

Main challenges to Swiss higher education

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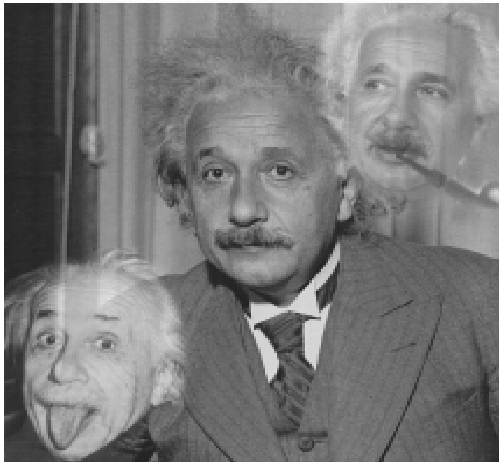
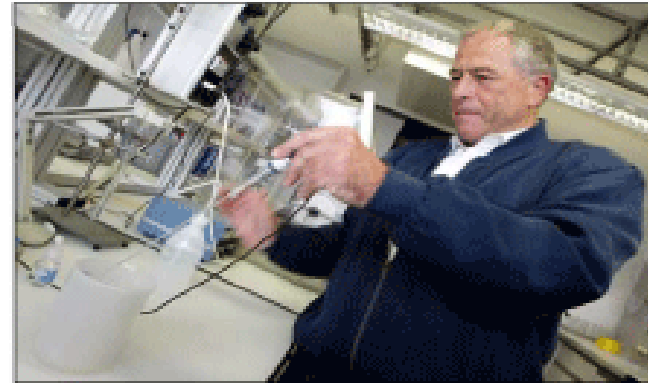
- Strengths
- Problems
- Towards a research and education country
- Quality insurance

Strengths

- Fifty years tradition of scientific excellence (SNF)
- A very open research and education system
- Tradition of research universities
- ETH and some universities of international standing
- Dual system and solid professional education
- Diversity (cultures, languages)
- Central location in Europe
- Open university system
- Students: between a mass and elite education

The highest number of Nobel Prizes per inhabitants

Kurt Wüthrich
ETH Zurich
Nobel Prize in Chemistry in 2002

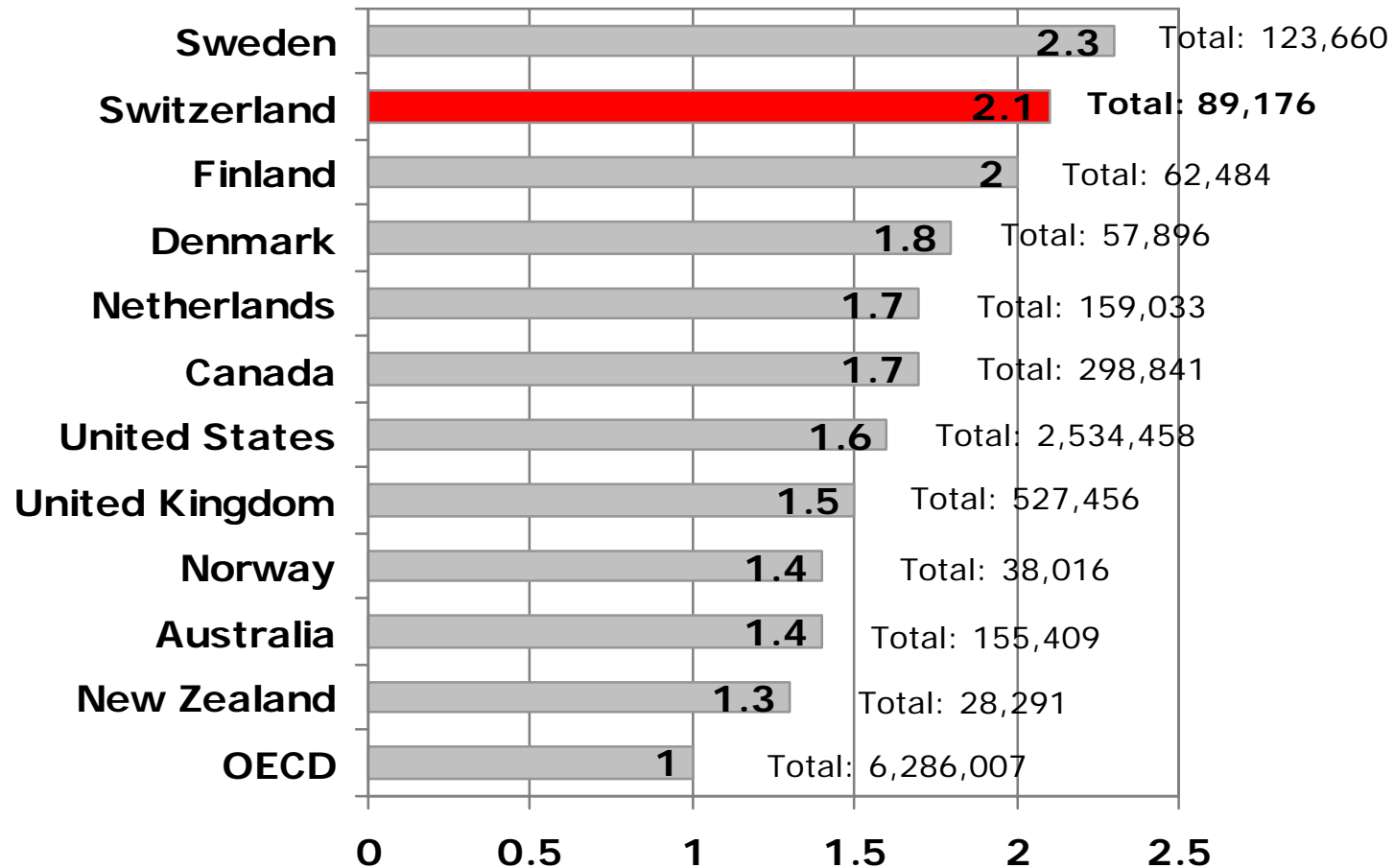


27 Nobel Prizes from 1901 to 2002

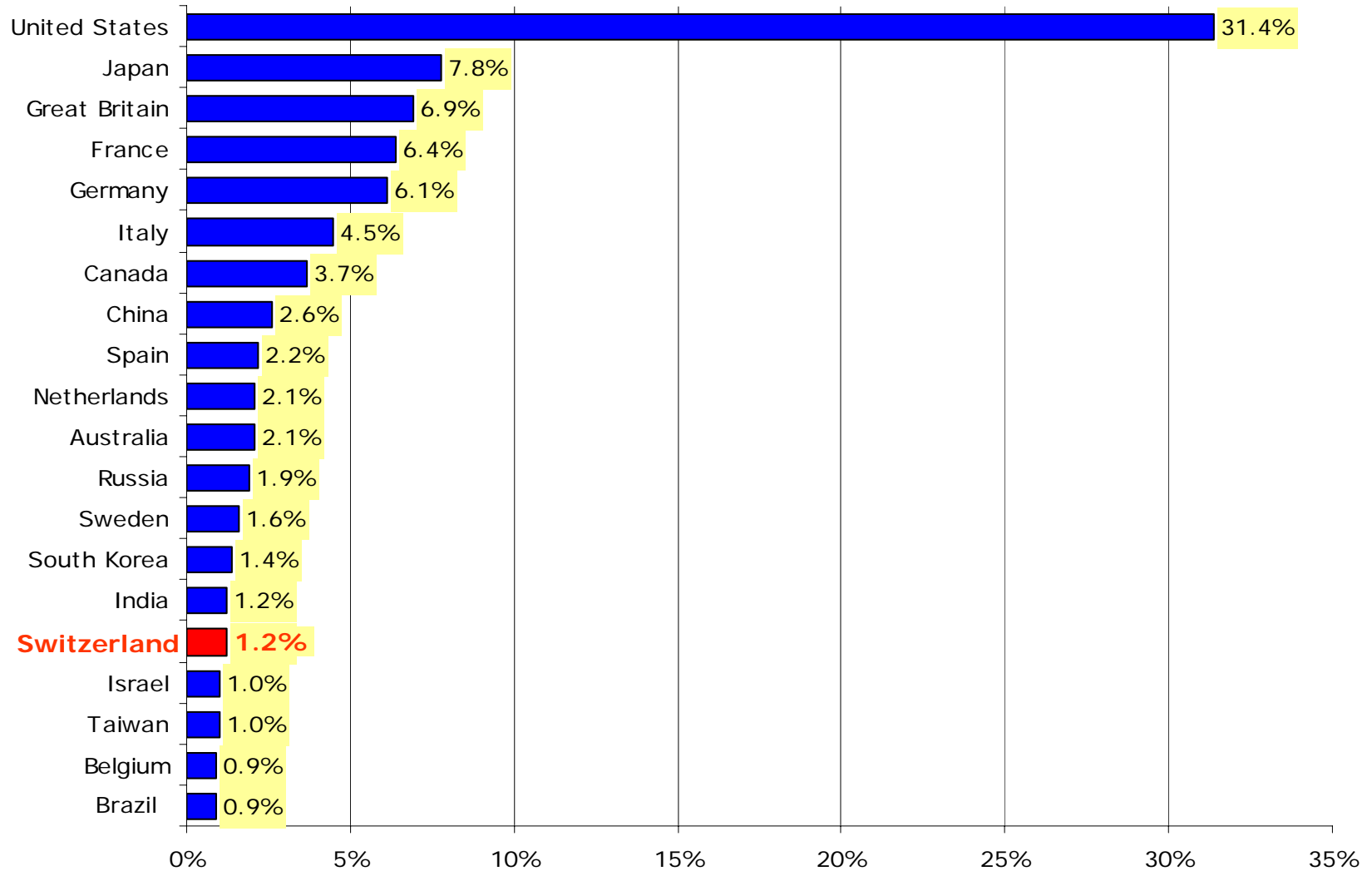
Albert Einstein
Nobel Prize in Physics in 1921

High Swiss presence in the world list of published scientific papers

International comparison of Switzerland's publication output
per 1000 inhabitants 1994-1999

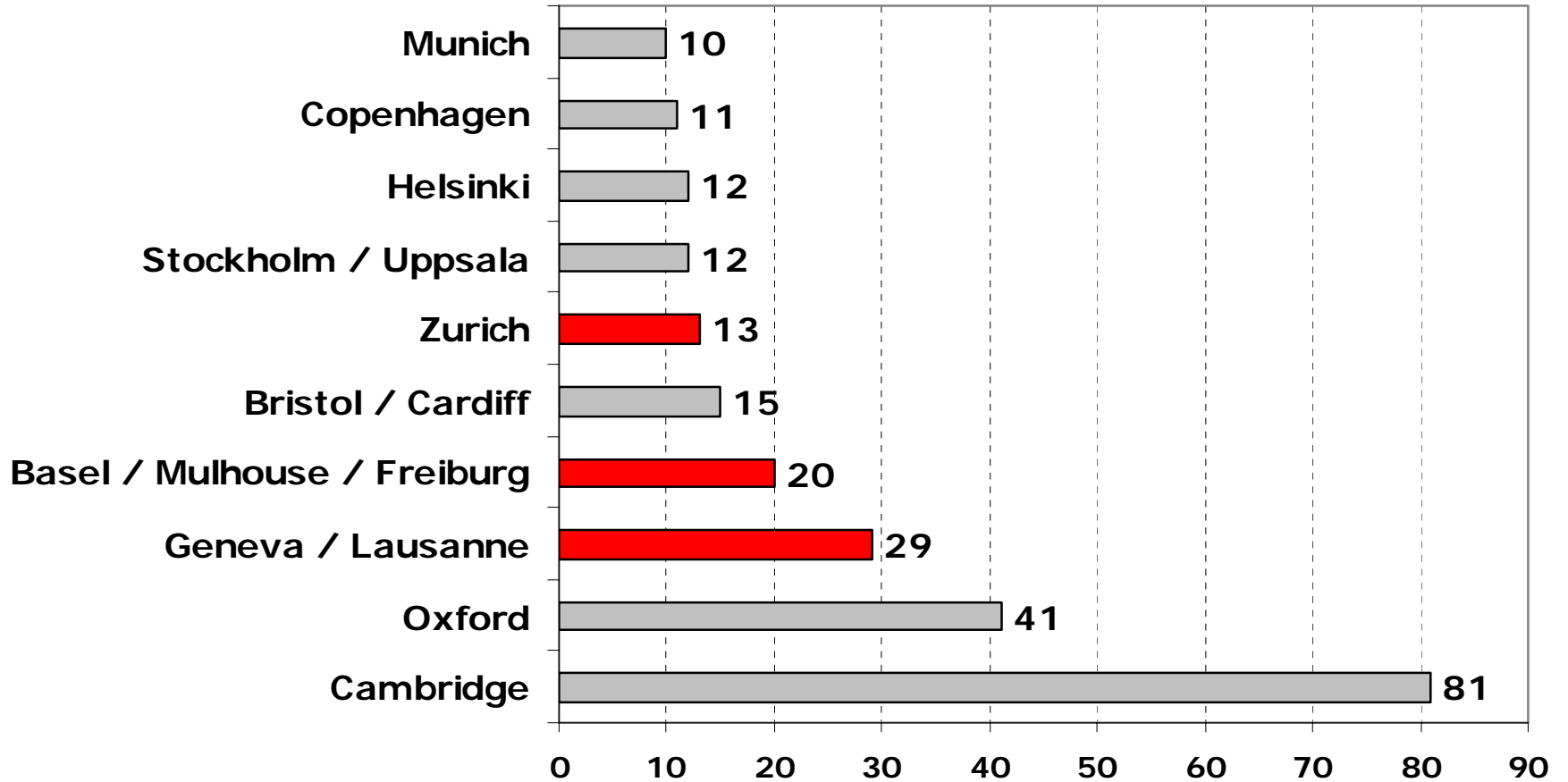


Switzerland in the 20 first world knowledge producers



Three Swiss regions in the Top Ten of European research

Scientific papers per capita



A very open research and education system

- 15% of the student body in Swiss tertiary education institutions are foreign students not educated in this country
- About 50% of post-graduate students in Switzerland come from abroad
- 36% of the teaching staff in Swiss tertiary education institutions come from abroad

Students: between a mass and elite education

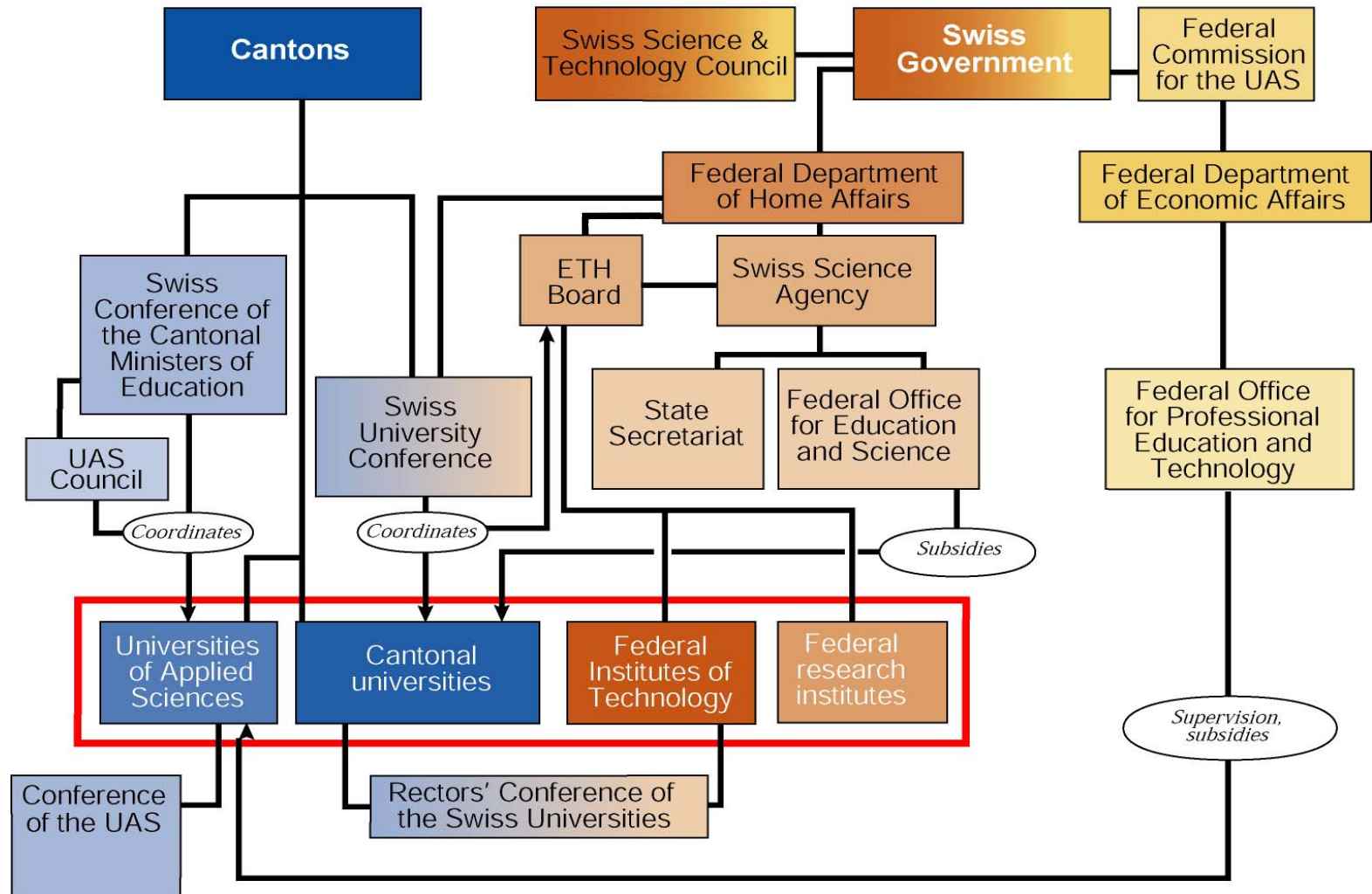
- 130,000 students attend Swiss tertiary education institutions. The population of Switzerland is around seven million
- About 35% of the Swiss population of the same generation go to high school
- General increase in student body (up 33% since 1980)
- Massive increase at the post-graduate level (up 107%)
- Intra-university selection of students (no numerus clausus)
- Very low student fee

Problems

- System too complex: responsibilities not clear enough
- Lack of leadership in universities; not autonomous enough
- System too fragmented
- Stagnation of resources for research and development
- Financial incentives not strong enough
- Breakdown in innovation process
- Breakdown in education process
- Lack of equal opportunity and student mobility

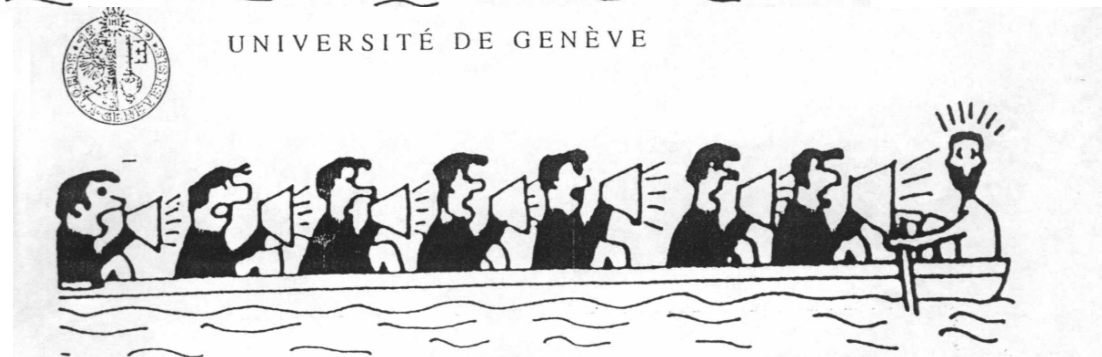
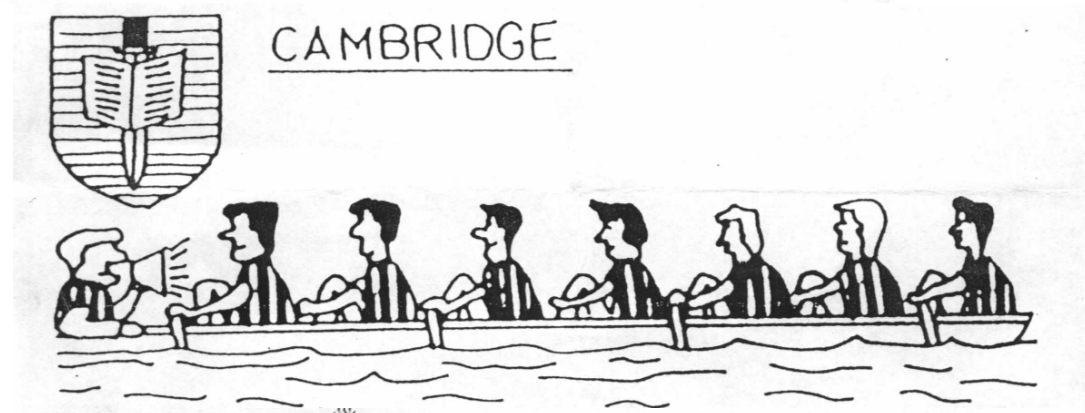
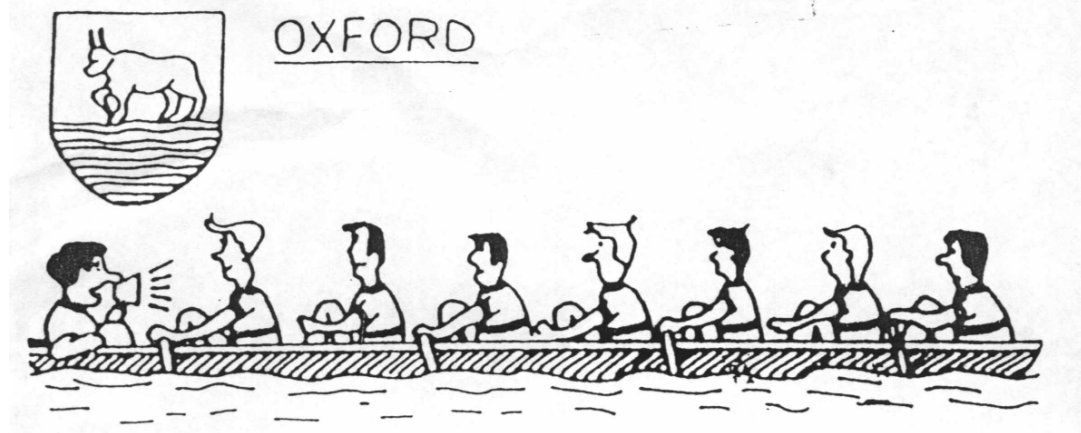
System too complex: responsibilities are not clear enough

(Organization of higher education in Switzerland as of 01.01.2001)

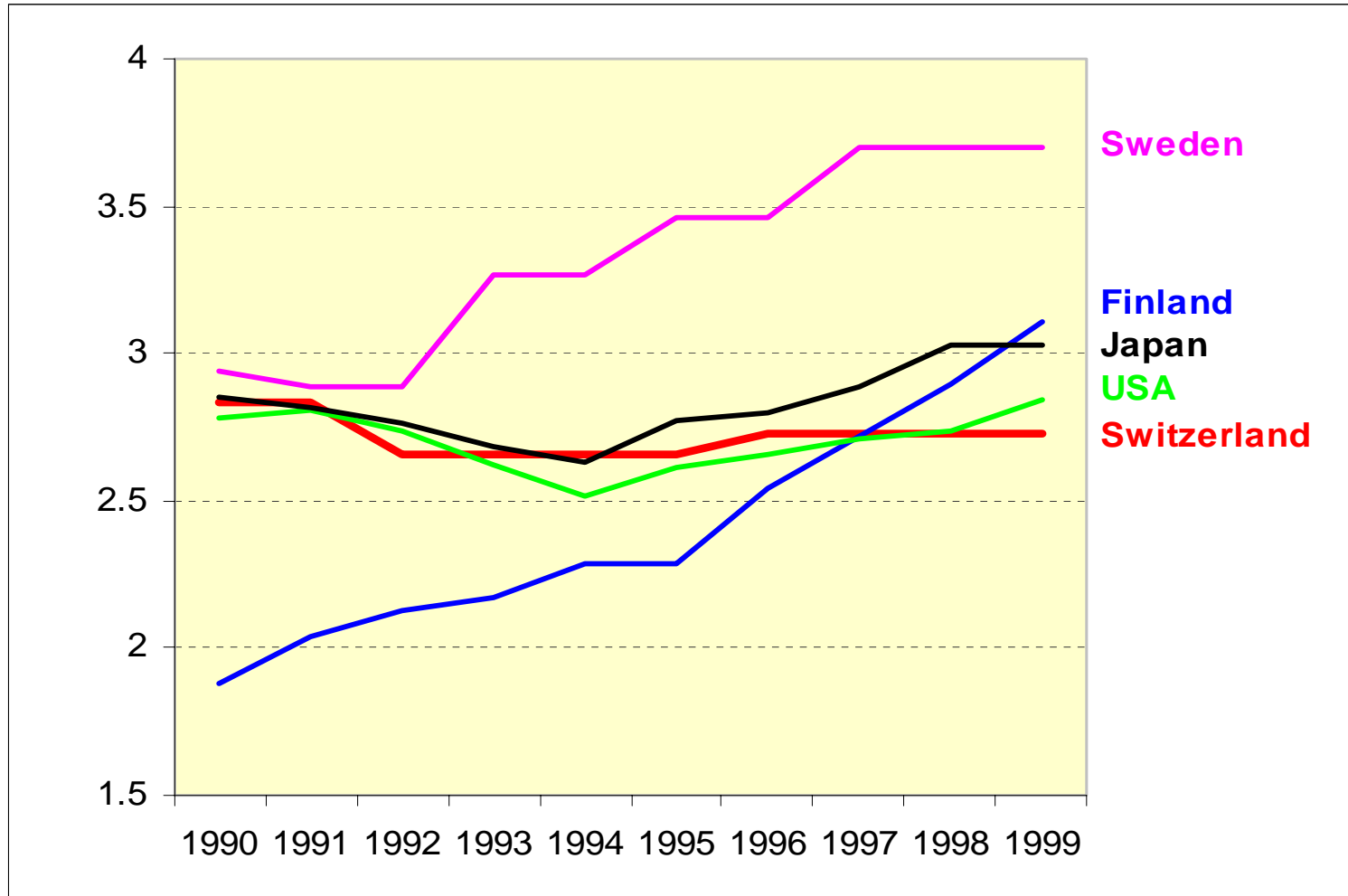


Lack of leadership in Universities

Governance of higher education in Switzerland

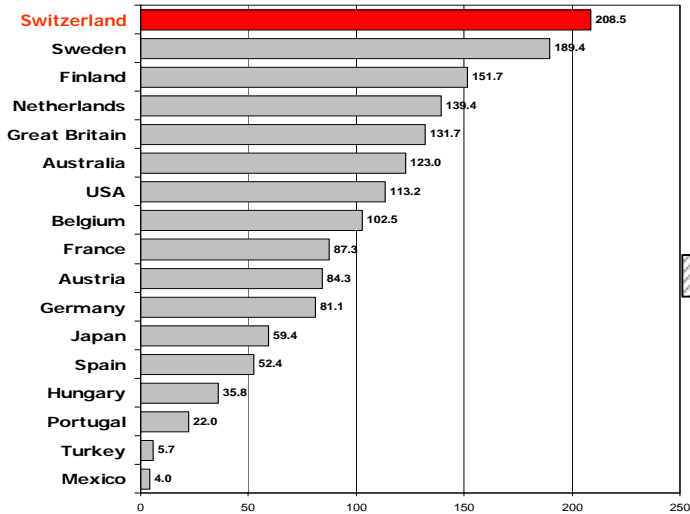


Stagnation of resources for research and development

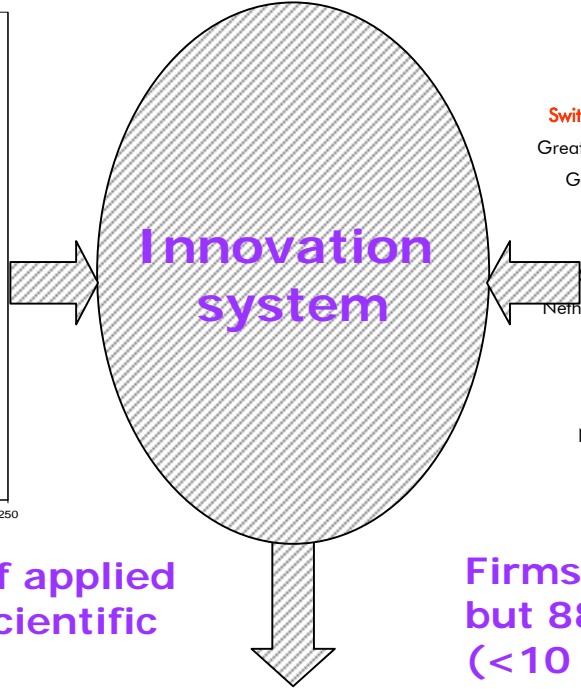
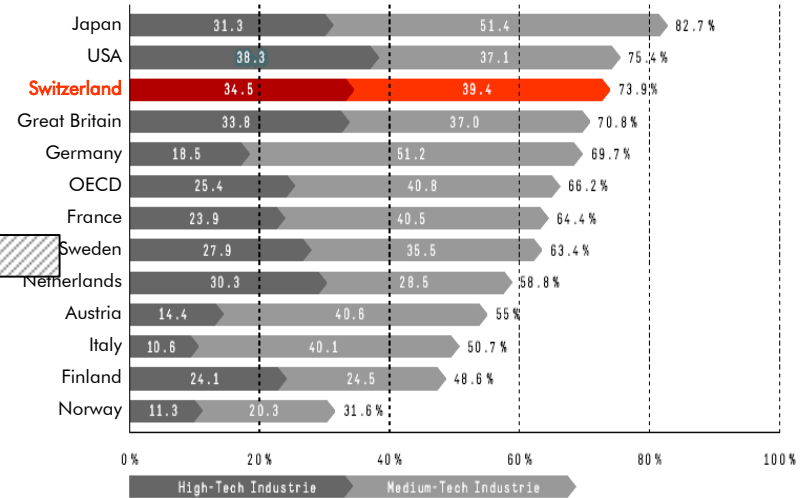


Breakdown in innovation processes

Publications per year per 100,000 inhabitants



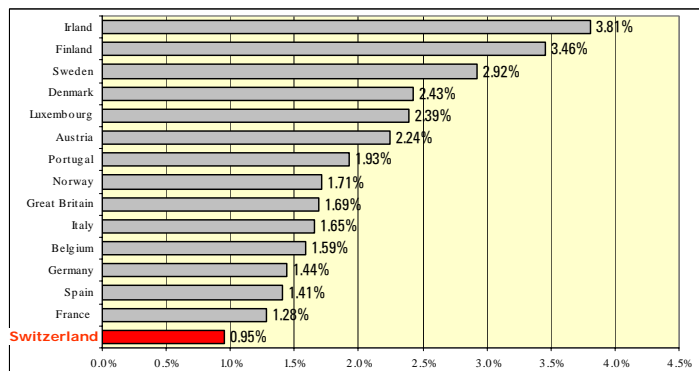
Share of high- and medium-tech industries in total exports (1999)



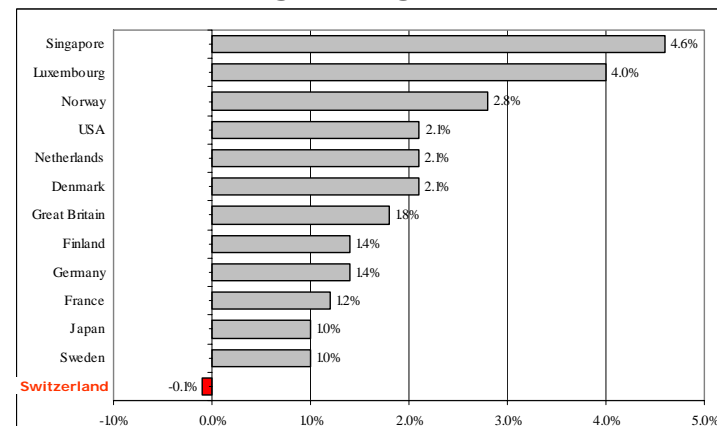
Universities and universities of applied sciences: among the highest scientific productivity in the world

Firms: a modern industrial structure, but 88% of micro-enterprises (<10 people)

Low growth of labour productivity



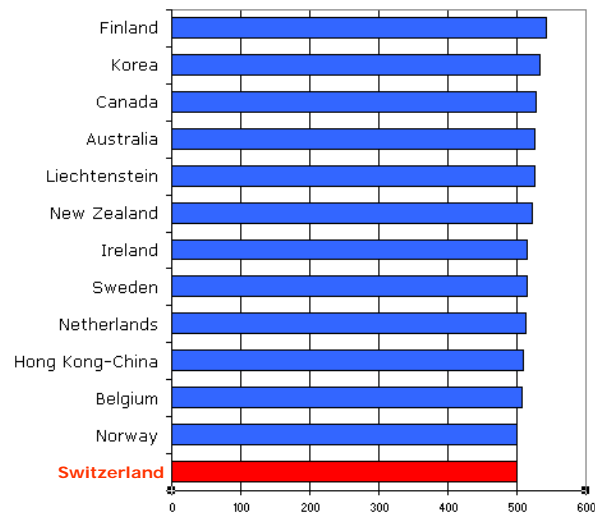
Negative growth



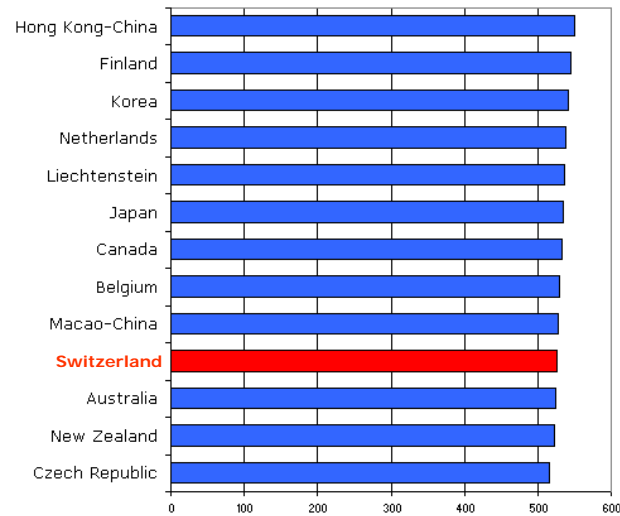
Breakdown in education processes

Student performance in reading, mathematics and science

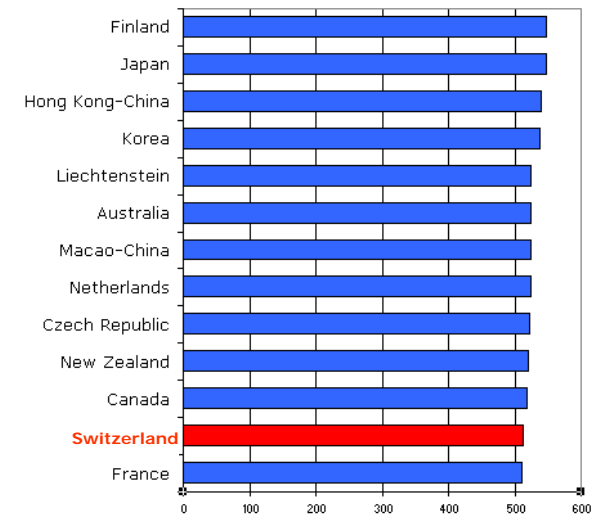
Reading



Mathematics



Science



Towards a research and education country (1)

Why?

- Knowledge is the first factor of production, of development, of civilisation and peace
- Serving global society by solving the most pressing problems of the 21st century
 - Sustainable growth and poverty
 - Living space and energy demand
 - Availability and management of resources
 - Preserving the ecosystem
 - Global health
 - etc..

Towards a research and education country (2)

How?

- Establishing a new pact between science and society
- Creating a national education and research area open to the world and regulated by competition (2008 + 1 + 2 + 3...)
 - Strengthening and simplifying national governance
 - Strengthening the autonomy and the management of universities
 - Resources should follow students/graduates and the best research project
 - Increase transdisciplinarity and invest in the interface between disciplines
 - Improvement of cooperation and creation of new centers of competence (strategic plan)

Towards a research and education country (3)

- Completing the Bologna process
- Strengthening the innovation process
- Improving equal opportunity and student mobility
- Improving gender equality
- Strengthening international cooperation / promote brain circulation
- Teaching more and more English
- Increase of resources
- Promoting long life learning
- Raising the level of quality assurance

Raising the level of quality assurance (1)

- Quality control is a main tool to enhance quality and steer the institutions and the system
- Universities are responsible for the quality of research and education
- Government and academic determine minimum norms and rules of quality assurance
- If quality assurance rules are not respected, financing can be reduced or stopped
- An independent institute gives accreditation if the rules are respected
- Examples of quality assurance rules:
 - Formally setting up an integrated quality assurance system
 - Periodic evaluation of the effectiveness of quality assurance measures

Raising the level of quality assurance (2)

- Regular external and internal peers evaluation in education and research
- Data base on research results, etc.
- Monitoring of nomination procedures
- Level of third part funds
- Exchange of good practices
- Autonomy of the university and quality of governance
- Participation of students and faculties
- etc...