



AURIL Conference 2016
Universities and Business Engagement: The Next Stage
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Education and Research

Universities and the World

- Medieval Model (Bologna 1088) – Men for Church and State
- Francis Bacon – inspiration for Royal Society (1660). Experimentation
- Napoleonic “Grand Ecoles” – absurdly selective – Civil Servants
- Prussian (Van Humboldt) (1810) – Teaching and Research
- Institutes (20th Century) – Max Planck, Research Council (Sclerotic civil service shackles)
- United States – Liberal arts + Research and Education + PhD
- United Kingdom – Thatcherite – Competitive mass-marketisation and diversity

University Contributions

Creation and Dissemination of Knowledge

Cultural Integrity

- Exploring our heritage and embedding civilisation

National Prosperity

- Educating, discovering and exploiting knowledge

Global Harmony

- Mixing, integrating and understanding people





University Contributions

Economic Contribution of UK Universities

- UK Universities generated £73bn output
- UK Universities contributed £40bn to GDP
- For every £1m of University output a further £1.35m was generated elsewhere in the economy
- 760,000 jobs were supported (directly and indirectly)
- For every 100 jobs created directly – 117 extra jobs were generated elsewhere
- Less than half of University revenue is from public sources
- Public investment in science results in a 20% return on investment

University Contributions

National Prosperity

- Educated populace – will have subject competency and critical thinking
- a 1% increase in graduate numbers  7.5% increase in productivity (within 3 years)
- Research outputs  Ideas, Processes, Products
- Start up and spin-out  New businesses
- Business interaction  Consultancy, CPD, Support Services

University Contribution

Educated Populace

- Graduates contribute 20-48% greater productivity
- They deliver disproportionate human capital
- They contribute disproportionate(US\$50k lifetime) tax
- They are more entrepreneurial. 10.8% compared with 7.4%
- They have higher employment rate and increased earnings
 - Graduate premium US\$230k in all industrial countries
- They are healthier, spending less on health services
- They are more law abiding, with fewer going to jail

University Contribution

Human Capital

The knowledge, skills, competencies and attributes that facilitate personal, social and economic well-being

- Graduates represent 26.2% of those in employment but account for 35.4% of UK human capital.

ONS 2014

University Contribution

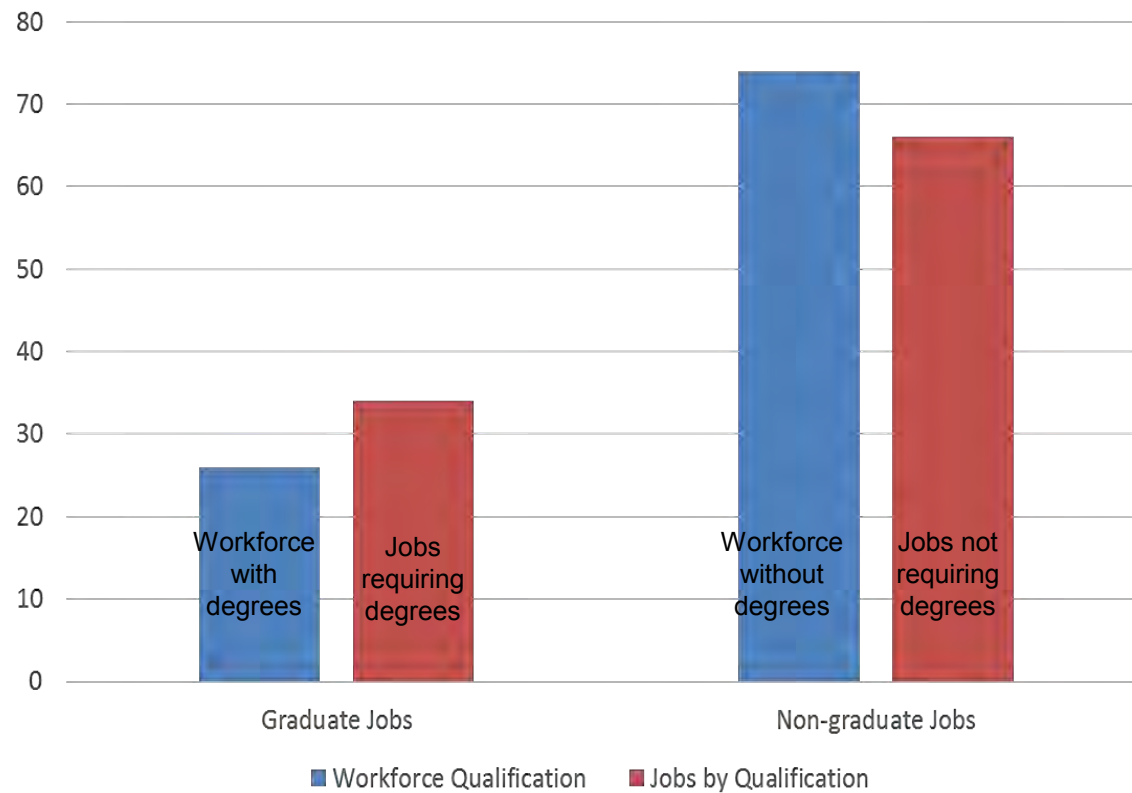
Universities and Skills

- Higher skills jobs – managers, professionals, associate professionals
- Those requiring higher skills will increase from 42% to 46% (by 2022)
- UK graduates in the workforce increased by 57% ('94-'05)
- Graduate contribution to long-run productivity was 11-28% ('94-'05)
- Companies with more than 35% high skilled workers achieve returns per employee 3x those with less than 20%

UKCES 2014, BIS 2013, McKinsey and Co 2010

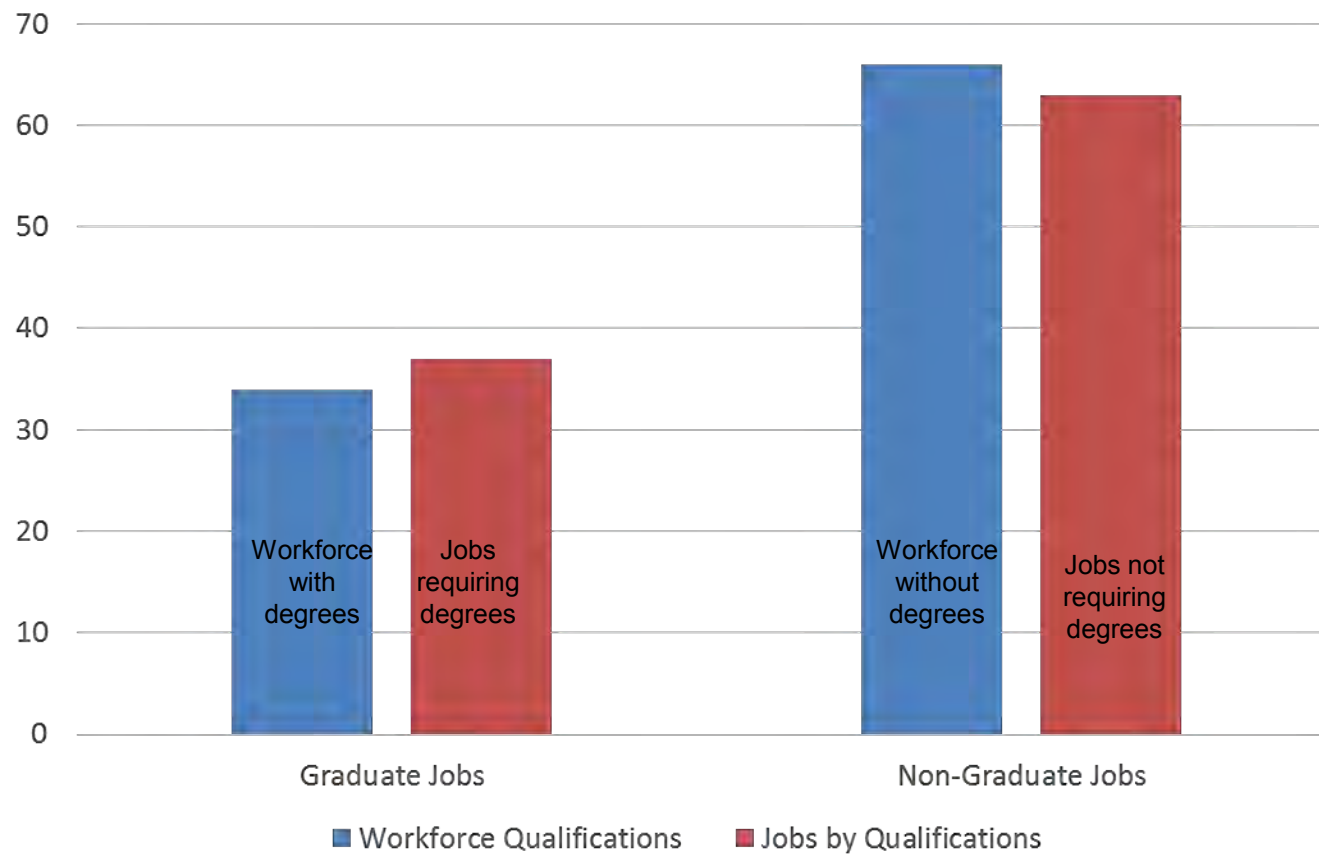
University Contribution

Jobs requiring degrees 2012 (UK)



University Contribution

Jobs requiring degrees 2022 (UK)



University Contributions

Beneficial outcomes of Business-University collaborations

- Technological change
 - New products
 - New services
 - Novel market opportunity
- Improved efficiency
 - Lower production costs
 - Higher speed of production

University Contribution

Universities as Investment Magnets

- UK Universities secure 15% of R&D funding from abroad
- The UK secured 21% R&D from overseas
- Universities deliver the talent pool which attracts Foreign Direct Investment (FDI)
- “Soft Power” associated with overseas graduates of UK Universities promote FDI in the UK

OECD 2015

Universities – Research Competition

Research Excellence Framework

Outputs

- Books, journal articles, artefacts, exhibitions

Environment

- Doctorates awarded, research income, strategy

Impact

- Case studies – reach and significance

University Research Industry relationship

University	QS Ranking	Industrial Funding for STEM Research	Contract Research
Cambridge	1	3	11
University College	2	4	3
Oxford	3	1	1
Imperial	4	2	2
Manchester	5	5	4

Witty 2013

University Innovation Facilitators

Bricks and mortar

- Providing spaces, equipment and facilities
- 50% of UK's 100 science parks are linked to Universities
- Income from 'facilities' has grown by 60% in a decade

Murray Brown 2014, HESA 2015

Innovation Investors

Universities as funders

- Between 2010 and 2015 UK Universities supported 15,000 new graduate and academic startups and spin-outs
- They provided seed-funding, subsidised space, mentoring and business support
- The University of Hertfordshire
 - Supported 95 entrepreneurs
 - Spent £10m on bioscience incubation facilities
 - Invested 20,000 hours of advice in businesses

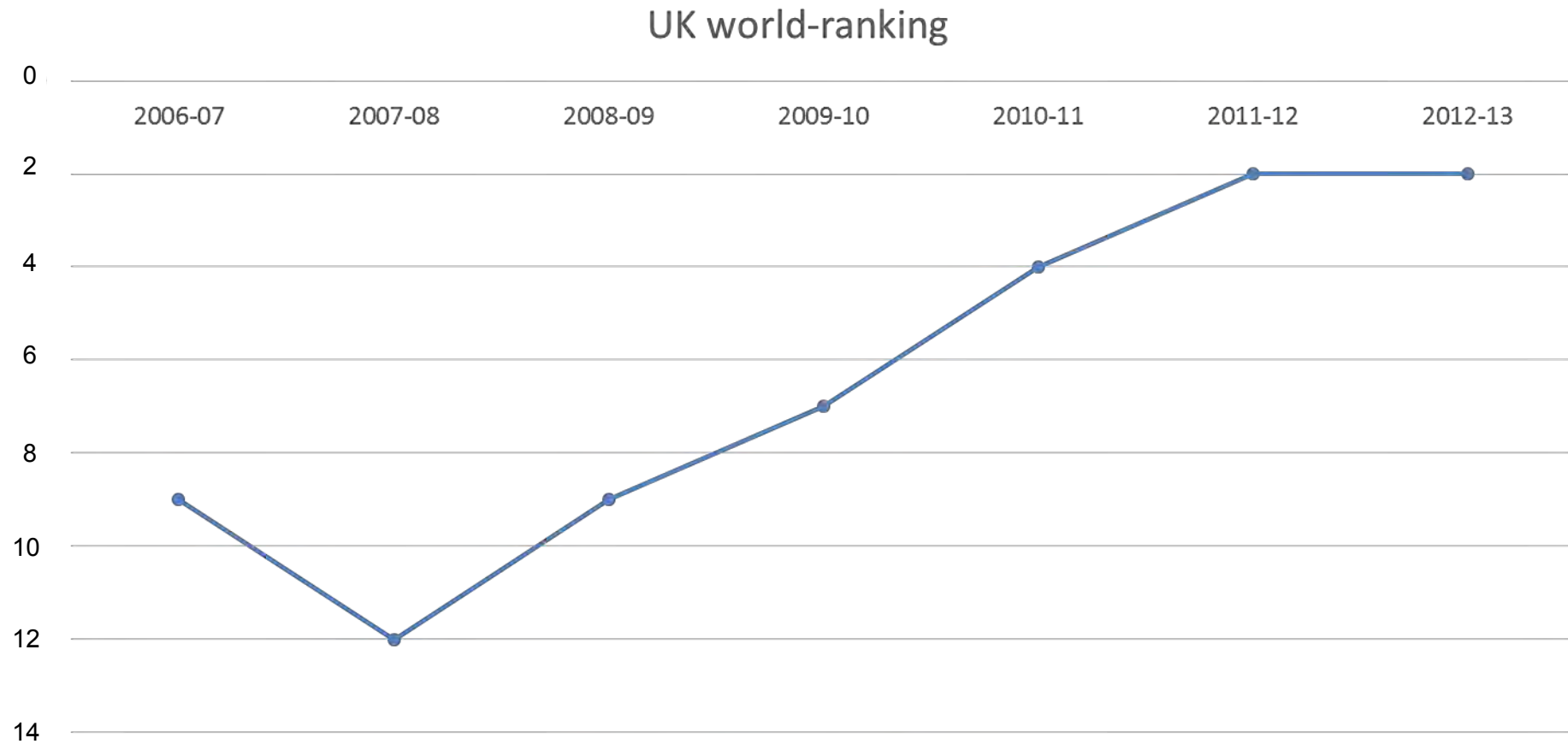
University Contribution

University Business Support

- Long term collaborative R&D programmes
- People exchange or sabbatical
- Feasibility studies
- Voucher schemes

UK World-ranking

University-industry collaboration



Business Benefits from University Collaboration (Over a 3 year period)

- Further investment in R&D (+161%)
- Better on product and process innovation (+45% + 40% respectively)
- Sales of novel products (+72%)
- Use of technical information (+57%)

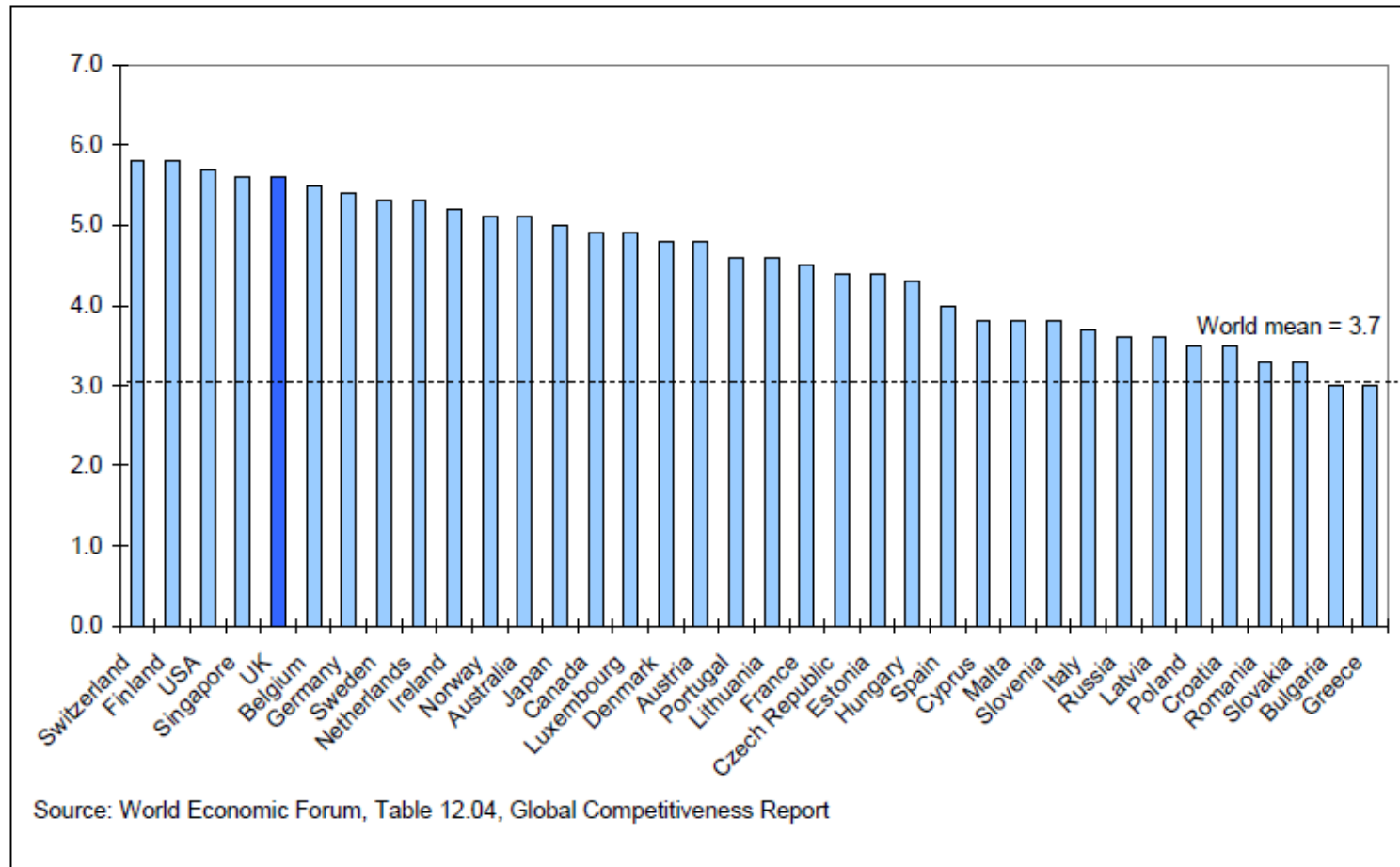
BIS 2014

Universities Of 161 Universities:

- 108 offer work based learning
- 150 offer bespoke courses for business
- 113 engage business in reviewing curricula
- Many now offer Graduate Apprenticeships
- HE – BCIS survey

University-Industry Collaboration in R&D in EU28, G8 and others

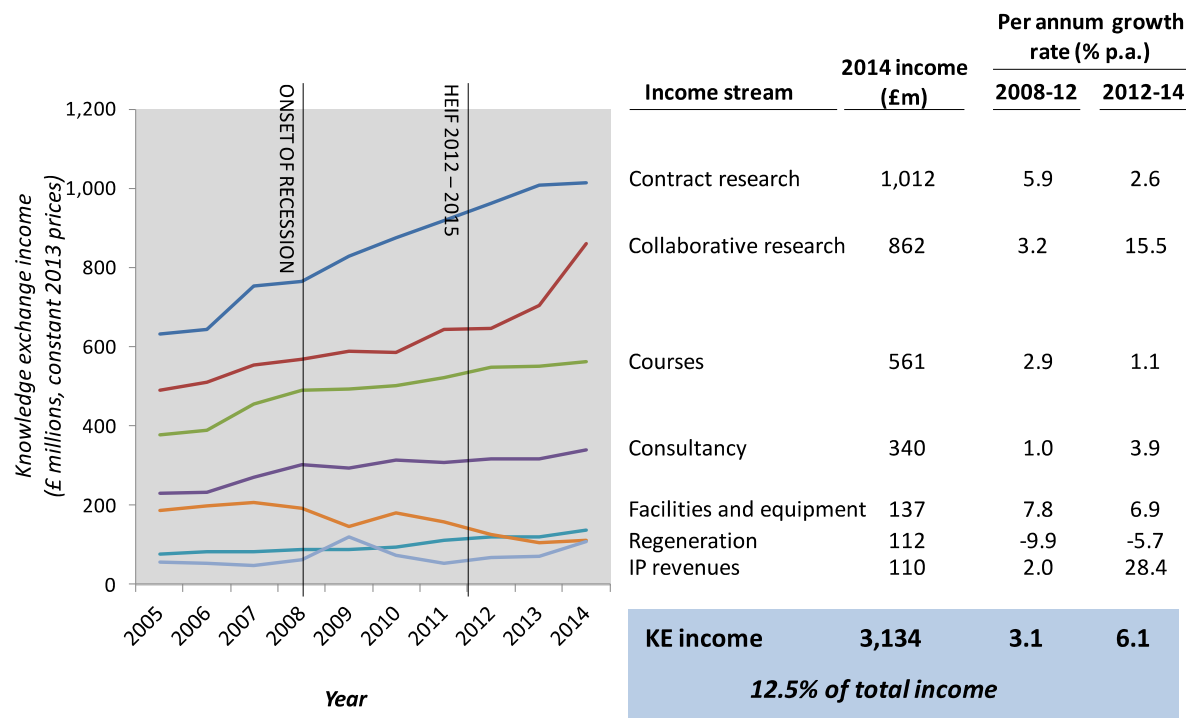
University-Industry Collaboration



Trends in Knowledge Exchange

Contract research and collaborative research

Trends in knowledge exchange income, by mechanism (2005 – 2014)



Assessing the Impacts of the Higher Education Fund, HEFCE

External income from relevant activities for UK HEIs (2014/15)

	SME Business	Large Business	Third Sector	Total
	£000s	£000s	£000s	£000s
Contract Research	47,985	435,257	726,539	1,209,781
Consultancy	73,686	109,541	259,202	442,429

Higher Education – Business and
Community Interaction Survey, 2014-15

Impact of Innovation at University of Hertfordshire

What we do



Innovation at University of Hertfordshire

What we do

- £3m turnover subsidiary company, established 2011
- UK Government, ERDF and private funding
- BT, EDF Energy, Cambridge, Cranfield universities
- Install a refuelling/recharging infrastructure across the East of England, linking with networks in London and the Midlands
- **A test bed for businesses to develop new technologies, products and services in the transport, built environment, digital and energy sectors**
- Felixstowe Port hydrogen vehicle trial
- Off-grid storage facility at Hethel Norfolk

EValu8

Employment Impact of Innovation at University of Hertfordshire

What we do

- Across 29 Knowledge Transfer Projects with SMEs:
 - £3M was input (40% from the company partners)
 - Partner revenues rose from £38M at programme start to £47.5M at the end, with £4.8M further 3-yr growth forecast
 - Projects leveraged investment of £1.4M in new plant and machinery, caused 29 new jobs to be created, and enabled 129 existing employers to acquire new skills
 - LEP funding will result in both economic enhancement and significant enhancements to our research

Any Questions?

Universities and Business Engagement