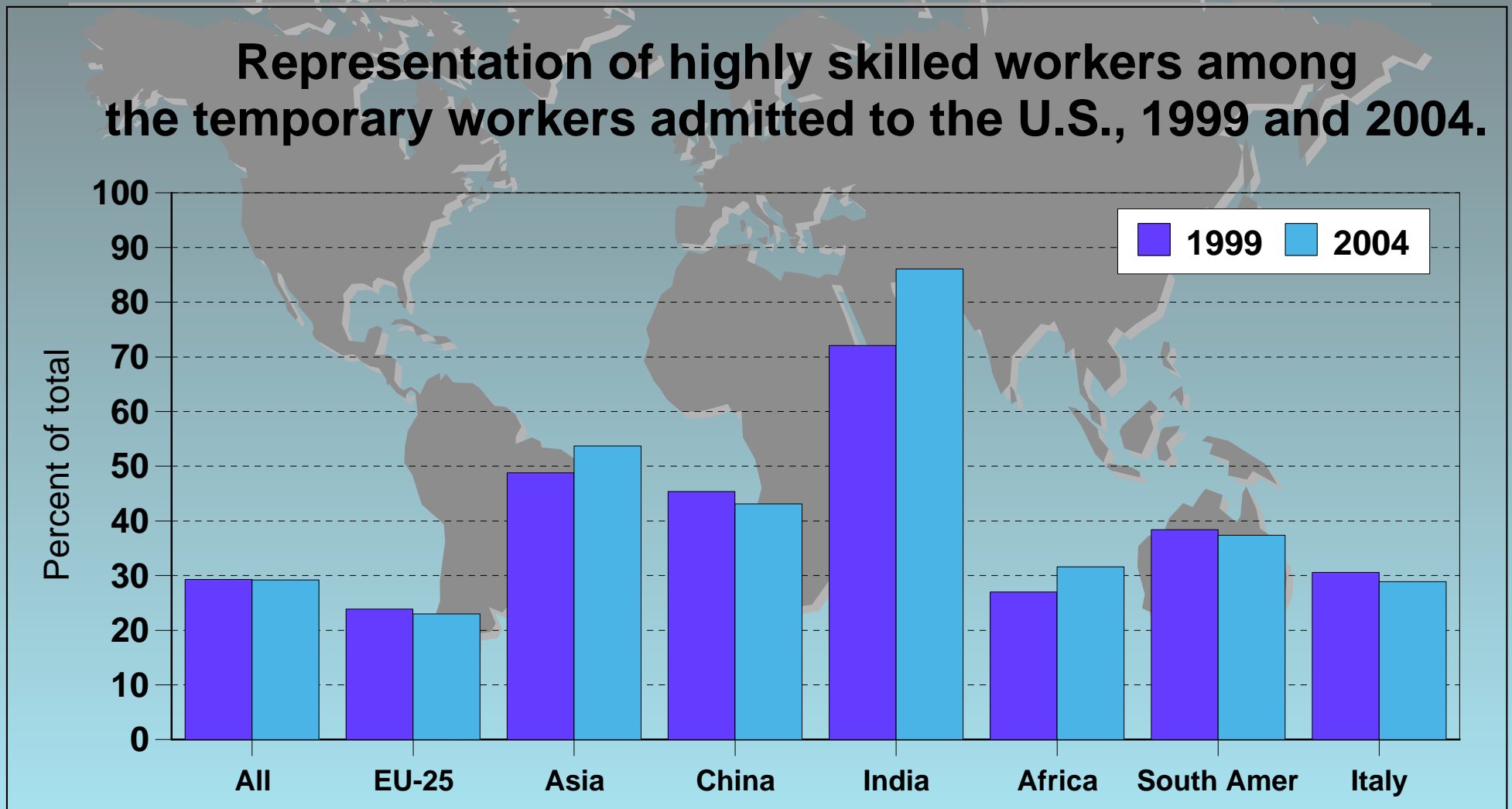
# Reliance upon source countries for skilled S&E workers is shifting. . .

- In the U.S. although the numbers are increasing in real terms, the representation of the supplying countries is changing.



Source: MERIT, based on USCIS data.

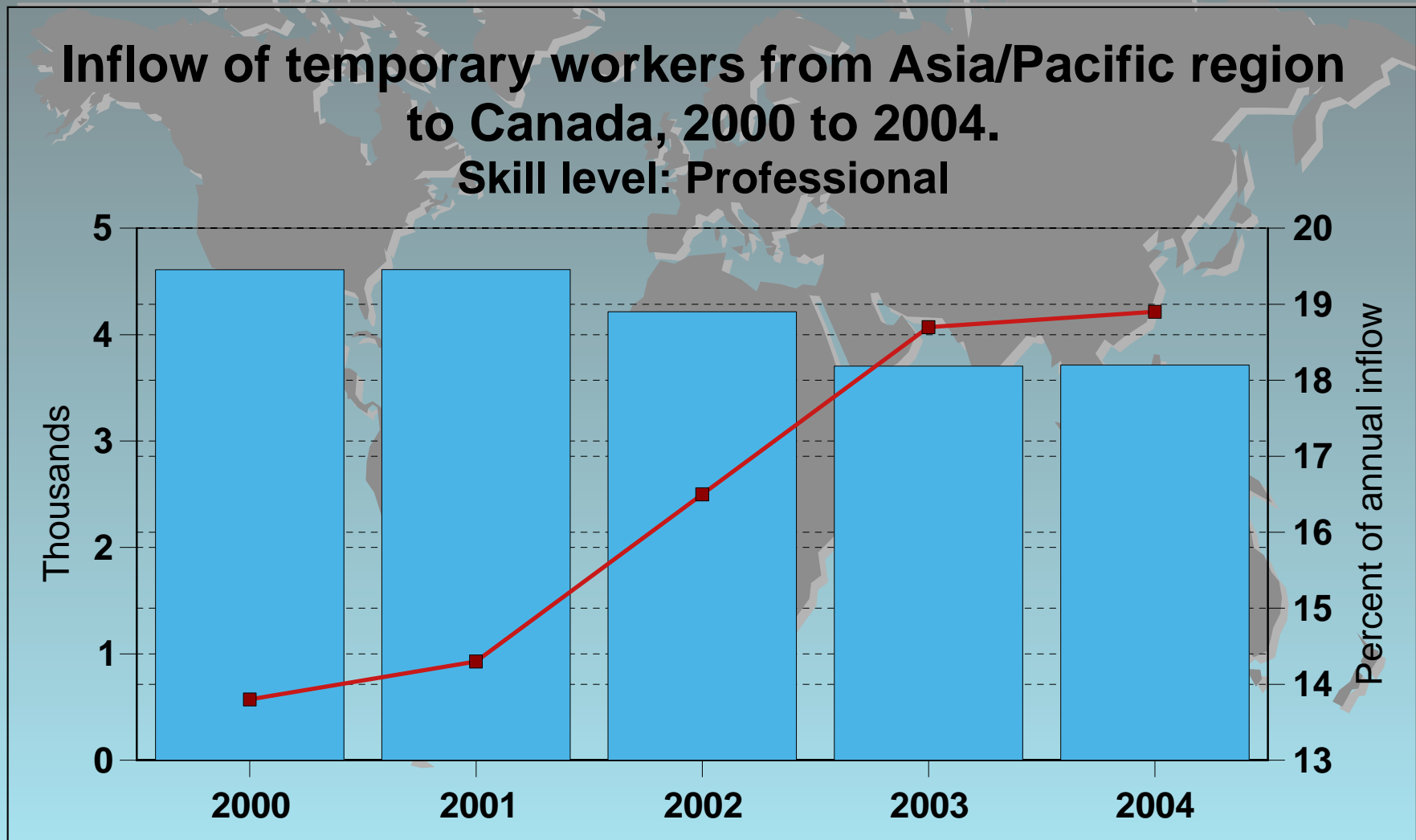
# The representation of highly skilled workers among the temporary workers.



Source: MERIT, based on USCIS data.



# Canada and its reliance upon the Asia/Pacific region



Source: MERIT, based on CIC data, 2006.

# EU policy reaction to international demand and EU needs . . .

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- **"Researchers must move around more ...  
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 of the EU and Europe"**  
(DG Research, Liberali, 2005).

# Foreign researchers identify 'push' and 'pull' factors of doing research in Italy.

	Strong factor	Medium factor	Not a factor
<b>To be involved in another research milieu</b>	<b>55%</b>	<b>31%</b>	<b>15%</b>
<b>Specialise in sector not at home</b>	<b>29%</b>	<b>29%</b>	<b>42%</b>
<b>Study and scientific opportunities</b>	<b>46%</b>	<b>39%</b>	<b>15%</b>
<b>Availability of scientific equipment</b>	<b>37%</b>	<b>38%</b>	<b>25%</b>
<b>Forefront of the research sector</b>	<b>24%</b>	<b>51%</b>	<b>25%</b>

PUSH

PULL

Source: CNR-IRPPS, Brain Drain Project, 2003.

# 'Movers' identify important reasons for going abroad.

	EU-25	U.S.	Latin Amer.	China	India	North Af/ Mid East
Career advancement	88% <sup>1</sup>	52% <sup>2</sup>	80% <sup>1</sup>	75% <sup>5</sup>	83% <sup>1</sup>	78% <sup>1</sup>
Employer reputation	74% <sup>2</sup>	61% <sup>1</sup>	77% <sup>3</sup>	86% <sup>1</sup>	81% <sup>2</sup>	69% <sup>3</sup>
Access to leading edge technologies	73% <sup>3</sup>	30% <sup>4</sup>	79% <sup>2</sup>	84% <sup>3</sup>	81% <sup>2</sup>	78% <sup>1</sup>
R&D funding	70% <sup>4</sup>	24% <sup>5</sup>	80% <sup>1</sup>	85% <sup>2</sup>	79% <sup>3</sup>	78% <sup>1</sup>
Professional networking	68% <sup>5</sup>	46% <sup>3</sup>	68% <sup>4</sup>	81% <sup>4</sup>	79% <sup>3</sup>	74% <sup>2</sup>
Salary	54% <sup>6</sup>	18% <sup>6</sup>	66% <sup>5</sup>	81% <sup>4</sup>	77% <sup>4</sup>	78% <sup>1</sup>

Source: MERIT, Brain Drain Project, 2003.

# 'Movers' rate skills as important for mobility.

	EU-25	U.S.	Latin Amer.	China	India	North Af/ Mid East
<b>Communication skills</b>	79% <sup>1</sup>	78% <sup>1</sup>	95% <sup>1</sup>	83% <sup>2</sup>	87% <sup>1</sup>	82% <sup>3</sup>
<b>Leadership skills</b>	77% <sup>2</sup>	73% <sup>2</sup>	87% <sup>2</sup>	78% <sup>3</sup>	87% <sup>1</sup>	83% <sup>2</sup>
<b>Language</b>	63% <sup>3</sup>	51% <sup>3</sup>	74% <sup>4</sup>	84% <sup>1</sup>	84% <sup>2</sup>	92% <sup>1</sup>
<b>Computer user skills</b>	53% <sup>4</sup>	50% <sup>4</sup>	76% <sup>3</sup>	67% <sup>4</sup>	63% <sup>3</sup>	75% <sup>4</sup>

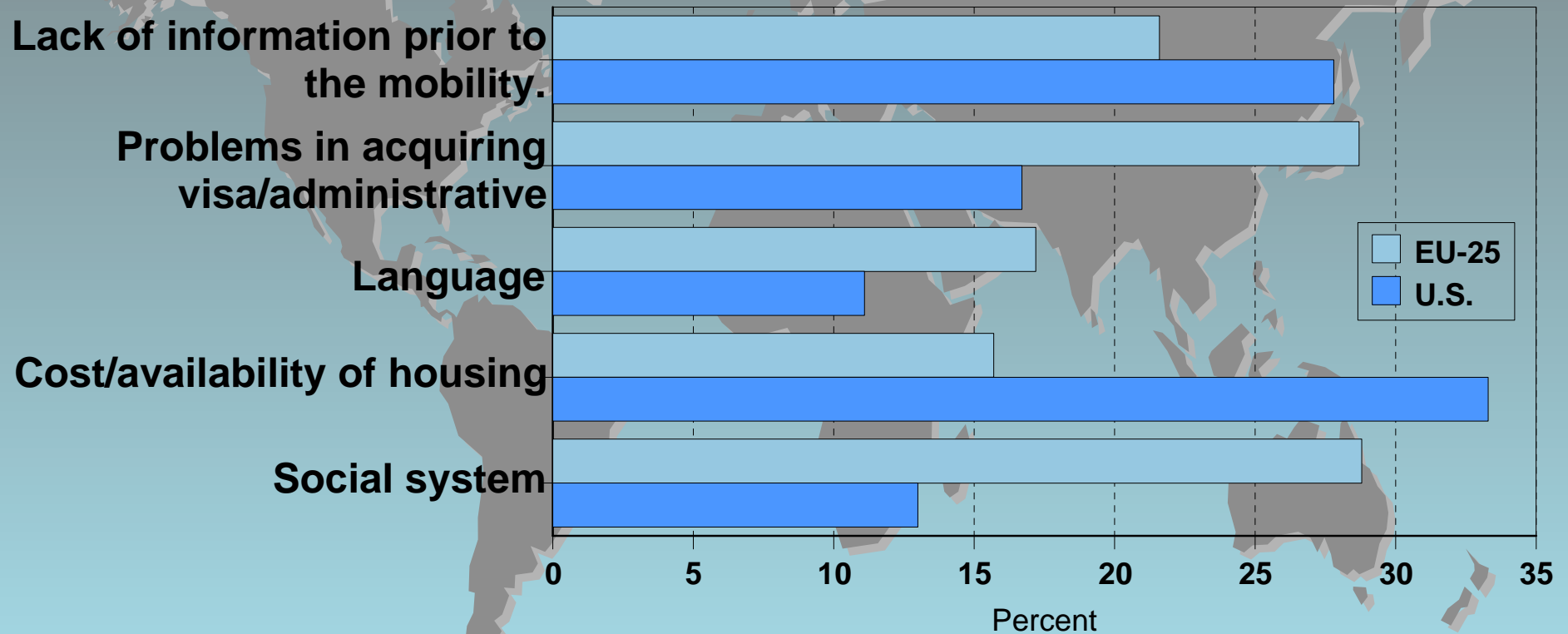
Source: MERIT, Brain Drain Project, 2003.

# Men and women 'movers' rate skills as important for mobility.

	EU-25	U.S.	Latin Amer.	China	India	North Af/ Mid East
<b>Communication skills</b>	80% 72%	79% 75%	95% 100%	84% 84%	87% 82%	92% 82%
<b>Leadership skills</b>	77% 63%	75% 65%	87% 86%	78% 84%	87% 82%	83% 82%
<b>Language</b>	77% 57%	50% 51%	80% 100%	84% 84%	85% 82%	92% 82%
<b>Computer user skills</b>	56% 42%	79% 75%	76% 86%	67% 68%	63% 64%	75% 73%

Source: MERIT, Brain Drain Project, 2003.

# Identifying barriers to mobility.



Source: MERIT, Brain Drain Project, 2003.