

ICT Research and Innovation Trends in EEMS

(as seen in the 2011 Report on ICT R&D in the EU)

Juraj Stančík

Institute for Prospective Technological Studies
Joint Research Centre
European Commission

(Seville, Spain)

Disclaimer:

The views expressed are those of the presenter and may not in any circumstances be regarded as stating an official position of the European Commission. Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use which might be made of this presentation.

PREDICT

Prospective Insights on R&D in ICT



- ▶ Provides quantitative information and analysis on ICT R&D expenditures and output (patents).
- ▶ Positions EU on the world market and benchmarks the EU member states.
- ▶ Uses three data sources:
 - ▶ national statistics
 - ▶ company data
 - ▶ technology-based indicators
- ▶ Publishes annual reports since 2006.
- ▶ Contributes to policy making.
- ▶ For further information visit:
<http://is.jrc.ec.europa.eu/pages/ISG/PREDICT.html>

Definition of the ICT sector

NACE revision 1.1 classes

Manufacturing

- ▶ NACE 30 (IT Equipment)
- ▶ NACE 32 (Components, Telecom and Multimedia Equipment)
- ▶ NACE 33 (Measurement Instruments)

Services

- ▶ NACE 642 (Telecommunication services)
- ▶ NACE 72 (Computer Services and Software)

Outline

Macroeconomic perspective

national statistics

Value Added, BERD, GBAORD

Microeconomic perspective

company-level data

EEMS companies, R&D investment, R&D intensity

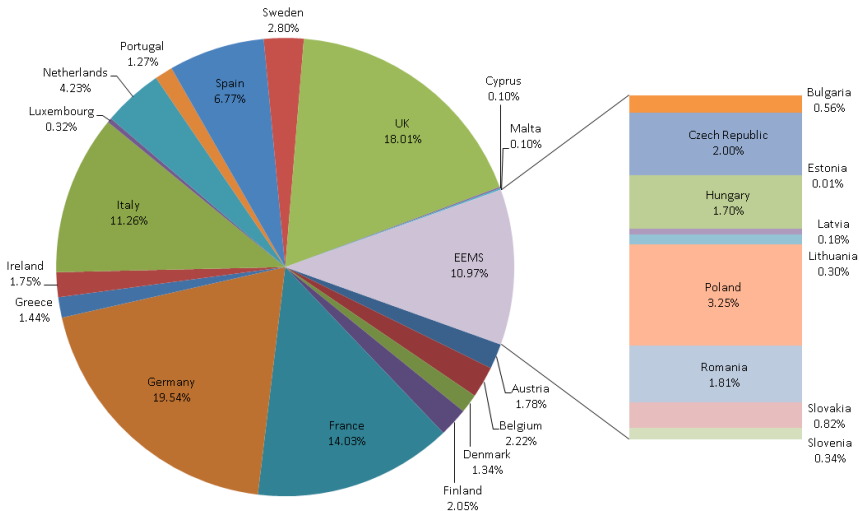
Macroeconomic perspective

Performance of ICT R&D – ICT patenting

Conclusions

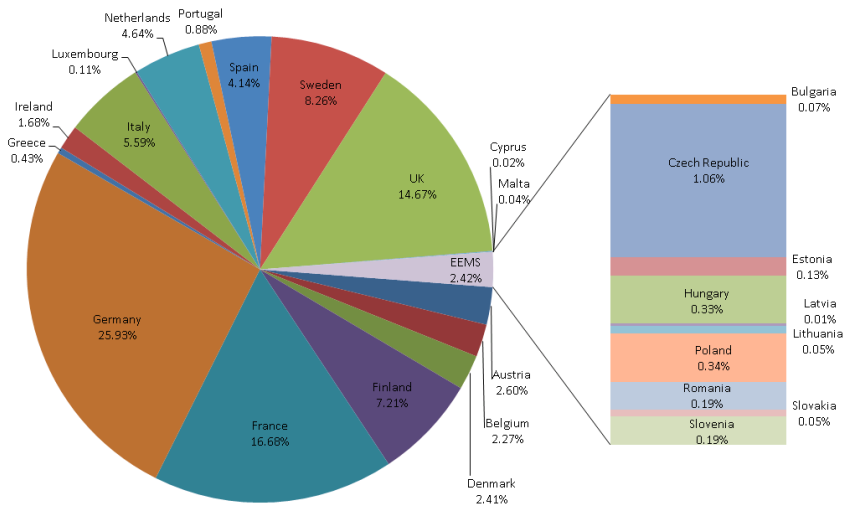
ICT value added shares produced by EU countries

% from EU ICT value added, PPP, 2008 (Total EU ICT VA = 574 bn. EUR PPP)



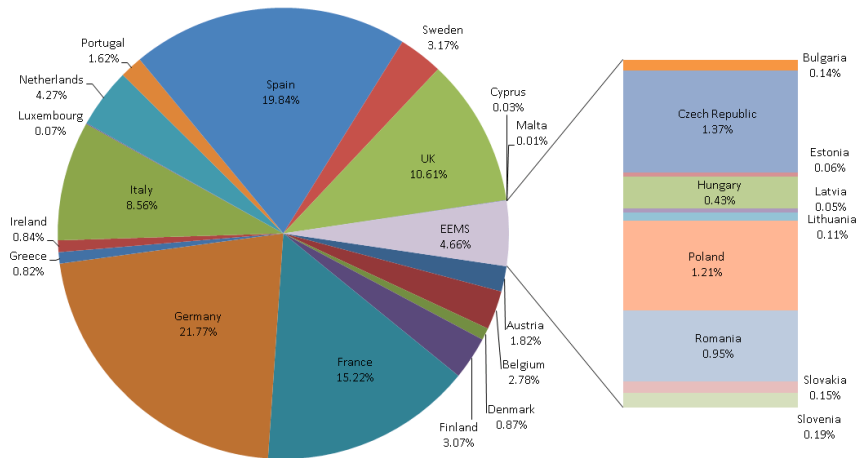
ICT BERD shares in EU countries

% of total EU ICT BERD, PPP, 2007 (Total EU ICT BERD = 34.1 bn. EUR PPP)



ICT GBAORD shares in EU countries

% of total EU ICT GBAORD, PPP, 2007 (Total EU ICT GBAORD = 5.3 bn. EUR PPP)



Macroeconomic perspective (summary)

- ▶ EEMS ICT shares in EU ICT totals are systematically below *reference* values:
 - ▶ EEMS GDP share in EU total is about 12%
 - ▶ EEMS population share is about 20%
- ▶ The level of ICT specialisation in EEMS in terms of output is similar but lower to that of the EU15 countries (11%)
 - ▶ Germany, UK, France and Italy cover two thirds of EU total ICT production
- ▶ EEMS' share in total EU ICT BERD is only 2.4%
 - ▶ Czech Republic represents almost half of the total EEMS ICT EBRD
 - ▶ Germany, UK, and France contribute 57% in total
- ▶ EEMS ICT GBAORD share is only 4.7%
 - ▶ Germany, Spain, and France dominate with about 20% each

Outline

Macroeconomic perspective

national statistics

Value Added, BERD, GBAORD

Microeconomic perspective

company-level data

EEMS companies, R&D investment, R&D intensity

Macroeconomic perspective

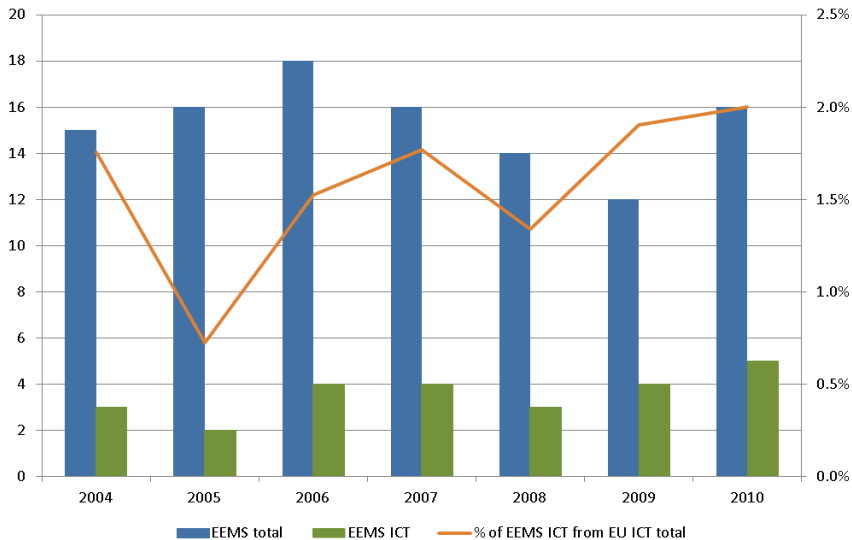
Performance of ICT R&D – ICT patenting

Conclusions

EU Industrial R&D Scoreboard panel

- ▶ R&D investment, economic and financial data from the last four financial years
- ▶ Published annually since 2004
- ▶ 80% of all company R&D investments worldwide (2008)
- ▶ Top 1000 EU & top 1000 non-EU R&D investors
 - ▶ in 2004 only Top 700
- ▶ It is not comparable to BERD:
 - ▶ R&D attributed to the country of registered headquarters
 - ▶ R&D attributed only to one single sub-sector
 - ▶ only R&D funded by the companies themselves
- ▶ EU sample: 1,698 unique companies from 23 countries over the period 2004-2009
 - ▶ 315 unique ICT companies from 17 countries

Number of EEMS companies in the Scoreboard by years

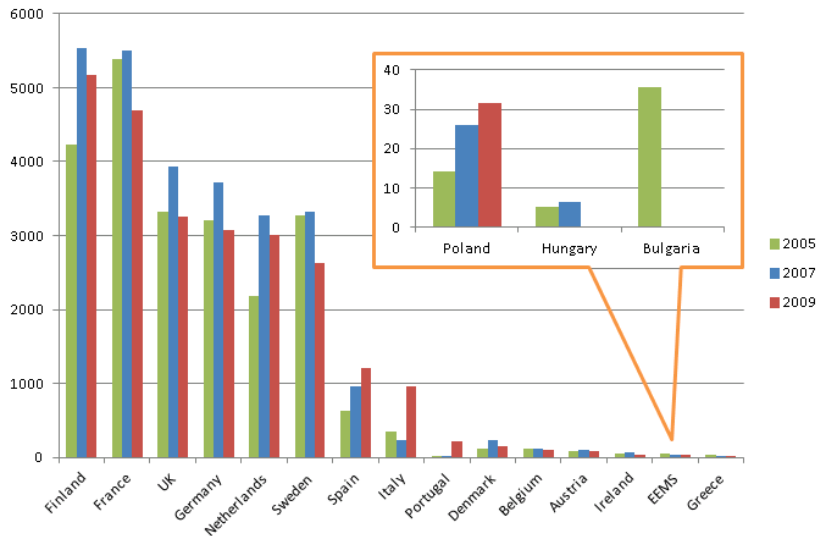


EEMS ICT and non-ICT Scoreboard companies

	company	country	sub-sector	R&D (mn. EUR)	R&D/Sales	year
ICT ↓	ComArch	Poland	Computer services	23.42	12.2%	2010
	Asseco Poland	Poland	Software	18.52	2.3%	2010
	Telekomunikacja Polska	Poland	Fixed line telecom	15.14	0.4%	2010
	Netia	Poland	Fixed line telecom	6.72	1.7%	2010
	Graphisoft	Hungary	Software	6.36	19.3%	2007
	Bulgarian Telecommunication	Bulgaria	Fixed line telecom	4.59	0.9%	2010
non-ICT ↓	Gedeon Richter	Hungary	Pharmaceuticals	97.46	9.9%	2010
	Krka	Slovenia	Pharmaceuticals	90.92	9.0%	2010
	Komercni Banka	Czech Rep.	Banks	61.62	4.7%	2010
	Egis Pharmaceuticals	Hungary	Pharmaceuticals	42.24	9.9%	2010
	CEZ	Czech Rep.	Electricity	28.26	0.4%	2010
	Zentiva	Czech Rep.	Pharmaceuticals	22.84	4.1%	2008
	BRE Bank	Poland	Banks	16.67	2.1%	2010
	Bioton	Poland	Pharmaceuticals	11.09	10.7%	2010
	Matador	Slovakia	Automobiles & parts	9.83	2.4%	2005
	Helios	Slovenia	Pharmaceuticals	8.29	2.8%	2010
	Ceske Drahy	Czech Rep.	Industrial transportation	8.24	0.8%	2010
	Bank Ochrony Srodowiska	Poland	Banks	7.81	6.8%	2010
	AERO Vodochody	Czech Rep.	Aerospace & defence	5.38	4.9%	2007
	Sava	Slovenia	Chemicals	5.15	3.0%	2009
	Gorenje	Slovenia	Household goods	5.00	0.6%	2004
	ORLEN	Poland	Oil & gas producers	4.95	0.0%	2008
	ACH	Slovenia	Automobiles & parts	4.62	0.6%	2008
	Trinecke Zelezarny	Czech Rep.	Industrial metals	4.57	0.4%	2006
	KGHM Polska Miedz	Poland	Mining	4.21	0.2%	2005
	Grindeks	Latvia	Pharmaceuticals	3.48	5.8%	2006

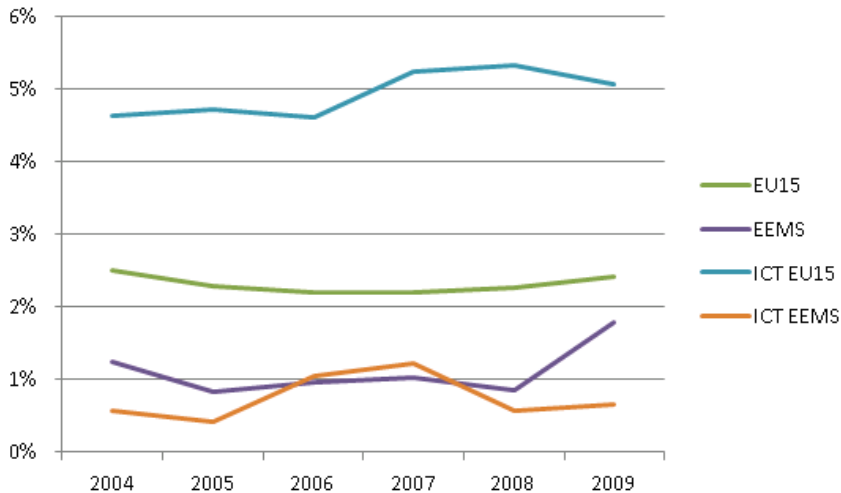
R&D investments by ICT Scoreboard firms

per country of registered headquarters, 2005-2009, EUR million



R&D intensity comparison between EU15 and EEMS

R&D intensity = R&D/Sales, 2004-2009



Microeconomic perspective (summary)

- ▶ EEMS ICT shares in EU ICT totals are systematically below *reference* values:
 - ▶ EEMS GDP share in EU total is about 12%
 - ▶ EEMS population share is about 20%
- ▶ Only 16 from the Top 1000 EU R&D investors comes from EEMS
 - ▶ EEMS ICT share is about 2%
- ▶ 13 EU countries invest individually more into R&D than the whole group of 10 EEMS
- ▶ EEMS ICT companies are 8 times less R&D intensive than EU15 ICT companies

Outline

Macroeconomic perspective

national statistics

Value Added, BERD, GBAORD

Microeconomic perspective

company-level data

EEMS companies, R&D investment, R&D intensity

Macroeconomic perspective

Performance of ICT R&D – ICT patenting

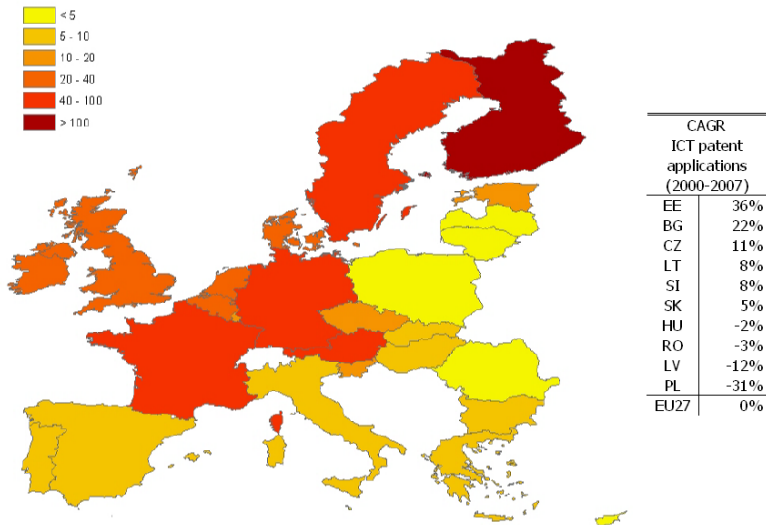
Conclusions

EPO Worldwide Patent Statistical Database (PATSTAT)

- ▶ developed and updated by the European Patent Office (EPO)
- ▶ worldwide coverage of patent applications submitted to around 90 patent offices in the world
 - ▶ the EPO itself, 27 national patent offices EU Member States, the US Patent and Trademark Office, the Japan Patent Office, the OECD countries' patent offices and other patent offices with the highest number of patent applications, including China and India
 - ▶ this highlighted selection covers 99.7% of the total number of priority patent applications worldwide in 2007
- ▶ A patent application for a given invention first filed at any of the patent offices worldwide by an applicant seeking patent protection is assigned a priority date (in case of first filing in the world) and is known as the **priority application**.
 - ▶ avoids multiple counting of the same inventions

ICT priority patent applications

per million inhabitants, 2007



Conclusions

- ▶ We describe only what we see
 - ▶ we might not see everything
- ▶ EEMS ICT shares in EU ICT totals are systematically below the EEMS economic weight
- ▶ EEMS are lagging behind the rest of the EU in BERD, GBAORD, top R&D investors, R&D intensity, patents...
- ▶ Dynamics – not so bad
 - ▶ steadily increasing share of EEMS in EU ICT production
 - ▶ the share of EEMS ICT companies in the top EU ICT R&D has doubled since 2004
 - ▶ the growth of ICT BERD in EEMS much bigger than in the EU15
 - ▶ priority patent applications: huge contrasts, they are country specific

Some open questions

- ▶ What did we miss here? What we do not see?
- ▶ Why are there only few EEMS ICT companies among the top R&D investors?
 - ▶ 20% of the EU15 ICT top R&D investors were established within the last 20 years
- ▶ Do you see any emerging future potential “Silicon Valleys” in EEMS?
- ▶ How do you see the business environment for young companies?
- ▶ So there is not enough ICT R&D in EEMS – does it really matter?
- ▶ ...