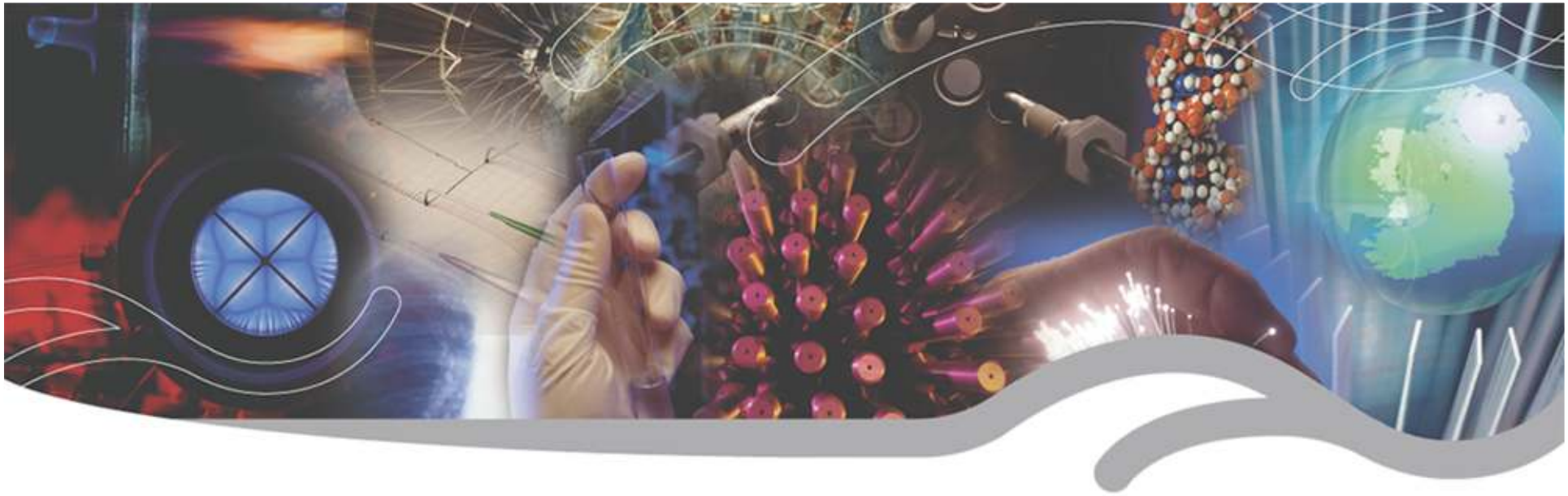
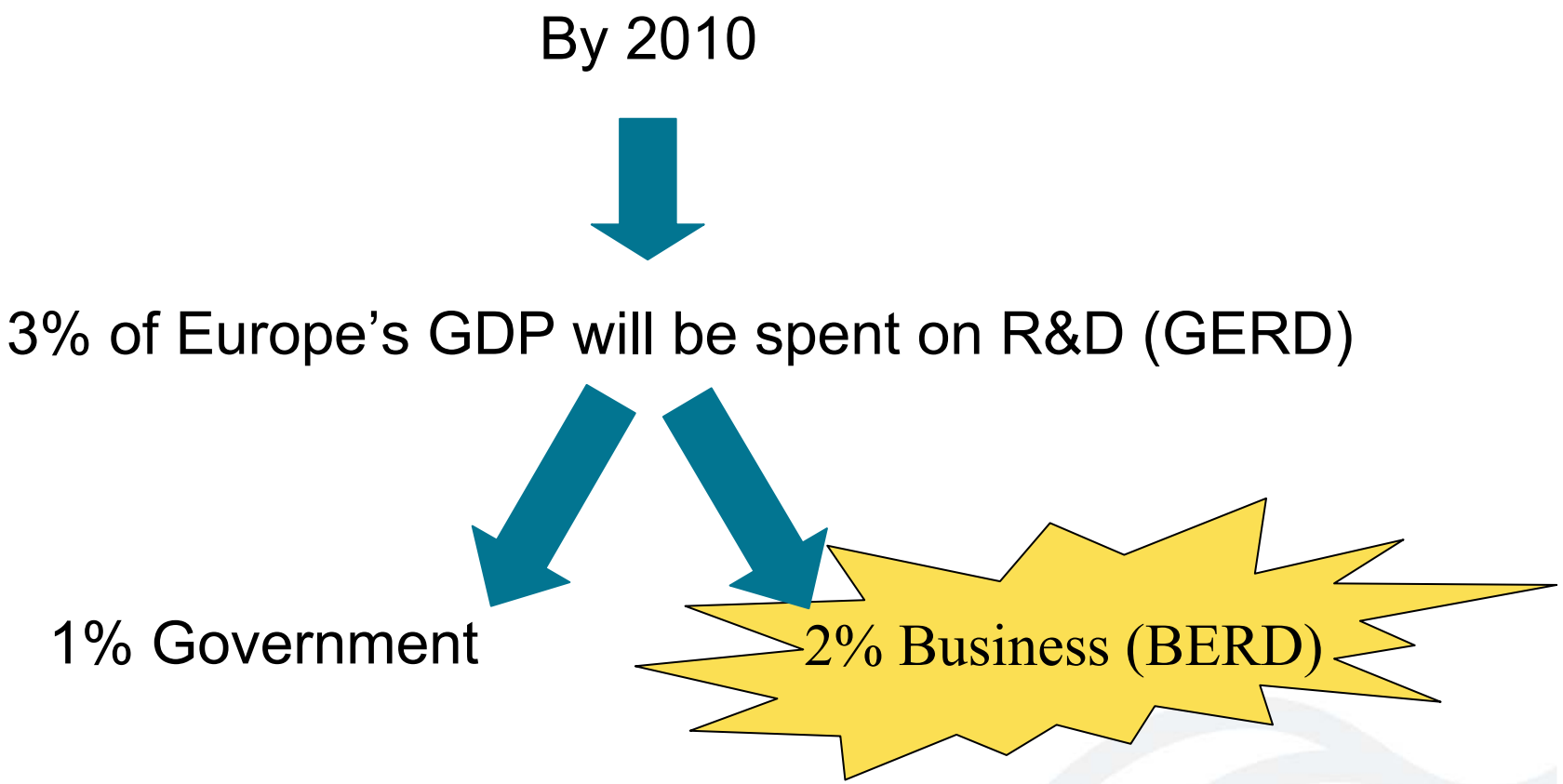


How to get the 2%

Frank Gannon, Science Foundation Ireland

sfi
science foundation ireland
fondúireacht eolaíochta éireann

The Lisbon Goal & Barcelona Challenge



The 2% goal is not only a mechanism to reach the Barcelona objectives

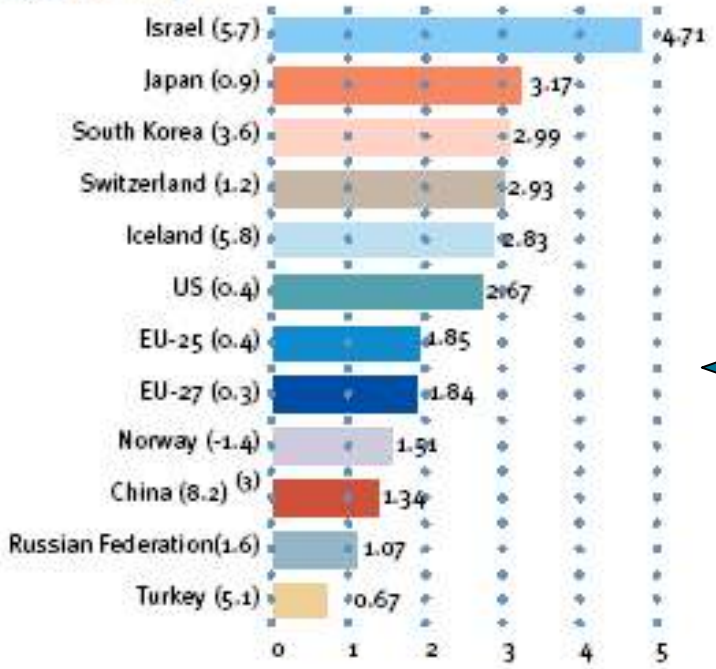
It is:

- **Justification for the investment by Governments**
- **Validation (and jobs) for the increased number of PhDs**
- **Proof that the high tech industry is growing in Europe**
- **A mechanism to anchor industries**
- **Support for research in public institutions**
- **An indication that worthwhile research is carried out in the region**

Gross Expenditure on R&D (GERD)

Figure 1

R&D intensity (Gross Domestic Expenditure on R&D (GERD) as % of GDP), 2005 [1]; in brackets: average annual growth rates (%), 1998-2005 [2]



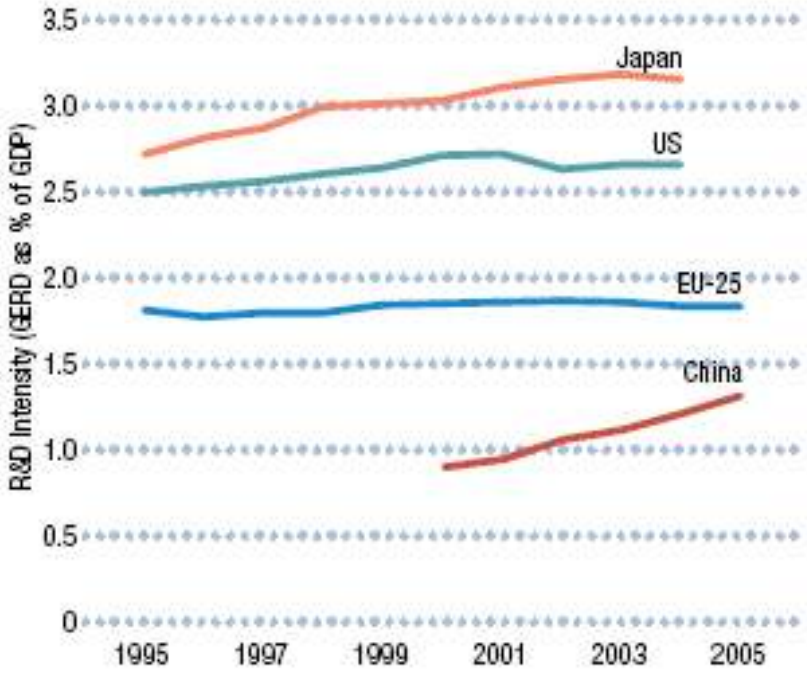
Source: DG Research
Data: Eurostat, OECD
Notes: (1) TR, IS, CH, US, IP: 2004; (2) CH: 1996-2004; TR, IS, US, IP: 1998-2004; NO: 1999-2005; CH: 2000-2005; (3) CN: Hong Kong is not included.

EU-25: 1.85% of GDP

Gross Expenditure on R&D (GERD)

Figure 2

Evolution of R&D intensity (GERD as % of GDP), 1995-2005



Source: DG Research
Data: Eurostat, OECD
Notes: (1) US: Break in series between 1998 and previous years; Japan: break in series between 1996 and previous years; (2) Japan: GERD was adjusted by OECD for the years 1991 to 1995 inclusive; (3) China: Hong Kong is not included.

1. EU stagnant
2. China = EU by 2009

Business Expenditure on R&D (BERD)

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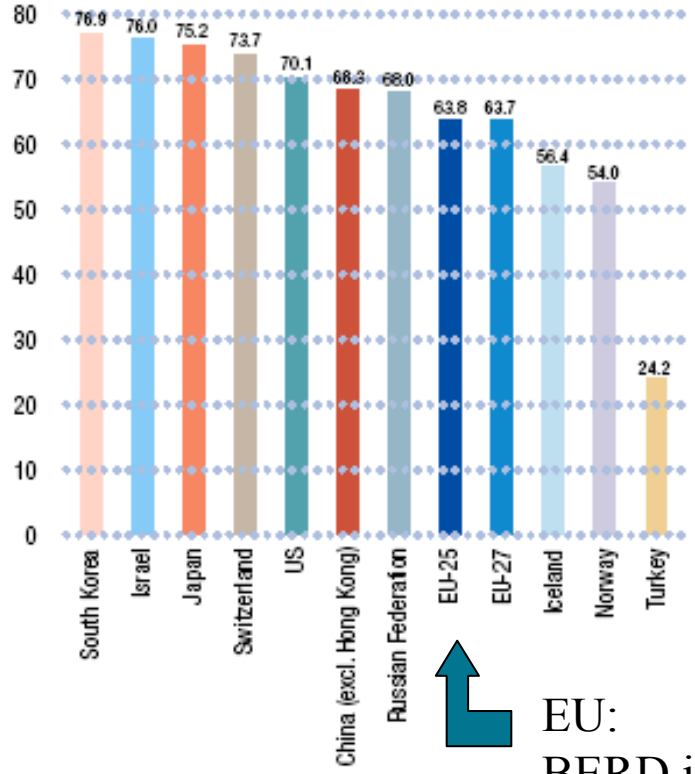
Figure 4

Business Expenditure on R&D (BERD) as % of GERD, 2005 (1)

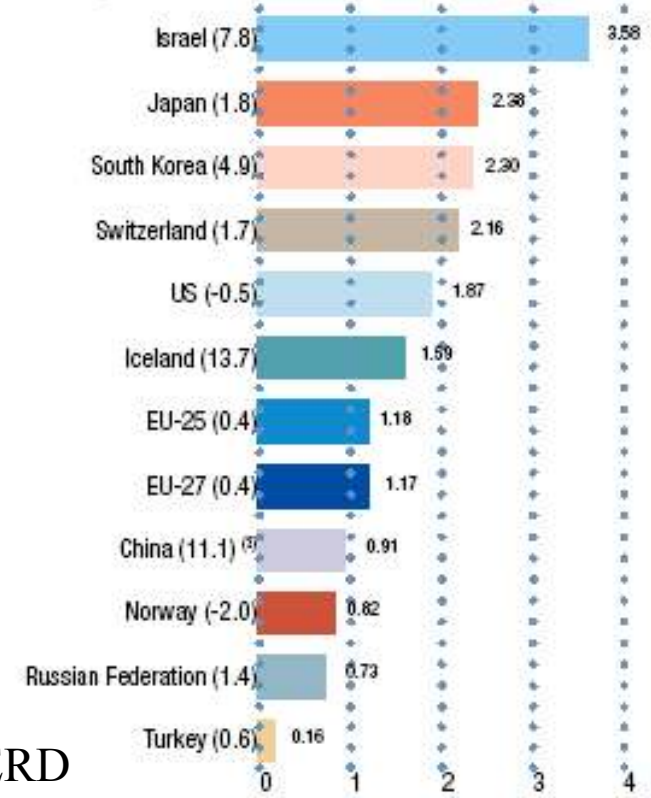


Source: DG Research
Data: Eurostat, OECD
Notes: (1) Iceland, Japan, Switzerland, Turkey, US: 2004.

EU:
BERD is 64% of GERD
Right ratio for
Barcelona objective

Figure 5

BERD as % of GDP, 2005 (1); in brackets: average annual growth rates (%), 1998-2005 (2)

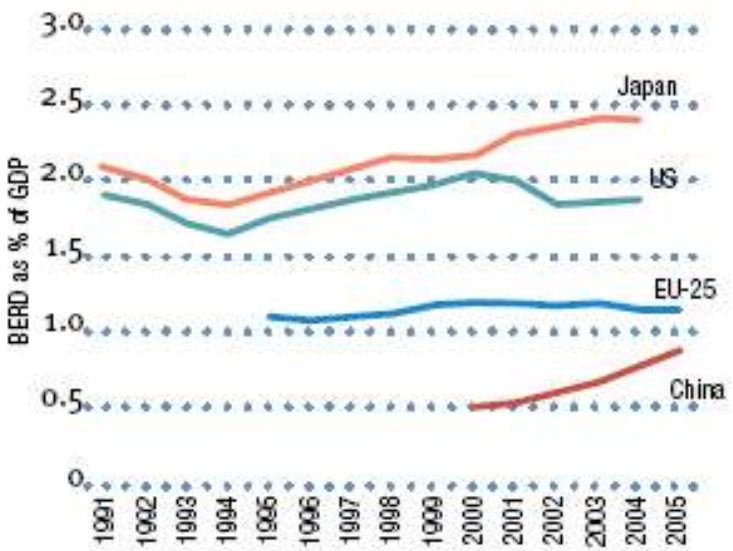


Source: DG Research
Data: Eurostat, OECD
Notes: (1) TR, IS, CH, US, JP: 2004; (2) CH: 1996-2004; TR, IS, US, JP: 1998-2004; NO: 1999-2005; CH: 2000-2005; (3) CN: Hong Kong is not included.

Business Expenditure on R&D (BERD)

Figure 6

Evolution of business enterprise expenditure on R&D (BERD) as % of GDP, 1991-2005 (1)



Source: DG Research
Data: Eurostat, OECD
Notes: (1) JP: Break in series between 1996 and previous years; (2) CN: Hong Kong is not included.

EU BERD is stagnant @ ~ 1%
Barcelona target is 2% ☹

But in Europe there is an uneven spread of the % contributed by BERD

- in Finland it is 71%
- in Spain it is 57%
- in Poland it is 29%

- Finland GERD is 3.4% & includes a high % of BERD. Therefore it is at the 'correct level'.
- Notwithstanding this, Finland aims to increase GERD to 4% by 2010. BERD will remain high.

In countries with low GERD & BERD, increases are needed!

Chicken & Egg……

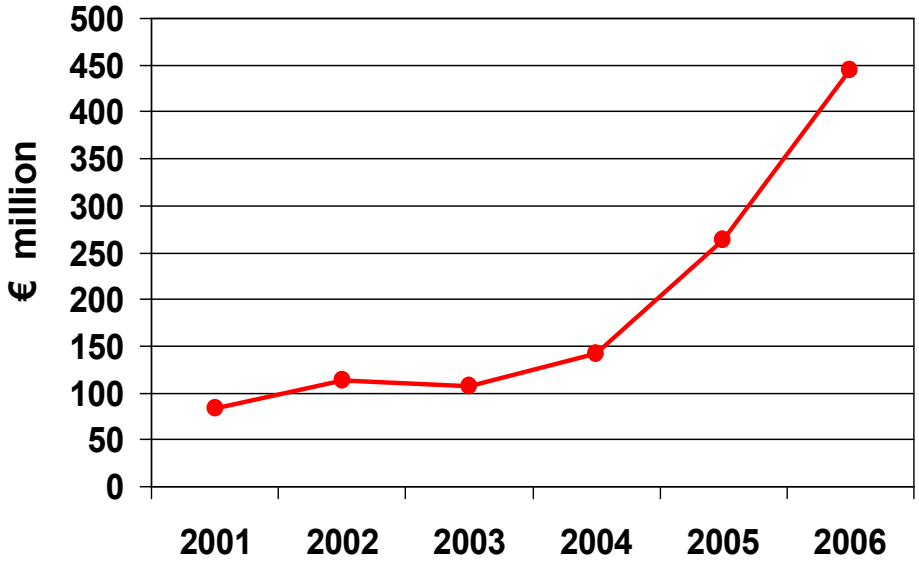
Governments HAVE to take the lead by investing to improve and expand the level of research in the public institutions (Universities)

The Government R&D chicken lays the Business R&D eggs

The Story in Ireland

	2000	2005	2013
GERD	€1.18b	€2.33b	€3.8b
GERD (% GNP)	1.32%	1.56%	2.4%
BERD	€800m	€1.33b	€2.5b
BERD (% GNP)	0.95%	1.05%	1.6%
BERD as % of GERD	72%	67%	67%

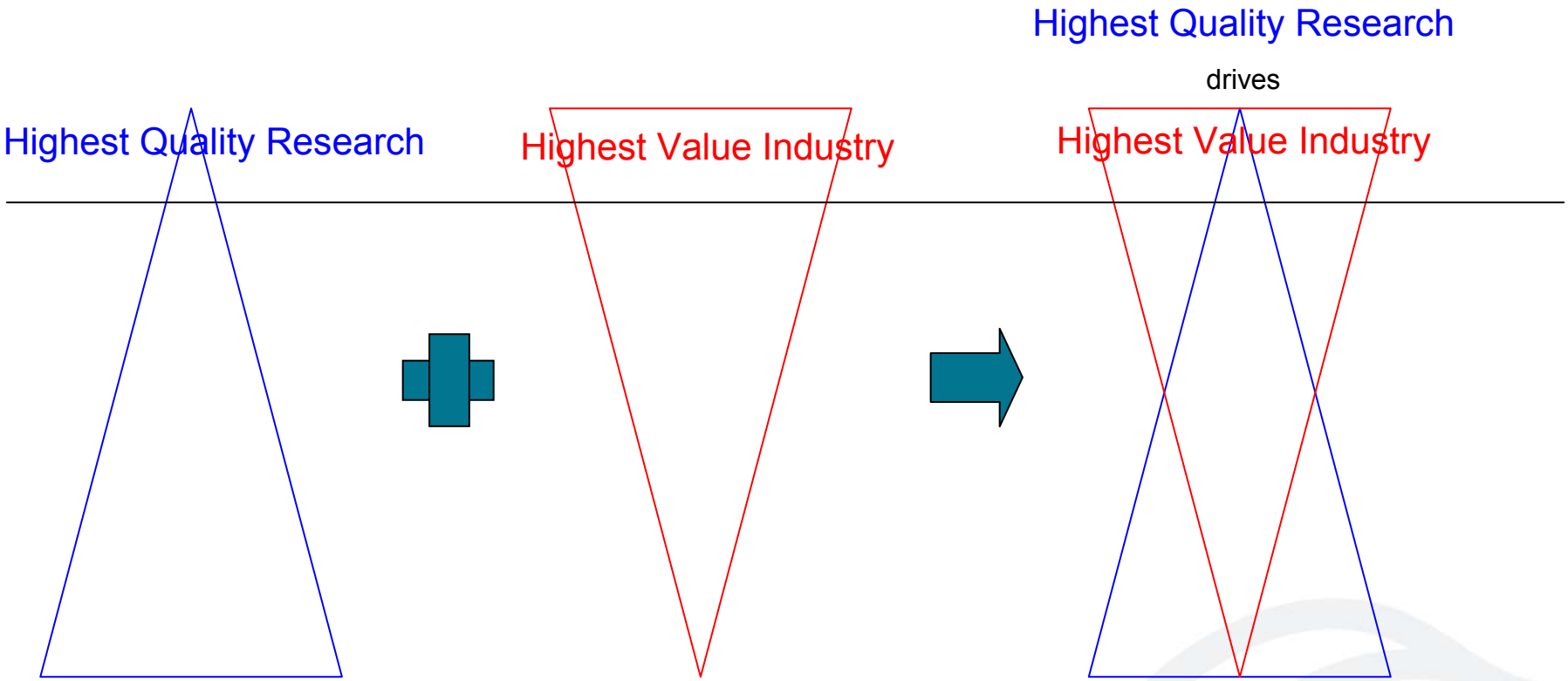
IDA Supported RD&I Investment 2001-2006



Ireland's R&D is increasing.
Like the EU its' BERD: GERD ratio is right
But
The actual level of GERD & BERD is too low!

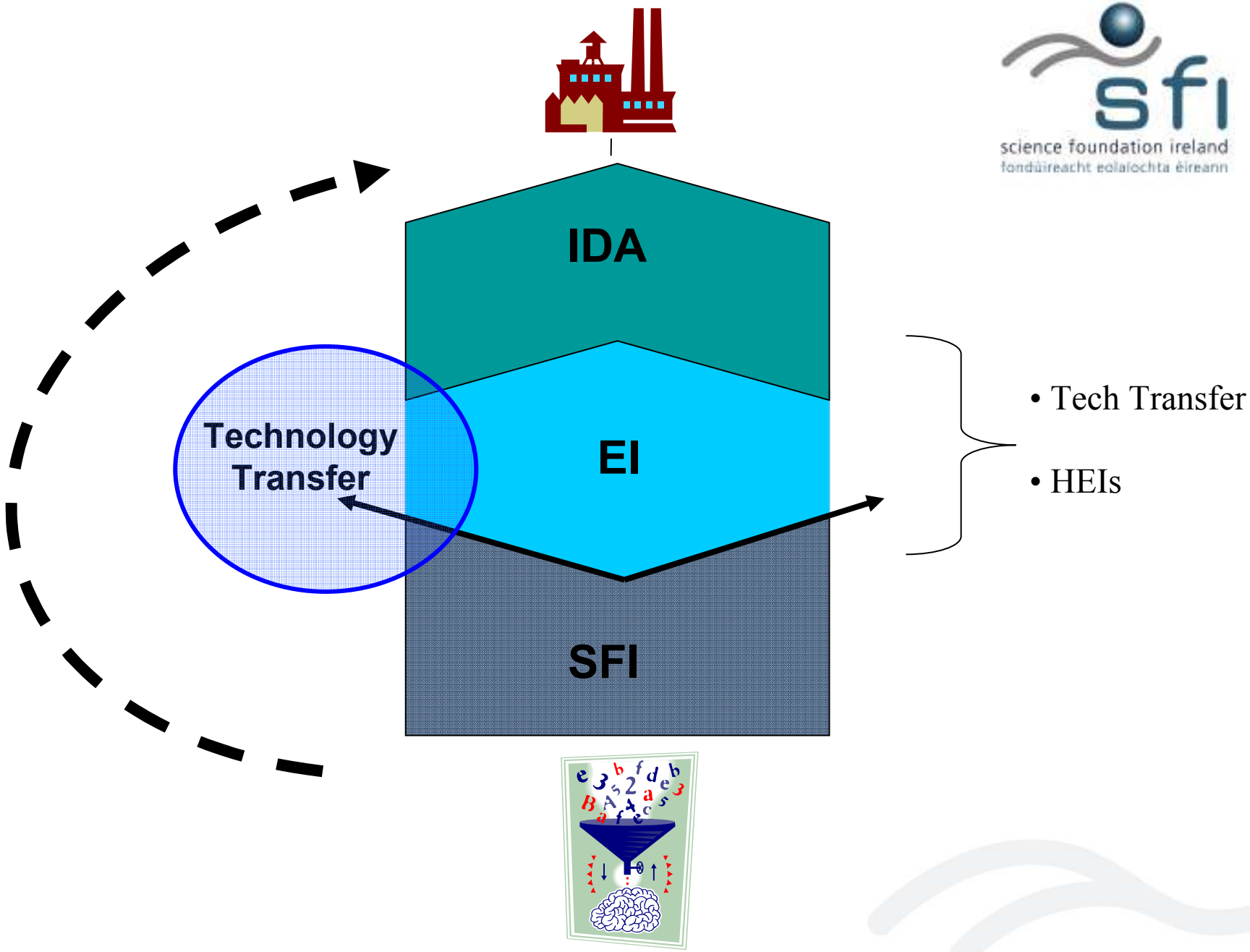
Spending more money wisely has to be the aim

Science Foundation Ireland was established in 2000 to support excellent research and through that move industry up the value chain

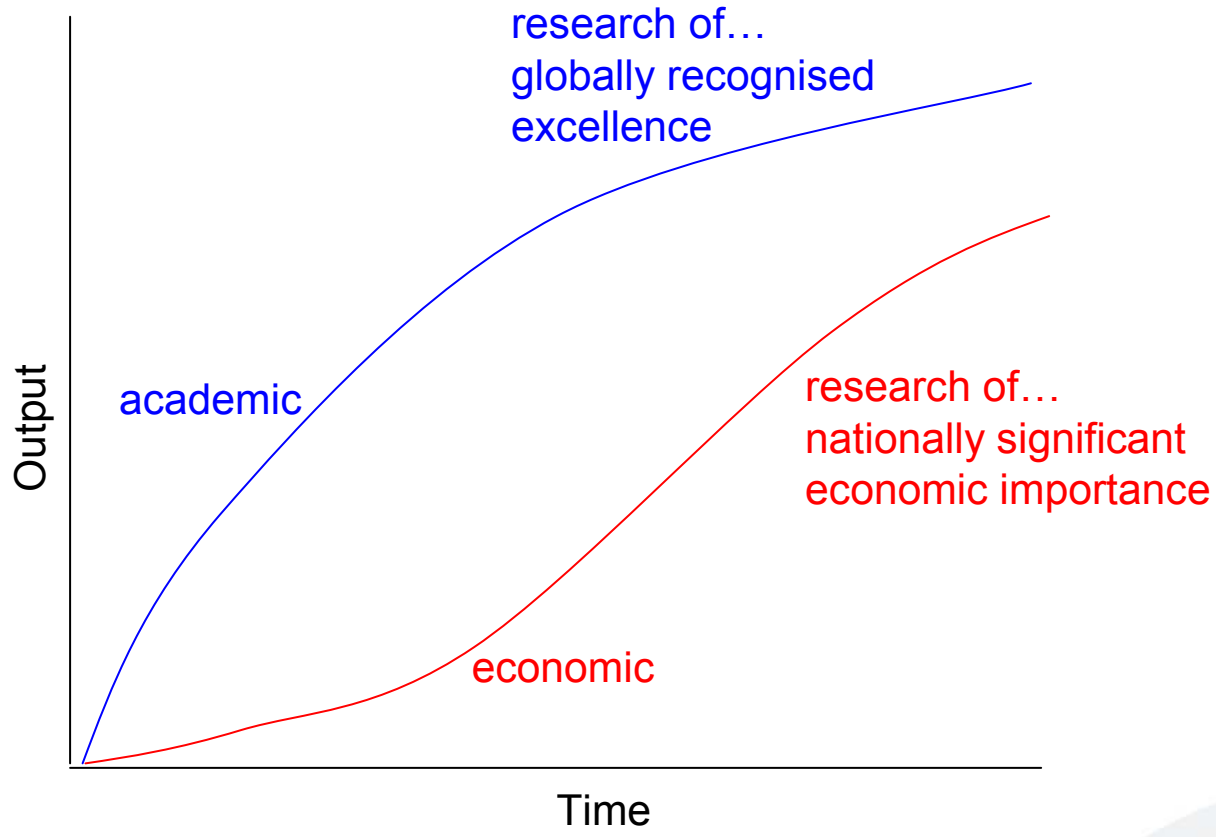


SFI Budget

- **Annual budget in 2007 €156m**
  - Equivalent to $16.5b when corrected to the USA population
- **This is part of an 8 year plan where the annual budget will increase year on year, reaching €255m in 2013**


IDA
EI
SFI
Technology Transfer
• Tech Transfer
• HEIs

Science Foundation Ireland invests in knowledge generation with the expectation that this will stimulate high tech R&D



Programmes run by SFI

- **Principal Investigator**
- **PIYRA**
- **PICA**
- **Industrial/International Supplements**
- **UREKA/STARs etc.**
- **SRCs**
- **CSETs**

Is it working?

- **45% of funded researchers report "spontaneous" collaboration with industry**
- **Clear collaborative integration of research from leading companies such as Intel, HP, GSK, IBM, Novartis, Elan etc.**
- **CSET concept working particularly well**

What is a CSET?

- **Centre of scientific/engineering excellence**
  - Whole is greater than sum of the parts
- **Competitive on a worldwide basis**
  - potential to be the best in the world
  - "edge" – unique feature(s) distinguishing centre from int'l competition
- **Importance of Director**
  - Intellectual leader and driver of scientific activities
  - Demonstrated ability/potential to lead major campus-industry centre
- **Industrial *partnerships***
  - Intellectually and finacially engaged and committed industrial partners
- **Value to Ireland**
  - Strategic impact on Ireland (e.g. potential economic impact via partnerships with industry in Ireland, etc)
- **Truly national centre**
  - Appropriate optimization of talent in small country

CSETs - Centres for Science, Engineering, & Technology

- Funding – up to €25 M over 5 yrs (€5M/yr), renewable
- Strategic Partnerships with industry - 25% (of SFI direct costs) industry cost share contribution required, can be widely defined: people, equipment, funds
- Research excellence
- Unique, globally competitive, multidisciplinary
- Strategically important to Ireland Inc.
- Large education & outreach component
- SFI has funded 3 BIO Centres & 4 ICT Centres to date

Biotechnology Centres

Alimentary Pharmabiotic Centre

Director: Prof Fergus Shanahan

Web: apc.ucc.ie

Regenerative Medicine Institute

Director: Prof Timothy O'Brien

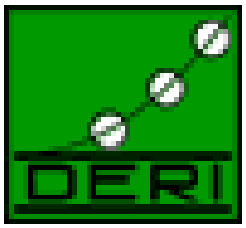
Web: remedi.nuig.ie

Biomedical Diagnostics Institute

Director: Prof Brian MacCraith

Web: www.bdi.ie

ICT Centres



Digital Enterprise Research Institute

Director: Prof Stefan Decker

Web: www.deri.ie

Centre for Research on Adaptive Nanostructures & Nanodevices

Director: Prof John Boland

Web: www.crann.tcd.ie

Irish Software Engineering Centre

Director: Prof Kevin Ryan

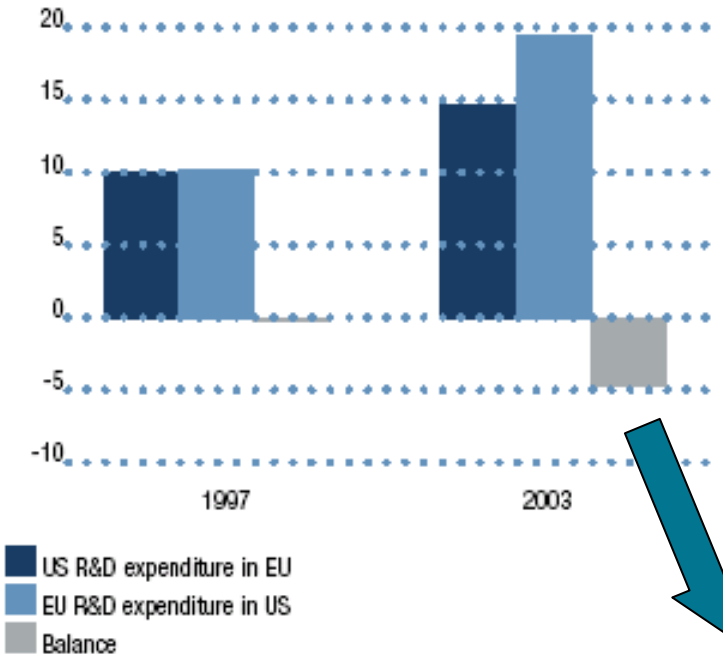
Web: www.lero.ie

In the global economy there has to be a reason for the choice of location for an enterprise

And BERD is becoming increasingly mobile….and flowing AWAY from the EU!

Figure 9

R&D expenditure flows between the EU-15 and the US, 1997 and 2003 (billion PPP$)

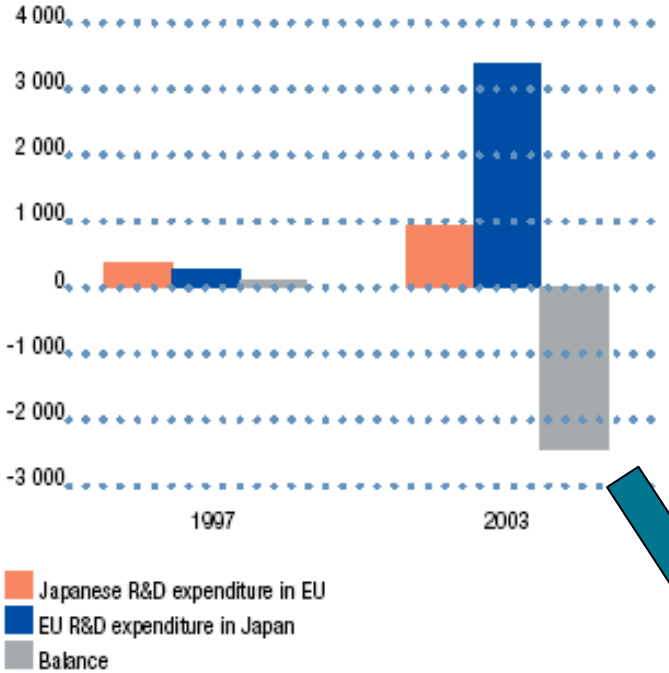


Source: DG Research
Data: OECD
Note: R&D Expenditure by affiliates of foreign parent companies.

EU BERD 'outflow' to US

Figure 11

R&D expenditure flows between the EU-15 and Japan, 1997 and 2003 (million PPP$)



Source: DG Research
Data: OECD
Note: R&D expenditure by affiliates of foreign parent companies; these figures may be influenced by the merger between Renault and Nissan in 1999.

EU BERD 'outflow' to Japan

What must Europe offer high tech knowledge intensive industries to retain and attract them here?

- **Proximity to market**
- **Language**
- **Cultural compatibilities**
- **Skilled workforce**
- **Top quality infrastructure**
- **Top quality research groups**
- **Supportive financial structure**
  - Tax regime
  - R&D credits
  - State aid rules
  - Procurement

within Governments remit

When these are fulfilled, private investment will follow and with it economic growth

BERD 'outflow' will cease, BERD growth will commence & the 2% goal can be achieved