PUSHING THE FRONTIERS OF INNOVATIVE RESEARCH
Research, Innovation and Education in Europe demands a Continuous Investment by Society for Society

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University of Amsterdam
Universitat de Barcelona
University of Cambridge
University of Edinburgh
University of Freiburg
Université de Genève
Universität Heidelberg
University of Helsinki
Universiteit Leiden
KU Leuven
Imperial College London
University College London
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University of Milan
Ludwig-Maximilians-Universität München
University of Oxford
Pierre & Marie Curie University
Université Paris-Sud
University of Strasbourg
Utrecht University
University of Zurich
Today’s Key Message

» The European research base has some of the highest levels of productivity and excellence in the world, but it is concentrated in those areas where it has been sustained by long-term national and European investment, coupled to positive interactions with industry.

» Public investment in research is essential. It has a demonstrably powerful social impact, from advances in medical diagnostics and therapeutics that improve health and the quality of life, to innovation and the development of new technologies essential to Europe’s future competitiveness.

» Research is quite simply the foundation for Europe’s future competitiveness. In this, the role of universities and associated research institutes is fundamental. Their focus on basic science lays the foundation for discovery and innovation, and their laboratories develop the human capital that businesses need for success.

» Innovation is a complex process, not a linear progression of basic science into new products. It is rare that the new knowledge created by scientific breakthrough has immediate practical implications. Often it is accidental.

» Frontier research requires patience, persistence and investment. Europe’s research-intensive universities have the unique capacity to bring together the three elements that are essential to ensuring Europe’s long-term competitiveness and welfare: higher education, research and innovation.
A European strategy for smart, sustainable and inclusive growth
Country-specific recommendations

European Semester
2016
Indicator: Business enterprise R&D expenditure (BERD) by source of funds (value or intensity)

Country: European Union
Unit: Percentage of GDP

- Abroad
- Government sector
- Private non-profit sector
- Business enterprise sector
- Higher education sector

Funding from Higher Education sector and Private Non-profit sector expressed in relative units is very small and therefore not visible.
### Pushing the Frontiers of Innovative Research

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Indicator: Public (government and higher education) R&D expenditure as % of GDP
2%
90%
PUSHING THE FRONTIERS OF INNOVATIVE RESEARCH
10 priorities

01. A new boost for jobs, growth and investment.
02. A connected digital single market.
03. A resilient Energy Union with a forward-looking climate change policy.
04. A deeper and fairer internal market with a strengthened industrial base.
05. A deeper and fairer Economic and Monetary Union (EMU).
06. A reasonable and balanced free trade agreement with the United States.
07. An area of Justice and Fundamental Rights based on mutual trust.
08. Towards a new policy on migration.
09. Europe as a stronger global actor.
10. A Union of democratic change.

Sources: European Parliament, European Commission
INVESTMENT PLAN FOR EUROPE

EU guarantee

€16 bn

European Investment Bank

Possible other public and private contributions

€21 bn

EUROPEAN FUND FOR STRATEGIC INVESTMENTS

€16 bn

x 15

Long-term investments

circa €240 bn

SMEs and mid-cap firms

circa €75 bn

€5 bn

x 15

circa €315 bn

total extra over 2015/17
Horizon 2020 Budget

- Excellent Science: 24.2 bn
- Industrial Leadership: 16.5 bn
- Societal Challenges: 28.6 bn
- Widening Participation: 0.8 bn
- EIT: 2.4 bn
- JRC: 1.9 bn

Total: EUR 74.8 bn
Out of the EFSI transactions approved by the European Investment Bank (EIB) so far, 23% are in the RDI sector. Two thirds of all projects have a strong RDI element.
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| FI      | Äänekoski bio-product mill (signed in June 2015) | - Construction of a new bio-product mill in Äänekoski, Finland  
- EIB financing under EFSI: EUR 75 million  
- Total investment expected: EUR 1.2 billion  
- Expected job creation: 8500 |
| IT      | Arvedi modernisation programme (signed in May 2015) | - Modernisation of an innovative, mid-sized steel producer in Italy  
- EIB financing under EFSI: EUR 100 million  
- Total investment expected: EUR 227 million  
- Expected job creation: 450 |
| EL      | Creta Farms (signed in May 2016) | - Development of new product lines in the cold cut meat and dairy food manufacturer segments  
- EIB Financing under EFSI: EUR 15 million  
- Total investment expected: EUR 31 million |
| FR      | RDI in steel plants (under assessment) | - Research, Development and Innovation on upgrading steel plants in cohesion regions |
| FR      | Dairy production in France (approved, not yet signed) | - Construction and operation of a dairy plant to produce UHT milk, butter and cream |
| ES      | Grifols biosciences R&D (signed in October 2015) | - Research and Development to improve medical treatment for conditions including Alzheimer’s disease, vascular and cardiovascular surgery  
- EIB financing under EFSI: EUR 100 million  
- Total investment expected: EUR 241 million  
- Expected job creation: 12 |
| IT      | Research, development and innovation in Italy (under assessment) | - R, D & I and production of innovative bioplastics and product technology |
| DE      | RDI in digital printing in Germany (signed April 2016) | - Research, Development and Innovation in printing presses and digital printing in a mid-sized company in Germany |
REFUND

MIDTERM REVIEW
Multiannual financial framework 2014-2020 – distribution

- 34%: European citizenship, freedom, security and justice
- 39%: Administration
- 13%: Research and technology
- 6%: Foreign policy
- 6%: Structural policy
- 6%: Agricultural policy
- 2%: Other

As of February 2013
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PUSHING THE FRONTIERS OF INNOVATIVE RESEARCH
Convince the Boss.
LE R U

PUSHING THE FRONTIERS OF INNOVATIVE RESEARCH

Biggar Economics
Study Objective

To quantify the economic contribution of each LERU University and the combined group of LERU Universities to the European economy
Framework

- Universities
  - create intellectual capital
  - provide leadership, knowledge infrastructure & a social environment for regional development
  - create human capital
  - transfer knowledge
  - facilitate technical innovation
  - attract capital investment

- Which leads to a range of economic impacts
**Inputs**

- Labour
- Supplies/equipment
- Services
- Students
- R&D institutions
- Social environment

**Outputs**

- Knowledge creation
- Provision of leadership
- Knowledge infrastructure
- Social environment
- Human capital creation
- Transfer of existing know-how
- Technological innovation
- Capital investment

**Impacts**

- Increase capacity for development
- Regional creativity
- New business start-ups
- Productivity gains
- Business innovation
- New business start-ups
- Direct and indirect spending impacts
Sources of Contribution

- Core contribution
  - direct effect
  - supplier effect
  - staff spending
  - capital spending

- Student contribution
  - student spending
  - student employment
  - student volunteering
  - student placements

- Knowledge transfer
  - licensing
  - consultancy
  - collaborative research
  - start-ups and spin-outs
  - science parks
  - workforce training (CPD)
  - staff volunteering

- Tourism
  - visits to staff and students
  - conferences and events

- Graduate productivity
Research Methods

- Data supplied by the Universities
- Economic assumptions
  - Eurostat Economic Ratios 2013/14 (GVA/turnover and turnover/employment)
  - Input-Output Tables for Economic Multipliers, 2011
  - Multipliers – Leontief Type 1 and Type 2
  - Exchange rates (2014 levels)
- Previous in-house experience
- Visits to the Universities
Measures of Economic Contribution

- Economic contribution measured in terms of:
  - Gross Value Added (GVA) – a measure of the value that an organisation, company or industry adds to the economy through its operations. GVA is equal to the value of production less the value of inputs used
  - Employment – jobs supported
Headline Economic Contribution

- Economic contribution
  - €55.7 billion GVA
  - 900,065 jobs

- Economic contribution including future graduate productivity
  - €71.2 billion GVA
  - 900,065 jobs

- Wider impact on regional economic growth
Return on Investment

- Every €1 direct GVA in the LERU Universities generate almost €6 GVA in the European economy.

- Every 1 person employed directly in the LERU Universities supports almost 6 jobs across the European economy.
Economic Contribution by Source

- Core
- Student
- Knowledge transfer
- Tourism
- Graduate productivity
LERU members...
educate
674,500 full time students

employ
186,600 staff
across 21 Universities

earn
€16.3 billion turnover

Have Core Impacts of...
€23.9 billion GVA
&
375,700 jobs

from...
direct operations, supplier chain expenditure, staff spending

and...
€1.5 billion capital investment

BiGGAR Economics
The students of LERU members generate €9.7 billion GVA and support 220,200 jobs in Europe and generated €5.2 billion GVA.

Outside the University, students spent an average of €7,937, which supported 93,100 jobs throughout Europe.

43% of full-time students worked part-time during term time. These students worked an average of 11.5 hours per week, contributing to the local labour markets.

BiGGAR Economics
Research and Knowledge Transfer...
activities supported 298,500 jobs throughout Europe and generated €21.9 billion GVA

Research had supported the creation of 1,065 active spin out companies, which employed 12,700 people

LERU members undertook €1.5 billion of contract research for private and third sector organisations and won €334 million of consultancy contracts

BiGGAR Economics
Graduate Productivity

In 2014, 172,300 students graduated from LERU member institutions.

On average these graduates will go on to earn an additional €89,700 over their working lives as a result of their University degree.

Graduate productivity contribution = £15.4 billion GVA
Extrapolating the Impact

- Based on the study findings, estimate the impact of entire European Research Universities
  - based on ERC data & CWTS Leiden rankings LERU = 23.4% of sector, so
  - European Research Universities sector contributes
    - Over €300 billion GVA
    - supports **3.8 million jobs** across Europe
- Equivalent to 1.8% of all employment in the EU and 2.2% of GVA
Wider Benefits

- Wider economic, societal, cultural, environmental, health and civic benefits of Research Universities:
  - stronger social cohesion
  - improved social mobility
  - better health & well-being
  - greater civic engagement
  - wider benefits for society from medical research
  - overall character and vibrancy of the cities the Universities are located in
Wider Benefits

Research Universities are drivers of long term sustainable economic growth:

• By pushing the boundaries of academic discovery they increase the pool of knowledge available to society

• Equally important, they diffuse this knowledge throughout society through their commercialisation activities and high quality graduates

• This diffusion of knowledge provides the basis for productivity improvements and therefore economic growth

• They also create knowledge and innovation ecosystems which form major clusters of economic activity, attract inward investment and create the knowledge sectors of the future
LERU
ENTERPRISE AND INNOVATION
COMMUNITY
OPEN FOR BUSINESS

LERU ENTERPRISE AND INNOVATION 2013

Number of:
- Patent applications > 10,400
- Licences agreements > 850
- Active spin-offs > 730
- Industry collaborations > 9,400
AAU is an association of 62 leading research universities in the United States and Canada. The 60 U.S. members of AAU:

- Educate 1.2 million undergraduate students and 570,000 graduate students each year;
- Employ more than 710,000 people, more than the population of Seattle, WA;
- Have combined annual operating budgets of about $152 billion (2013);
- Have patented and licensed thousands of innovative discoveries and technologies that have fostered new products, companies, and entire industries in such fields as medicine, public safety, food and agriculture, new materials, semiconductor devices, education, and communications;
- Issued 3,460 patents and executed 3,068 licensing agreements in 2013;
- Initiated 479 start-up companies in 2013, of which 73 percent operate in the same state as the licensing institution.
Research strategies: Planning for Europe 2030
How to align corporate and university strategies with the next EU Framework Programme

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12 October, Brussels
The EU Institutions

- European Commission
- The Council of the EU
- European Parliament
- European Council
- European Court of Justice
- European Court of Auditors
- Economic and Social Committee
- Committee of the Regions

European institutions working together to promote research and development (R&D) and investment in Europe.