

Human Capital in the New and Global Economy

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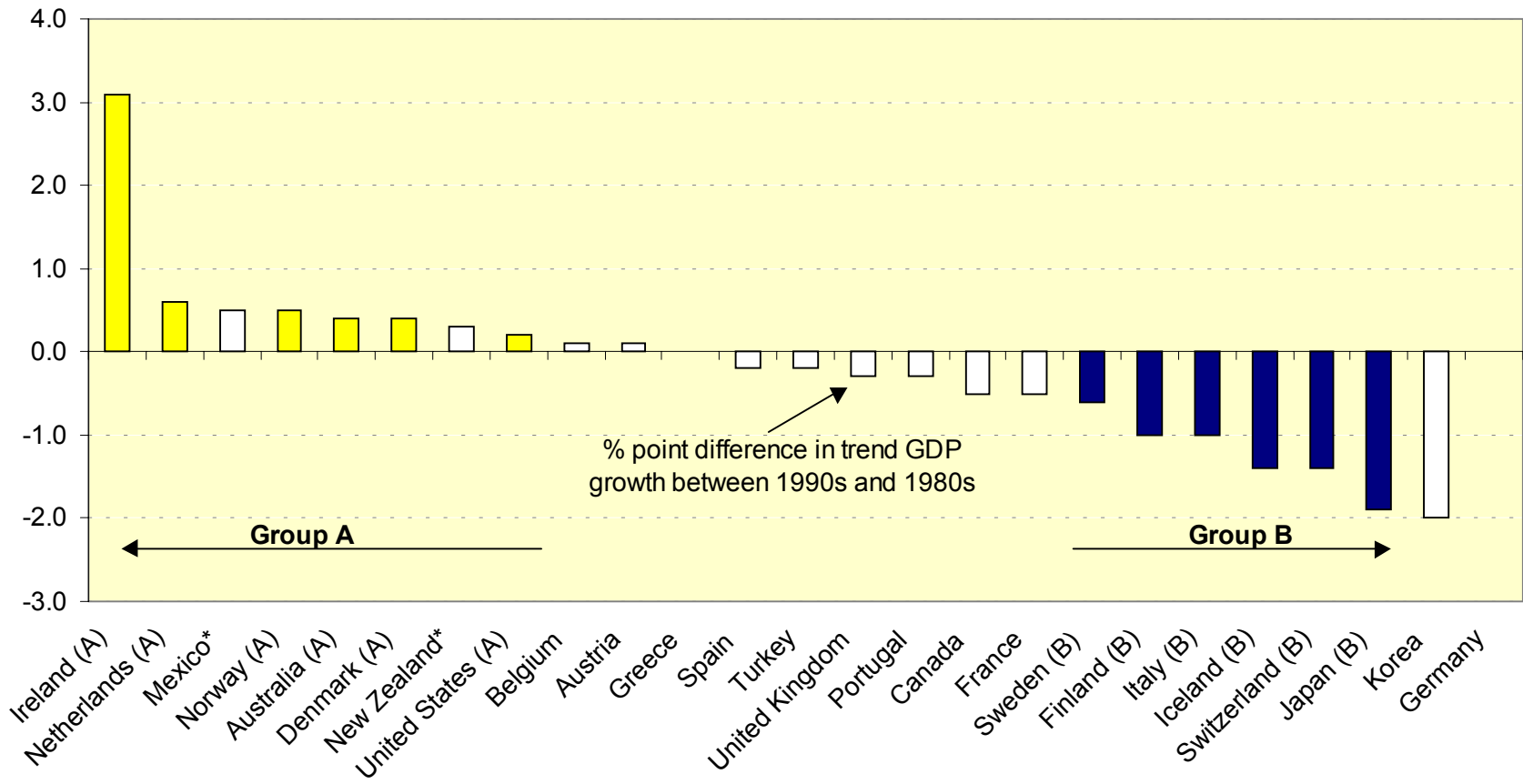
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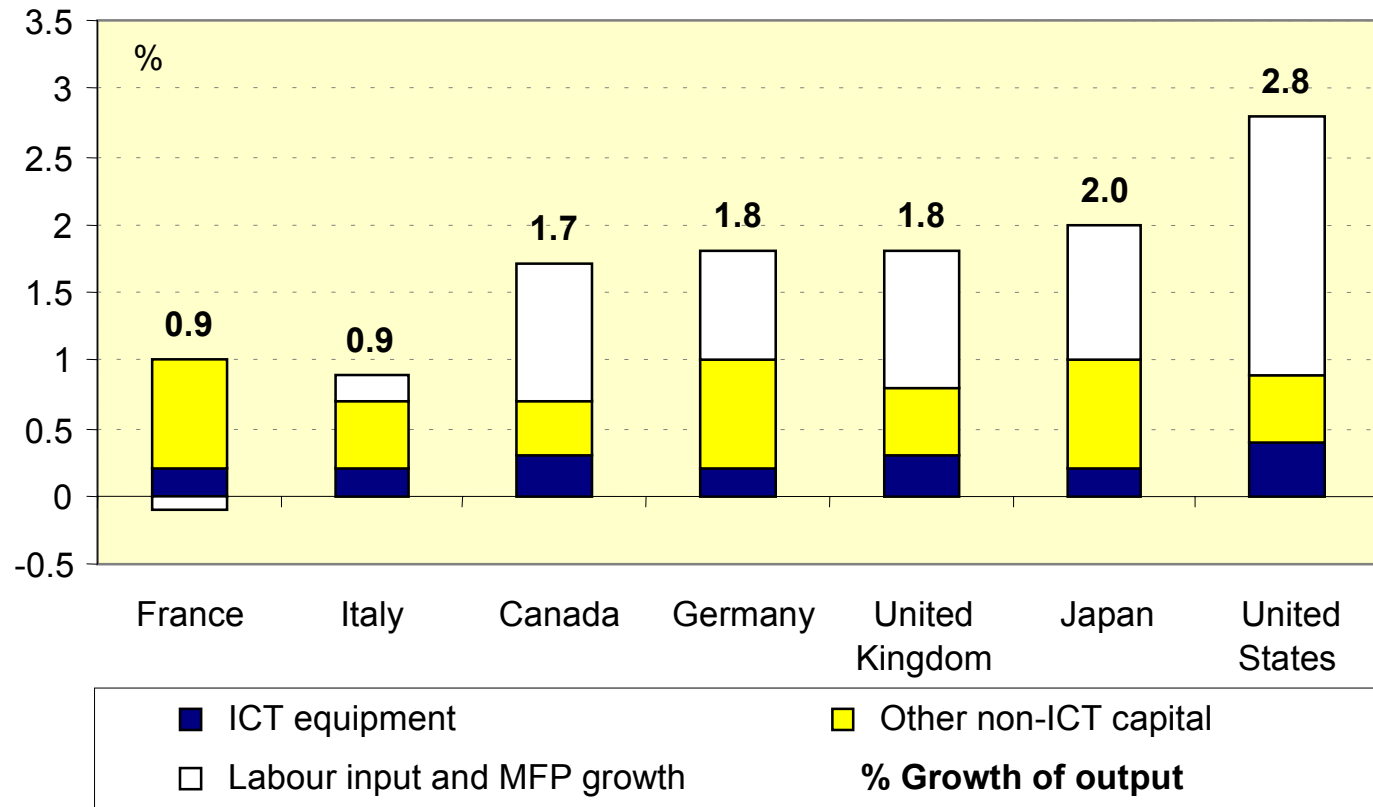
- ❑ **New patterns of growth: evidence of a “new economy”**
- ❑ **Innovation-led growth changes requirements for human capital**
- ❑ **Global demand and competition for talent**
- ❑ **Emerging policy issues and responses**

Rates of GDP Growth and Country Grouping



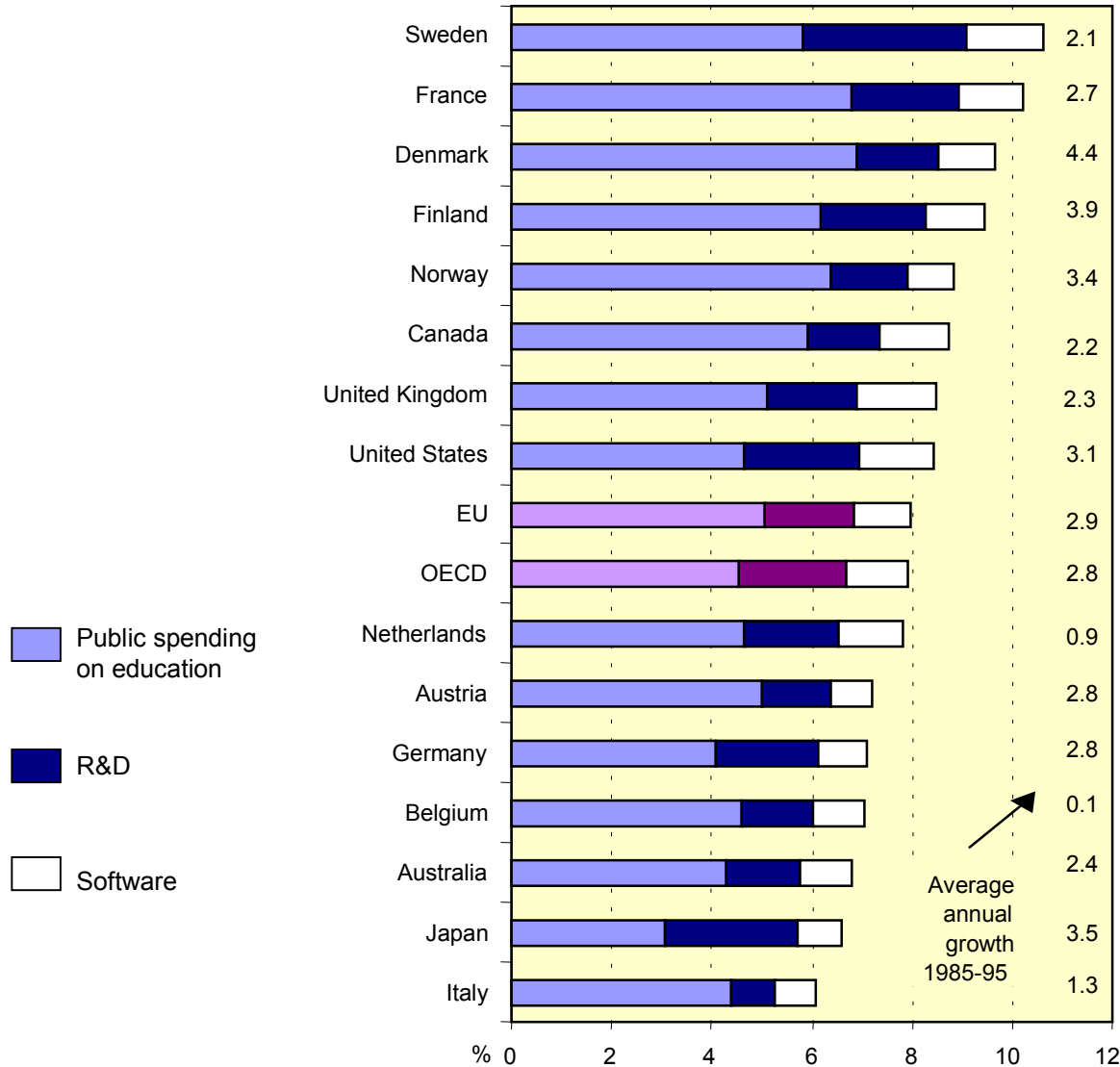
ICT contribution to output growth (1990-96)

Total industries, based on harmonised ICT price index

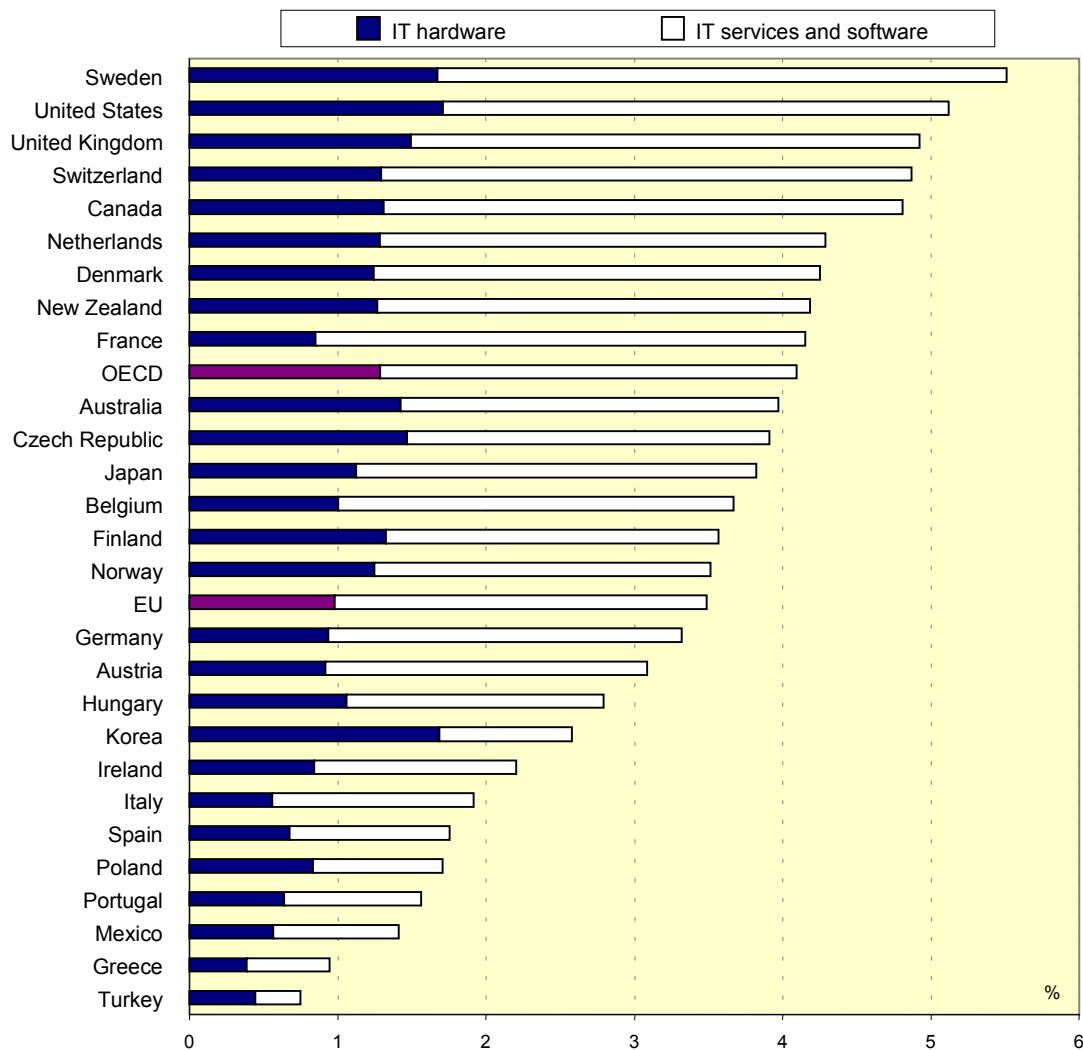


Source: OECD

Investment in intangibles, as % of GDP, 1995



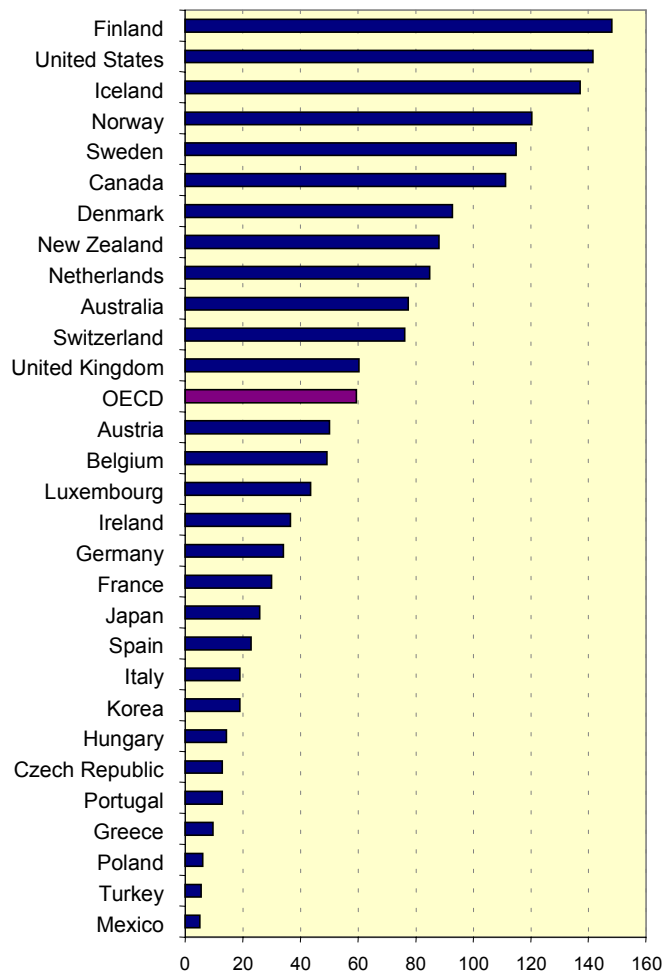
Intensity of ICT expenditures as % GDP, 1997



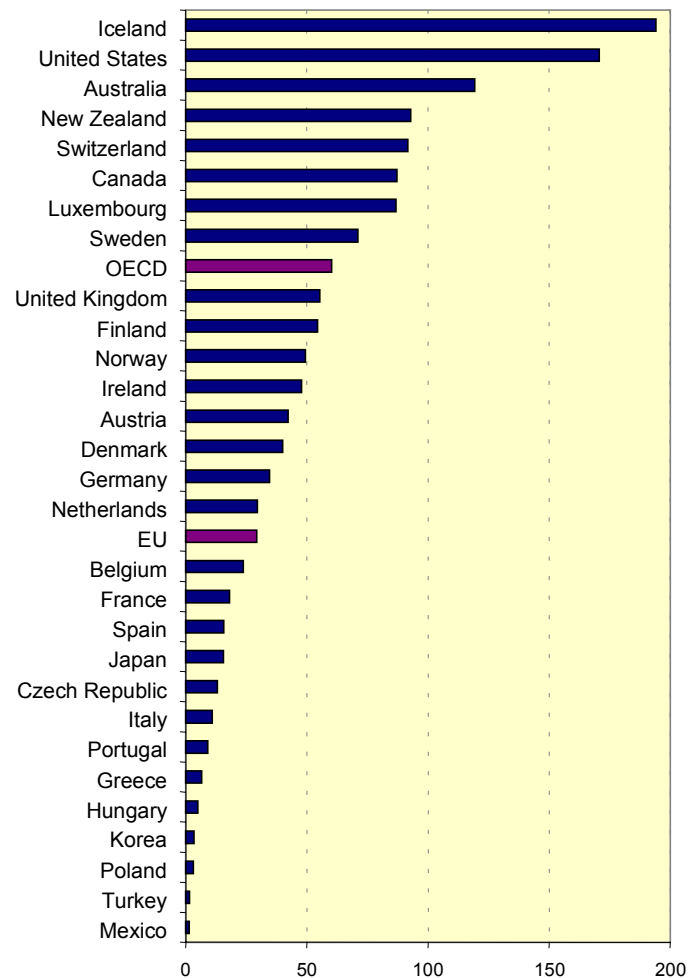
Source: OECD

Density of Internet Hosts and Secure Web servers, 2000

Internet hosts per 1,000 inhabitants, January 2000



Secure servers per million inhabitants, March 2000



Source: OECD

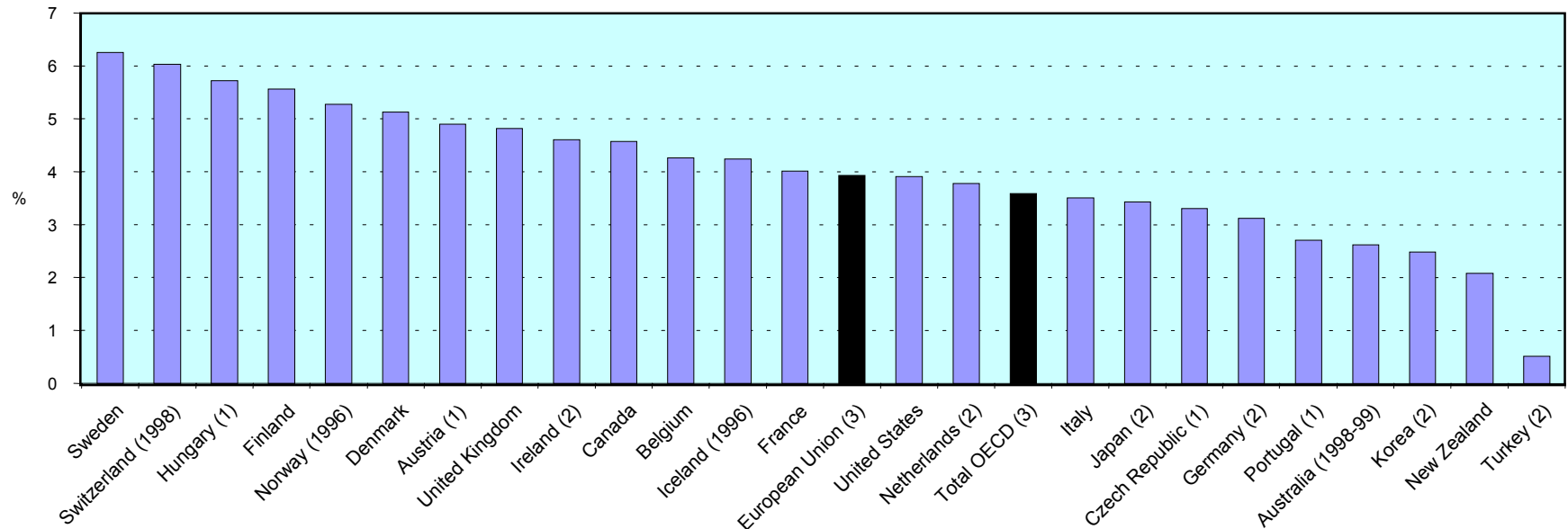
The “New Economy”: innovation-led growth?

- ❑ **Core mechanism: increasing returns on investment in physical and human capital embodying knowledge generated endogenously by the process of growth itself**
- ❑ **Human capital is central to innovation**
 - **People drive innovation, not institutions**
 - **Innovation relies more on networking, and this takes place through people**
 - **Highly skilled people are an entrepreneurial engine of growth and source of new innovative firms**

Changing requirements for human capital

- ❑ **Increased demand in knowledge-based industries, especially ICT and services**
- ❑ **Strong demand for researchers and scientists, especially in the business sector and outside the US**
- ❑ **Shortages of categories of highly-skilled workers**

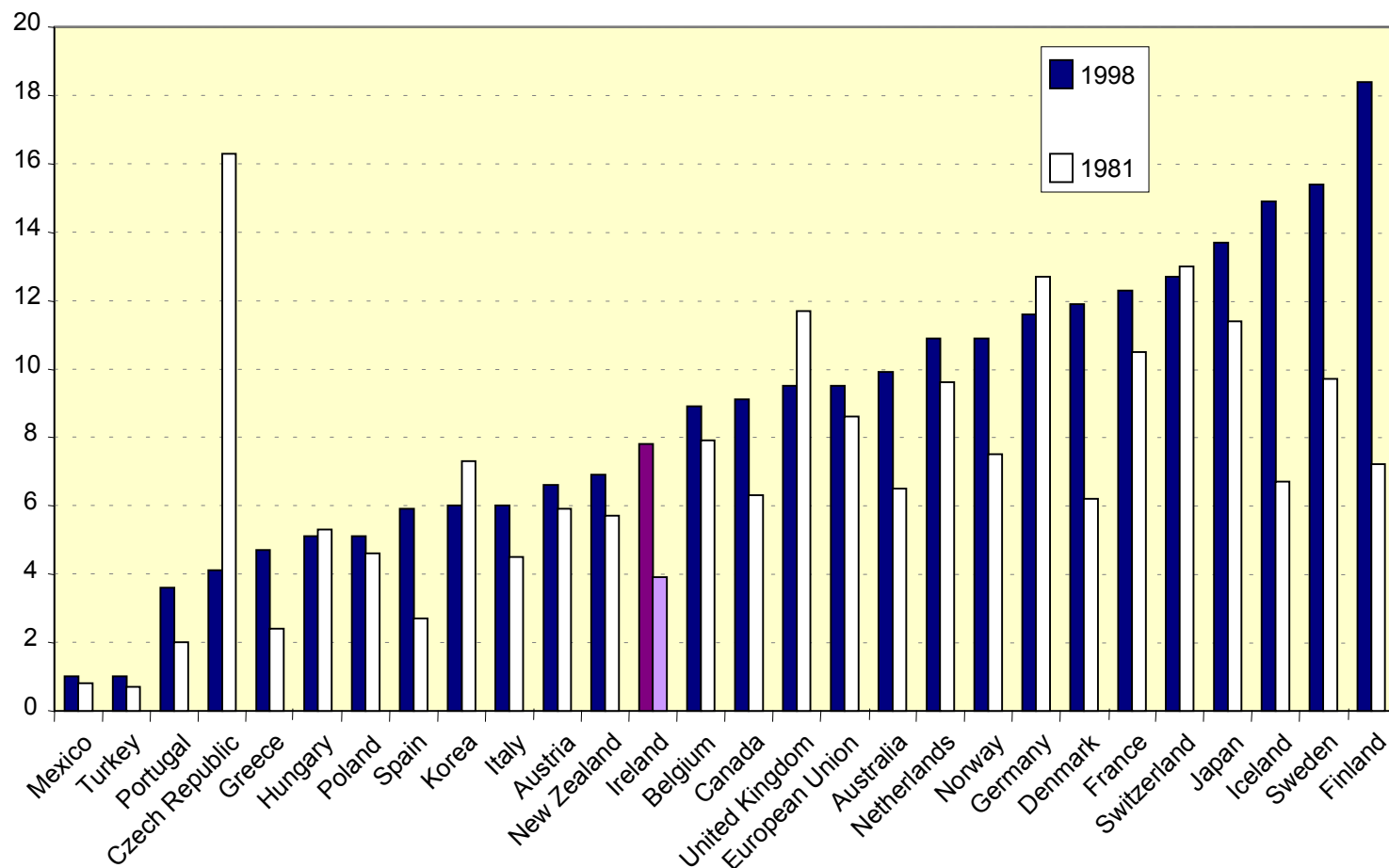
Employment in “core ICT producing” sectors as share of total business employment, 1997



1. Including all of Wholesale of machinery, equipment and supplies (ISIC 5150).
2. Excluding all of Wholesale of machinery, equipment and supplies (ISIC 5150).
3. Calculated with the available countries.

Source: OECD, mainly based on data provided by Member countries.

Total R&D personnel per 1,000 labour force, 1981 and 1998



Estimated shortages of IT workers in Europe and the US

- ❑ **Canada (30 000)**
- ❑ **Denmark (30 to 45 000)**
- ❑ **France (25 000)**
- ❑ **Germany (75 000)**
- ❑ **Norway (20 to 50 000)**
- ❑ **United Kingdom (80 000)**
- ❑ **United States (400 000)**

Changing context and nature of highly skilled employment

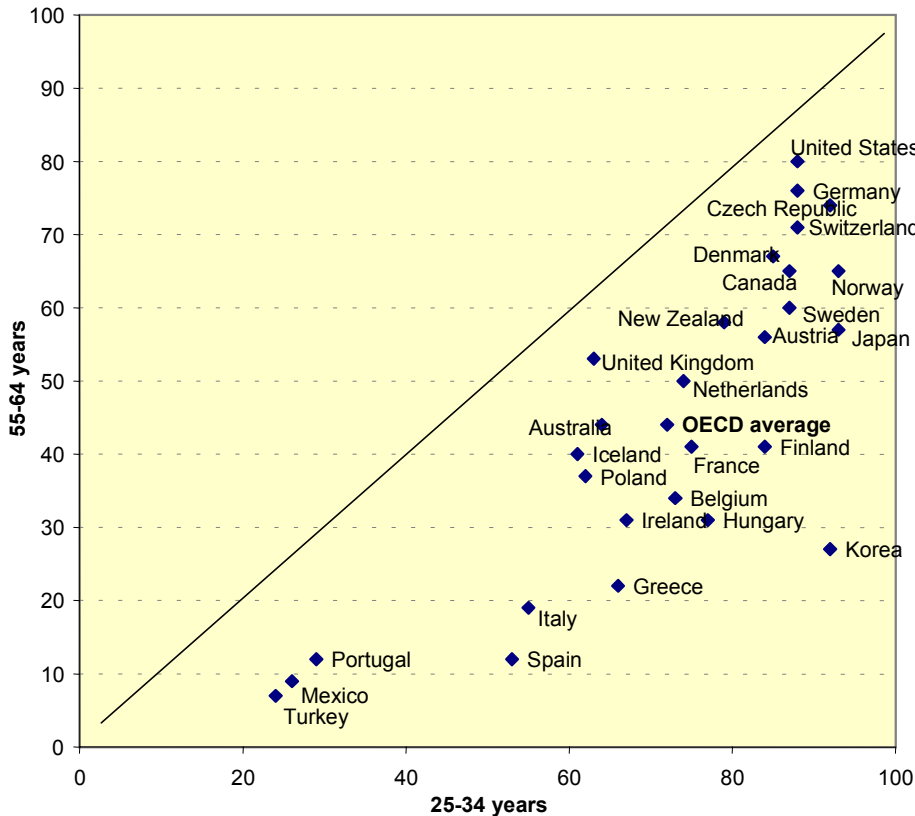
- ❑ Expansion of IT and electronic commerce is also increasing demand for IT “literacy” among all skilled workers, including among teachers
- ❑ “Un-bundling” of R&D and the creation of a market for knowledge
- ❑ Temporary employment for technical staff is on the rise in business and public sectors
- ❑ Workers (and jobs) are becoming more mobile both within and across countries

Are supply systems adequate?

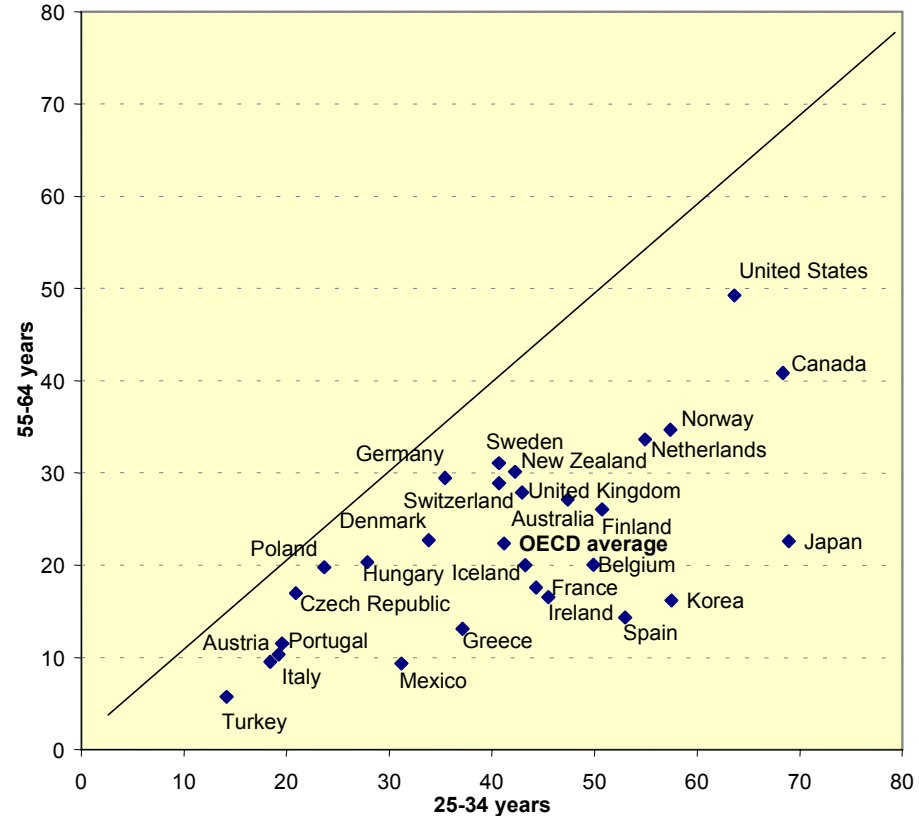
- ❑ People in OECD are becoming more educated...
- ❑ But OECD countries differ in share of university graduates in S&T...
- ❑ Women in S&T remain under-represented especially at higher degree levels, despite progress in higher education
- ❑ More and more countries seek to meet demand for specific skills through immigration

Share of the population by education level, by age category, in 1998

With at least a secondary education level

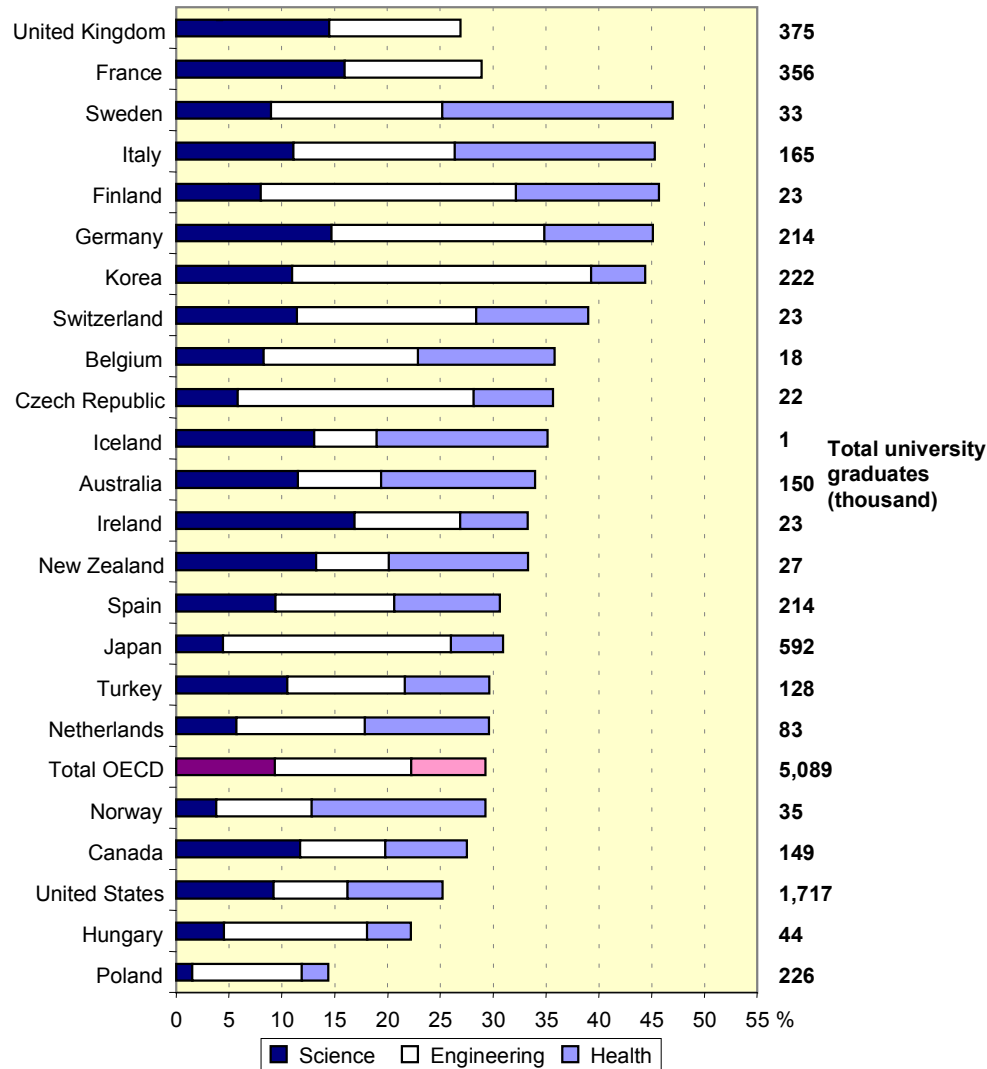


With at least a tertiary education level



Source: OECD

University graduates in Science, Engineering and Health¹, 1998 As a percentage of total university graduates (%)

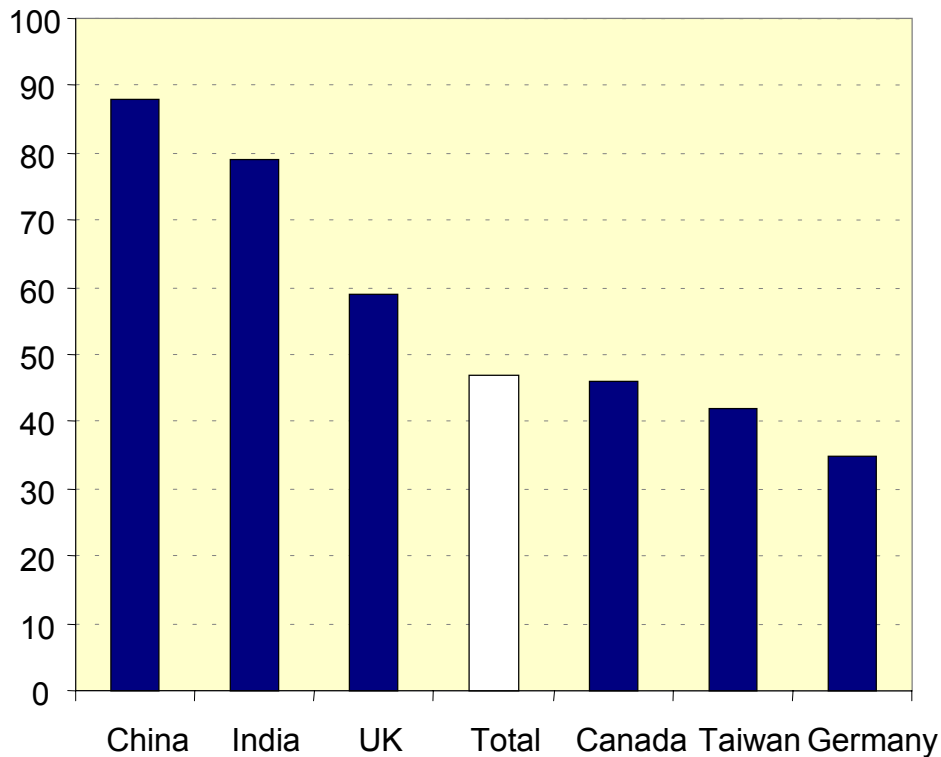


1. Science is defined as the sum of Life sciences (ISCED 42), Physical sciences (ISCED 44), Mathematics and statistics (ISCED 46) and Computing (ISCED 48). Engineering includes Engineering and engineering trades (ISCED 52), Manufacturing and processing (ISCED 54) and Architecture and building (ISCED 58). Health is ISCED 72. Data are classified according to the new ISCED 1997.

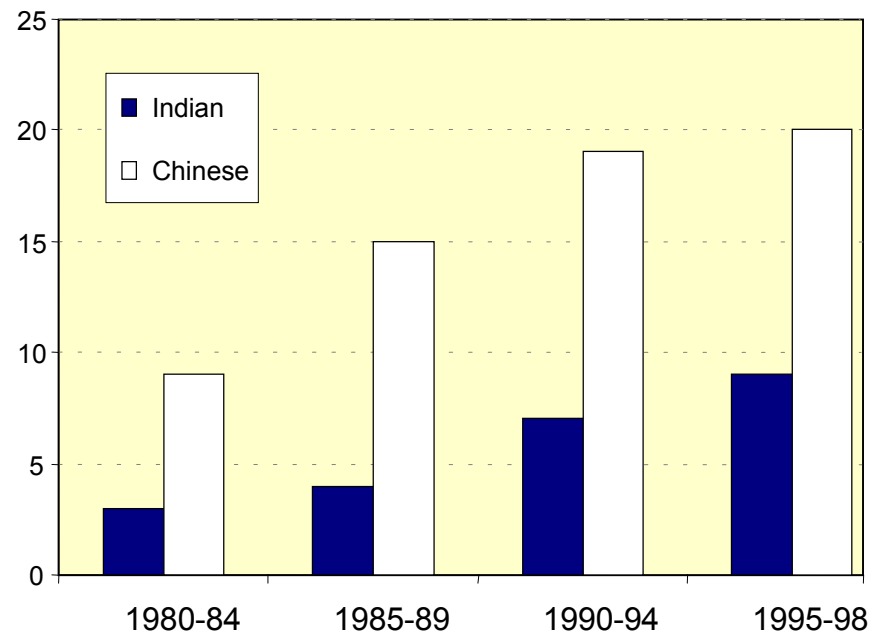
Source: OECD Education database, 2000.

Openness matters: the role of immigration in innovation

% of 1990-91 Foreign S&E US Degree Recipients Working in US in 1995



Share of Total Silicon Valley Start-ups by Ethnicity (%)



Policy issues and current responses:

- ❑ **Quality of education, not just quantity**
- ❑ **Science and technology remain important but must be combined with “soft skills”, interdisciplinarity**
- ❑ **New instruments to meet specific skills needs**
- ❑ **Converging initiatives**

Converging initiatives

- ❑ **A renewed commitment to public funding of scientific research and education in OECD countries**
- ❑ **Major efforts to reform universities, greater autonomy**
- ❑ **Greater attention to skill needs of new growth areas**
- ❑ **Making life-long learning a reality through incentives**

Converging initiatives *(continued)*

- ❑ **Measures to increase the flexibility and mobility of researchers and scientists**
- ❑ **More attention to human capital issues at the highest levels of government**
- ❑ **Increased involvement of industry and professional associations**