



Excellent Science in Relation to Framework Programmes

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Slovak Academy of Sciences (SAS)

- SAS was established in 1953 as a self-governing scientific institution of the Slovak Republic; its activity is oriented on the advancement of science, scholarship, culture and economy
- 56 scientific institutes and 12 specialised & service organizations of the SAS are subdivided into 3 scientific sections
 - mathematical, physical, technical, earth, and information sciences
 - medical, biological, chemical, agricultural, and veterinary sciences
 - historical, human, culture and, arts sciences
- The total number of staff amounts to 3250 employees, 1870 scientists and 600 PhD students
- SAS publishes annually 8 yearbooks and 57 scientific journals (34 of them being indexed in Current Contents and similar databases)
- SAS is a member of 27 international non-governmental organizations including ICSU, ALLEA and ESF

SAS Priorities in Science & Research

Top priorities

- Materials Science and Nanotechnologies
- Biomedicine and Biotechnologies

Other priorities

- Information and Communication Technologies
- Industrial Technologies - transportation, mechanical and electrical engineering
- Sustainable Energetics and Energies
- Environmental Protection, Agriculture, Food Quality
- Societal Challenges

Materials Science & Nanotechnologies

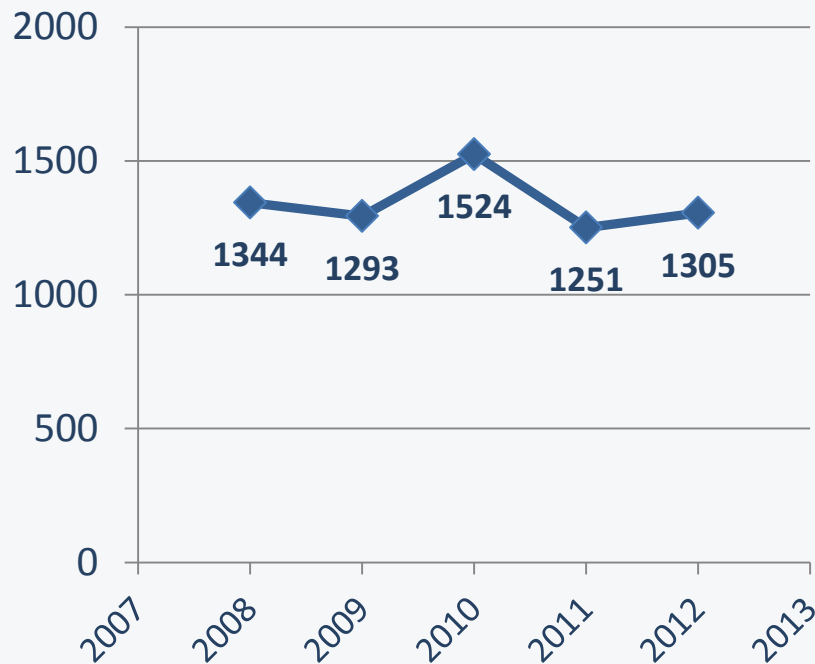
- **Nanomaterials and Nanotechnologies** – functional nanocomposites with properties tailored for application in new sensors and actuators, photovoltaics, and smart coatings
- **Materials for Electrical Engineering** – electronic sensors, structural elements for distribution networks
- **Light Construction Materials and Progressive Steel** - for applications in mechanical engineering, automotive, and energetics
- **Materials for Extreme Conditions** – ceramic and polymer materials (or composites) and metallic materials for bioimplants, drug carriers, automotive applications, space industry, etc.

Biomedicine and Biotechnologies

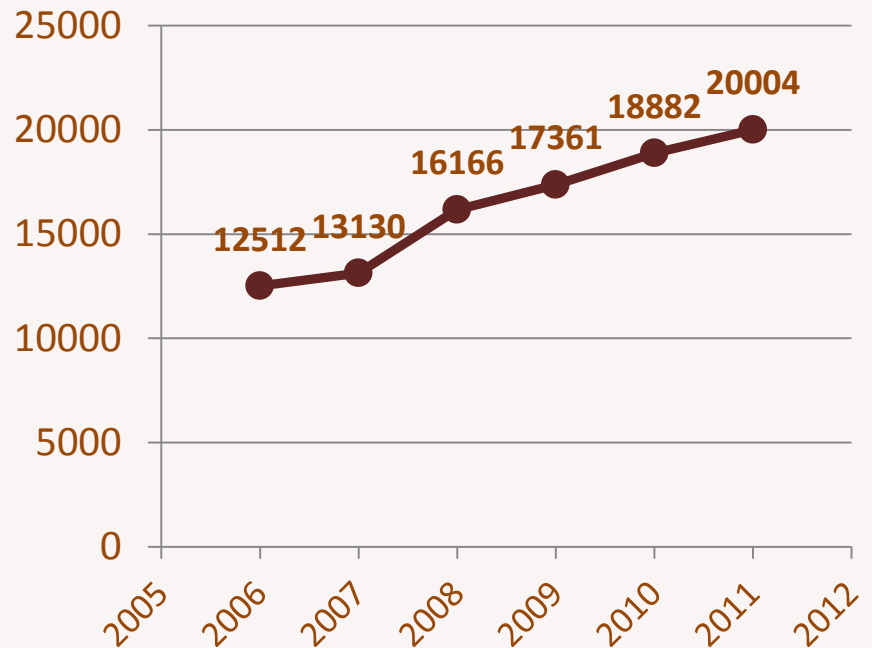
- **Tumor Diseases** – new strategies to improve diagnostics and therapy of aggressive tumors; controlled release of biological drugs; experimental diagnostics and progressive methods of therapy
- **Cardiovascular and Brain Diseases** – cardiometabolic syndrome: prevention, risk factors, new drugs; heart failure; new approaches to depressive episodes, autism, motor and cognitive disorders
- **Endocrine and Metabolic Disorders** – genetic disorders of metabolism, obesity; new approaches in DNA diagnostics and prevention of negative endocrine and metabolic impacts of these disorders
- **Infectious Diseases of Viral and Bacterial Origin** – emerging infectious agents, immunity, host-pathogen relationships; new rapid and sensitive tests for detection of pathogens and antibodies
- **Transplant and Regenerative Medicine** – new approaches to regeneration of injured tissues and organs, new strategies in anti-tumor therapies

SAS Scientific Output

Number of scientific papers
in journals indexed in Current Contents



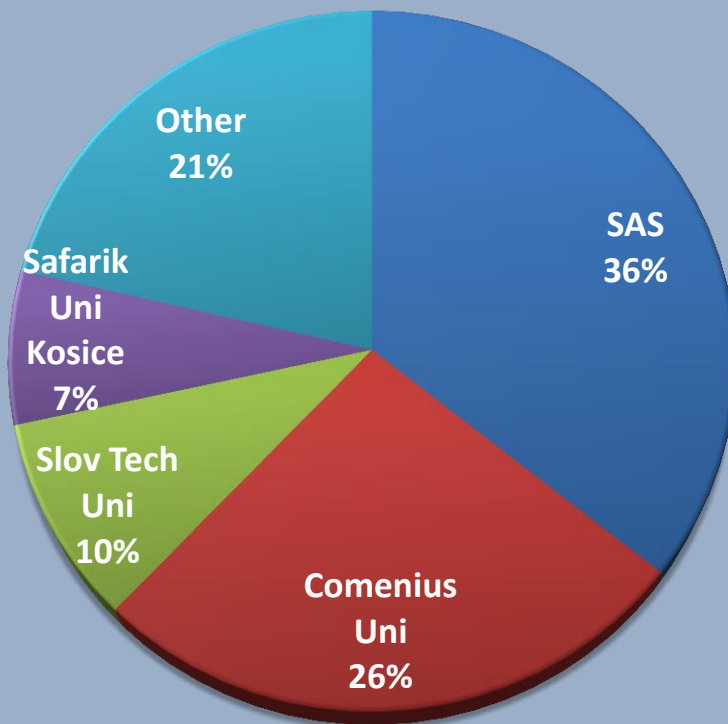
Number of citations



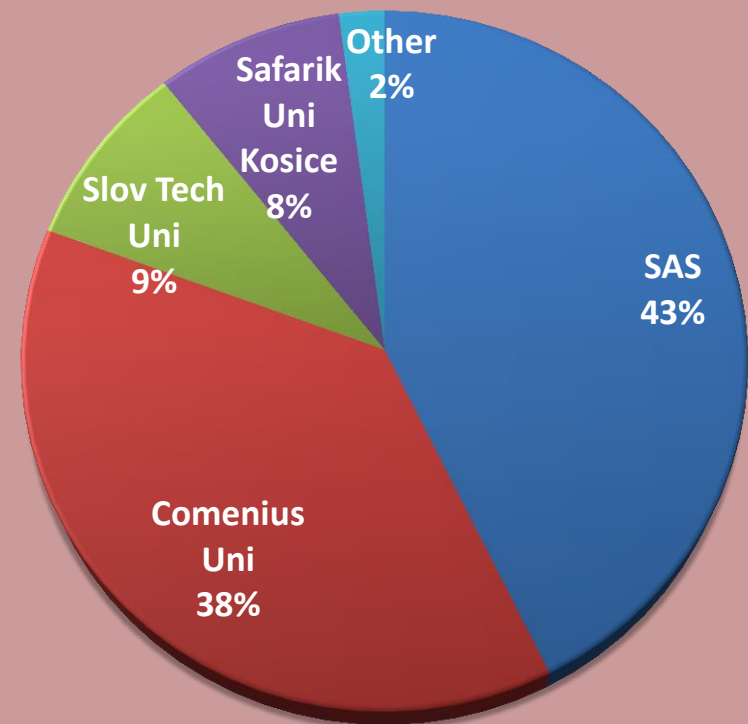
Source: SAS Annual Report 2012

Scientific Output of Key SK Institutions

14 545 Papers (2009-2013)

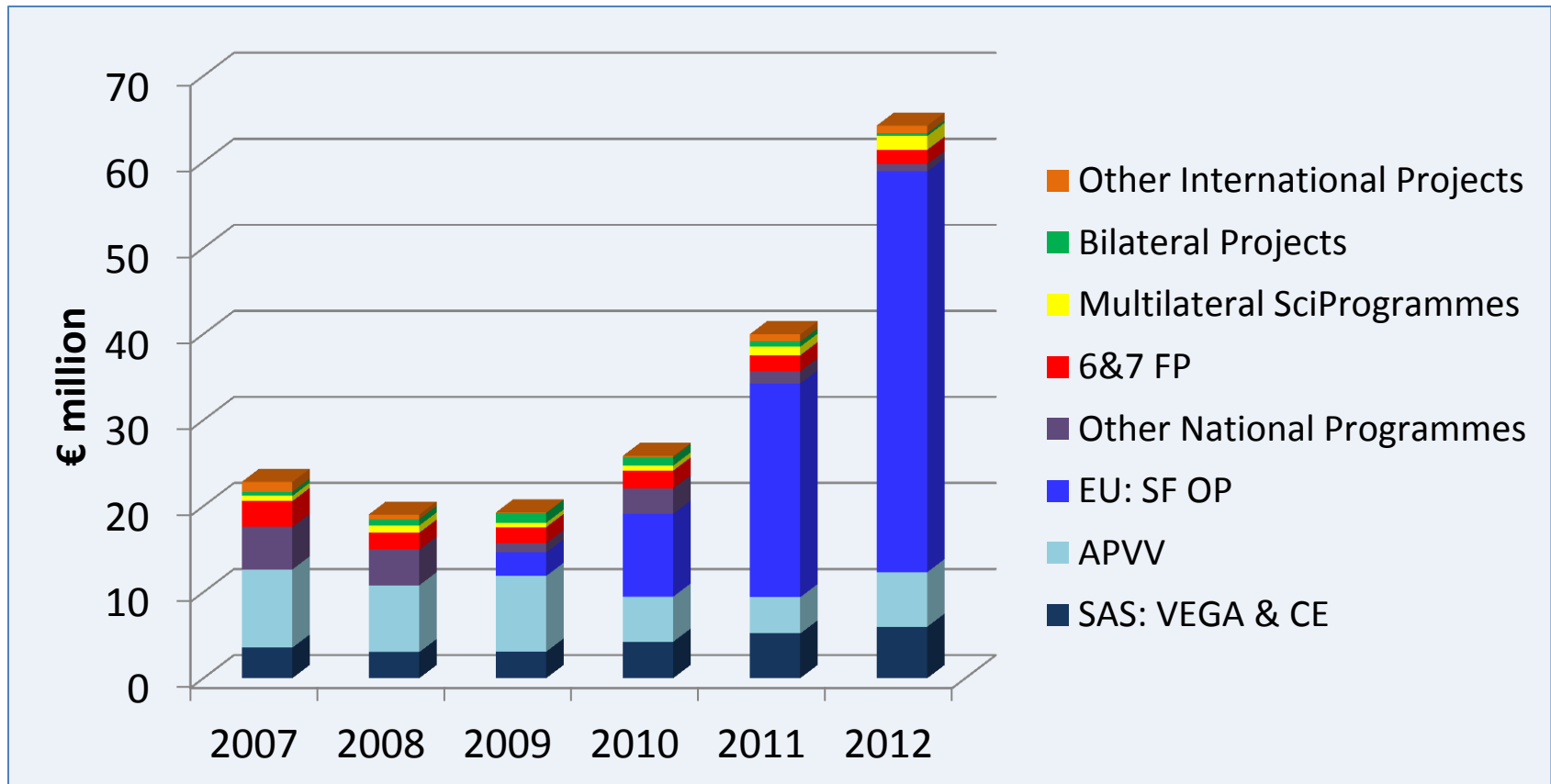


60 435 Citations (2009-2013)



Source: The Thomson Corporation, Essential Science Indicators (updated on November 1, 2013)

SAS Expenditures on Research Projects

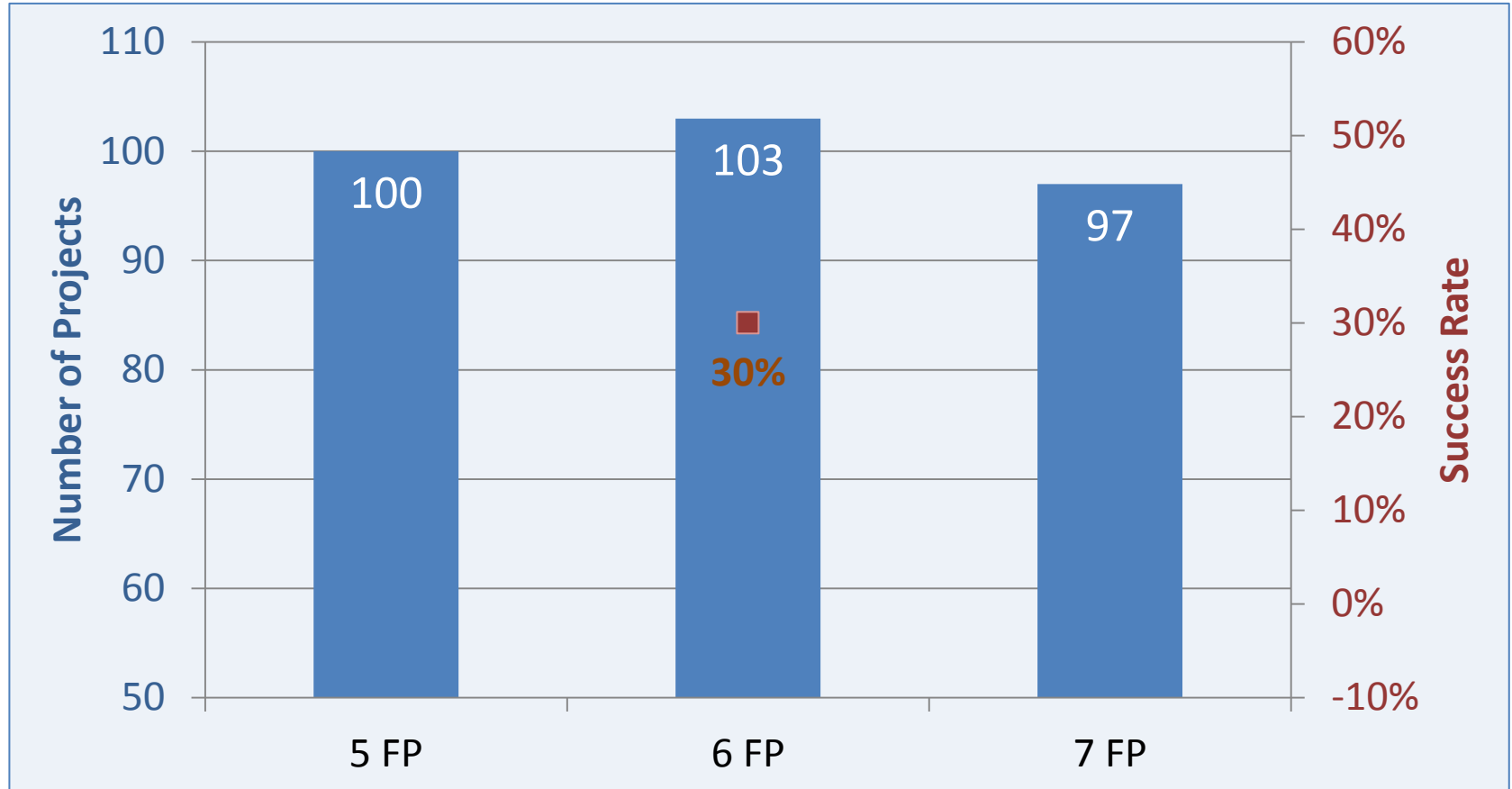


Source: SAS Annual Reports;

VEGA & CE – Scientific Grant Agency & Centres of Excellence; **APVV** – Research and Development Agency

Multilateral SciProgrammes - COST, ERANET, INTAS, EUREKA, PHARE, NATO, UNESCO, CERN, IAEA, ESF, ERDF, ESA, and other

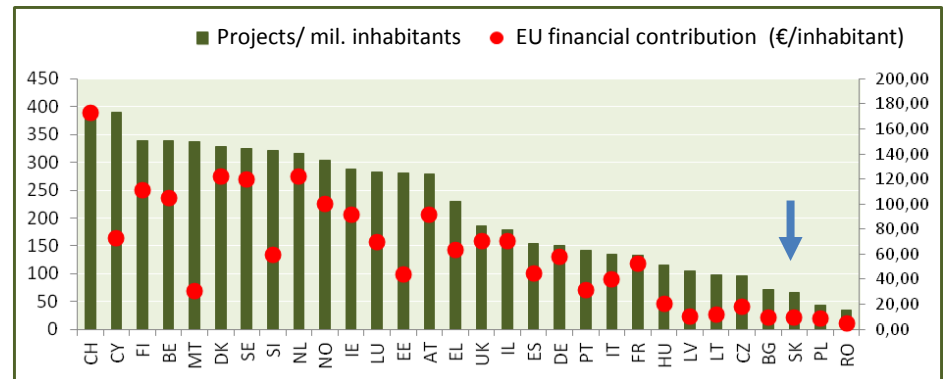
SAS Participation in 5, 6, and 7 FP



Source: SAS Annual Reports & SAS Internal Databases (31/12/2013)

Slovakia in 7 FP

	Top 10 Institution	EU funding		Projects	
		€ mil .	%	No.	%
1	SAS	10,3	20,1	67	18,5
2	Tech Uni Košice	4,2	8,4	18	5,0
3	Comenius Uni BA	3,6	7,2	24	6,6
4	Ardaco, a.s.	3,2	6,4	6	1,6
5	Slov. Health Uni BA	2,6	5,2	10	2,8
6	Slov. Tech Uni BA	1,4	2,8	16	4,4
7	Žilina Uni	1,3	2,6	17	4,7
8	Intersoft, a.s.	1,1	2,2	5	1,4
9	ZTS R&D Inst, a.s.	1,0	2,0	4	1,1
10	Šafárik Uni Košice	0,9	1,8	7	1,9
SK	Total	49,9	100	362	100

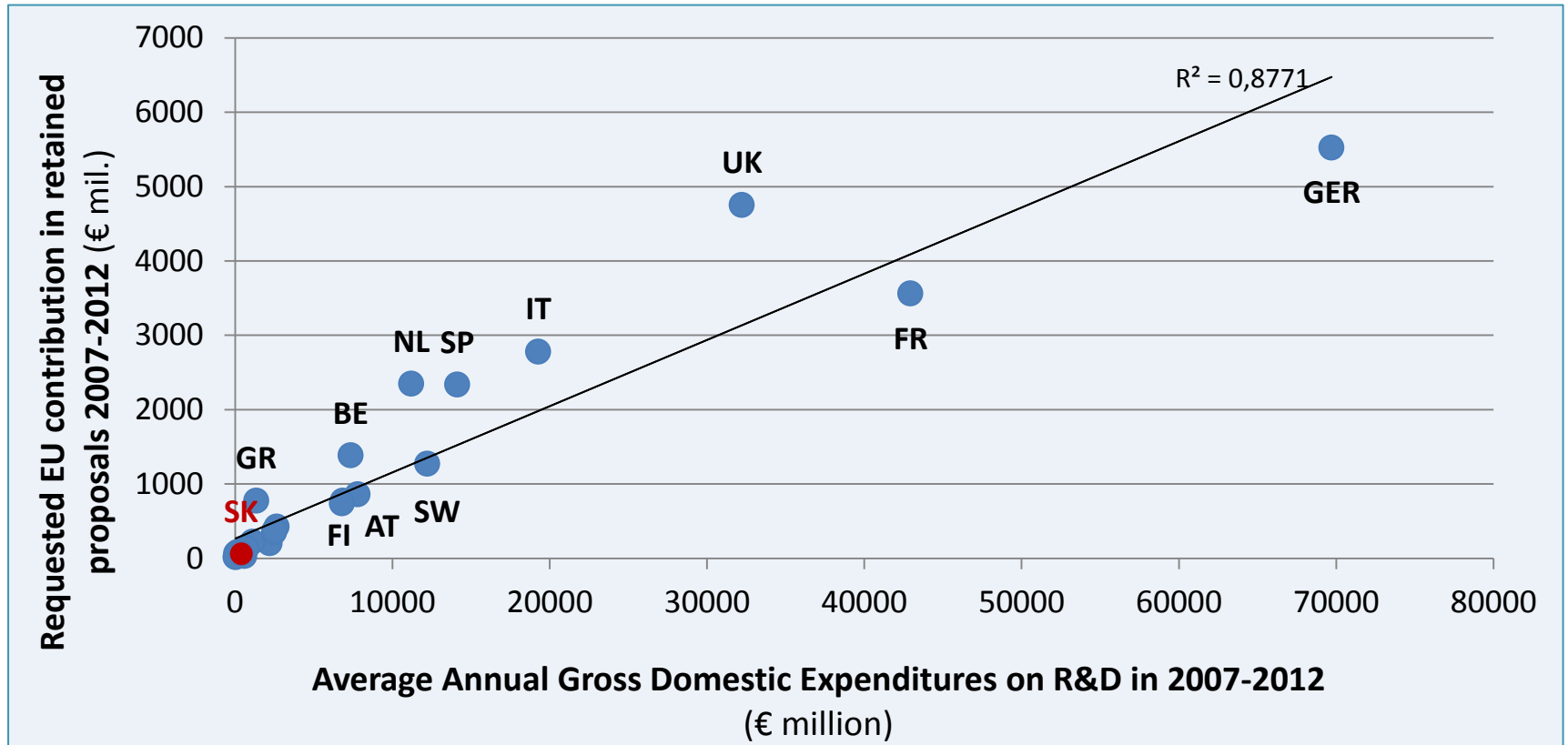


Source: Ecorda 18/10/2012; Slovak Organization for R&D Activities

- **Weak Slovak participation in 7FP**
 - Small number of projects
 - Low EU financial contribution
- **SAS is the most successful Slovak institution** in terms of
 - financial contribution provided
 - number of projects

Source: Ecorda 18/10/2012; Slovak Organization for R&D Activities

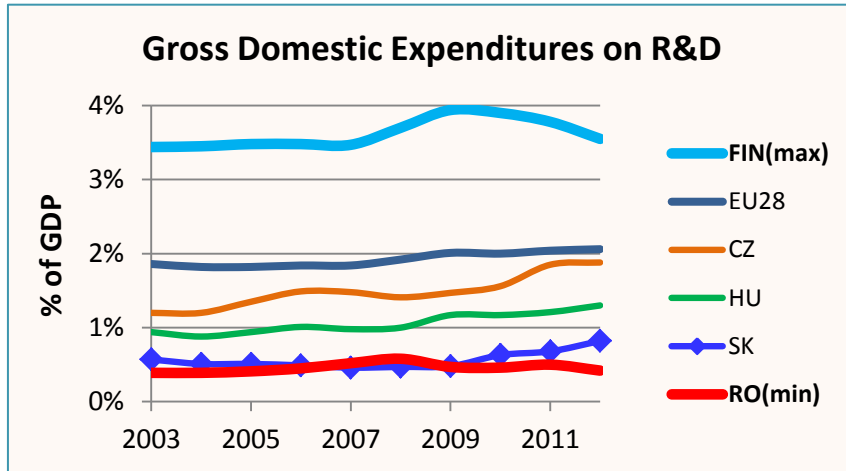
FP7: EU contribution correlates with GERD



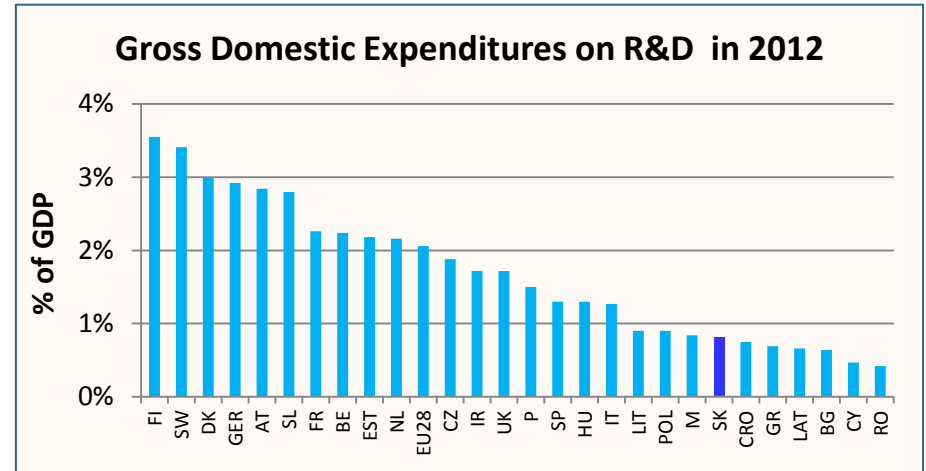
Source: SAS; Sixth FP7 Monitoring Report; Eurostat

Successful participation in Framework Programmes requires adequate financial support on national level

Low Slovak R&D intensity



Source: Eurostat

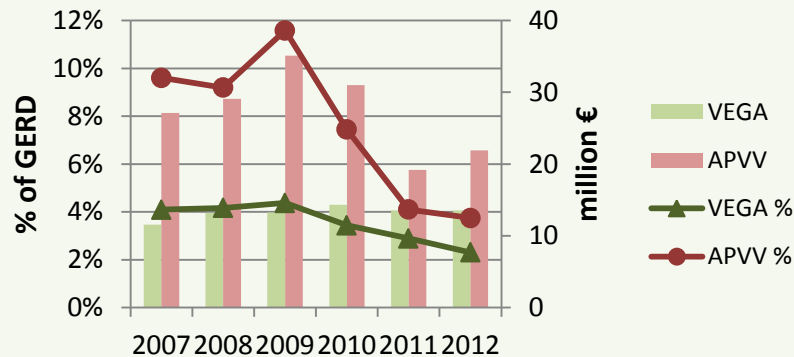


Source: Eurostat (missing data for Luxembourg)

- Slovak R&D intensity below 1%; Europa 2020 target at 1,2%
- 22nd place among EU 28 countries
- Increase in years 2010-2012 is due to implementation of EU Structural Funds
- Fragmentation of R&D activities - expenditures allocated to a project are generally small; it is necessary to apply for more projects

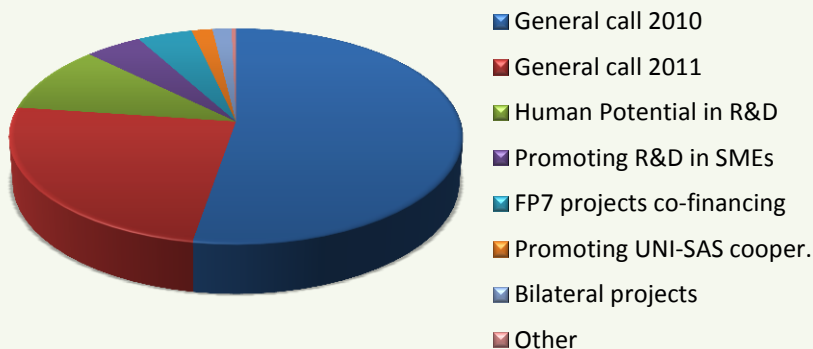
Underfinanced Slovak Grant Agencies

Competitive Funding of Scientific Projects



Source: Eurostat, VEGA and APVV Annual Reports

APVV Expenditures on Projects in 2012



- **VEGA: Scientific Grant Agency**

- Common Agency for Universities and SAS
- Provides relatively high number of „small“ grants (cca 6 000 €/Grant)
- Stable „survival“ financing

- **APVV: R&D Agency**

- Agency for Business, State, Private Non-profit, and Higher Education Sector
- Negative impact of Structural Funds on the budget of Agency in years 2010-2012
- Smaller number of „bigger“ grants (cca 0,1-0,2 million €/Grant)
- Calls are not predictable, e. g. no General call in 2012

Excellent Science



Horizon 2020

The specific objectives of Excellent Science Pillar

Strengthening frontier research, through the activities of the European Research Council (ERC)	13 095 mil €
Strengthening research in Future and Emerging Technologies	2 696 mil €
Strengthening skills, training and career development, through the Marie Skłodowska-Curie actions	6 162 mil €
Strengthening European research infrastructures	2 488 mil €



Absence of a National Programme

- The Horizon 2020 Excellent Science objectives should be supported by measures at national and regional level
- Implementation of EU Structural funds within National Smart Specialisation Strategy will improve the R&D infrastructure, but the infrastructure itself is not sufficient for successful participation in Horizon 2020
- To exploit the full potential of Horizon 2020, it is necessary to increase research and innovation investments at national level and to introduce specialized national support schemes

National Support for Excellent Science

- Promote the convergence of Slovak R&D system towards Horizon 2020
- Continue in identification of excellent Slovak scientists and scientific teams and in providing support to them
- Set up a Slovak Excellent Science Programme
- Implement measures to promote Slovak applications for ERC grants

Strengthening Excellent Science in the SAS

- **Excellent science in SAS** - a nonspecific horizontal priority determining successful basic and applied research and technology transfer in the identified SAS priority research areas
- **Excellent science programme** - introduction of a programme supporting top scientific teams in the SAS and universities, decrease of fragmentation of research projects
- **Encourage SAS scientists to submit ERC projects** – partial financing of projects with good evaluation results, but not funded by ERC
- **SAS Premium Award** for recognition of scientific excellence in the SAS
- **Motivational tools for attracting top scientists from abroad**
 - **SAS Scholarship Program** for the acquisition of top experts from abroad and for reintegration of Slovak talented scientists working abroad
 - **SASPRO Project** focused on getting top researchers from abroad, both Slovak and foreign citizens, who have long-term research stay abroad (in the framework of FP7-Marie Curie COFUND)
- **Science policy formulation and implementation in Slovakia** - active participation in the process; strengthening the role of the SAS as an institution supporting excellent science and research



**Thanks for your
attention!**