



MANUFUTURE'2007

Constructing a Sustainably
Competitive Europe

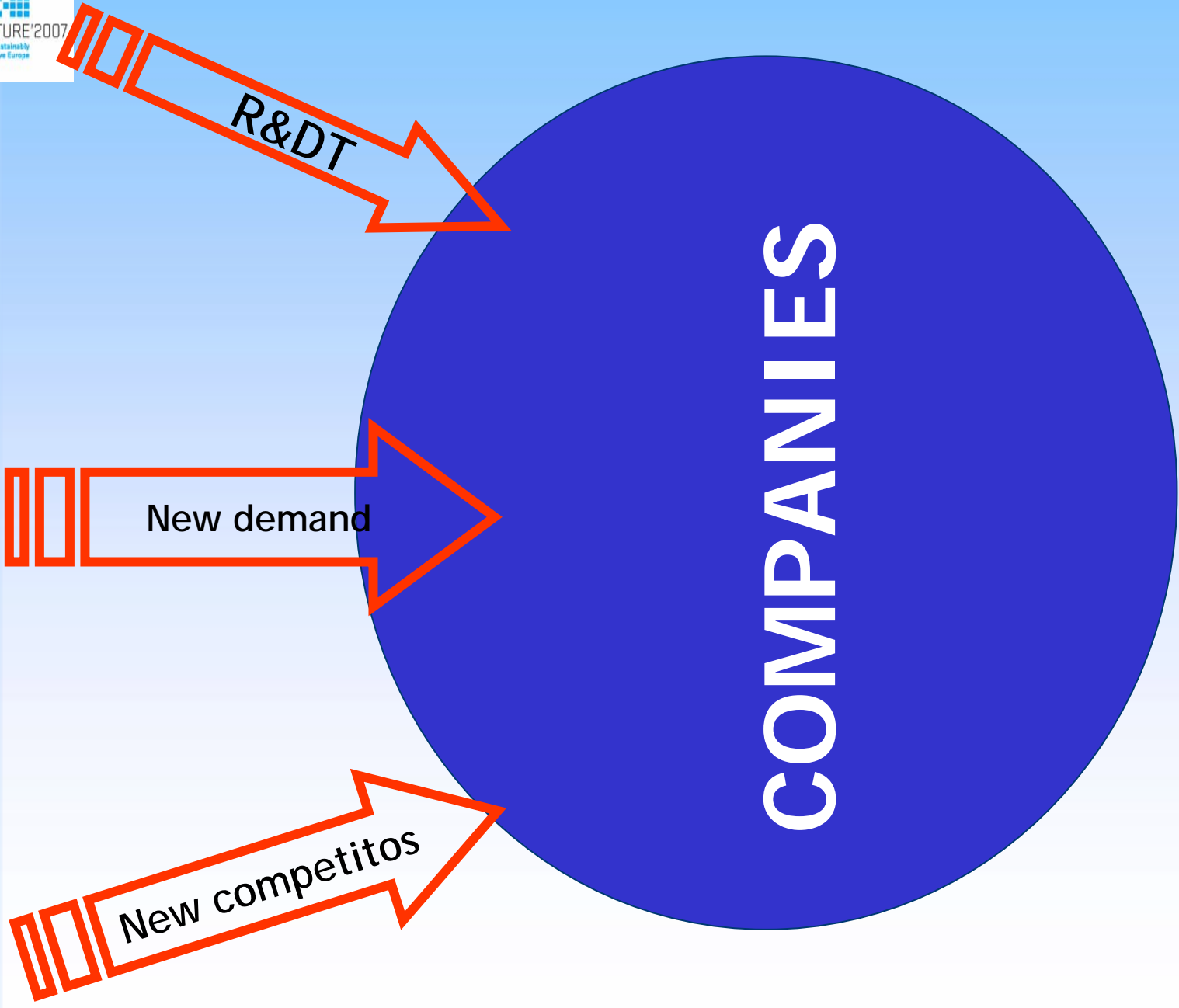
FINANCING KNOWLEDGE BASED INNOVATION

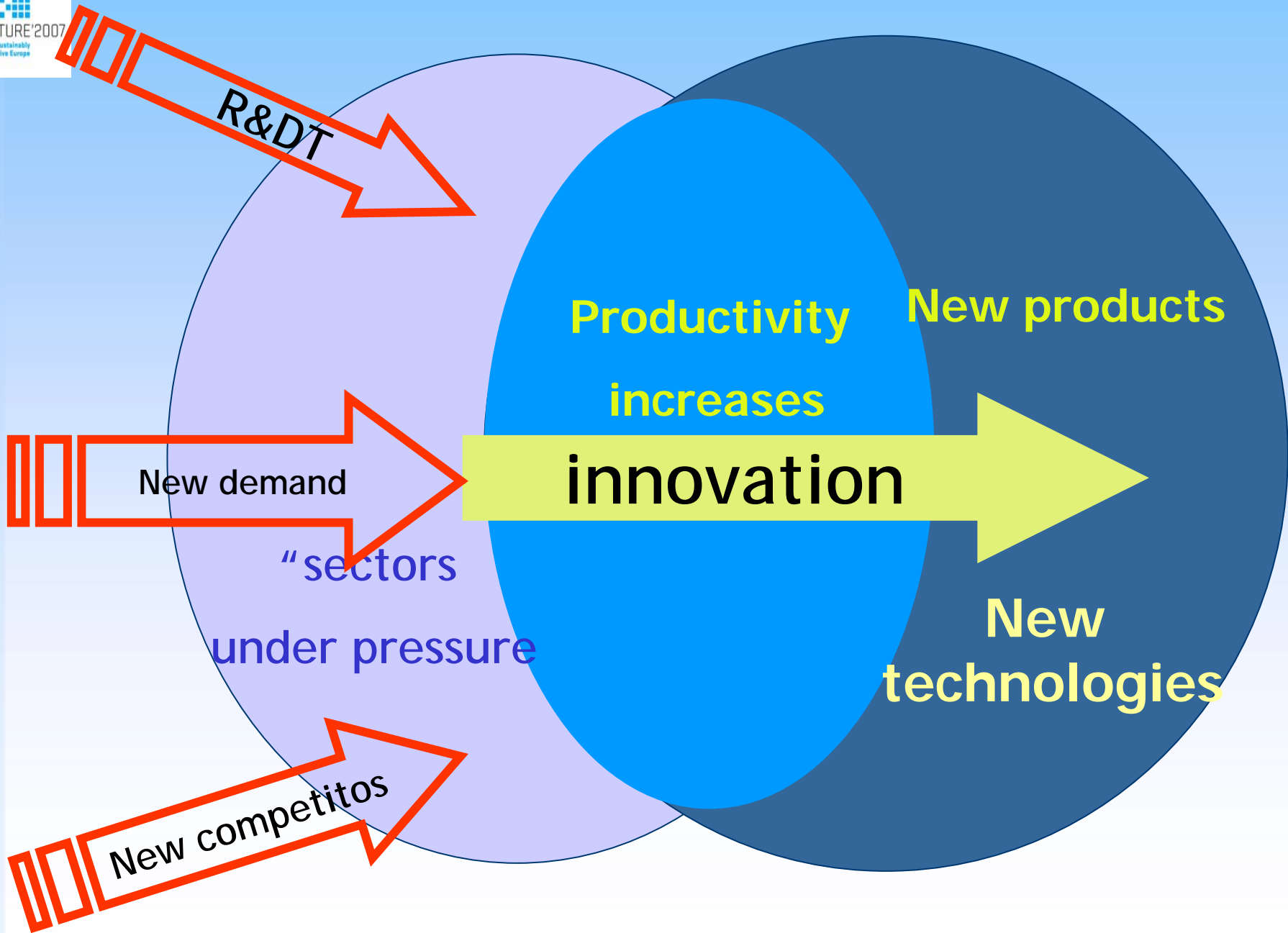
Carlos S. Costa

Vice- President

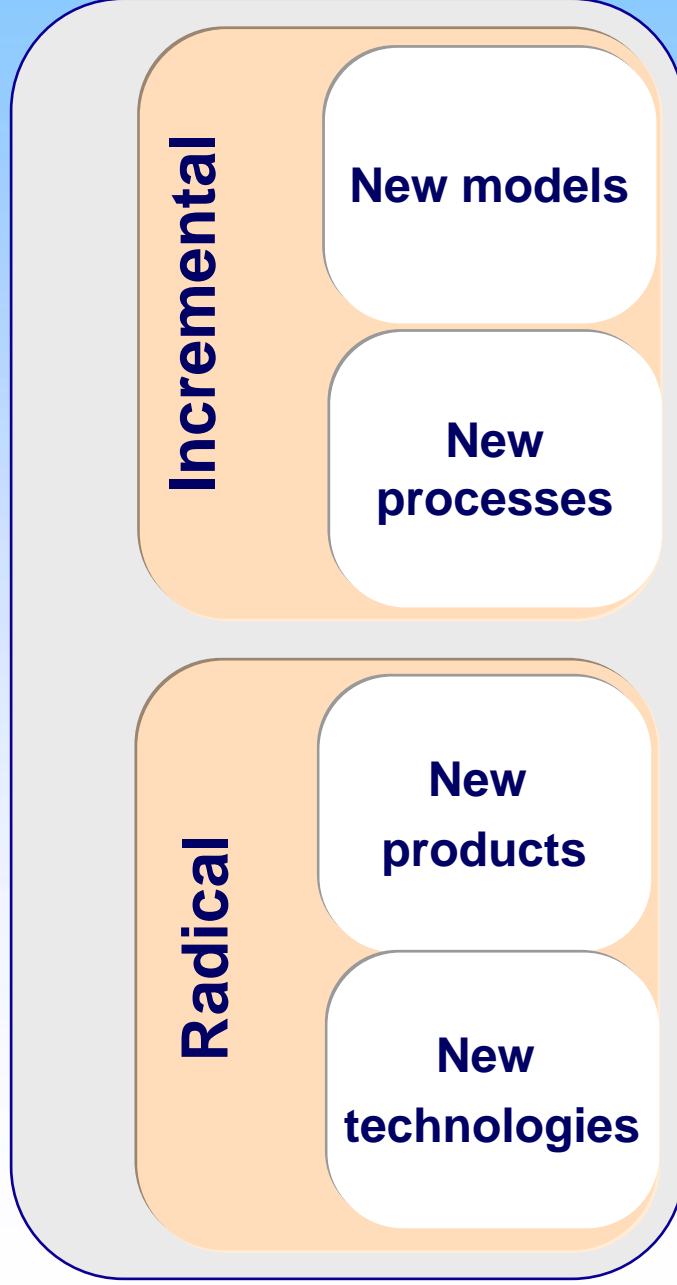
European Investment Bank

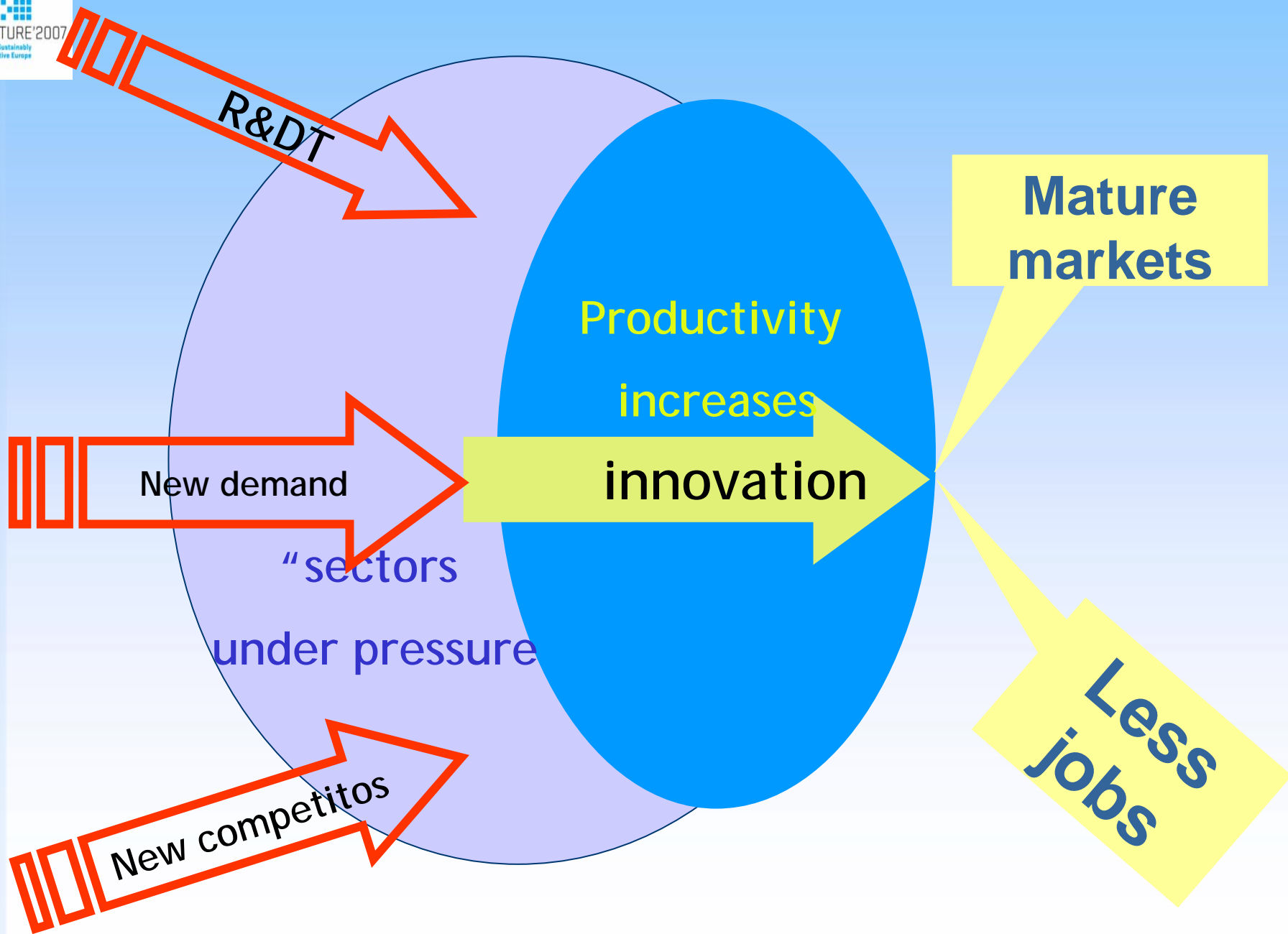
Porto, 3 December, 2007



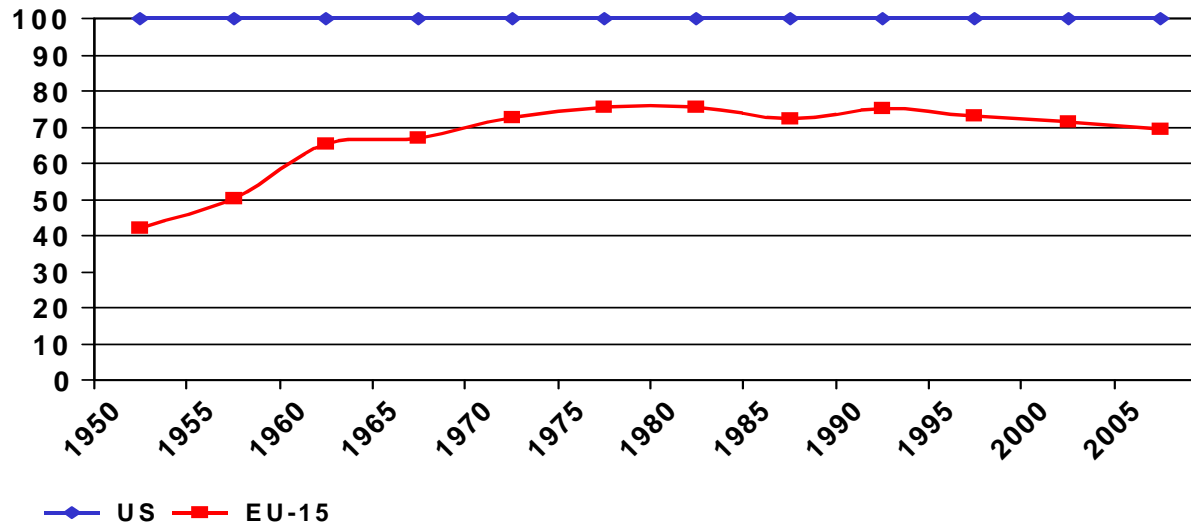


Innovation





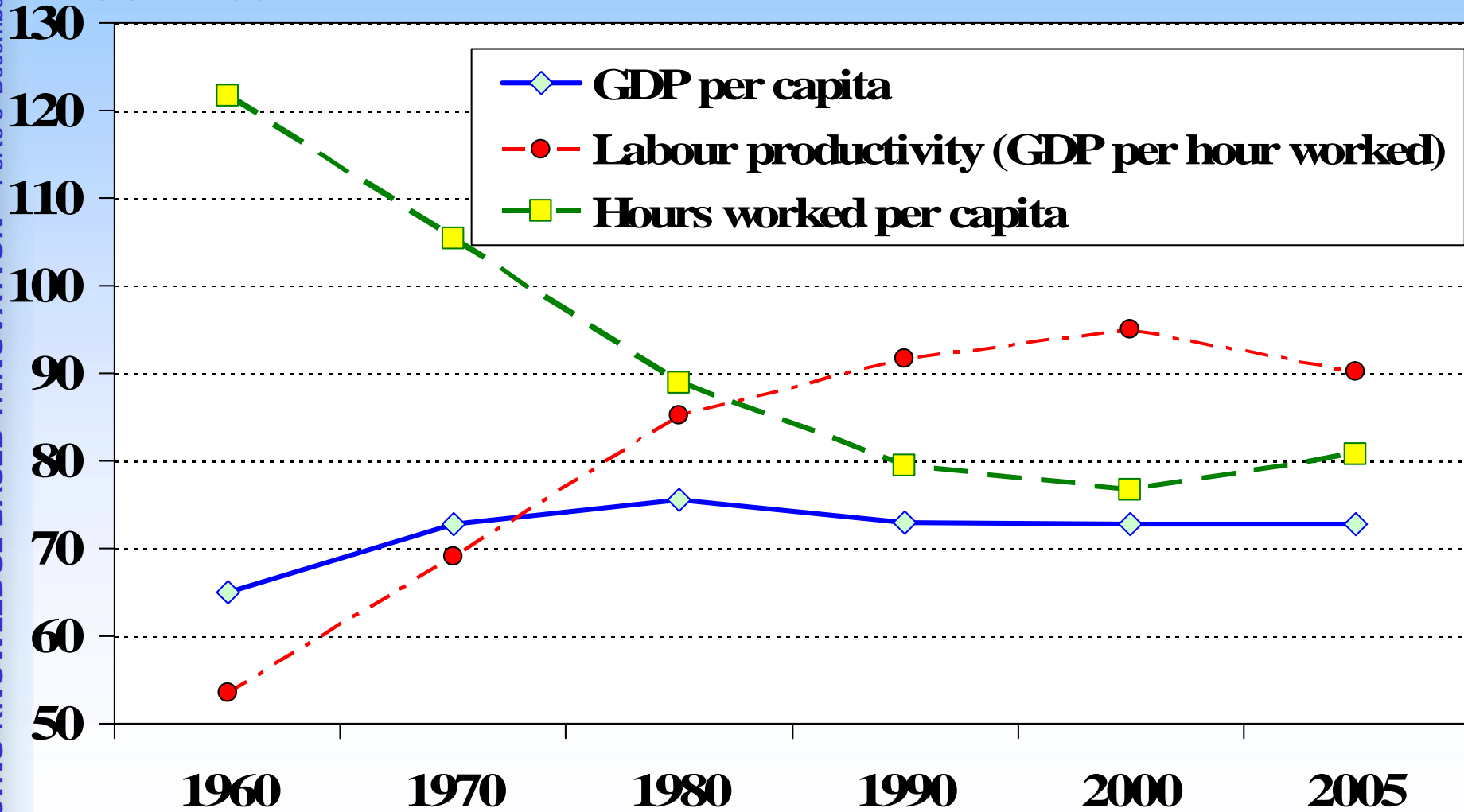
GDP per capita (USA=100)



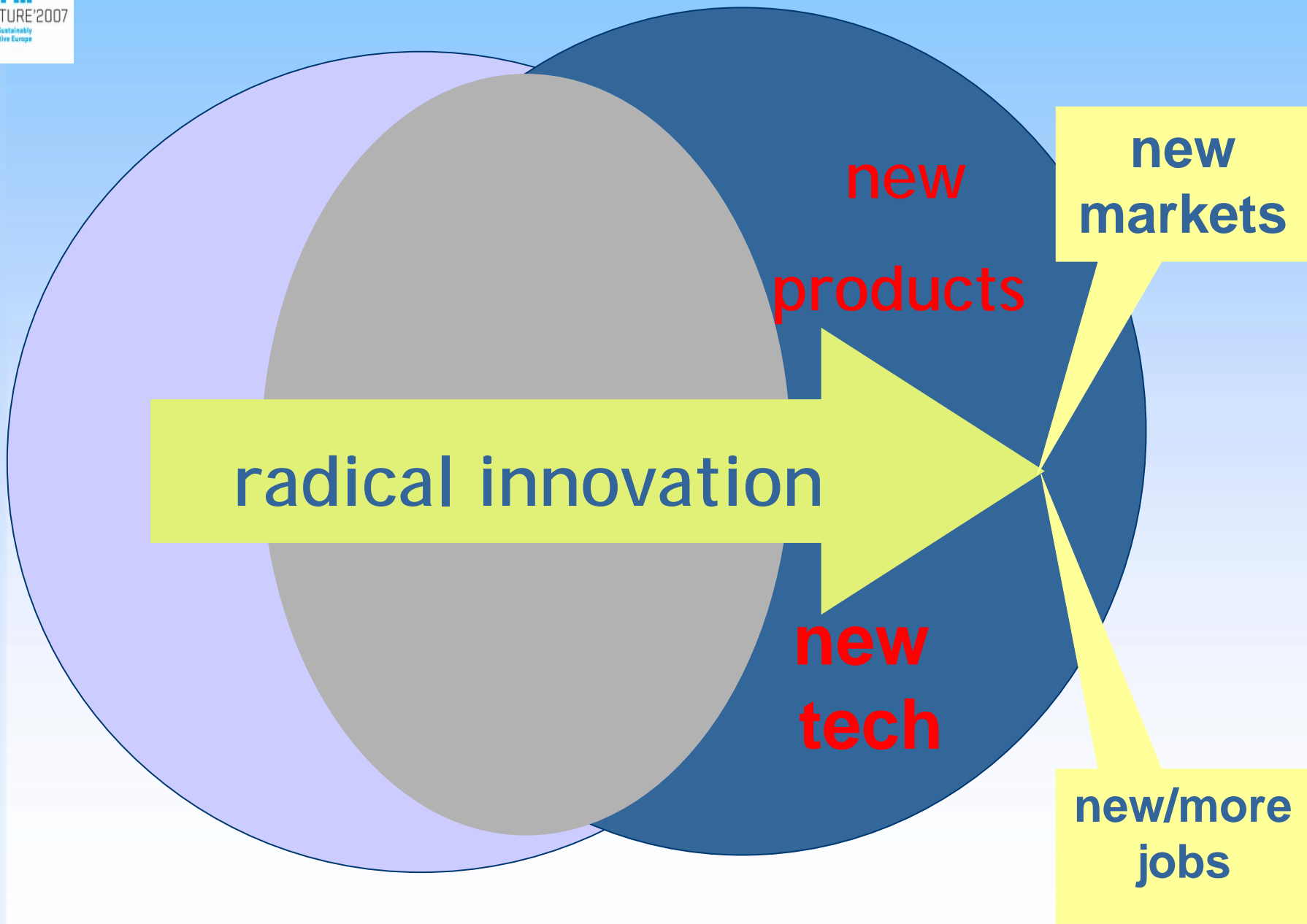
Source: European Commission

EU vs US: GDP, productivity and hours worked

USA=100

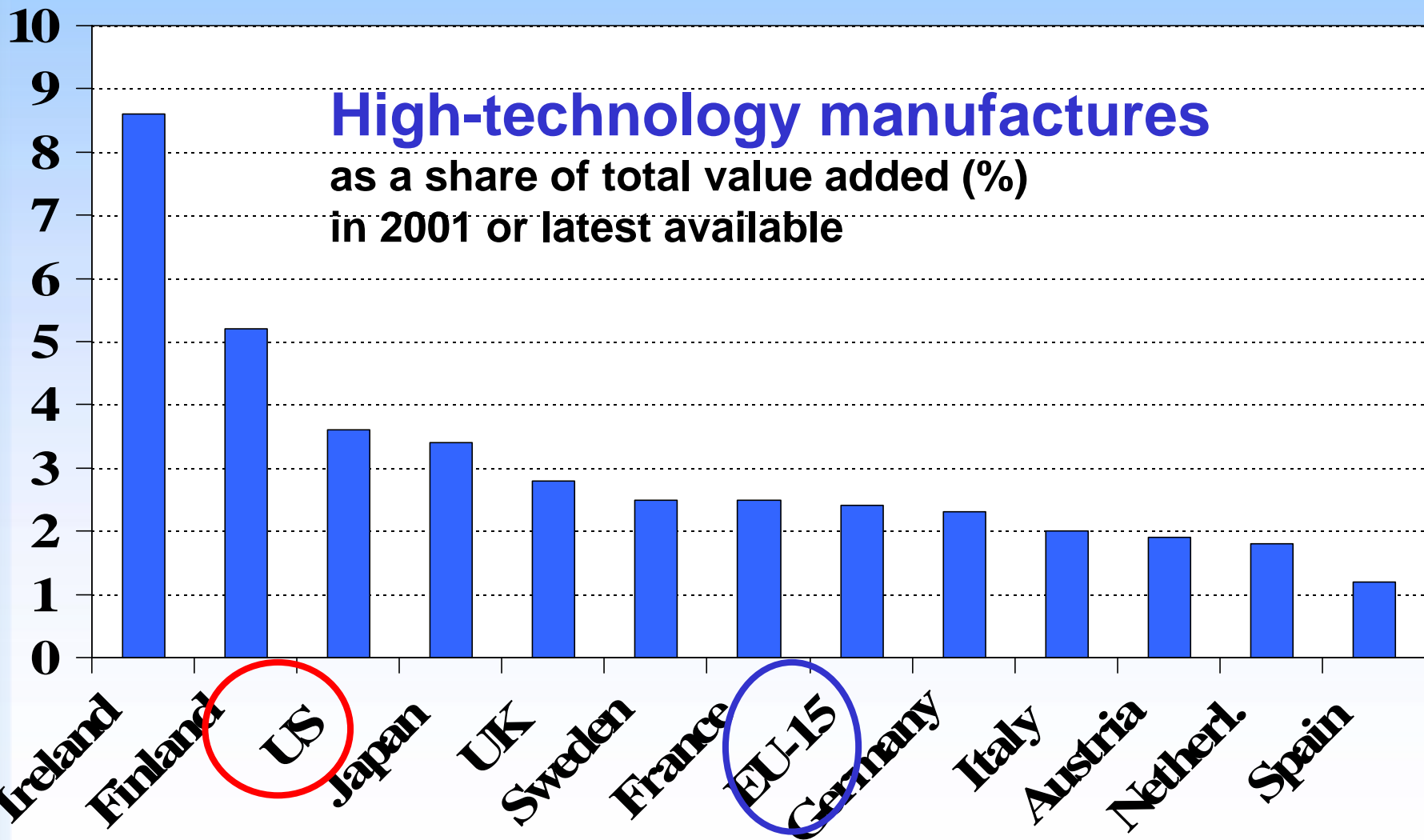


Source: Source: European Commission (AMECO) and Groningen Growth and Development Centre and the Conference Board

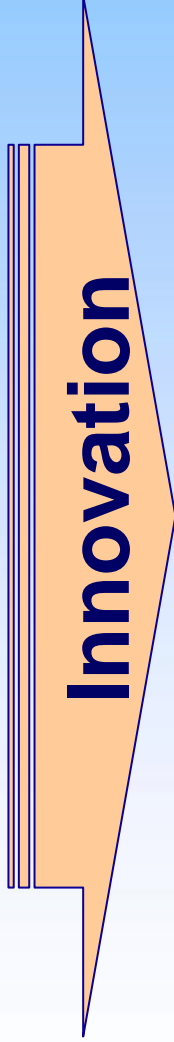




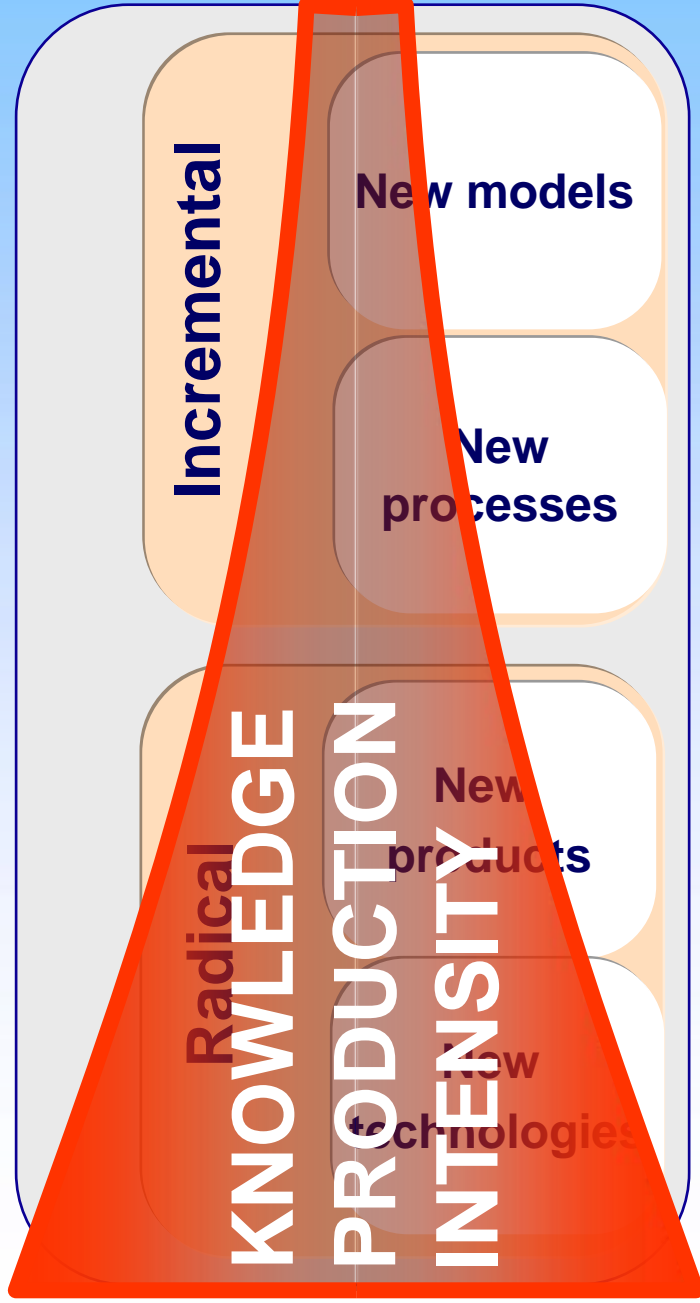
Share of high-tech manufactures



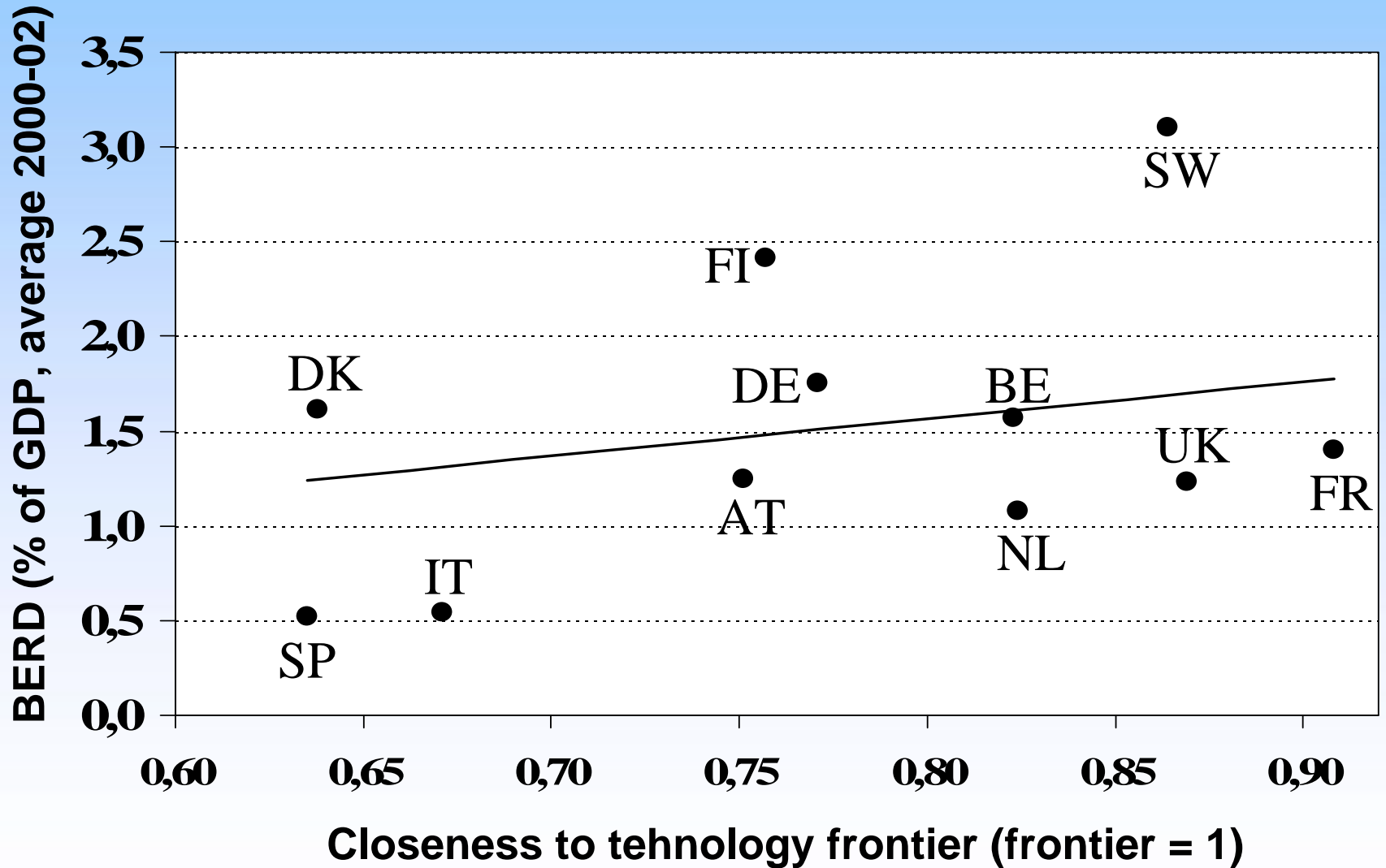
Source: OECD Science and Technology Outlook 2004



Innovation



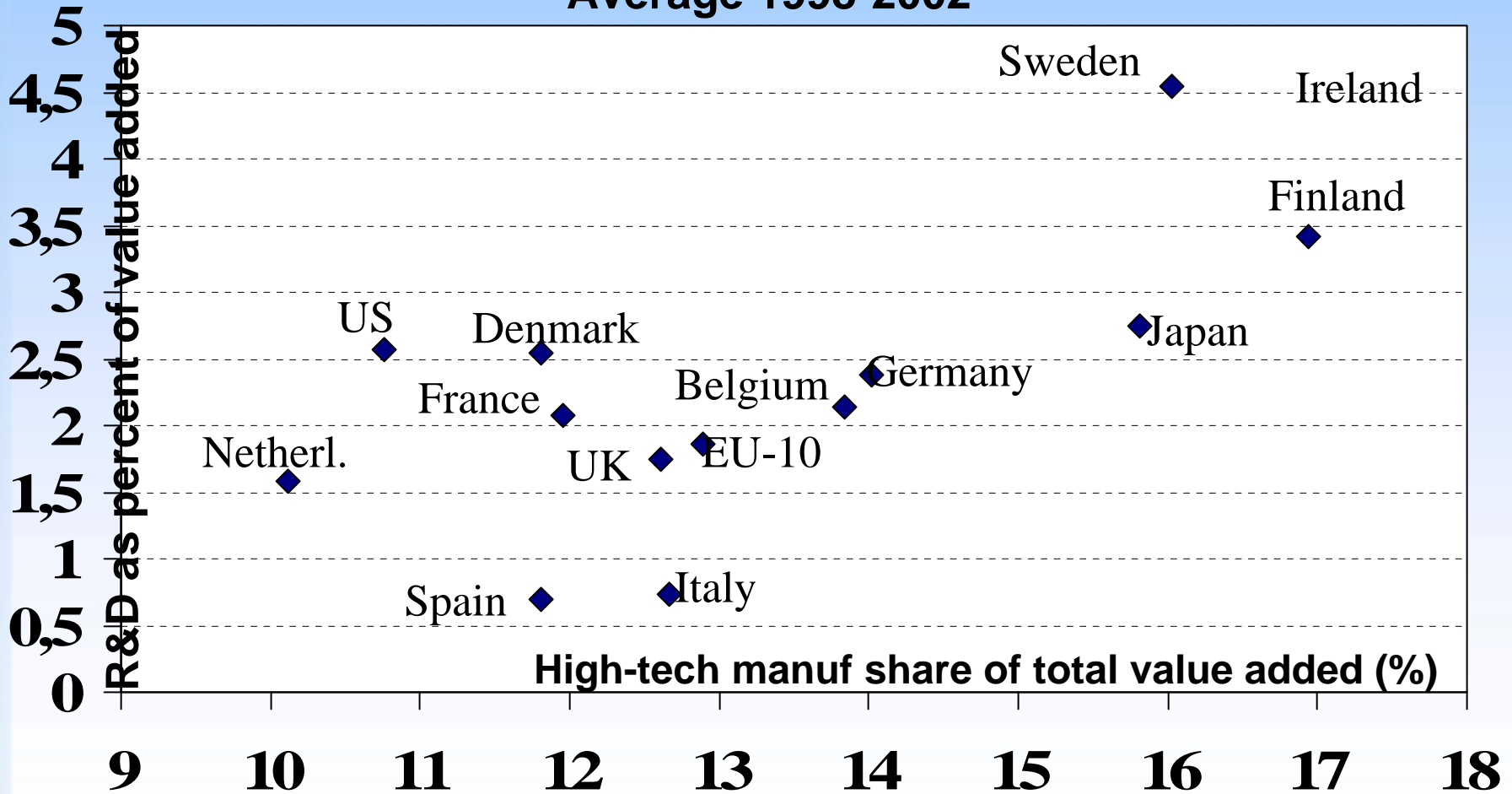
More R&D closer to frontier



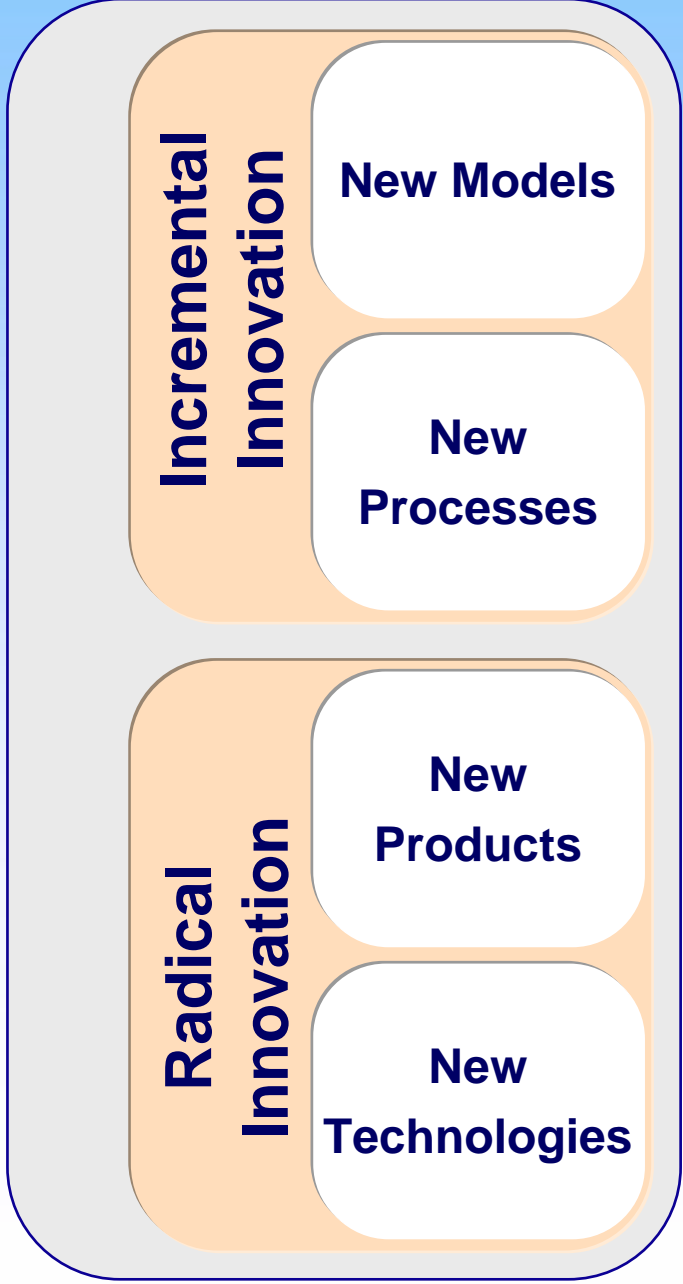
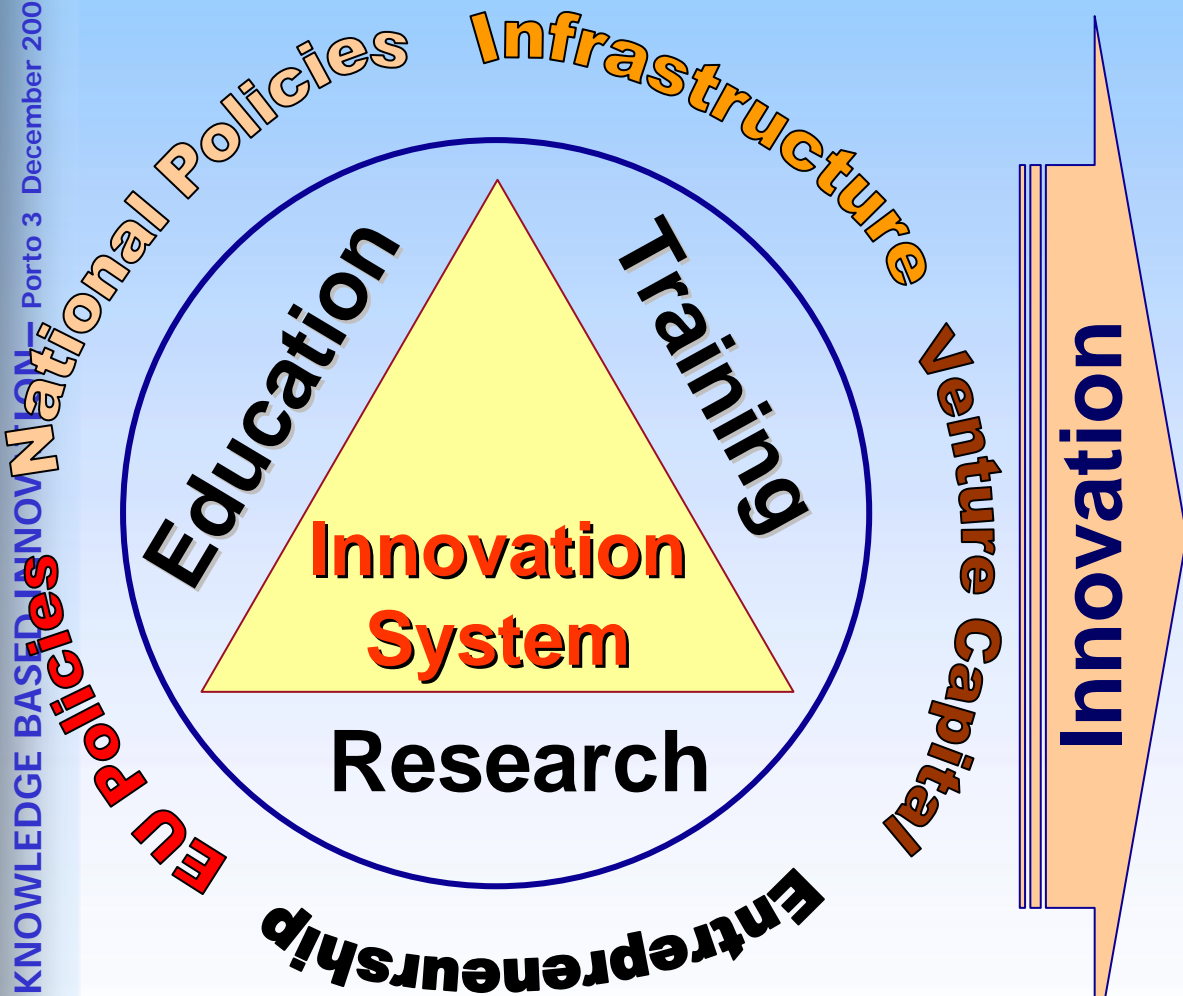
Sources: OECD; Gual, J. and S. Jodar (2006) "Vertical industrial policy in the EU", EIB Papers.

High-tech manufacturers also have higher R&D intensities

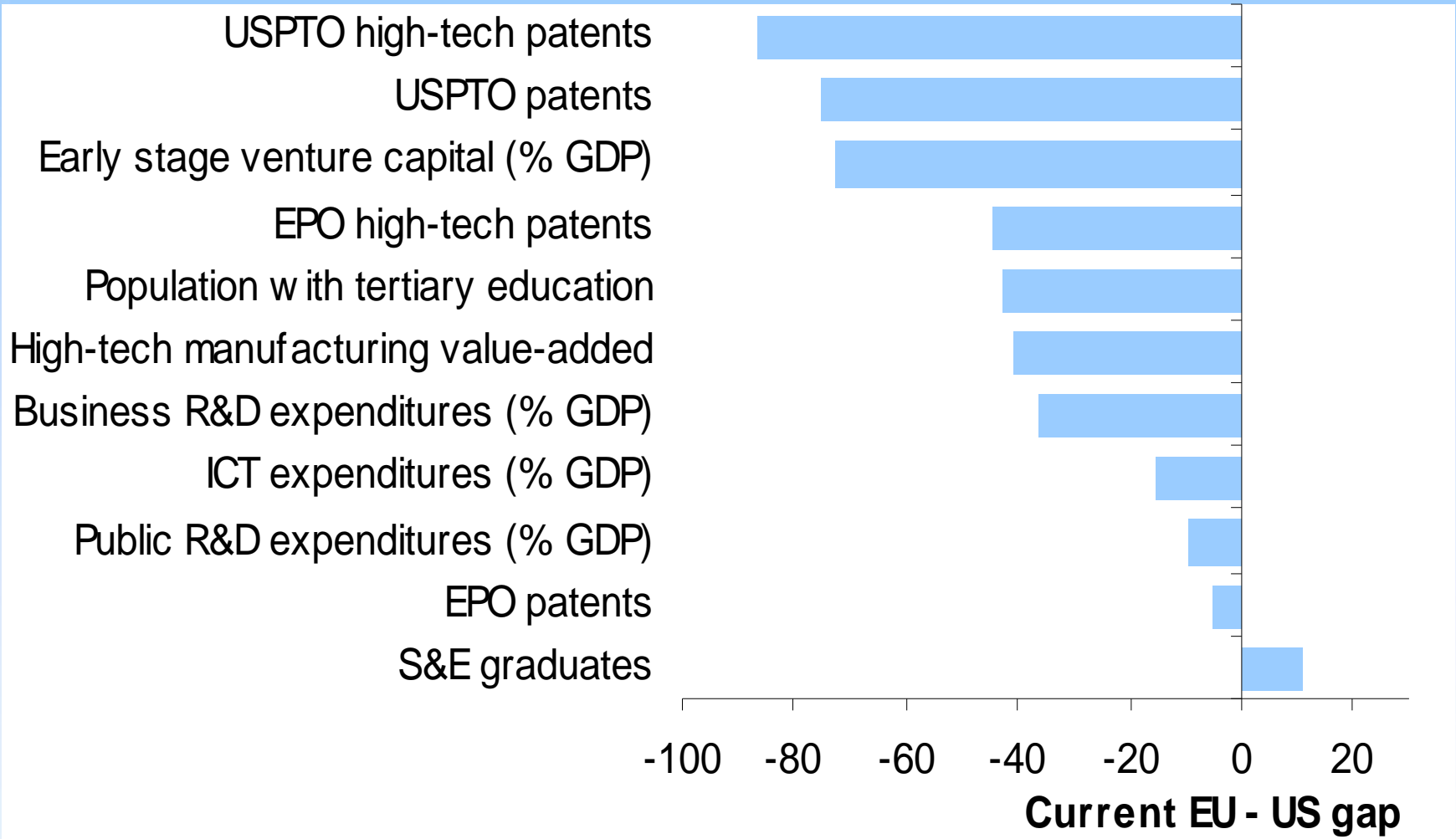
Average 1998-2002



Source: OECD



The EU / USA innovation gap





Six Main Categories of Measures

- ◆ Research and Development
- ◆ Education
- ◆ Training of the Labour Force
- ◆ Diffusion of new technologies
- ◆ More competitive markets
- ◆ Financial instruments



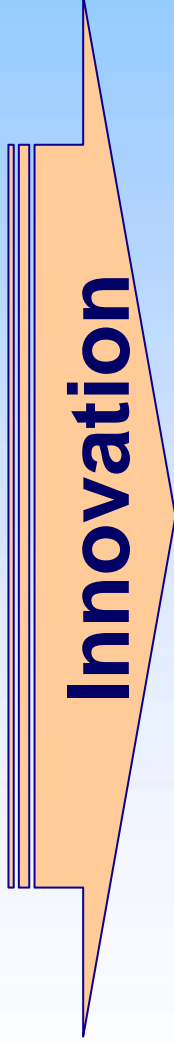
Six Main Categories of Measures

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- ◆ **Financial instruments**

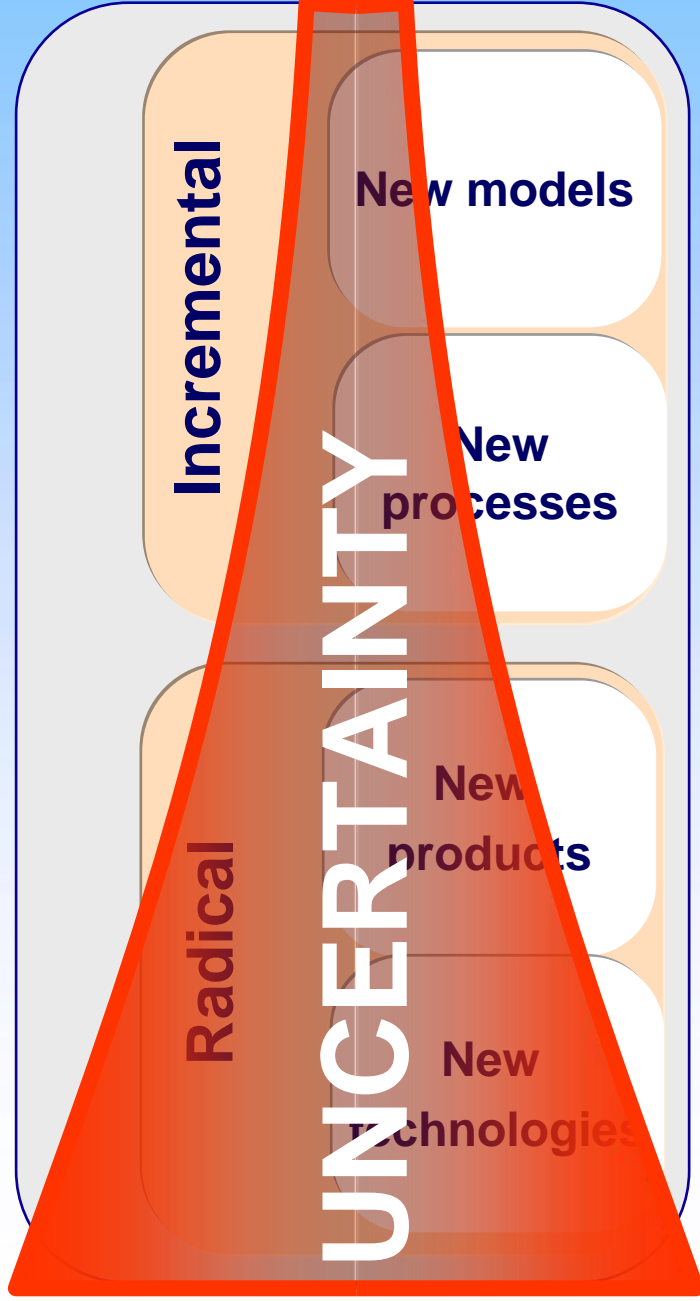


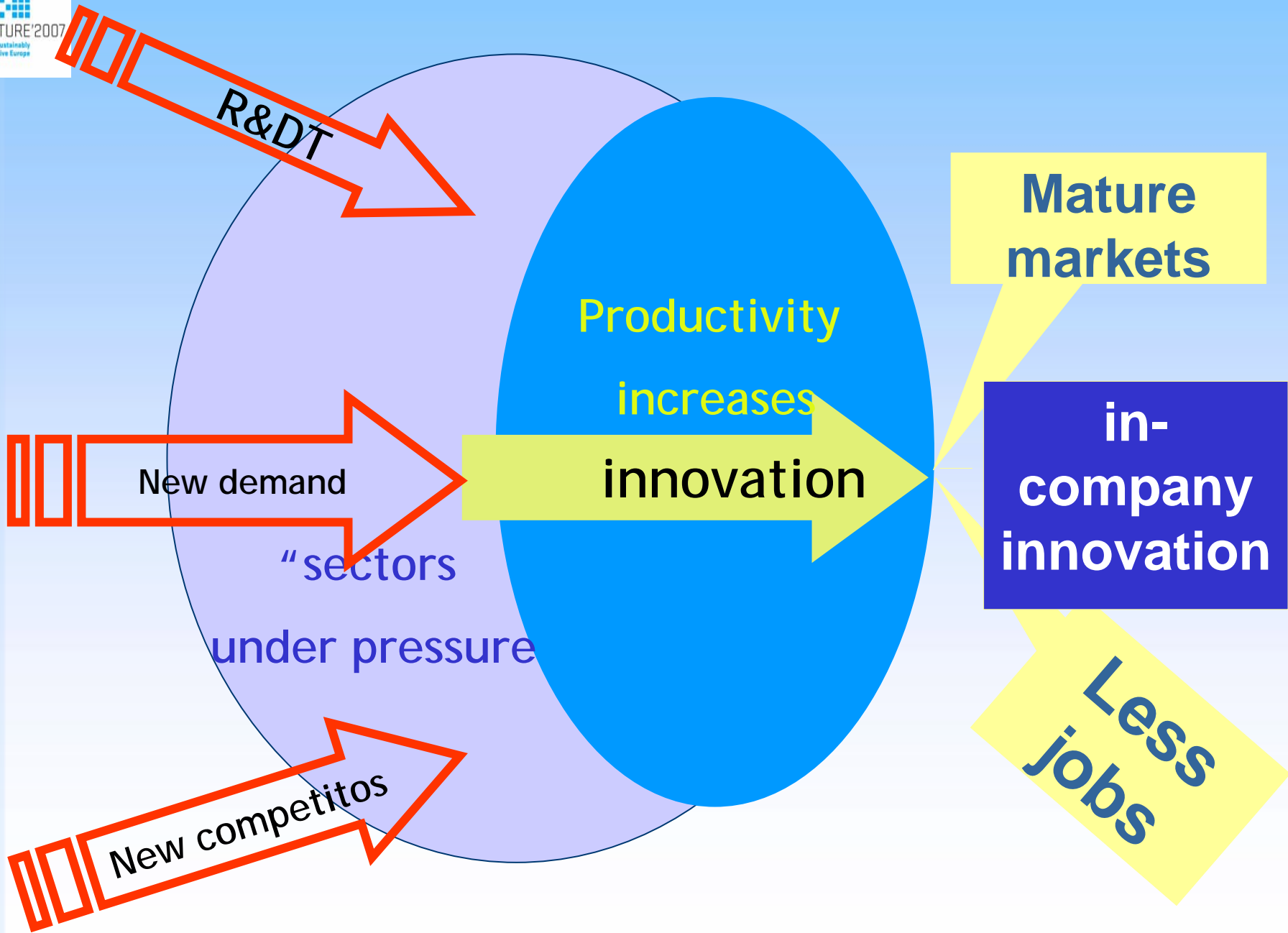
FINANCIAL INSTRUMENTS FOR RDI

- ◆ **Grants**
- ◆ **Loans**
- ◆ **Mezzanine loans**
- ◆ **Seed capital**
- ◆ **Venture capital**
- ◆ **Garantees**



Innovation





Financing incremental innovation

An existing company

- with a track record
- provided with own funds
- with capacity
 - to collateralize loans
 - to go to capital market
- A known market
- A tacit knowledge
- A basic technology that is already mastered

The obstacles

- The size of the company and the own funds versus
- The financial risk of the incremental innovation



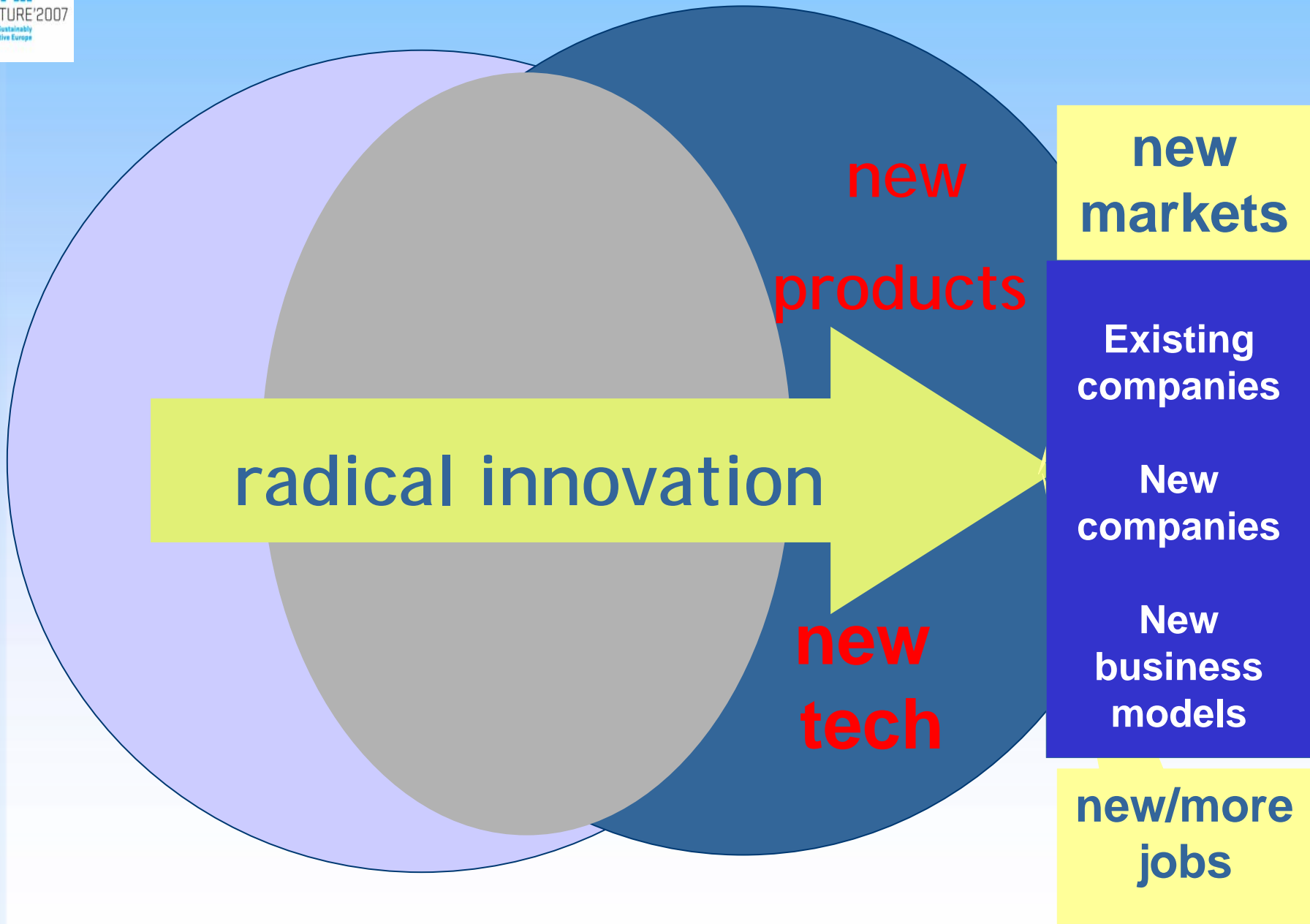
Financing incremental innovation

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BANKABLE

The obstacles

- The size of the company and the own funds versus
- The financial risk of the incremental innovation



**new
markets**

**new
products**

**Existing
companies**

radical innovation

**New
companies**

**new
tech**

**New
business
models**

**new/more
jobs**



FINANCING RADICAL INNOVATION

Existing companies

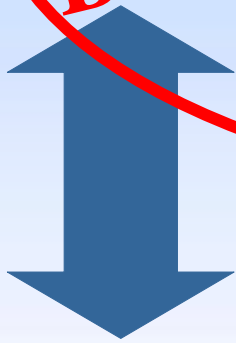
- Vision
- Adequate skills (knowledge centers)
- Organisation
- R+D+I Budget
- Network
- Dimension (capacity do accomodate a project failure)
- Corporate culture

Start-ups

- Capacity to identify the new knowledge economic value
- Management skills
- Capital needs
- Uncertainty
- Lack of colaterals

FINANCING RADICAL INNOVATION

Existing
companies



Start-ups

Bankable for largest companies
CORPORATE RISK

- Vision
- Adequate skills (knowledge centers)
- Organisation
- R&D Budget
- Network
- Dimension (capacity do accomodate a project failure)
- Corporate culture

Capacity to identify the new knowledge economic value

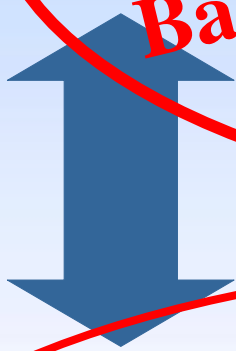
- Management skills
- Capital needs
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FINANCING RADICAL INNOVATION

Existing
companies

Bankable for largest companies

- Vision
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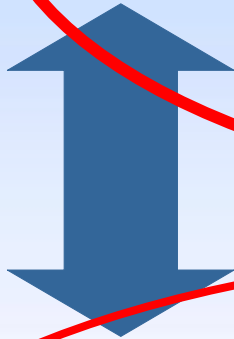
Start-ups

Non bankable

- Capacity to identify the new knowledge economic value
- Management skills
- Capital needs
- Uncertainty
- Lack of colaterals

FINANCING RADICAL INNOVATION

Existing
companies



Start-ups

- Vision
- Adequate skills (knowledge centers)
- Organisation
- Budget
- Network
- Dimension (capacity do accomodate a project failure)
- Corporate culture

**Bankable
for largest companies**

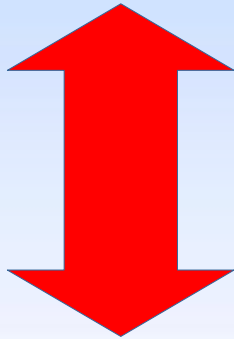
- Capacity to identify the new knowledge or economic value
- Management skills
- Capital needs
- Uncertainty
- Lack of colaterals

**Need of new financial
instruments**



FINANCING RADICAL INNOVATION

**Existing
companies**



Start-ups

- Vision
- Adequate skills (knowledge centers)
- Organisation
- R+D+I Budget
- Network
- Dimension (capacity do accomodate a project failure)
- Corporate culture

- Capacity to identify the knowledge economic value
- Management skills
- Capital needs
- Uncertainty
- Lack of colaterals

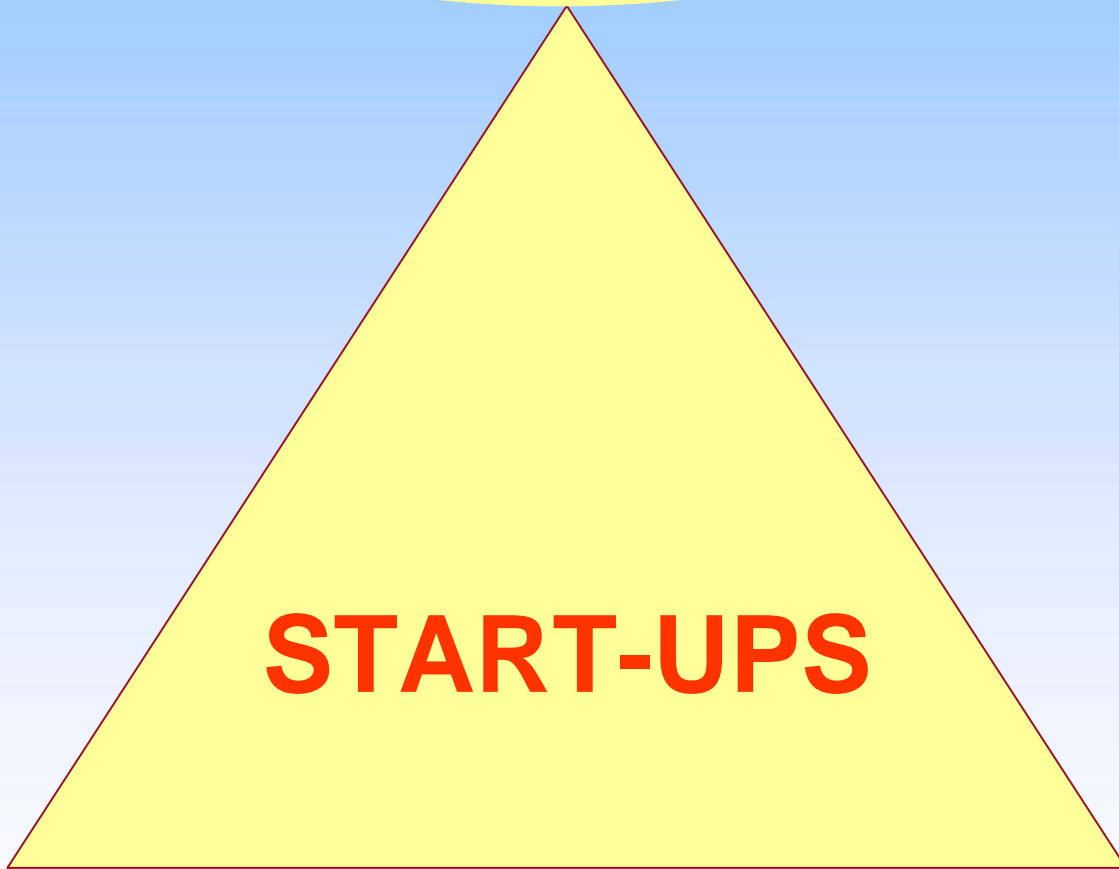


Entrepreneurship

START-UPS

Knowledge

Funding

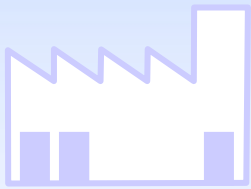
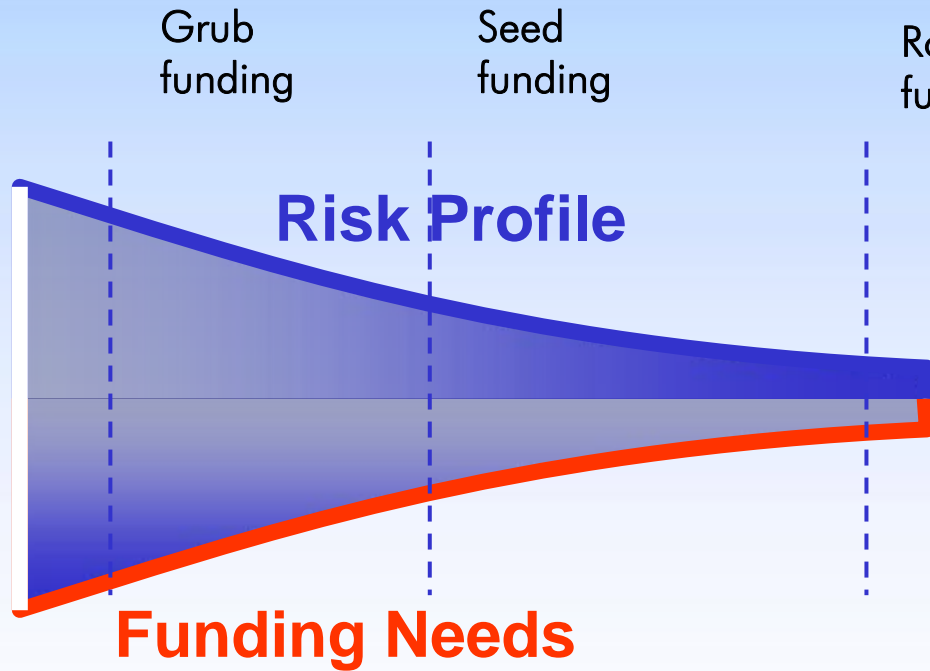


INNOVATION CHAIN FINANCIAL PROFILE RISK VS VOLUME NEEDS



Innovation in:

- labs
- universities
- research organisations



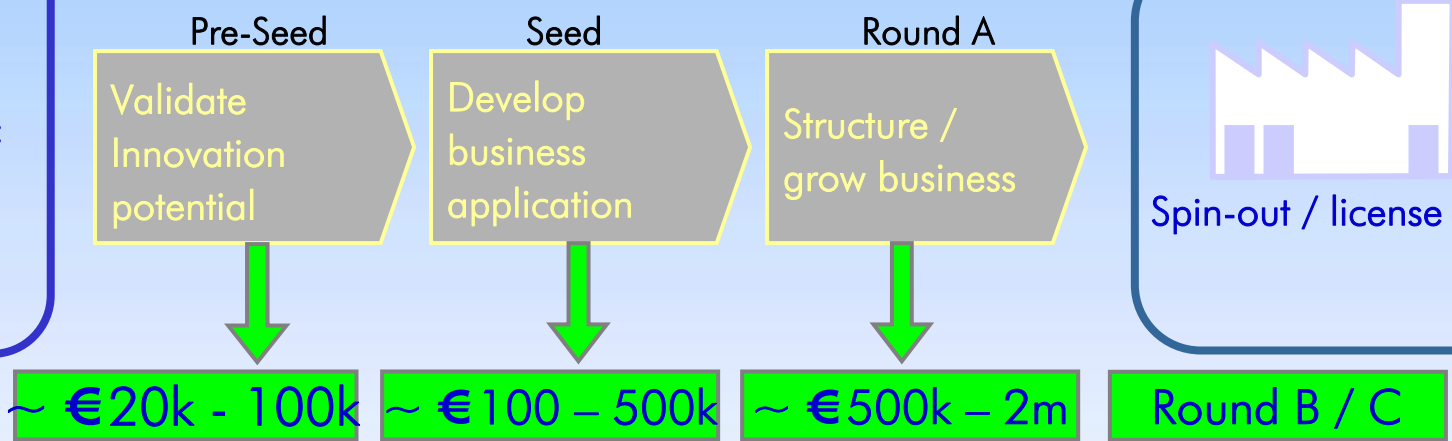
Spin-out / license

INNOVATION CHAIN FINANCIAL PROFILE

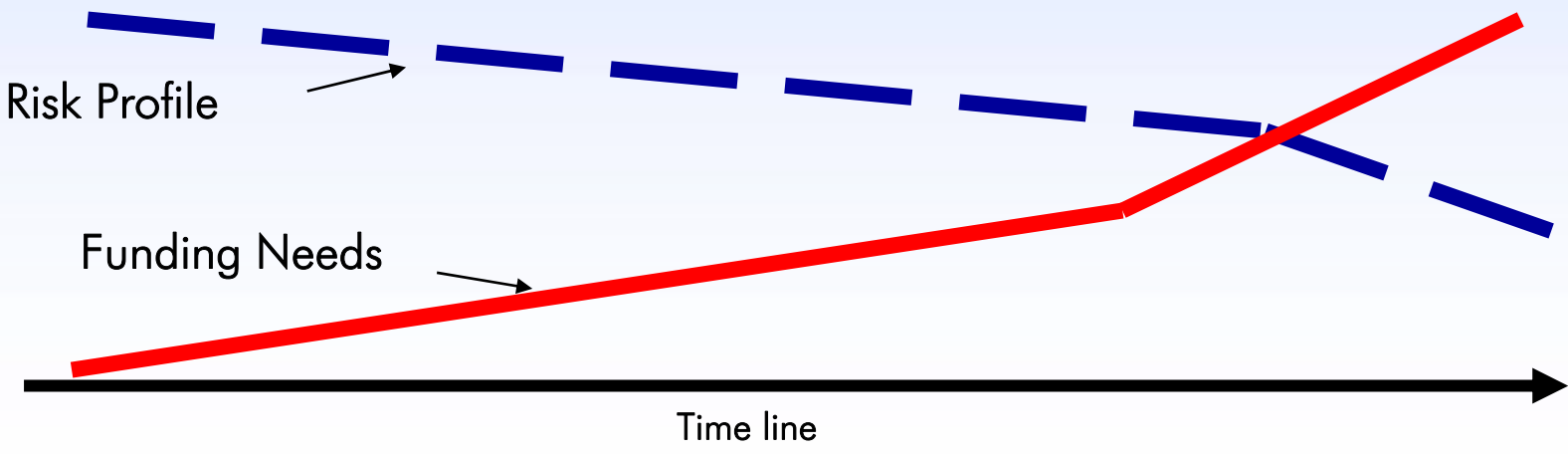
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Innovation in:
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- universities
- research organisations



Spin-out / license



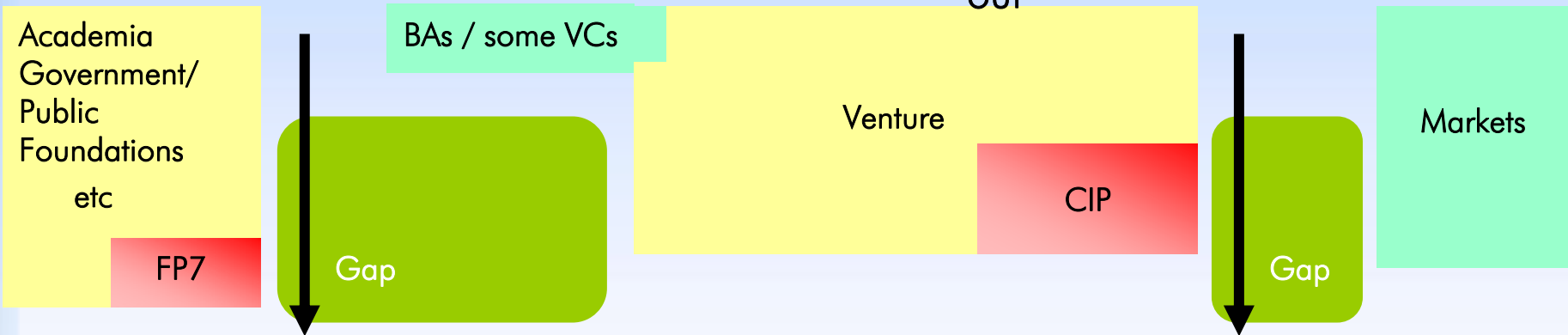
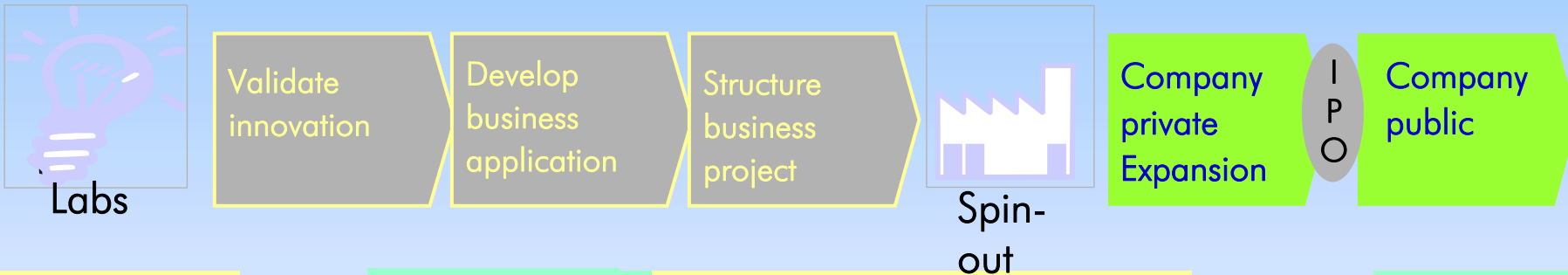
THE INNOVATION CHAIN

“institutional gap”

- ◆ Investment in knowledge generating activities are characterized by enormous uncertainties
- ◆ The specificity of each stage of the innovation chain
 - Different needs/problems
 - Different actors
 - Different balances among the different actors
 - Different governance and management requirements
- ◆ The need of institutions
 - ◆ adapted to each stage of the innovation process
 - ◆ and equipped with the skills needed to a market driven management
- ◆ **The need for**
 - ◆ **adequate financial instruments**
 - ◆ **and a consistent institutional framework**

INNOVATION CHAIN "GAPS"

The institutional and the organisation gaps



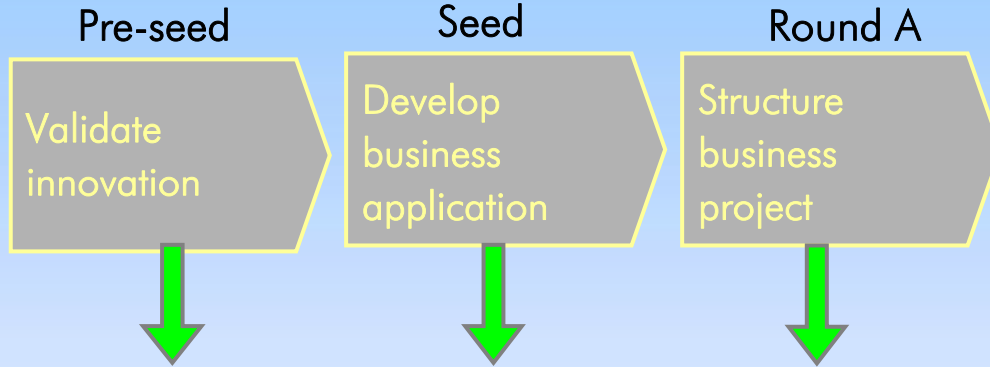

- Lack of adequate accessible management resources
- Risk return profile often not attractive for Venture
- Academia not equipped to cover this stage
- Not enough BAs in most continental EU

- Potential gap depending on market situation




Innovation in:

- labs
- universities
- research organisations

Spin-out / license

~ €20k - 100k ~ €100 - 500k ~ €500k - 2m Round B / C

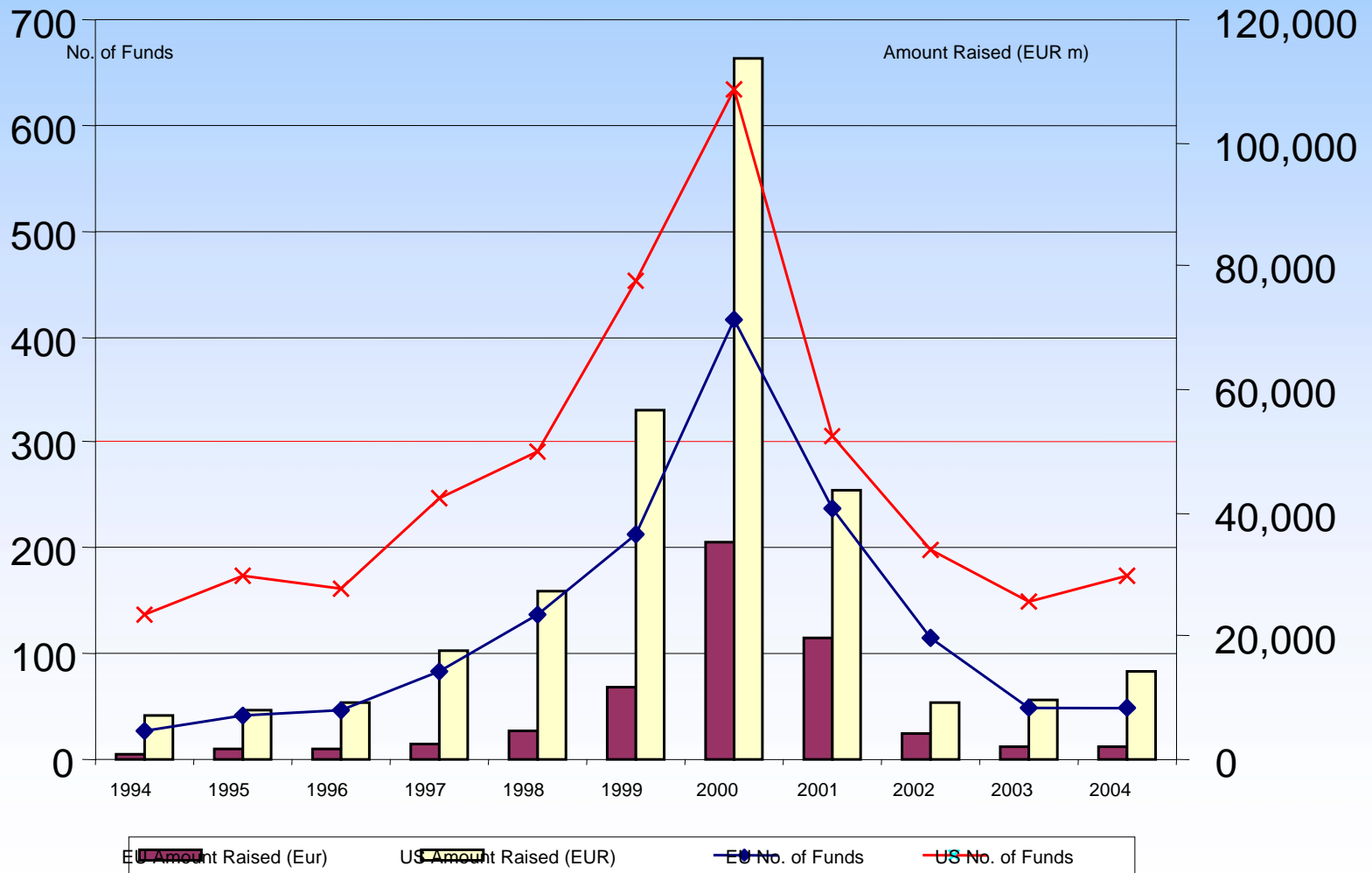
Activity

- Confirm innovation
- Initial patenting
- Identify potential commercial applications
- PCT filing
- Develop proof-of-concept / prototype
- Build embryo business plan
- Preliminary marketing
- Build founding team
- Create spin off
- Marketing evaluation and validation
- First contracts
- Build management
- Develop operations
- Develop marketing and sales

Actors

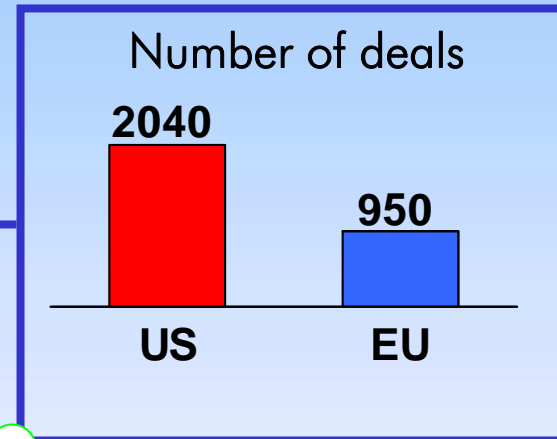
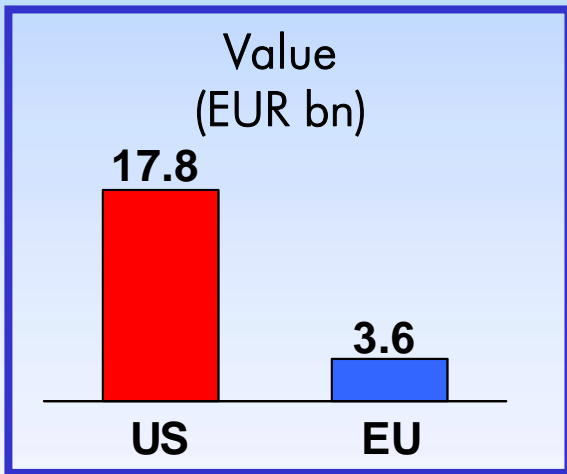
- RI
- National grant systems
- Captive seed fund
- Business angels
- 3F's (family, friends, fools)
- Business angels
- Contracts
- Some VCs
- VCs
- Industry

European VC/US Funds Raised 1994 to 2004

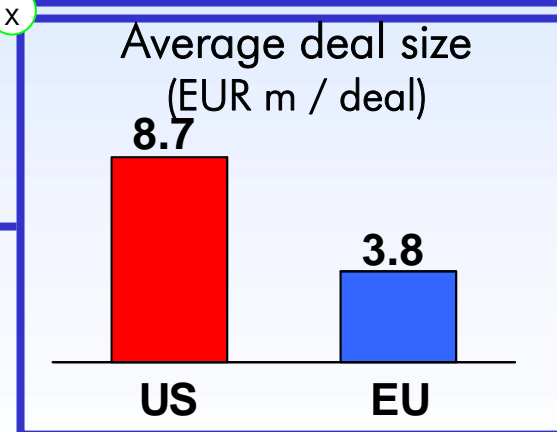


Investments in VC-backed industries US vs Europe, 2005

FINANCING KNOWLEDGE BASED INNOVATION— Porto 3 December 2007



x



EU is under-performing the US in terms of number of deals and size of deals, despite the fact that EU has the World's largest Economy

Inefficiency in Tech Transfer a major issue for the seed funding gap

1. Mixed results of tech transfer initiatives

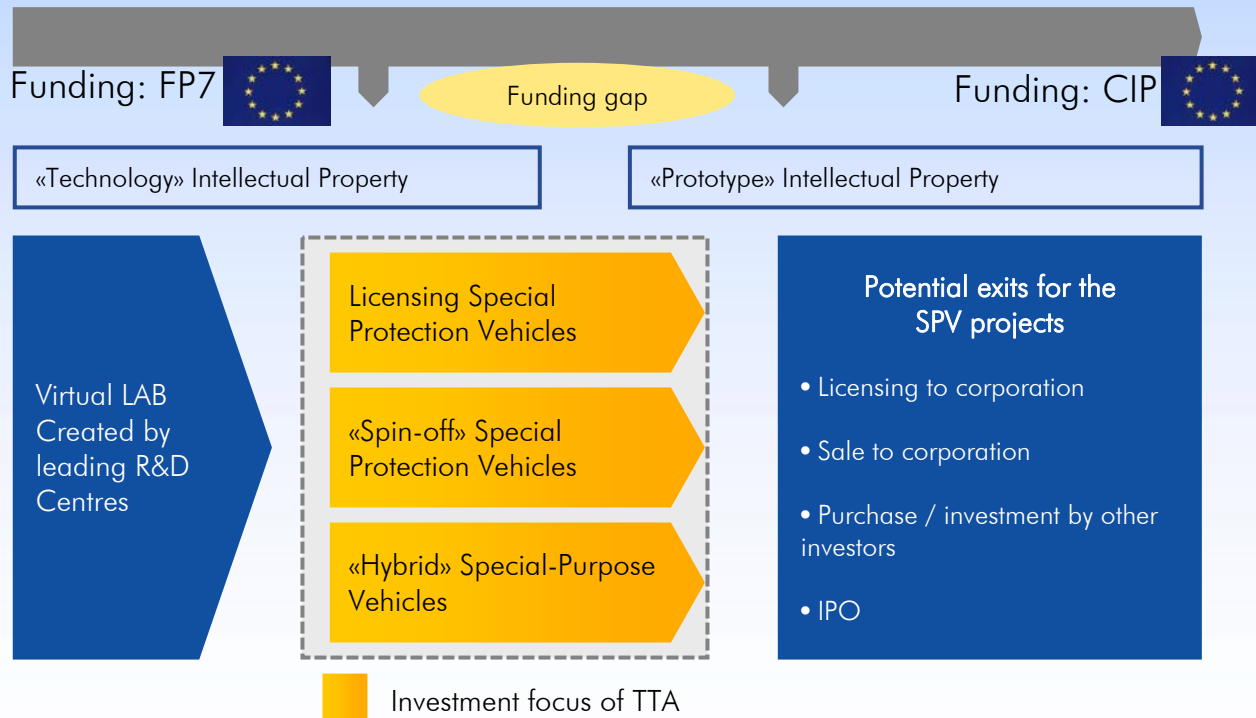
- Small “(semi-) captive” seed funds often unsatisfactory
- Many initiatives are sub-scale and lack critical mass
- Many universities struggling: technology transfer not their mission
- Most universities do not have the means to hire professional management
- Incubators have a mixed record

2. Venture often more suited to grow business rather than seed them

- Larger deals more attractive
- Milestone driven approach vs. need for flexibility
- Impaired decision-making as a result of syndication
- Fixed life time of funds

Technology Transfer

R&D Tech Transfer / proof-of-concept Marketable product

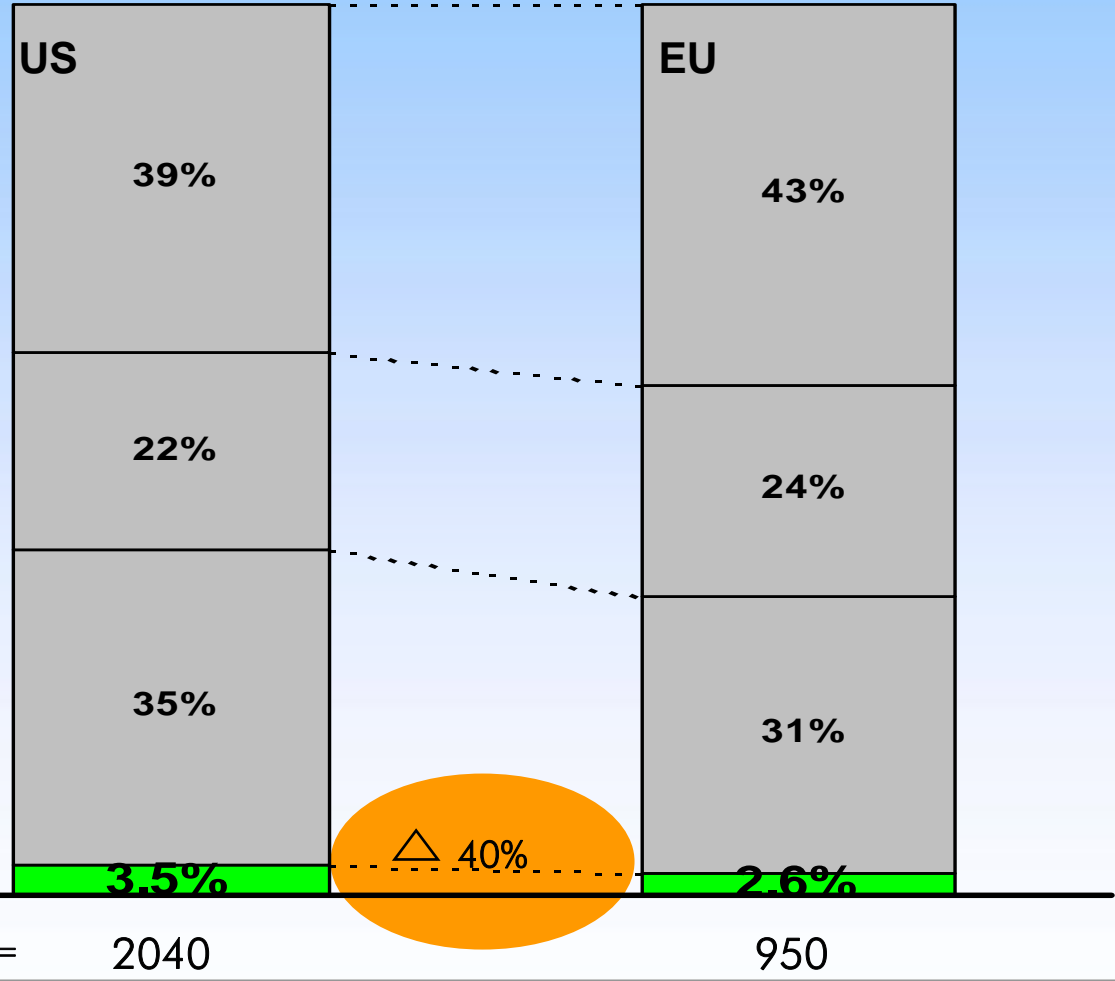
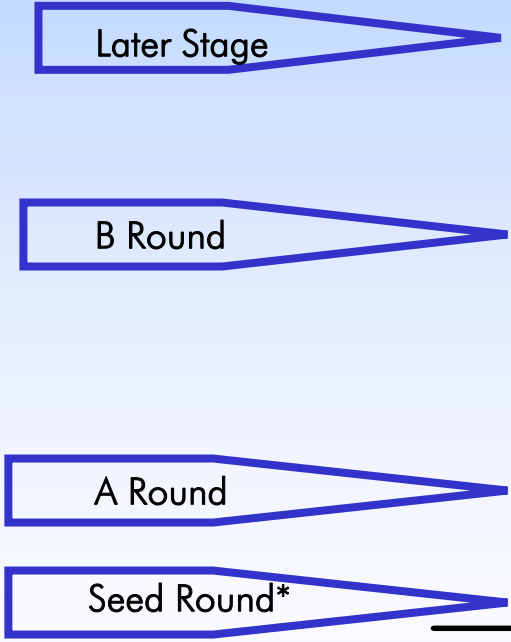


Provider of innovative solutions to VC constraints

Europe vs US seed deals

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Investments in VC-backed industries by round class (number of deals, 2005)



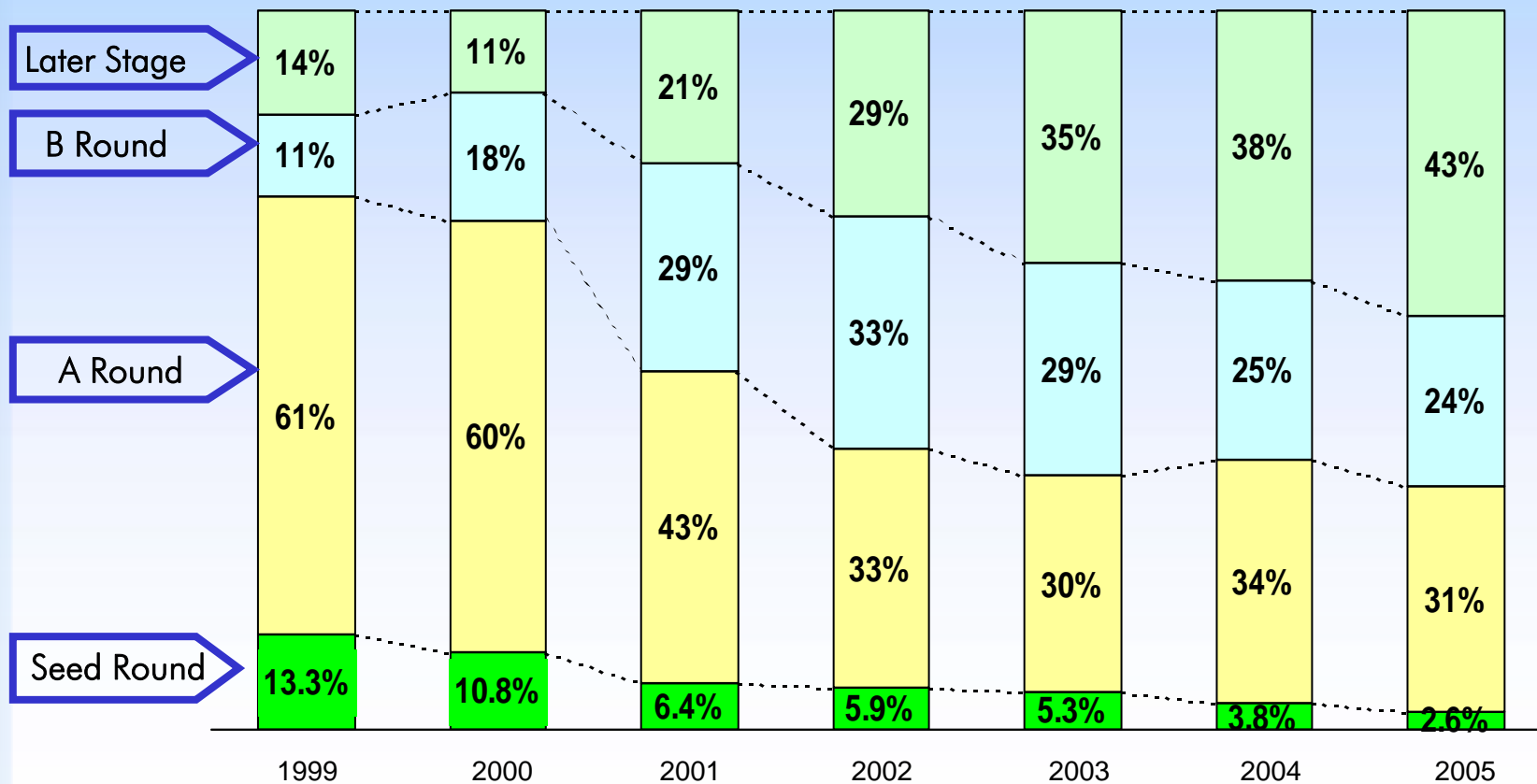
there are three times more seed deals in the US than in the EU

Source: Dow Jones VentureOne, E&Y 1Q2006

*Note: Pre-seed deals are not included in this data

Seed round crowded out by later stage rounds

Development of distribution of VC instrument per Stage over Time
 (1999-2005, EU; based on number of deals)



Source: Dow Jones VentureOne, E&Y 1Q2006



EIB: an active player in the process of making Europe more innovative and competitive

◆ Improved access to R&D and innovation (RDI) finance

- ◆ Financing promoters or projects qualifying for “investment grade” lending which are the main and “traditional” part of the EIB’s lending portfolio, including in the area of innovation
- ◆ Financing promoters or projects which, in order to invest in cutting edge R&D and innovative products, need to leverage their equity base through loans even if they may only qualify for **low or sub-investment grade lending**
 - dynamic “gazelle-type” start ups which rapidly outgrow the size where they could mainly rely on pure equity injection
 - mid-sized or family-owned companies which suffer from lack of access to (loan) capital markets;
 - SPV or PPP-type structures through which companies either outsource specific risks or cooperate with other private or public partners in innovative activities;
 - innovative SMEs which need a more ready access to loans in order to expand and thrive;
- ◆ Introducing new tools to finance projects and promoters that are not qualifying for “investment grade” lending
 - With the creation of the European Investment Fund, EIB has become a major player on the European venture capital scene financing the high tech start ups which need primarily venture capital.



The EIB's Innovation 2010 Initiative

- 1 Research and development
 - ◆ Research in the private sector
 - ◆ Centres of excellence and university groupings
- 2 Human capital
 - ◆ Improving school infrastructure and educational facilities (particularly in higher education)
 - ◆ Improving access to education and life-long learning
- 3 Diffusion of new information and communications technologies
- 4 Support for innovative SMEs by injecting venture capital via the European Investment Fund (EIF)

The EIB's Innovation 2010 Initiative

- ◆ represents a dedicated lending priority with a specific lending objective
 - By the end of this year, EIB lending under i2i shall reach
 - 42 billion (approved loans already today exceed 52 billion).
 - more than 300 loan operations
 - throughout practically all European countries;
 - Recent examples of signed operations include e.g.
 - hydrogen and emission reduction related R&D in the German automobile industry;
 - a solar energy demonstration project in Spain;
 - a framework loan supporting science and technology promotion in Poland
 - a loan co-financing Albania's National Education Strategy for 2007-2010.

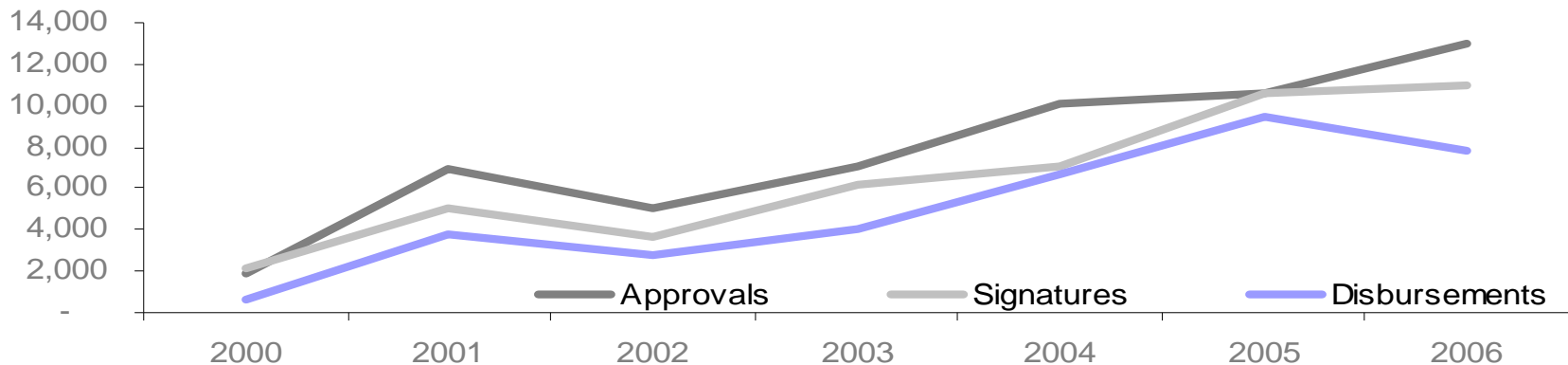


Structured Finance Facility (SFF)

- ◆ A facility under which the EIB is lending, on its own resources and at its own risk, to promoters which do not qualify as “investment grade”.
 - EIB covers itself against these risks by drawing on additional risk provisions sourced by the Bank’s annual surplus for this specific purpose (the lending volume under such a special envelope is limited);
 - Facility not limited to lending to innovation-intensive activities.

EIB Financing of RDI

Innovation 2010 Initiative – Track Record



- The EIB financing of i2i investment reached EUR 46bn since 2000, half of which in RDI.
- Financing of RDI (public and private sector combined) is the largest component, with 61% of signatures in 2006.
- EIB has developed a strong base in RDI since 2000 upon which to now develop more Value Added Products.
- EIB's i2i objective: finance up to EUR 65 billion by 2013.



Sharing Finance Facility (RSFF)

- ◆ A facility jointly created by the EIB and the EU for improving access to EIB debt financing of RDI projects with a higher than average risk
 - The beneficiaries of such facility will stem mainly from the private sector, but public promoters will equally benefit, notably if they participate in PPP-type structures (as could e.g. be the case for certain research infrastructures).
 - RSFF is a significant reinforcement of the Bank's capacity to extend lending specifically to RDI activities under SFF terms and conditions



Risk Sharing Finance Facility (RSFF)

- ◆ **Risk Sharing Finance Facility (RSFF)** is an **innovation** in itself
 - Combines FP7 budget resources (up to one billion over 2007-2013) with an equivalent amount of EIB funding in a new type of financial engineering instrument, in order to increase the Bank's provisions required to cover the higher risk inherent in the underlying operations.
 - Completes the portfolio of existing instruments to finance RDI and respond to a specific need of the market
 - Complements FP7 grants and "standard" loans under i2i, by making available more loans specifically for promoters and projects who normally encounter problems to obtain such funding on acceptable terms.
 - The two sources of RSFF, FP7 and EIB, enable it to cover a wide eligibility of projects, which appears particularly well adapted to the overall **innovation cycle** that starts with R&D (and as such is also covered by FP7 grants under the notion of research, technological development and demonstration), and continues into market-nearer phases of deployment and commercialization of new and high tech products and services.
 - This down-stream phase, which is crucial for the improvement of European competitiveness, is also covered by RSFF since the funding from EIB can be used for pure R&D activities as well as for broader RDI projects



EIB: an active player in the process of making Europe more innovative and competitive

Risk Sharing Finance Facility (RSFF)

- ◆ **Risk Sharing Finance Facility (RSFF)** represents the marriage of two approaches and philosophies,
 - one grant-based (and comparatively more “supply constrained” since budget-dependent), as developed in the research framework programmes,
 - and one loan-based, as developed from EIB’s lending patterns. Our services on the Commission’s and the Bank’s side went through quite a discussion process to clarify the details of RSFF and they are now finalizing the corresponding agreements.