The manufacturers' organisation

SMART SKILLS SPENDING –

FUNDING FOR ENGINEERING IN THE HE SECTOR

FOREWORD

Professor John Perkins CBE

Efforts by the Government to rebalance the United Kingdom's economy by strengthening the contribution from high-value manufacturing will rely heavily on the provision of suitably qualified professionals. This has been recognised in the Government's recently published Industrial Strategy, where one of its key Pillars is People.

As the representative voice of British manufacturing, EEF – the manufacturers' organisation has a profound interest in securing the supply of qualified professionals to support these developments. Much of the requirement relates to Engineering and Technology graduates, with the highest demand from manufacturing industry being in Engineering.

Good progress has been made in encouraging more young people to pursue an engineering career, with acceptances to engineering courses at UK universities growing by 29% between 2010 and 2016. However, there are concerns that possible future changes in funding arrangements may arrest this trend.

In the light of the Government's decision to undertake a review of funding of the UK's Higher Education system and given 2018 is The Year of Engineering, this report analyses the demand and supply of Engineering and Technology provision relevant to the needs of manufacturing industry, before commenting on the current and possible future funding arrangements for these subjects in universities.

A number of recommendations are included which if acted on will help secure the supply of qualified personnel to fuel the reshaping of the British economy towards the greater contribution from high-value manufacturing we all seek to achieve.

OVERVIEW

Manufacturers have long voiced their concerns about accessing the right people with the right technical skills for their business. In fact, 73% of manufacturers struggled to fill engineering roles in the past three years, with two-thirds reporting that candidates lacked the right technical skills. The demand for technical skills has led manufacturers to primarily demand graduates who hold a degree in engineering – 63% of manufacturers have recruited an engineering graduate in the past three years, and 66% plan to do so in the next three years[1].

Engineering graduates go on to fill high-level, skilled roles within the manufacturing industry. However, manufacturers have also continued to recruit business graduates who work in other parts of their organisation. They demand graduates with a strong level commercial awareness and business acumen to compliment and work with engineering graduates.

As manufacturers move towards the production of high-value goods and related services, as well as utilising new technologies, this will only increase their demand for higher-level skills. Ensuring manufacturers have access to the skills that they need now, and in the future, will be essential if they are to achieve their growth ambitions. It will also be key to the Government meeting its People Pillar of the Industrial Strategy, and filling the skills gap in our industry. To meet this demand, manufacturers need access to an expanding supply of STEM (Science, Technology, Engineering and Mathematics) graduates, in particular engineering graduates, which can be attained through an effective higher education system.

Industry has had to navigate a large number of changes to the education and skills landscape in recent years. The Government's review into post-18 education and funding is an opportunity to set a long-term course for investment in the UK education system and to build a stable funding environment. At the heart of this should be smart investment in the degrees that will fill the skills gap in the UK's most important industries.

This paper outlines why STEM, and in particular engineering graduates, are so important to manufacturers, it identifies the challenges with current Government funding for those degrees, explores how to ensure that universities can continue to deliver high-cost degrees and, produce enough engineering graduates to meet demand.

[1]EEF, Improving the quality and quantity of graduate-level skills, 2014

1. THE DEMAND FOR ENGINEERING GRADUATES

1.1 Engineering graduates - how many do manufacturers' need?

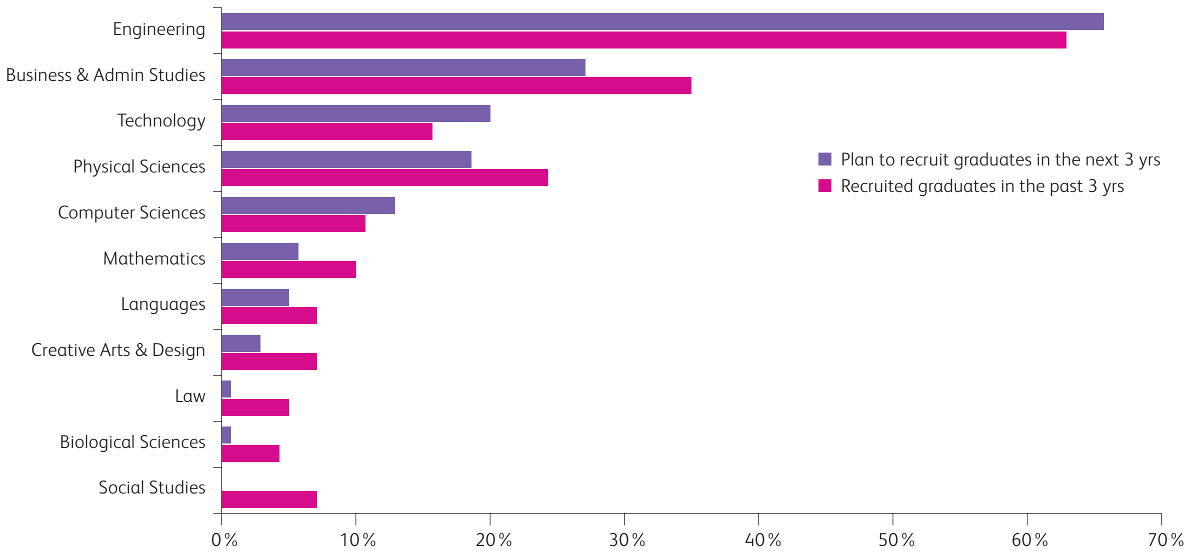
Over the last few years, the development of new technologies within the manufacturing industry has resulted in a shift towards the production of high-value goods and related services. Manufacturers have begun to automate lower-skilled roles, often those involving repetitive manual tasks, and prioritsed the recruitment of people to fill medium-to-high skilled roles.

In its 2017 annual report, Engineering UK estimated that the demand for Level 3 skills would shrink, but demand for people with Level 4 and higher skills would increase through to 2024. It went on to project that the UK would need approximately 186,000 skilled entrants into engineering occupations each year to meet demand. However, based on these projections, the UK will fall short of demand by 20,000 qualified engineers annually[2]. This evidence shows that not only are engineering graduates in short supply now, but we risk widening the skill shortage gap in manufacturing unless we can boost the number of engineers between now and 2024.

1.2 Current demand for engineering graduates from UK manufacturers

EEF's previous report, '*Improving the quality and quantity of graduate-level skills*', found that manufacturers rely heavily on the recruitment of STEM graduates, in particular engineering graduates, to fill high-skilled roles in their companies. Two-thirds (63%) of manufacturers reported that they had recruited an engineering graduate in the past three years, and a further 66% of them planned on doing so in the following three years[3].

CHART 1: MANUFACTURERS THAT HAVE RECRUITED A GRADUATE IN THE PAST THREE YEARS, AND PLAN ON DOING SO IN THE NEXT THREE YEARS



Source: EEF, Improving the quality and quantity of graduate-level skills, 2014

[2] Engineering UK, The State of Engineering, 2017
[3] EEF, Improving the quality and quantity of graduate-level skills, 2014

It is unsurprising then that the manufacturing industry recruits the largest proportion of engineering graduates in the UK (26%) - the majority of these work as production and manufacturing engineers (40%), closely followed by mechanical engineers (38%)[4].

The demand for engineering, and more widely STEM graduates, is also reflected in their positive employment prospects after graduating. Analysis of data from the Higher Education Statistics Authority (HESA) found that 66% of engineering graduates were in full-time employment six months after graduating, compared to just 58% for the average graduate population. Furthermore, the majority (71%) of those engineering graduates were working within an engineering occupation[5].

A similar pattern is observed for salaries. Average earnings in manufacturing are £32,047, compared to £28,299 in the whole economy[6]. The trajectory of median earnings for engineering graduates is positive. They can expect to earn median earnings of £25,100 per annum one year after graduation, increasing to £40,000 per annum 10 years after graduation[7]. This shows that studying engineering is highly lucrative in a competitive job market where employers are willing to pay more to recruit these graduates.

While there is clear demand for engineering graduates, we cannot discount the value manufacturers also put on graduates of other disciplines, in particular, those with a business background. As chart 1 shows, manufacturers are planning to recruit Business and Administrative Studies graduates. This is because manufacturers also need employees with commercial awareness and business acumen.

[4] Engineering UK, The State of Engineering, 2017
[5] Engineering UK, The State of Engineering, 2017
[6] EEF Manufacturing Fact Card, 2017
[7] DfE, Longitudinal Education Outcome (LEO) data, 2017

2. THE SUPPLY OF ENGINEERING GRADUATES

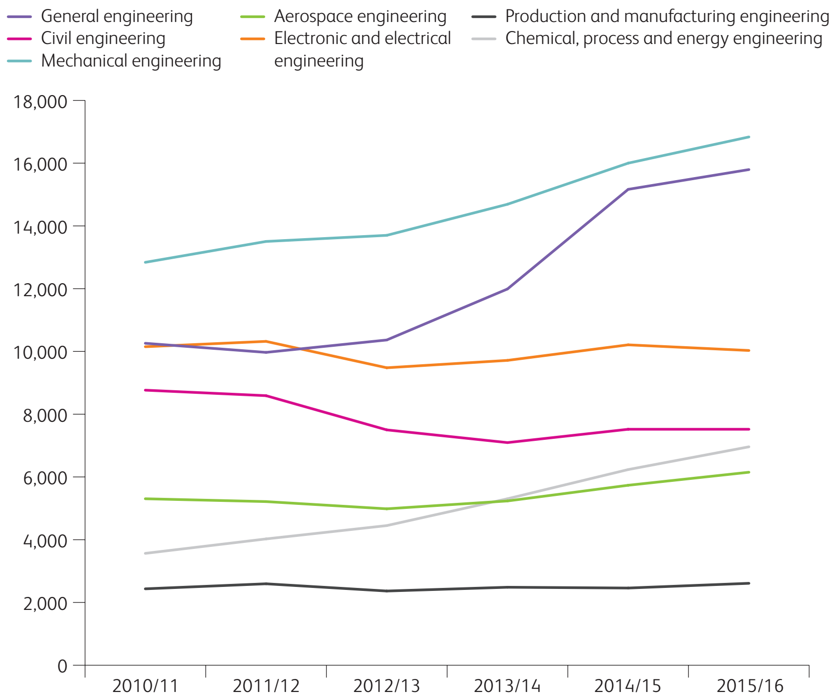
2.1 Applications

The number of university applications made for engineering courses has increased at a faster rate compared to all other subjects. In the last five years, applications for engineering courses have increased by 5% compared to 3% for all other subjects[8]. There were also increases within specific sub-disciplines of engineering, in particular General Engineering and Mechanical Engineering. Despite the different challenges the industry continues to face in recruiting engineering professionals, the increase in application numbers is a positive sign.

2.2 Acceptances

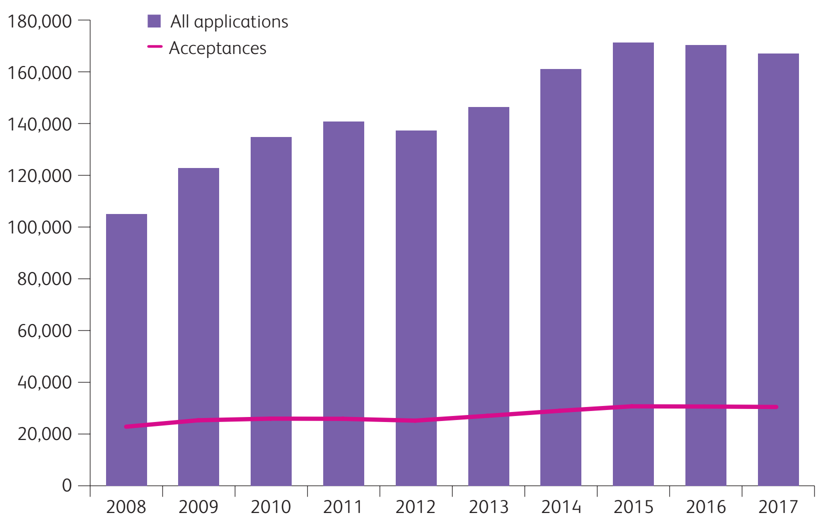
Between 2008 and 2017, applications to study engineering at university increased annually by 5.3%. Despite a small dip in applications during 2012, when tuition fees increased to £9,000 a year, students have continued to apply for engineering courses in their thousands. Whilst it is good news that the number of students applying and then accepted onto engineering courses has been increasing amid a challenging labour market, there remains a significant gap between applications to study Engineering (167,025 in 2017) and those accepted (30,600 in 2017) onto an engineering course. Acceptances onto engineering courses have only increased annually by 3.3%.

CHART 2: APPLICATIONS TO ENGINEERING COURSES BY SUB-DISCIPLINE, 2010/11 TO 2015/16



Source: UCAS

CHART 3: APPLICATIONS AND ACCEPTANCES ONTO ENGINEERING COURSES, 2010/11 TO 2015/16



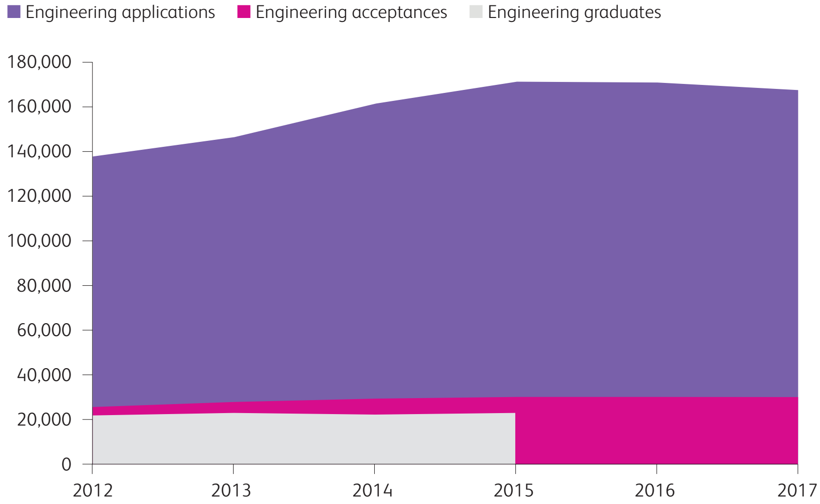
Source: UCAS, 2017

[8] UCAS and HESA data, 2012 to 2015

2.3 Graduates and employment

Analysis of UCAS and HESA statistics show that whilst there has been an increase in the number of students applying to study engineering, the number graduating with an engineering degree, as a proportion of graduates, has remained stable at 15 %[9]. As application numbers grow, manufacturers want to see that the number of graduates is increasing in line with this demand.

CHART 4: DIFFERENCE IN THE NUMBER OF STUDENTS APPLYING, ACCEPTED AND GRADUATING WITH AN ENGINEERING DEGREE



Source: UCAS and HESA, 2017

[9]UCAS and HESA data, 2012 to 2015

EMPLOYMENT AND EARNING FOR ENGINEERING AND TECHNOLOGY GRADUATES

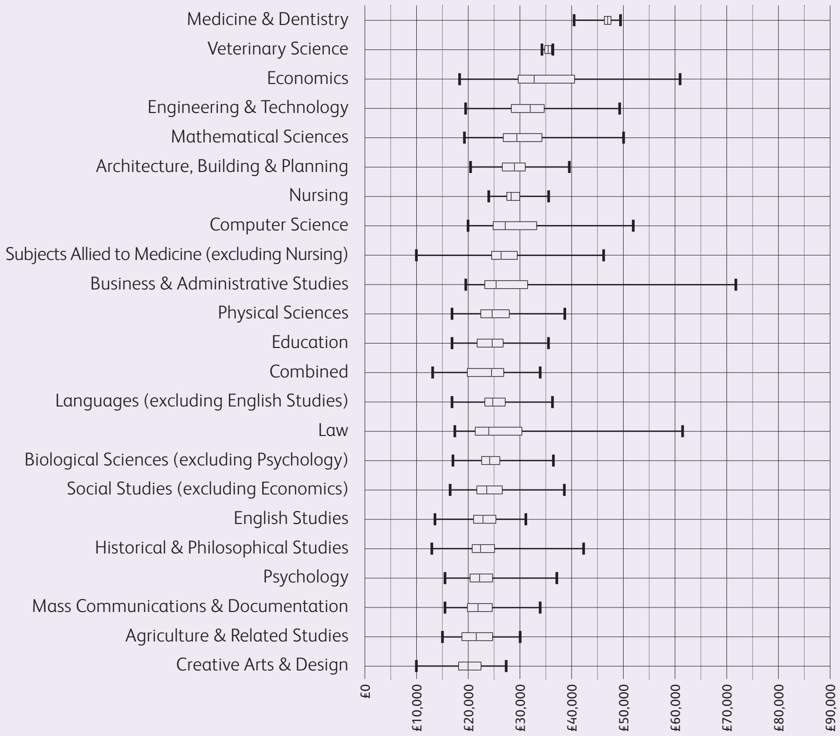
In 2017 the Government linked higher education and tax data to show the transition of graduates from higher education to employment. It tracked data on their earnings, showing their median level of earnings five years after graduating in 2008/09. Whilst there are caveats around the data, graduates who studied engineering and technology had annual median earnings of £25,100 one year after graduating in 2013/14. The only graduates that achieved median earnings greater than those were those in medicine and dentistry, veterinary science and economics. The upper quartile of earnings went up to £30,700, with the top earner receiving £51,500.

This is supported by EEF pay benchmarking of professionals' working in the manufacturing industry each year. Which found that engineering graduates earned, on average, £25,486 a year. As a graduate progresses onto more senior roles, such as an Engineer and then Senior Engineering, £33,940 and £42,262 respectively[10].

[10]EEF Professional Pay Benchmarking, 2017/18

DISTRIBUTION OF MEDIAN ANNUALISED EARNINGS ACROSS HEIs FOR EACH SUBJECT AREA FIVE YEARS AFTER GRADUATION (MINIMUM, LOWER QUARTILE, MEDIAN, UPPER QUARTILE, MAXIMUM).

GRADUATING COHORT 2008/09, SORTED BY MEDIANS



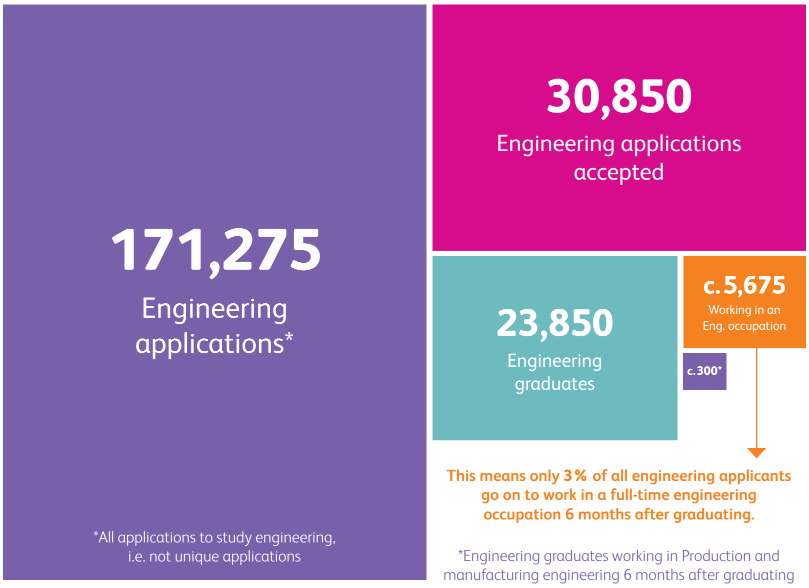
Median earnings across HEIs by subject studied, five years after graduation, female + male

Source: DfE, Longitudinal Education Outcome (LEO) data, 2017

This gap widens further when comparing the number of graduates to those who go on to work in an engineering occupation within an engineering company. It is clear that the pipeline of engineering graduates diminishes significantly, as we move from applications to employment. The diagram to the right demonstrates the extent to which we lose graduates, resulting in a significantly smaller talent pool from which manufacturers can recruit from. There are many reasons driving this and many of these are well documented in government-led and government commissioned research such as the Perkins Review of Engineering Skills[11].

However a critical factor in fixing the engineering pipeline will be to ensure that HEIs are sufficiently funded to deliver high quality engineering courses. This will in turn produce good, rounded engineering graduates with the transferable skills needed to be ready for the world of work. The next section focuses on how universities are currently funded, how that inhibits investment, and what can be done to incentivise universities to invest in higher education where it levers greatest economic benefit.

THE ENGINEERING PIPELINE:



Source: UCAS, 2015

[11]www.gov.uk/government/publications/engineering-skills-perkins-review

3. AN OVERVIEW OF UNIVERSITY FUNDING

As table 1 shows, universities' income and expenditure has steadily increased since 2010/11, with income outstripping expenditure each year. Whilst on the surface this suggests that university funding is not a cause for concern, this section shows that the composition of the income received has changed since the introduction of the higher £9,000 tuition fees and is likely to impact what they can deliver.

Universities receive funding on an annual basis and in the 2015/16 academic year universities received £34.7 billion[12]. The income universities receive is distributed to universities through a number of different channels. As table 2 shows, the composition of income universities receive, has changed since 2014/15.

The main sources of income for universities are tuition fees and education contracts, accounting for 48 % of all income. Other sources of income include, funding body grants, and research grants and contracts. However, universities are now more reliant on tuition fees because other funding streams such as grants have decreased in the past year.

The change in the way universities are funded coincides with universities reporting a growing reliance on tuition fees to fund their expenditure since the introduction of the £9,000 a year tuition fees. One university we spoke to as part of this report reported that prior to the increase in tuition fees, approximately 20 % of their income came from tuition fees, and 40 % from government grants, however now, 50 % of their income came tuition fees and only 10 % from government grants. This represents a substantial shift in the way universities are being funded, relying ever more on greater student numbers to bring in income.

The biggest expenditure item for universities is staff costs and operating expenses. Universities UK carried out an analysis of what universities spend their income on and found that 55 % of all income is spent on teaching and research[13]. This includes expenditure on academic staff, followed by running academic departments and then support staff. The remaining bulk of income is spent on maintaining university campuses and student and staff facilities, such as academic buildings and infrastructure.

As the next section demonstrates, the change in the way universities are funded has had a profound impact on what they choose to spend their income on.

TABLE 1: INCOME AND EXPENDITURE OF UK HE PROVIDERS, 2010/11 TO 2015/16 (£ BILLIONS)

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Income	27.6	27.9	29.1	30.7	33.2	34.7
Expenditure	27.2	26.7	27.9	29.3	31.2	33.0

Source: Universities UK

TABLE 2: INCOME OF HE PROVIDERS 2014/15 AND 2015/16 (£ MILLIONS)

		2014/15		2015/16	% change
Tuition fees and education contracts	£	15,541	£	16,810	8 %
Funding body grants	£	5,345	£	5,166	-3 %
Research grants and contracts	£	5,968	£	5,886	-1 %
Other income	£	5,902	£	6,045	2 %
Investment income	£	230	£	261	14 %
Donations and endowments	£	532	£	572	7 %
Total income	**£**	**33,518**	**£**	**34,739**	**4%**

Source: Universities UK

[12]HEFCE Funding Guide 2017/18
[13]Universities UK, What do universities spend their money on, November 2016

3.1 Income – relying on tuition fees

From 1998/99 entrants to full-time higher education courses were expected to contribute up to £1,000 a year to the cost of their tuition. The introduction of the Higher Education Act in 2004 allowed institutions to charge variable fees of up to £3,000. Student fees would increase in line with inflation up until January 2010.

However, since 2012/13, full-time students entering higher education in England have been charged fees of up to £9,000 a year. For part-time students the fees were slightly lower at £6,750 per year. As always, students were able to apply for student loans to cover the cost of the fees, however the range of other financial support such as maintenance grants were replaced.

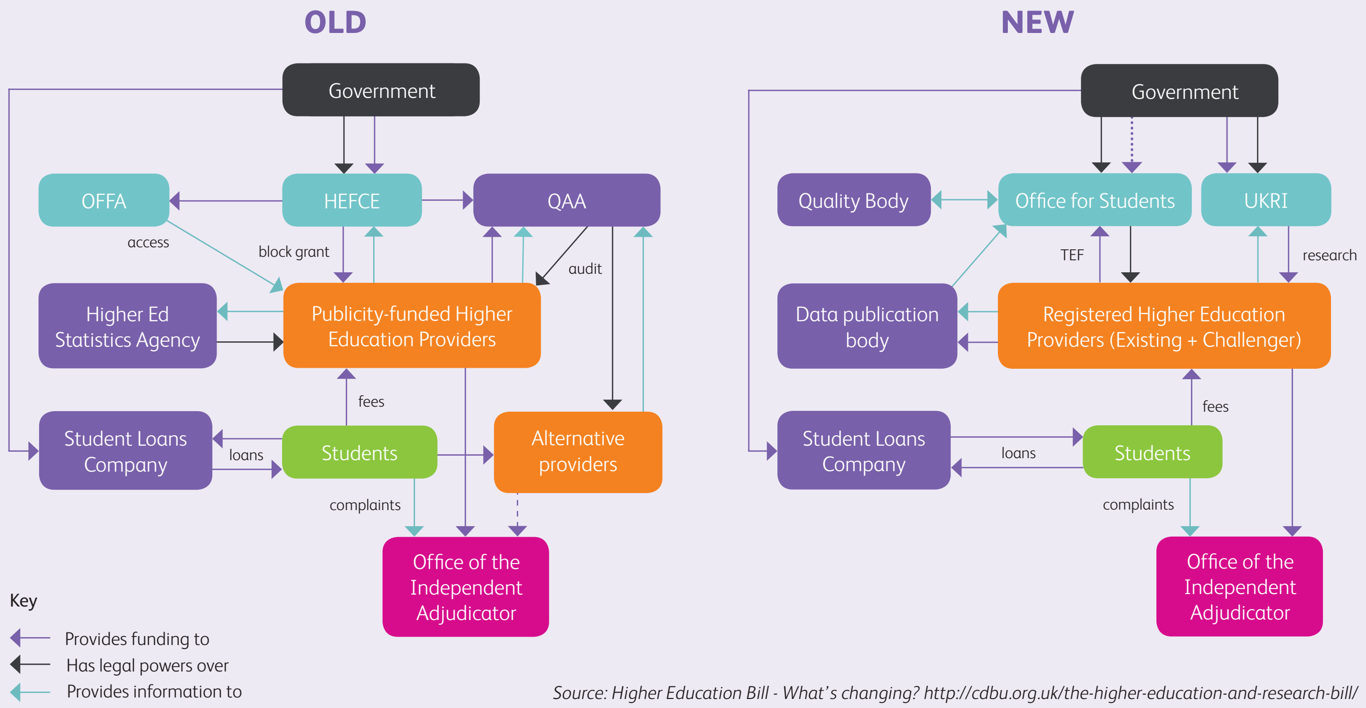
In the 2015 summer budget, the Chancellor announced some universities could charge student fees above the £9,000 and in line with inflation. This meant that from 2017/18, tuition fees would be £9,250 per year, however, only institutions with a Teaching Excellence Framework (TEF) of

NEW REGULATORY BODIES

The Higher Education Funding Council for England (HEFCE) is the body which funds and regulates universities and colleges in England. Its focus is to ensure funding for high cost subjects, widen participation, improve retention, and offer flexible forms of learning. This has led to a change in the balance between HEFCE teaching grants and the funding generated by tuition fees, with a significantly higher amount coming from fees as opposed to HEFCE funding. From April 2018, HEFCE will cease to exist, and will be replaced by the Office for Students and UK Research and Innovation (UKRI).

The decision to create the Office for Students was outlined the 2015 'Teaching Excellence, Social Mobility and Student Choice' Green paper, and established in law by the Higher Education and Research Act. All higher education providers will now have to register with the OfS to be able to award accredited degrees.

The Government sought to create a new sector regulator and student champion, echoing other arm's length bodies such as Ofcom, Ofgem and Ofsted. The Office for Students will be the new regulator for higher education and take on most functions of HEFCE and the Office for Fair Access. UK Research and Innovation will bring together the existing seven research councils into one body and provide higher education providers with quality-related research funding.



Source: Higher Education Bill - What's changing? http://cdbu.org.uk/the-higher-education-and-research-bill/

an appropriate grade would be eligible to charge students these higher fees. The move signalled a clear shift in university funding towards a demand-led model. With the removal of a cap on student numbers, universities are now able to recruit as many students as they see fit.

This new demand-led approach has resulted in many universities cross-subsidising funding from less costly subjects to fund more costly courses, such as engineering. In our interviews with representative bodies and universities, we found that this model allowed universities to deliver a mixed-portfolio of courses including more STEM subjects, which remain in demand from students. Despite the reliance on tuition fees to fund these subjects, universities see real value for money in offering STEM courses to students and will seek alternative ways to access the funding required to deliver it. This is clear evidence of universities commitment to continue to fund more costly subjects despite the incentive to provide less costly, classroom-based courses.

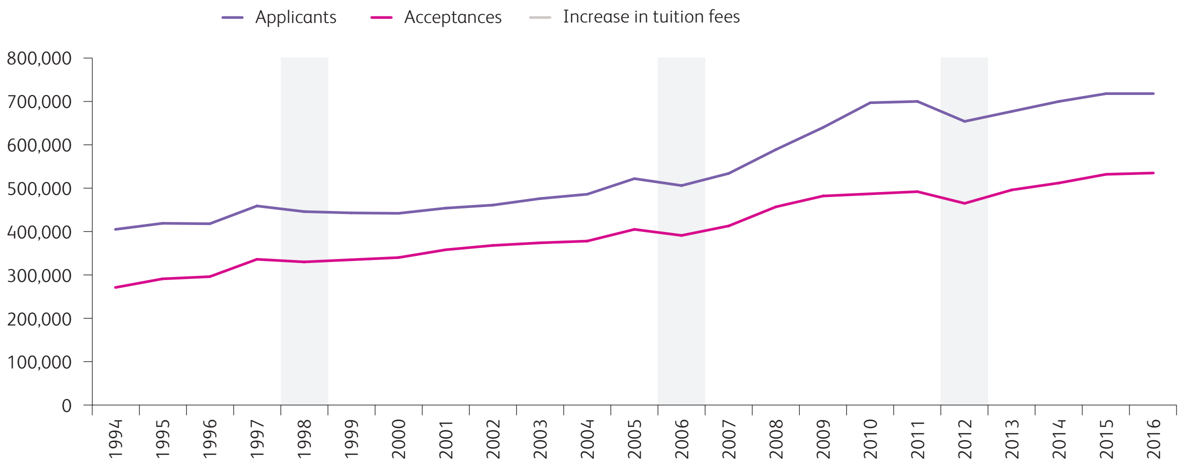
3.2.1 Impact on student numbers

Since their introduction, tuition fees have been subject to much debate, especially since recent analysis found that on average, students would leave university with £40,000 worth of debt[14]. This figure increases to £53,000 for students from the poorest families. There is growing pressure on the Government's student loans book too. Currently, there is £45 billion of student loans on the Government books, and it is predicted that by 2042, this will rise to £200 billion, with 6.5 million people with a student loan[15].

As chart 7 shows there have been three falls in applications and acceptances between 1994 and 2016: 1998, 2006 and 2012, which all coincided with an increase in tuition fees. Despite these increases, applications and acceptances have continued to increase at a steady rate, suggesting that students have not been discouraged from studying at universities because of higher tuition fees.

The general trend remains positive, in fact, through our discussions with manufacturers, there is a strong case that the increase in fees has driven young people to make informed decisions about their careers. Young people are thinking more carefully about the value of their degrees and the potential career opportunities of studying certain disciplines. This has certainly been the case for Engineering, which has seen a 29% increase in demand[16].

CHART 5: APPLICATIONS AND ACCEPTANCES TO UNIVERSITY BY UK DOMICILED STUDENTS



Source: UCAS

[14]House of Commons, Student Loan Statistics, June 2017
[15]Student Loan Repayments, House of Commons Public Accounts Committee
[16]UCAS, 2010 to 2016

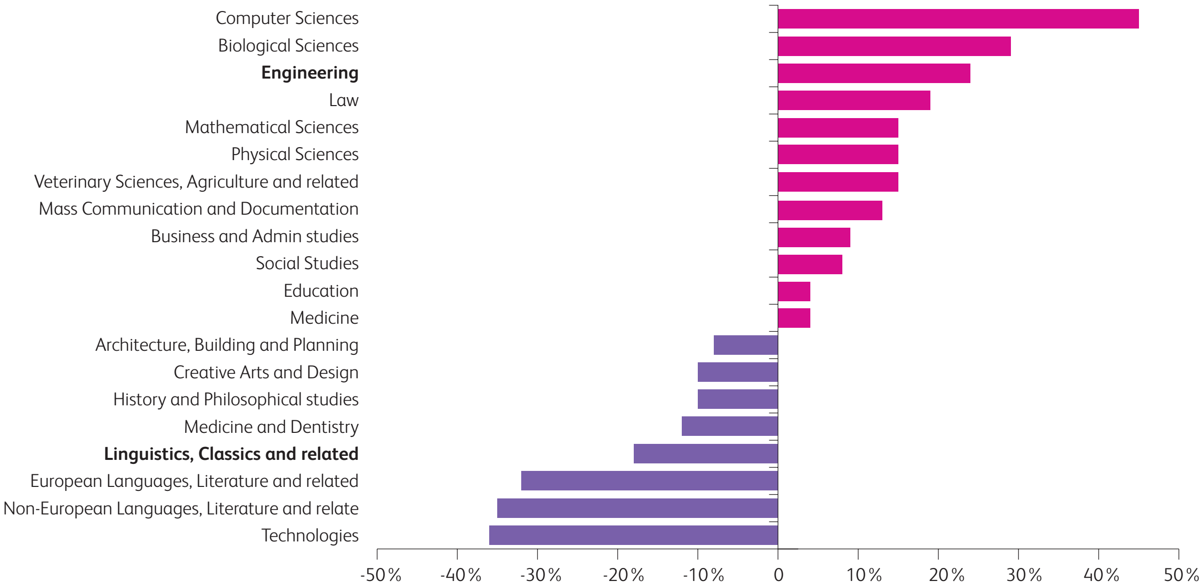
3.2.2 Impact by subject course

Although the overall trend seems to be of increasing applications and acceptances, this differs significantly by subject courses. Between 2010 and 2017, applications to engineering courses had increased by 24%, only Computer Sciences and Biological Sciences saw bigger increases. This underpins the suggestion that young people are in fact making an informed choice about the career they wish to pursue, and the relevant degree they would require.

The fact that students are making more informed choices is also reflected in the Student Academic Experience Survey. It found that on average Engineering students workload per week was 30 hours; 14 hours of contact time, 13 independent study hours and 3 hours of work outside of their course. Focusing on contact hours only, Engineering students had more contact hours than the average student. Approximately, they paid £51 for each hour of contact time, compared to £59 per hour for all other students. This shows that all other students are paying a 17% premium for those courses. It is therefore no surprise that engineering students had an above average response to whether they perceived engineering to be value for money (38%)[17].

It seems then that the tuition fee increase has had a positive impact on the numbers of students choosing to study engineering at university, therefore reducing fees could undo the positive trends we have seen for applications to engineering to date. Manufacturers want to continue to see universities being able to offer and deliver high quality engineering degrees. Engineering courses clearly represent good value for money for both the learner and HEIs; therefore, the Government focus should be on prioritising these courses and ensuring they remain sufficiently funded in real terms.

CHART 6: INCREASES IN APPLICATIONS TO UNIVERSITY IN THE UK BY SUBJECT FROM 2010 TO 2017



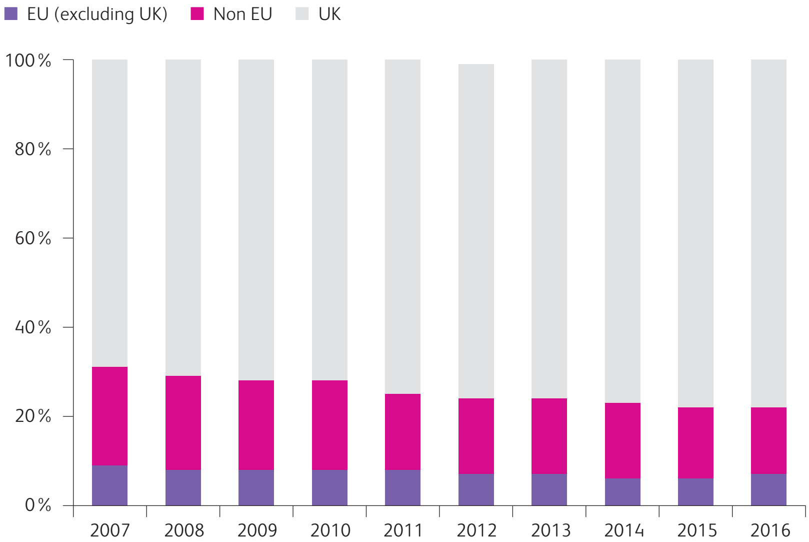
Source: UCAS

[17]Student Academic Experience Survey, 2017

3.2.3 Fees from international students

It is not only home-grown students that contribute to the increasing demand for engineering places at university. As chart 9 shows, non-EU and EU students make a significant contribution to the numbers on an engineering course. Students from outside the EU pay anywhere between £10,000 and £35,000 a year. This is in addition to the money they spend in the UK economy during their studies and on accommodation costs. Some universities we have spoken to say they are dependent of non-EU students to help ensure the sustainability of their engineering departments. The additional income universities receive in fees from international students can be used to subsidise the cost of upgrading equipment and even expanding provision.

CHART 9: ACCEPTANCES OF ENGINEERING STUDENTS, BY DOMICILE, 2007 TO 2016



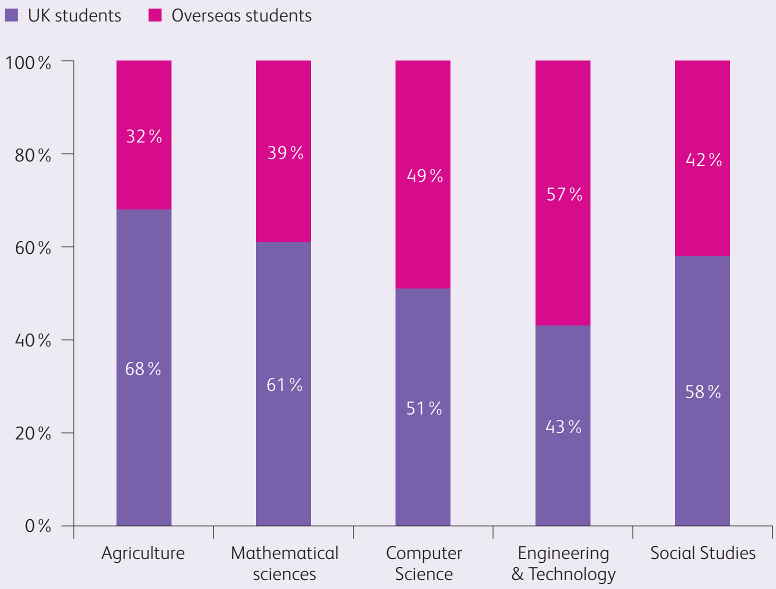
Source: UCAS

CASE STUDY: THE IMPORTANCE OF NON-UK STUDENTS AT THE RUSSELL GROUP UNIVERSITIES

International students play an essential role in the UK's world-class universities. An economic impact assessment of the Russell Group universities found that the 100,000 non-UK domiciled students who started Russell Group universities in 2015/16 generated a net economic impact of £8.82 billion for the UK. This includes tuition fees, on- and off-campus expenditure, visitor spending, staff spending, indirect and impacts through the supply chain.

The assessment also found that every 7 non-UK undergraduates studying at a Russell Group university, generate £1 million of impact to the UK economy. In addition to their significant economic benefit, international students help ensure our universities can deliver broad, high-quality academic programmes. Although this is not reflective of all universities, Non-UK students make up a high proportion of students within STEM subjects at Russell Group universities, especially engineering and computer science. Without international students, some courses would not be financially viable, which would impact on choice available to domestic students and on the ability to meet the skills needs of the UK economy.

FIRST YEAR STUDENTS IN STEM DISCIPLINES AT RUSSELL GROUP UNIVERSITIES



Source: London Economics, The economic impact of Russell Group universities, and the costs and benefits of international students by parliamentary constituency report

It is clear that international fees are vital to the long-term financial sustainability of these courses. If we were to restrict the number of students allowed to study here, universities would lose an integral source of funding. It is unlikely that higher educational institutions will be able to make up the funding gap by dramatically increasing the number of UK students, or make up the gap in funding through additional grants provided by the Government.

The Government must do all it can to ensure that the UK remains an attractive place to both study and work after graduation. This includes removing students from the net migration figures and allowing non-EU students to work in the UK after graduation. Currently students only have four months after graduating to find employment, leaving them with little time to secure a job upon graduation. Whilst non-EU nationals accounted for 15% of all acceptances onto engineering courses, they accounted for 36% of graduates. Given they make up a growing proportion of graduates (27% in 2004/5); the Government must make it easier for non-EU students to both study and work in the UK.

3.2 HE expenditure – rising delivery and capital costs

3.2.1 Differing costs of delivering HE courses

The cost of delivering a university course varies. The biggest expenditure items for all universities are staff and capital costs. Universities pay a premium to attract high quality lecturers to not only teach at their institutions, but to contribute to the research-side of their particular field. This particularly holds true for engineering faculties who rely on attracting lecturers and researchers from outside the UK to fill these positions. One university representative group we interviewed told us that nearly 25% of their lecturers were from outside the UK – this rose to 50% in universities with large STEM faculties.

Another substantial cost to delivering a course is the capital cost in delivering one subject. This includes elements such as infrastructure and equipment. The Government recognises this cost through strategically important and vulnerable (SIV) funding. This is done through HEFCE's categorisation of dividing degrees into different price bands, ranging from Band A for the most costly subjects to deliver, to Band D for the least costly. Based on this, universities are then provided

Price Group	Subject-based allocation (£)
A*	£10,000
B	£1,500
C1	£250
C2 and D	£0

* Band A subjects have their student numbers capped

additional subject-based allocations. Currently, engineering degrees are categorised as Band B degrees meaning universities receive an additonal £1,500 per student, per year to deliver the course. This funding is received in addition to tuition fees. However as the next section explores, the delivery of engineering courses, costs considerably more than others such as band C or D courses, and the subject-based allocation does not sufficiently cover the expenditure made by universities.

3.2.2 The cost of delivering engineering courses

The cost of delivering engineering degrees outweighs the income universities receive to provide them. Universities we spoke to told us that the £9,000 in student fees, plus the additional SIV funding of £1,500 (an uplift of 16%) does not cover the cost of delivering engineering courses. This is primarily due to the cost of labs and equipment, which is integral to the quality of learning that students can access. Not only is the initial outlay expensive, universities must also continually update equipment to ensure that students are being taught with the latest technology. One university we spoke to estimated that the cost of furnishing one engineering lab could be up to £2 million.

Engineering degrees fall into Band B and are estimated to cost in the region of £15,000 per year, per student to deliver, compared to £7,000 for a Band D degree such as economics. However, a university would only receive £10,500 to deliver an engineering course, (£9,000 in student fees and £1,500 in SIV funding), leaving the university a deficit of £4,500 to fund from elsewhere – in many cases international student fees.

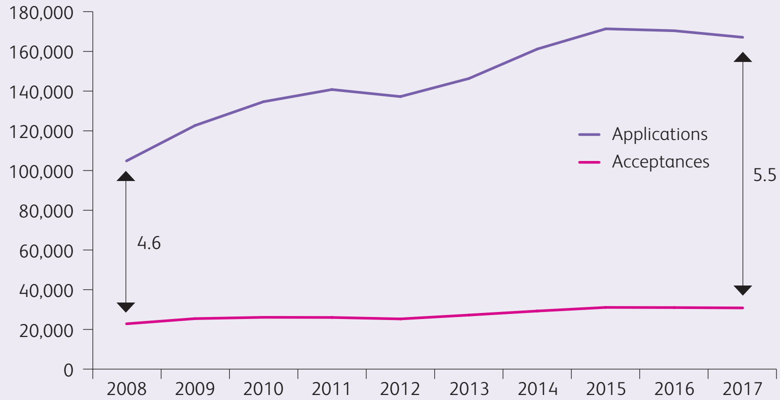
IS THE HIGH COST OF DELIVERY LIMITING THE NUMBER OF PLACES UNIVERSITIES OFFER?

When comparing the number of applications made to study different degrees to the number of acceptances and places offered, we can see a stark difference by degree. Whilst applications to study more costly degrees have increased since 2008, acceptances onto these courses have not kept pace. As the charts show, for every one acceptance onto an Engineering degree, there were 4.6 applications in 2008 and 5.5 applications in 2017.

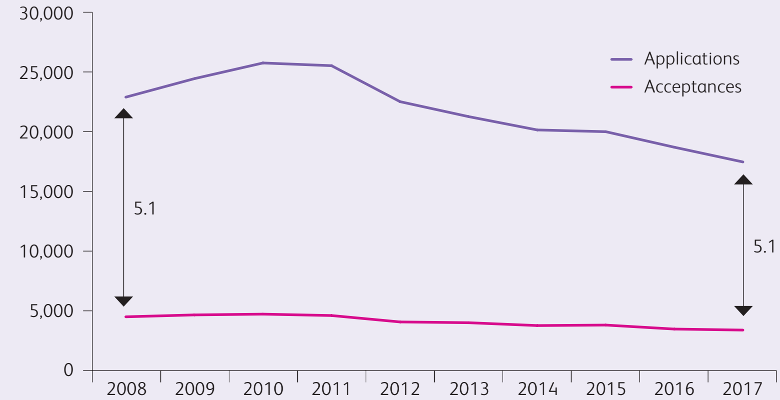
For less costly degrees, in Band C2 such as European languages, literature and related courses, there were 5.1 applications for every one acceptance in 2008, and in 2017 the figured had remained the same. A similar trend can be seen for Band D courses. In 2008 there were 5.0 applications for every one acceptance on social studies or business and administration courses. In 2017 the figure had remained the same. Both examples demonstrate that universities have been more agile to adjusting their supply of courses in response to demand. As applications to study Band D subjects have increased, the corresponding number of acceptances has also increased in line.

This suggests that whilst universities may not be actively prioritising some degrees over others, there is no doubt that the high cost of delivering more expensive degrees such as engineering, is a major barrier to the number of places universities can offer on these courses.

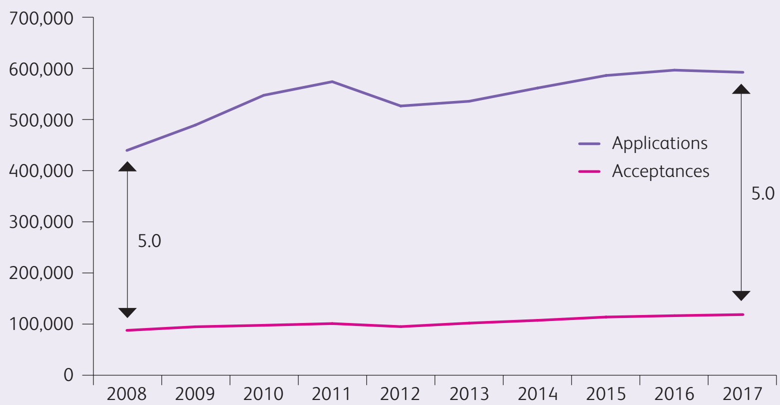
ENGINEERING (BAND B): APPLICATIONS VS. ACCEPTANCES



EUROPEAN LANGUAGES, LITERATURE AND RELATED (BAND C2): APPLICATIONS VS. ACCEPTANCES



SOCIAL STUDIES AND BUSINESS AND ADMIN (BAND D): APPLICATIONS VS. ACCEPTANCES



Source: UCAS

3.2.3 Additional STEM specific funding

Some capital funding was made available to HEIs on a competitive bid basis in 2015/16. HEFCE provided £200 million to 73 universities for STEM teaching capital funding. The funding was intended to ensure that universities could respond to an increase in demand for STEM degrees. To take advantage of this funding, the higher education institutions had to match-fund any allocation on at least a one-to-one basis resulting in the total STEM capital investment being at least £400m.

In addition to this one-off capital funding from Government, some universities source capital funds from employers, often through sponsorship of a faculty or providing resources. Two such collaborations can be seen through the Siemens Engineering Faculty at Lincoln University and Unipart's "Faculty on the Factory Floor" in partnership with Coventry University. In our interviews with universities and stakeholders, many said that this model of collaboration was desirable, both in terms of student experience, and also financially but are very much the exception rather than the norm.

Without the necessary funding for these high-cost subjects, it will be difficult for universities to offer and deliver engineering courses to meet the growing demand. A funding model that relies on increasing student numbers is forcing universities to make long-term financial decisions such as a decision to expand or open a new engineering lab, based on short-term student number projections. For universities to be able to deliver the full range of courses that manufacturers demand, government must ensure that the funding model can meet and deliver the courses to fill our skills gap.

ARE UNIVERSITIES BORROWING TO FUND EXPENDITURE?

Despite universities receiving considerable amounts in funding, many still resort to borrowing to fund capital expenditure on things such as teaching spaces, research facilities and refurbishment of existing buildings. This is vital to ensure that universities are investing in the latest technology, but also that they are expanding to deliver the provision that students demand.

Universities UK estimated that external borrowing increased as a percentage of income from 24% in 2011/12 to 30% in 2016/17. One university we spoke to borrowed in the region of £120 million in order to fund capital equipment for their engineering faculty. Whilst this may be necessary, we are concerned that external borrowing may become the norm in order to deliver high quality courses. This may result in universities choosing not to invest in the delivery of degrees such as engineering that have high upfront costs.

4. CHALLENGES AHEAD IN THE HE FUNDING LANDSCAPE

In writing this report, we identified three future funding challenges that universities face:

- **Additional SIV and one-off capital funding is not sufficient to cover the cost of engineering degrees.** Since the introduction of higher tuition fees and the marketisation of higher education, universities have been borrowing more and more in order to fund long-term investment into facilities and equipment for high cost degrees. The additional funding universities can apply for is not sufficient to invest in the latest engineering equipment, or to expand provision through new buildings and labs. As the gap between the cost of delivering engineering degrees and universities income grows, the incentive to deliver them will diminish. In the long-term, this will increase the existing large skills gaps in the manufacturing industry.

- **A demand-led funding model creates difficulties for universities to expand provision of engineering degrees.** The current model of funding means universities receive a smaller proportion of funding in grants for research and maintenance. In comparison, they receive a greater proportion from higher tuition fees, and as a result, cross-subsidise funding to deliver more high cost degrees such as engineering. Whilst all universities and stakeholders we spoke to agreed that this 'mixed-portfolio' was operationally viable, it results in universities being dependent on student numbers. Any fluctuation in student numbers would lead to universities being unable to effectively cross-subsidise more costly engineering degrees. It also inhibits universities' ability to expand their provision to accommodate growing demand; this will not help reduce the skills gap in our industry.

- **Any restrictions on international students would mean that universities would lose much of their income.** As this report shows, the tuition fees international students pay is an integral source of income for universities. This additional income, allows engineering faculties to be financially sustainable and deliver high quality engineering degrees. Manufacturers have repeatedly stressed the importance of graduates work readiness, therefore, being able to learn with the latest equipment and replicating what they would find in the workplace, is essential to achieving this.

  If the Government were to place further restrictions on the number of international students able to study in the UK, this would have a profound impact on the ability of engineering faculties to deliver courses. Furthermore, it could hinder universities ability to invest in the latest technology and equipment for students to use. Manufacturers have stressed the importance of exposure to the latest technology, which replicates the world of work.

5. RECOMMENDATIONS TO GOVERNMENT

Based on our findings we are making the following recommendations to Government:

1. **Increase subject-based allocations for engineering degrees, and for Band B degrees, introduce Bands B1 and B2.** Evidence shows that the current funding model falls short in covering the true cost of delivering engineering courses. This is contributing to the fact that engineering graduates are in short supply leaving manufacturers with unfilled vacancies. The Government must prioritise STEM subjects by introducing B1 and B2 within Band B to help provide universities with the additional funding they need to be able to cover the delivery of STEM provision. Introducing B1 and B2 will also help differentiate between the differing costs and impact within STEM too, with B1 degrees receiving a higher allocation than B2.

2. **Review STEM teaching capital funding grant every two years and SIV funding to ensure it is adequate.** Despite the one-off STEM teaching capital funding and SIV funding received, universities are topping up funding by borrowing to invest and expand their engineering provision. In order for universities to be able to invest in the latest technology and replicate what is found in the world of work, the Government should review and provide STEM teaching capital funding every two years, and review the amount of SIV funding so that it is responsive and sufficient to universities' delivery needs.

3. **Incentivise university engineering faculties to establish partnerships with manufacturers to support the delivery of high quality STEM courses.** Working in partnership with manufacturers to deliver STEM courses is a great way to overcome the barrier of having access to the latest capital equipment. By working together not only do students have access to the latest technology but they can also see engineering and manufacturing in a workplace. It brings to life their studies and would no doubt encourage them to undertake an industrial placement year which is highly desirable amongst manufacturers.

4. **A flexible immigration system that encourages students to study engineering degrees and work in the UK.** During our interviews with universities and their representative groups, all highlighted the invaluable contribution non-EU nationals make to the UK HE sector, even more so within engineering. The higher student fees they pay help to fund the delivery of the courses, including large investments such as new lab equipment. The Government should therefore remove non-EU nationals from their net migration figures to signal the importance of their contribution to both our education system and the UK manufacturing industry, and re-instate the Tier 1 post-study work route. This will enable non-EU students to stay in the UK for two years after graduating to seek skilled employment.

eef The manufacturers' organisation

EEF is dedicated to the future of manufacturing. Everything we do, from business support to championing manufacturing and engineering, is designed to help our industry thrive, innovate and compete locally and globally.

In an increasingly uncertain business environment, where the UK is now on a path to leave the European Union, we recognise that manufacturers face significant challenges and opportunities. We will work with you throughout this period of uncertainty to ensure that you are on top of any legislative changes and their implications for your business.

Furthermore, as the collective voice of UK manufacturing, we will work tirelessly to ensure that our members' voices are heard during the forthcoming negotiations and will give unique insight into the way changing legislation will affect their business.

Our policy, employment law, health, safety and sustainability and productivity experts are on-hand to steer you through Brexit with rational, practical advice to help your business succeed.

Verity Davidge
Head of Education and Skills Policy
020 7654 1572
vdavidge@eef.org.uk

Bhavina Bharkhada
Education and Skills Policy Advisor
020 7654 1588
bbharkhada@eef.org.uk

For information on how EEF can support your business call:
0808 168 5874

www.eef.org.uk

For more information contact the EEF Policy and External Affairs team on **020 7654 1555**

www.eef.org.uk @EEF_Economists

Published by EEF, Broadway House, Tothill Street, London SW1H 9NQ

eef SUPPORTS THE YEAR OF ENGINEERING 2018