THE COMMERCIALISATION OF PUBLIC RESEARCH

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OECD
BETTER POLICIES FOR BETTER LIVES

Outline

- OECD: Who we are
- Public Research
- Commercialisation
- The Innovation Policy Platform

WHO WE ARE

The OECD…

- …is the global organisation that drives **better policies for better lives**

- …analyses, measures and compares experiences and policies to give advice that helps **raise living standards** globally

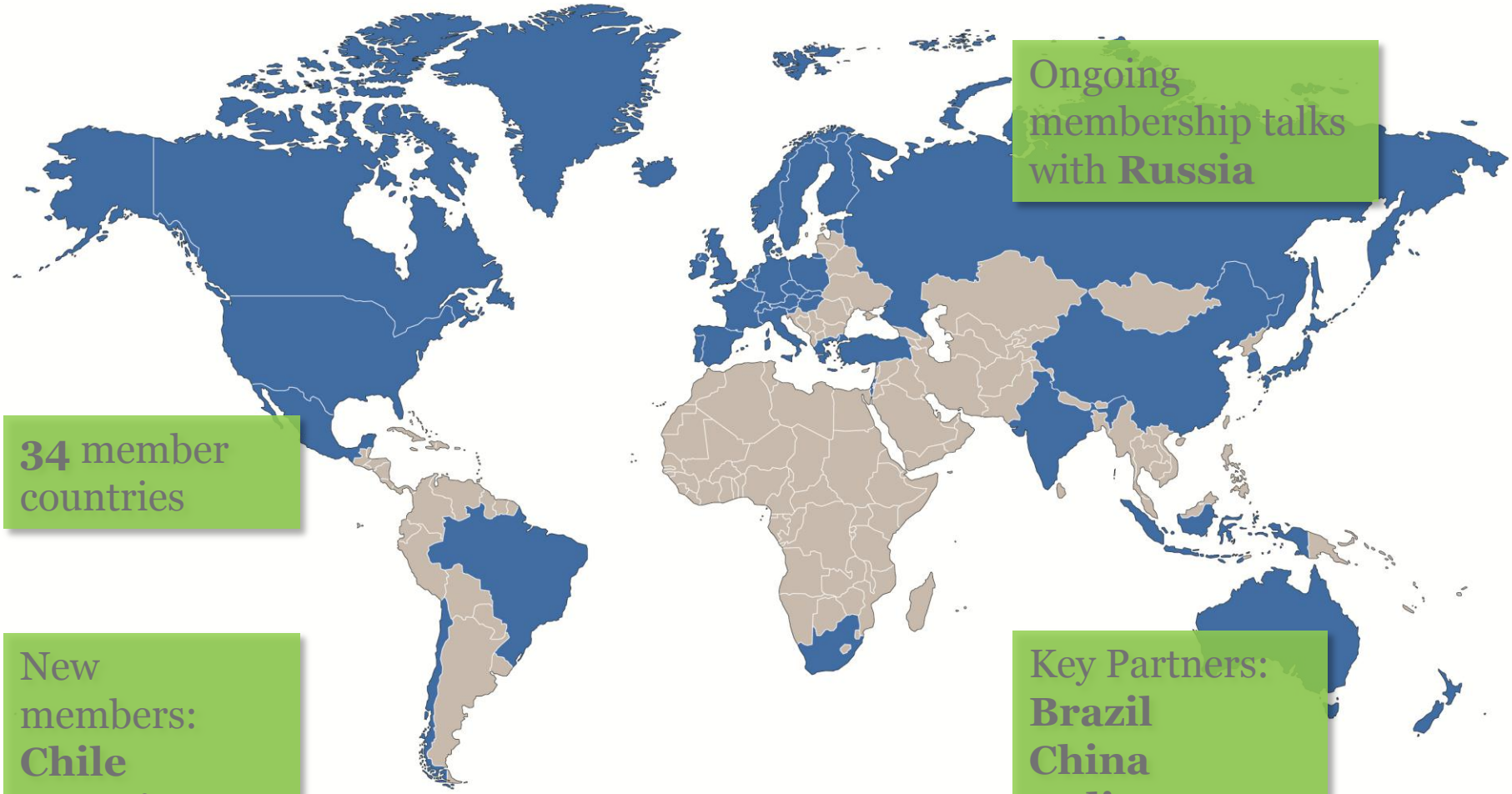
- …aims for a **stronger**, **cleaner**, **fairer world** through efforts such as..
  - Restoring confidence and **financial stability**
  - Tackling **climate change**
  - Fighting international **tax evasion** and **corruption**

Fast facts

- Established: **1961**
- Headquarters: **Paris**
- OECD Centres: **Berlin, Mexico City, Tokyo, Washington**
- Members: **34**
- Secretary-General: **Angel Gurría (Mexico)**
- Secretariat staff: **2 500**
- Annual budget: **347 € million (2012)**

- Nearly **300 expert committees** and working groups with participation of **+100 countries**

OECD's global reach



Ongoing membership talks with **Russia**

34 member countries

New members:
Chile
Estonia
Israel
Slovenia

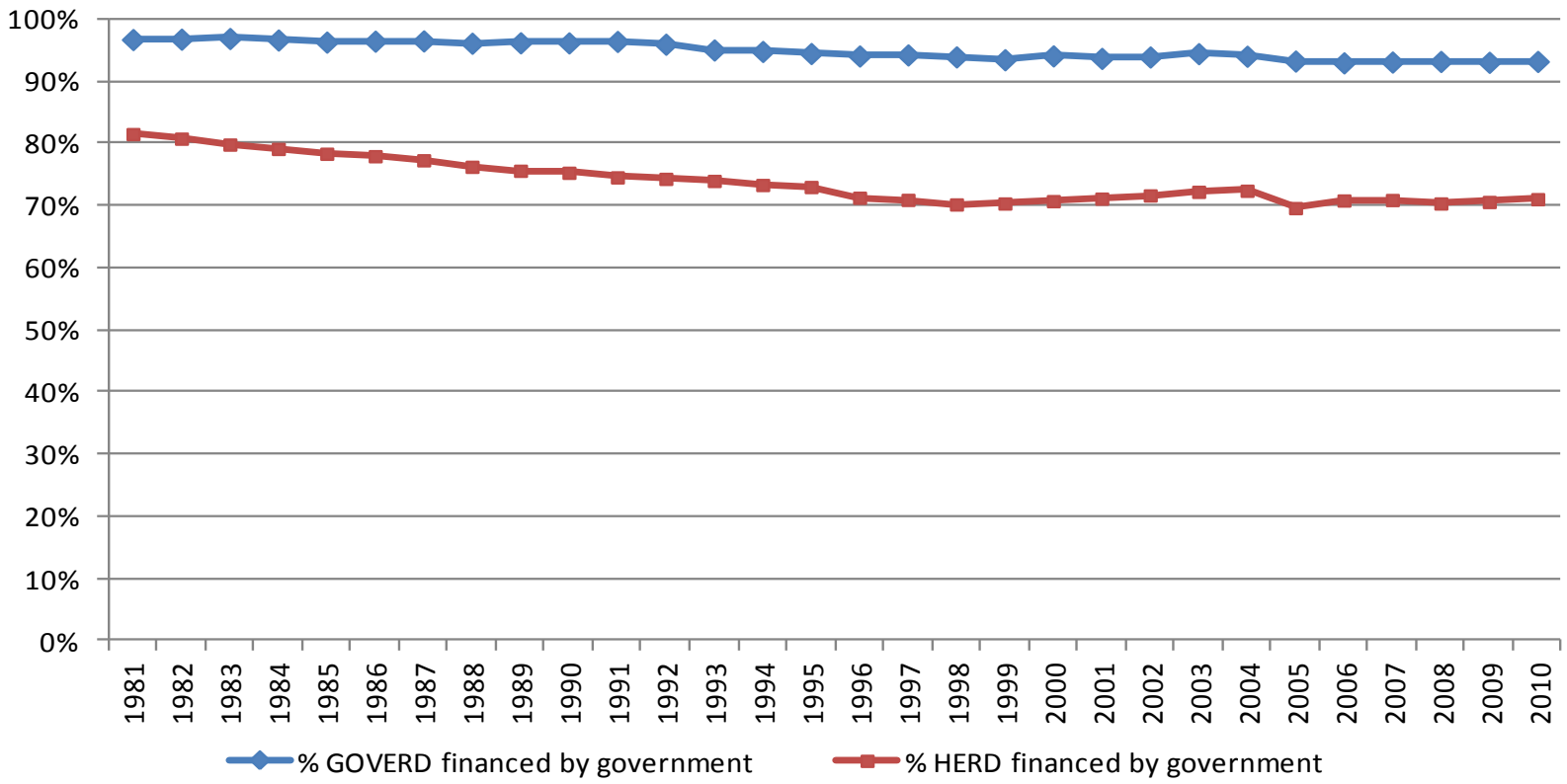
Key Partners:
Brazil
China
India
Indonesia
South Africa

SETTING THE STAGE


Public
research
funding

Government funds a large share of publicly performed R&D (USD 400 bn in 2012)

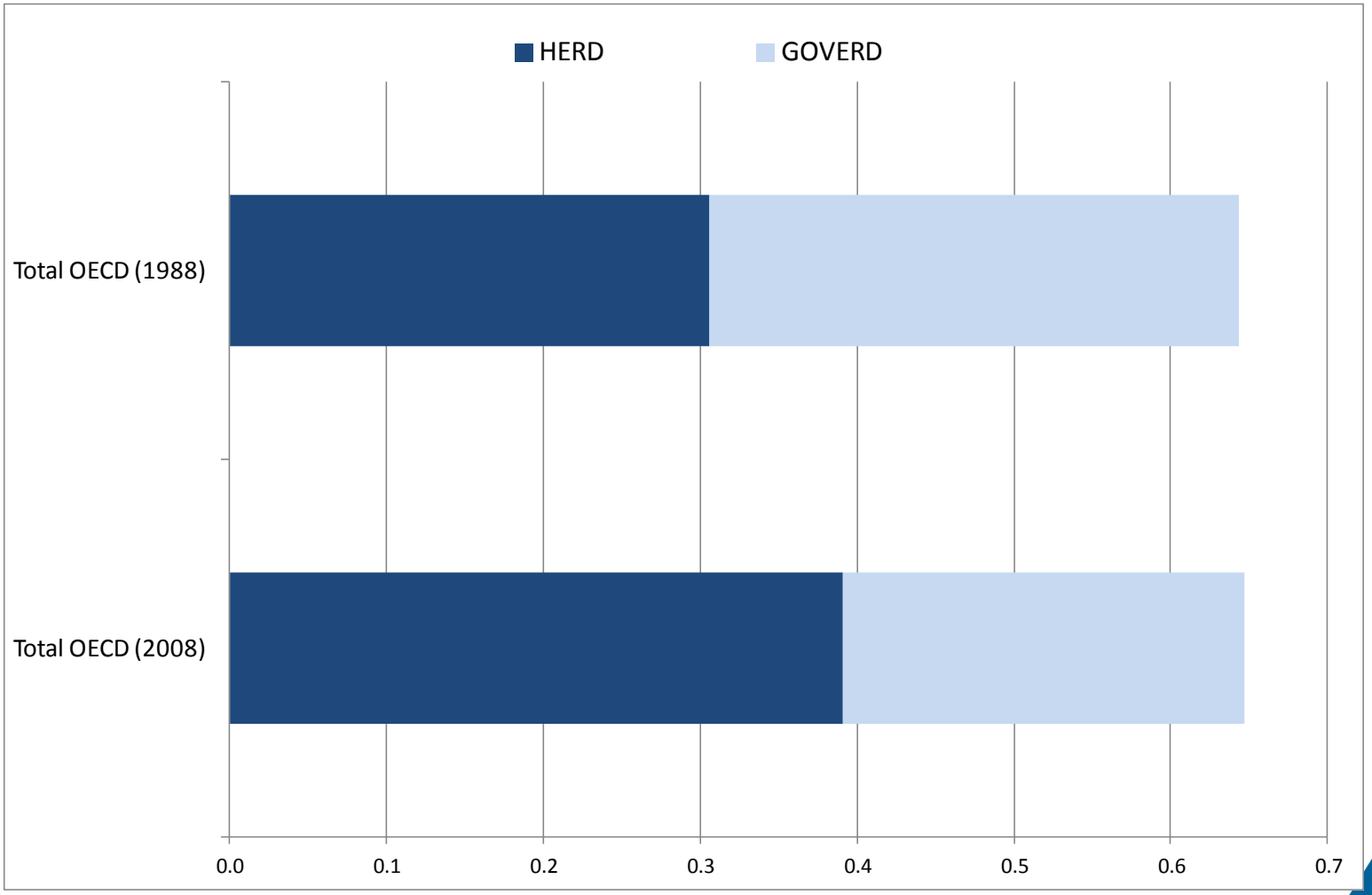
(2010: 71% of HERD and 93% of GOVERD in the OECD)

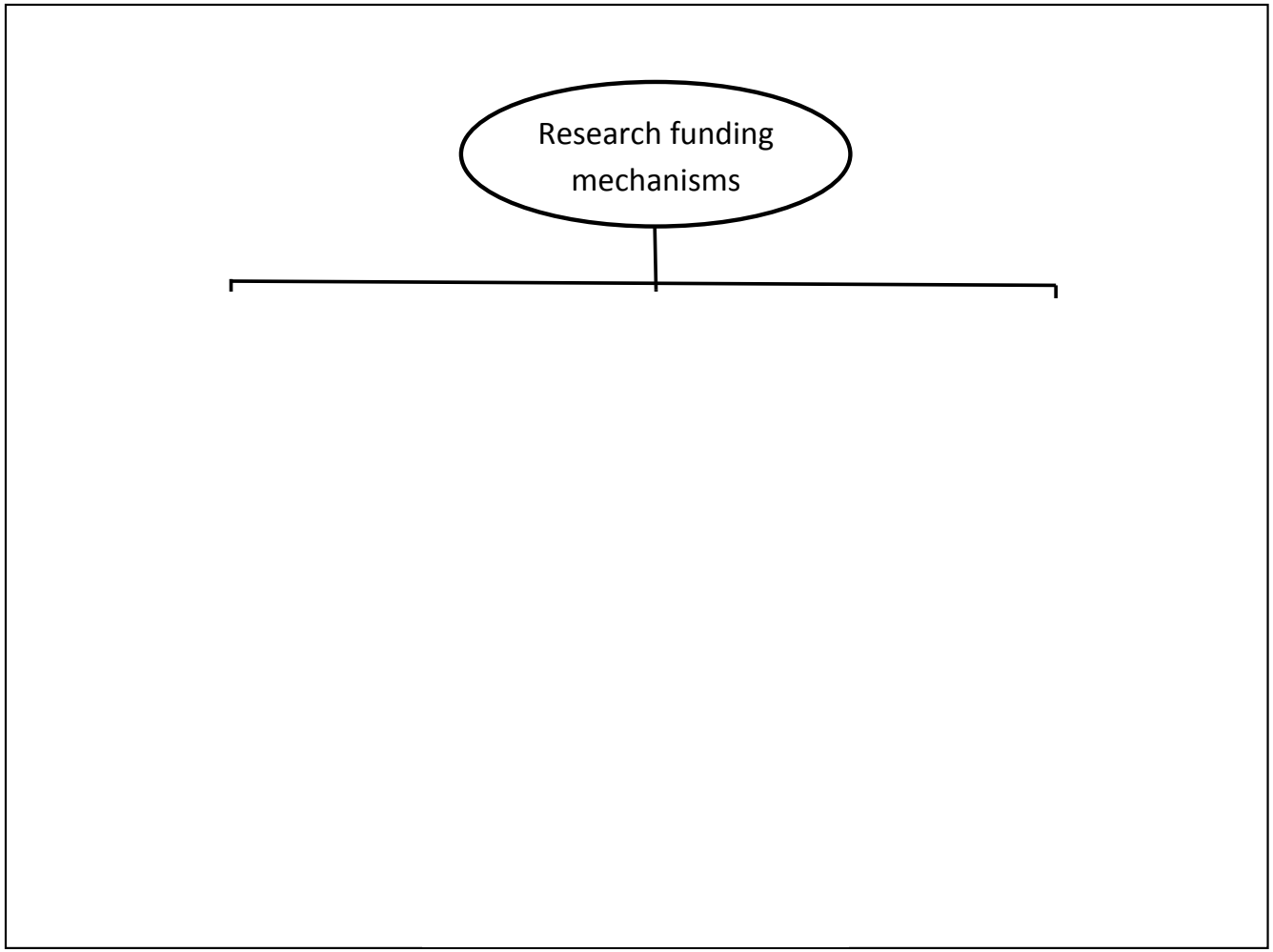


Source: OECD Research and Development Database, 2011

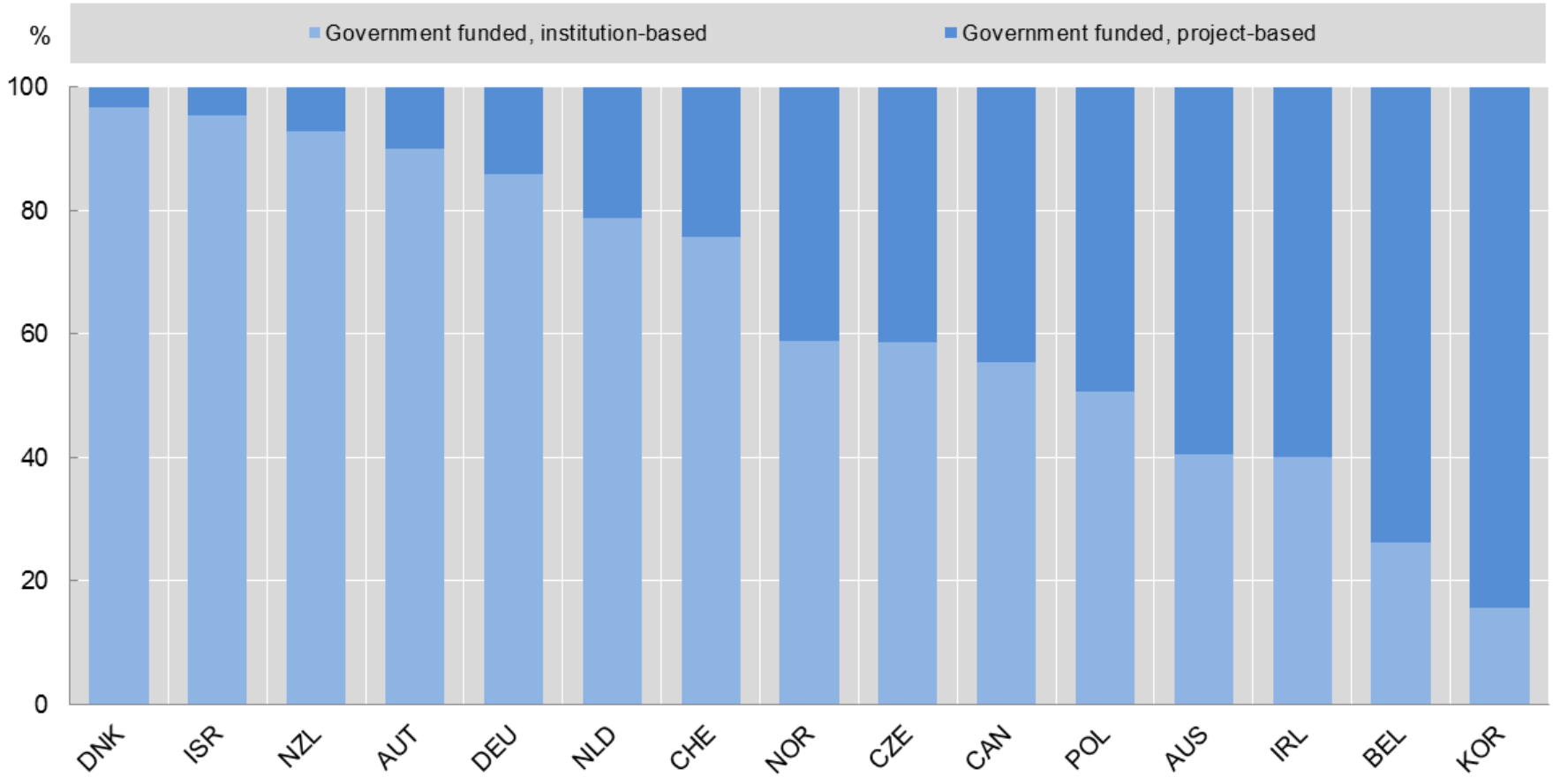
Switch in performers of R&D towards higher education sector

R&D performed in the government and higher education sectors as % GDP




Research funding mechanisms

Government funded R&D in higher education by type of funding, 2010



Source: OECD Scoreboard, 2013.

Performance-based funding for public research in tertiary education institutions

- Scope:
  - Experts commissioned to investigate models, indicators and impacts
  - Questionnaire survey completed by 13 countries
- Key findings:
  - Most schemes introduced since 2000
  - Main rationale: raise quality of research; but also others
  - Assessments commonly used for several rounds of annual funding
  - Open disclosure of processes and results in most countries
  - Similarities in indicators used: 3rd party income, publications, degree completions; differences in combinations and weighting, reliance on quantitative indicators and peer review, and use of additional indicators
  - Differences in budget impacts of schemes: while difficult to compare across countries, annual block funding affected ranges from 6% to 75%
  - Differences in the involvement of HEIs in designing schemes
  - Few formal evaluations of schemes – evidence suggests positive effects on research outputs and research management
  - Negative and unintended consequences also highlighted: e.g. narrowing of research focus on publications targeted at certain journals

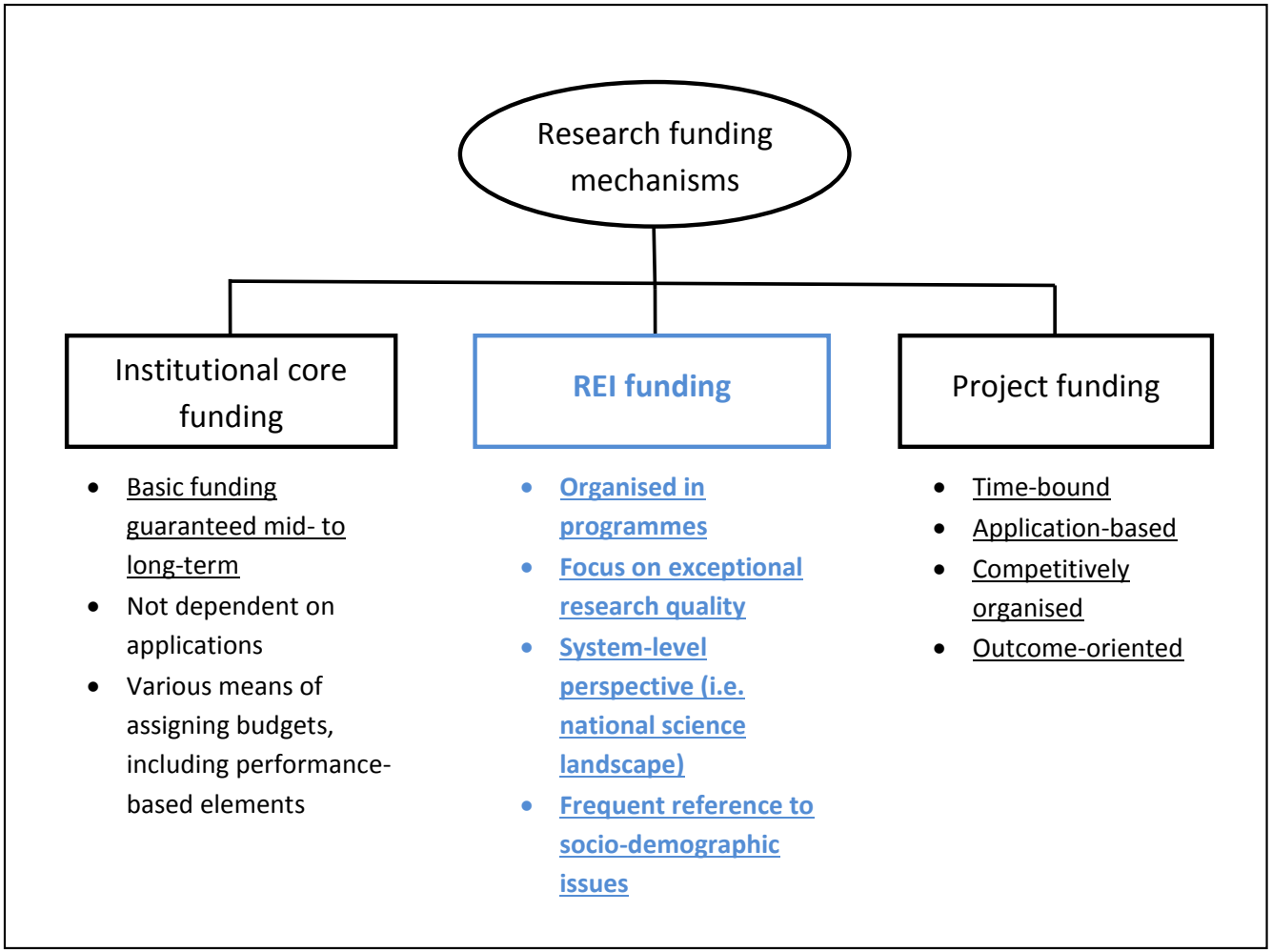
Performance-based funding for public research in tertiary education institutions (2010)

Country	System	Year implemented/ major revision
United Kingdom	RAE moving to REF – research excellence framework	1986/current
Spain	CNEAI – National Commission for the Evaluation – *sexenio*	1989
Slovak Republic		1992/2002
Hong Kong, China	RAE	1993
Australia	Composite Index, Research Quality Framework (RQF), Excellence in Research for Australia (ERA)	1995/current
Poland	Ministry of Science and Higher Education – parametric evaluation	1991/1998-99
Italy	*Valutazione triennale della ricerca* (VTR)	Evaluation 2001-03/ funded 2009
New Zealand	Performance-based research funding (PBRF)	2003/current
Belgium (Flemish Community)	BOF key	2003/2008
Norway	Norwegian model (new model for result-based university research funding)	2006
Sweden	New model for allocation of resources	2009
Denmark	Implementation of the Norwegian model	Current
Finland	Funding formula for allocation of university resources	1998/2010

Public research institutions: mapping sector trends

- Scope:
  - 20 countries participated: country notes / questionnaires
  - 12 institutional case studies
- Key findings:
  - Amid diversity, trend towards more competitive funding
  - Variety of public funding sources
  - A trend too far? Concerns around short-termism, convergence, careers, infrastructures, etc. Korea and New Zealand have notably reinstated core funding on account of these concerns
  - Funding instruments should balance short and long-term goals and consider division of funding between PRIs and other research providers
  - PRIs' organisational arrangements have undergone active change
  - Increase in the importance of international relationships
  - Challenges in recruitment, particularly foreign staff

Promoting Research Excellence: New Approaches to Funding

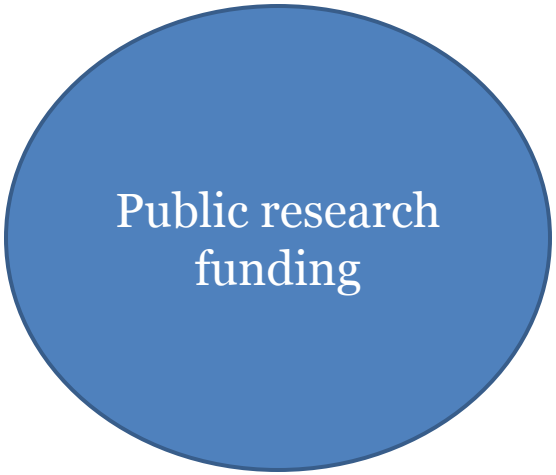


Overview of REIs in responding countries

Country	Name of REI	Start date	Maximum funding period for individual research unit
Australia	ARC Centres of Excellence	2003	7 years
Austria	Competence Centres for Excellent Technologies	2008	K1: 7 years K2: 10 years
Denmark	Investment Capital for University Research	2008	5 years
Estonia	Development of Centres of Excellence in Research	2001	7 years
Finland	Centres of Excellence (2008-13)	1995	6 years
Netherlands	Bonus Incentive Scheme	1998	No maximum set (will change in future)
New Zealand	New Zealand Centres of Research Excellence	2002	6 years
Norway	Norwegian Centres of Excellence	2002	10 years
	Centres for Research-based Innovation	2007	8 years
	Centres for environment-friendly energy research	2009	8 years
Poland	Leading National Scientific Centres	2012	5 years
Portugal	Multi-Year Funding Programme	1996	5 years
Russian Federation	National Research University initiative	2008	10 years
Slovenia	Centres of Excellence	2009	4 years
Sweden	Strategic Research Areas	2010	5 years
	Linnaeus Grants	2006	10 years
	Berzelii Centres	2006	10 years

Promoting Research Excellence: New Approaches to Funding

- Scope:
  - Research Excellence Initiatives (REIs)
  - Review of 27 REIs from 18 countries
- Key findings:
  - Combine features of both institutional and project-based funding – provide funding, but also prestige
  - Objective: competitiveness of research
  - Part of strategies to fund fewer institutions, selected on the basis of excellent performance and future potential
  - Selection panels tend to be internationally staffed
  - Variation in focus: young researchers, infrastructure, attracting international talent, cooperation with industry
  - Evaluation evidence remains weak – long-term effects remain unverified and evaluation efforts have yet to focus on effects on research landscape as a whole


Public research funding


Knowledge transfer and the commercialisation of public research

New strategies and policies for the transfer, exploitation and commercialisation of public research results

- Scope:
  - Mapping of recent institutional strategies and government policies to enhance the transfer and commercialisation of public research results
  - Benchmarking performance in OECD countries
  - 10 institutional case studies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Wii
COURTESY: NINTENDO


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Google

Commercialising public research…

… is important for generating more economic growth and jobs from innovation…

… and is not easy, as academia and business are two different worlds, with different motives, rules and cultures.

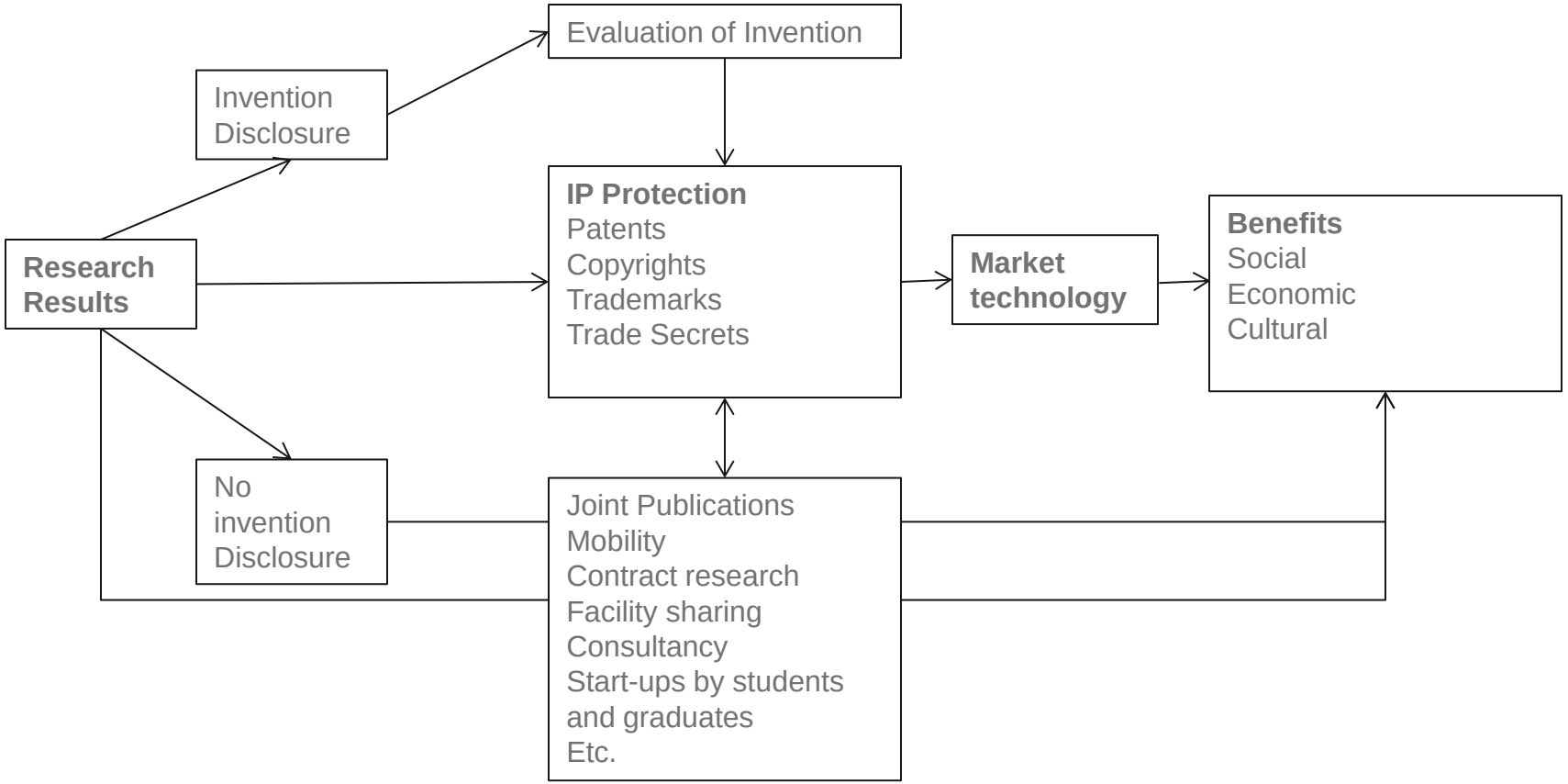
Commercialisation has been at the centre stage of research policies in OECD countries for 20 to 30 years now

⇒What is it about?

⇒Where are we with it?

⇒ What can we do to foster it?

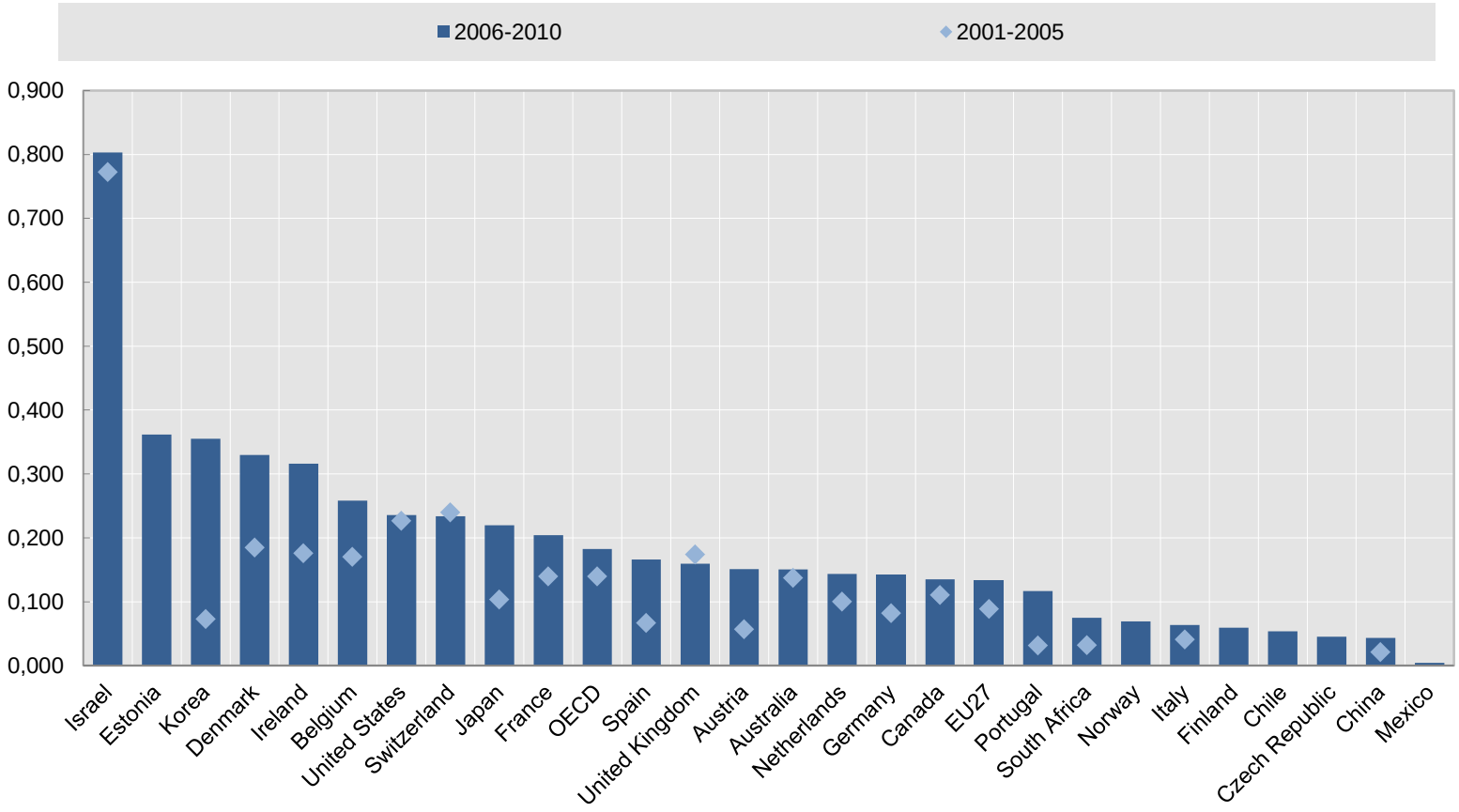
Commercialisation is more than IP



Academic patenting has increased in most countries in the 2000s

Patents filed by universities, 2001-2005 and 2006-2010

Patent applications under Patent Cooperation Treaty (PCT) per billion GDP (*Constant* 2005 USD (PPP))

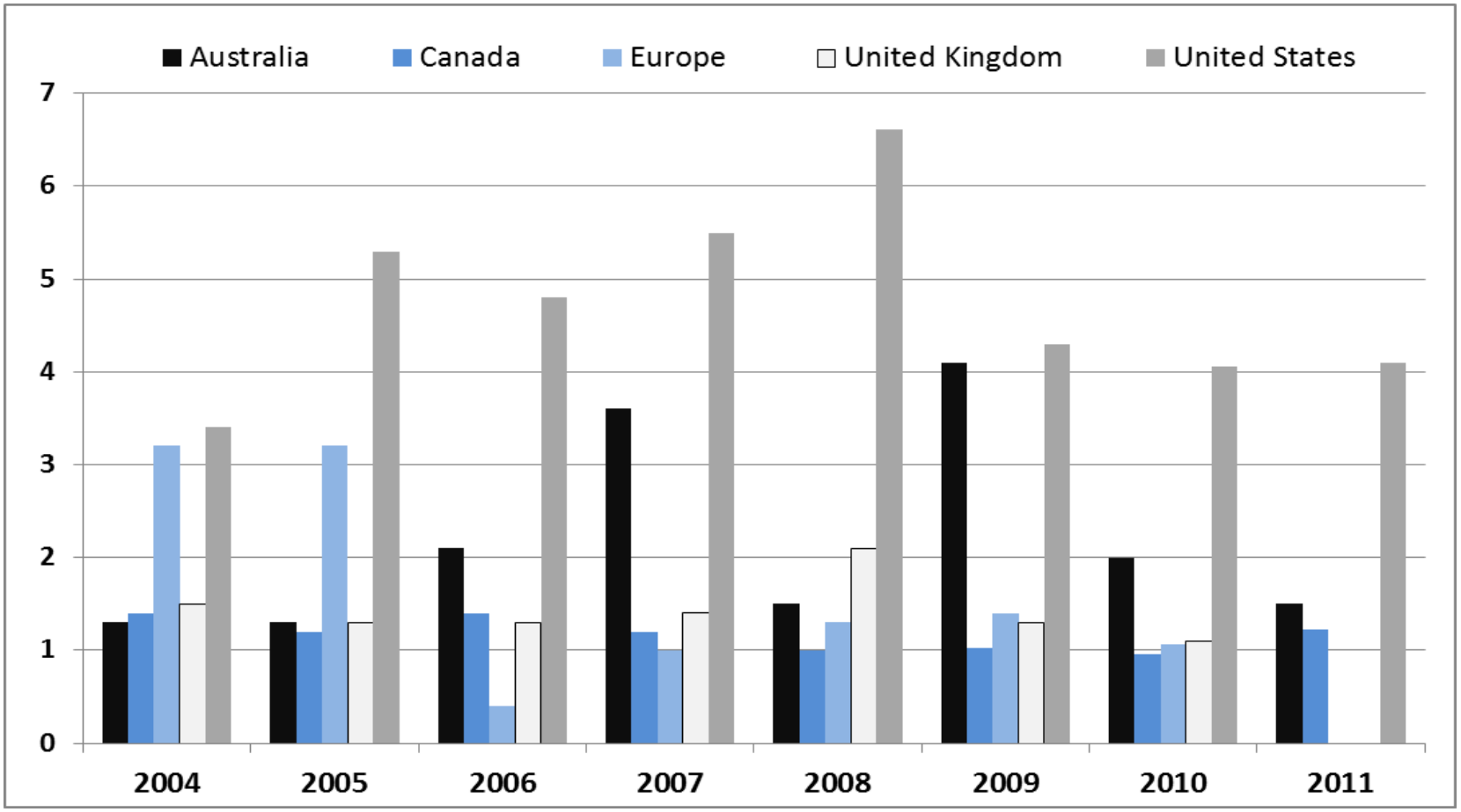


Source: OECD Patent Database

In Europe, revenue from licensing is low compared to the US and is not increasing

Licensing income, 2004-2011

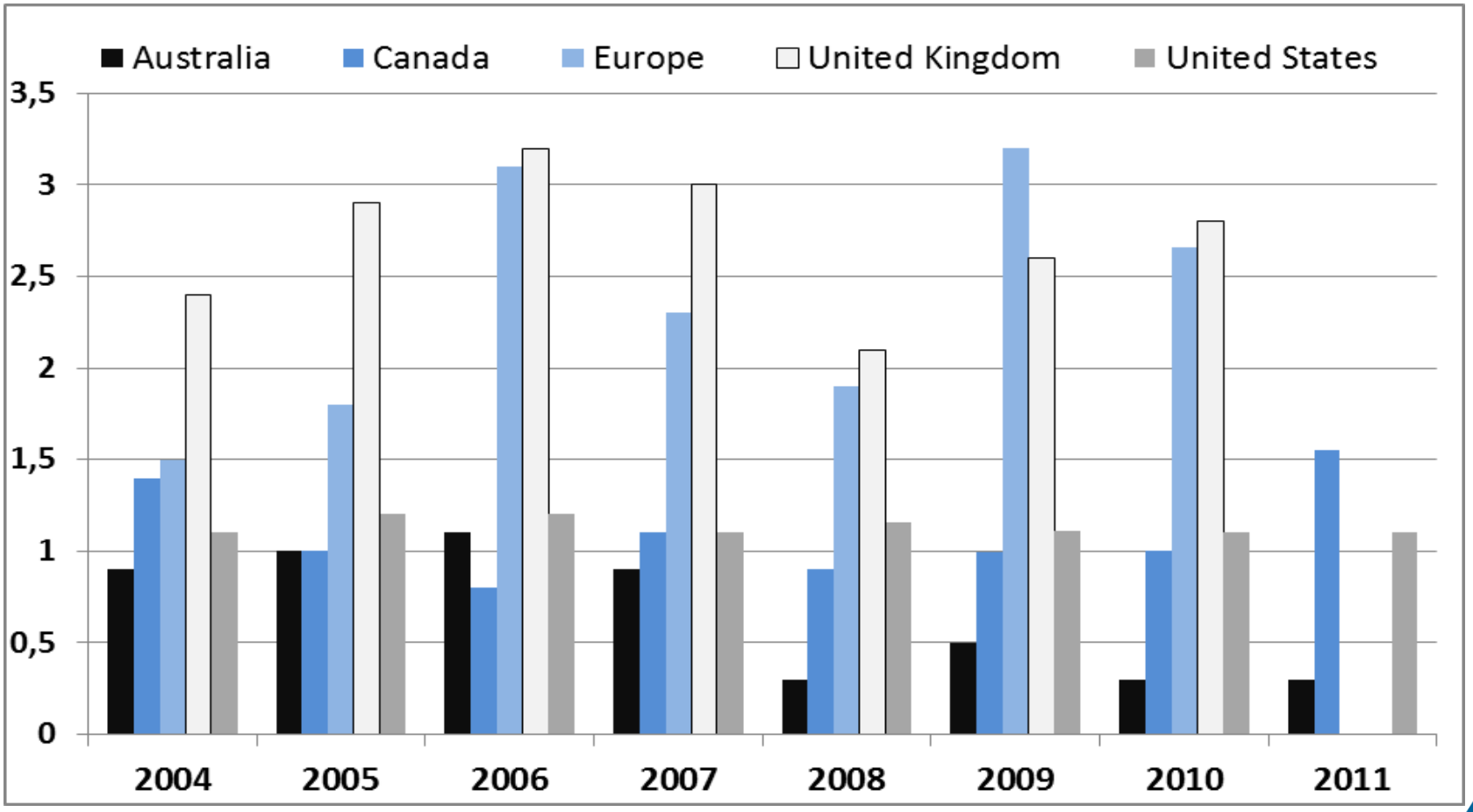
As a percentage of research expenditures



Spin-off creation is higher in Europe, but little evidence of growth and job effects

Creation of public research spin-offs, 2004-2011

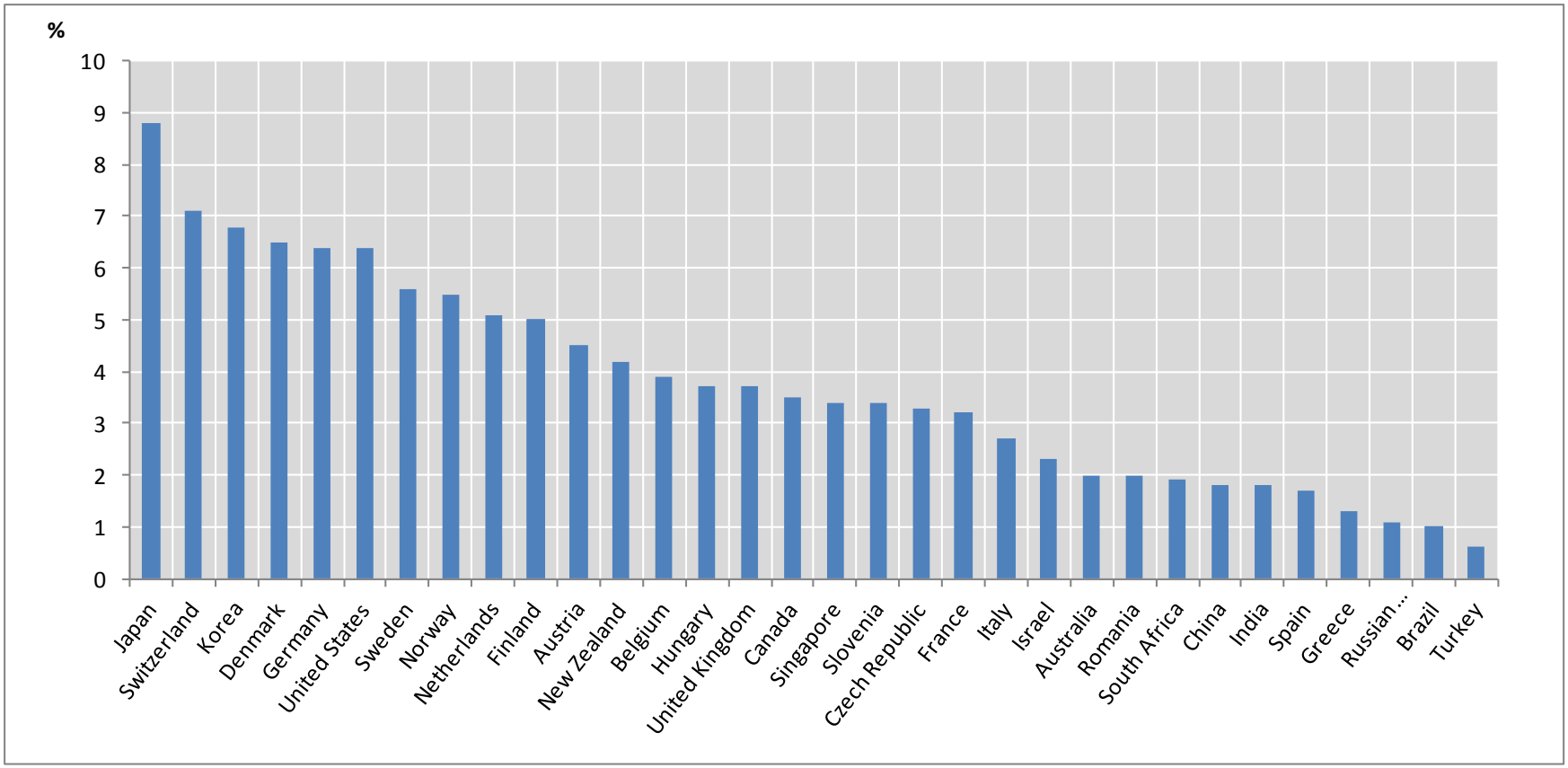
Per USD PPP 100m research expenditure



Co-authored publications can indicate the degree to which business absorbs or integrates public sector knowledge

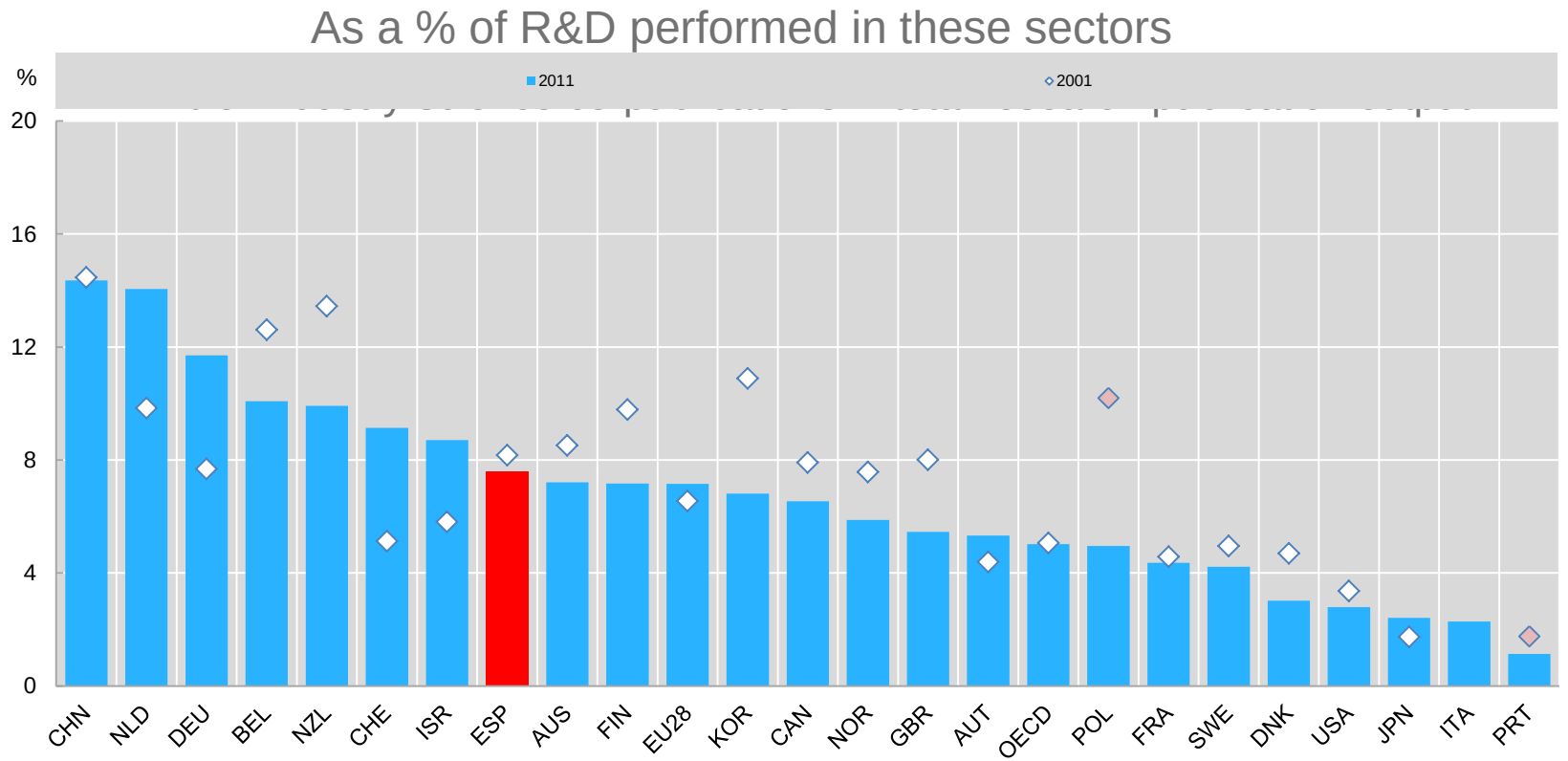
Industry-science co-publications, 2006-10

% of industry-science co-publications in total research publication output



Source: Centre for Science and Technology Studies (CWTS), Leiden University, using Web of Science (WoS) database.

Business-funded R&D in the higher education and government sectors, 2001 and 2011



Source: STI Scoreboard 2013.

After two decades of reform in Europe and emulation of Bayh-Dole around the world ...

... commercialisation seems to be levelling off in a number of countries.

- *What is holding back the commercialisation of public research?*

- *What solutions?*

Why the levelling off?

- **Limits in policies**: narrow focus on patenting, with little understanding of the broader determinants ("what should I do with my patents?")
- **Governance and incentives**: Technology Transfer Offices often lack capabilities (size, skills, incentives)
- **The knowledge produced** by public research is not always relevant to commercialisation.

Beware of assertiveness in IP management!

From: HR Team Communications [hrteamcommunications@micron.com]
Sent: Monday, January 14, 2013 3:35 PM
To: Multiple-Recipients
Subject: Micron's student recruitment at the University of Illinois

Dear Professor:

I write to inform you of a change in Micron's student recruitment at the University of Illinois ("UIUC"). Because Micron remains a defendant in a patent infringement lawsuit that UIUC filed against Micron in Federal court in Illinois on December 5, 2011, effective immediately, Micron will no longer recruit UIUC students for open positions at any of Micron's world-wide facilities.

When the case was first filed, Micron expressed to UIUC counsel the company's strong dismay that despite the long-term synergies resulting from collaboration and partnership between Micron and UIUC, UIUC had chosen to file suit against Micron. UIUC counsel continues to refuse to dismiss the case even though the case has now been stayed indefinitely, pending resolution of a Micron petition filed with the Patent & Trademark Office regarding the validity of the three UIUC patents asserted.

As you know, Micron has long enjoyed a close relationship with UIUC. Among other things, Micron has hired numerous UIUC engineering students for both full-time and internship positions. In addition, the Micron Foundation has endowed chairs at the College of Engineering and has sponsored student scholarships and professor research. However, because UIUC's suit imposes costs and risks on Micron that are inconsistent with collaborative relationships among Micron, UIUC and its students, Micron must regrettably indefinitely suspend its recruitment of UIUC students and likewise suspend participation in other joint activities.

Sincerely,

Michelle Burks
Academic Program Manager
Micron Technology, Inc.

Source: *www.**patent**lyo.com*

New mechanisms for tech transfer

BUT…

Some research institutions (e.g. IMEC) and countries (e.g. Finland) have had **successful experience**, notably in relation with contract research.

TTOs and IP management

- Technology Transfer Offices (TTOs) have expanded their missions (marketing non-patent services, innovation culture), liaise or merge to reach a critical mass.
- New bridging and intermediation structures
  - e.g. Innovation offices programme in Sweden
- Replacing or improving TTO structures
  - *Technology Transfer Alliances (e.g.* Innovation Transfer Network (ITN) in the US, SATT in France)
  - *For-profit models (e.g. Science Ventures in Denmark)*
  - *Internet-based models* *(e.g.* Flintbox at University of British Columbia)
  - *Free Agency model*
- Patent funds: selling or licensing IPR.

Boosting Entrepreneurship

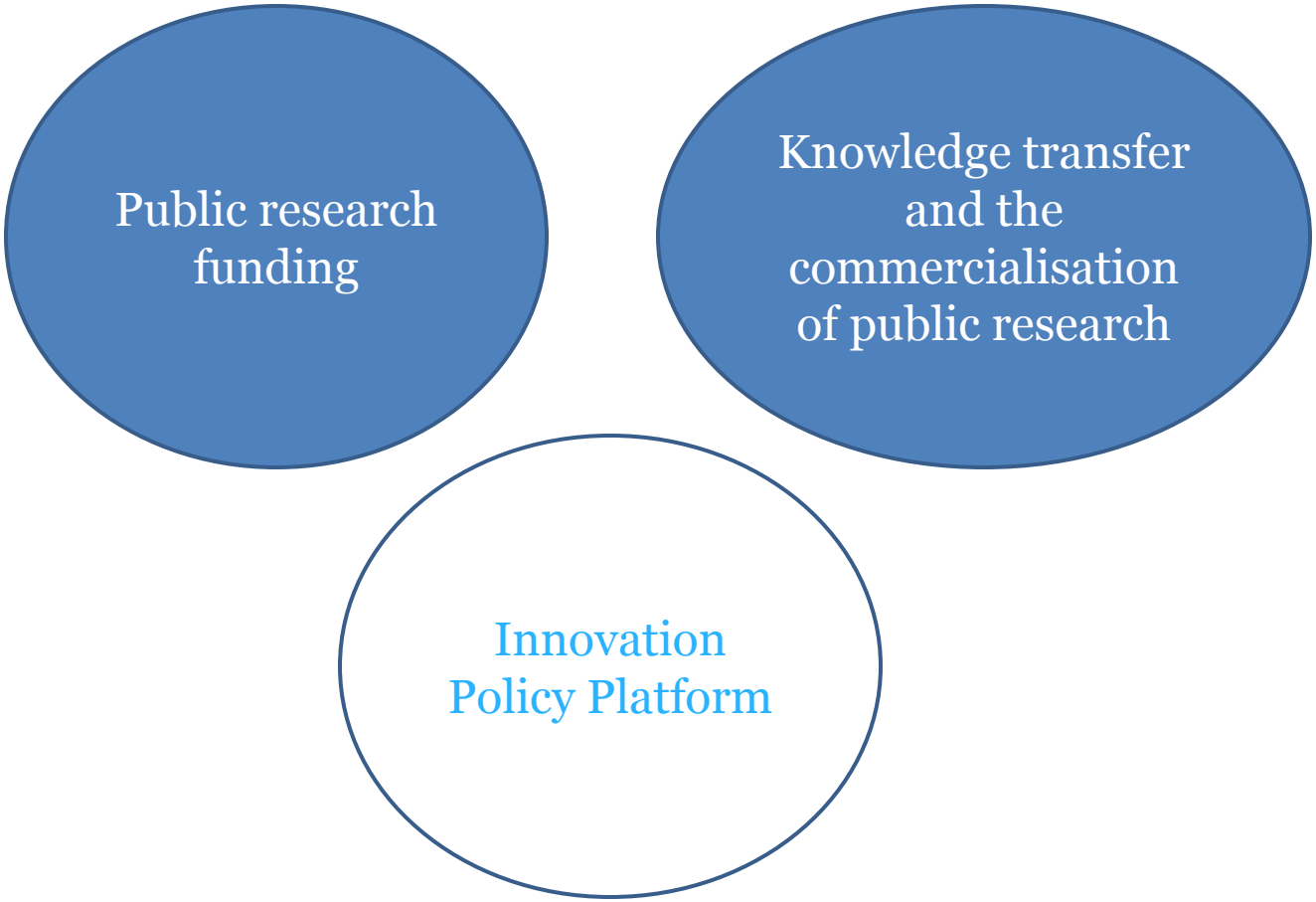
- Successful spin-offs come **more often from students and alumni** than from professional researchers.
- Creating a favourable eco-system for student and academic entrepreneurs
  - e.g. Aalto Centre for Entrepreneurship (ACE) in Finland
- Work study programmes, internships, mentoring relationships, workshops, seminars, all-campus initiatives, free online entrepreneurship courses, …
- “Crowd funding for research”: more about engaging scientists with society and the economy
  - University of Utah’s TTO entered in 2013 an exclusive agreement with crowdfunding platform RocketHub

Promoting Openness in Science

- Requirement to publish in digital format
  - *Institutional*: e.g. US National Institutes of Health (NIH), Canadian Institutes of Health Research (CIHR)
  - *National*: e.g. Spain, New Zealand, US
- Building knowledge repositories
  - e.g. EC: Digital Repository Infrastructure Vision for European Research (DRIVER), Open Access Infrastructure for Research in Europe (OpenAIRE), etc.
- New co-operative models
  - e.g. Lund University, the National Library of Sweden and Nordbib to adopt online guides to open access journals publishing

A few conclusions

- The major channel for knowledge transfer remains the placement of students
- Collaborative research, contractual research are financially more important than IP; and they ensure that the needs of industry are well integrated in the research agenda of the university (demand pull as much as supply push)
- IP matters, but it is not everything
- The creation of spin-offs requires more an eco-system approach than a series of one-off
- Students and alumni are usually better entrepreneurs than professional researchers: need to develop an entrepreneurial spirit among students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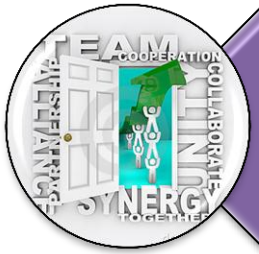
Uses...

Knowledge resources and collaboration opportunities



Accessible Repository of knowledge
Intelligent archive (memory of OECD & WB work)
Virtual platform for **Community of Practice**

Resource for policy analysis and research
Learning space about policy tools and approaches
Access to tacit knowledge and case studies

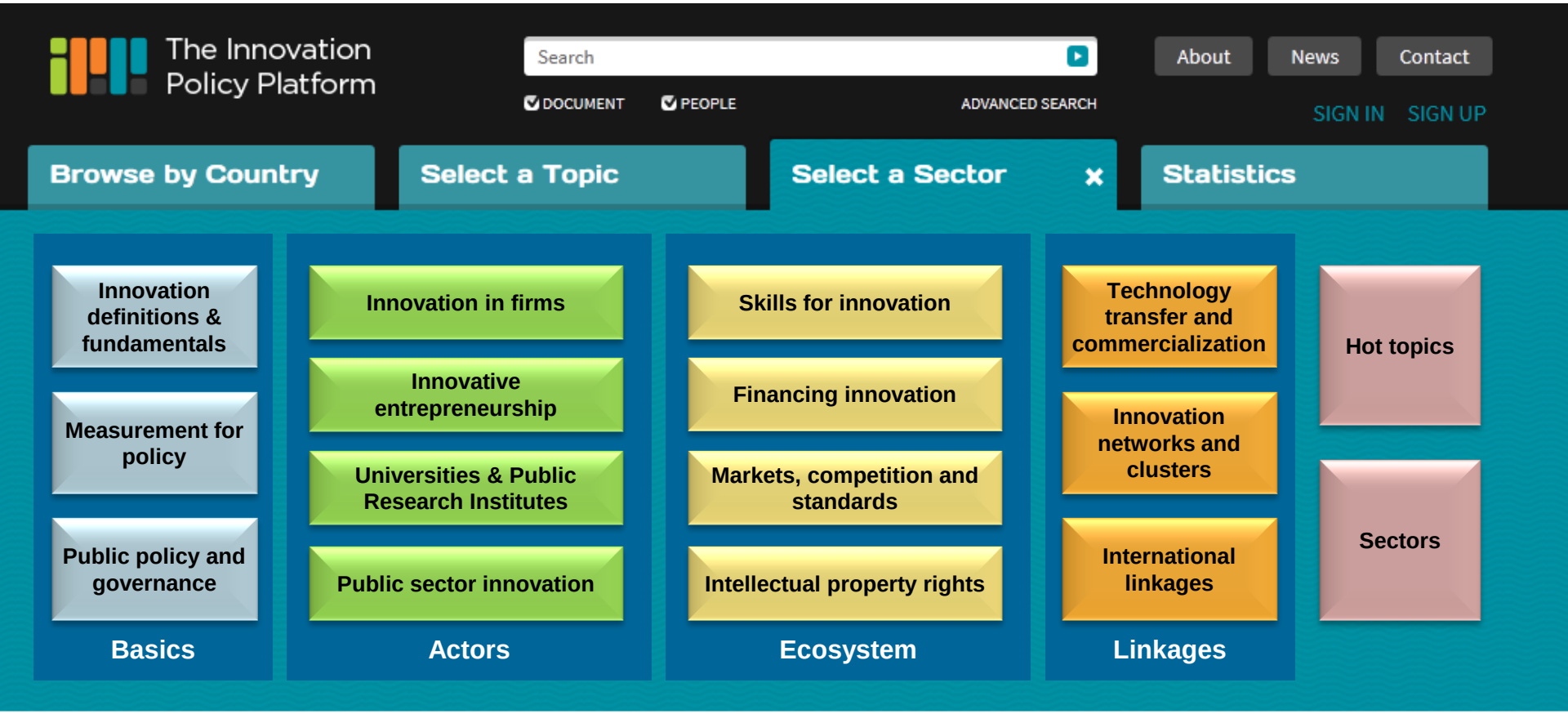
"How-to" of innovation policy formulation and implementation
Systematic **decision frameworks** for policy

Resulting in improved responses to requests from Ministers, policy makers, and practitioners

IPP content

- Types of content:
  - Existing OECD/World Bank qualitative reports
  - Existing OECD/World Bank quantitative data
  - IPP web pages for summaries and navigation (Q&A format)
  - New IPP 'knowledge products': policy briefs and case studies
- Organised by:
  - Country
  - Sectors and General Purpose Technologies, e.g. Nanotechnology
  - Thematic modules

https://www.innovationpolicyplatform.org/



Resources and links

www.oecd.org/sti/innovation

Upcoming events and recent releases
(sign up for newsletter):

www.oecd.org/sti/news.htm

Thank you!

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