

The role of the University of Oxford and Oxford Brookes University in the Oxford economy

1. Introduction and purpose of this paper

This background paper supplements the relevant background papers that were published at the Issues stage of consultation in 2016.

For clarity, the content of the 2016 papers has not been reproduced here but should be read alongside the 2017 papers, particularly the background paper on Employment and Economy and the Employment Land Assessment (2016) study. This paper builds on those to explain more about the specific influences of the University of Oxford and of Oxford Brookes University in the local context.

2. Background of the Oxford universities and knowledge-based economy

Oxford is renowned as a city of learning, and is host to two universities: The University of Oxford and Oxford Brookes University. These make a significant contribution towards the national and local economies.

Both of the universities are highly regarded in their own right and have built a reputation for educational excellence. The University of Oxford has had a long historical connection to the city since its foundation in the 12th Century, so for some 900 years Oxford's economic growth has been influenced by this, whether through employment by the University (directly or indirectly), or through revenues brought in to Oxford resulting from the reputation of the city associated with the University. Oxford Brookes University has 150 years of history in providing education in the city and has also had an influence in shaping Oxford's economy during that time.

The University of Oxford is regularly ranked amongst the top five universities in the world, and in 2016 was named the top rated university globally¹ which was the first time a UK university has achieved this accolade. Oxford Brookes University is rated as one of the best new universities in the UK, and is rated as within the top 150 'young' universities, universities which are under 50 years old, globally.² Together, these universities set the precedence for educational excellence within Oxford and provide a key driver for the knowledge-based economic activities in the city.

Directly, the two universities are some of the largest employers in Oxford and Oxfordshire (the University of Oxford has around 12,000 full-time equivalent employees and Oxford

¹ https://www.timeshighereducation.com/world-university-rankings/2017/world-ranking#!/page/0/length/25/sort_by/rank/sort_order/asc/cols/stats

² https://www.timeshighereducation.com/world-university-rankings/2016/young-university-rankings#!/page/2/length/25/sort_by/name/sort_order/asc/cols/stats

Brookes almost 2,000 full-time equivalent). In addition, over 1,500 high tech firms operate in Oxford, employing over 43,000 people, and the knowledge intensive sector as a whole accounts for 72,700 jobs (70% of total jobs in the city)³. In the coming years it is anticipated that there will be significant growth in employment in university-related education, biosciences, and healthcare, as well as an increase in corporate research and development linked to the universities most likely in biomedical, engineering, and computing⁴.

3. Evidence base and studies

There are a range of studies, strategies, and discussion papers which explain and provide evidence which illustrates the influence of the two universities upon the Oxford, Oxfordshire, and national economy. This section provides signposts to the key studies and strategies and their conclusions, and then the next section of this Background Paper explains the various influences under different themes.

Economic Impact of the University of Oxford (BIGGAR Economics, June 2017)

This paper was prepared by Biggar Economics for the University of Oxford based on an economic impact study of The University during the 2014/15 academic year. The findings of the report reviews the economic input of the University of Oxford locally and nationally.

The report demonstrates the substantial monetary value to the Oxford economy made directly and indirectly by The University and affiliated people and organisations, as summarised in the pictographics below.

³ NOMIS

⁴ Economic Forecasting to inform the Oxfordshire SHMA (Cambridge Econometrics, 2014)

Figure 1 Regional Economic Impact of the University of Oxford, reproduced from Oxford University's Economic Impact (2017)

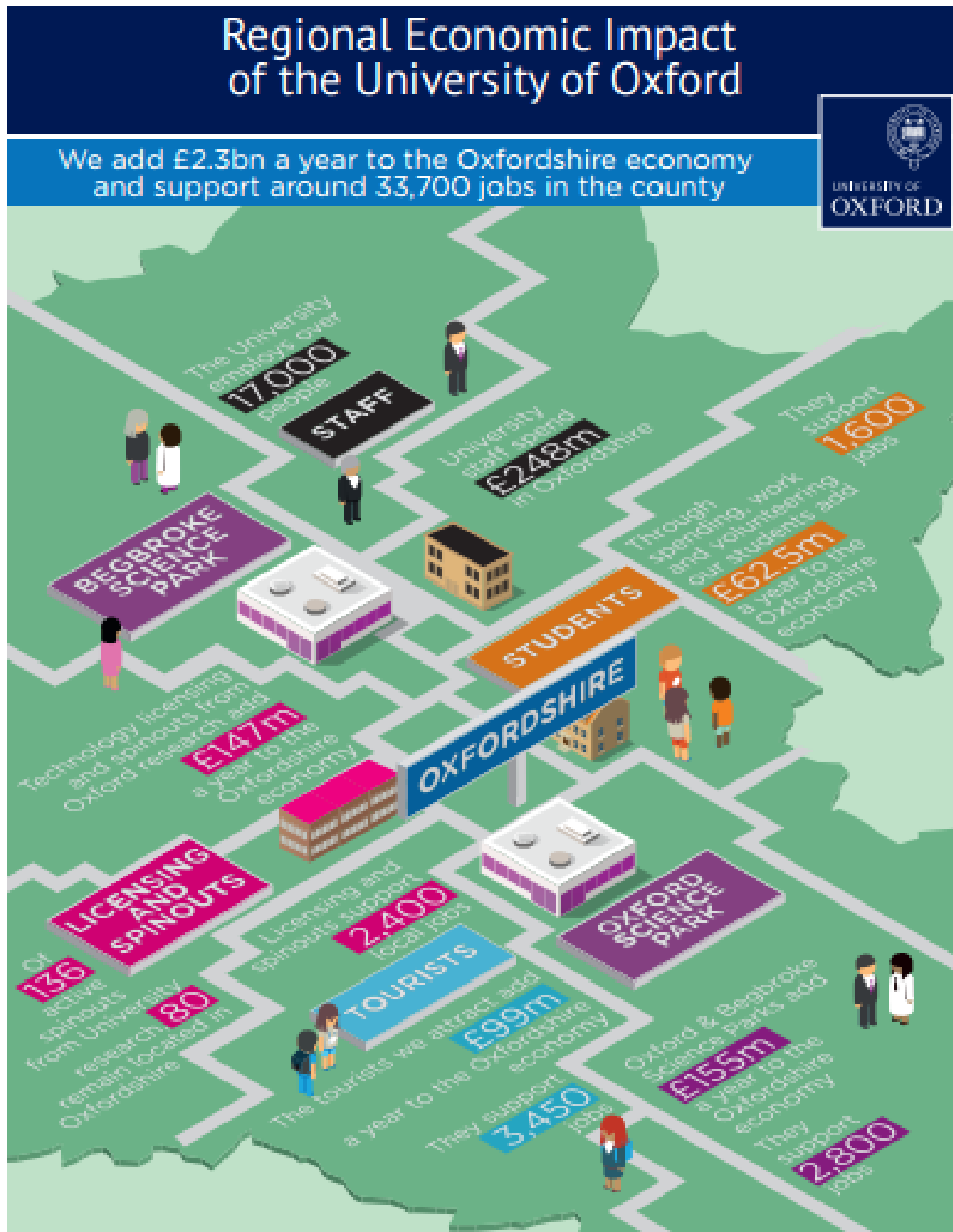
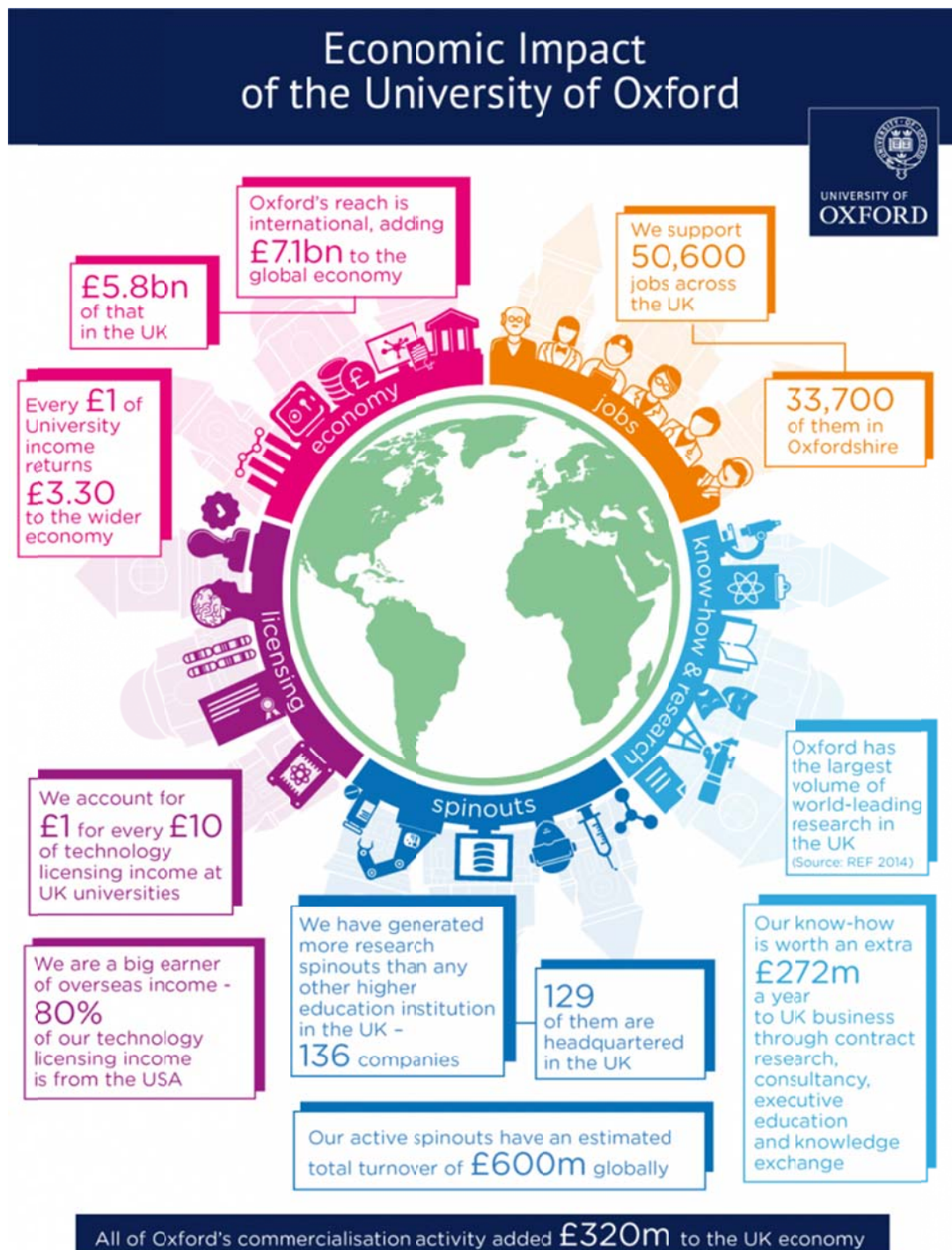


Figure 2 General Economic Impact of the University of Oxford, reproduced from Oxford University's Economic Impact (2017)



Source: BIGGAR Economics report 'Economic Impact of the University of Oxford' (2017). All figures relate to the 2014/15 year and economic contribution is measured as Gross Value Added (GVA). See the full report at: www.ox.ac.uk/economicimpact

Smart Oxford, 2017

“Smart Cities” is a concept that has been adopted by multiple cities worldwide. Smart City initiatives aim to improve the management of urban environments through the use of information technology, and the collection, processing, and integration of data across services, such as transport, healthcare, and energy services. Smart Cities are about making places more ‘liveable’, and enabling citizens to engage with all the services on offer, public as well as private, in a way best suited to his or her needs.

Smart Oxford is a partnership of local businesses and stakeholders including the two universities, overseen by the Oxford Strategic Partnership, to deliver a whole range of projects and innovations. Examples include improving broadband and the availability of superfast broadband, Science Transit public transport system, driverless cars, flood warning systems, and low carbon initiatives. The projects overall can be summarised as aiming to ensure that the city and county can benefit from innovation and technology advances. Many of these projects link closely with research from the universities and spin-off businesses. The Smart Oxford Competition was launched in March 2017 to find and commission a smart city project that will engage with the wider community and promote Smart Oxford and smart city solutions.

Strategic Economic Plan for Oxfordshire 2013 and 2016 (OxLEP)

The Strategic Economic Plan was prepared by the Oxfordshire Local Enterprise Partnership “OxLEP” in 2016 as a refresh to the 2013 Strategic Economic Plan, taking into account evidence that was previously unavailable as well as updating the strategic approaches. Although the report considers the whole of Oxfordshire, it contains useful data concerning the two universities and recognises their particular economic contribution both regionally and to Oxford itself. It also highlights the contribution of the universities to the “knowledge spine” which runs through the county, with the universities at the centre, and indicates that employment and housing growth should be shaped around this. Many of the projects that the SEP identifies for Local Growth Fund funding are linked or related to projects which the universities are contributing or securing funds to already, to maximise the economic benefits.

Capital of Innovation Bid, 2016

The Oxford Capital of Innovation Bid, known as ‘Oxford iCapital16’ sets out a detailed case to show how work undertaken by The University of Oxford, and partner organisations, has been instrumental in driving innovation and business growth within the economy of Oxford and the wider sub-region. This bid highlights the clear benefits this lends to Oxford’s economy and status as a knowledge and technological cluster and innovation.

Oxford’s bid to be the European Capital of Innovation Award 2016 was ultimately unsuccessful despite reaching the final, but the process of putting the bid together was of great value as, for the first time, the breadth of Oxfordshire’s innovation eco-system was observed. The bid itself has provided complementary material to OxLEP’s new Innovation Strategy and a basis for future activity. Another bid is being prepared to become the Capital of Innovation in 2017.

Economic forecasting to inform the Strategic Economic Plan and the Strategic Housing Market Assessment (2014)

This study provides evidence of population growth and economic forecasting to inform the Oxfordshire Strategic Economic Plan, and the Strategic Housing Market Assessment. It identifies key sectors as likely to stimulate growth above trend in Oxford as including the University of Oxford and Brookes University (research) 2,000 additional jobs, Bioscience 1,500 jobs, health sector 2,500 jobs. Significant growth is expected to take place in the education (university-related), bioscience, and healthcare sectors, as well as an increase in corporate R&D linked to the universities, the most likely being in biomedical, engineering and computing.

The Oxfordshire Innovation Engine (SQW, 2013) and Update Report (2016)

The Oxfordshire Innovation Engine Report (2013) was commissioned by the University of Oxford and Science Oxford together with the Oxfordshire Local Enterprise Partnership (OxLEP) who appointed SQW to undertake some independent research on Oxfordshire's high tech cluster. This was updated in 2016 to review the progress made since the original report.

The report complements previous work done to better understand elements of the special innovation ecosystem that drives Oxfordshire's economy, such as Invest in Oxfordshire Sector Analyses, and the NESTA network analysis. It provides an analysis of the factors that have led Oxfordshire to become one of the UK's most significant centres for science-based research and enterprise. It highlights the strategic importance of the area in fields as diverse as life sciences, high performance engineering, space, motorsport, ICT and particle physics. It also identified the constraints which prevent Oxfordshire from realising its full potential.

The report highlights the importance of Oxfordshire's economic assets and in particular those associated with science and technology which are considered by the consultants to be outstanding. Amongst the key assets include the two universities, and the 'global' Oxford brand which the report suggests conveys the image of academic excellence, historic significance and a beautiful place to live. It highlights that the University of Oxford is central to technology and knowledge-based development in the county.

The Economic Contribution of Oxford Brookes University (Oxford Brookes University, 2010)

Oxford Brookes University undertook a study in 2010 in which they evaluated their economic contribution to the UK economy. This report collated data from a variety of sources and presents tangible figures and statistics demonstrating the economic role. Although the report is now comparatively dated to the other studies, the key narrative of vast economic contributions of the Oxford economy remains as true today.

Figure 3 “Facts and Figures”, reproduced from *The Economic Contribution of Oxford Brookes University*



4. Economic Impacts and Influences by Theme

The universities influence and shape economic growth in various ways, both directly and indirectly, as this section considers.

Direct Contribution to the Economy

Both of the universities in Oxford contribute a significant amount of revenue directly to the local economy in Oxford and the Oxfordshire region, by employing staff and other activities which generate income and add value to the economy (GVA). It is estimated that in 2014/15 The University of Oxford contributed £5.8 Billion GVA nationally, of which £2 billion GVA and 28,800 jobs were within Oxford itself⁵.

The University of Oxford also generates income which makes a significant contribution to the local economy. In particular it accounts for approximately 10% of licensing income received by UK universities, making £14.7 million from such licensing royalties.

Commercialisation activities also support jobs and bring in revenue. For example Oxford University Innovation Ltd (the University’s wholly owned research and technology

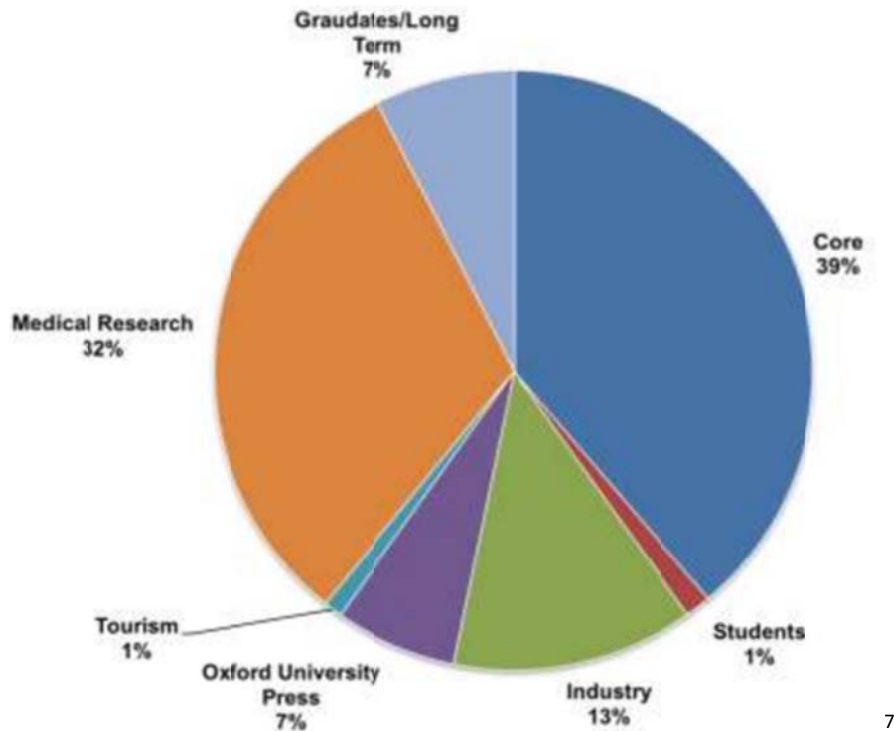
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<https://www.ox.ac.uk/sites/files/oxford/Economic%20Impact%20of%20the%20University%20of%20Oxford.pdf>

commercialisation organisation) alone supports 1,600 jobs and manages 2,490 patents which generated £24.6m revenue in 2015⁶.

The income generated by the University is summarised in the diagram below:

Figure 4 UK GVA impact of the University of Oxford by source



Oxford Brookes University similarly has a significant role directly as an employer, employing 2,500 staff, making it the 8th largest employer in the county⁸. In 2010, 84% of the staff lived within Oxfordshire and academic staff earn an average salary of £39,461, compared to a countywide average of £30,202⁹. The diversity of the university staff, in terms of disparity in skills, qualifications and roles, also ensures the economic benefit of employment is spread across a diverse demographic of the work force in the city.

Oxford Brookes University also generates significant and increasing levels of income with around £158 million generated income in the 2008/09 academic year. This income is largely spent in ways which benefit Oxford's economy, for example in the same year 56% of the £151 million expenditure was spent on staff costs, most of which reside locally¹⁰. A further £20 million is directly injected into the local economy through locally sourced service and supply contracts¹¹. This highlights how even the day-to-day functionality of Oxford Brookes University directly injects a substantial stream of income into the local economy. It is likely

⁶ <https://www.ox.ac.uk/local-community/engagement/part-of-oxford/economy?wssl=1>

⁷ Biggar Economics 2017

⁸ The Economic Contribution of Oxford Brookes University p.7

⁹ Oxford Brookes University 2010

¹⁰ Oxford Brookes University 2010

¹¹ Oxford Brookes University 2010

that since the 2010 report, these figures will have continued to increase especially given that Oxford Brookes University's income increased by 74% between the 2001/02 and 2008/09 and their expenditure increased by 50% in the same period. Assuming a similar trajectory has continued into the new decade, or even if growth had slowed in the wake of the 2008 global recession, the economic contribution of Oxford Brookes to the local economy is becoming even more considerable.

The supply of highly skilled and educated graduates also benefits the local economy and enhances Oxford's prosperity. For example approximately 75% of Oxford Brookes graduate nurses go on to work in the local community in the area¹². Both universities also train many of the local workers in key sectors, such as the educational sector which supports a supply of qualified teachers. This direct feeding of skilled workers back into the local area contributes to the city's reputation of a highly skilled workforce, making it a desirable place to locate business as well as supporting a good educational and health infrastructure.

The 'Oxford Brand'

The high profile that Oxford enjoys can partly be attributed to the prominent role of the universities. The universities, particularly the older University of Oxford, play a critical role in generating and maintaining the Oxford brand that is recognised internationally. This benefits the Oxford and Oxfordshire economy, by attracting visitors, employers and employees, and investors, who wish to experience or be associated with that brand.

Oxford is the 7th most visited city in the UK. The city attracts approximately 7 million visitors, both domestic and international, per year, generating roughly £600 million. The historic buildings of the various colleges of the University of Oxford in particular are a major source of tourist interest and visitation and represent somewhat unique tourist attractions that few other cities can rival. The University of Oxford's renowned museums, galleries and gardens further enhance the tourist offer of Oxford, as well as generating further income through lending various collections globally. It is estimated that the additional 43% of tourism Oxford experiences compared to other comparable cathedral cities can be attributed to the University of Oxford and its associated attractions.

The Oxford brand also attracts employers and businesses which amongst other locational factors also wish to be associated with the Oxford brand and the prestige that brings in certain lines of business. A high calibre of employees can also be attracted by the 'dreaming spires' images, high quality environment and other factors. These factors have assisted Oxford in attracting more foreign direct investment than many larger cities; companies like Siemens, BMW and Sharp all prosper in the city.

Supporting 'Knowledge sector' clusters

Clustering of related businesses is important in in knowledge-based, research and high-tech industries, and the presence of the two universities (and resulting supply of graduate workers) fosters the aggregating of such related industries particularly to be located within Oxford where they are physically close to the universities and associated research labs and the research hospitals.

¹² Oxford Brookes University 2010

Oxfordshire supports an internationally recognised cluster of ‘big science’ and research facilities, over 1,500 high tech businesses, and a highly skilled workforce. Underpinning Oxfordshire’s strong economy and labour market is the area’s very particular strengths in higher education and research, facilitated by the opportunities arising from the two universities. This is reflected in the county’s ability to lead on at least six, and have capacity in all, of the ‘eight great technologies’ identified by Government: big data, space, robotics, synthetic biology, regenerative medicine, advanced materials, agricultural technologies, and energy storage. These ‘Big Sciences,’ would be impossible without the two universities supporting, partnering and producing skilled graduates for this ‘knowledge’ sector¹³. It is estimated 26% of Oxfordshire’s graduates stay within the county to work after completing their courses.

The University of Oxford made a particularly large contribution in medical research, for which they received an additional £340 million of funding, which has a large effect in supporting the life science cluster in the region.

There has been continued sustained growth in the University’s total external research income, which in 2014/15 reached £523m, while Oxford Brookes University is consistently within the top 10 universities in the UK in terms of income from intellectual property which reflects the strong impact of its research, from which the university draws in the region of £1.8m annually, in addition to substantial sums from the Quality-related Research Funding (£4.84m in 2015-16)¹⁴. Overall in the last few years investments of around £400m have been made in research infrastructure in Oxfordshire, mainly in Oxford University, at Culham, and at Harwell. This includes £110m investment in a new Precision Cancer Medicine Institute, £20m for the Chan-Soon-Shiong Oxford Centre for Molecular Medicine, £60m for the Oxford Big Data Centre, and £15.6m for the Robotics and Remote Handling Centre¹⁵. This highlights the essential contribution to the economy by underpinning Oxford’s brand with concepts of research excellence¹⁶.

Innovation and Partnerships

Economic growth in key sectors in Oxford such as education and health are being driven by the universities in partnership with the University Hospitals Trust. The collaborative research undertaken by the University of Oxford and the Hospitals Trust together with Oxford Brookes University are key drivers of research and development that make a major contribution to Oxford’s position as a world-class city.

The universities also have a strong influence on innovation and associated spin-out businesses, and Oxford is the main centre for spin-outs in the county¹⁷. ‘Oxford Instruments’ was the first commercial spin off from the University of Oxford, in 1959, which invented the world’s first commercial superconducting magnet and forged the technology that led to the development of the human MRI. In recent years, the University of Oxford had become far

¹³ OXLEP Strategic Economic Plan

¹⁴ Oxfordshire Innovation Engine Update 2016

¹⁵ Oxfordshire Innovation Engine Update 2016

¹⁶ Strategic Economic Plan

¹⁷ Oxfordshire Innovation Engine

more embedded in the local business and innovation landscape and often works closely with other organisations such as the Oxford Trust, and Oxford Science Innovation PLC. The University of Oxford produces more spinouts than any other university in the UK¹⁸. New technology-based companies are frequently spinning out from the universities with the recent examples being Oxford Gene Technology and an OUI Incubator company¹⁹. The University of Oxford has 136 active spin-out companies which contribute £147 million GVA and support 2,400 jobs, most of which is located in Oxfordshire²⁰. The two universities have provided a combined total of £320 million to fund spinout companies and businesses. These companies reinforce Oxford's economic strength and the regional economic strategy of developing the Oxford- Cambridge corridor as a 'knowledge spine.'

In recent years, the brand 'SMART Oxford' has also supported further innovation and progress, which the universities are partners in. Smart Oxford recognises Oxford as a centre for developing products and services that use Big Data, Internet of Things, and Robotics. Specific strengths lie in autonomous vehicles, digital health and mobile energy. A number of projects have been launched across a range of topics including transport (e.g. Oxbotica), environment (e.g. Oxford Flood Network), energy, broadband and digital.

The Business Sector

In parallel to research funding that the universities attract to Oxford, they are also involved in measures to increase the local economic benefits of the research, so that initiatives from the two universities also support development and growth of businesses in Oxford. For example in 2015 Oxford University produced an Innovation Strategy, restructured Isis Innovation (which has aided the establishment of over 100 spin-out companies since 2000), and established a £320m 'Oxford Sciences Innovation' fund to invest in science and technology-based spin-outs²¹. Oxford is also a hub for enterprise, entrepreneurship and business acumen with the Oxford Saïd Business School (supported by the University of Oxford) being ranked first in Europe for entrepreneurship in the Financial Times' league table of the best MBA programmes.²² For the last decade, the Young Enterprise National Finals have featured Oxford finalists and Isis Enterprise won a Queen's Award for enterprise while also being the top performing university spin out nationally.²³

Oxford Brookes University also has strong credentials in the business landscape. Not only do they channel significant funding into boosting local businesses and skills, but they also offer consultancy advice for local small and medium businesses to help protect this more vulnerable, but essential, demographic of the economic ecosystem. The universities are also firmly imbedded in local business partnerships such as CommercialISE, a large partnership of 11 universities which supports 200 businesses²⁴. These accolades in business represent a significant indirect contribution to the local economy.

¹⁸ <http://www.spinoutsuk.co.uk/listings/university-listings/Default.aspx>

¹⁹ <https://innovation.ox.ac.uk/news/colwiz-ogt-exits/>

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<https://www.ox.ac.uk/sites/files/oxford/Economic%20Impact%20of%20the%20University%20of%20Oxford.pdf>

²¹ Oxfordshire Innovation Engine 2016 Update

²² <http://im.ft-static.com/content/images/e676be3c-1b32-11e5-8201-cbdb03d71480.pdf>

²³ <https://innovation.ox.ac.uk/news/isis-enterprise-receives-queens-award-enterprise/>

²⁴ Oxford Brookes University 2010

Potential risks to continued economic growth from the universities

This paper has so far considered the strengths and the positive economic contribution of the universities, however there are also risks which could threaten future growth. The national decision in 2016 to leave the EU could endanger the economic potential of the universities. This threat is particularly potent to the University of Oxford, which received £437 million from EU grants between 2007 and 2013²⁵. Both universities also have an above average intake of foreign students, particularly from the EU, which could be threatened if access becomes more difficult for foreign students or if costs like tuition fees increase substantially. This uncertainty does show that, while the economic contribution to Oxford by the universities is hugely significant, they are institutions which remain vulnerable to wider political and economic change and which may need support and some protection.

5. Conclusions

This paper sets out that there is a clear economic contribution the universities within Oxford make to the UK economy as well as, significantly, accounting for a large part of Oxford's own economic success. This includes direct financial interaction and support, as well as the immeasurable impacts of the strong reputation they lend to Oxford as well as the resultant brand that has been developed for Oxford, which makes it such a desirable place for businesses to locate.

The evidence indicates that the economic potential of the universities is continuing to rise, particularly as these institutions continue to become more ingrained and integrated with the local business community through offering consultation, partnerships and financial support to local small to medium businesses and start-ups. The economic output of these institutions is unmatched by any comparable academic institution in Oxford.

Given the potential vulnerability of the two universities in these times of economic uncertainty as well as the continual need for these institutions to expand in order to preserve and enhance their economic status; the evidence suggests that the universities should be given precedence over other educational facilities in Oxford in order to make Oxford more economically robust and resilient. This has been reflected by the preferred policy options in the Preferred Options Document.

²⁵ SEP