

SLOVENIAN RESEARCH AGENCY

Research Management in Slovenia - the support of knowledge transfer

Conference on “COMMERCIALIZING SCIENCE”

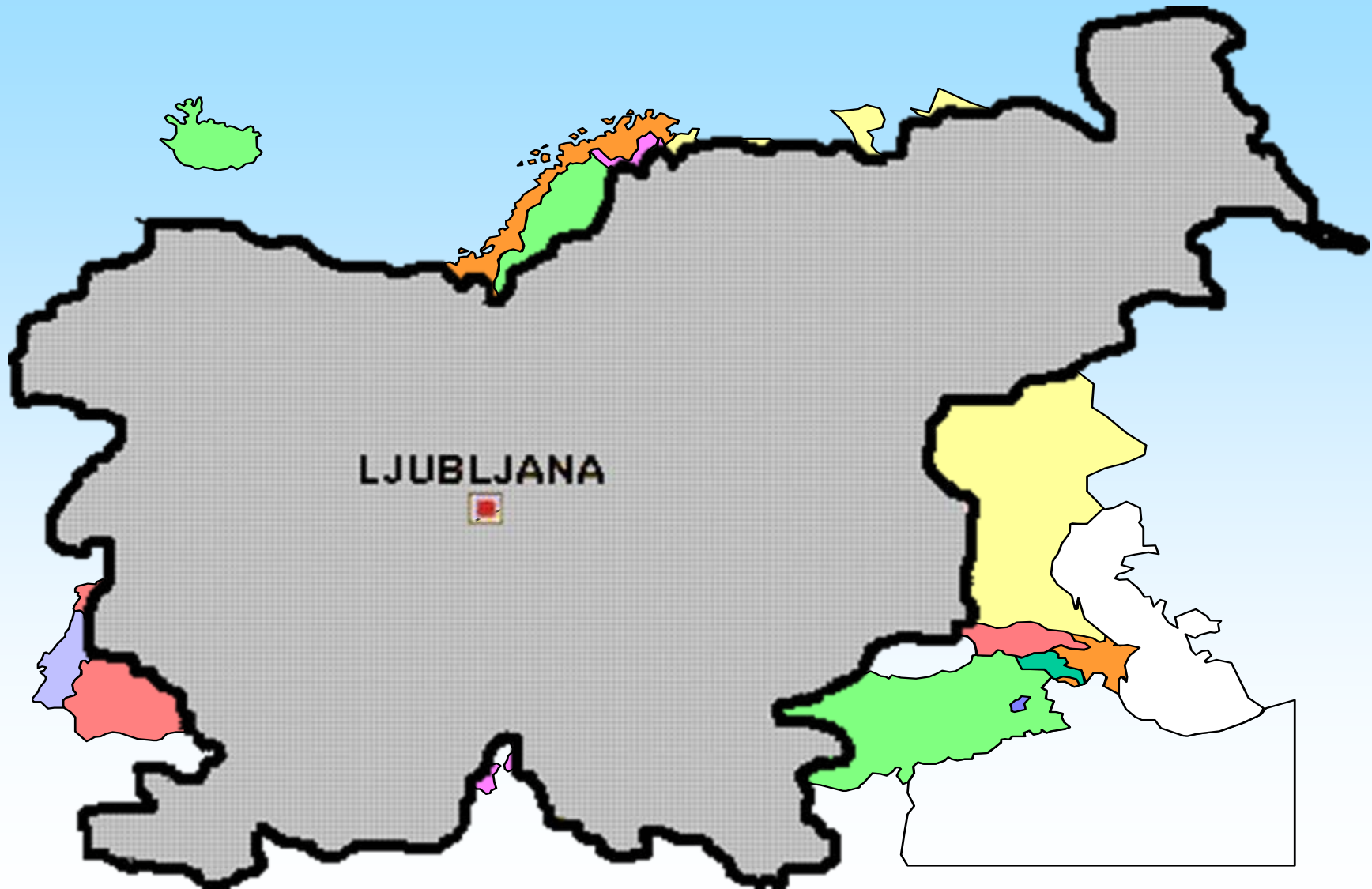
dr. Tomaž Boh, ARRS
tomaz.boh@arrs.si

Baku, October 15-18, 2007

Contents:

- Some facts about **Slovenia** and **Slovenian Research Agency**
- Importance of **knowledge** in modern society – interplay between **science** and **society**
- Main SRA research policy **instruments** – regarding the transfer of knowledge
- Some facts about the **research** and **innovation activities** in Slovenia

Some facts about Slovenia



SLOVENIA - in the Heart of EUrope

Basic data:

Constitution:

Parliamentary democracy

Capital:

Ljubljana (popul. 300 000)

Area: 20 273 km²

Population: 2 million

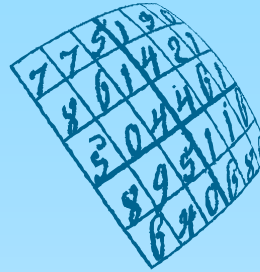
Population density: 99.0/km²

GDP: 29,7 mrd EUR

GDP per capita:
14.800 EUR (2006)

Annual real growth rates of GDP:
5,2 (2006)

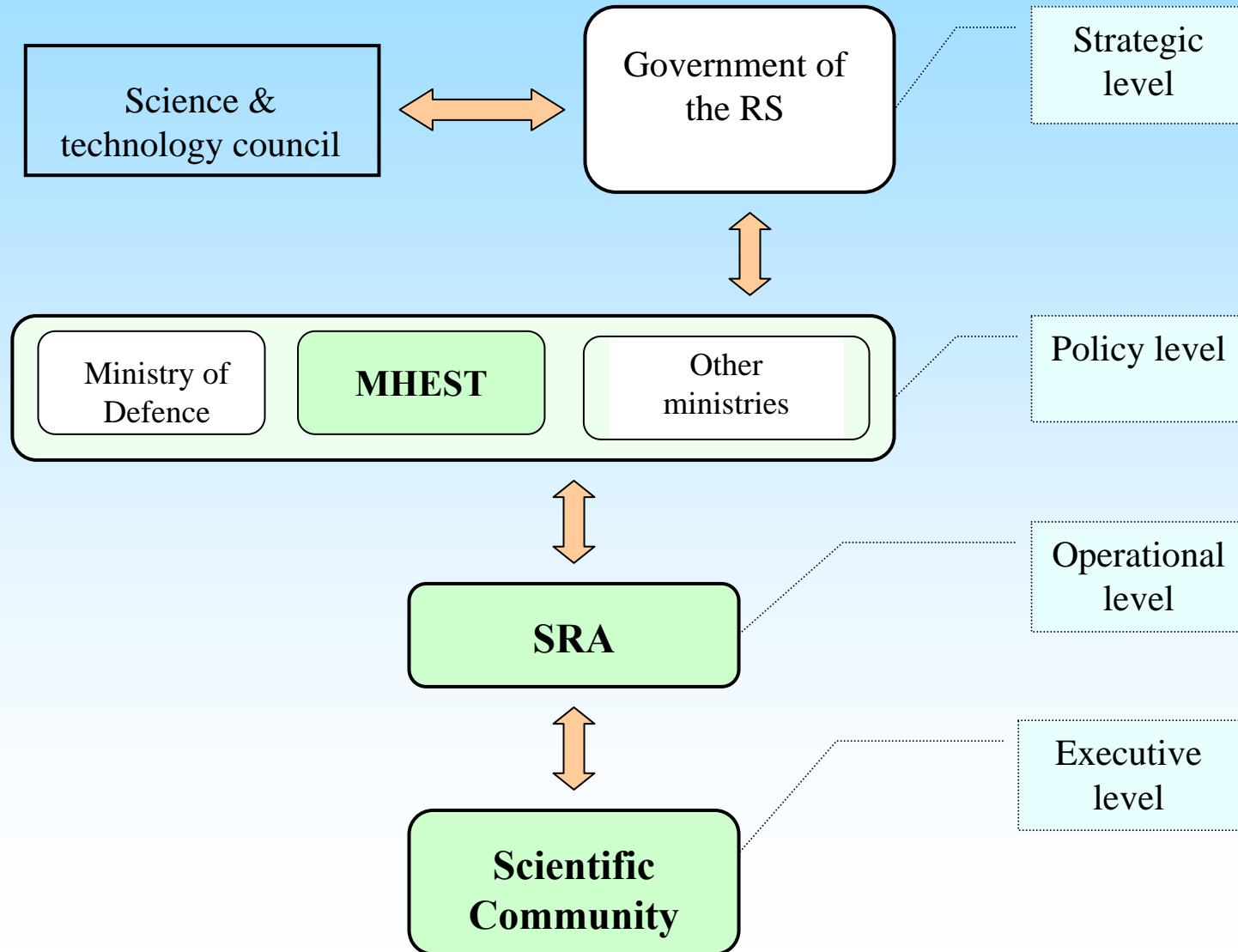




SLOVENIAN RESEARCH AGENCY

- **Establishing:** November 2004, Government of the Republic of Slovenia
- **Status:** a legal person of public law; indirect user of the budget of the Republic of Slovenia
- **Mission:** performing professional tasks relating to implementation of the adopted *National Research and Development Programme*
- **Budget:** 145 million € per year (2006)

Institutional design and position of the SRA



Main Slovenian R&D policy **objectives**

- to increase **investments** in R&D according to the 3% GDP
- to increase **effectiveness** of public investments in R&D
- to strengthen **human resources** in R&D
- to strengthen **R&D co-operation** between **public research** sector and **enterprises**
- to strengthen **business sector** R&D
- to increase **international co-operation**

Broad priority areas of Slovenian R&D

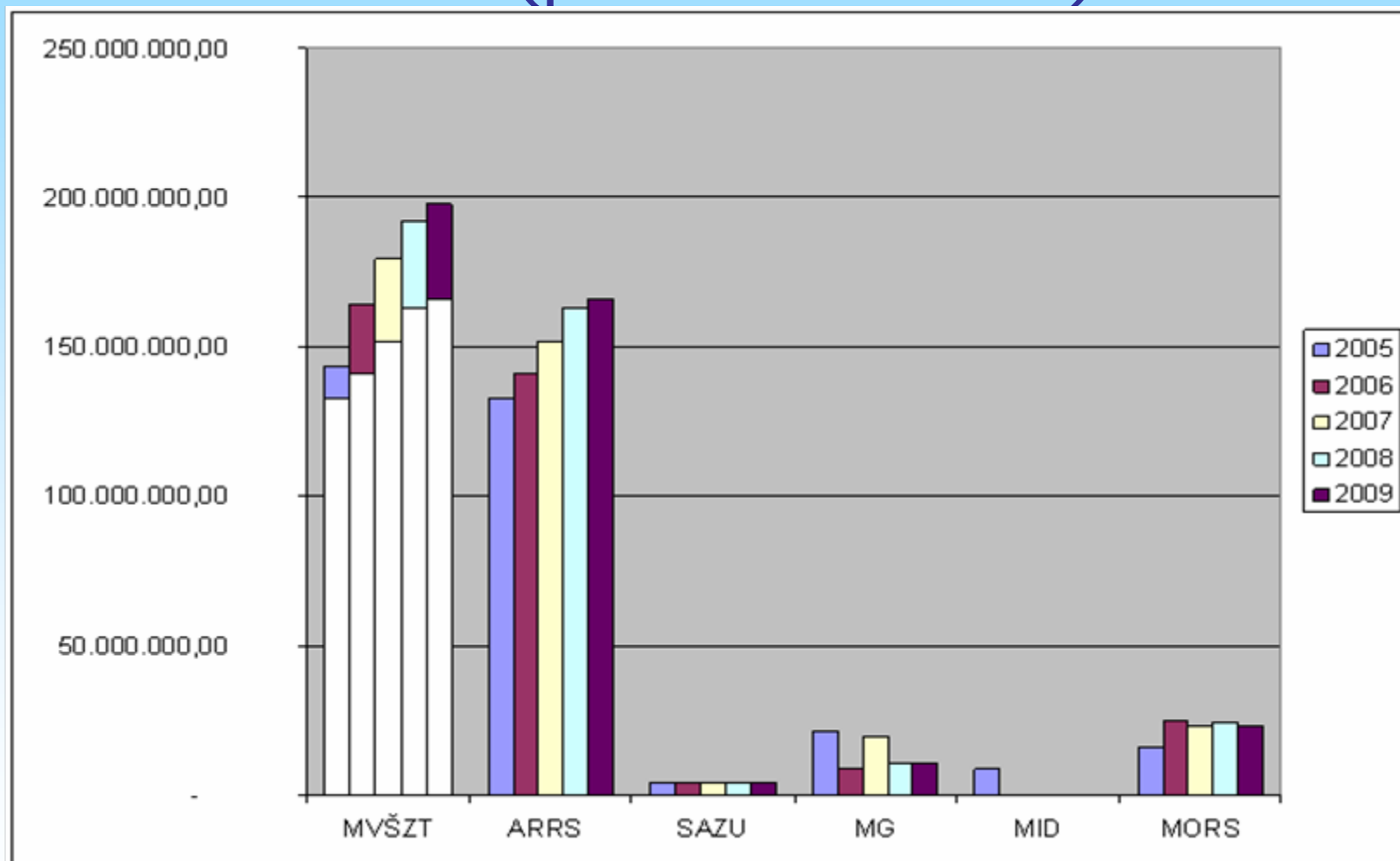
- **Information** and Communication Technologies
- Advanced New **Materials** and Nanotechnologies
- **Complex Systems** and Innovative Technologies
- Technologies for **Sustainable Development**
- **Health** and Life Sciences



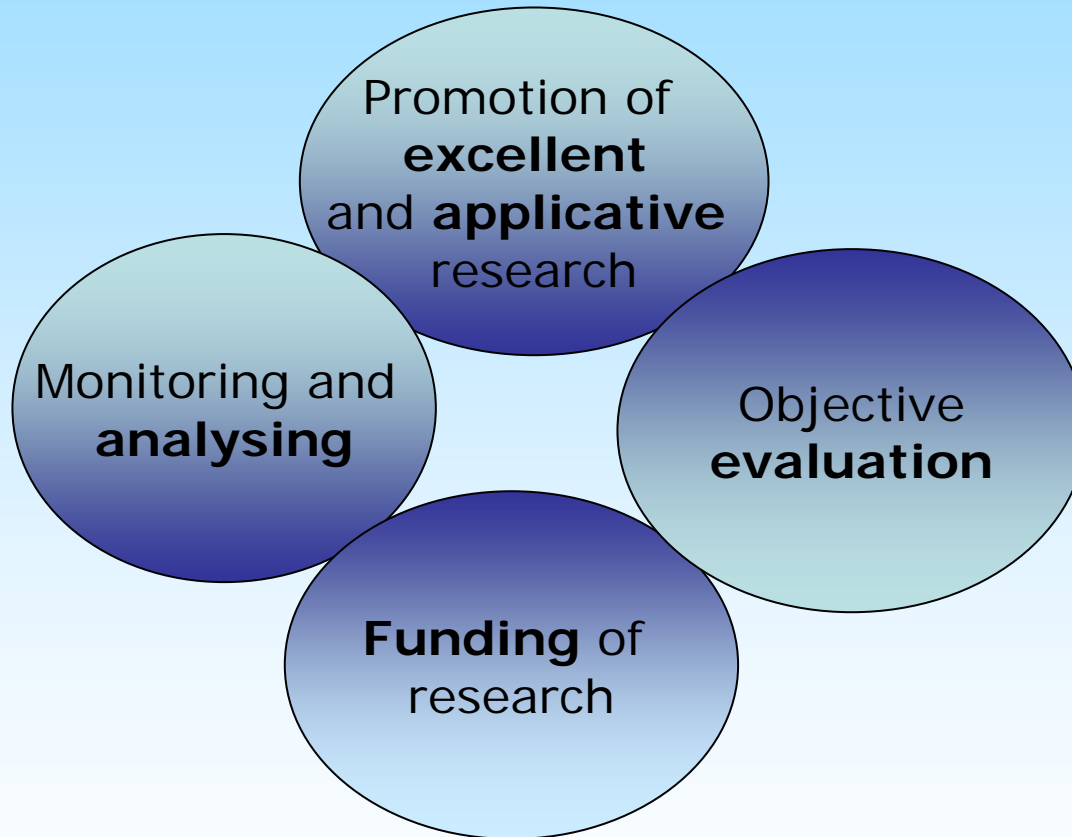
Priorities related to **social and cultural development**

- support to national identity, modern Slovenian history, **natural and cultural heritage**
- development of efficient state and modern **democratic society**
- management of **social processes** and risks caused by new technologies, globalization, changing the **demographic structure**

Slovenian budget for S&T, 2005-2009 (public sources)



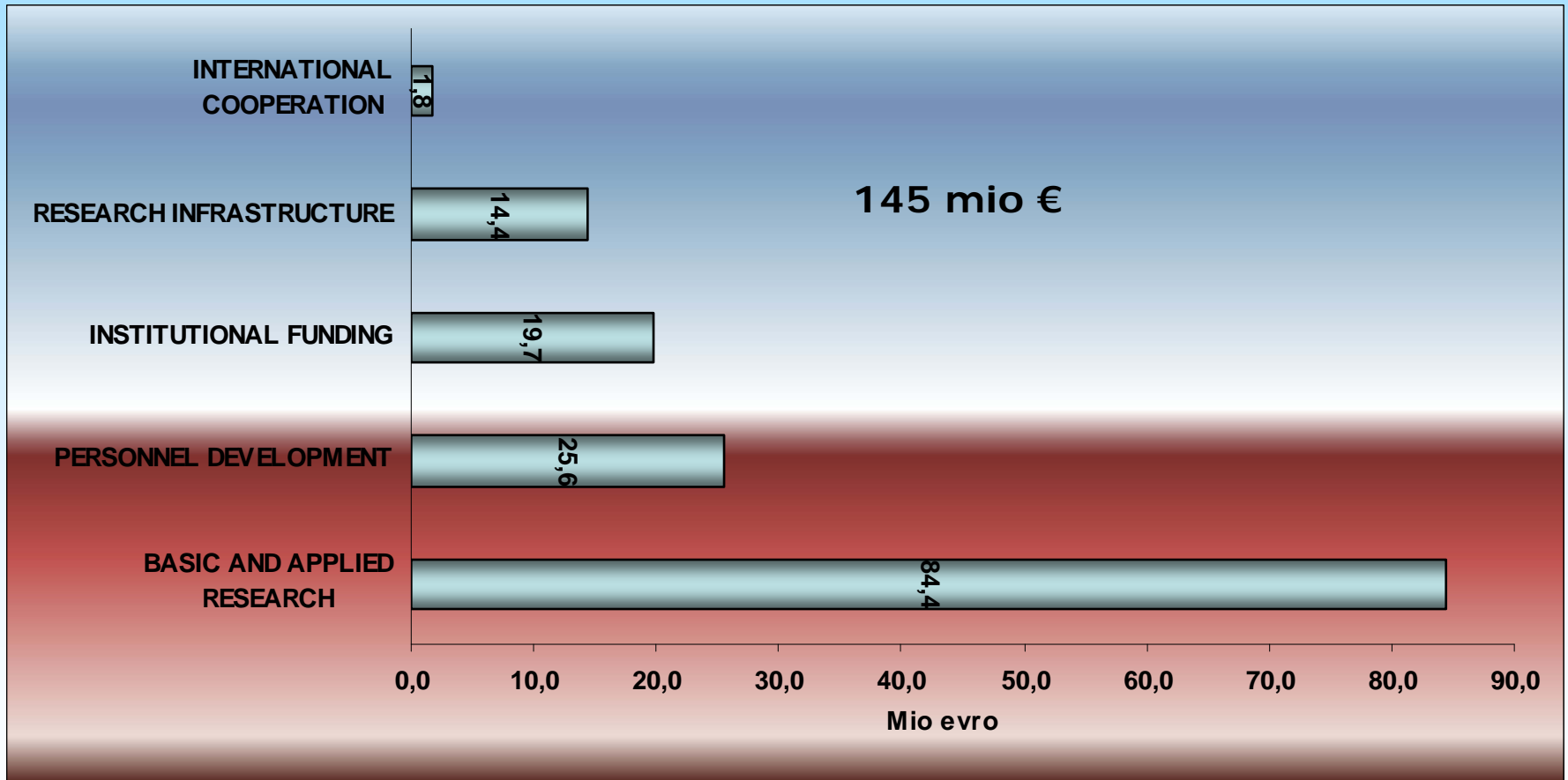
SRA main **areas** of operation



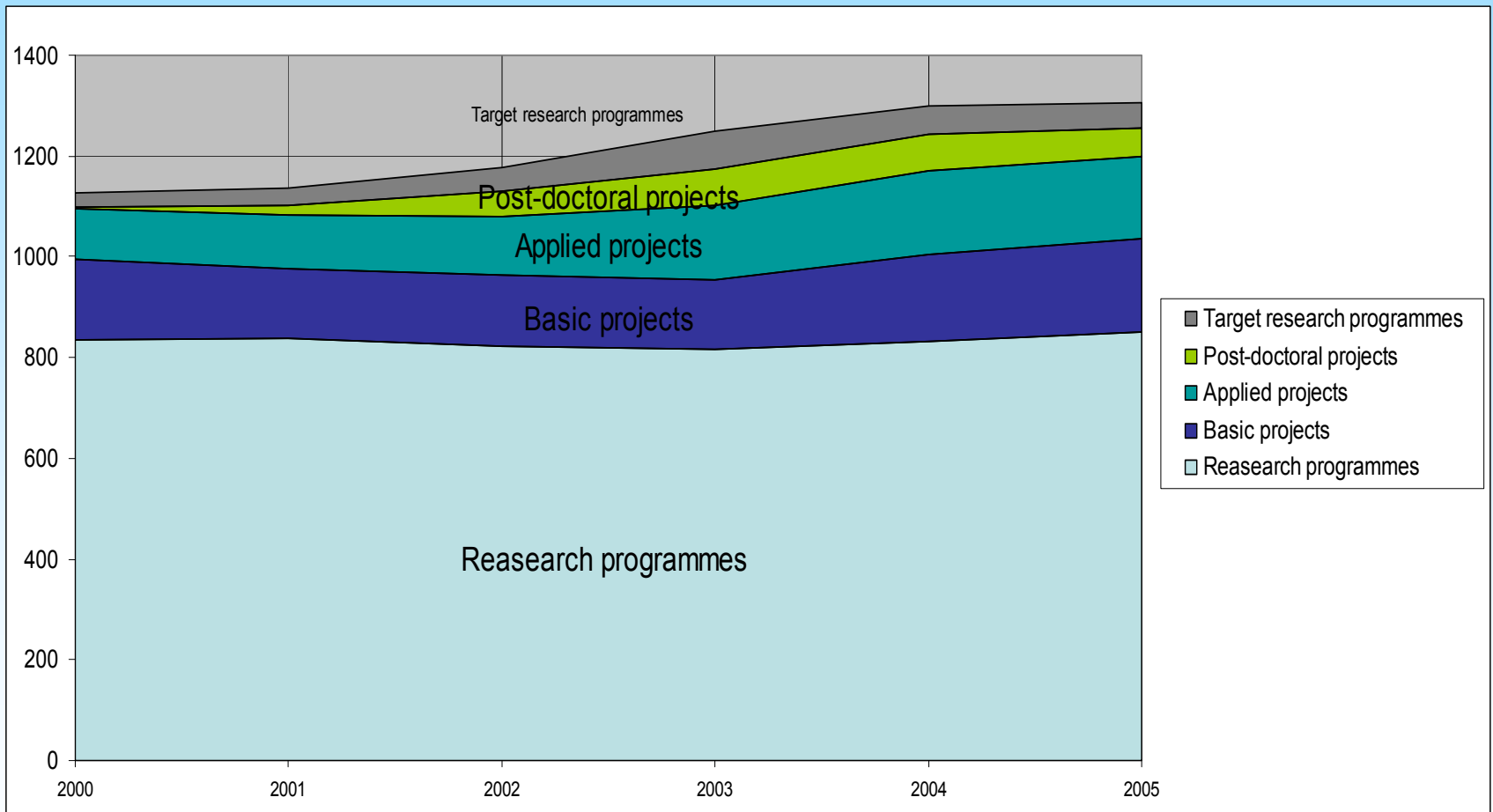
Openness of the SRA supporting system

- **Opening the national programmes:**
integration of foreign citizens into the
programme of young researchers,
postdoctoral research and excellent foreign
scientists
- Funding of postdoctoral research for
researchers who will switch over from **public**
to **business** sector

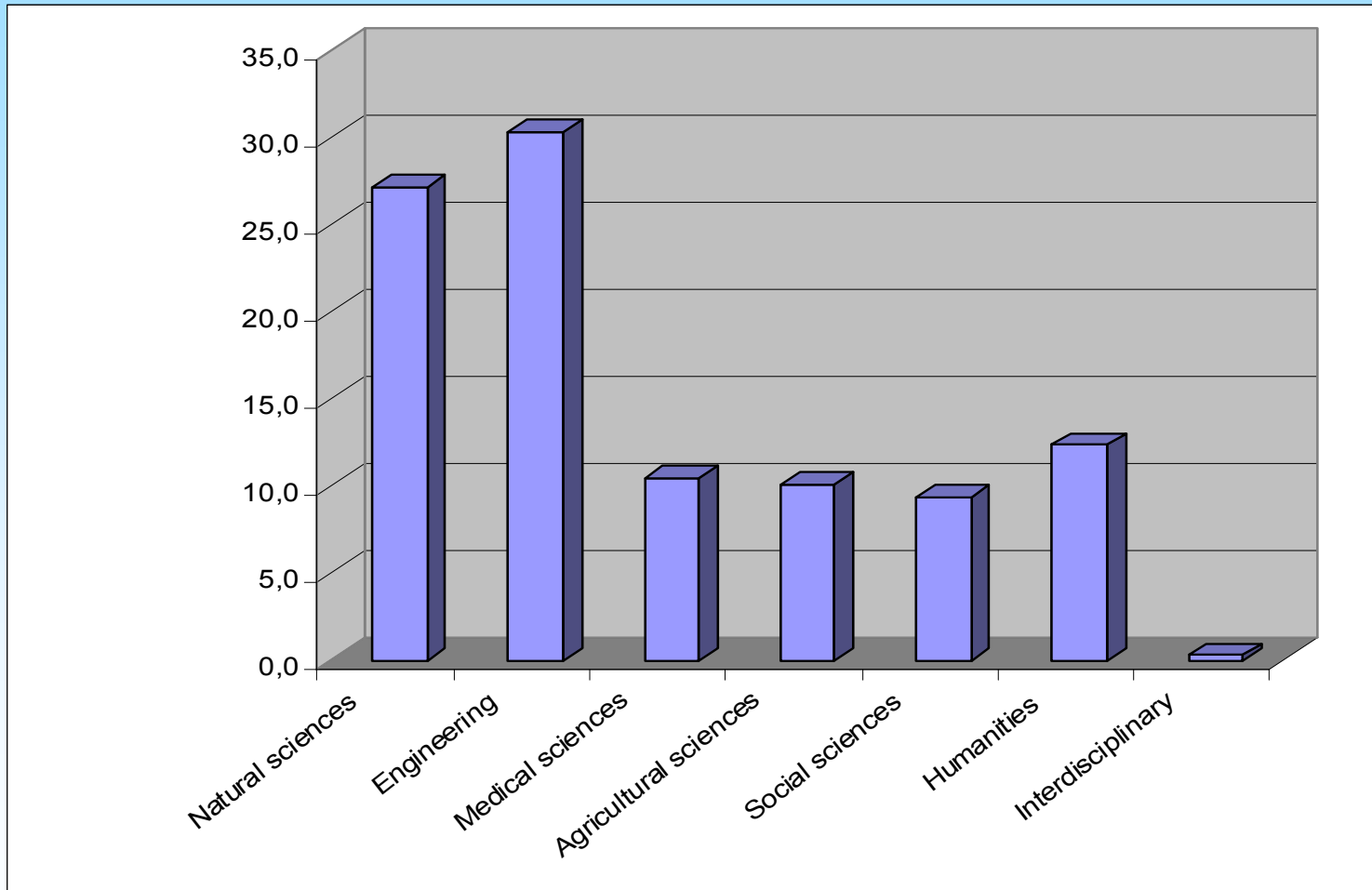
SRA budget – by research activities, 2006



1.300 FTE by research type



Funding (SRA) of research by **fields** of science



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“Knowledge is becoming the main source of wealth for nations, companies and people, but it can also become the main factor of inequality”
(Rodrigues, 2003)



Types of research impact

SPRU taxonomy of 'exploitation channels'

1. Increasing the stock of useful knowledge
2. Training skilled graduates
3. Creating new scientific instrumentation & methodologies
4. Forming networks and stimulating social interaction
5. Increasing the capacity for technological problem-solving
6. Creating new firms
7. Provision of social knowledge

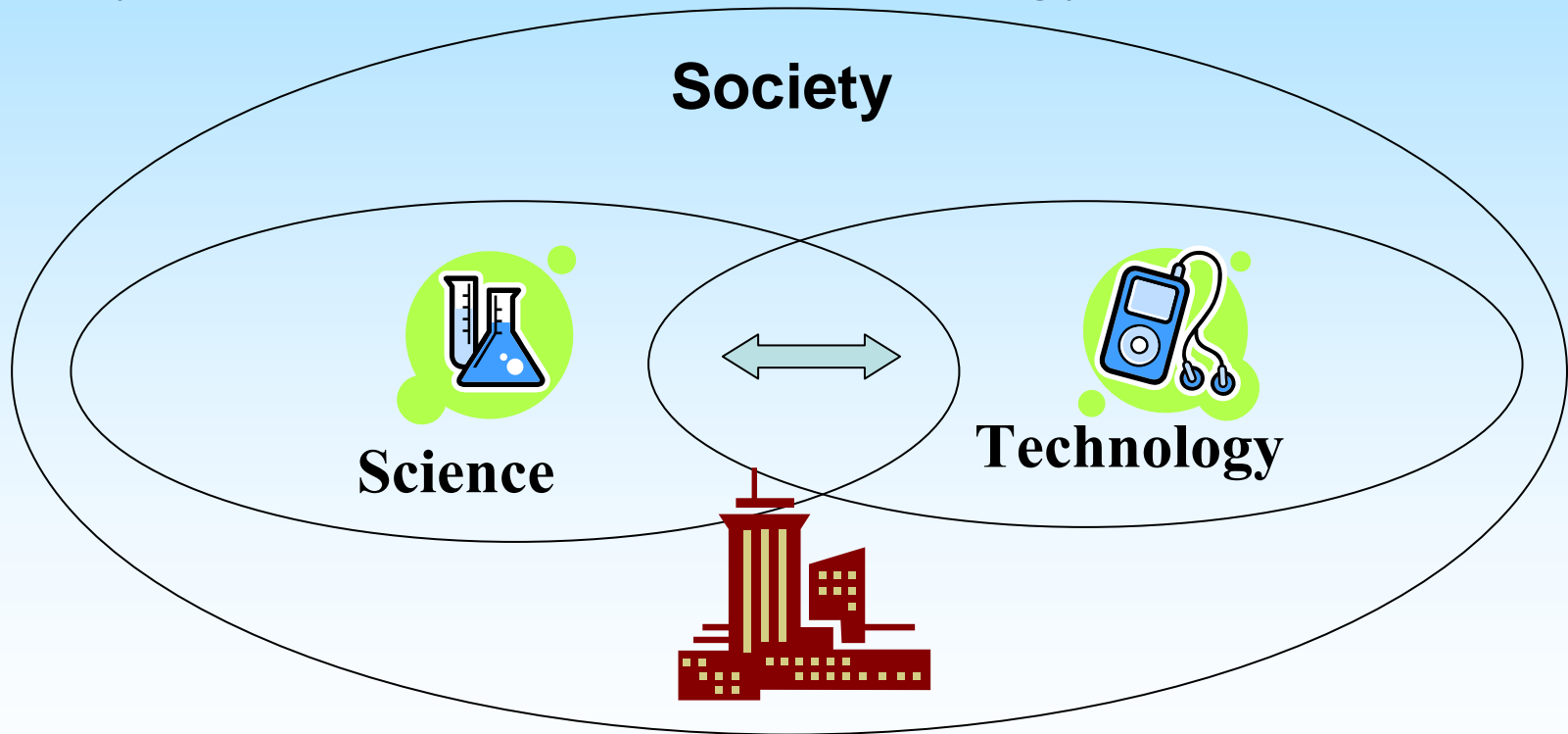
Extensive literature shows

- substantial benefits for each of these channels
- some more readily measurable than others

(Martin et al., 1996; Salter et al., 2000; Salter & Martin, 2001; Scott et al., 2002; Martin & Tang, 2006)

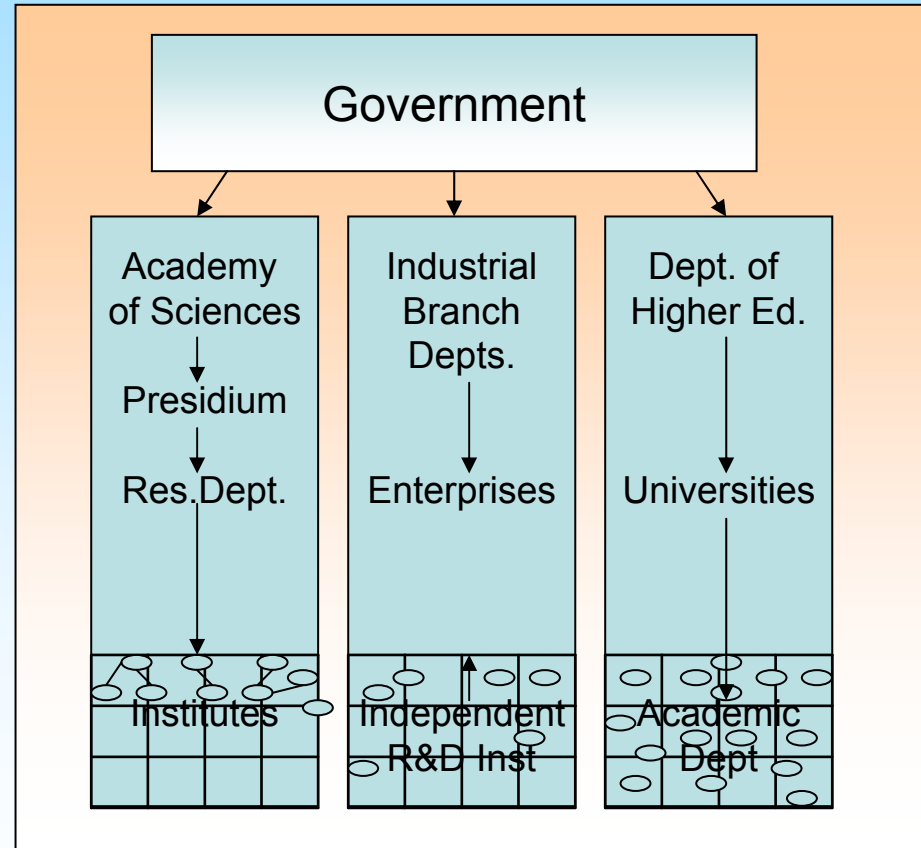
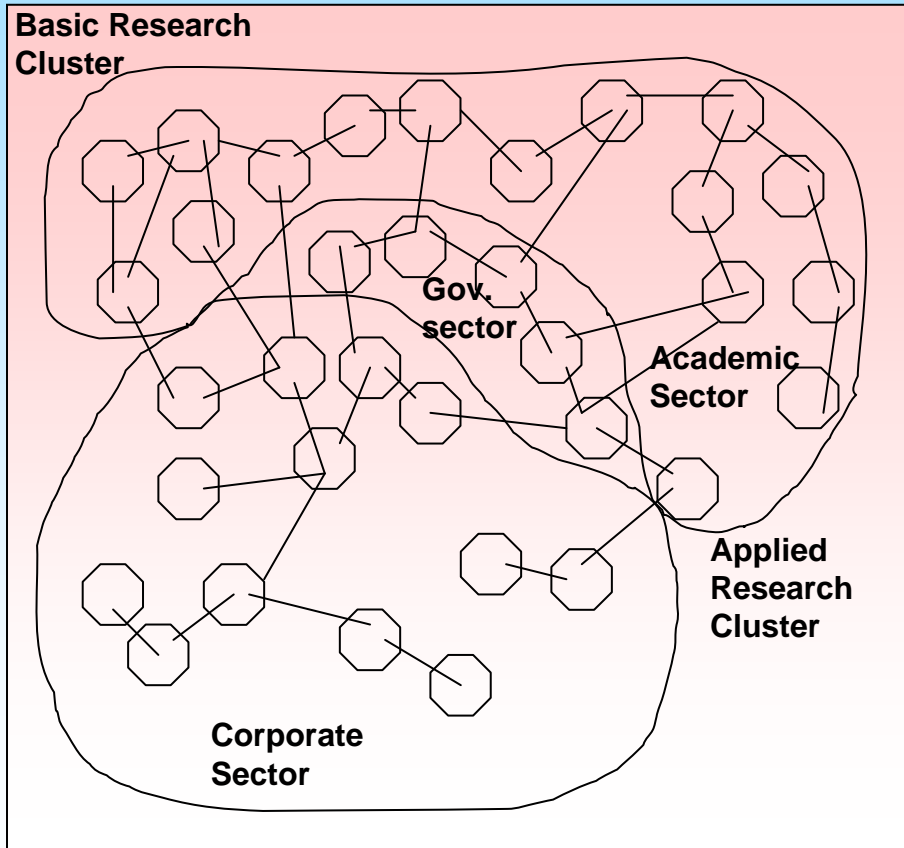
Interplay between science, technology and society

Money \Rightarrow Science \Rightarrow Technology \Rightarrow Wealth

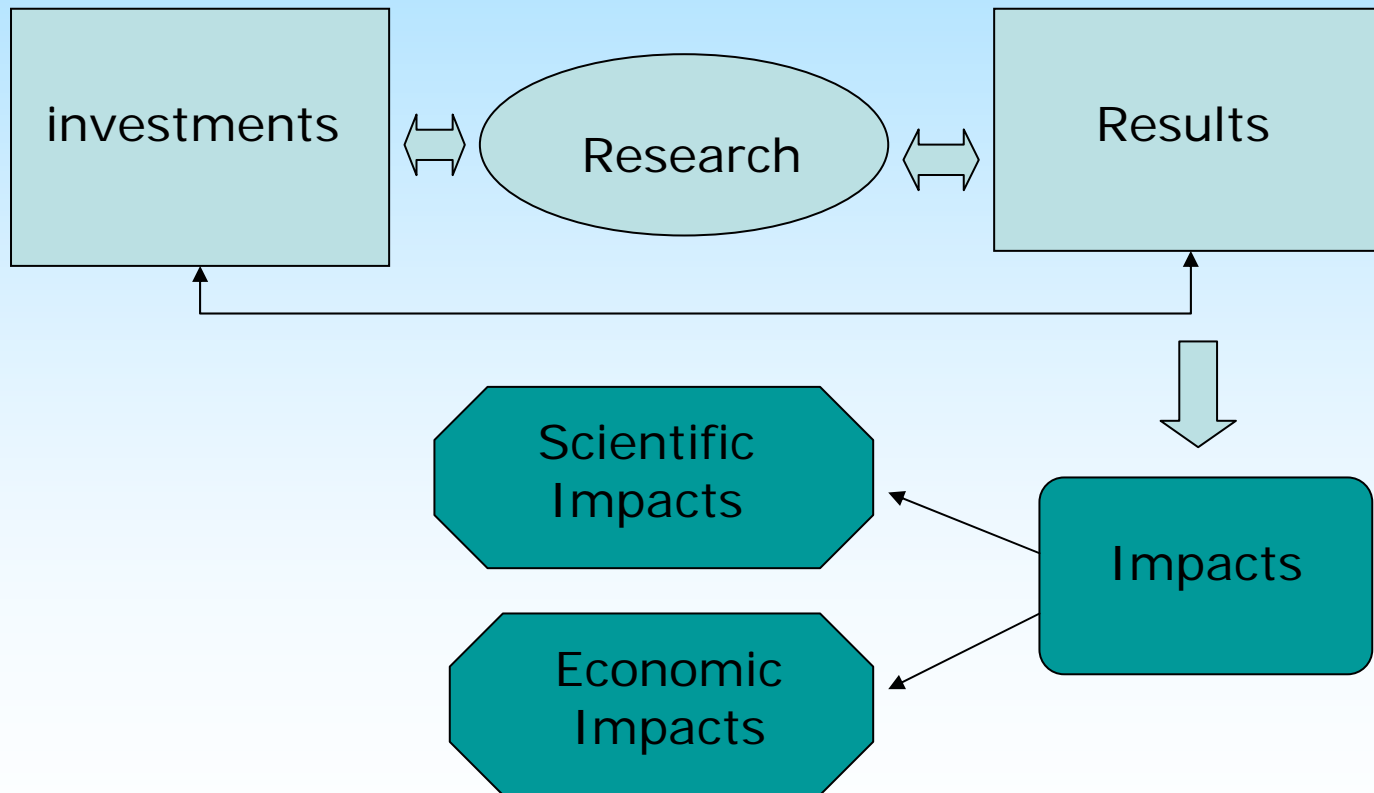


Comparison of two different research management approaches

- Western System (network)
- Soviet System (centralised)



Model of impacts and results of research



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Relevance of the **research projects**

- **Targeted** research programmes (**TRP**)
 - Slovenian competitiveness 2006-2013
 - Knowledge for peace and security 2004-2010
- **Programme for young researchers (YR in private sector)**
- **Thematic public calls** for basic, applied and postdoctoral projects

Socio-economic relevance is an important criterion of **evaluation**

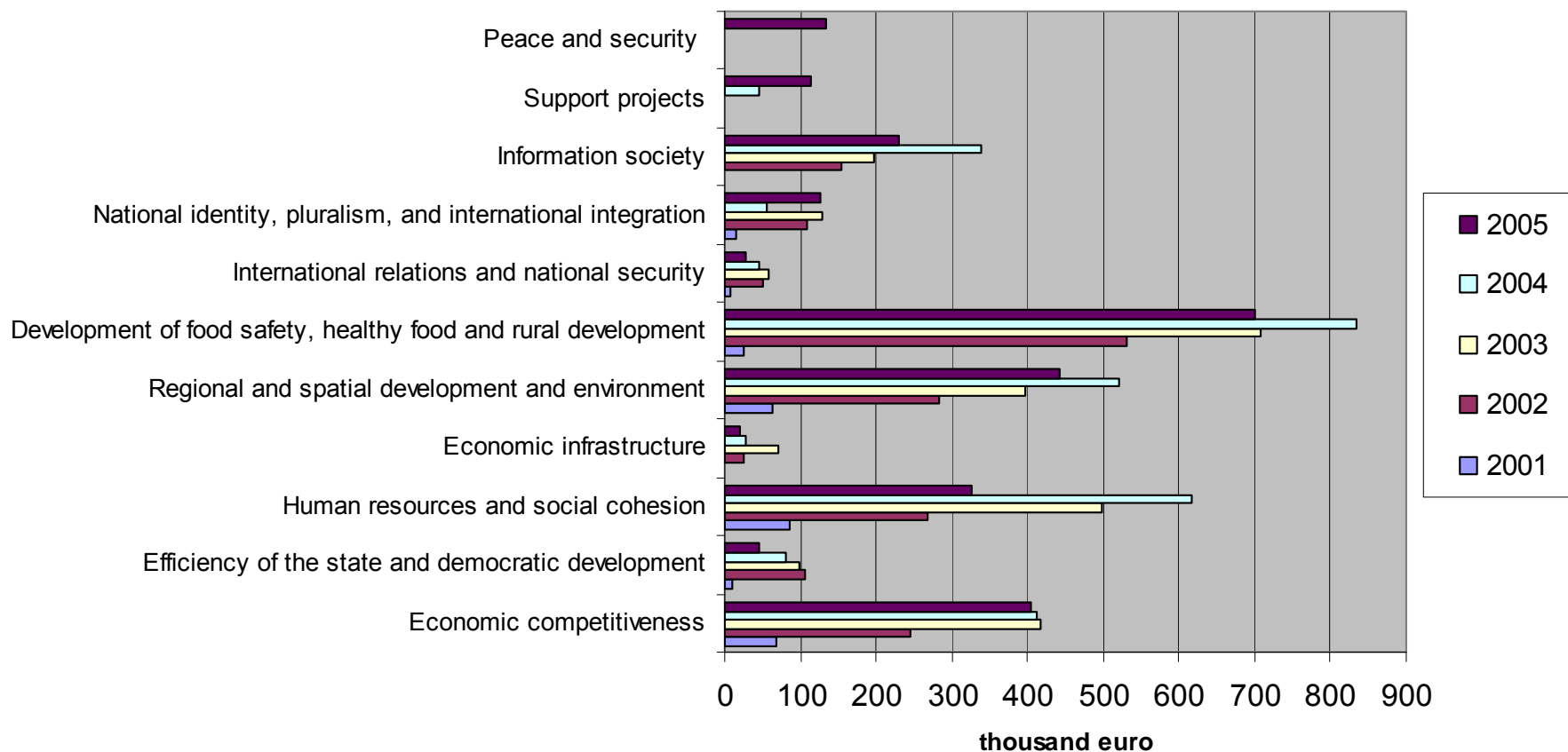
TRP Public call:

"Knowledge for peace and security
2004-2010"

Research chapters:

- **Slovenian Army** of the 21st century
- Development of **the communication and information system** according to the needs of **national security**
- **Defence** against terrorism, **civil protection** and **environmental protection**
- Development and management of the **national security system**

**Volume of agency co-financing of CRP by focus area,
2000-2005**



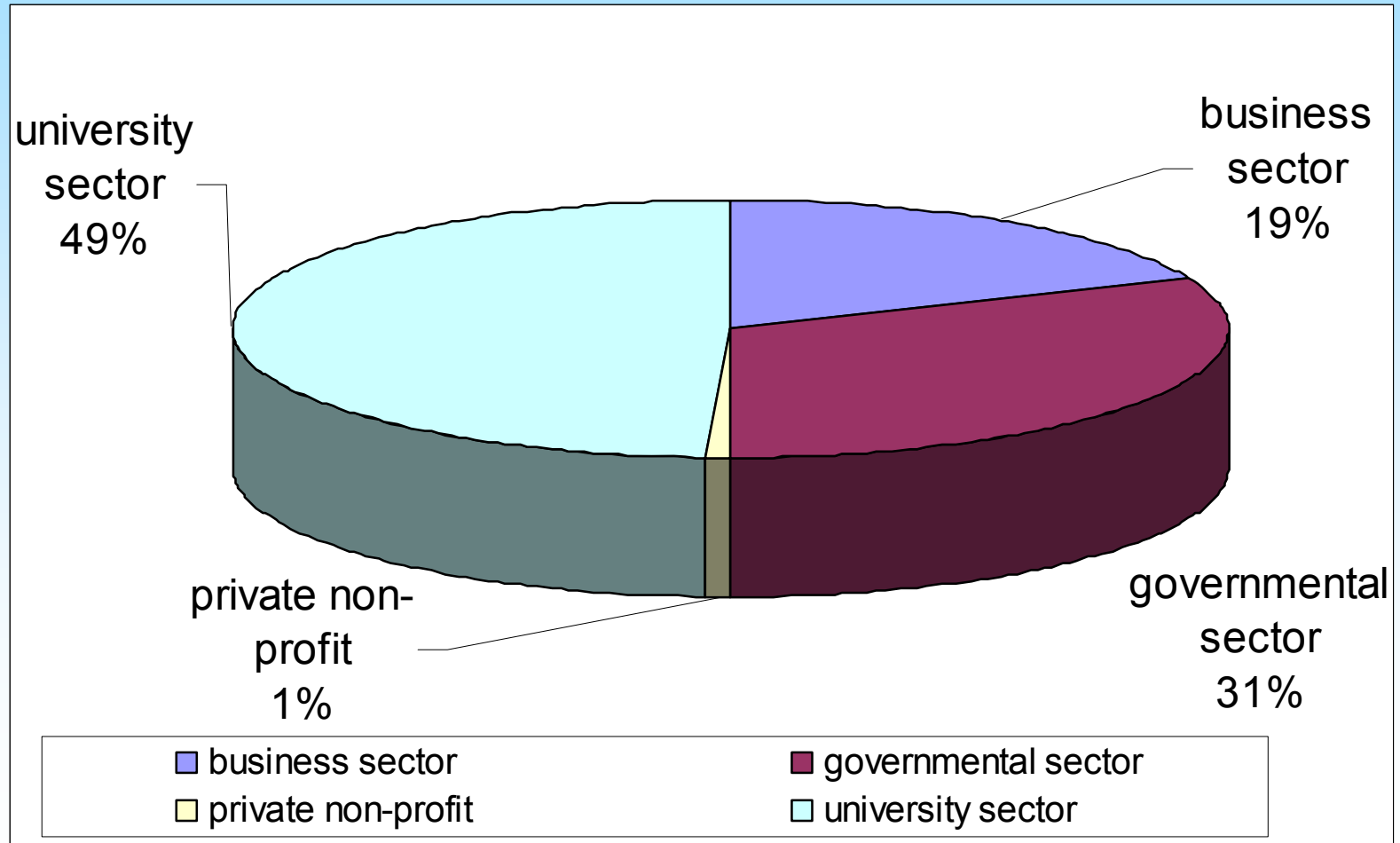
Target research programme: *"Knowledge for security and peace"*

- 98 % of budget comes from the Ministry of Defence
- 2 % Ministry of higher education science and technology
- Main topics:
 - Relating to security
 - Natural catastrophes
 - Other topics related to security and peace (socio economic, legal...)

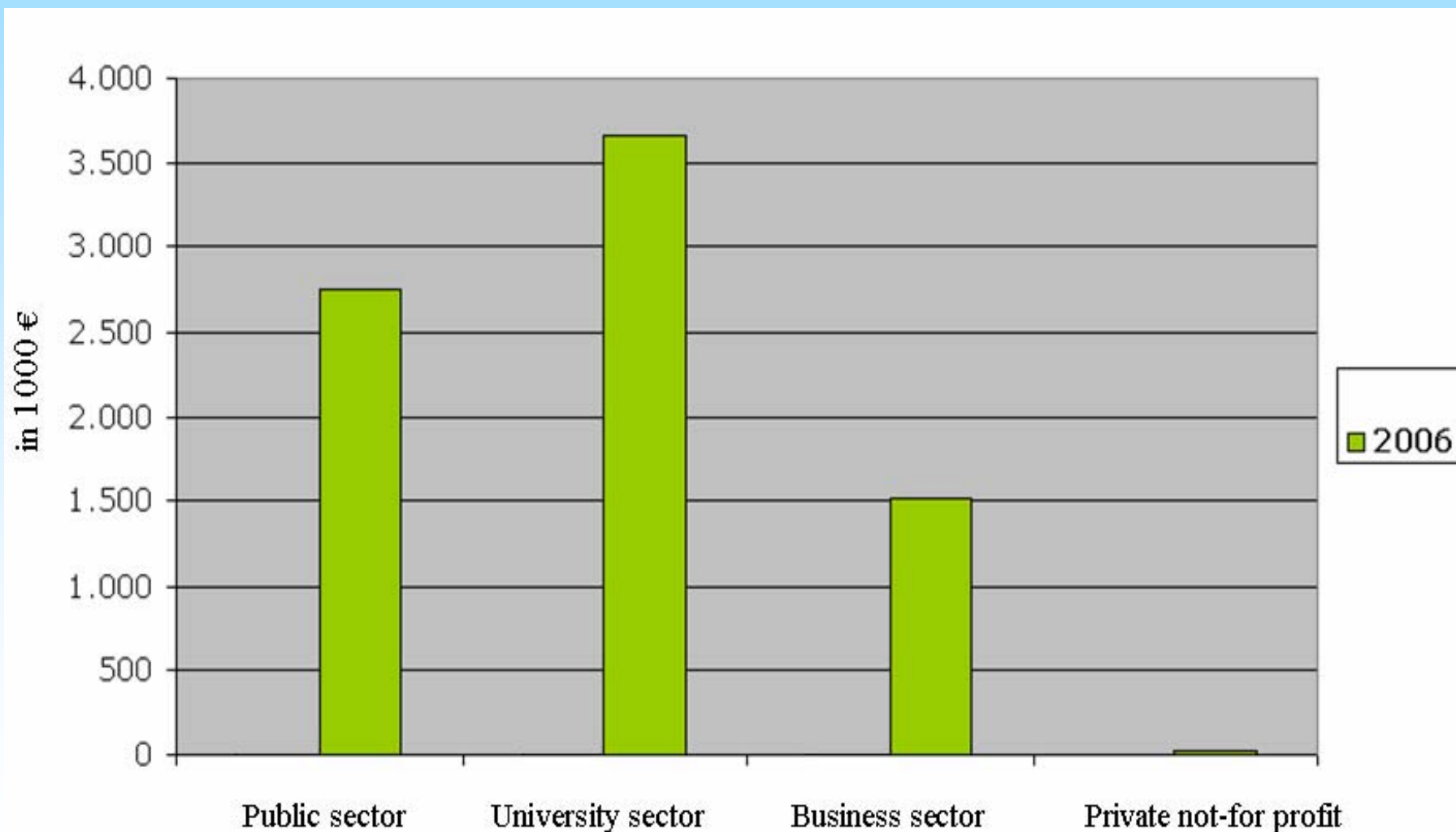
Budget for a period 2006-2010

- Ministry of defence: 33.175.000 €
- SRA: 625.940 €

Structure of participating research institutions



Receivers of CPR money according to sector

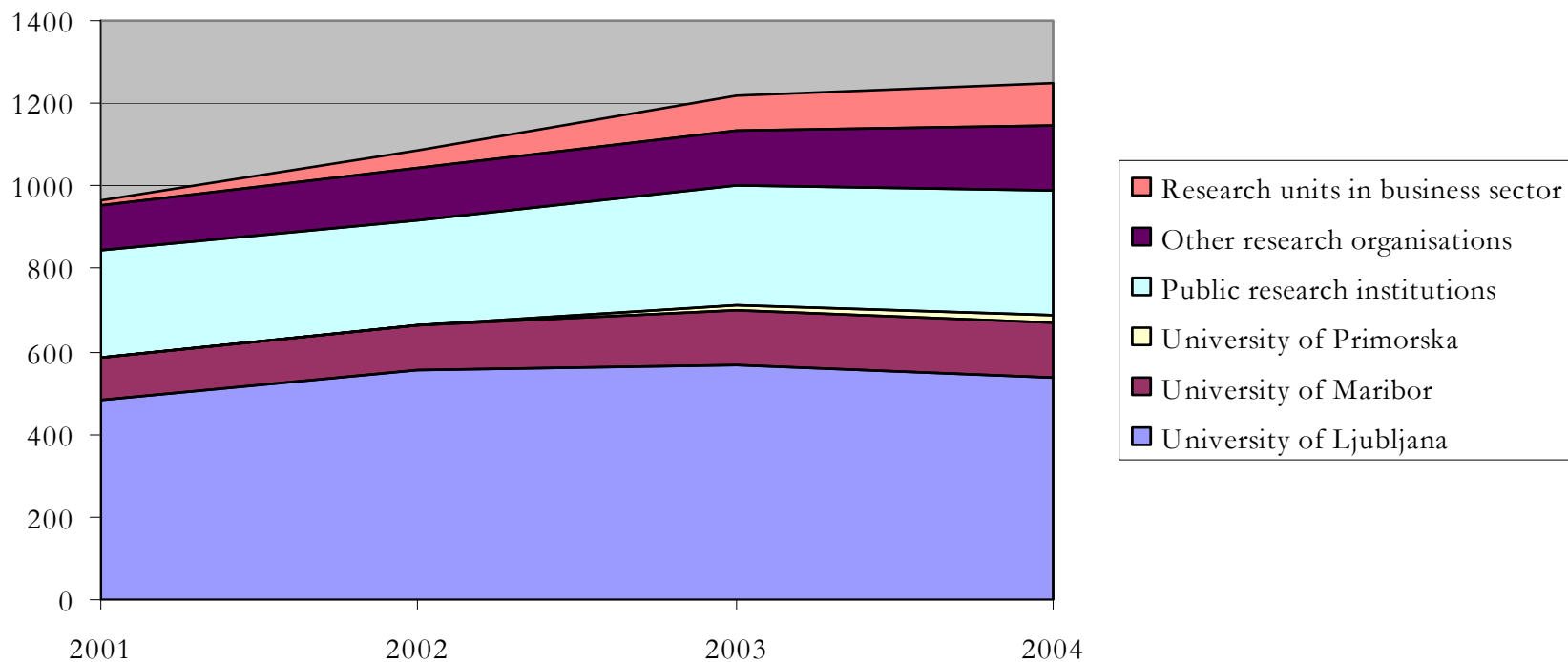


Programme of Young researchers (YR)

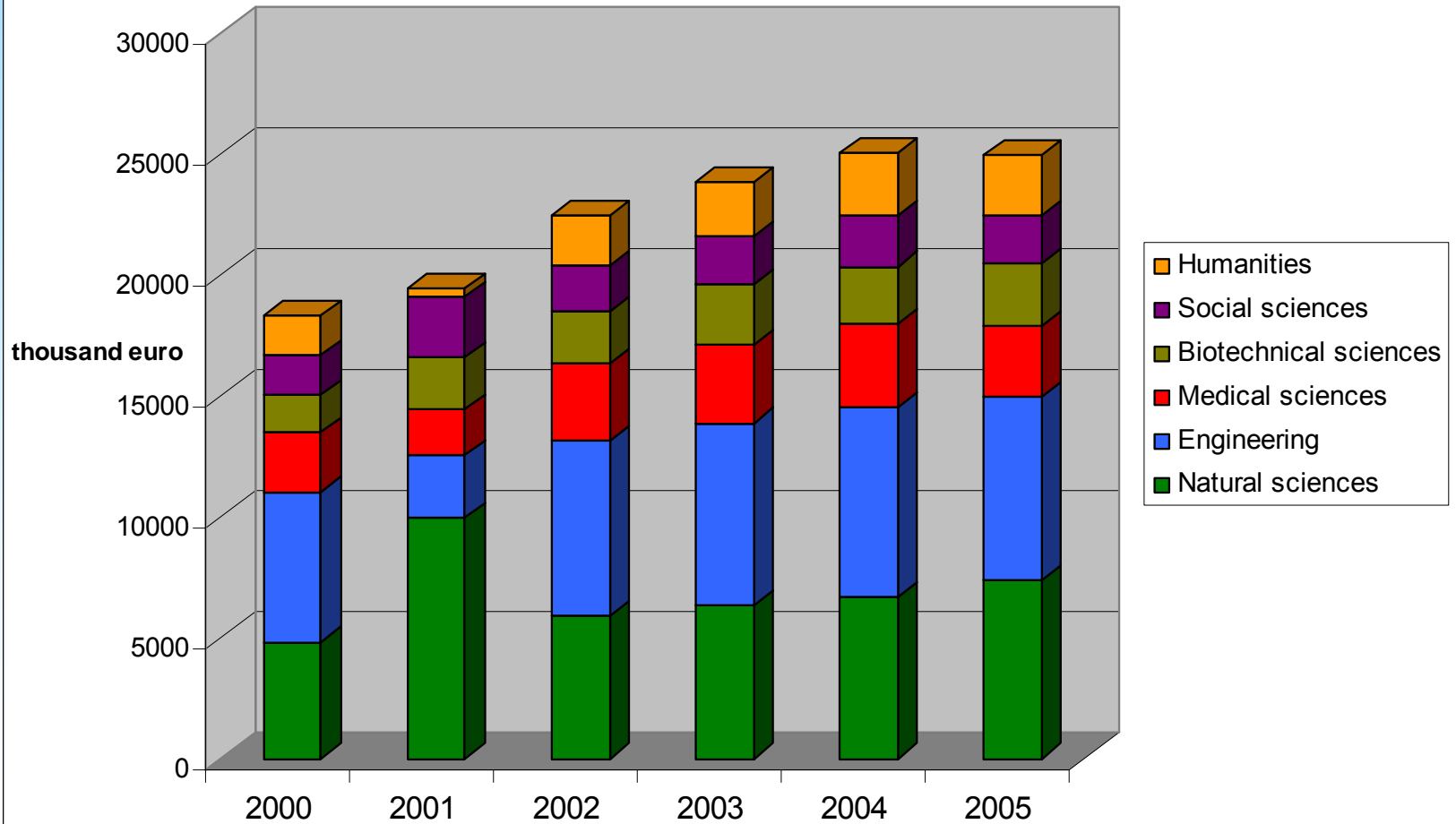
- **1.200** young researchers (850-900 FTE) financed per year
- **250** new candidates for young researchers accepted per year
- **25 mio EUR** per year
- **19%** of the budget of SRA

YR by research organizations

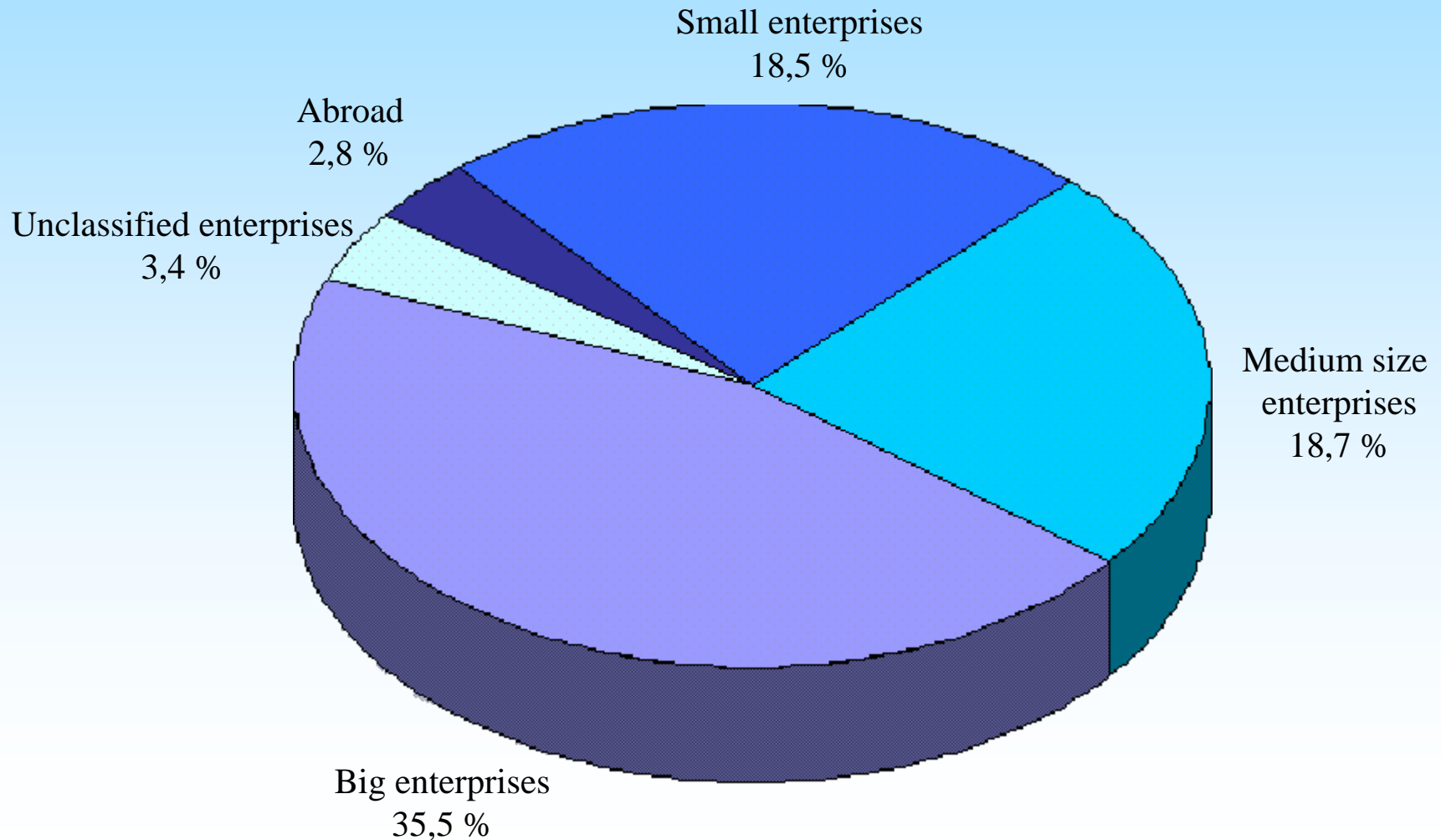
Total number of young researchers financed by research organization type
2001-2004



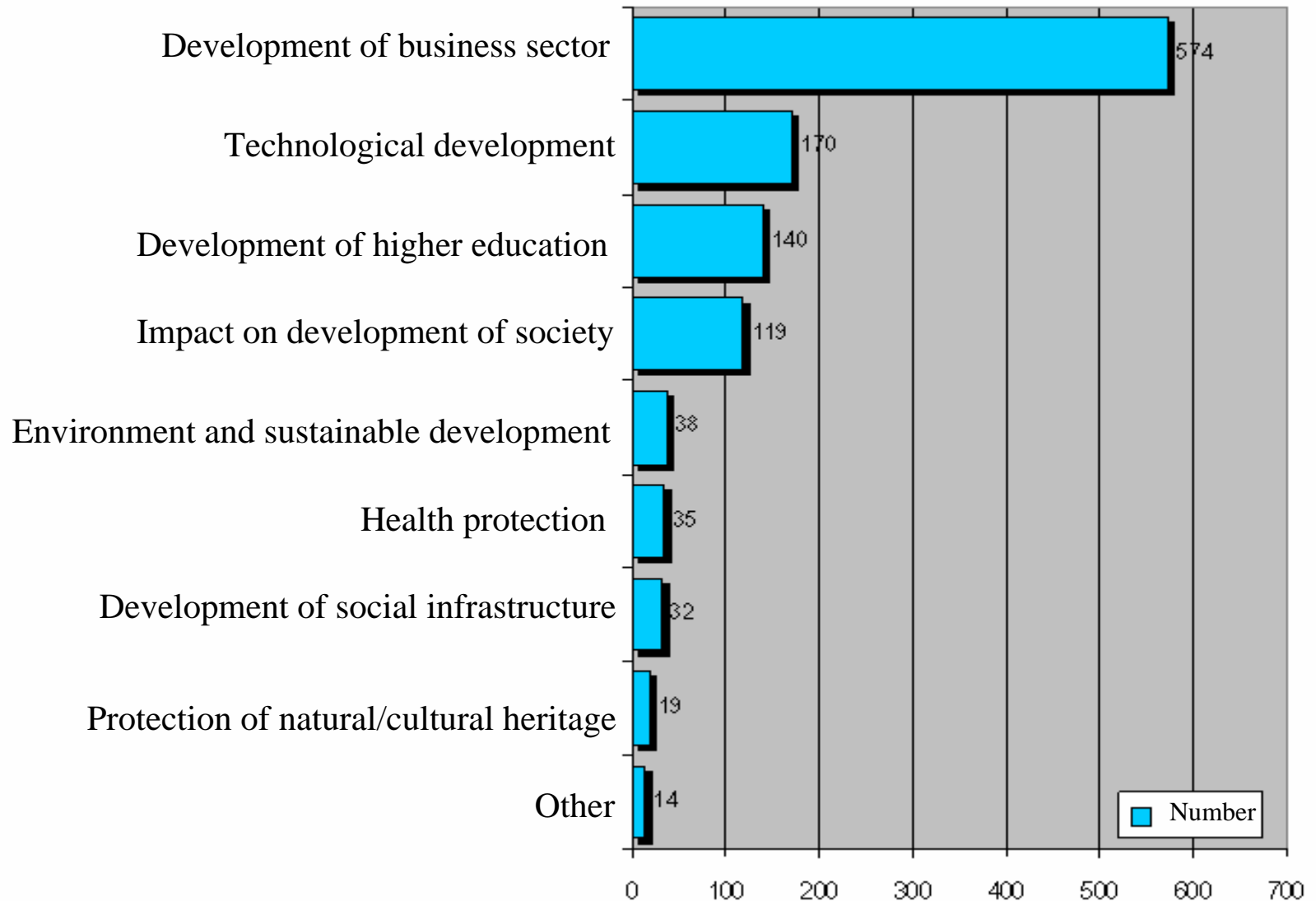
**Funding of young researchers by fields of science,
2000-2005**



Applied-industrial projects by the type of co-financing institutions



Type of influences of finished applied projects 2004-2006



Transparency as a tool supporting R&D activities

- Control over the use and distribution of research money and indirect control of public over the work of researchers
- Public availability of research results (for researchers and general public)
- Dissemination of research results in short and understandable form

Elements of transparency

1. Transparency of instruments
2. Transparency of Procedures
3. Financial Transparency
4. Transparency of results of the research

Elements of transparency

(The case of SRA)

1. Transparency of instruments

- Annual plan of public calls
- Timetable of evaluation process
- Guidelines prepared by the Ministry of higher education science and technology;
- Published names peers and members of decision-making bodies
 - Inclusion of “users” – representatives of business

Elements of transparency

(The case of SRA)

2. Transparency of procedures

- Evaluation methodology – unique for each field of science
- Transparent membership in expert bodies (published on SRA home page)
- Procedure of peers selection is known in advance
- Evaluation criteria (questions for peers) are prepared, adopted and published in advance
- Publicly available results of selection process

Elements of transparency

(The case of SRA)

3. Financial Transparency

- Annual financial reports (White book on financing)
- Up-to date overview of distribution of budget (online white book)

Elements of transparency

(The case of SRA)



4. Transparency of research results

- Use of COBISS bibliographic system
- Use of SICRIS system and its abstracts of research work
 - The most important scientific results
 - Socio-economic significance of research
- Use of international citation indexes (ISI, CSA and other bibliographic databases

COBISS bibliographic system – articles and patents

ŽELJKO KNEZ [02619] - Microsoft Internet Explorer

Datoteka Urejanje Pogled Priključene Orodja Pomoč

Naslov <http://izum.izum.si/bibliografije/Y20071004160307-02619.html> Pojdi Links

COBISS Co-operative Online Bibliographic system & services COBISS

ŽELJKO KNEZ [02619]

Personal bibliography for the period

1979-2007

ARTICLES AND OTHER COMPONENT PARTS

1.01 Original Scientific Article

1. KNEZ, Željko, GOLOB, Janvit, DOLEČEK, Valter. A study of the isolation of important components from Aurora hop. *Vestn. Slov. kem. druš.*, (Documenta chemica Yugoslavia), 1984, letn. 31, št. 1, str. 57-70, graf. prikazi [COBISS.SI-ID [26735877](#)]
2. KNEZ, Željko, DOLEČEK, Valter, GOLOB, Janvit, ZUPANEC, Janez. Some physico chemical processes at the hop alteration. *Hopfen-Rundsch.*, 1985, vol. 3, str. 40-42, graf. prikazi [COBISS.SI-ID [26736133](#)]
3. KNEZ, Željko, DOLEČEK, Valter. Izolacija pivarskih značajnih komponenata hmelja etanolom. *Pivarstvo*, 19 (1986), 4 ; str. 271-275. [COBISS.SI-ID [348164](#)]
4. KNEZ, Željko, HABULIN, Maja. Membrane reactors for ester synthesis. *Chem. biochem. eng. q.*, 1988, 2, 4, str. 233-234. [COBISS.SI-ID [6381828](#)]
5. KNEZ, Željko, POSEL, Franc. Ekstrakcija vodnih raztopin in trdnih substanc s superkritičnim CO₂. V: *Hemijska industrija : časopis Saveza hemičara i tehnologa Jugoslavije : žurnal Sojuza himikov i tehnologov Jugoslavii : journal of the Federation of Chemists and Technologists of Yugoslavia*. Beograd: Savez hemičara i tehnologa Jugoslavije, 1947-, 43 (1989) 11-12 ; str. 445-449. [COBISS.SI-ID [1778436](#)]
6. KNEZ, Željko, POSEL, Franc, GOLOB, Janvit, BAUMAN, Davorin. Supercritical fluid extraction of organics from water. *Vestn. Slov. kem. druš.*, (Documenta chemica Yugoslavia), 1989, letn. 36, št. 2, str. 155-166, graf. prikazi [COBISS.SI-ID [14083328](#)]
7. ZUPANEC, Janez, GOLOB, Janvit, KNEZ, Željko. Potential use of a heat pump in a plant material drying process. *Vestn. Slov. kem. druš.*, (Documenta chemica Yugoslavia), 1989, letn. 36, št. 2, str. 215-222, graf. prikazi [COBISS.SI-ID [26736645](#)]
8. KNEZ, Željko. Potential use of a heat pump in a plant material drying process. *Vestn. Slov. kem. druš.*, (Documenta chemica Yugoslavia), 36(1989), 2 ; str. 215-222. [COBISS.SI-ID [1140228](#)]

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646. BAUMAN, Davorin, KNEZ, Željko, MARČINKO, Vlasta, PETROVIČ, Branko, RIŽNER HRAŠ, Andreja. Process for preparing N-phosphonomethyl glycine : international application published under the Patent Cooperation Treaty (PTC), international publication number WO 96/19485, date 27 June 1996 : international application number PCT/SI95/00029. [S.l.]: World Intellectual Property Organisation, 1996. [COBISS.SI-ID [5605398](#)]

657. WEIDNER, Eckhard, KNEZ, Željko, NOVAK, Zoran. *Process for the production of particles or powders : United States Patent US006056791A, Patent Number 6,056,791, Date of patent May 2, 2000 : Appl. No.: 08/965,805, Filed: Nov. 7, 1997 : Continuation of application No. 08/694, 455, filed as application No. PCT/EP95/00538, Feb. 14. 1995 : Priority data SI 9400079, Feb. 15, 1994.* [S.l.: s.n], 2000. [10] f., graf. prikazi. [COBISS.SI-ID [6115350](#)]

SICRIS information system

SICRIS - Microsoft Internet Explorer

Datoteka Urejanje Pogled Priključene Orodja Pomoč

Nazaj Iskanje Priključene

Naslov <http://sicris.izum.si/search/rsr.aspx?lang=eng&id=7455&opt=1> Pojdi Links

SLOVENIAN CURRENT RESEARCH INFORMATION SYSTEM

Search Log in News SICRIS

RESEARCHER

11709 Drnovšek Roman

STATUS researcher employed in a registered research organisation

RESEARCH AREA 1.01.01 - Natural sciences and mathematics / Mathematics / Analysis

PRESENTATION ENGAGEMENTS PROJECTS PROGRAMS

CONTACTS

TELEPHONE (01) 476 66 32

FAX (01) 251 72 81

E-MAIL roman.drnovsek@fmf.uni-lj.si

WWW ADDRESS

ACTIVITY

→ **SRA CLASSIFICATION**

1.01.01 - Natural sciences and mathematics / Mathematics / Analysis

→ **KEYWORDS**

Operator theory, Banach spaces, Banach lattices, collections of operators, semigroups, invariant subspaces, spectral properties of operators.

→ **BIBLIOGRAPHY**

[Representative](#) / [Complete](#)

LANGUAGE SKILLS (reading / writing / speaking)

English functional / functional / functional

German basic / basic / basic

Serbo-Croatian (Roman) functional / functional / functional

EDUCATION

BACHELOR'S DEGREE 1990

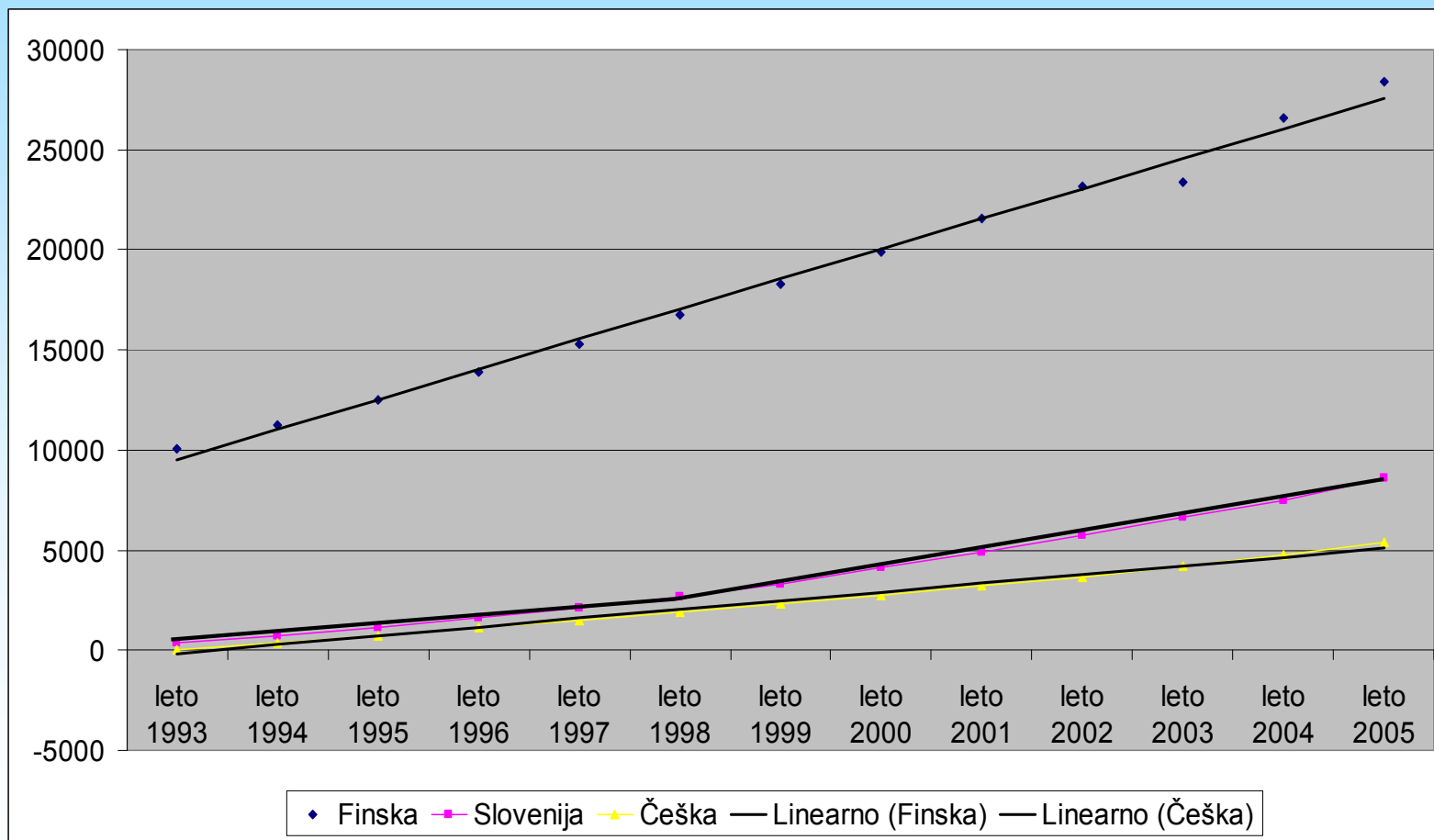
Slovenia

MASTER'S DEGREE 1993

Slovenia

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Publications in journals (index) per million inhabitants – result of transparency?



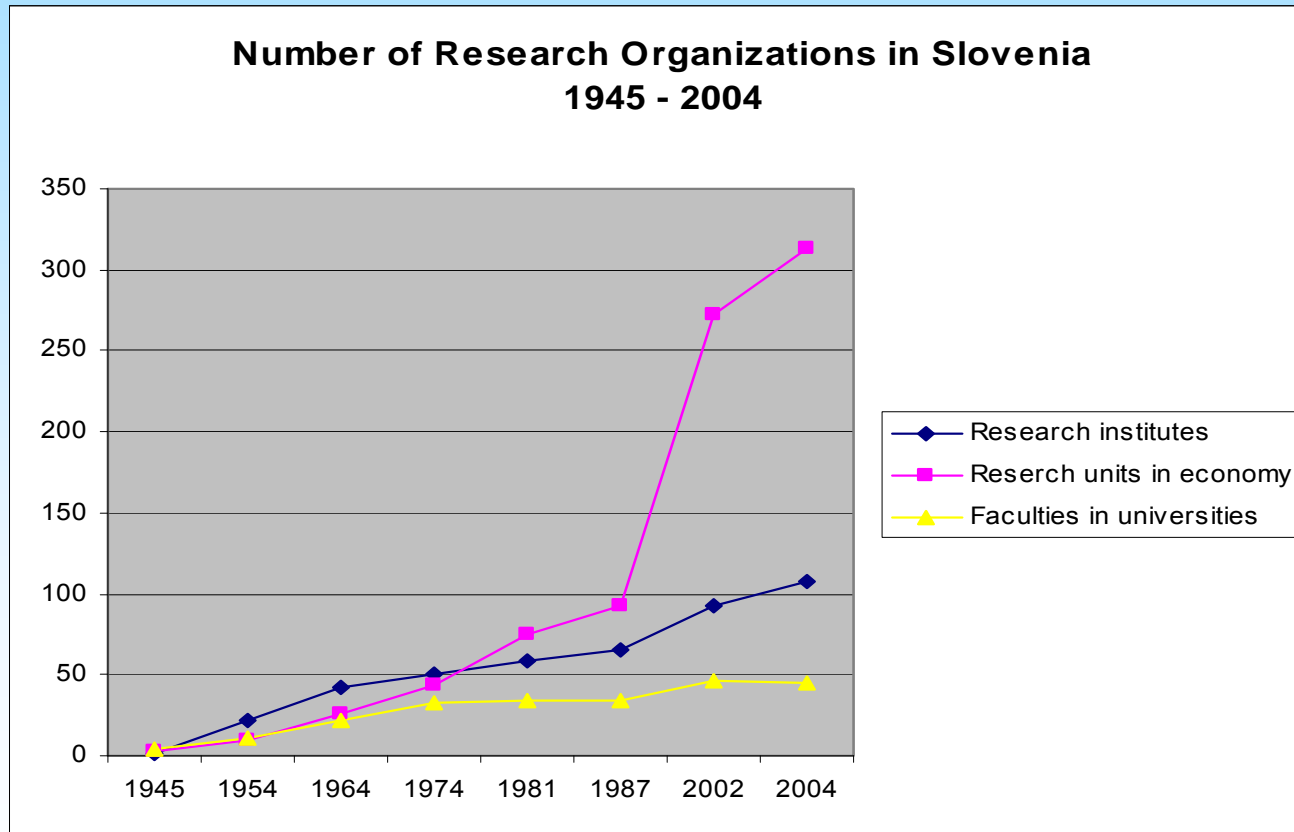
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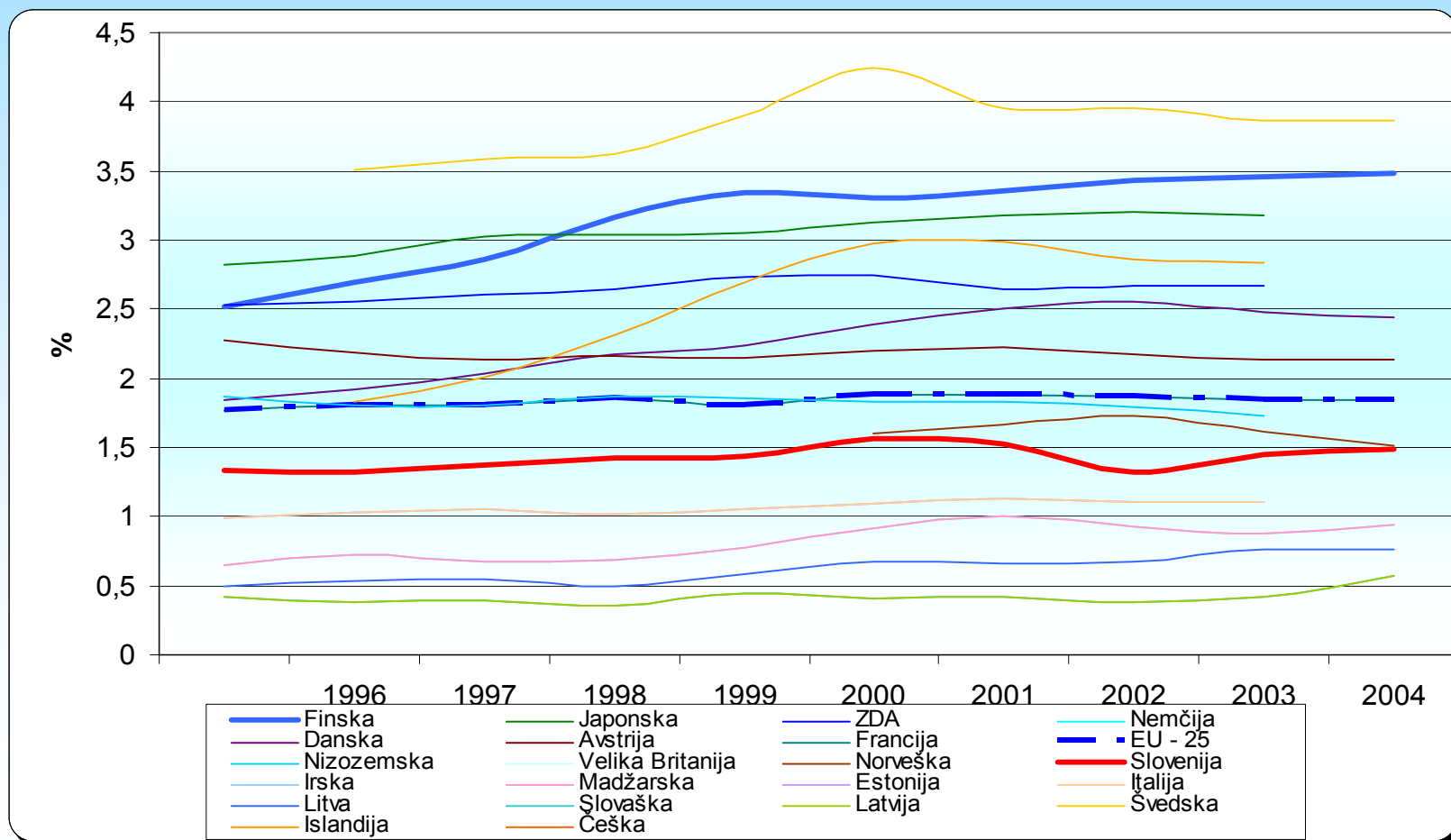
Institutional research **landscape**

- 4 Universities:
 - University of Ljubljana (26 faculties)
 - University of Maribor (12 faculties)
 - University of Primorska (7 faculties)
 - University of Nova Gorica (6 faculties)
- **National** Research Institutes (15)
- Private (non-profit) **Research Institutes** (ca. 100)
- **Research unites** in business (ca. 300)

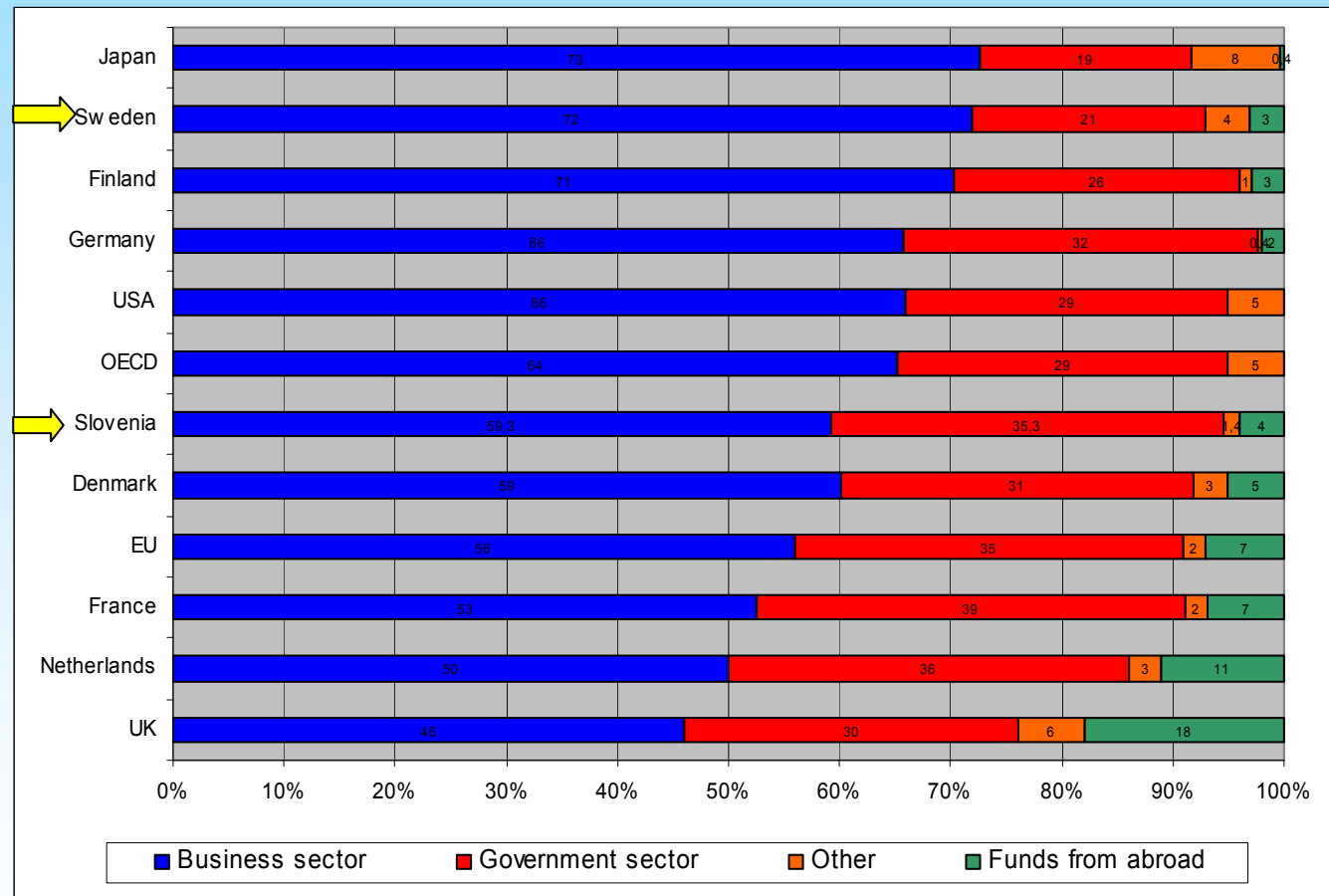
Evolution of research organizations in Slovenia



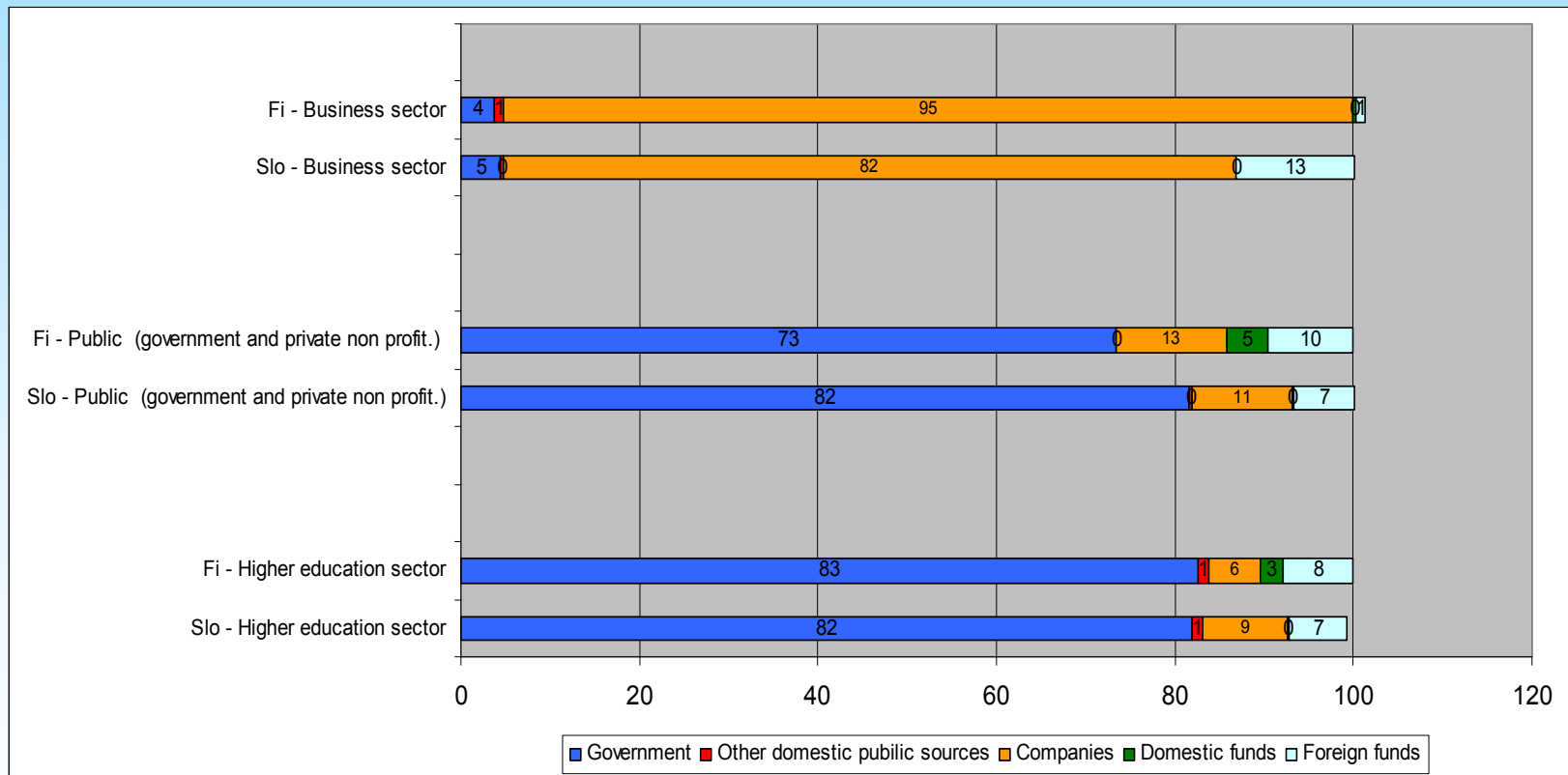
R&D expenditure as a proportion of GDP (%) in Slovenia and in selected OECD countries 1990 – 2005



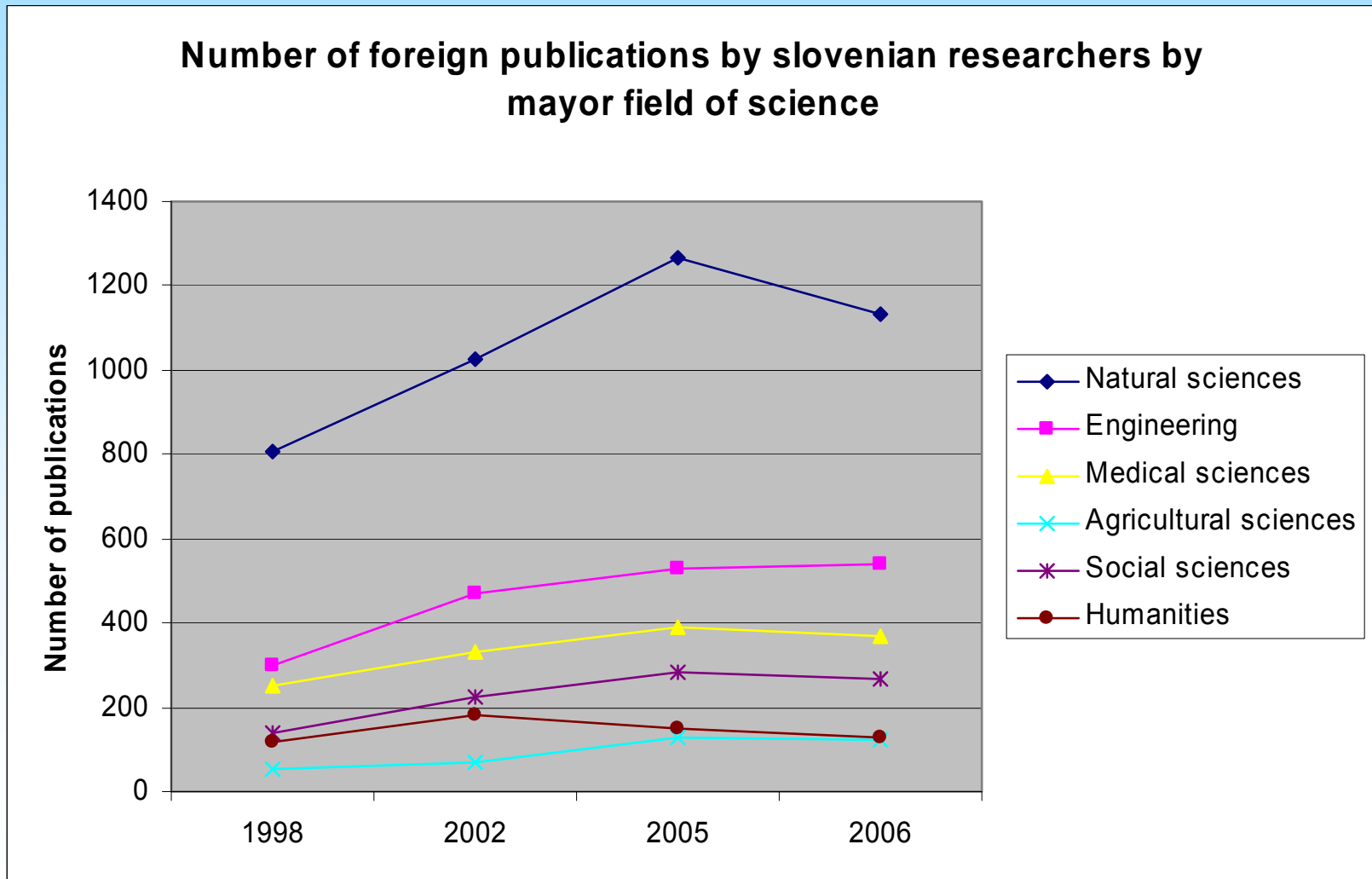
Funding from different sources as a % share of R&D expenditure in Slovenia and in selected OECD countries



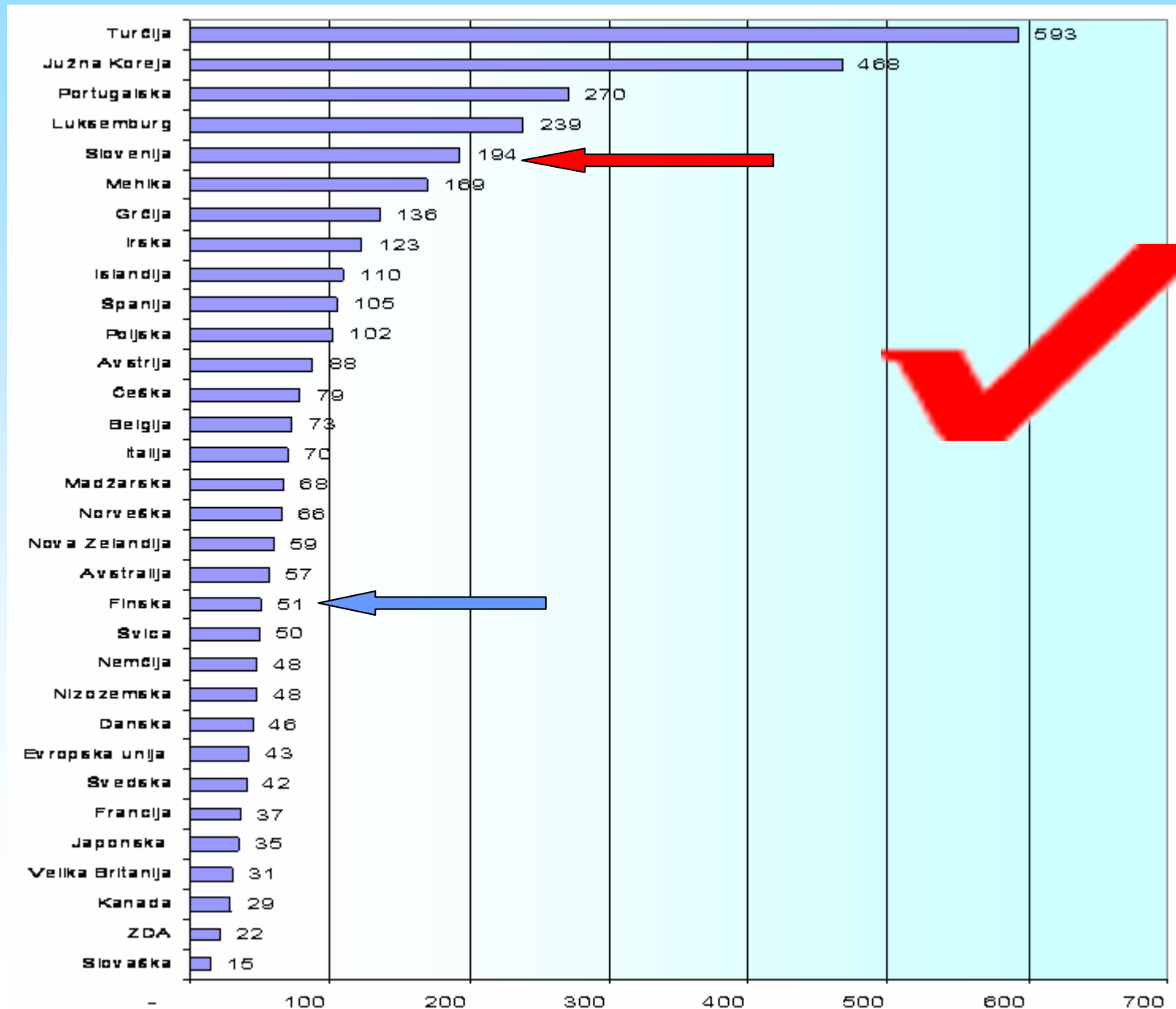
Funding from different sources as a % share of R&D expenditure in Slovenia and Finland by sector of performance, 2004



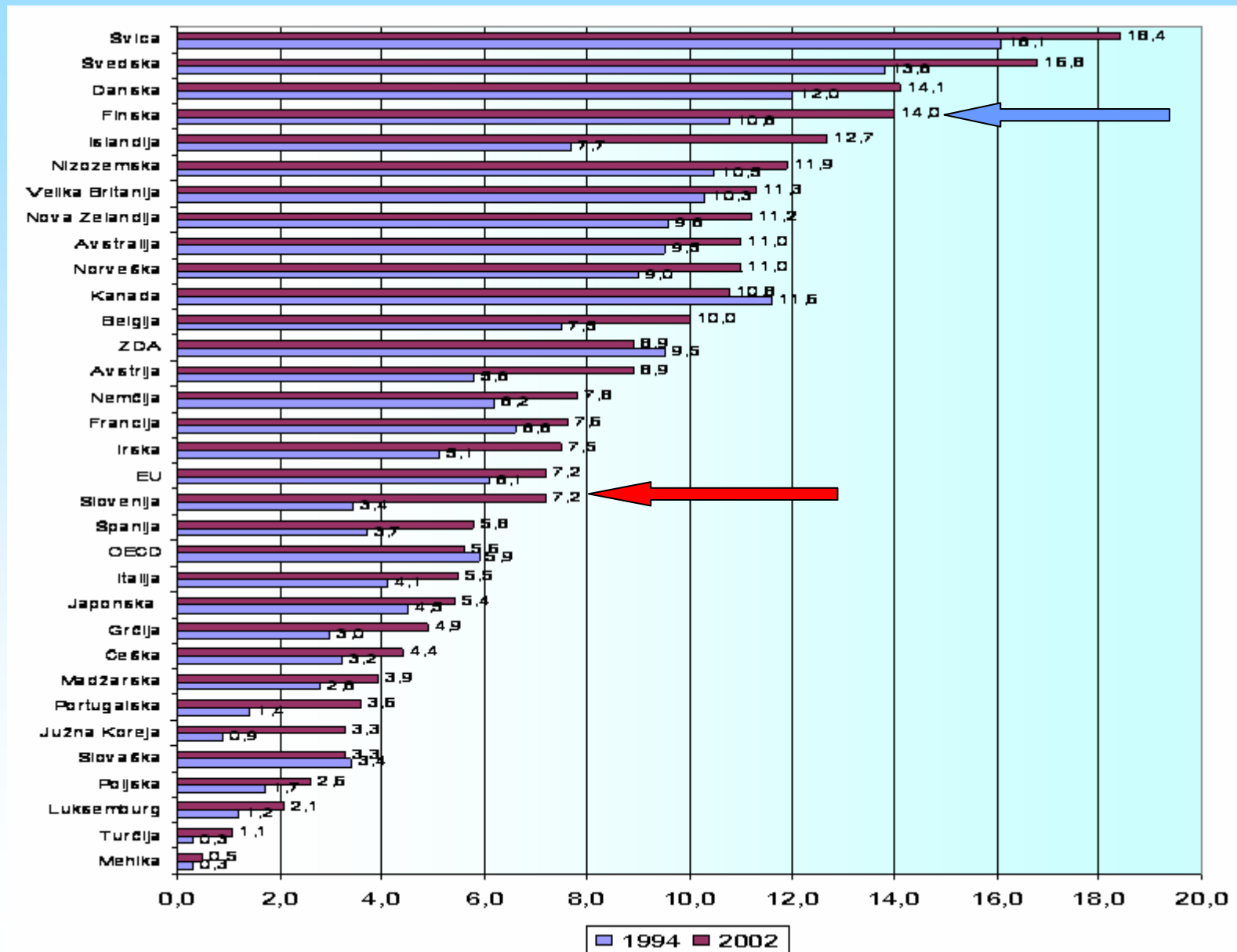
International publications of Slovenian researchers



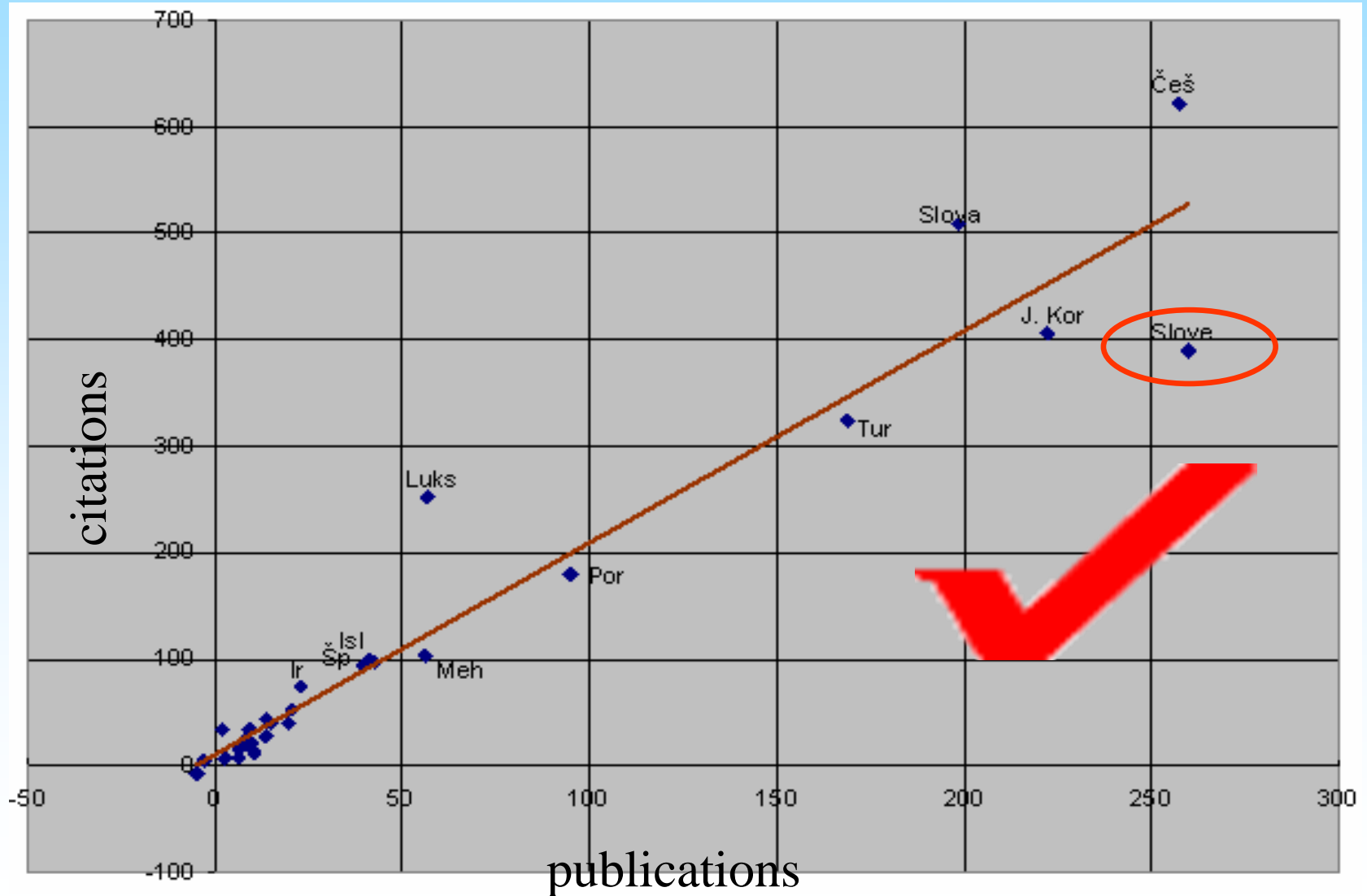
% of change in number of publications per anno in period 1994-2005



Scientific publications in Slovenia and selected OECD countries in 1994 and 2002



Intensity of changes of publications and citations

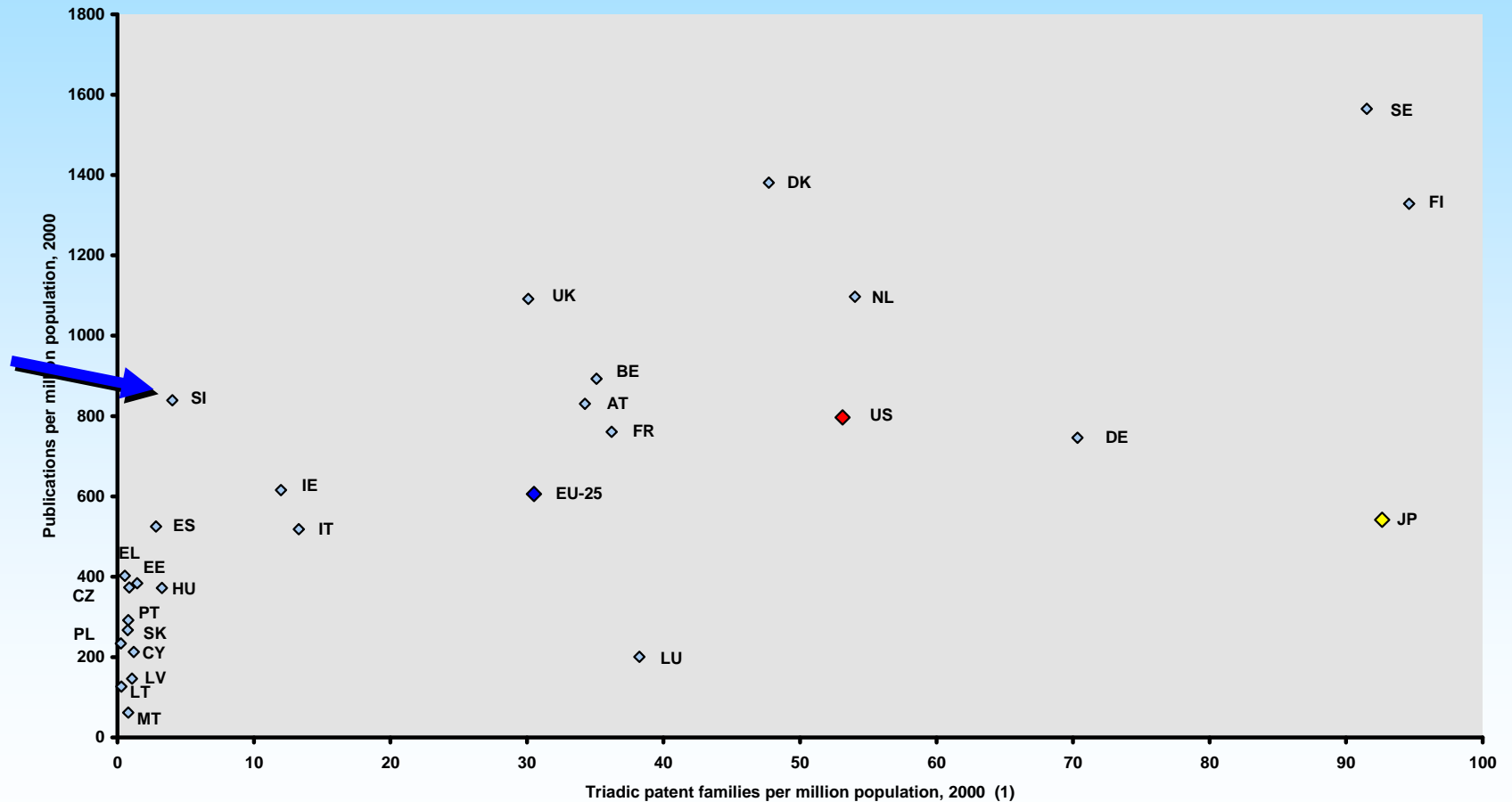


Efficiency of research programmes

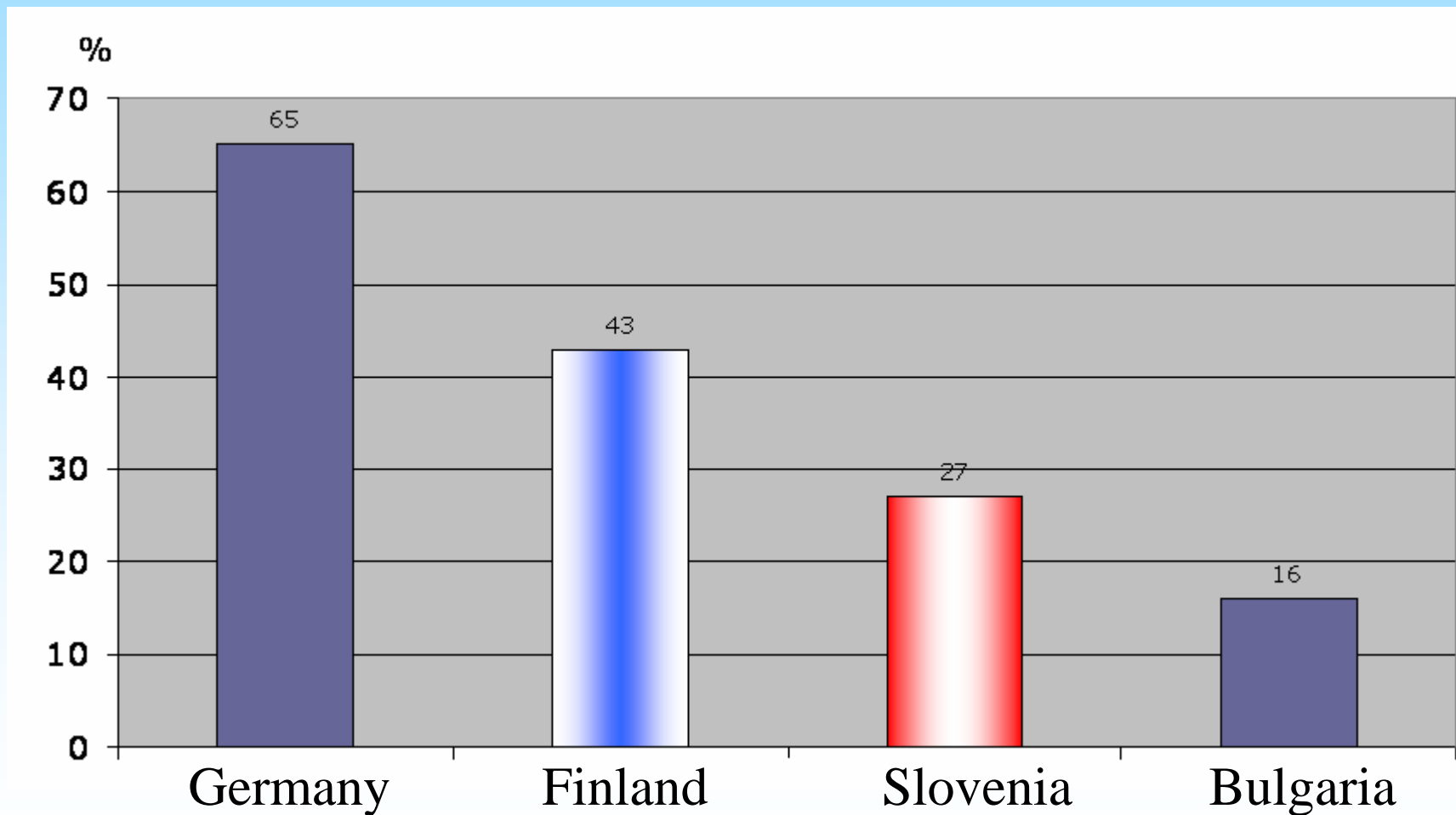
Year	Public funding	Private funding	Total funding	% of private funding
2005	50.039.481	11.081.221	61.120.702	18,13
2006	51.794.634	12.851.110	64.645.744	19,87

Triadic patent families and publications per mio population

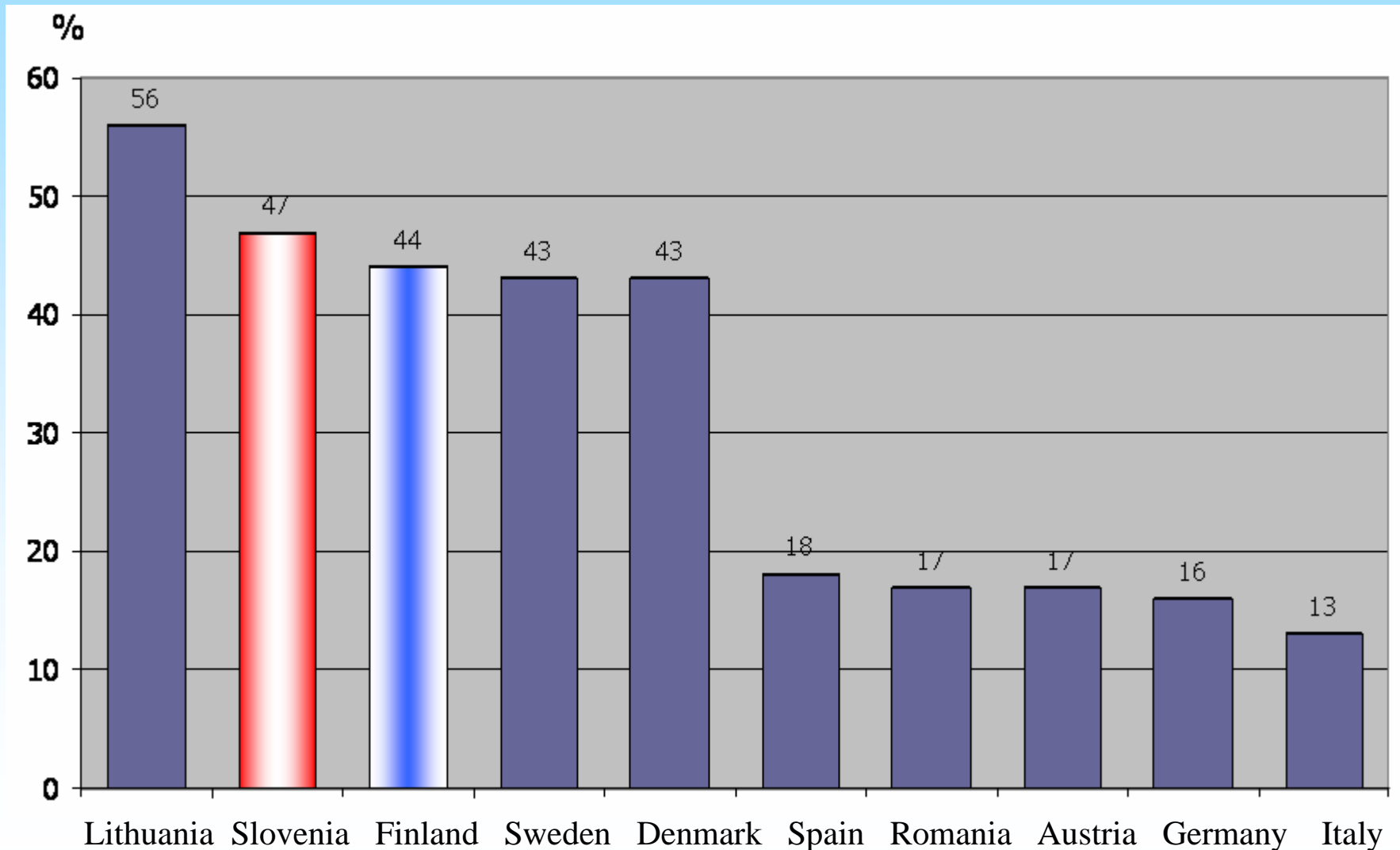
Figure 3.2.5 Triadic patent families and publications per million population, 2000



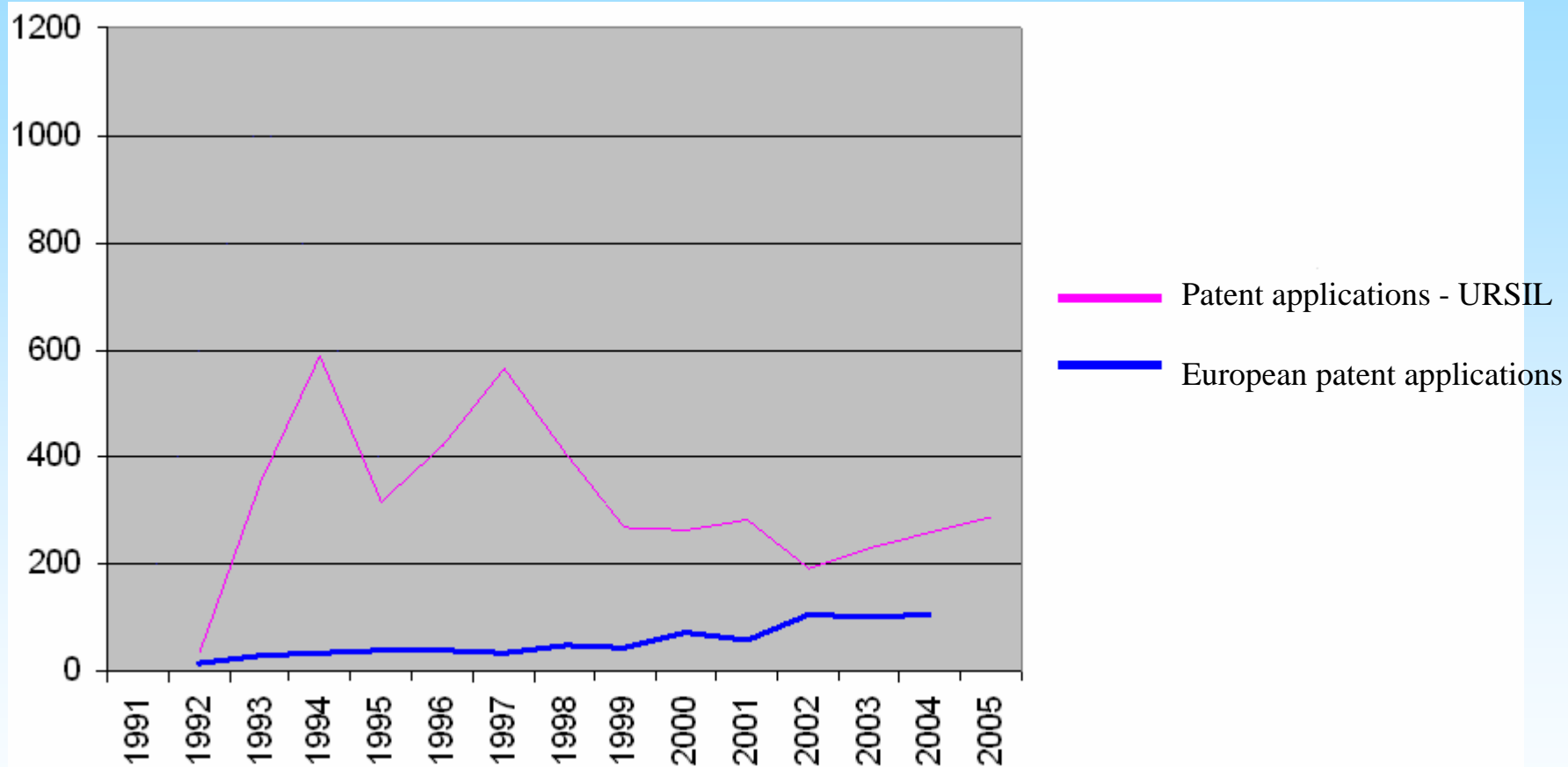
Share of innovation active enterprises

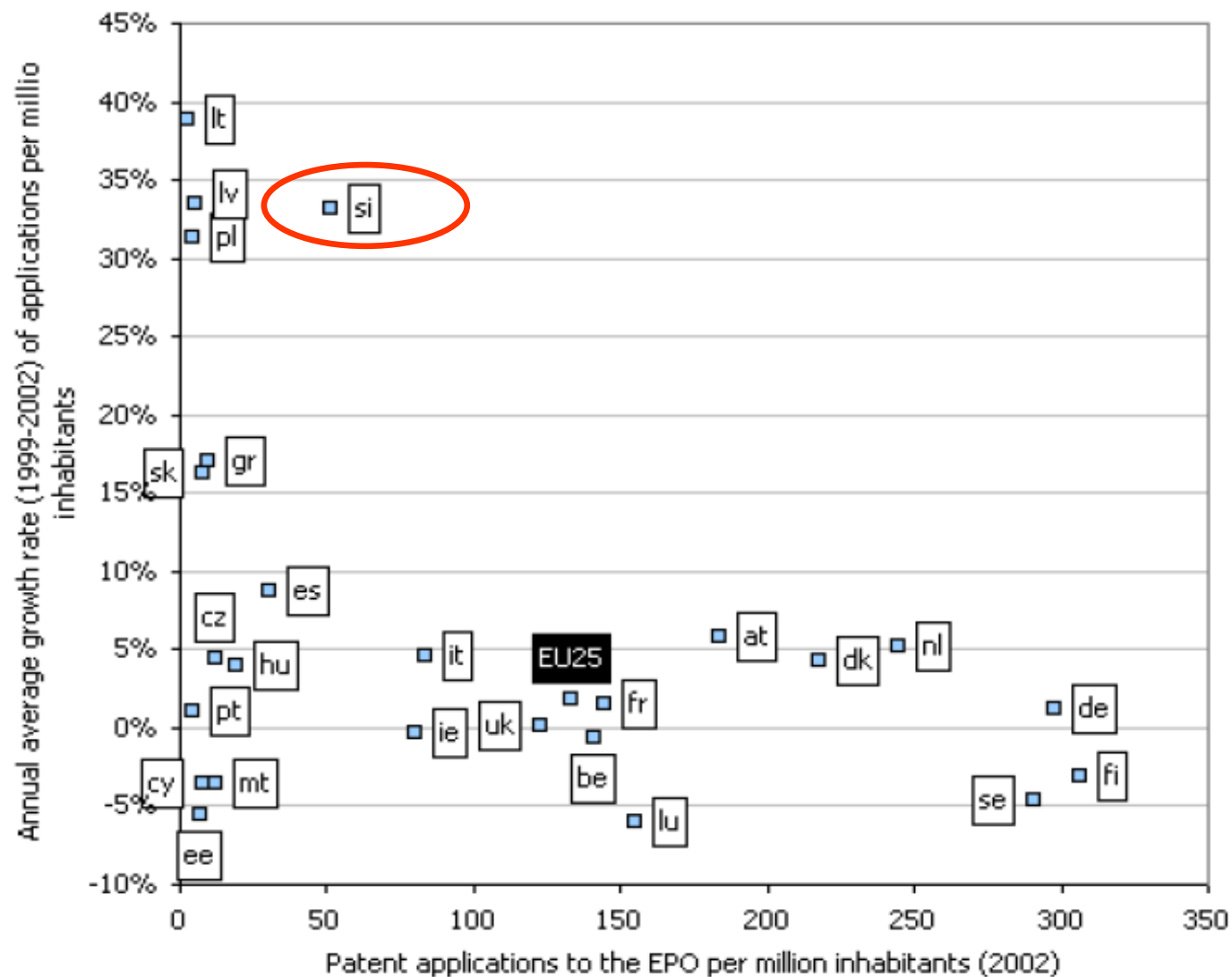


Share of innovative enterprises which collaborated with other enterprises



Number of patent applications on Slovenian Intellectual property office

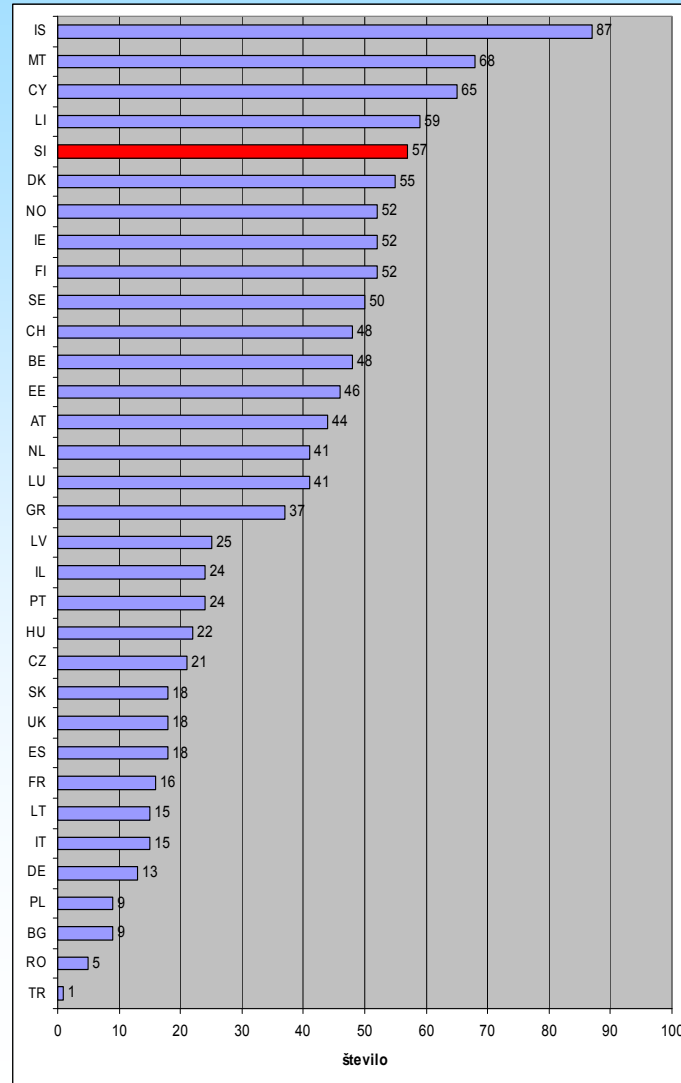




Source : Eurostat compiled by ERAWATCH

Last update date: 12/12/2006

Number of projects in **6. FP** per million people



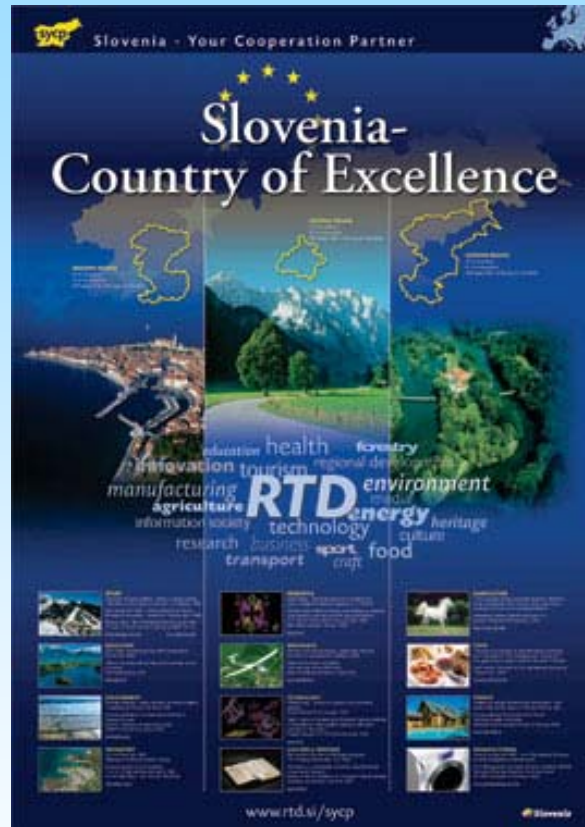
SI in FP6 contracts
Overall figures 17.7.2006

EU27 population	490 mio.	
SI population	2 mio.	0,41%
Total no. of contracts	6.654	100%
No. of SI contracts	360	5,4%
All participants	51.304	100%
No. of SI participants	429	0,84%
Total EU funding	12.122	100%
For SI participants	56.5	0,47%

SI in FP6 contracts
Overall figures 17.7.2006

EU27 population	490 mio.	
SI population	2 mio.	0,41%
Total no. of contracts	6.654	100%
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Thank you for your attention!



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