21st Century universities: engines of an innovation-driven economy

How do we reduce the fiscal deficit without damaging growth?

A report by University Alliance

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How do we reduce the fiscal deficit without damaging growth?

Key findings

- Innovation and high-tech approaches are the most likely to be successful in driving economic recovery and growth in the UK economy.
- Achieving an innovation-based economy will require increased investment in higher education, science and research – a fact widely recognised by our international competitors.
- Without this critical investment in the building blocks of innovation, we face a downward spiral of economic competitiveness.
- Given the scale of the fiscal deficit, sources of additional public investment will be constrained but any reduction in total investment (public and private) would be detrimental to our future economic prosperity.
- Together, therefore, we must consider solutions that will shift the proportion of both private investment and private delivery of higher education in order to ensure that any reduction in public investment does not harm the future growth of our economy.

Executive summary

1. There is a question that is currently being asked across the UK as we face the biggest deficit since the end of World War II. The question was recently summed up by Vince Cable in his Denning Lecture; "can we reduce the deficit while still investing in helping the economy?"[1]

2. While government has recognised the important role of universities as part of this critical question,[2] the full role of these institutions within our economy has often been overshadowed in the UK. Indeed, despite severe spending cuts in many countries, it is a remarkable fact that the UK and Romania are the only two OECD countries that are not increasing their investment in higher education, research and science.

[1] Cable V, Denning Lecture 2010, Can we pay down the deficit and invest in growth? 10 June 2010, see http://www.bis.gov.uk/news/speeches/vince-cable-denning-lecture

[2] In the same lecture Vince Cable noted that high quality education, science, research and innovation were some of the things that public money should be invested in due to their impact on productivity and growth. David Willetts also highlighted the crucial role of universities in our economy during his speech to the Universities UK conference, see http://www.bis.gov.uk/news/speeches/david-willetts-uuk-conference

3. This paper highlights a weight of evidence to demonstrate that universities are not just part of a growth strategy, they are central to it. The quality and scale of our higher education (delivering highly skilled graduates), science and research will determine the future pattern of economic growth in any innovation-driven economy. This puts universities right at the heart of the original question.

4. As President Sarkozy has recently outlined:

> "With western economies going through a difficult period - a recession unlike any the world has experienced since 1929 - governments are obviously tempted to postpone needed investments in science. If you were in our shoes, you would be tempted too.
>
> But we in France took the opposite tack, considering that higher education and research are the solution to the recession. The economic downturn should not prompt us to postpone investment in science, but rather to bring it forward and consolidate it."
>
> Président Nicolas Sarkozy, Palais des Congrès, Paris, 26 July 2010[3]

5. And France is not alone:

   - In the US, President Obama has pledged the largest commitment to scientific research and innovation in American history alongside his goal that by 2020 America will once again have the highest proportion of college graduates in the world – with the intention of "greatly enhancing [their] ability to compete for the high-wage, high-tech jobs of the future."[4]
   - In Australia, the Government announced a 25% increase in the science and innovation budget from 2008-2009.[5]
   - In Germany, Chancellor Merkel has announced their goal to create a 'Bildungsrepublik', an educated and learning republic', involving a €12 billion increase in the budget for education and teaching by 2013.[6]

6. So what is it that France, the US and, indeed, most other OECD countries are recognising that we are not?

[3] see http://www.ichep2010.fr/10-07-26-35th_International_Conference_on_High-Energy_Physics.pdf
[4] Obama B Specch at the 146th Annual Meeting of the US National Academy of Sciences, 27 April 2009, http://www.pnas.org/content/106/24/9539.full
[5] The Royal Society, The Scientific Century, securing our future prosperity, March 2010, http://royalsociety.org/the-scientific-century/
[6] Ibid

1. **Innovation is a key driver of growth and productivity.**
    a. Recent research has confirmed that innovation and high-tech approaches are the most likely to be successful in driving economic recovery and economic growth in the UK economy.
    b. Innovation was responsible for two-thirds of productivity growth between 2000-2007 and was the common defining feature of the fastest growing 6% of businesses between 2002 -2008. These businesses generated half of all new jobs created during this time.
2. **Human capital (particularly graduate-level skills) is now the primary indicator of future economic growth.**
    a. The proportion of our working population with graduate-level skills, along with our science and research base, will determine the pattern of our future economic growth and our ability to achieve the innovation-based economy that we are striving for.
    b. A graduate contributes between 20 and 48 per cent greater productivity to the labour market than employees holding lesser qualifications.
3. **There is an increasing shortage of graduates, not saturation, and there is still a significant 'graduate premium' attached to obtaining a degree.**
    a. The UK economy is not presenting any of the labour market signals that would suggest there are too many graduates in the economy. Graduate vacancies continue to grow, there is an increasing proportion of skilled jobs in the total workforce and there is still a significant graduate premium.
4. **If we stand still we will fall behind – our global competitors are continuing to invest heavily in universities despite their own budget deficits.**
    a. In 2000, the UK was 3rd amongst top industrialised nations in terms of the proportion of young people graduating. In 2008 we had fallen to 15th position because our competitor countries have been investing at a faster rate than us.
    b. We have to consider carefully the consequences of continuing to move down this ranking in terms of our international competitiveness.
5. **Universities have a vital role to play in re-balancing the future economy, both in terms of sectors and regions.**
6. **Those universities with high levels of business engagement are well placed to build on established partnerships with business and new industries.**

Recommendations: public and private investment in higher education

A - Public investment: any cuts must be weighed up against the wider impact on the UK's future growth and prosperity

7. The investment of public funding in higher education is just that – an investment. As an innovation-driven economy, the UK is likely to have the greatest impact on future growth and productivity by investing in this area.

8. Given the scale of the fiscal deficit, sources of additional public investment will be constrained but any cuts in this area must be weighed up against the wider impact on economic prosperity. As Lord Sainsbury so aptly put it:

> "The best way for the UK to make the most of globalisation opportunities is to support the restructuring of British companies into high-value goods, services and industries. We should seek to compete with emerging economies in a 'race to the top' rather than a 'race to the bottom'"[7].

9. Assuming that we accept the strong case for continued investment, we would highlight the following three priorities for the Spending Review:

Recommendation one: ensure every pound of public investment is used to the best effect

See report: Efficiency, Leadership and Partnership: an approach that delivers shared economic priorities[8]

Recommendation two: ensure limited public investment in research and science is used to the best effect by maintaining the principle of funding excellent research, wherever it exists

See report: Concentration and Diversity: understanding the relationship between excellence, concentration and critical mass in UK research[9]

Recommendation three: maintain core public investment to support knowledge exchange and business partnerships that bring in private investment

HEIF, for example, enables HEIs to generate between £5 and £7 in additional knowledge exchange income for every £1 spent. Knowledge Transfer Partnerships (KTPs) have enabled critical business engagement that is driving innovation and new industries.

[7] Lord Sainsbury of Turville, The race to the top: a review of government's science and innovation policies, October 2007

[8] http://www.university-alliance.ac.uk/downloads/Publication_Efficiency_Leadership_Partnership.pdf

[9] http://www.university-alliance.ac.uk/downloads/Publication_Research_Concentration_and_Diversity.pdf

B – Private investment: a more radical look at the ratio of public v. private investment in higher education, research and science

10. Once we recognise the fundamental importance of increasing investment in higher education, research and science in order to drive economic growth, how can this be achieved given the massive fiscal deficit? Do we need to consider more radical options that will deliver a higher proportion of private rather than public investment in these areas?

11. In our view, the answer has to be 'yes'. In light of this, we make the following recommendations for the Spending Review:

Recommendation four: introduce a graduate contribution scheme that will readdress the balance of private and public investment in a way that is fair and progressive for graduates (and ensures that university is free at the point of use for students).

See publication: Proposals for a Graduate Contribution Scheme in England[10]

Recommendation five: Consider a radical re-structuring of the landscape of higher education provision in order to:

a. **enable rapid growth in areas of high demand from employers and students**
b. **increase the level of private provision of higher education in the UK, including effective partnerships with private providers**
c. **increased merger and acquisition / take over**
d. **support more flexible patterns of delivery**
e. **achieve more shared solutions**

See report: Efficiency, Leadership and Partnership: an approach that delivers shared economic priorities[11]

[10] http://www.university-alliance.ac.uk/downloads/Publication_Proposal_for_a_Graduate_Contribution_Scheme_in_England.pdf
[11] http://www.university-alliance.ac.uk/downloads/Publication_Efficiency_Leadership_Partnership.pdf

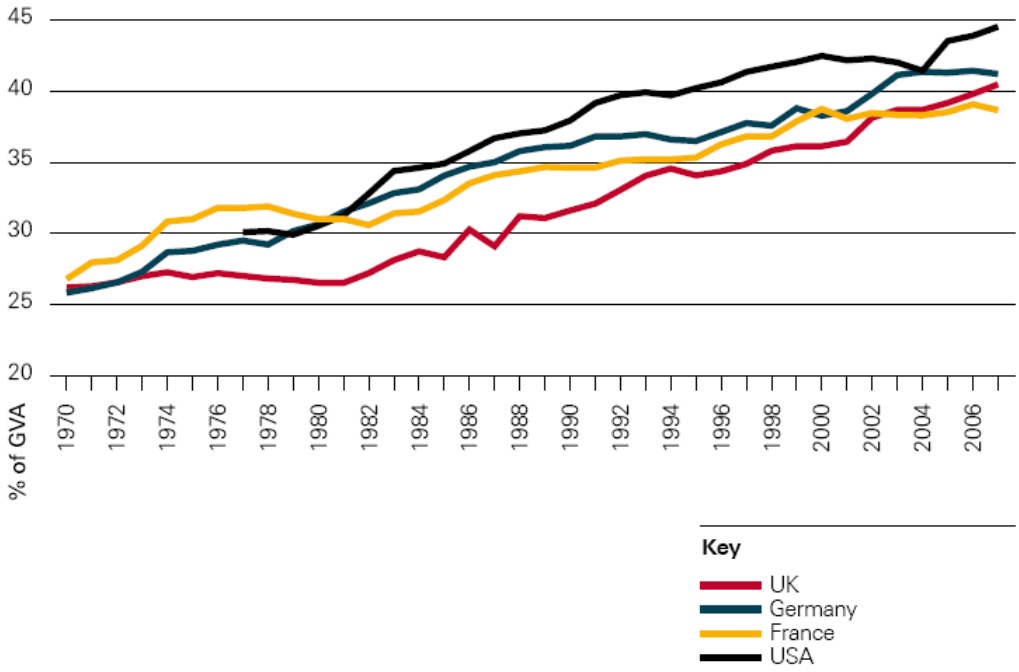
1. Innovation is a key driver of growth and productivity

> "Our country should make more use of its scientific excellence, so that innovation becomes a motor for long term growth and change."
>
> Vince Cable, Strategy for sustainable growth, June 2010

12. Innovation is widely recognised as a key driver of growth and productivity; it was responsible for two-thirds of productivity growth between 2000-2007 and was the common defining feature of the fastest growing 6% of businesses between 2002 - 2008. These businesses generated half of all jobs created by existing businesses during this time.[12]

13. Figure 1 shows the consistent increase of knowledge-intensive services and high-tech manufacturing as a percentage of gross value added (GVA) in the UK, US, Germany and France. This demonstrates the extent to which these countries have become innovation-based economies.

Figure 1: Continued investment necessary to increase productivity in high value-added sectors, as part of ongoing transition to a knowledge economy



Source: The Royal Society, The Scientific Century, securing our future prosperity, March 2010, http://royalsociety.org/The-scientific-century/

[12] Shanmugalingam S et al, Nesta, Rebalancing Act, June 2010, http://www.nesta.org.uk/rebalancing_act

14. In their report, 'What was / what next?', Universities Scotland highlights four main factors that influence productivity: innovation, skills, investment in capital and competition. They find that:

> "The creation of new ideas, technologies and process can have a significant effect on productivity performance. Innovations often have 'spill over' effects that can create wider benefits to the overall economy than simply to the person or firm who created the innovation. These spill overs can be contagious and increase the productivity of all firms as new processes and ideas are copied. "[13]

Future scenarios – high-tech industry and innovation should be our focus

15. In their recent report 'Rebalancing act', NESTA analyses four possible scenarios for future growth in the UK: business-as-usual, a broad-based manufacturing renaissance, a high-tech growth scenario, and a scenario in which businesses invest heavily in innovation across the economy.[14] NESTA report the following findings:

- Business-as-usual scenario: UK would grow at a reasonable rate over the next decade (by 2.6 % pa), but this would come with slow employment growth (not anticipated until 2013) and poor growth in the UK's regions and nations.
- Broad-based manufacturing renaissance scenario: Strains credibility as an increase in the sector's contribution to the economy by 3 percentage points by 2020 (from 2010) implies levels of manufacturing growth (around 6.2% pa) not seen since 1945.
- High-tech and innovation scenarios: Offer plausible growth projections, demonstrating the important role that high-tech manufacturing, business and financial services are anticipated to have in driving growth over the next decade. Both would deliver robust economic growth (over 3.0% pa) and bring a faster return to employment growth.

16. As we will go on to demonstrate, it is the high-tech and innovation scenarios that will depend heavily on a highly qualified workforce as well as investment in research and innovation in our universities.

[13] Universities Scotland, What was / what next?, February 2009, http://www.universities-scotland.ac.uk/uploads/publications/What%20next%20-%20black%20and%20white%20version%20for%20website.pdf
The report was produced under guidance from a panel of 11 leading Scottish economist – no key argument or assertion was included unless it was supported by every members of the advisory panel and supported by multiple pieces of verifiable evidence.

[14] Shanmugalingam S et al, Nesta, Rebalancing Act, June 2010
The four scenarios are based on a specially adapted version of the Oxford Economics industry model. This uses a modified input-output structure to link changes in demand and competitiveness to UK value added and employment for 32 sectors.

2. Human capital is the primary driver of economic growth

17. As the Government's Strategy for Sustainable Growth has recognised:

> "A highly educated and skilled workforce are essential components of our growth potential. They enable people to find employment and create high value goods and services within a knowledge based economy, and to deliver high quality public services. They also contribute to social mobility and fairness."[15]

18. The strategy goes on to outline that "the best strategy is to focus government's resources where they can achieve greatest returns in building an internationally competitive skills base, especially to leverage the most private investment and create additional value." We would argue that it is investment in high-level skills, alongside innovation and research, that will deliver the greatest returns – and there is strong evidence to back this up.

High-level skills drive productivity

19. A graduate contributes between 20 and 48 per cent greater productivity to the labour market than employees holding lesser qualifications.[16] Together with investment in innovation and research, high-level skills are of crucial importance to productivity growth, particularly in a developed economy. As Universities Scotland finds:

> "Improving skill levels contributes directly to productivity performance as it can generate new innovations, technologies and ideas that benefit the economy as a whole."[17]

20. Or, as Leitch pointed out:

> "The ability of firms to succeed in the face of growing international competition depends increasingly on the skilled labour force they can draw from. Skilled workers are better able to adapt to new technologies and market opportunities. Higher levels of skills drive innovation, facilitate investment and improve leadership and management. For innovation to be effectively implemented, businesses must be able to draw on a flexible, skilled workforce."[18]

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[15] BIS, A strategy for sustainable growth, July 2010, http://interactive.bis.gov.uk/comment/growth/files/2010/07/8782-BIS-Sustainable-Growth_WEB.pdf

[16] Universities Scotland, What was / what next?, February 2009, http://www.universities-scotland.ac.uk/uploads/publications/What%20next%20-%20black%20and%20white%20version%20for%20website.pdf In twelve studies of the impact of increasing numbers of graduates in the workforce on productivity, all showed a direct positive impact

[17] Ibid

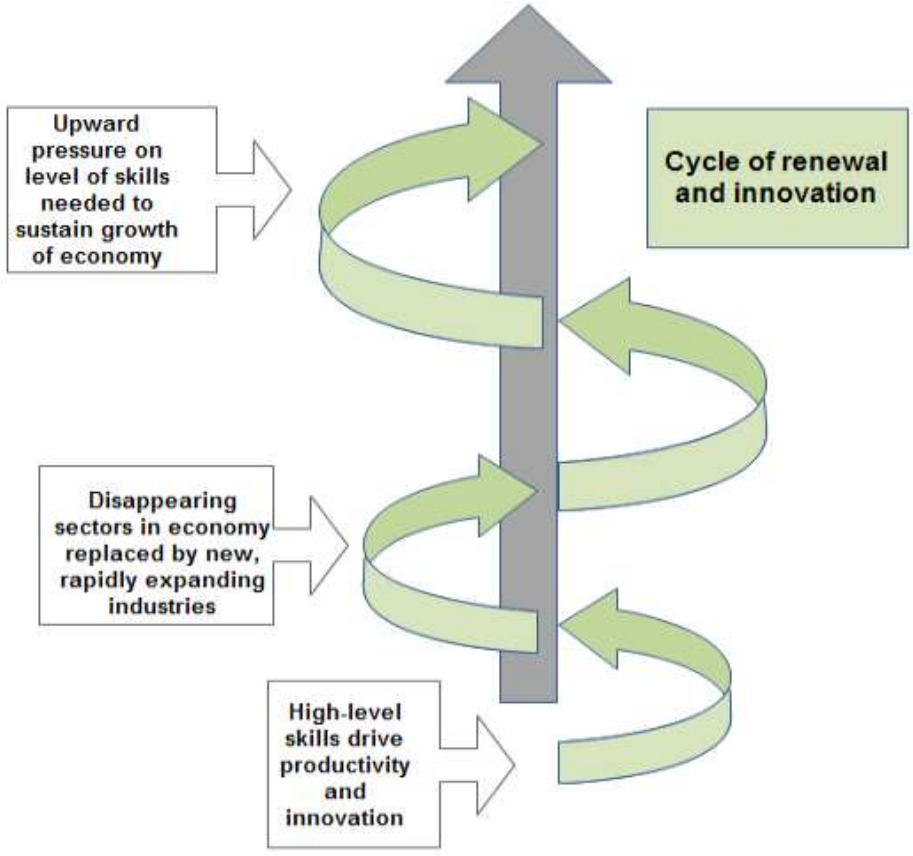
[18] Leitch S, HM Treasury, Leitch Review of Skills, Prosperity for all in the global economy – world class skills, December 2006

High-level skills are vital to drive the growth and renewal of new business and industry

21. In the UK's global, knowledge-based economy, where 80% of new jobs are in high-skill areas[19] and new and growth industries take a high-tech, high-skill and innovative approach, universities are playing a critical role in driving the UK's economic future.

22. High-level skills are a vital component of our future growth but they are also central to the process of innovation and renewal in the key sectors of our economy. Businesses on the cusp of innovation and expansion then drive our future skills needs.

Figure 2: The role of high-level skills in driving renewal and innovation in our economy[20]



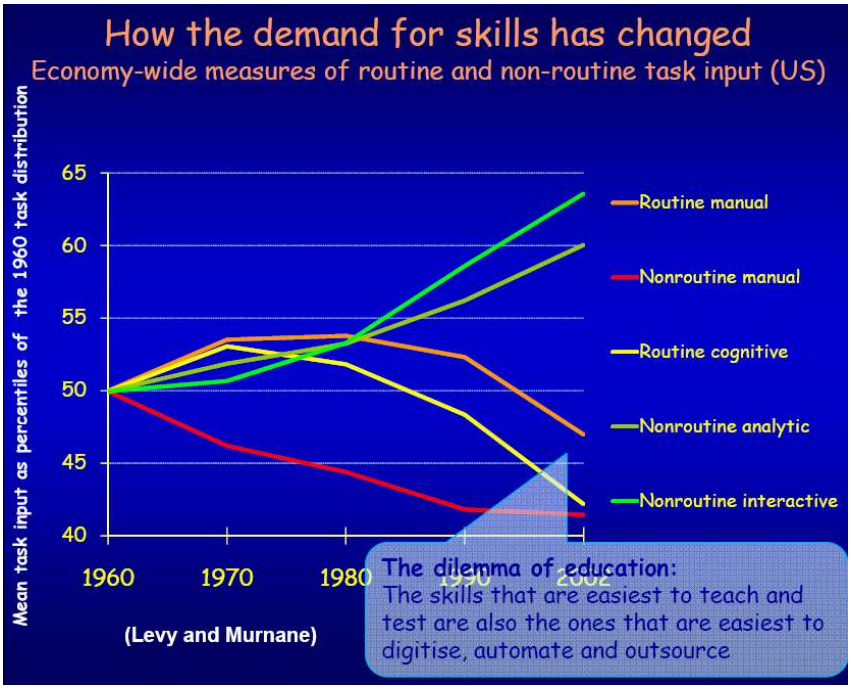
23. This cycle is borne out by OECD evidence that demonstrates the rapid decline of demand for routine skills that are easiest to digitise, automate and outsource.

[19] Wilson R and A Green, Department for Education and Employment, Projections of Occupations and Qualifications: 2000/2001: Research in Support of the National Skills Taskforce, 2001, http://www2.warwick.ac.uk/fac/soc/ier/publications/2001/projections2001.zip

[20] Based on the findings in Universities Scotland report, What was / what next?

24. Figure 3 shows that it is non-routine analytic and non-routine interactive skills – i.e. graduate-level skills – that are needed in our economy. This is compared against reducing demand for routine and manual skills.

Figure 3: Demand is increasingly focussed on jobs that require high-level skills



Source: Andreas Schleicher, OECD, slides from Universities UK Annual Conference, September 2010
Notes: Data from OECD Education at a Glance 2010

25. As Lord Sainsbury highlighted:

> "Company strategies based on low costs alone will end up in a downward spiral, each year bringing a new low-cost competitor. The best way for the UK to make the most of globalisation opportunities is to support the restructuring of British companies into high-value goods, services and industries. We should seek to compete with emerging economies in a 'race to the top' rather than a 'race to the bottom'"[21].

26. UKCES predict a continuation of this trend in 'Working futures 2007-2017' stating that the most significant increases in employment up until 2017 are likely to be in higher level occupations such as:

- managers & senior officials (+872,000, 1.7% pa)
- professional occupations (+643,000, 1.5% pa)
- associate professional & technical occupations (+654,000, 1.4% pa)

[21] Lord Sainsbury of Turville, The race to the top: a review of government's science and innovation policies, October 2007

27. Conversely, declining employment levels are projected for:

    - skilled trades occupations (-226,000, -0.7% pa);
    - machine & transport operatives (some -117,000, -0.5% pa)[22]

28. Universities Scotland use such projections to predict a polarisation of skills with a growth in demand almost all at graduate skills level meaning that mid-level skills are increasingly squeezed out of the market. They go on to state:

    "There are real risks that high-level skills supply shortages could be a major brake on economic growth and transformation."[23]

Prioritising investment where it will have the biggest impact

29. The UK will benefit most from investment in innovation and high-level skills because it is an innovation-driven economy. As the World Economic Forum has identified, a country's stage of development has a big impact on the strategy it should adopt to increase competitiveness. By comparison, efficiency-driven economies (those with infrastructure, mass education but lower levels of deployment of technology and innovation) benefit most from improving the efficiency of their infrastructure – through secondary education, availability of financial markets and greater deployment of technology.

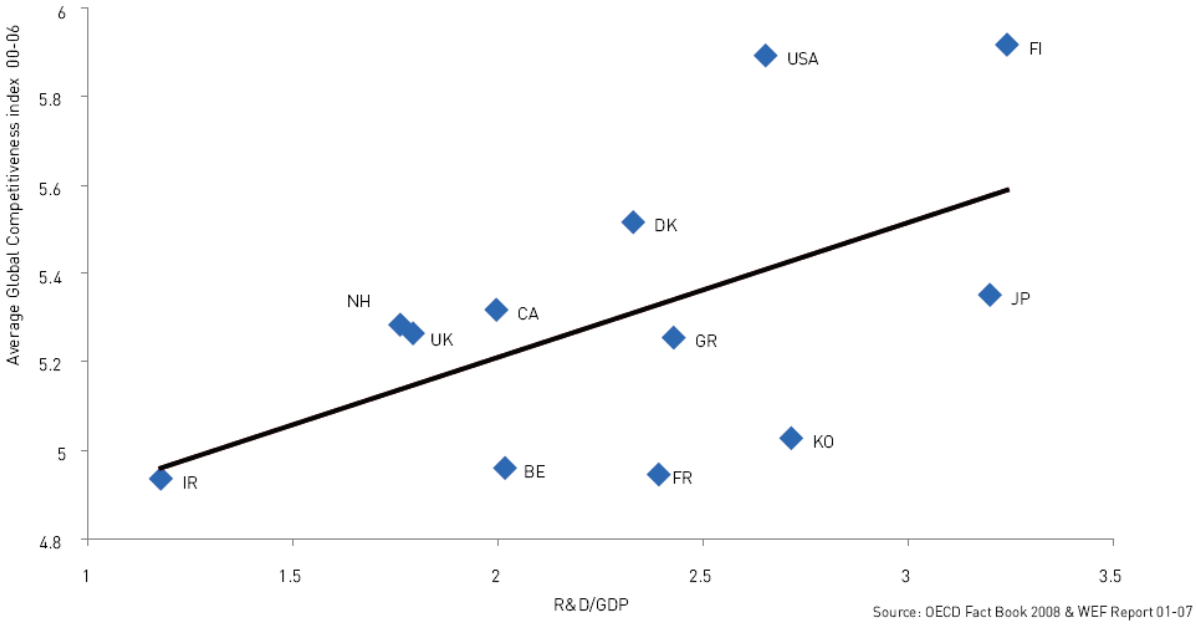
30. As Universities Scotland concludes:

    "Once an economy is saturated with one skill level then further expansion at that level does little to improve economic competitiveness... Repeating investment which has already delivered economic benefits (creating universal primary education or building the M8) will not repeat the benefits."[24]

31. Figure 4 demonstrates this point by plotting average global competitiveness against investment in research and development as a proportion of GDP. The strength of correlation between these two factors was shown to be a highly significant 0.55%.

[22] UKCES, Working Futures 2007-2017, December 2008, http://www.ukces.org.uk/upload/pdf/Working%20Futures%203%20FINAL%20090220.pdf
[23] Universities Scotland, What was / what next?, February 2009
[24] Universities Scotland, What was / what next?, February 2009

Figure 4: Investment in innovation makes advanced economies more competitive



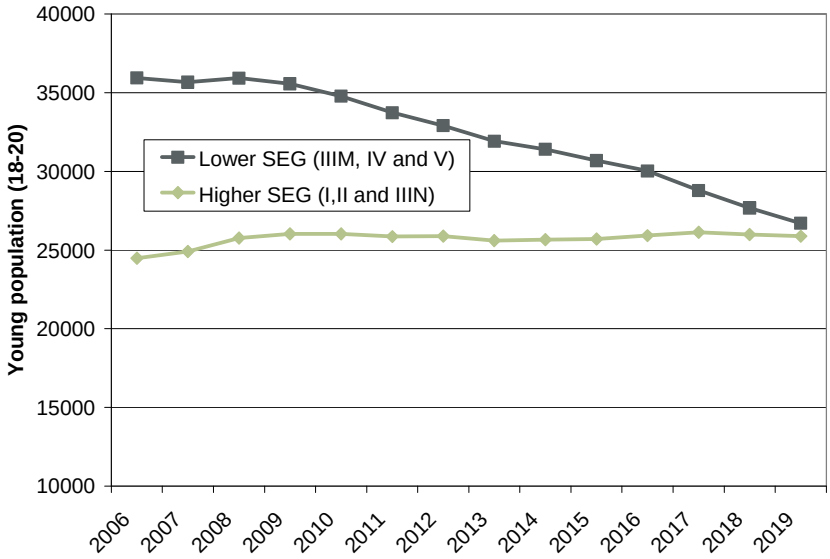
Source: Universities Scotland, What was / what next?, February 2009
Notes: Data from OECD Fact Book 2008 and WEF Report 01-07

Continued demand for higher education from prospective students

32. In addition to the pressure for high-level skills from business and industry the demand is there from prospective students. Despite the widely reported demographic downturn in overall population of 18-20 year olds after 2010 we can predict continued steady demand for higher education amongst those groups in the population with a higher propensity to go to university.[25] In other words the situation this summer where 150,000 applicants were predicted to miss out on a place at university[26] is likely to be repeated unless we are able to find a way of expanding the number of places available.[27]

[25] History has taught us to be cautious in this area. Kenneth Baker famously predicted a decline in HE numbers in the 1988 White Paper based on raw demographic data alone. Over the next five years (1989 to 1994) there was the fastest growth in HE ever experienced in the UK - the population of the highest social class groups did not decline and participation rates doubled from 15% to 30%.
[26] BBC News, University place shortage 'hitting 150,000 students', 20 August 2010, http://www.bbc.co.uk/news/education-11036059
[27] See L Aston, University Alliance, Proposals for a Graduate Contribution Scheme for our proposals in relation to this, http://www.university-alliance.ac.uk/downloads/Publication_Proposal_for_a_Graduate_Contribution_Scheme_in_England.pdf

Figure 5: Projections steady for those most likely to enter higher education



Source: ONS population estimates and GAD projections http://www.hepi.ac.uk/466-1366/Demand-for-Higher-Education-to-2029.html

Notes: Figures reflect 10% sample of total population, based on data from the technical annex of this report

33. Figure 5 shows that far from there being a demographic decline projected after 2010, amongst the population most likely to participate in higher education, there is likely to be a small increase in numbers after 2010. There will be no reduction in applications to higher education from 18 year-olds as a result of demographic changes.

34. Along with demographic changes, the following factors all suggest strong, continued growth in demand for full-time higher education:

- projected increase in educational attainment and staying-on rates resulting from introduction of compulsory leaving age extended to 19
- graduate salaries and private rates of return likely to remain high because economic demand for graduates is projected to continue to increase in a knowledge economy
- in a mass HE market, opportunities for non-graduates continue to decline - access to job opportunities will continue to drive demand for HE
- during a recession when there is higher unemployment, many individuals will choose to take the opportunity to improve their high-level skills
- demand for UK HE from highly qualified EU students is projected to continue to increase – particularly from the 2004 Accession Countries[28]

[28] Aston L, University Alliance, Impact of fees: a review of the evidence, January 2010, http://www.university-alliance.ac.uk/downloads/Publication_Impact_of_fees_review_of_the_evidence.pdf

3. There is an increasing shortage of graduates, not saturation, and there is still a significant 'graduate premium' attached to obtaining a degree

35. Over recent years we have seen an increase in press coverage and commentary describing an over supply of graduates following the 50% participation target introduced by Labour. However, a look at the evidence tells a different story, there is actually likely to be an increasing shortage of graduates, not saturation.

Growth in vacancies at graduate level or higher

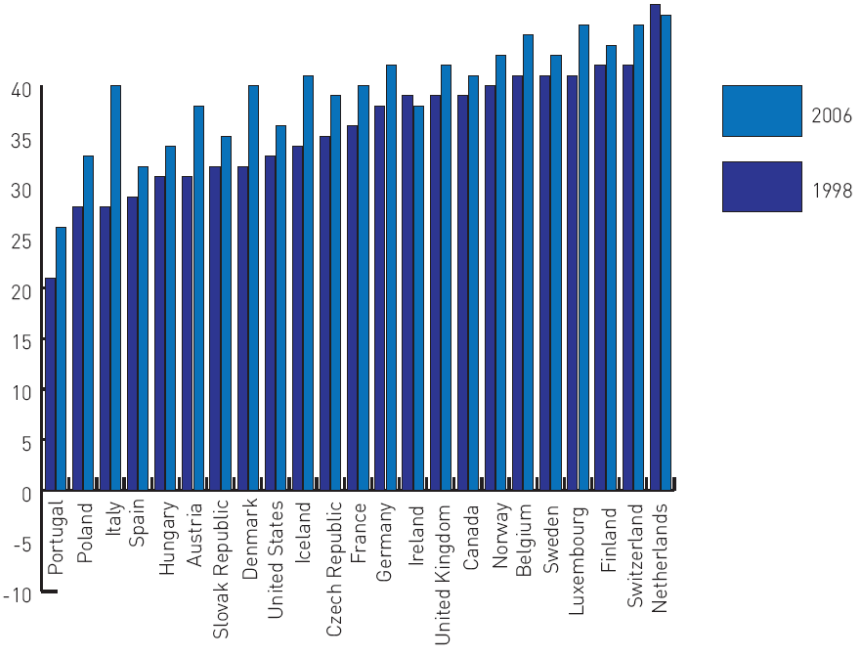
36. A recent study by High Fliers Research showed that the prospects for university-leavers in 2010 are much improved compared with considerable reductions in graduate recruitment in 2008 and 2009 as a result of the recession. To date, employers have recruited 17.9% more graduates to start work in 2010 than were employed in 2009.[29]

37. Evidence also demonstrates that the majority of graduates are in jobs requiring high-level skills and, fitting with the evidence outlined in the previous section, that new jobs are likely to be at graduate level or higher. Indeed, a longitudinal survey report focussing on the graduate class of '99, found that over 80% of respondents appeared to be in 'graduate-level' jobs and that an undergraduate degree had been necessary to access most of the new graduate jobs.[30]

38. Figure 6 provides further evidence that the majority of new jobs are in high skill areas. The trajectory showing the increase in jobs in these areas corresponds with a growth in demand for graduates.

[29] High Fliers Research, The Graduate Market in 2010, 2010, http://www.highfliers.co.uk/download/GMReport2010.pdf
[30] Kate Purcell et al, The Class of '99, A study of the early labour market experiences of recent graduates, October 2005. The data derives from self completion postal questionnaires, from approximately 8,600 who finished comparable programmes in 1999.

Figure 6: Increasing proportion of skilled occupations in the total workforce for OECD countries – new jobs are in high skilled areas

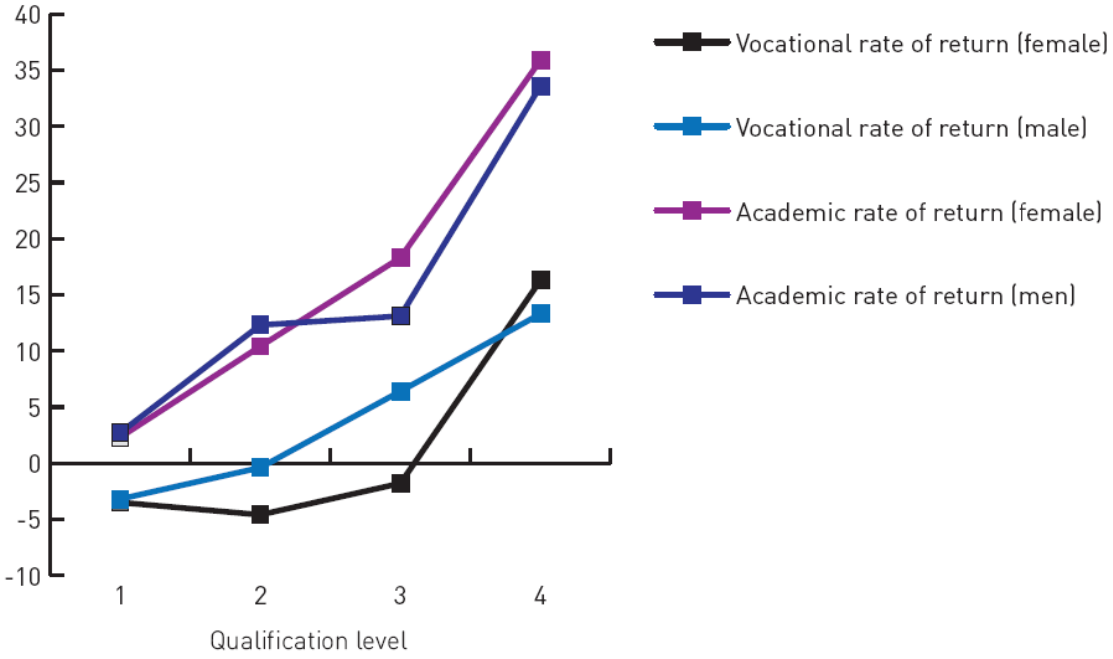


Source: Universities Scotland, What was / what next? February 2009

39. There simply are not signs of saturation at graduate level, in fact it could be said that there are signs of saturation at vocational level four. As Universities Scotland highlight "A rate of return for a qualification is a measure [of] how highly a qualification is valued by the jobs market."[31] As Figure 7 identifies, because the market is saturated with sub-degree qualifications, people with these get a lower rate of return.

[31] Universities Scotland, What was / what next?, February 2009

Figure 7: Signs of saturation at sub degree level rather than for graduates



Source: Universities Scotland, What was / what next? February 2009

40. Universities Scotland concludes:

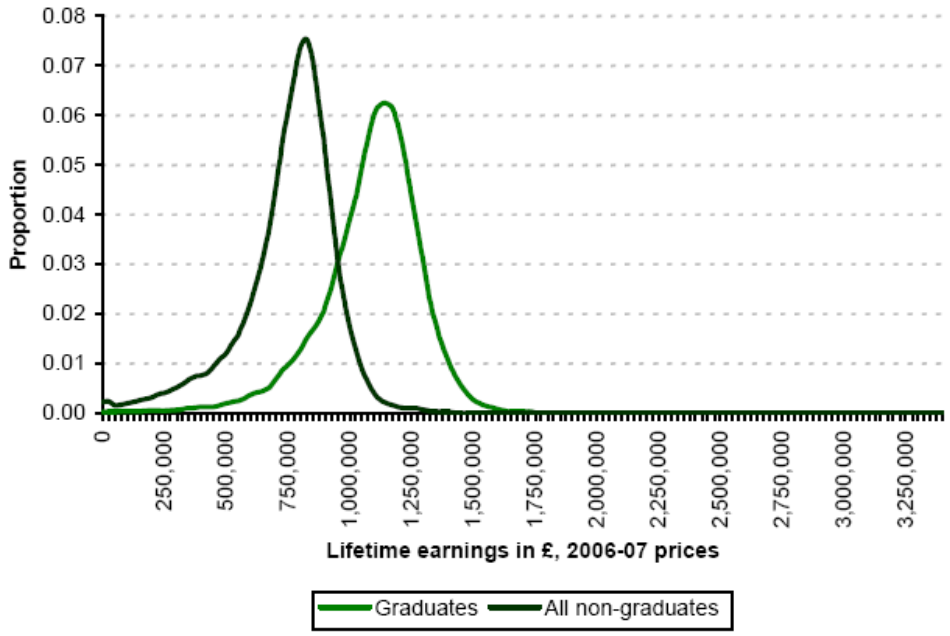
> "It is economically incorrect to think that 'any education will result in economic benefits – if we take someone with no qualifications and provide them with a qualification but one which is not in demand in the labour market we will fail them twice by failing to get them into employment and alienating them from further study."[32]

There is still a significant graduate premium

41. The continued demand for graduates is also reflected in the significant graduate premium that UK graduates continue to benefit from. IFS projections of earning profiles for graduates compared to non-graduates, shown in Figure 8, demonstrate the 'graduate premium' graduates receive in higher average salaries. The pattern of normal distribution of salaries is similar but there is a significant difference in average earnings between graduates and non-graduates.

[32] Ibid

Figure 8: Distribution of lifetime earnings for male graduates and non-graduates



Source: Dearden et al, IFS, Higher education funding policy: who wins, who loses? A comprehensive guide to the current debate, 2005 http://www.ifs.org.uk/comms/comm98.pdf

Notes: Incorporating earnings mobility and non-employment, 2006–07 prices

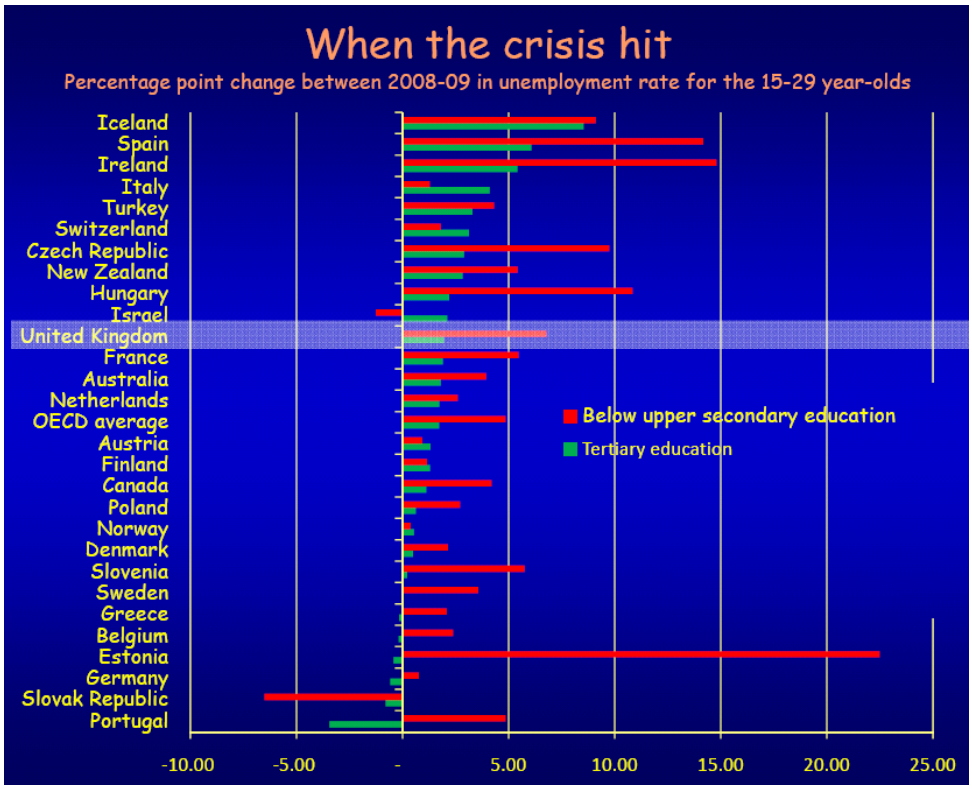
Those without a degree were hit worst by the recession

42. As Lord Leitch highlighted in 2006, skills are a key determinant of employment. At the time that his review of skills was published fewer than one half of those with no qualifications were in work, compared to nearly 90% of those with graduate level qualifications. In addition, the employment rate of those with no qualifications had fallen over the previous 10 years at a time when the employment rates of most disadvantaged groups rose more quickly than the average.[33] The deciding factor was qualification rather than background.

43. Figure 9 shows that the picture painted by Leitch was repeated when the most recent economic crisis hit. The youngest were hit hardest, and the lower educated were substantially more vulnerable than the more highly educated.

[33] Leitch S, HM Treasury, Leitch Review of Skills, Prosperity for all in the global economy – world class skills, December 2006

Figure 9: Graduates least likely to be unemployed following economic crisis



Source: Andreas Schleicher, OECD, slides from Universities UK Annual Conference, September 2010
Notes: Data from OECD Education at a Glance 2010

4. If we stand still we will fall behind – our global competitors are continuing to invest heavily in universities despite their own budget deficits

44. While the Government clearly recognises the importance of situating the strategy for growth within the context of a globalised economy[34], the comparative actions of other countries is stark in terms of their investment in universities – every OECD country is currently investing in higher education except the UK and Romania.

Investment in higher education by competitor countries – as part of their stimulus packages

45. As we have already highlighted, France has recognised the importance of investment in higher education and research. Since President Sarkozy was elected in 2007, the university budget has increased by one billion euros per year, while the public research budget has increased by 800 million euros per year. As a response to the recession, they have introduced a 35 billion euro 'Investing in the future' investment plan of which two-thirds are being devoted to higher education and research.[35]

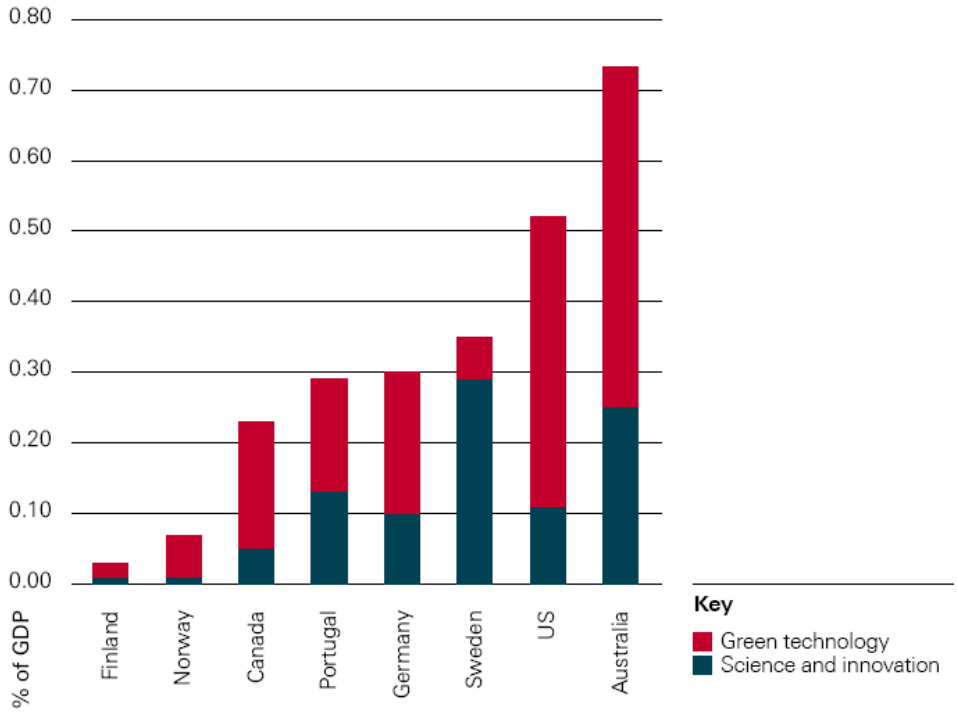
46. And France is not alone:

- In the US, President Obama has pledged the largest commitment to scientific research and innovation in American history alongside his goal that by 2020 America will once again have the highest proportion of college graduates in the world – with the intention of "greatly enhancing [their] ability to compete for the high-wage, high-tech jobs of the future".[36]
- In Australia, the Government announced a 25% increase in the science and innovation budget from 2008-2009.[37]
- In Germany, Chancellor Merkel has announced their goal to create a 'Bildungsrepublik', an educated and learning republic', involving a €12 billion increase in the budget for education and teaching by 2013.[38]

47. Figure 10 shows the relatively high levels of investment in science and research in our competitor countries.

[34] The BIS strategy for sustainable growth notes IMF estimates that in five years Asia's economy will be 50% larger than is today and that by 2030 the GDP of Asia will exceed that of the group of seven major industrialised nations.
[35] Sarkozy N, Speech at Palais des Congrès, Paris, 26 July 2010
[36] Obama B Speech at the 146th Annual Meeting of the US National Academy of Sciences, 27 April 2009, http://www.pnas.org/content/106/24/9539.full
[37] The Royal Society, The Scientific Century, securing our future prosperity, March 2010, http://royalsociety.org/the-scientific-century/
[38] Ibid

Figure 10: Investment in science and innovation has been a key part of the stimulus packages in our competitor countries



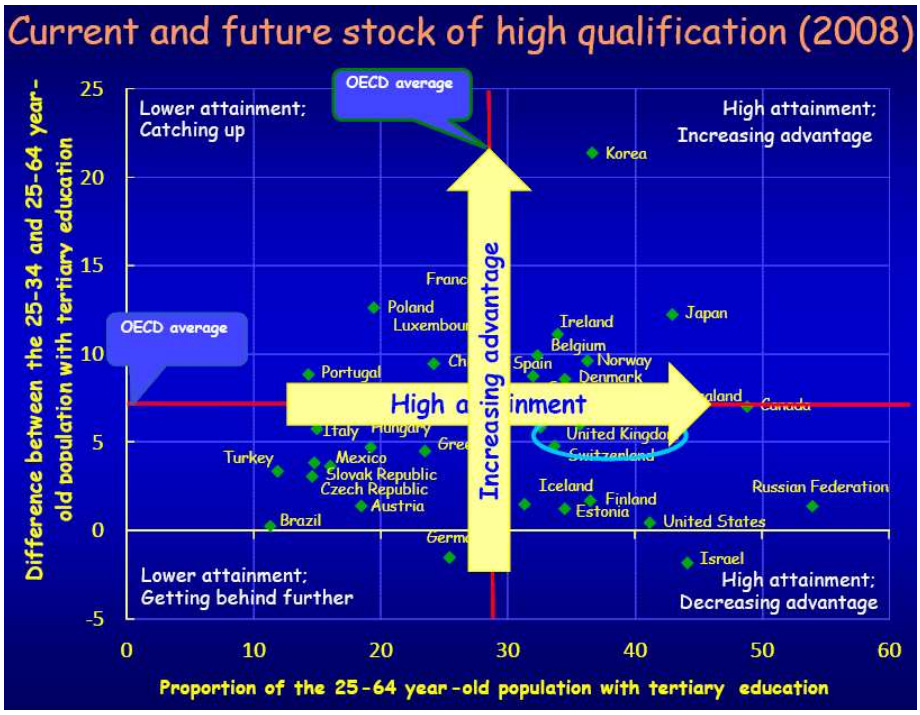
Source: The Royal Society, The Scientific Century, securing our future prosperity, March 2010

Investing now will lead to increasing advantage in the longer term

48. These countries are recognising that investment in higher education, research and science now will be a key driver for the future success of their economy.

49. Figure 11 compares current and future proportions of high-level skills across OECD countries. The current levels of attainment in the UK are slightly above the OECD average but we are firmly in the group of countries that are reducing their advantage in terms of our projected future skills base. Figure 12 illustrates that, on current trends, we will receive reduced economic advantage from our stock of high-level skills as our competitors invest at a higher rate.

Figure 11: Countries increasing their investment in high-level skills are increasing their advantage for future years



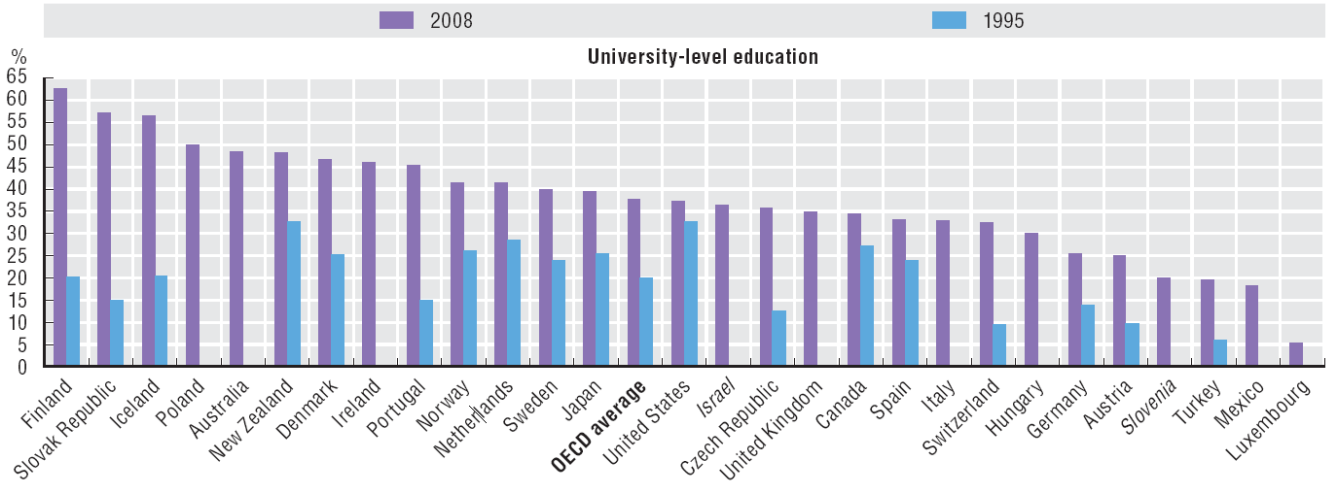
Source: Andreas Schleicher, OECD, slides from Universities UK Annual Conference, September 2010

Notes: Data from OECD Education at a Glance 2010

50. Simply put, those countries not investing, or decreasing their investment, will fall behind. We are already seeing signs of this in the UK despite relatively high investment in higher education since 1997; between 2000 and 2008 the UK fell from 3rd highest to 15th among top industrialised nations for the proportion of young people graduating.[39] As Figure 12 shows we are now below the OECD average.

Figure 12: UK is below the OECD average in the percentage of young people who are first-time graduates from university

[39] OECD, Education at a Glance 2010



51. As OECD Secretary-General Angel Gurria concludes:

> "In a global economy, it is no longer improvement by national standards alone. The best performing education systems internationally provide the benchmark for success"[40]

52. Furthermore, it should be recognised that despite the increased focus on the importance of universities in delivering national priorities over recent years and a welcome increase in funding, universities are not on a sustainable financial footing even at current levels of funding. Independent research undertaken by the Financial Sustainability Strategy Group for HEFCE proved that the sector did not enter a new era of affluence with the introduction of fees but remained under-funded. The report concluded that without further investment the "quality of the student experience and the reputation and contribution of English higher education will suffer."[41]

[40] BBC, UK slipping down graduate league, 7 September 2010, http://www.bbc.co.uk/news/education-11203790
[41] JM Consulting, The sustainability of learning and teaching in English HE. A report prepared for the Financial Sustainability Strategy Group, 2008. http://www.hefce.ac.uk/Finance/fundinghe/trac/fssg/FSSGreport.pdf

5. Universities have a vital role to play in re-balancing the future economy

53. As the Government's sustainable growth strategy recognises:

> "Developing knowledge and skills are fundamental to [the] goal to rebalance the economy with a richer mix of high performing and productive business sector and more even distribution of economic social benefits between regions"[42]

Universities are a key resource for regional economies

54. Of course, the fact that innovation is a key driver of growth and productivity, that human capital is the primary driver of economic growth and that there is an increasing shortage of graduates should have an impact on regional as well as national policies. This means that universities should be central to the government's aim to balance the economy across the regions. Again, this is not just about skills but about the central role universities play in the knowledge economy, driving growth and innovation in new sectors and markets.

55. The Work Foundation has identified four sectors that are likely to be crucial for the growth and success of our regional economies over the next decade:

- The creative industries – these will continue to grow, driven by the UK's international specialisation in these industries and the increasing importance of intangibles as factors of production.
- Manu-services – where the manufacturing sector is increasingly linked into service based activities, with firms designing physical goods for niche markets and gaining long term revenue streams from the maintenance and servicing of these products.
- Low carbon industries – driven by regulatory shifts to a low carbon economy, markets for carbon trading and consumer preferences for environmentally friendly goods.
- High-tech and high-value added networked services – which act as intermediaries in the production process, adding value to other sectors.[43]

56. These findings are consistent with NESTA's conclusion that the UK should focus on rebalancing towards high-tech and innovation industries. These industries will be dependent on a highly qualified workforce and an actively engaged research base.

[42] BIS, A strategy for sustainable growth, July 2010
[43] Neil Lee et al, The Work Foundation, No city left behind? The geography of the recovery – and the implications for the coalition, July 2010, http://www.theworkfoundation.com/Assets/Docs/no_city_FINAL.pdf

Universities have a central role to play in the new Local Enterprise Partnerships

57. Because of the central and diverse role of universities in driving future growth and productivity we would argue that they are not simply a potential partner[44] in the Government's new Local Enterprise Partnerships but an essential partner.

58. As the Work Foundation concludes:

> "Universities are a valuable source of knowledge and innovation which can benefit start-ups and existing local businesses, whilst close linkages with businesses are also very valuable to universities. Cities will rely on innovation to drive growth in the recovery, and this makes these reciprocally beneficial linkages particularly important. Cities and the government need to ensure that the economic role of universities in local economies are maximised."[45]

59. The approach in Alliance universities to business engagement, civic regeneration and local communities means that they work with partners across their region, and indeed the UK, to ensure that the benefits of higher education and more specifically their entrepreneurial approach have a direct effect on the regional economy and emerging industry - for example the automotive industry in Manchester, the Aeronautical industry in Bristol, the High-tech industries around Hertfordshire and the Maritime industry in Plymouth and Portsmouth.

[44] Cable V and Pickles E, Letter to Local Authority Leaders and Business Leaders, 29 June 2010, http://www.communities.gov.uk/documents/newsroom/1626430.pdf

[45] Neil Lee et al, The Work Foundation, No city left behind? The geography of the recovery – and the implications for the coalition, July 2010

6. Business facing universities have well established genuine partnerships that can be built upon

> "A business-facing university has a revolving door with business - not an interface or a portal but a true interaction. Employers know that the university will deliver - whether it be high-level skills, applied research, knowledge exchange or process improvement, short courses for their staff or expert consultancy services."
>
> Professor Tim Wilson, University of Hertfordshire[46]

Universities have been successful at increasing the impact of their third stream activities

60. The recent HEFCE evaluation of third stream (business engaged) activities within universities painted a positive picture of the success of this work across the sector:

- the knowledge exchange activities of HEIs generated £1.94 billion in income in 2007, growing by approximately 12% per annum over the period 2001-07
- gross knowledge exchange income was £10.3 billion over the period 2001-07 (in 2003 prices)
- an injection of £592 million by HEFCE through its third stream funding programmes over the period 2001-07 has generated £2.9 billion in gross additional knowledge exchange income over this period, either directly or indirectly[47]
- for every £1 spent, HEIs generated between £5 and £7 in additional knowledge exchange income[48]

The knowledge exchange model adopted in Alliance universities means they are well placed to maximise their impact on productivity

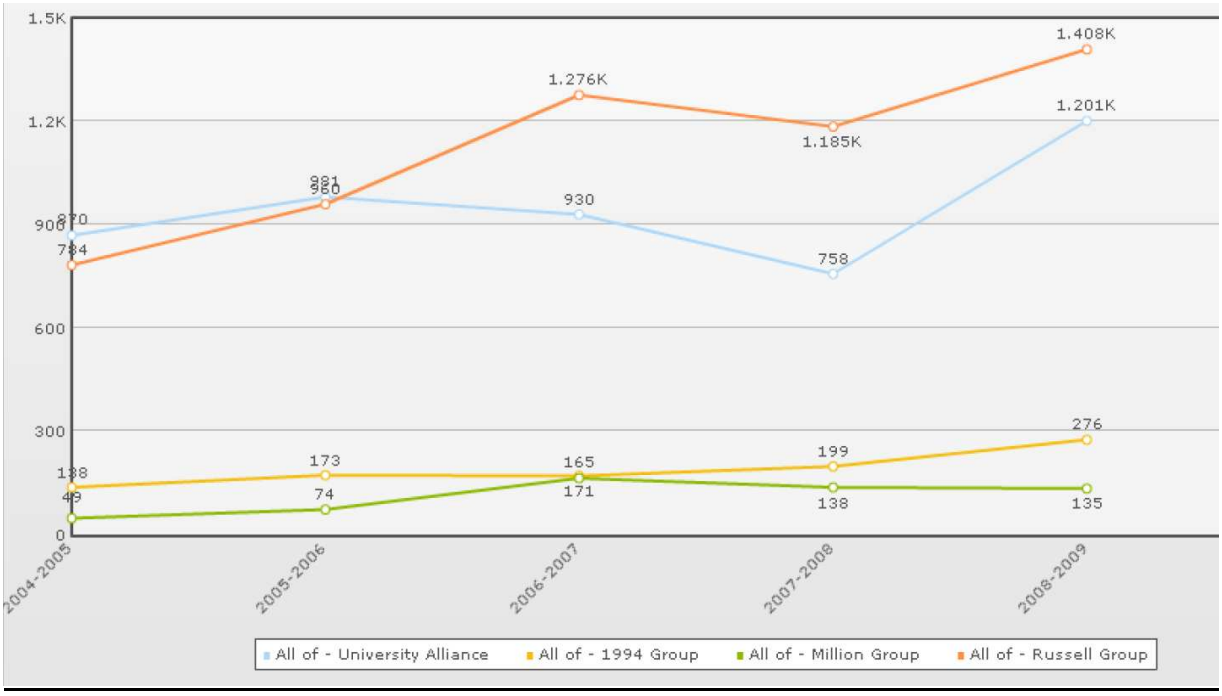
61. Strong links with business and industry are a central focus of Alliance universities. They have found that the most successful approach is one where business links and engagement are embedded across a range of university activities. The focus here is on knowledge exchange rather than knowledge transfer – wealth creation and business engagement are not an add-on once the research has taken place. Rather, they are intricately part of the university's very fabric. Innovation and knowledge creation is formed from this mutual partnership and is therefore directly linked to economic need.

[46] Wilson T, Times Higher Education, Embrace don't shun the ethos of business, 12 October 2007
[47] Based on a lower end assumption of addtionality at 28%
[48] HEFCE, Evaluation of the effectiveness and role of HEFCE / OSI Third Stream funding, 2009, http://www.hefce.ac.uk/pubs/hefce/2009/09_15/

62. These universities have developed strong partnerships with both national and international business to the extent that there is active businesses engagement in curriculum design, collaboration on specific programmes to embed graduate skills, research and innovation activities as well as the university delivering consultancy. The results of this approach can be seen in the high proportion of professionally accredited courses they deliver, the world-leading research they produce that is often in areas linked to the new economy and the exploitation of that research as demonstrated by the number of licenses granted.

63. Figure 13 demonstrates the high number of licenses granted at Alliance and Russell Group universities; a reflection of the scale of interaction with business in these universities. These universities are ideally placed to support the full range of business processes that lead to increased productivity.

Figure 13: Business facing universities in the Alliance perform well against their peers for number of licenses granted



Source: HE-BCI survey data 2008-09, For all license types, organisation types and values.

64. Based on this approach, Alliance universities are well placed to deliver on the Government's key priorities for sustainable growth:

- to leverage private sector investment and encourage businesses to start, grow and thrive
- to assimilate and exploit leading-edge research
- to foster the exchange of new knowledge between universities and business[49]

[49] BIS, A strategy for sustainable growth, July 2010