HOUSE OF LORDS

Select Committee on Economic Affairs

Corrected oral evidence: The Economics of Higher, Further and Technical Education

Tuesday 31 October 2017

3.40 pm

Watch the meeting

Members present: Lord Forsyth of Drumlean (The Chairman); Lord Darling of Roulanish; Baroness Harding of Winscombe; Lord Kerr of Kinlochard; Lord Lamont of Lerwick; Lord Layard; Lord Livermore; Lord Tugendhat; Lord Turnbull.

Evidence Session No. 4 Heard in Public Questions 31 - 40

Witnesses

I: Professor Simon Marginson, Director of the Centre for Higher Education, University College London; Professor Sir Anton Muscatelli, Principal and Vice-Chancellor, University of Glasgow; Professor Edward Byrne, President and Principal, King's College London.

USE OF THE TRANSCRIPT

1. This is a corrected transcript of evidence taken in public and webcast on www.parliamentlive.tv.

2. If in doubt as to the propriety of using the transcript, please contact the Clerk of the Committee.

Examination of witnesses

Dr Simon Marginson, Professor Sir Anton Muscatelli and Professor Edward Byrne.

Q31 **The Chairman:** Professor Byrne, Professor Sir Anton Muscatelli and Dr Simon Marginson, welcome to the Economic Affairs Committee. Perhaps I could start by asking the first question. Do you think there is too much emphasis on higher education in England?

Professor Simon Marginson: I think not. There is inappropriate, perhaps insufficient, emphasis on higher education. Comparing the UK with other OECD countries, our level of participation is not especially high. When you take out the international students from all the country figures, you find that our level of participation is at about the OECD average, and that includes Turkey, Mexico and some poorer countries.

Professor Sir Anton Muscatelli: I agree with that point. It is very difficult to judge what the right level should be because it is not simply demand determined. We cannot simply say, "What is the demand for high-level or graduate skills in the economy?" We have to recognise that a lot of the productivity gains could be driven by additional supply of skills at the high end. We have seen that in countries such as Korea where participation has risen very rapidly, and that in turn has fuelled the development of technology and productivity.

Professor Edward Byrne: I agree with my colleagues. In a country such as the UK, whose main asset is its people, its future is dependent on a well-educated, innovative and flexible workforce and a vibrant university sector.

The Chairman: We had some written evidence from the City Guilds Group that said that "the current structure of post 16 education in this country was overly weighted towards the Higher Education … pathway both in terms of funding and policy attention". It pointed out that the Netherlands has not created a new university since 1976: "Instead they expanded their 'higher professional education' system which is close to the vision for our 'old' polytechnics". It contrasted that with the UK, where "we have created over 90 universities and not a single major alternative institution for technical and professional education".

Professor Edward Byrne: This is clearly a debate with an argument on both sides. If I put the argument towards a higher education—university— emphasis, for me it goes something like this: the world is changing rapidly, the jobs that will disappear are the less complex ones and the skills people will need in the future more and more—within a decade—are lateral thinking, tolerance of ambiguity and problem solving, not so much the more technical skills that abounded in the past. I am not saying they are not still important; clearly, they are, but we are in a world where a Go champion was defeated by the AI computer 20 years before anyone expected, and our workforce are transforming. It is not by chance that the driving economies of Asia are investing so heavily in their

university sectors. They regard that as crucial to being the innovative, successful nations they want to be.

The Chairman: I am not altogether convinced that a computer will be able to look after us in our old age.

Professor Edward Byrne: No, but jobs will change.

Professor Sir Anton Muscatelli: I do not think it is an either/or. Clearly, there needs to be upskilling at all levels in the tertiary sector. One needs to look at patterns of demand, but it is quite difficult to forecast what the supply of skills in the mix has to be.

In the Netherlands, Germany, Austria or Switzerland, a lot of the technical skills we describe are taught in different kinds of institutions, which are possibly the equivalent of universities. We have to be very careful what we do and do not call university education, and where we draw the boundaries. It is entirely possible that we may have the skills mix wrong, but you may want to drive that from within the university system, not necessarily change the landscape of institutions.

Professor Simon Marginson: On the comparison with the Netherlands, I think there is a very good system and it is a very good country for education. Our systems are broadly similar. The level of participation is about the same. The difference is that it has two sectors of higher education, not one. We have a universal approach, a single sector. Its second sector are universities of applied science. As in Germany, the second sector has university status and offers degrees and a duration of study similar to what we offer. The difference is that research funding is concentrated in its primary universities, while in the second sector its strong teaching institutions have a bit of applied research but they do not do much research. In the UK, all the universities are expected to carry out research functions—all of the erstwhile public universities. Maybe that is a better approach in some respects, as it means teaching is informed by research.

The Chairman: Lord Willetts told us it was no surprise that countries with flexible labour markets, like the UK and the United States, had high levels of university participation and low levels of apprenticeship. Do you agree with him?

Professor Simon Marginson: Apprenticeship takes us back to the whole question of how vocational and technical education fits with academic education, and that, in turn, derives from the character of the industry profile. In countries where there is cutting-edge, high-skill manufacturing, producing large-scale exports, such as Germany and Korea, and Taiwan in computing, there are strong technical and vocational sectors that have good status and funding, private and public, reasonably high academic standards and high completion rates compared with most such systems. If we had a larger, stronger manufacturing sector, we would not be having this discussion; we would simply be managing that system. Our problem is that our strength is in services

rather than in high-skill manufacturing. We have areas of high-skill manufacturing, but we are not a manufacturing power on the scale of Germany or Korea.

The Chairman: Some people suggest that that might be a chicken and egg argument.

Professor Simon Marginson: Maybe there is something in that.

Professor Sir Anton Muscatelli: There is an interdependence, but we are where we are as an economy. Looking ahead at areas where services, which are 80% of the UK economy, have to innovate in order to export—areas such as fintech and software engineering—there is a big question as to whether you can broaden them simply by doing things around apprenticeships. You can in some measure. It probably means that the pipeline needs to be better joined up at that level, so that people have the opportunity to progress from high-level technical skills to higher masters-level skills that might be required by, say, fintech or industries like that.

Lord Lamont of Lerwick: How do you know that the content, putting it broadly, of what in the United States would be called liberal arts courses, which are taught in many universities here, contributes to problem solving?

Professor Simon Marginson: There is a variety of evidence we could bring to bear on that. It is a good, appropriate question to ask. You have to look at how graduates are picked up by the labour market, how they are employed, where they go, what they do and their subsequent graduate careers. You could conduct a research programme that looked closely at the kinds of skills they are learning and the kind of skills they are using in the workplace.

I am convinced by the argument. A good liberal education creates a lot of flexibility of thought, a critical capacity and an ability to reconstruct things mentally and put your own original stamp on things. Managing both scientific and cultural knowledge can lead you in that direction. It is not a province of one discipline or another. This is an evidence-based forum and that is a call for evidence. As a researcher exactly in this area, I would rather go away and research it for a year or two and come back with an answer than try to make a superficial one now.

Professor Sir Anton Muscatelli: I am principal of the University of Glasgow and I chair the Russell group of universities. I know that the institutions in the Russell group spend quite a lot of time thinking about the kind of attributes our graduates have across a whole range of disciplines, including the arts and humanities. Areas like critical thinking and problem solving are routinely part of a history or a humanities degree.

Coming back to Simon's point, we need to look at the evidence. We are beginning to get some interesting evidence from the longitudinal learning

survey. As far as we can tell, earnings premia are still being maintained despite the expansion in higher education in the UK, certainly at the top end. Universities like the Russell group find that their graduates have high employability in graduate occupations and still have high-value premia, but, clearly, if one wants that level of detail for individual courses or attributes, it requires additional evidence.

Professor Edward Byrne: In the more than 10 years I have been a vice-chancellor, I have seen a hugely increased focus by university leadership on understanding what industry and business want in our graduates. We engage at every level—course advisory, in-course placements and internships—and the feedback we get is pretty positive. The figures show that the vast majority of graduates are in good employment relatively quickly. I can give some Australian figures, if you are interested.

To me, the equally important aspect is that, if we were having this discussion maybe 20 years ago, the question about early employability would still be very important. It has been made more important by the fees people pay; they are paying a lot of money for degrees, but then it would perhaps have been more naturally understood that a university education puts somebody in a different position for the whole of their life. It is a broader and more engaging life, perhaps one where they undertake a number of different jobs and careers. My Irish peasant grandfather digging coal in the north of England understood intrinsically that education opened all sorts of doors. It was understood intrinsically, perhaps a generation ago, that a great university education put you in a position to have a much broader life; it was not simply about your first job. That is the pit we fall into a little in this discussion.

Lord Tugendhat: I was very taken by Dr Marginson's reply. You said that the Germans and the Koreans have a long tradition in the engineering industry—long for the Germans at any rate. In a sense, they are in a virtuous circle; because they have done so well for so long, they have apprenticeships and continue to do well. Then you answered a question about the United States. One of the striking things about Germany is that, although it has been so successful at engineering, right back to the 19th century, it has been very much less successful in developing the high-tech areas—the Googles, Microsofts, Amazons and all the rest of them. Indeed, Europe as a whole, and Germany in particular, given its success in other areas, has been notably unsuccessful. To what do you attribute the continued success over many generations of the United States in that respect? To hazard a guess, were there to be a big change in industrial systems, and it turned out that electric cars take off in the way that is envisaged, with all the significance of that for the supply chain, we could imagine that Germany might go the way of Detroit, if you follow me. Would you comment on that, and on why the United States is so very successful in the high-tech area?

Professor Simon Marginson: That is a great question. There is a path dependency in these things, and Germany's success, like Japan's, in high-

skilled manufacturing, meant that they had less need for the IT revolution in the 1990s. They had less need to go down that route as their next wave of innovation, and they tended to feed off the innovations coming from the United States. Both countries, and Korea, continue to be so strong in advanced electronics, product creation and sales in those areas that they can continue as they are for some time ahead.

The United States is a fascinating country. What jumps out is the extraordinary fecundity and creativity of enterprise in industry itself, in the workplace and in business. Explaining that requires a discussion of the whole culture, society and history. I would like to be able to say that education drives everything, but I do not think it does. It is one piece of a puzzle. Families are important, and governance, business, law and a lot of other social institutions are important.

In the United States, there are wonderful high-quality universities at the top end, not only private ones but the great public universities. There are wonderful liberal arts colleges. They are not very inclusive, and they are rather elite in social composition, but from all the evidence I have seen they are very good teaching institutions—not all, but most of them. They produce flexible thinkers to some extent. A liberal first degree approach, which generally creates broad-based knowledge, rather than the early specialisation we tend to go for, probably helps to equip the labour market, the business workforce and so on. The great originality and creativity in industry in the United States is from the way in which enterprise is placed right at the centre of the social fabric. It is given tremendous support and emphasis from birth. In the same way that Chinese families give education support and emphasis from birth, in the United States enterprise, trade and exchange are central values.

Lord Lamont of Lerwick: You place great emphasis on Asia, and you mentioned Taiwan and Korea. You did not mention Singapore. I think I am right in saying that Singapore made a conscious decision not to expand university education and to concentrate very much on technical education. Its performance has been just as good as, if not better than, many Asian countries.

Professor Sir Anton Muscatelli: What is happening now in Singapore is interesting. You are absolutely right that Singapore took that conscious decision, but it has now created additional universities. My university, the University of Newcastle, the University of Manchester and others are now offering joint degrees with some of those polytechnics in areas such as avionics, aeronautical engineering and computing science. That takes us back to the point I made earlier. One should not be too focused on the titles of institutions. The fact that a university like Glasgow is doing joint degrees with what used to be polytechnics but is now the Singapore Institute of Technology, and we have 700 students studying for degrees in Singapore, tells you something about where they are going. In Singapore, they are genuinely worried about the decline of their manufacturing base and other sectors. They are looking at higher-level skills, and in a way they have to move before Germany or Korea does.

Professor Edward Byrne: I do not think anybody would argue that everyone should go to university. There is an optimum figure we could discuss; it might be around 40% or a little more. Singapore gets that. Its five new technical colleges at sub-university level are all great. I know them. They have a pipeline into university for their great students, but Singapore has also invested massively in its two great universities. Both NTU and NUS, on some scales, are both top 20 universities; they are certainly two of the four or five top universities in Asia. Singapore gets the American example that at the heart of every great innovation precinct in the world there are one or two research universities. It has invested massively in the National University of Singapore and Nanyang Technological University in the last decade.

Professor Simon Marginson: You are absolutely right to point to the quality of Singapore. It is a good example of how a mix of non-university and university institutions can be a very successful approach. If you started again in the UK you might do that, but we are on another path. The reason why Singapore is so strong in its workforce as well as its higher education system is that its schooling is the best in the world on measured outcomes. Its PISA scores in all three disciplines—reading, science and mathematics—are the highest. All the east Asian countries do well in PISA, but Singapore is the best. If we could put as much emphasis on schooling as Singapore, we would all do much better.

Q32 **Lord Lamont of Lerwick:** Have not the great losers in this expansion of universities been part-time students and older students who used to do part-time courses? Their numbers have plummeted while this massive expansion has been going on. If we wanted training that was related to the jobs market and skills, would it not be more productive, and certainly more correlated, if we expanded back to what it used to be: part-time education with more mature students who know what they want to do with it?

Professor Edward Byrne: That is a very important point and a weakness of the current funding system in the UK. As Baroness Wolf suggested recently, in Australia, by contrast, people can borrow a sum of money in the course of their whole life for repeated exposure to education. That works very well. My view is that it is an area where the UK could do better.

Lord Turnbull: There is perhaps a slightly easy acceptance that liberal arts equals critical thinking equals problem solving. The Civil Service, which I led for a time, is a victim of that. You are basically dealing with people who gave up maths at the age of 16 and have had very little exposure to analysis of risk.

The Chairman: Surely not in the Treasury.

Lord Turnbull: The Treasury may be a bit of an exception, but there is an elite in this country who are brilliant with words, yet their ability to handle statistical concepts and analyse data is poor. People may be able to put together a logical argument in a debate or an essay, but their

ability to look at statistics is quite low.

Professor Edward Byrne: That, too, is a very real and important issue. Specialisation at A-level means that only about 20% of young people, in England at least, leave school with significant mathematical ability. In Australia, the figure is between 50% and 60%; in other countries, it is higher. That is one advantage of the baccalaureate over A-levels. Universities and higher education providers need to look at raising cognitive reasoning capacity and mathematical literacy to give some of these young people a second chance to get their skills up.

Dr Simon Marginson: We could make an argument that mathematics should be compulsory to the end of school. Some countries do that, and it does not do them any harm. People would complain if you brought it in tomorrow, but it would be a step forward.

Professor Sir Anton Muscatelli: I could not agree more. To go back to Simon's point, that is what gives a number of other countries an advantage. Often, universities now have to pick up the pieces as regards the level of mathematics preparation. We do what we can, but we are impaired by what the pipeline produces.

Professor Edward Byrne: On broad as opposed to professional education, the majority of young people coming into universities enter a professional course—engineering, law, medicine or business—that takes them to a career. A significant number do a broader course, and many of those do a more professional course at masters level. It is very difficult to advise people on the best approach. In my last job, in the city of Melbourne, the university I ran, Monash, had a more professional entry approach. Our peer university, the University of Melbourne, had a liberal entry course for many of its students. It is very difficult to tell, seven or eight years later, which is the best approach.

Q33 **Baroness Harding of Winscombe:** Do you think we should be worrying about the level of graduate underemployment? We have had a couple of different data points in evidence, the clearest from the Department for Education, stating that academic researchers believe 74% of graduates have been matched into graduate jobs; thus, 26% have not. Do you think that is better or worse than the rest of the world? Should we be concerned about it?

Professor Simon Marginson: That is a fascinating question. It all depends on what you call underemployment. If it means working in occupations that are not seen as graduate jobs, that is one meaning; another meaning is that people are not working full-time.

Baroness Harding of Winscombe: I meant the former, not the latter.

Professor Simon Marginson: It is interesting to look at the worldwide pattern. I have just come off an eight-country project that has been looking at the great growth of participation in education across the world. Everywhere in every jurisdiction, not year by year but over half-decades and decades, participation rates in the population are going up; each

generation of young people participates at a higher rate than the previous one. That rate has accelerated in the last 20 years or so. Now we have a situation where about 37% of all school leavers go into tertiary education. That includes all the poorer countries as well as the rich ones. In more than 50 countries, the level of participation now exceeds 50%, and in a significant number of countries it exceeds 75%. When it gets to 50%, it keeps going up, so our pattern is the same as the rest of the world. You would think that would create a vast oversupply of graduates relative to workforce needs, but what tends to happen is that, at the same time, economies and workforces change. The availability of graduates itself has an impact on the nature of the work that is done.

Another important part of the equation is that graduates move down the occupational scale and displace non-graduates from the jobs they previously held. There is a rise in the level of work and a spread of graduates downwards through the structure at the same time. The net outcome is that more and more people have degrees, and it becomes increasingly necessary to have a degree to get a career or a full-time job of any kind in some countries.

Baroness Harding of Winscombe: Is that not the nub of the challenge? If all we are doing is creating grade inflation, it is not a great use of society's resources?

Professor Simon Marginson: Those people are more educated; they are educated to a higher level, so I would not say the qualifications have been devalued. We have a situation where the level of participation in education is not fundamentally driven by labour market demand, but by the growth of aspiration in families for participation in education, which is seen as a source of betterment. It is seen as a way of having a better life, and it is. If people do not have a degree now, they are increasingly disadvantaged. We can explain a lot of political developments in those terms. People without degrees are being pushed to the margins of society, and that is a problem.

Professor Sir Anton Muscatelli: I would add three points. First, progress in society is not all led by demand for skills. The point Simon made, which is that the supply-side effect of increasing education has a positive impact on productivity and growth in the long run, is really important.

Secondly, we cannot focus on just a couple of data points. It takes from five to 10 years to take somebody through higher education, sometimes postgraduate education and then training on the job. Looking at a period of economic slackening, like the one we are going through post 2008, it is easy to conclude that perhaps we have overproduced and that we have a temporary oversupply of graduate skills, but the danger is that, if you put on the brakes, you might be disadvantaged in five or six years' time.

The final point is an analogy. In the history of the 20th century and secondary education above the age of 14, look at the United States. The United States was probably the first among what we now call the OECD

countries to move to educating people beyond the age of 14. Participation rates in the US compared with continental Europe, and even the UK, were much higher. Economists such as Claudia Goldin and Lawrence Katz have argued that that was one of the things that drove American growth during the 20th century. There may have been other causes, but that supplied the graduate skills the US economy needed post 1945. We may be in another similar situation, if there is rapid technological change happening at the moment.

Lord Darling of Roulanish: Dr Marginson, you said that now everybody has a degree, and if you do not have one you are left out. Thirty or 40 years ago, comparatively few students took honours degrees unless they wanted to go into academia, or something specialist. If you speak to someone leaving university now, they say that unless they have an honours degree they will not get an interview. I am curious about how we have got this inflation of expectations. You might argue that today's graduates are much better than those who came out of universities 40 years ago, but I doubt that is universally the case. To some extent, maybe you are talking your own book. Listening to you, you have been saying that universities are everything, and nothing else matters. What is your view of that?

Professor Simon Marginson: I do not want us to say that. There is a downside to growth in participation. We need to think about social inclusion and what it means. I am convinced that the growth in participation is inexorable. It is driven by democratic populations. In fact, it is driven by populations in every country; every Government must respond to the need to create more and more opportunity in the supply of places. It is not something you can regulate and put a ceiling on without creating a built-up demand factor that in the end pushes through the barrier.

You are right about what some people call credentialism. The other side of the coin from growth is a raising of the level at which selection occurs. Elite posts need a higher and higher level of preparation, but I would say that is simply the mathematically certain outcome of the whole process whereby we bring more people to the end of school, put more into tertiary education and give more people the opportunity. Selection into elite posts requires a greater number of years and maybe a higher level of achievement. The worry is if that turns into institutions of higher education attempting to manage their own survival by increasing the number of people who get higher grades and using that as an incentive to enrol. If that was the kind of competition we were in, we would have a problem about standards, but I have not seen strong evidence that it is happening.

Baroness Harding of Winscombe: Is there not another challenge? If inexorably increasing the percentage of the population who have degrees automatically led to all of them living more fulfilled lives, the world would be fine, but it is not non-graduates and people under 30 who are dissatisfied; it is a lot of graduates, because they cannot get jobs that

recognise the investment they have made in their education. The stats we have seen suggest that student satisfaction with the value for money of their education has been declining quite rapidly as participation has increased. What am I getting wrong in that cycle? I worry that, if we take as a cardinal act of faith that more higher education is good, we could end up with a deeply dissatisfied younger generation.

Professor Edward Byrne: I think it is the opposite. Higher education of a good standard opens up people's vision in so many different ways and enables their lives to be so much fuller. Young people today are every bit as empowered as their parents and grandparents were, maybe even more so. In my current university, more people than ever before do start-ups after leaving university, going into entrepreneurial activities and working for themselves. Coursework masters are the equivalent in England of honours in Scotland. People do those through aspiration and a desire to improve themselves. In the main, they do not do it for the workforce. Maybe that is at the back of their mind, but young people want to be as educated as they possibly can be, because they are going to leave university at the age of 22 and live to their mid-90s. They will have three or four careers over that time and most will probably finish work when they are in their 70s. It just gives them a broader base from which to begin their lives.

Lord Layard: I certainly think that the rate of return on university education is quite a decent one, and it has held up. Therefore, I do not believe too much about the underemployment story, and I certainly do not believe the credentialism story, but is it not the case that the rate of return on apprenticeship, sub-university and post-school education is double or treble the rate of return from university education? What is your comment on the evidence about much higher rates of return from apprenticeship and FE than university education?

Professor Sir Anton Muscatelli: You are correct. You are absolutely right that the lack of decline in the graduate premium is evidence that we are not dealing with oversupply. However, it is interesting that after a number of years the non-graduate premium on apprenticeships was perhaps not as high as on secondary education. We are now observing a rise. That is interesting, but it takes us back to the point I made earlier. It is a false dichotomy to say that it is increasing the supply of people with higher education versus the rest. We need to look at skills across the whole of the tertiary spectrum. I agree with that; it is not an either/or.

Professor Simon Marginson: There is scope to strengthen public esteem for vocational and technical education routes, and that is missing. There is not enough respect for non-university tertiary training in this country.

The Chairman: Dr Marginson, that is the second time you have appeared to blame parents rather than the system.

Professor Simon Marginson: No. I would say that where public opinion is formed is very important.

The Chairman: I was struck by the 2015 OECD report, *Over-qualification and skills mismatch in the graduate labour market,* which suggested that graduate overqualification was a particular problem for the UK. The report found that countries such as Germany, the Netherlands and Slovenia, which have a history of strong vocational training, had 10% graduates or fewer in non-graduate jobs. Baroness Harding's point was that we were at 26%.

Professor Simon Marginson: The point Baroness Harding made, which is a very strong one, was that people's expectations should be aligned with what is achievable. We have to be careful not to double our vocational and technical education numbers and then find that there are not the opportunities we hoped there would be. There is a need to develop a broader set of options and broader provision. We may have made a mistake in abolishing the polytechnics. If we did it all again, maybe we would do it differently; we would strengthen them instead.

Lord Tugendhat: There are many reasons why more and more people across the western world have been going to university. One obvious reason is the changing role of women. Clearly, there has been an increase in both men and women going to university, but a much greater increase in the case of women, because they could not do so before. I have two questions. First, do you feel that over time the subjects that in the past have been identified as masculine or feminine will equal out much more, and we will have more or less the same proportions of both sexes across the board? Secondly, is there a gender difference in relation to graduate dissatisfaction? Is it possible to say that male or female graduates are more or less satisfied with the position in which they find themselves?

Professor Simon Marginson: I am intrigued by the second question. I am not sure what the answer is. I will check it, because I am not sure whether there are differences in gender patterns in student satisfaction surveys—in outcomes, for example. There may be. I know that first generation students tend to be more satisfied than students from third or fourth generation higher education families. I do not know whether that means that, because more women in the last generation came in as first generation students, they have a higher level of satisfaction.

As regards fields of study and gender, some subjects have changed. Medicine and law have changed and equalised substantially. Engineering and the technologies have been resistant, at least in English-speaking countries. There are countries in eastern Europe or east Asia where larger numbers of girls go into engineering and technology than in the UK. In the UK, engineering is not a generic degree providing broad-based preparation for, say, business and management as well as the engineering profession; it is primarily a professional degree. If we were to look for the causes of why engineering is so stubbornly resistant to feminisation, we would probably need to look at the engineering profession and the way it works—its culture and mores.

Lord Tugendhat: Until four or five years ago, I was for 14 years

chancellor of the University of Bath. I noticed how over the years more and more women came up from the chemistry faculty, but not many women came up from physics. It was quite striking. Not very many women came up on engineering, but more women came up on social sciences. Although the proportions changed, they did not change as much as I would have expected.

Professor Sir Anton Muscatelli: We have certainly seen trends over time. On engineering, there is one interesting thing that convinces me that there is a cultural issue that we need to confront. It is not only the international patterns that show it. In Latin America or eastern Europe, there are many more female engineers. In a university like my own, there is a male bias, except in product design engineering, which is much more gender balanced. It is really interesting because there is much higher demand. It seems that more women want to apply for that kind of engineering. It is clearly a cultural issue. In the physical sciences, we have seen rebalancing over time, and certainly in the life sciences there is now a female majority in most of our universities.

Professor Edward Byrne: In my own discipline, when I was a young academic, 80% of the student body were men. Now there is a preponderance of women—between 51% and 52%. We see that through all the specialities—surgery et cetera—so it can be done. The problem with engineering in the UK is the issue Lord Turnbull raised. You cannot do proper engineering unless you can do mathematics. If only 20% of our young people leave school with a reasonable level of mathematics, that is the pool from which we can recruit engineers.

The Chairman: But that would not explain the gender difference, would it?

Professor Edward Byrne: Yes, it does.

The Chairman: Are you saying that girls are less able?

Professor Edward Byrne: There is a male preponderance of mathematicians.

The Chairman: You are saying that males leaving school are more likely to have good mathematics.

Professor Edward Byrne: No. It is A-level choice. Female students tend to go towards non-physics and non-mathematics at A-level.[1]

Q34 **Lord Turnbull:** We should keep reminding ourselves that our remit is the economics of higher, further and technical education. We happen to be starting at the higher end, and there are certain disadvantages in that. Let us deal first with England, and we will come to Scotland later. Has the expansion of the university sector, and the fact that it has many articulate backers, many in this House, to some extent been at the

[1] *Note by witness: Boys are three times more likely than girls to study physics at A level and twice as likely study mathematics.*

expense of further and technical education? Has the money per student been much more generous in the university sector than in the other two?

Professor Simon Marginson: Society made a decision to go that way and to emphasise the status of university degrees and universities as institutions. That is true of all the Westminster democracies. Australia and New Zealand, as well as the UK, went the same way. The US has a more variegated system in lots of ways, but primarily it too has headed towards university degrees. Technical and vocational education in the US is often on the job rather than in formal institutions. It is an English-speaking country habit.

Although we had a differentiated system, with a strong secondary strand with an emphasis on practical skills, we allowed it largely to erode. The level of esteem for non-university education is proportionate to the level of funding. We have underfunded it. There is emerging consensus, evident in this room and in the country, about the need to strengthen technical and vocational education to make it high not low quality, and a high not low-esteem route.

Professor Edward Byrne: I certainly agree, but to reinforce the counterpoint a little, the strongest university system in the world on every measurement is in the US. The second is in the UK and the third is in Australia. There is massive investment in Germany and France at the moment in strengthening their universities, because they want universities like the ones we have.

Lord Turnbull: The question I am getting at is whether to some extent it has been at the expense of the other channels. We received a briefing before we started. The university sector has a very clear brand. Everyone knows what the university course is and they can get the money for it in 24 hours. The other channel is a hopeless mess of fragmented systems—poorly funded, overlapping et cetera. We might advise young people to go down the non-university channel because they can do just as well that way, but it does not seem remotely to compete.

Professor Edward Byrne: But both channels have to be strong, do they not?

Lord Turnbull: That is the whole point. The question is whether we have put our effort into strengthening one and have severely neglected the other.

Professor Sir Anton Muscatelli: I would worry if the rebalancing meant that we then moved into underinvesting in what is probably the best asset we have, as Ed was saying. Speaking on behalf of the Russell group, we have to remember that the vast majority—80%—of medical and medical-related graduates are from those 24 universities. They have a very high proportion of STEM graduates. If we are to look at rebalancing, we have to be careful. How do we rebalance over time? Is it through additional funding? How easy is it to do in the current environment?

Lord Turnbull: Scotland has gone down a completely different channel; it has not gone down the fee channel. Am I right in saying that there is a certain amount of disquiet? In particular, to compensate for that, Scottish universities have been very aggressive in seeking people who pay higher fees, and the chances of 18 year-olds getting into Scottish universities have not improved to the same extent as they have for that social group in England.

Professor Sir Anton Muscatelli: There are two or three points. First, it is a publicly funded system, and by definition there has to be a number of funded places. On that basis, unless there is an expansion of that, the number cannot increase; it is not an uncapped system like the English one.

One of the problems in comparing rates of participation south and north of the border is that a lot of higher education in Scotland happens in further education, and there is quite a lot of articulation between colleges and universities. We have to look carefully at the numbers across the board.

As a sector, in Scotland, we have increased the number of international students and rest of UK students. I would not say that the expansion of universities such as Edinburgh or Glasgow, the two Russell group universities north of the border, has been any more aggressive than expansion anywhere else in the system in England.

Lord Turnbull: One thing that has surprised people is that, despite the rise in fees, applications by pupils from poorer backgrounds have continued to grow. Have you achieved the same thing in Scotland with its different system?

Professor Sir Anton Muscatelli: In Scotland, for a number of years numbers were not rising, and in the last three or four years there has been an increase. Of course, to some extent that is within a fixed number, although the Scottish Funding Council, on the board of which I sit, has increased the number of places for students from so-called SIMD 20 and 40 postcodes, which are the ones of highest multiple deprivation, and the number of articulation places. There has been a bit of expansion in the system to take account of that. At the University of Glasgow, 14% of our current students are from the zero to 20th percentiles of social deprivation, and about 28% or 29% of our undergraduate students are from the poorest 40% by the SIMD 40 definition. As a university, we have seen an expansion of people from less traditional backgrounds coming to university, within a fixed number of Scottish and EU numbers. Another issue in Scotland is that those funded places are for Scottish and EU students.

Lord Darling of Roulanish: Am I right in thinking that someone from a lower income background in Scotland is less likely to go to university than someone from a similar household in England? You are right that it may have improved, but it is still a lot further behind.

Professor Sir Anton Muscatelli: It is very difficult to do some of those comparisons because the data used in England tend to be POLAR data, which look at low participation postcodes, while in Scotland the targeting has been on SIMD numbers. The targeting has been on different numbers, so inevitably we see an improvement in SIMD numbers, but not necessarily in POLAR numbers. Another issue is that some of the expansion of higher education in Scotland has been through FE. As you know, further education in Scotland is very different from that in England.

Lord Darling of Roulanish: It has been clobbered as well. One thing I find exasperating is that what people are prepared to say in public is rather different from what they say in private in the higher education sector in Scotland. The FE sector has had places cut very substantially. You and your colleagues understandably say to the Scottish Government, "We cannot get our fees but we need income". Although you say it may be difficult to study it, two studies have managed to come up with something that suggests that children from poorer backgrounds are less likely to be able to go to university than their equally qualified counterparts from better-off backgrounds. That does not seem to be a particularly great place to be.

Professor Sir Anton Muscatelli: We have a lot of work to do.

Lord Darling of Roulanish: Does that mean you agree with me?

Professor Sir Anton Muscatelli: I was a member of the Commission on Widening Access that looked at this in Scotland. It is entirely right that we are now seeking to expand the numbers of SIMD students to 20% by 2020 and 30% by 2030. If we achieve that, we will see progression beyond the current level in England, so it is something we need to work on.

What universities are doing to support students from diverse backgrounds is very important. In my university, students from SIMD 20 and SIMD 40 postcodes have access to summer schools for transition. It is not simply about admission to university; it is also the ability to come through it and succeed. It is about the support mechanisms that you build around it, not just about access to university.

Q35 **The Chairman:** Wearing your hat as chairman of the Russell group and your hat as being in charge of a Scottish university, there seem to be two conflicting arguments. The Russell group would say that having a system of fees and not having a cap on places means that participation can be widened and universities have the freedom to provide the courses and attract the staff they need to be world-class institutions. How do you reconcile that with the argument in Scotland, where the effect has been that universities' resources are constrained and places are capped, and the only way in which they can get additional resources is by taking in students from England or from outside the European Union? Surely, that must be at the expense of places for Scottish students. Is that not why fewer students from working-class and poorer backgrounds get places at Scottish universities than at English universities, which is counterintuitive

to the argument that has been put on fees?

Professor Sir Anton Muscatelli: The way I would articulate it is that ultimately it is up to society and politicians to decide what the balance should be between private and public funding. Let us not forget that the English system is not 100% privately funded; a third of it comes through supported loan. Scotland has taken its route; Germany has taken a very similar route.

The Chairman: Wearing your hat as chairman of the Russell group, which system is better, because that is one of the key things this Committee is looking at?

Professor Sir Anton Muscatelli: I might turn to Dr Marginson in a moment. Interestingly, across the OECD countries, there is a mix of different systems, some 100% publicly funded, some mixed and some totally privately funded. It is not obvious that the participation rates of those from more disadvantaged backgrounds are any better, or correlated in any way with the funding system.

Professor Simon Marginson: I was going to make that argument earlier. It is striking that there are similar-looking systems around the world in many countries, yet the financial arrangements are so different. The arrangements concerning tuition charges, free systems, low fees and high fees seem to produce similar configurations of the total level of participation and social mix. Everyone has the same problem that, while they expand their system, they are not able to bring in a proportionate improvement in the position of the bottom quartile or quintile in family income terms. All countries struggle with that. There is an assumption—

The Chairman: I am sorry to interrupt you, Dr Marginson. I am trying to get to the bottom of the argument. I understood that the Russell group universities and universities in England argued that a fees-based system is good for participation and for the expansion of the universities. That is why we are concentrating on the difference in Scotland, where the evidence we have had is that the budget for further education has been raided, reducing the number of places for people doing vocational courses and limiting opportunities, because there has to be a cap if there is a funded system. That is what we are trying to get to.

Professor Edward Byrne: The key point is the uncapping rather than how it is funded. To give an example, Australia has a hybrid system; it is half way between Scotland and England, in that slightly more than half of university funding comes manifestly and transparently from the taxpayer and half is against the loan pool. The increase in numbers with uncapping was almost exactly the same as it was in England—about a third. It then became saturated, and the rate of increase has slowed quite markedly in Australia from what it was in the first few years.

Lord Darling of Roulanish: What we are trying to get from you is which system you think is better. You must have a view on that.

Professor Edward Byrne: Neither is my view. I think the Australian system is infinitely better than either, and I can justify that to you.

Lord Darling of Roulanish: I will try my luck with Professor Muscatelli. As Lord Forsyth said, you chair the Russell group and you are the principal of a very eminent Scottish university. Which system do you think is better?

Professor Sir Anton Muscatelli: Let me take this angle. The Russell group would argue that uncapping is important to see that where students go is reflected in demand. Interestingly, you could do that in a publicly funded system, but Scotland has chosen not to do that.

Lord Darling of Roulanish: If you uncap it, you have to accept that you are willing to spend more on universities.

Professor Sir Anton Muscatelli: It depends on the uncapping. The English system is completely unfettered. You could have a system in which there was an element of public funding, such as in Australia, or a higher element of public finding, and ensure that universities that are able to expand do so within a fixed number of public places. I wrote a piece on this about 10 years ago in which I said that there could be some element of demand driving funded places even in a system like Scotland's. It is a choice that the funding council has not made at the moment, but you could do it. It is about institutions like the Russell group, which have higher demand for their courses, being able to respond to that demand, and in that sense it is consistent for a university like Glasgow. I would certainly make that case in Scotland as I would in England.

Professor Simon Marginson: To make a simple point, the comparison is flawed in one respect: the two jurisdictions do not have the same fiscal capacity.

Lord Darling of Roulanish: I think we know that.

Professor Simon Marginson: The 2012 system in England led to a substantial expansion of higher education funding, and much of that is public funding. More public money is going into higher education in England now than there was prior to 2012, certainly relative to Scotland. Scotland is much more constrained fiscally, and I suspect that is why it has gone down the route it has. If Scotland's fiscal capacity was proportionate to England's, we would not be having this discussion.

Lord Darling of Roulanish: Professor Muscatelli, you made the eloquent case that without capping universities like your own might be able to expand; you are in demand and you could do so. It seems to me that you are accepting the case that the Government—the Scottish Government in this case—would recognise that universities are different; that members of the Russell group are different from, say, the University of the West of Scotland, Edinburgh Napier or whatever.

Professor Sir Anton Muscatelli: I would certainly argue that what we provide is very different from other universities, but that is part of a differentiated system.

Lord Darling of Roulanish: I just wanted to check that.

Q36 **Lord Kerr of Kinlochard:** I think that Australian universities are very good, and I am certainly prepared to accept that the Australian system is very good. It seems to me that one great advantage that the Australians have compared with us is an enlightened immigration policy. It seems to me that it is easier to attract the most brilliant students from, say, the subcontinent of India, Pakistan and Bangladesh to good Australian universities than to get them to come to British universities. Is that the case?

Professor Edward Byrne: Yes, it is, but it was not. When I was running Monash, the Australian Government changed the policies quite dramatically and made them more draconian than the UK's are now. In a major government review, we looked to the UK and adopted many of the practices then in existence in the UK. Australia is more open to the international student market than the UK is, but it was not always; it is a fairly recent modification.

The key difference in Australia is that there is a much more explicit recognition at all levels of the country that university education has a public as well as private benefit. The private benefit is paid for against a loan book and the public benefit is covered by the tax base. The public contribution is very transparent and obvious for all to see, whereas in England the fact that the Government still subsidise a significant part of university education is largely hidden to many of our students.

The Chairman: Professor Byrne, we are extremely grateful to you for your paper, which I enjoyed reading over the weekend.

Lord Layard: Professor Byrne, I want to pursue what you said about the Australian system being better than the English one. We have huge problems now with our English system. In the light of the Australian experience, what would you say is the best way forward to deal with the problems we have with the English funding system?

Professor Edward Byrne: The overall level of funding is very similar in both countries. If you want great universities, you have to fund them at a decent level. They are funded at a decent level in both Australia and the UK. The Australian system could benefit from the UK system, in that the UK system explicitly funds the research component of academic time away from the student base, in a way the Australian system does not. The English system could benefit from the Australian system, in that the Australian system recognises, with eight clusters, the differential costs of delivering different degrees. It is cheaper for a university to deliver a humanities degree than a medicine degree. It also recognises that the degree of private benefit varies from degree to degree, and has three broad bands based on likely income levels. It is more complicated, but it

has become very well accepted by the population at large as a transparently fair way of doing things.

The Chairman: There is a Division in the House. We will adjourn for 10 minutes.

The Committee suspended for a Division in the House.

The Chairman: Professor Byrne, you were in mid-sentence when you were cut off so cruelly. Can you remember what you were saying?

Professor Edward Byrne: I think we were talking about the Australian system. The last point worth making is that the final debt in Australia is less. It is more manageable. The interest rate is set on a cost-adjustment factor, which is a measure of inflation. The result is that students repay, on average, in eight or nine years, which is much quicker than in England, and the residual unpaid corpus is significantly less.

Q37 **Lord Tugendhat:** We have made a number of international comparisons during this meeting, and this is another one. How does the proportion of graduates studying for full-time three-year programmes or, indeed, four years in the case of Scotland—the whole Monty—compare with other countries of which you are aware?

Professor Sir Anton Muscatelli: I am not an expert on comparisons of part-time and full-time education. One has to be very careful, because in some systems, such as the French system or the Italian system, which are open entry, de facto, some people are studying part-time. Although there are nominally certain periods of study, a lot of people choose to attend sporadically. There are very high drop-out rates. It is certainly not a system we should aspire to. One of the benefits of the UK system, certainly full-time, is its efficiency. The graduation rates are very high compared with many other countries, but Simon is more of an expert on part-time versus full-time.

Professor Simon Marginson: I do not have an exact answer to your question, but there are a number of associated points that can help us with it. Taking international students out of the picture, our first degree graduation rate is pretty much at the OECD average: 37% of the equivalent age cohort in the UK compared with 36% in the OECD, so there is not much difference. If we include international students, they boost the participation rate and make it look better. I remember making that point to Lord Willetts a few weeks ago, and he was quite surprised.

On the question of full-time and part-time, I do not have the data in front of me, but the UK's part-time rate is lower than many other countries, and it has been lowered by the tuition regime since 2012. As you know, there has been a substantial decline, and that is an issue to address. The graduation rate is very good compared with most countries. It is highest in east Asia where almost everyone seems to complete. In southern Europe and Latin America, there are relatively low completion rates. In the other English-speaking countries, completion rates are lower than in the UK, considerably lower in the case of the United States, where

tertiary participation rates are about 85% but only about 40% graduate at degree level. In the UK, because of the good completion rates, our graduation rate at degree level is higher than in the United States.

Q38 **Lord Layard:** Could we go back to financing? Can you make any general propositions about the ratio of public to private funding in England compared with other countries? What about sources of private finance other than, say, a student's future earnings? What role do they play in other countries?

Professor Simon Marginson: The overall public-private split for sources of funds—the funding of institutions of higher education—is 0.6 public and 1.3 private according to the OECD data, but, as Nicholas will no doubt tell you, part of what is attributed as private expenditure is the subsidised payment of tuition and the Government's share of tuition costs, due to the fact that not everyone repays their tuition debt over their lifetime. That is substantial. Estimates, depending on which assumptions you use on a particular day, vary between 35% and 45%. When you put that into the equation, it is roughly 50:50. It is about 50% private funding and 50% public.

As you may be aware, Lord Layard, the OECD countries, generally, do not have private tuition regimes. US private institutions charge relatively high fees. The public institutions charge increasing fees, but they are below the level of the UK. The Australians, on average, are a little below the level of the UK, but relatively high in world terms. The Japanese and Koreans charge high fees, but most others do not charge much. The European jurisdictions have either low fees or no fees. The UK has a relatively high expectation of private funding.

One of the things we all hoped for as regards non-tuition, with the shift to a more entrepreneurial and enterprising approach in the universities, was the tapping of significant private sector funds. Where that happens in tertiary education it is in the second sectors—the vocational and technical sectors—where there is a strong manufacturing sector, such as in Germany or Korea. Industry plays a significant role in financing. In the English-speaking jurisdictions, it has not been possible to develop a substantial industry role in the payment of training costs.

In relation to research, it depends on the industry. The American higher education system is still substantially funded by the public sector for research costs—the National Science Foundation and the NIH. The great research schemes in the US carry the bulk of research costs, but in the biomedical-biotechnical area and the pharmaceutical sector, for example, there is significant industry funding. In particular sectors, where there is a direct benefit to the industry coming in and working with researchers, creating useful saleable products and so on, there is a high industry funding factor. It seems to be quite industry specific, or specific to vocational education, in some countries.

Lord Layard: Are you including in the private funding the higher taxes that a person pays automatically as a result of their higher earnings from

being a graduate?

Professor Simon Marginson: No. That is outside the equation.

Professor Sir Anton Muscatelli: One important point that we were beginning to come to is how research is funded across different jurisdictions. We need to look at the value for money argument when we look at how well universities are funded. As Ed mentioned earlier, in Australia some of the public funding that is going in is for baseline research. The danger in where the value for money argument might go in the UK is that we fail to recognise that most universities, certainly the research-intensive universities that we represent, produce research and teaching together. It is quite difficult to disentangle some of the cost accounting. If you look at some of the headlines around cost accounting, there is no doubt that we are using unregulated areas, such as international income, to subsidise research to a heavy degree. In the UK, most of the funders including the research councils still fund well below full economic cost.

There are some important issues. As we look at value for money for teaching, we must not forget that there is another part of the equation. Our universities do these things jointly; we do not have a research department and a teaching department. It does not work that way.

Professor Edward Byrne: The basic financial proposition in England and Australia is identical. The TRAC data in England show that the cost of delivering domestic education across the board in a multidisciplinary university is almost exactly what we get paid for it, which is the same in Australia. It generates no margin. At the moment, all the margin we generate on the educational side is from the international student market outside Europe. That goes to cross-subsidise research.

Q39 **Lord Darling of Roulanish:** Can we go back to the question of fees? Do you think there is a case for universities being more open about how fees are calculated in respect of different types of courses? It is quite remarkable that, as the fee goes up, everybody rises to the top level, with the odd exception, so that everything costs £9,000. Do you think it would be helpful for people to see how you reach that calculation? Presumably, not all courses cost the same to run.

Professor Sir Anton Muscatelli: We need to look at that because it has been called into question and we have to be transparent in that area. The optics are that everybody pays the same because that is what is required, but of course higher-cost subjects get additional resource from the funding council. In reality, the cost of those courses is not £9,250. We have to take that into account.

The other thing we need to take into account is that we have reasonably good information on cost accounting at the broad level, as we have just discussed, for research and for teaching international students. If we try to do that at a very granular level, there are some fixed elements to teaching provision that cut across all the disciplines, so cost accounting

becomes a bit difficult. We have to look at it. There is no doubt that, as a sector, we want to work with Government and with the Treasury to look at these things, but we have to be careful, because so much of what we do is in joint production of teaching, research and so on. You might not be able to get very good information once you become very granular.

Lord Darling of Roulanish: Australia had some differentiation. When fees were introduced, the argument, certainly from some quarters, was that people would decide how much they were willing to spend on their higher education, and some degrees would be less expensive than others. I take your point about your fixed costs, and I will come to cross-subsidisation in a moment. What can be done to make the system more open and transparent, as you say? You undoubtedly have Australian experience. We would like to hear about that.

Professor Edward Byrne: Australia has bands that recognise the differential costs, which are clearly marked. A medical degree in real terms is probably four times the layout—the cost—for a liberal arts degree. Transparency certainly would be possible and is probably desirable, but there is a bit of ying and yang; although modest margins may be generated from £9,000 for some liberal arts degrees, we do not get full cost recovery, even with the HEFCE T supplement for a number of the high-cost courses. Some people would get a really good deal, because the total cost of delivering the course would be significantly more than was paid by them, even with the government supplement. It is a bit of a balanced equation.

Lord Darling of Roulanish: I understand that. Let me come at this another way. In some universities, some tutorial groups are quite small and there is more intensive tuition. Other universities, because of various constraints, have much bigger groups, so it is more like a lecture than a tutorial. If I am going to university and I am paying £9,000 a year, I want to know whether I am going to get that more intensive tuition or more general tuition. Is that not another area in which more openness as to what is going on would be helpful? As it is, it does not matter whether the product is good or bad, you are paying the same for it.

Professor Simon Marginson: You are right. We need better information. I am not sure whether it is a price-driven or quality-driven market in exactly the sense that you explain it. I suspect that most students—there is some research on this—when they make decisions about which programme to enrol in and which university to go to are, unfortunately perhaps, exercised by issues of status. The harder the university is to get into, the more they prize it. They want to enter the one that their score will just allow them to enter.

University prestige is important. It is not something we factor into policy. It is not something we measure readily, but it is important and it determines decisions. The question of what people want to study, what profession they want to enter or what knowledge they want, is also important for them. Somewhere a long way back are assumptions, knowledge and information, perhaps from their peers, about teaching

quality, size of classes, resources and those sorts of things. In the best of all possible worlds, we would have a higher education system where everyone made decisions on that kind of rational basis, but you are right to say that the information is not there.

The Australians looked at comparative costs in different disciplines in 2011. They produced quite a good report, the base funding review, which has largely been forgotten because it was shelved almost immediately. It suggested increases in tuition in some areas, which proved to be unsaleable. They established that about half the disciplines, in their view, were underfunded. The problem with that calculation, as you said before, is that it depends on the teaching model. You need to establish reasonable consensus about what the size of classes should be, what the staffing ratio should be and what kind of laboratory equipment is required in science-based programmes. It needs to be done quite objectively. Even then, there will be outliers like the Oxford and Cambridge teaching model, which is substantially more expensive than most but perhaps better quality and integral to those universities.

Lord Darling of Roulanish: Most students, in my experience, find out what a university is like once they get there rather than when they apply. Prospectuses are not always clear about that.

Professor Simon Marginson: That is exactly right.

Lord Darling of Roulanish: Jo Johnson, the Universities Minister, said recently that he wanted to see a reduction in the cross-subsidy between courses. What is your view on that?

Professor Simon Marginson: Cross-subsidy is worth a major inquiry in its own right. It is a complex problem, and it is an information issue in part. I agree with what has been said so far. The tendency has been for us to find every way and means we can to subsidise and build research, because research is not only integral to the role of universities but has become central to their national and global competition. The REF, which is a brilliant instrument for producing high value for money, has encouraged high-quality universities, especially at the top end, to focus more on research outcomes relative to all other outcomes. We are using our teaching money where we can, whether it is domestic or foreign income, to subsidise our research output and effort.

Perhaps a deeper discussion on cross-subsidisation would allow us to address the teaching-research balance. Of course, teaching and research are integrally related. It is not as if, when you subsidise research, you do nothing but teaching. It becomes a more complicated problem. Some disciplines are cross-subsidised by others. In many institutions, I suspect that the relatively low-cost business programmes, which generate high volumes of students, with large numbers of international students paying full fees and so on, subsidise a lot of other activity.

Professor Sir Anton Muscatelli: We have to be absolutely open and gather more information. I would be very careful once you get to the

granular level, for the very reasons that Simon and I mentioned: there is joint production of teaching and research. If we look at the TRAC data—the data we have for transparent accounting of costs in universities—at institution level the aggregation is such that there are reasonably good data as to what activities are cross-subsidising what. We mentioned that for international fees. Once you fragment them, it is very difficult to get good data, because a lot of it is based on cost-accounting methodologies, which involve saying how much of an academic's time is spent doing X as opposed to Y as opposed to Z. There are many approximations and, at that granular level, with small numbers, it becomes very difficult to get accurate data. In principle, we are interested in doing it, but we have to be very careful that we do not take the results as gospel.

As regards the other issues, the optics of differential pricing, which you rightly refer to, may be good for people's expectations, but that does not necessarily ensure that you do not get cross-subsidisation. That depends on many other decisions having been taken later. There are some interesting issues.

The Chairman: If you do not have the data, how do you know that £9,000 is not the right amount? One of the people who gave us evidence suggested that if the cap on fees was much higher, if it was £20,000, institutions would still charge £20,000 secure in the knowledge that most students would not have to pay it back, that it was easy money and that if they did not charge £20,000 they would be seen to be a lesser university. Is this not just a little bit of a racket?

Professor Sir Anton Muscatelli: If you look at the aggregate data, which, as I said, is more reliable, on balance, as Ed was saying, publicly funded teaching is covered by the income that is received through the fees and loan system, so it breaks even on that basis. However—

The Chairman: I am sorry to interrupt you, but when you were being asked about the differential between courses, you said that you could not really work out how much is research and how much is the rest, so how are you able to do that?

Professor Sir Anton Muscatelli: You are able to do that at aggregate level because the numbers are large enough. If you try to do it at discipline level—for instance, history or English—and look at that disaggregation, it is more difficult. I am not saying it cannot be done. Cost accounting is done on a very particular basis. The cost accounting methodology was developed in order to look at whether research was properly funded, as part of the full economic costing reforms when the research councils were looking at whether research was underfunded. You have to be very careful. That is all I am saying. I am not saying that it cannot be done, but we have to be very careful once we get to that level of disaggregation, because we are often dealing with very small numbers. Cost allocation methodologies could swing the numbers one way or the other and lead to some very odd conclusions.

If you are interested, the Scottish Funding Council has a funding methodology that looks at pricing by teaching of different subjects. The council has tried to allocate different subjects to different price bands, and it has good experience. There is quite wide variation simply because the methodology is dealing with some large errors at the granular level. You may want to look at that.

Lord Turnbull: While we are doing that, we may want to tackle cross-subsidy. If we decide that there are £5,000 courses, £10,000 courses and £15,000 courses, and students are charged the cost of their course, it does not seem to me that it follows that we then get the balance of skills that the country actually needs, because, as you said, a degree is a mixture of public and private benefit. Training a doctor is big on public benefit, so there is a case for subsidising that more. The law may be the other way round. It does not seem to me that knowledge of the cost of different subjects leads to a viable basis for charging.

Professor Edward Byrne: I agree completely, Lord Turnbull. If you did that for medicine, we would have precious few people doing medicine because the cost would be enormous. It is clearly a great public good to have a medical workforce in a country. Therefore, if you are coming through with the true cost, the only way you can do workforce planning is if there is a public subsidy—a public component and a private component.

Professor Sir Anton Muscatelli: Even if we do not focus on doctors, who are a particular example, and we look at the need of the country for STEM graduates, if there is differential pricing, you need to design the system properly so that you can decide who will make up the difference. Will there be a fixed number of places again? That goes back to what type of system you want. Do you want a totally uncapped system where you can increase the supply of STEM graduates, or do you want to allocate fixed numbers? It leads you into that territory as well.

Professor Simon Marginson: Part of the problem is that you cannot manipulate the system with costs on the demand side. The Australians brought in subsidies for nursing, teaching and STEM. They lowered the student cost in all those areas and there was no discernible effect on the pattern of applications, demand and the number of students going into those programmes. While there is a fee regime in which people do not pay directly at the point of entry, there is no price effect operating, so you cannot fine-tune it through that mechanism. You need to use some other mechanism.

Q40 **Lord Kerr of Kinlochard:** Professor Byrne, in your written evidence, for which we are very grateful, you said that there "would be a serious risk in both Australia and England to the financial sustainability of universities and a range of key high cost to deliver subjects if international student numbers were to decline sharply and stay that way for a sustained period of time". They are declining steeply in this country. They have gone down a long way in the last five or six years. What is causing that and how damaging is it? My definition of international student is non-EU—wider-world students.

Professor Edward Byrne: International students are of value to the university system in a country for all sorts of non-monetary reasons. They greatly enrich campus experience. We are educating young people to be global citizens—I know that not everybody likes that term—and many of them will work around the world, so being exposed to people from different cultures and backgrounds is enormously valuable. When international students go home, they are the most amazing ambassadors if they have had a good time. They also contribute financially, because they pay a higher fee than the domestic student. That is entirely justifiable intellectually because the domestic student is taking advantage of a university infrastructure that is being paid for by the domestic taxation base for generations. The international student is able to come in and access that, so a differential fee is entirely reasonable.

The bottom line of all that is that the only area of all a university's business in the UK where a significant margin is generated and can be reinvested in the university is the international student business. It is that margin availability that means that we have so many universities in the top 50 in the world. Without it, we would have only two or three.

Professor Simon Marginson: My chair is in international education. Your question is close to my heart, I have to say. The UK pattern has been a plateauing of non-EU student numbers rather than a substantial drop. What has happened is that numbers from China, Malaysia and Hong Kong have gone up, but numbers from India and elsewhere in the subcontinent, parts of Africa, Saudi Arabia and so on have been going down. The pattern of growth that we saw for 15 years has stopped. I do not think it is a factor of demand; it is a factor of supply. In part, it is what is happening with visas; and all the uncertainty around international student policy is not helping us. All of us would make a strong argument for freeing up international education and providing a more supportive policy environment. The importance of that is clear for a whole set of reasons, including those that Ed gave that are non-monetary in character.

The other side of the coin, though, is that our dependence on international students financially is very high. The Australian dependence is even higher. Australia is taking almost one Australian dollar in every five from the international student. Without the international student, the Australian research effort, below the top eight universities, would collapse. That level of dependency is too high. There is a lack of balance between private funding on the international student side and public funding.

If we are using international student income, as Ed said, to shore up our basic operation and to provide all the discretionary money that we need for development to respond to global and domestic challenges, and that international money dries up, we will no longer have that capacity. That might be a minor argument if international student income was 3% or 4%, but when it is at levels of 15% and above, it is very substantial. We are too dependent.

Lord Kerr of Kinlochard: I do not recognise the plateau in numbers. The numbers we have been given show a pretty steep fall.

Professor Simon Marginson: How interesting.

Lord Kerr of Kinlochard: We have ONS numbers that say that immigration to the UK for study in 2010 was 181,000, and in 2016 it was 92,000. That looks like quite a big drop.

Professor Simon Marginson: Those are not the HESA stats—the data on enrolments.

Professor Sir Anton Muscatelli: Does that include further education as well as higher education?

Lord Kerr of Kinlochard: I think it does, yes.

Professor Anton Muscatelli: In higher education, I suspect that the numbers have not fallen, but absolutely there has been a discouragement from some markets. In the *Times Higher Education* Hobsons survey of 2015, 36% of students who chose not to come to the UK, but to go to other English-speaking jurisdictions, said that it was because of the absence of post-study visas. This has been a big issue, with Australia and Ireland moving in that direction, and in Canada. It is certainly affecting the UK.

Lord Kerr of Kinlochard: Could you just spell that out? The problem is that the potential student wanting to come here, or wanting to research here, gets no assurance of being able to stay on when he has his degree, to undertake work experience.

Professor Edward Byrne: This is particularly a problem with recruiting students from the subcontinent, and especially India. It is less so with China; students generally want to go home pretty quickly. For those from India, it is a huge boon to be able to work for a couple of years and get deeper experience. The very restrictive visa conditions around moving from a tier 4 to a tier 2 visa are a definite turn-off for Indian students.

Lord Kerr of Kinlochard: For a university, particularly a STEM university, the immediate postdoctoral student, who is employable at a very low salary, is an extraordinary useful resource.

Professor Sir Anton Muscatelli: Indeed. The Australian system allows people to work, travel and study in Australia for between two and four years. Ireland's system allows masters and doctoral graduates to remain in work in the country for 24 months after graduation. It is not just the universities. One point is sometimes forgotten. We, as large organisations, are able to navigate the tier 2 system, and we find that we are able to attract qualified people above a certain salary level, but when a small or medium-sized enterprise in this country is trying to address the UK's productivity challenge, the lack of some sort of system to attract talent may be a problem in the future.

Professor Edward Byrne: I have seen this in Australia, where concerns about international student numbers were put to bed. The problem was managed very effectively, so that it did not become a migration concern, and it has become a huge business for the country. In the last year—I have the figures before me—in 2016-17, the Australian economy generated 22 billion Australian dollars from international students, and that did not include the wider spending of international students in local economies. For Australia, it is the third largest industry.

Professor Simon Marginson: The difficulty we face in this area is that international education is partly migration related. Demand for international education around the world is partly driven by the desire to have migration options. Canada, the US and Australia have fairly open regimes, with encouragement to stay on and work after graduation, but it is not spelt out in policy. It is related to the fact that those countries want to attract those people, possibly as permanent migrants. That has created a situation where the UK has been placed in a different position from the other English-speaking jurisdictions, because the UK is more migration sensitive and under more migration pressure, partly because of its EU membership, with open entry from Europe crowding out migration opportunities.

Maybe it will all change after Brexit. Maybe the whole question of the relationship with international students and international education will come back on the agenda. We have made a tremendous effort in this country to separate migration and international education, to the point of making it very difficult for people to stay on, and that is costing us in our attraction to international students of quality.

Professor Edward Byrne: I disagree slightly with my colleague. I led on that for the sector in Australia at vice-chancellor level. The Australian Government, through a series of convoluted and painful processes, fell on a mechanism where it was very effectively risk-managed and where education and migration were, in the main, separated.

The Chairman: Thank you very much. I thought we would get through a whole session without anyone saying Brexit, but you got it in at the last moment. It has been a really useful session. We are extremely grateful to you.