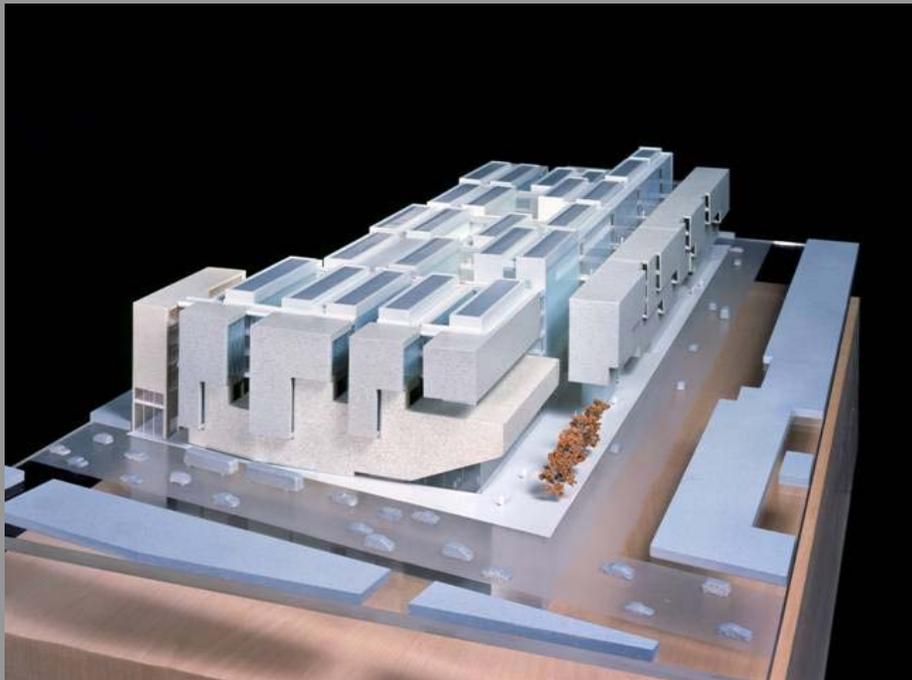


Innovative Financing, Financing Innovation:

*EIB financing for Human Capital, R&D,
and Innovation*



L. Ferreira

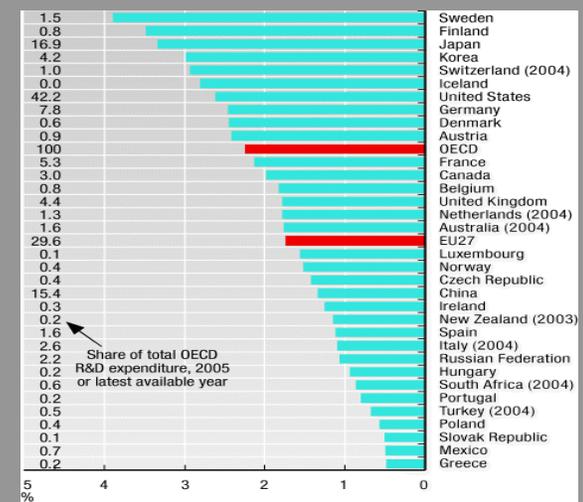
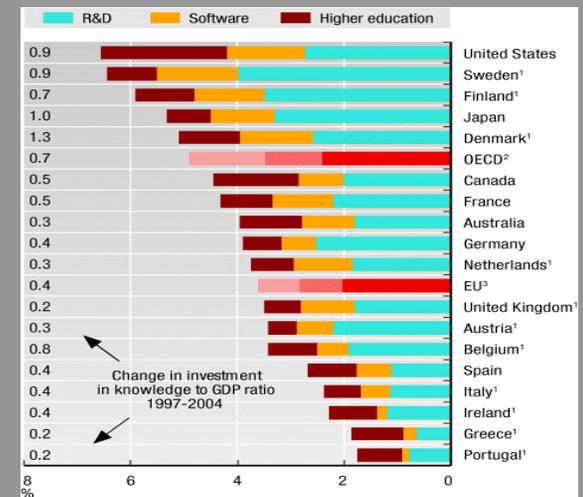
Projects Directorate
Innovation and
Competitiveness
Department

Lisbon, Nov 11 2007

Funding is Insufficient...

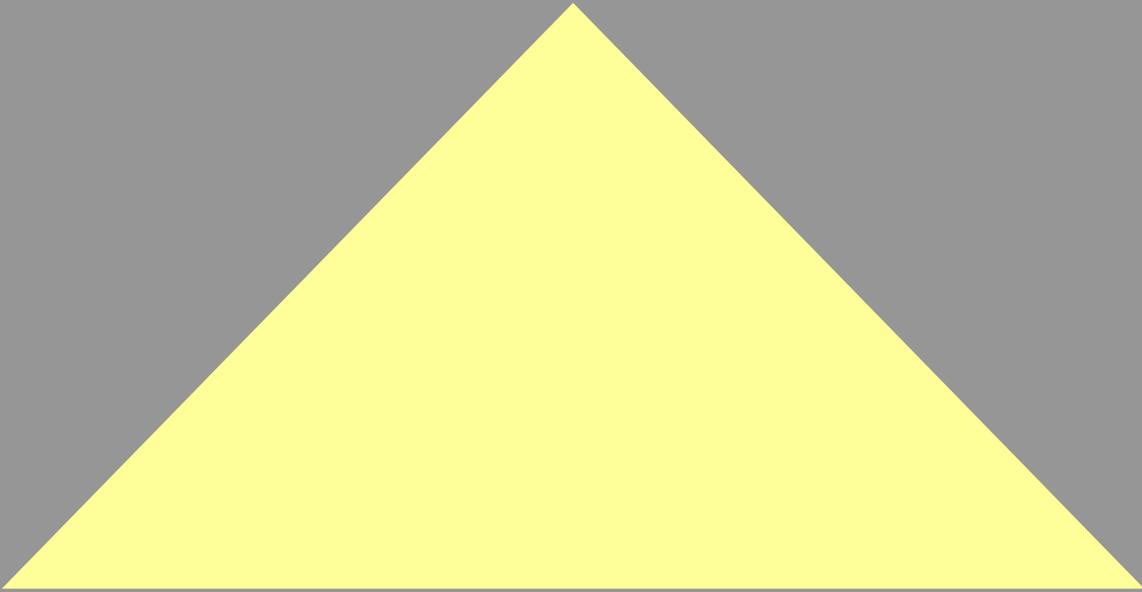
- ▶ US spends 6.6 percent of GDP in Knowledge (EU just 3.8 %)
- ▶ EU spends ~1.3 % of GDP in HE (USA spends ~2.3%)
 - Private spending in US is 9x!
- ▶ US spends about 2.6 percent of GDP in R&D (EU 27 ~1.7%)
 - Private spending on research higher in US than EU

Bad for R&D and innovative power in Europe!



How Can We Bring Additional Resources into Knowledge?

Human Capital



Research

Innovation

Innovative Financing, Financing Innovation

1.

The EIB and i2i Initiative

2.

EIB's financing of HE and R&D: two case studies

3.

The Risk Sharing Finance Facility (RSFF)

4.

The EIF and the Transfer Technology Accelerator (TTA)

European Investment Bank



Who we are....

The **European Investment Bank** is the European Union's long-term financing institution. The Bank acts as an **autonomous body** set up to finance capital investment furthering European integration by **promoting EU policies**

- The EIB is owned by the 27 EU member states
- The EIB has a **subscribed capital EUR 164bn**
- The EIB raises its funds on the **capital markets (2006: EUR 48bn)**
- The EIB **signed loans** amounting to **EUR 45.8bn** in 2006
- The EIB is a **policy driven, non-profit institution following sound banking principles**
- EIB is actively developing **risk-sharing structures** with its banking partners

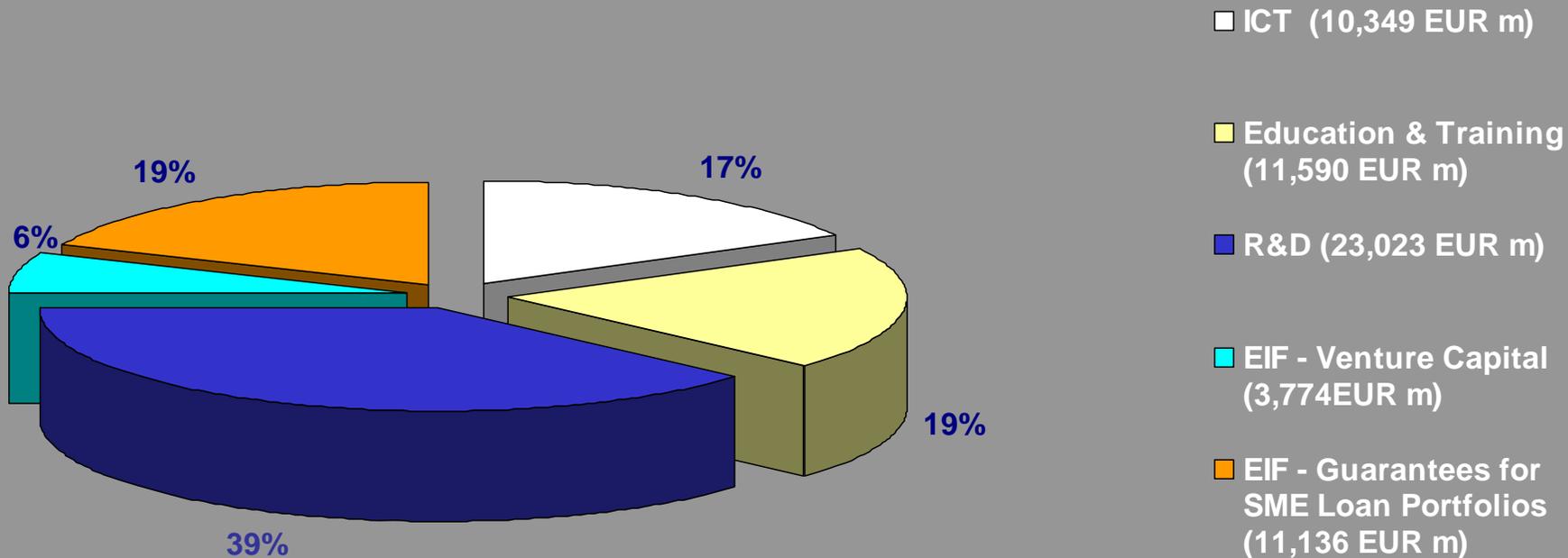


“i2i” – Promoting Knowledge and Innovation (2000-2010)

New Start for the Lisbon Strategy – Building the knowledge economy through effective investments in Human Capital, R&D and ICT technologies.

- ▶ **EIB response: Innovation 2010 Initiative**
- ▶ **Operations focus on three key fields:**
 - Human capital formation (LLL)
 - Research, Development and Innovation
 - Information and Communication Technologies (ICT) networks, including e-services and audiovisual innovation

"i2i" – Promoting Knowledge and Innovation (2000-2010)



Loans signed: EUR 45.7bn since launch in 2000

Venture Capital (EIF): EUR 3.8bn

Guarantees for SME loan portfolios (EIF): EUR 11.1bn

EIB's i2i objective: finance up to EUR 65 billion by 2013

Innovative Financing, Financing Innovation

1. The EIB and i2i Initiative

2. EIB's financing of HE and R&D:
some examples

3. The Risk Sharing Finance Facility
(RSFF)

4. The EIF and the Transfer Technology
Accelerator (TTA)

Financing Higher Education and R&D: What can be financed?

ELIGIBLE COSTS

Time	Year 1	€20m	←
	Year 2	€10m	
	Year 3	€30m	
	Total	€60m	←
		↓	
		€30- 45m	MAX. EIB LOAN

Eligible project cost include:

- Facilities: project **capital expenditures** for tangible assets
- Activities : project **capital expenditures** for intangible assets, **research staff cost**, incremental **working capital** needs and **other related operating expenses**

R&D budgets typically cumulated over 3 years (investment programme)

Up to 50 -75% of the total project cost

What Investment Projects and Programmes?

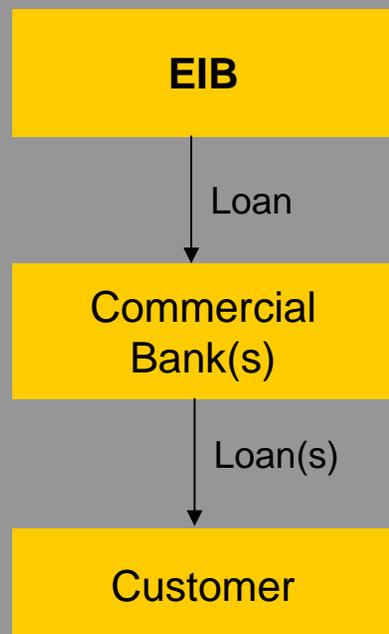
- ▶ Typical “bricks and mortar”
 - Infrastructure: new construction, rehabilitation, all educational levels
 - Fitting out: ICT, research labs, equipment
- ▶ But also (and increasingly) intangibles
 - Learning Support: content, e-learning, curriculum development
 - Academic and Business R&D: tangibles and intangibles, recurrent costs, spin-offs, STP activities, TT
 - Demand Side Measures: student loans

Wide range of eligible projects
provided investment represents cost-effective gain

Traditional EIB Financing Structures: Guarantees and Loan Amounts

Bank Intermediated Loans

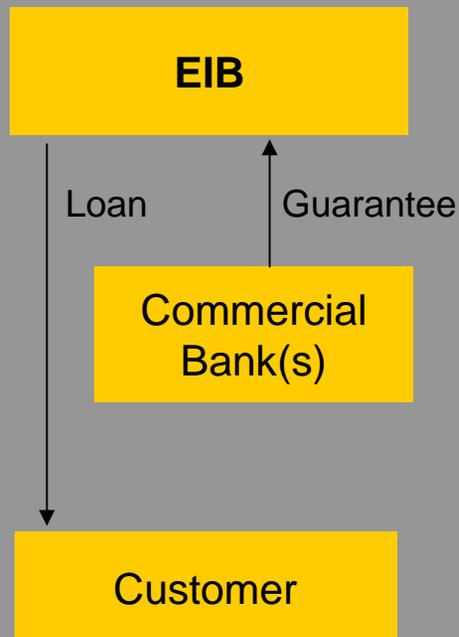
EIB lends to client's house bank passing through its low funding cost. Credit risk is born by the commercial bank.



Global Loan, Framework Loan

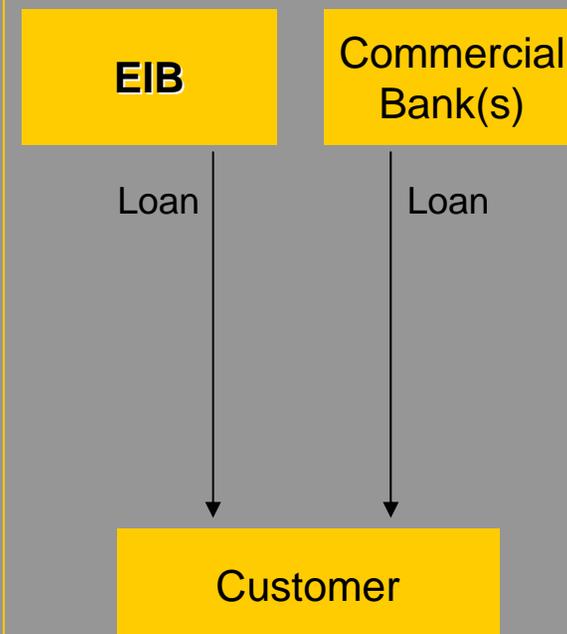
Bank Guaranteed Loan

EIB provides financing directly to the customer alongside other lenders as appropriate. Credit risk is born by the guarantor.



Direct Loan

EIB provides financing directly to the customer alongside other lenders as appropriate. Credit risk is shared on an equal basis with other bank(s).



Loans over EUR 25 millions

Financing: Key Elements

- ▶ **Borrower:** Entities with legal capacity for borrowing
 - Public, private or not for profit
 - Universities, regional or municipal authorities, central governments, research bodies, PPP vehicle, commercial banks....
- ▶ **Maturity:** linked to the economic life of the project (up to 30 years: typically 25 years for buildings and 10-15 years for equipment); grace periods function of project's implementation period.
- ▶ **Repayments:** Usually equal annual or semi-annual instalments but bullets is also possible.
- ▶ **Interest rates:** Reflect the cost of EIB's borrowing on the financial markets as AAA borrowers and not-for profit organisation; fixed, fixed-revisable, variable.
- ▶ **Guaranties:** Typically bank guarantee or sovereign guarantee; for some universities "unsecured" ("single signature").
- ▶ **Risk sharing:** when the promoter has a future stream of revenues.

Innovative Financing, Financing Innovation

1. The EIB and i2i Initiative

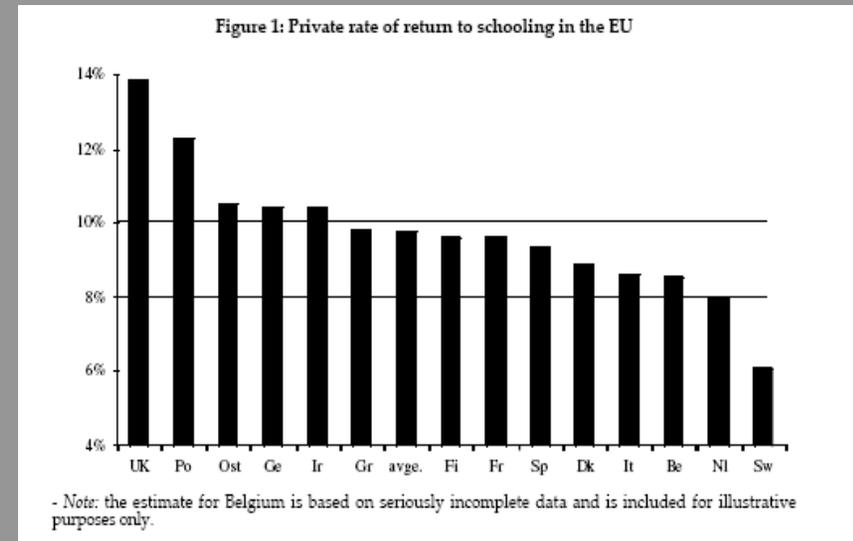
2. EIB's financing of HE and R&D:
Case Study (1): Student Loans

3. The Risk Sharing Finance Facility
(RSFF)

4. The EIF and the Transfer Technology
Accelerator (TTA)

Funding is insufficient....

- Universities should rely more on private funding....
 - Gap between social and private returns is declining
 - Estimated macro-Mincer returns same order of magnitude as micro-Mincer returns
 - Baumol Cost disease
 - High and rising private returns → warrant higher tuition fees including revision of tuition policy



Student Loans

- How to get students to pay much more of the cost of their study without harming access of higher education?
 - **Enrollment in HE = f (ability, background factors)**
 - requires interventions at early stages
 - HE should be “free” at point of entry

Student Loans

- How to avoid students taking disruptive part-time jobs?
- How to avoid subsidy going to less diligent, less talented students from rich families rather than to smartest students from poorer families?

Requires good loan system! No subsidies are needed to warrant access.

Student Loans

- ▶ **Insufficient access to credit markets ..**
Failures in Capital and Insurance markets
- ▶ Lender side:
 - Human capital is not good collateral
 - Asymmetries in information
 - Difficult to assess default risks
 - Difficult to monitor efforts by students and graduates to perform well.

Adverse selection and moral hazard effects → High interest rates and credit rationing

Student Loans

- ▶ Borrower side: debt aversion
 - Imperfect information: benefits from getting a degree are unknown
 - Risk and uncertainty: may fail exams and not get degree
 - Risk: high variance of earnings
- ▶ Risks cannot be insured
 - Insurance market failure

Imperfect capital and insurance markets → Under investments in HE

Need for Loans

Student Loans: Strategic Design Features

- ▶ Amount of Loan
- ▶ Repayment mechanism: income contingent versus mortgage loan
- ▶ Role of “Government”
 - Interest subsidy? Saving distortions/overinvestment
 - Eliminate “rotten apples” (avoids moral hazard and adverse selection]
 - Enforce contracts through Tax authorities
 - Funding of Risk premium
 - Funding default risks from general tax revenue (=subsidy) avoids adverse selection is not very regressive.

Student Loans

- **Banca Intesa – Politecnici Italiani:**
Milano, Torino, Bari (22 Universities, incl. 2 post Grad. schools)
Fondazione Cariplo
- **Diákhitel Központ Rt. I & II, Hungary:**
All accredited HE Institutions in Hungary
- **Meister Bafög, KfW, Germany:**
Entrepreneurial qualifications
- **Student Loan, Landesbank, Germany:**
Tuition fees for Universities and Fachhochschulen

Comparing the Three SLs

Studiendarlehen Hessen	Politecnici Italiani	Diákhitel Központ Rt.
Legal Structure		
Promotional Bank	Private Bank	Limited Company, by shares fully owned by the Government
Government Involvement		
Operation governed by Gov. Decree	Operation governed by agreement between Banca Intesa and Univ.	Operation governed by Gov. Decree
University Involvement		
Select student; guarantee the loan; improvement plan	Select student; guarantee the loan	Info on student enrolment status

Comparing the Three SLSs

Studiendarlehen Hessen	Politecnici Italiani	Diákhitel Központ Rt.
Flexibility of Individual Loan Size		
No: loan covers tuition fees	Deposit of EUR 5,000 per year (in two tranches)	Four possible amounts per year (in 10 monthly tranches or in 2 tranches) ranging from EUR 407 to EUR 1,570
Maximum Level of Indebtedness		
EUR 8,000	EUR 15,000	EUR 9,420
Demand		
All eligible students can receive a loan	Ceiling on number of loans to be attributed	All eligible students can receive a loan

Comparing the Three SLSs

Studiendarlehen Hessen	Politecnici Italiani	Diákhitel Központ Rt.
Repayment Schedule		
"Flexible" Mortgage	Mortgage	Income Contingent (5 and 8 percent)
Grace period after completion of Studies		
2 years up to 11	1 year	1 month (→ 3 months)
Risk Premium		
Study fund: Land Hessen and Universities	Covered by HE Inst. + Fondazione Cariplo	First years covered by Gov., now pooled

Innovative Financing, Financing Innovation

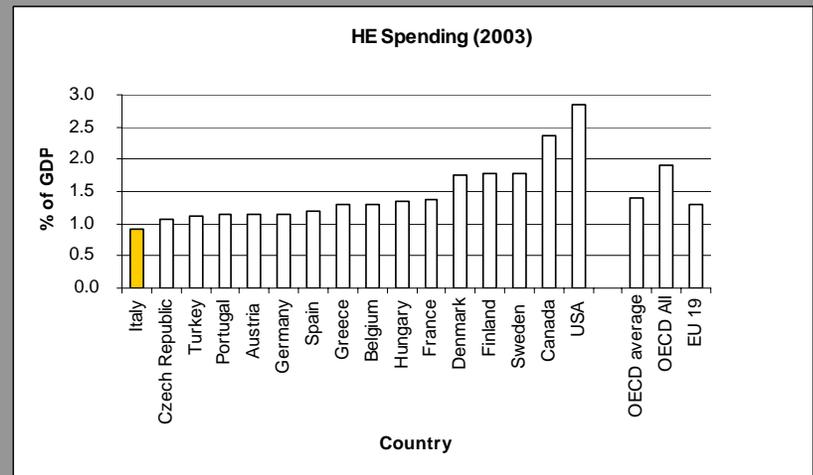
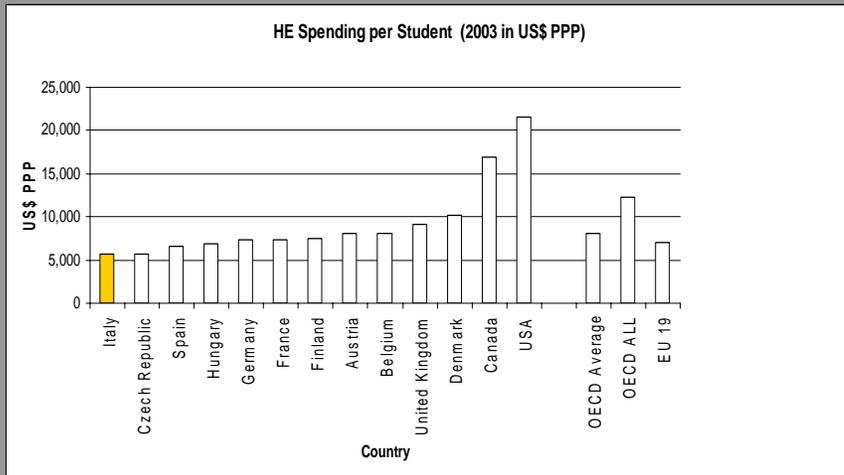
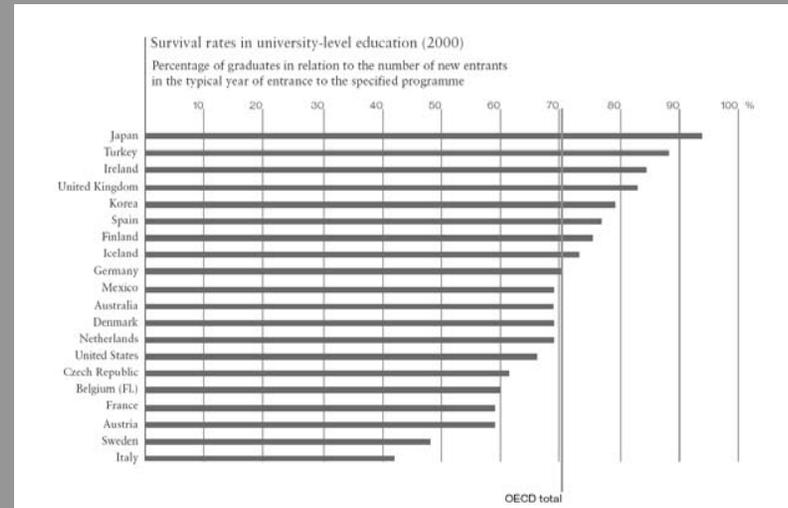
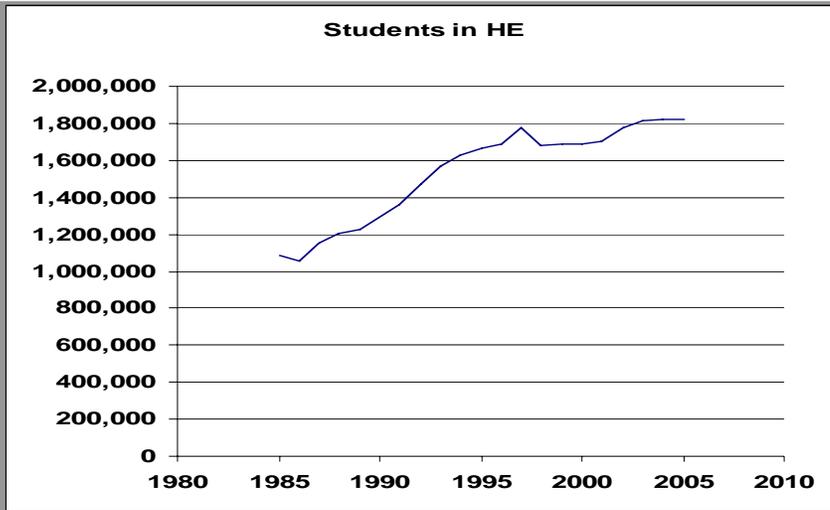
1. The EIB and i2i Initiative

2. EIB's financing of HE and R&D:
Case Study (2): HE in Italy

3. The Risk Sharing Finance Facility
(RSFF)

4. The EIF and the Transfer Technology
Accelerator (TTA)

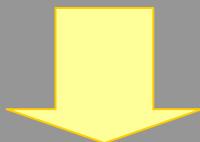
Higher Education In Italy: Strategic Context



EIB and Financing of HE in Italy

- ▶ First project: 1999. Today, more than 12 projects:
 - Public and private institutions
 - Small and large institutions
 - Institutions offering different programmes
 - Tangibles and intangibles
 - Construction, upgrading and equipping
 - R&D: infrastructures and research expenditures
 - Student loans
- ▶ **Portfolio is very diversified:** Purely academic projects but also research, and links between academics and business sector; urban re-qualification; student loans with active involvement of Universities.

EIB and Financing of HE in Italy

- ▶ Financing Structures: progressively more sophisticated
 - Loans 100% intermediated
 - Direct loans
 - Bond issue
- 
- 

Innovative Financing, Financing Innovation

1.

The EIB and i2i Initiative

2.

EIB's financing of HE and R&D: some examples

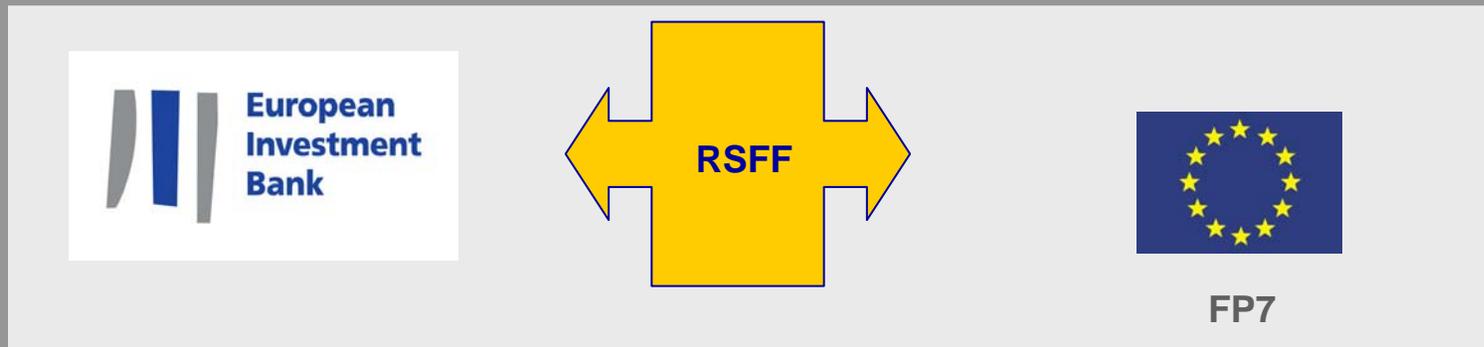
3.

The Risk Sharing Finance Facility (RSFF)

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The Risk Sharing Finance Facility Rationale



An innovative **joint EIB and EU facility** to improve access to **debt financing** with a **higher** than average **risk profile** for **RDI projects**. The beneficiaries can be private and public promoters, SPVs and PPPs.

The Risk Sharing Finance Facility (RSFF)

Scope



Eligibility

- R&D: fundamental, applied, industrial, demonstration activities, prototyping
- Innovation

EIB Products

- Corporate loans/guarantees, project finance
- Risk sharing bank facilities, funds that meet the RSFF credit profile

Beneficiaries

- Large Corporates, Mid-caps, SMEs, turnaround situations, infrastructure SPVs, **Universities** and PPPs

Size of Loans

- Reduced to min. EUR 7.5m for direct loans/guarantees

EUR 10bn in Financing Capacity

The Risk Sharing Finance Facility



Eligibility categories

Fundamental research

Definition stage / feasibility studies

Industrial research

Pre-competitive development activity

Pilot and demonstration projects

Innovation

- Geographic Scope: EU 27 and Associated countries (Iceland, Liechtenstein, Norway, Switzerland, Israel, Turkey and Croatia)

The Risk Sharing Finance Facility

Key Sectors

1 Engineering/Automotive

2 Energy

3 ICT

4 Life Science

5 RDI Infrastructures

Rationale for Selection

- Scope of Sector
- EU Policy Dimension
- Key RDI Trends
- Strong EIB Track Record in the industry
- RSFF Implementation Strategy

Product Development

Sector Know-How

Long Term Financing

The Risk Sharing Finance Facility

Moody's	S&P and Fitch
...	...
A1	A+
A2	A
A3	A-
Baa1	BBB+
Baa2	BBB
Baa3	BBB-
Ba1	BB+
Ba2	BB
Ba3	BB-
B1	B+
B2	B
B3	B-

- RSFF is a debt based instrument not a grant
- Financing does not involve a subsidy element
- The facility does not concern risk capital such as venture capital



RSFF concerns companies or projects mature enough to demonstrate capacity to repay debt on the basis of a credible business plan
An external rating is not required

RSFF- Financing Solutions



EIB taking more risk under RSFF

► Projects > EUR 15 m Sector Specific Financing Needs ► Projects < EUR 15 m

Direct Lending

Extend Debt Capacity

Corporate Finance: Senior Debt

Project Finance: Senior Debt

Subordinated Debt/Mezzanine

Interest Contingent Loan

Counterparts

Corporates

Universities

SPVs, JTIs,
PPPs

Indirect Lending / Financing

Extend Lending Capacity of Financial Intermediaries

Risk Sharing Facilities

Investment Funds

Co-financing / Leverage of Funds

Counterparts

Banks

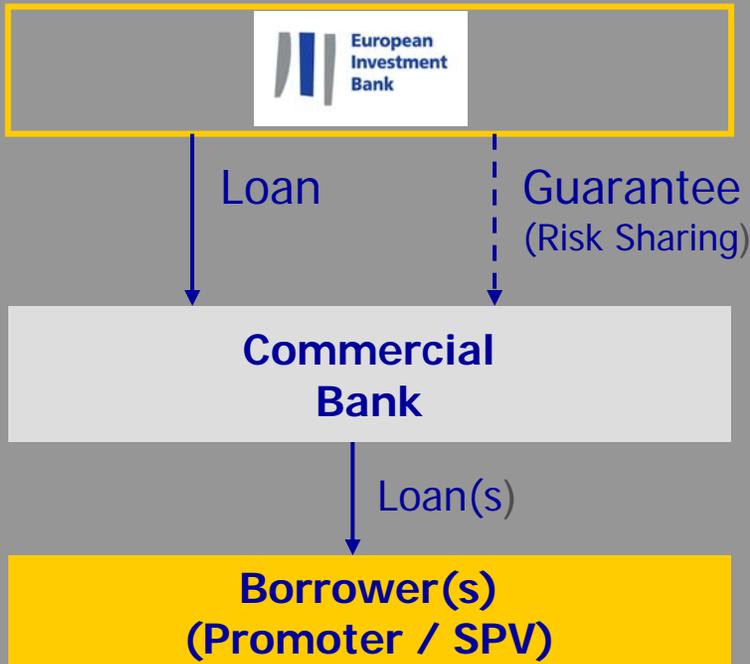
Funds/Collaboration
with EIF

RSFF – Key Elements

What are EIB Types of Operation?

Risk-Sharing Loans PROJECTS OF ALL SIZE

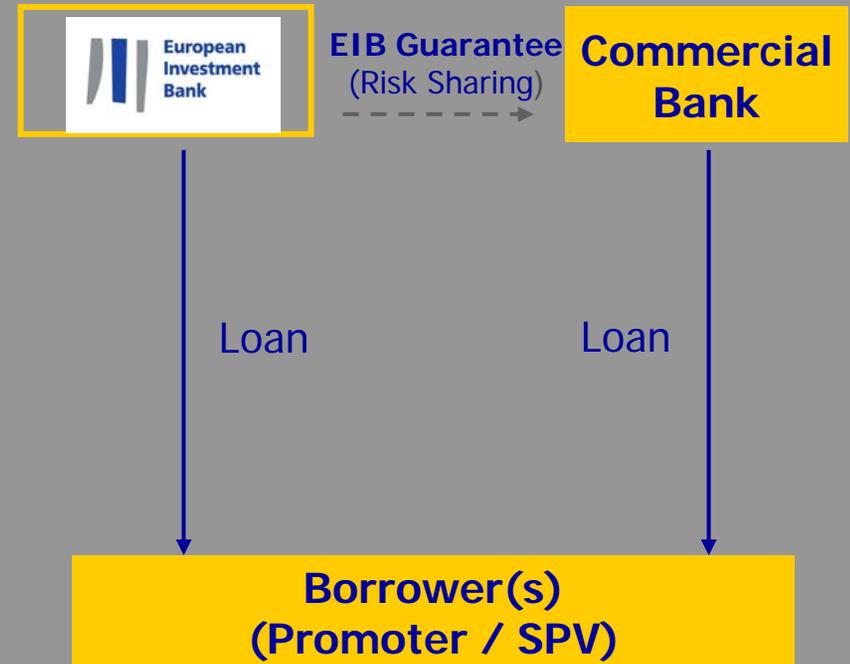
EIB lends to or guarantees the borrower's house bank passing through its low funding cost and/or shares the credit risk of the borrower(s).



The Borrower's primary counterpart is the house bank.

Direct Loans PROJECT(S) > €15m

EIB provides financing directly to the customer alongside other lenders as appropriate. The respective credit risk can be shared with the commercial bank.



The Borrower's counterparts are the EIB and the house bank.

EIB financing solutions under RSFF



I. Corporate / Project Finance

- **Targeted beneficiaries:** Mid-sized and large corporations (low/sub-investment grade),
- **Product Ideas:** RSFF loans and guarantees (Structured individual corporate loans - senior/junior debt, mezzanine),
- **EIB value added:** Lower Financing Cost, increase of debt capacity (in case of subordination), project risk sharing.

II. Risk Sharing with Banks

- **Targeted beneficiaries:** SMEs & Mid Caps (low / sub-investment grade),
- **Product Ideas:** RSFF loans and guarantees, Risk Sharing Global Authorisations,
- **EIB value added:** Beneficiaries: risk sharing, higher debt capacity, lower financing cost; Banks: risk sharing, capital relief, customers cross selling.

NEW PRODUCT DEVELOPMENTS

- **Targeted beneficiaries:** Universities, research institutes, science parks,
- **Product Idea:** RSFF loans and guarantees; Royalty fund,
- **EIB value added:** Increased access to financing for universities; facilitates partnerships and PPPs; monetize royalty streams of research results (e.g. patents).

- **Targeted beneficiaries:** Joint Technology Initiatives (JTIs), European Technology Platforms (ETPs), Multi-country Research Infrastructures (ESFRI),
- **Product Ideas:** PPPs, SPVs and RSFF/ERCF loans and guarantees for R&D programmes,
- **EIB value added:** facilitate both public and private sector financing of Research Infrastructure through conventional as well as structured finance.

III. Risk Sharing with Universities

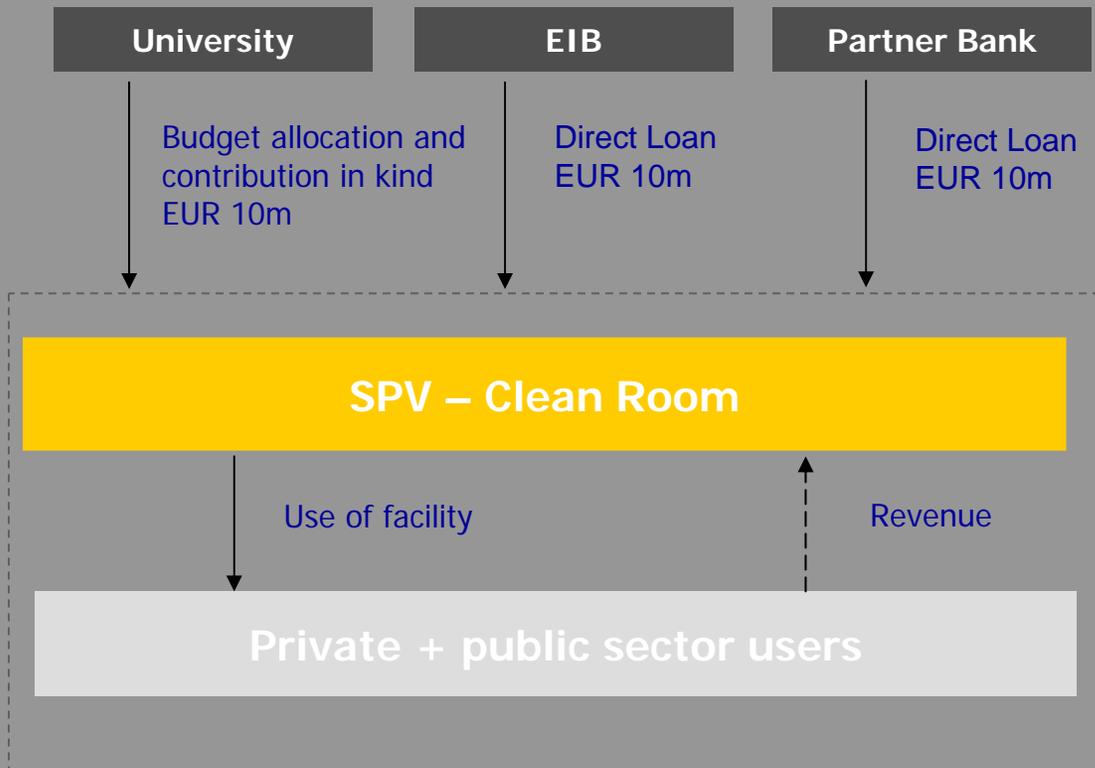
IV. R&D and Infrastructure Consortia

EIB Financing solutions under RSFF



University Finance Example – Project Financing

University investing EUR 30m in clean room technology and seeking partial debt financing to leverage budget allocation :



- **Total Debt Financing: EUR 20m**
- **Credit Rating of SPV: Ba3**
- **Senior secured loan: 10 years**
- **Structured Finance with cash flow finance underpinned by minimum level of utilisation contract**
- **Limited recourse to University**

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European Investment Fund and Financing of Research and Innovation

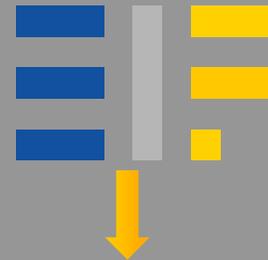


- ▶ **EIF's activity**
 - Venture capital (e.g. targeted at SMEs that are research intensive)
 - Guarantees
- ▶ **Technology Transfer Initiative (TTA):**
The commercialization of intellectual property

EIF at a glance

EU specialised financial institution for SMEs,
acting through: **Venture Capital** (fund-of-funds),
Guarantees for SME portfolios and financial engineering

AAA (Standard & Poor's)
Aaa (Moody's)
AAA (Fitch)
MDB status 0% weighting



Subscribed capital:
EUR 3bn
EIB: 66 %
EU: 25 %
Fin. institutions: 9 %

Geographic location

Working in “enlarged” union
Breaking traditional finance boundaries: Turkey,
Western Balkans, and South-Eastern Europe
Continuing to diversify portfolio with further
investments in NMS and Southern Europe

Aaa-rated European institution with MDB status
Need to generate return on equity

The Private Equity / Venture Capital Market Covered by EIF

VENTURE CAPITAL

PRIVATE EQUITY

Tech
Transfer/
Incubators

Business
Angels
Side Funds,
Pre-Seed

Seed
Stage

Early
Stage

Expansion
Develop-
ment
Capital

Mid
Stage

Later-stage
Buy-out

Stock
Exchange/
Public
Equity

EIF INVESTMENT FOCUS

Commercialization of Research and Technology Transfer



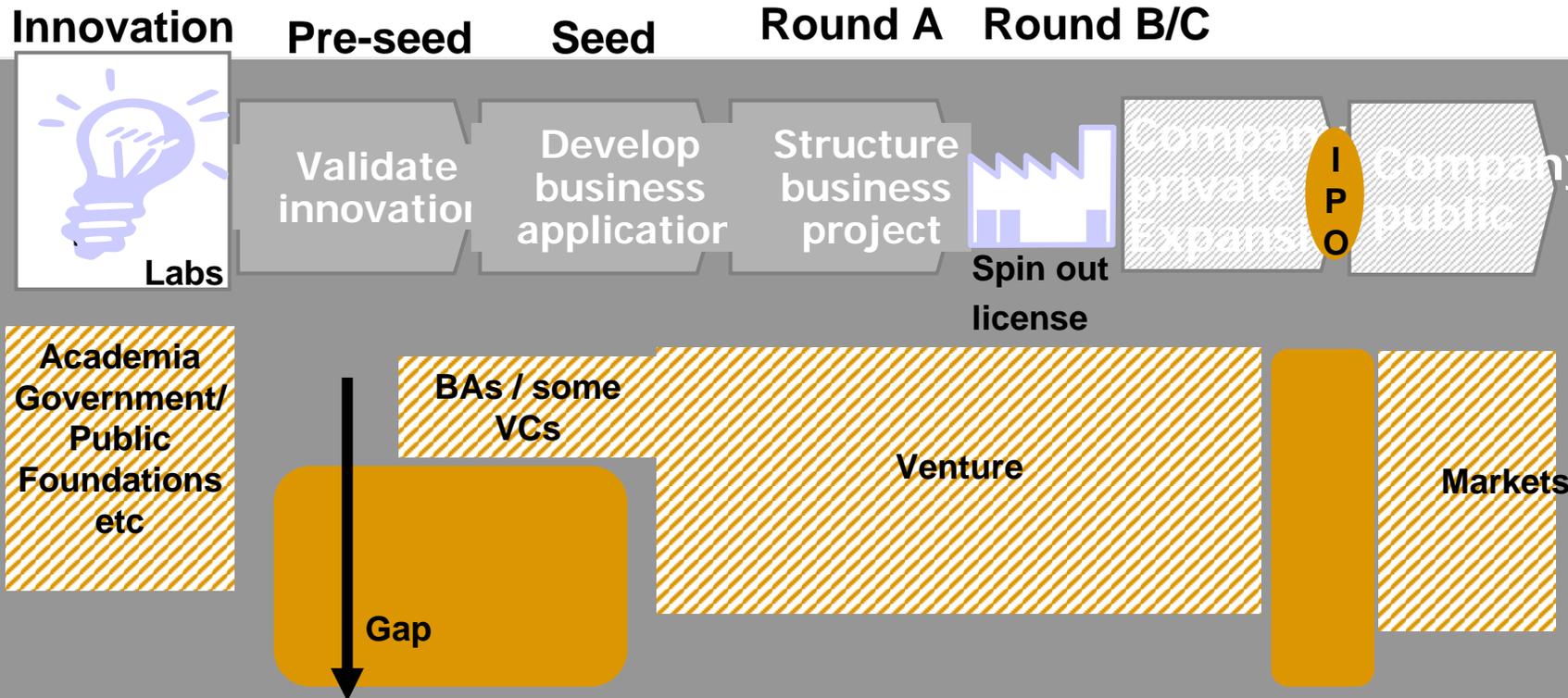
Study's Objective:

“ Assess the feasibility and define the operational modalities of a new targeted risk capital and technology transfer investment vehicle linking centers of excellence from different European Countries. The aim is to bridge the financing gap between research and early stage financing through a new scheme. ”

Diagnosis: Clear market failure regarding commercialization of research in Europe in the area of technology transfer, with a significant and growing gap to the US; considerable weakness of early stage venture investing in Europe.

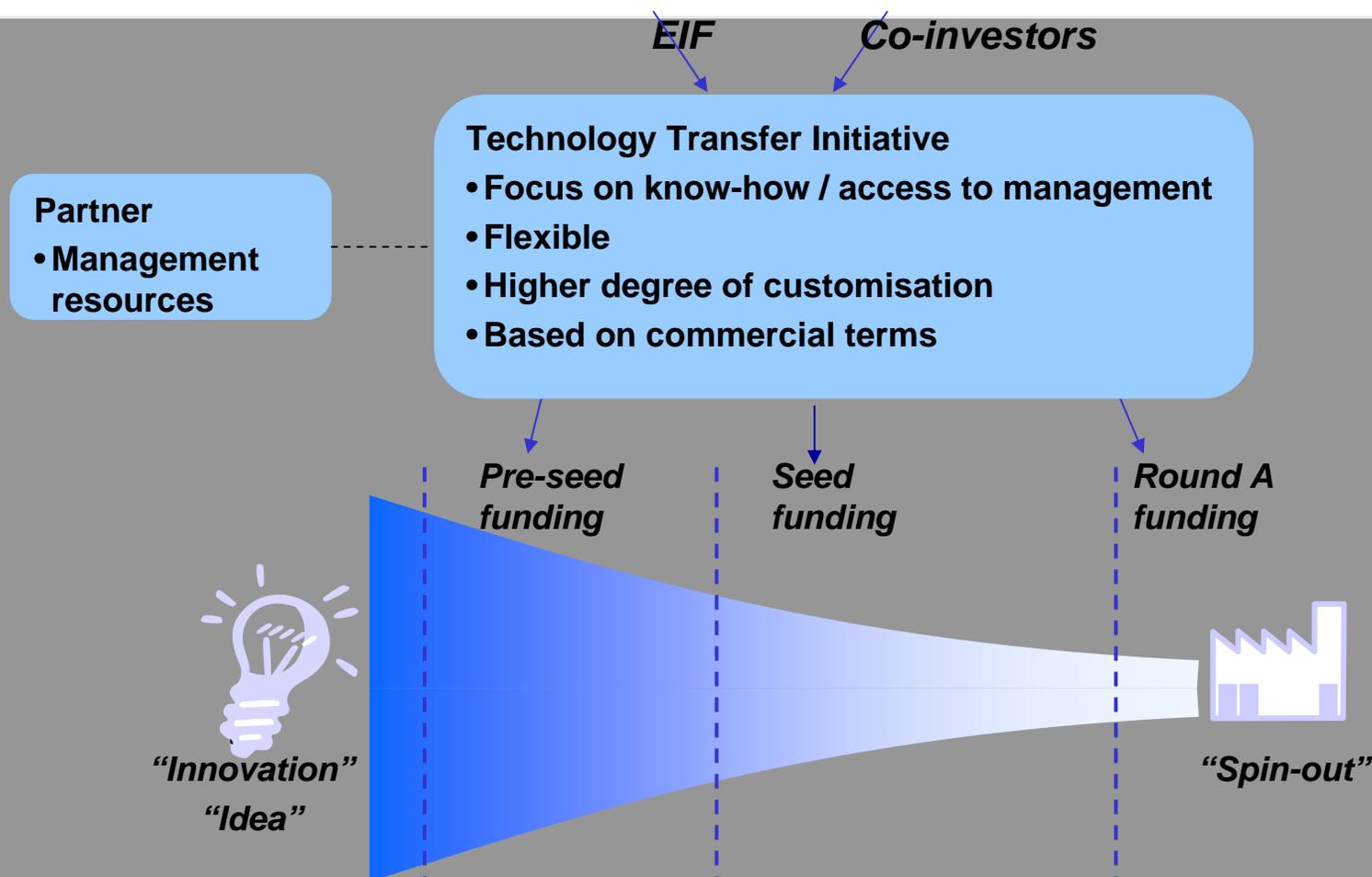
Design of a programme: The TTA programme to improve the commercialization of academic research

Multiple funding gaps



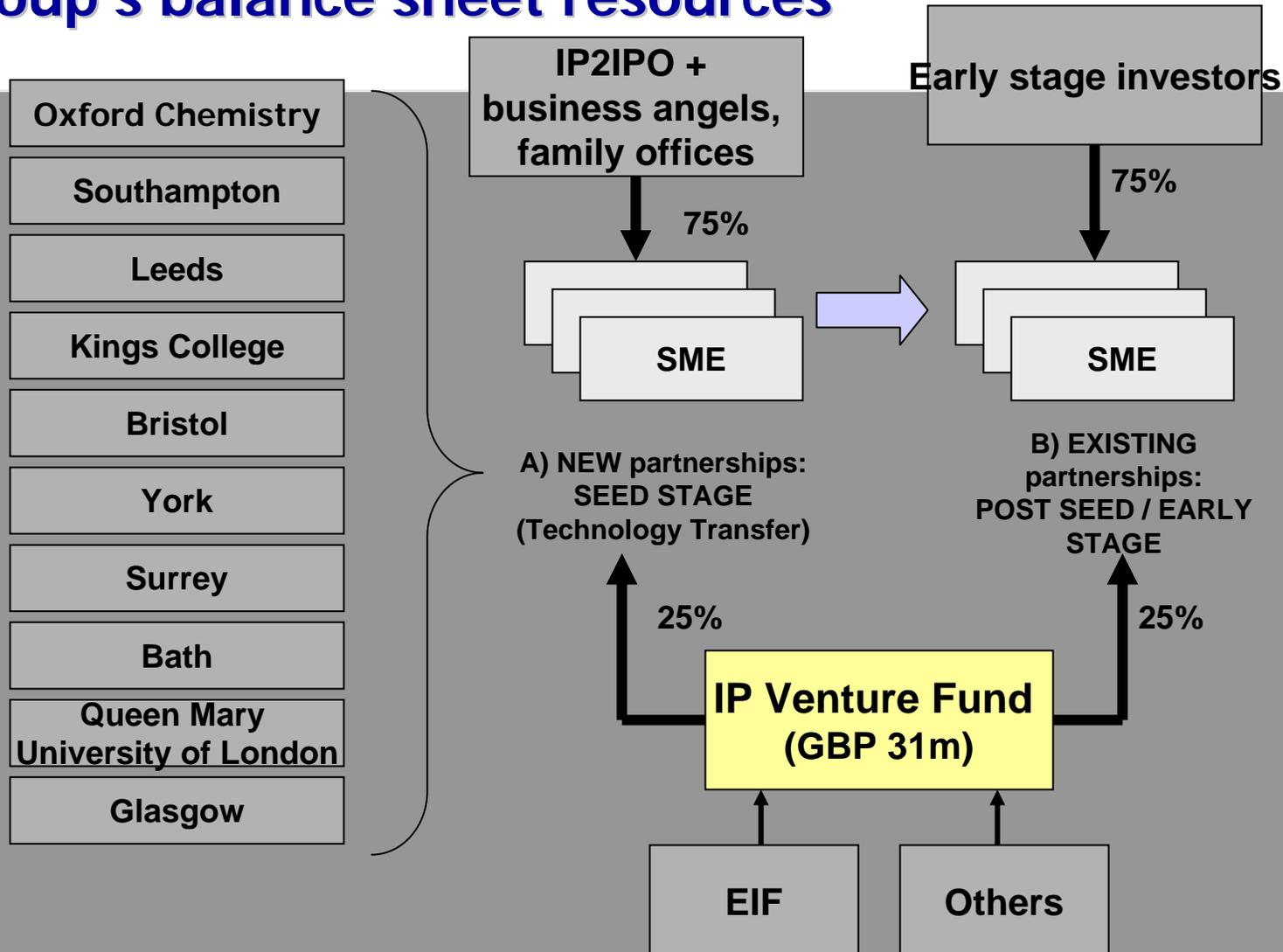
- High uncertainty
- Small size makes economics difficult
- Difficult to access management resources
- Need to bridge academic and financial perspectives
- Limited number of investors

EIF's Technology Transfer approach in a nutshell



The IP Venture Fund

Co-investment fund supplementing IP group's balance sheet resources



Thanks!

- ▶ To learn more about EIB-financed projects
 - <http://www.eib.org/projects/index.htm>
- ▶ To learn more about RSFF
 - RDI@eib.org
 - <http://www.eib.org/rsff>
- ▶ To learn more about the EIF and the TTA
 - <http://www.eif.org>