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# **The social composition and future earnings of postgraduates**

**Interim results from the Centre for Economic Performance  
at the London School of Economics**

**March 2010**

## **Key findings**

### **Numbers and financial contribution**

- In 2008 there were 250,000 full time postgraduates in the UK, nearly double the number in 1995. Over half (55%) now come from outside the UK (increasing from 30% in 1995).
- Full and part time postgraduates in the UK pay £2.75 billion a year in university fees.

### **Social composition**

- The social background of postgraduates mostly reflects the social make-up of university undergraduate intakes. One in six (17%) postgraduates studying six months after graduation are educated at independent school compared with 14% of undergraduate students, and 7% of school pupils.
- Three in ten (30%) graduates studying six months after graduation are from higher managerial and professional families compared with 27% of undergraduate students, and 13% of the population as a whole.

### **Undergraduate achievement**

- 68% of independent school educated university students obtained a First or Upper Second class degree (the usual requirements for pursuing a postgraduate course) in 2008 compared with 64% of state educated students.
- However, comparing like-for-like students (from the same ethnic group, subject of degree, university, and family background), those educated at independent schools were 4% *less* likely to achieve a First or Upper Second class degree than otherwise similar students educated in state schools.

### **Postgraduate progression**

- 30% of independent school educated university students were studying six months after graduating in 2008 compared with 23% of state educated students.
- Comparing like-for-like students (from the same ethnic group, subject of degree, class of degree, university, and family background), those educated in independent schools were 1.2% more likely to carry on to postgraduate education than otherwise similar state educated university students.
- This difference in postgraduate progression has been widening for the most recent years. In 2002 university graduates who had attended independent school were no more likely to carry on to postgraduate education than their otherwise similar state educated counterparts; by 2008 however independently educated graduates were 2% more likely than their state educated peers to be studying six months after graduating.

### **Leading research universities**

- Students from leading research<sup>1</sup> universities make up 40% per cent of all postgraduates, and the majority of PhD students.
- Three quarters (76%) of independent school pupils who went to university (in the years 2004-2008), graduated from one of these leading research universities, compared with four in ten (39%) state school pupils who went to university.
- Comparing like-for-like university students (from the same ethnic group, subject of degree, university, and family background), state school students at leading research universities are 3% more likely to achieve a First or Upper Second class degree than otherwise similar students educated in independent schools. However, they are slightly less likely to undertake postgraduate education than otherwise similar students educated in independent schools<sup>2</sup>.

### **Earnings**

- Postgraduates with a Masters degree earn on average £1.75 million over their lifetimes, while postgraduates completing a PhD earn on average £1.9m– 15% and 23% more respectively than a university graduate with £1.5m in average lifetime earnings<sup>3</sup>.
- The average starting salary for a home postgraduate was £24,000 in 2008 compared with the average starting salary for a home undergraduate of £19,500.

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<sup>1</sup> Leading research universities are defined as members of the Russell and 1994 groups.

<sup>2</sup> The difference – 1.3% - is small but statistically significant.

<sup>3</sup> All figures based on 2009 Prices

## Introduction and background

This interim report is a summary of initial research findings from a project commissioned by the Sutton Trust entitled ‘Growth of Postgraduate Education and its Effect on Intergenerational Mobility’ being undertaken by Stephen Machin<sup>4</sup> and Richard Murphy at the Centre for Economic Performance at the London School of Economics.

This summary outlines evidence presented to the Government’s current review of postgraduate provision in the UK, led by Professor Adrian Smith, Director General of Science and Research at the Department for Business, Innovation and Skills. In particular, the research project is highly relevant to the review’s aims to “examine levels of participation, in terms of who undertakes postgraduate study, and whether there are barriers affecting the diversity of participation and any associated reduction in the availability of high-quality entrants”, and also to “assess the benefits of postgraduate study for all relevant stakeholders”.

At the heart of this research project is the question of whether the boom in postgraduate courses in the UK over recent years has had a negative impact on intergenerational mobility, rather than opening up educational opportunities to students from a wider range of family backgrounds. In an increasingly competitive labour market, and an expanded higher education system, an academic postgraduate qualification has become an obvious way to stand out from the crowd. This research considers the questions of who has been accessing this education, and what rewards it promises to bring them in later life. A connected question explored by the research (not covered in this interim report) is the extent to which the increasing enrolment of overseas students on postgraduate courses has complemented or displaced the enrolment of UK students.

This report considers the size and financial impact of the university postgraduate sector, the social composition and school backgrounds of postgraduate students, the factors driving these patterns, the earnings returns to further study, and finally trends for postgraduate students from leading research universities in particular<sup>5</sup>. The research will also explore trends for different types of postgraduate courses – Masters, PhDs and professional qualifications -- as well as different disciplines, but this interim report focuses only on trends for postgraduates overall.

We would like to thank the Higher Educational Statistical Agency (HESA) for the use of their data -- on undergraduates, and postgraduates and their outcomes for the last 6 years (the main period of expansion that we are interested in). HESA does not accept responsibility for any inferences or conclusions derived from the data by third parties. The research has also used the UK Labour Force Surveys which use data from 1992.

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<sup>4</sup> Professor of Economics at University College London and Research Director at the Centre for Economic Performance, at the London School of Economics

<sup>5</sup> Leading research universities are defined as members of the Russell and 1994 Groups. The Russell Group is composed of the following universities: Birmingham, Bristol, Cambridge, Cardiff, Edinburgh, Glasgow, Leeds, Liverpool, Manchester, Newcastle, Nottingham, Oxford, Sheffield, Southampton, Warwick, Imperial College, London, King’s College London, London School of Economics, Queen’s University Belfast, and University College London. The 1994 Group is composed of: Bath, Birkbeck, Durham, East Anglia, Essex, Exeter, Goldsmiths, Institute of Education, Royal Holloway, Lancaster, Leicester, Loughborough, Queen Mary, Reading, St Andrews, School of Oriental and African Studies, Surrey, Sussex, York

## Findings

### Numbers of postgraduates

As the table below shows, the number of full time postgraduates in the UK has nearly doubled since 1995, from 130,000 to 250,000 in 2008. This growth can also be observed in the working age population as a whole: the proportion of UK 18-65 year olds with a postgraduate qualification was 8% in 2008 compared with 4% in 1998 and less than 3% in 1993. These population based figures include full time and part time postgraduates -- taking Masters courses, PhDs, and other professional qualifications such as PGCEs (Postgraduate Certificate in Education).

The growth in full time postgraduates has been fuelled in recent years by a boom in the numbers of students from outside the European Union (EU). Over half (55%) of full time postgraduates in 2008 came from outside the UK, an increase from 30% in 1995. In 2008, four fifths (80%) of non-native students came from outside the EU.

**Table 1: Numbers and proportions of full time postgraduates, from the UK, EU and outside the EU**

| <i>Year</i>        | 1995    | 1997    | 1999    | 2001    | 2003    | 2005    | 2007    | 2008    |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| <b>Populations</b> |         |         |         |         |         |         |         |         |
| <i>UK</i>          | 88,900  | 91,700  | 90,800  | 101,600 | 110,300 | 112,800 | 117,800 | 115,300 |
| <i>EU</i>          | 12,200  | 16,700  | 20,300  | 24,800  | 25,100  | 27,600  | 28,900  | 29,400  |
| <i>Non EU</i>      | 28,500  | 32,500  | 35,300  | 45,900  | 71,400  | 85,600  | 96,400  | 103,700 |
| <i>Total</i>       | 129,700 | 140,900 | 146,400 | 172,300 | 206,800 | 226,100 | 243,100 | 248,400 |
| <b>Shares</b>      |         |         |         |         |         |         |         |         |
| <i>UK</i>          | 68.6%   | 65.1%   | 62.0%   | 58.9%   | 53.3%   | 49.9%   | 48.5%   | 46.4%   |
| <i>EU</i>          | 9.4%    | 11.8%   | 13.8%   | 14.4%   | 12.1%   | 12.2%   | 11.9%   | 11.8%   |
| <i>Non EU</i>      | 22.0%   | 23.1%   | 24.1%   | 26.7%   | 34.5%   | 37.9%   | 39.6%   | 41.7%   |

Students from leading research universities<sup>6</sup> make up 29% of undergraduates but 40% per cent of all full time equivalent postgraduates. These students provide the lion's share of those taking PhDs.

<sup>6</sup> Defined as Russell Group and 1994 Group institutions.

In 2008 there were 501,135 full time and part time postgraduates, two thirds of whom were from the UK<sup>7</sup>.

Over the same time period (1995-2008) the undergraduate sector has grown by 30%, from 950,000 to 1,230,000. In contrast, the share of domestic full time undergraduate students has remained constant, at 90%.

### **Financial contribution**

Postgraduates studying at UK universities paid approximately £2.75 billion in fees in the academic year 2008-09. This figure includes fees from both part time and full time students. Overseas postgraduates (EU and non-EU) accounted for approximately £1.5 billion of this total amount. These figures are calculated from the number of students by subject by university multiplied by the appropriate fees. This level of funding is complemented by core funding from Government allocated directly to universities for postgraduate study.

Furthermore, it is estimated that full time postgraduates spend approximately £2.5 billion on living costs each year. This figure is calculated by applying living costs data for undergraduates to the number of full time postgraduate students<sup>8</sup>.

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<sup>7</sup> This figure excludes students on sabbatical and writing-up students.

<sup>8</sup> The National Union of Students estimate annual living costs as £10,297 in London and £9295 outside London

## Social composition

Students from professional families and students who previously attended independent schools are over-represented at postgraduate level. This pattern has remained fairly constant during the last decade. This social composition is mostly a result of the social make-up of university undergraduate intakes to begin with.

In 2008, one in six (17%) postgraduates studying six months after graduation were educated at independent schools compared with 14% of undergraduates, and 7% of school pupils. Three in ten (30%) postgraduates studying six months after graduation are from professional families compared with 27% of undergraduate students, and 13% of the population as a whole<sup>9</sup>. By contrast, students from families with semi-routine occupations, which make up 15% of the UK working population, account for just 10% of the undergraduate population and make up only 9% of those who continue to study after graduation.

**Table 2: Parental background\* of domestic students studying 6 months after graduation in 2006 and 2008 (all figures are combined totals for two years)**

|                                              | Proportion    |                                          | Number |
|----------------------------------------------|---------------|------------------------------------------|--------|
|                                              | Undergraduate | Those studying 6 months after graduation |        |
| Higher managerial & professional occupations | 27%           | 29%                                      | 17195  |
| Lower managerial & professional occupations  | 32%           | 33%                                      | 19165  |
| Intermediate occupations                     | 14%           | 14%                                      | 8000   |
| Small employers & own account workers        | 8%            | 7%                                       | 4030   |
| Lower supervisory & technical occupations    | 5%            | 5%                                       | 2755   |
| Semi-routine occupations                     | 10%           | 9%                                       | 5230   |
| Routine occupations                          | 5%            | 4%                                       | 2370   |
| Never worked & long-term unemployed          | ..            | ..                                       | 25     |
| Totals                                       | 100%          | 100%                                     | 58,770 |

\*Of those with Known/Classifiable family backgrounds

<sup>9</sup> Population figures from Census 2001, [http://www.statistics.gov.uk/methods\\_quality/ns\\_sec/downloads/NS-SEC\\_Origins.pdf](http://www.statistics.gov.uk/methods_quality/ns_sec/downloads/NS-SEC_Origins.pdf)

## Undergraduate achievement

The analysis also considers the proportions and numbers of undergraduates from different school (and social) backgrounds achieving a First or Upper Second class degree (the usual requirements for pursuing a postgraduate course).

Overall, 13,380 independent school educated university students obtained a First or Upper Second class degree in 2008 compared with 78,520 of state educated university students. As the table below shows, these 'raw' figures equate to just over two thirds of all degree students from independent schools and state schools respectively.

**Table 3: Proportion of native undergraduates achieving a First or Upper Second Class Degree (2008)**

|                                          | State   | Independent |
|------------------------------------------|---------|-------------|
| Numbers with First or Upper Second Class | 78,520  | 13,380      |
| Proportion                               | 64%     | 68%         |
| Numbers with lower degrees               | 44,890  | 6,240       |
| Proportion                               | 36%     | 32%         |
| Totals                                   | 123,410 | 19,620      |

What these 'raw' figures do not provide is a like-for-like comparison of degree performance between two otherwise similar students with different school backgrounds. To do this a statistical analysis was undertaken to control for a range of factors - including individual university studied, the geographical region of the university, the social background and ethnicity of students, and the degree subject studied - and then to compare the differences in outcomes between one student educated in an independent school and a similar one educated at a state school.

Comparing like-for-like students in this way, and averaging for the years 2004/06/08, university students educated at independent schools were actually found to be 4% *less likely* to achieve a First or Upper Second class degree than otherwise similar students educated in state schools.



## Postgraduate progression

Table 4 below shows the raw numbers and proportions of students going on to postgraduate study for state and independent educated students. This shows that 28,175 state educated university students went onto to pursue postgraduate study - 23% of all state educated students. This compares with 5,810 independently educated university students who went onto to pursue postgraduate study - 30% of all independently educated students. So on the basis of raw numbers, state educated students are less likely to pursue postgraduate study than their privately schooled peers.

**Table 4: Proportion of native undergraduates going on to postgraduate study (2008)**

|                                      | State   | Independent |
|--------------------------------------|---------|-------------|
| Studying six months after graduation | 28,175  | 5,810       |
| Proportion                           | 23%     | 30%         |
| Other Activity                       | 95,245  | 13,810      |
| Proportion                           | 77%     | 70%         |
| Totals                               | 123,410 | 19,620      |

Again, though, the study also provides separate comparisons of the likelihood of going onto postgraduate study for students with similar characteristics - apart from their different schooling. This like-for-like comparison controls for a number of factors that are likely to impact on the progression to postgraduate study: the individual university studied, the geographical region of the university, the social background and ethnicity of students, degree subject studied, and the degree grades awarded.

On this basis, despite being slightly less likely to obtain a good degree, university students educated in independent schools are found to be 1.2% *more likely* to carry on to postgraduate education than otherwise similar state educated university students, taking an average figure for the years 2004/06/08<sup>10</sup>.

The relationship between school background and the likelihood of staying on in higher education after graduating has also strengthened since 2002. In 2002 university graduates who had attended independent school were no more likely to carry on to postgraduate education than otherwise similar state educated counterparts; by 2008 however independently educated graduates were 2% more likely to be studying six months after graduating than their state educated peers.

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<sup>10</sup> This is a small but statistically significant difference. The raw difference (not controlling for other student characteristics) is 6%

## Entry, achievement and postgraduate progression in leading research universities

The research also explores undergraduate entry, achievement and postgraduate progression from leading research universities in particular – defined here as institutions which are members of the Russell Group or 1994 Group. These universities, which make up 29% of all full time equivalent undergraduates, are important for the postgraduate sector, producing the lion’s share of potential PhD students, and providing 40% of all postgraduate students.

The figures reveal the stark divide within the undergraduate sector. Three quarters (76%) of independent school pupils who went to university (in 2008), graduated from one of these leading research universities, compared with four in ten (38%) state schools pupils who went to university.

Another way to consider this is the make-up of graduates from leading research universities: a quarter (24%) attended an independent school, compared with 14% of the total graduate population, and 7% of the school population.

Similarly, in 2008 more than 58% of students with professional parents went to leading research universities, but less than 26% of those with parents in routine occupations.

The tables below show the raw numbers and proportions of students gaining a First/Upper Second class and students going on to postgraduate study for state and independent educated students.

**Table 6: Proportion of native undergrads with a First/Upper Second degree from a research university (2008)**

|                             | State  | Independent |
|-----------------------------|--------|-------------|
| First or Upper Second Class | 34,535 | 10,810      |
| Proportion                  | 74%    | 72%         |
| Other                       | 12,455 | 4,150       |
| Proportion                  | 26%    | 28%         |
| Totals                      | 46,990 | 14,960      |

**Table 7: Proportion native undergrads studying 6months after graduating from a research university (2008)**

|            | State  | Independent |
|------------|--------|-------------|
| Studying   | 13,725 | 4,770       |
| Proportion | 29%    | 32%         |
| Other      | 33,260 | 10,190      |
| Proportion | 71%    | 68%         |
| Totals     | 46,990 | 14,960      |

Comparing like-for-like students in the same way as before, and using native undergraduates who graduated in the years 2004/06/08, those at leading research institutions educated at independent schools were found to be 3.1% less likely to achieve a First or Upper Second class degree than otherwise similar students educated in state schools. However they were slightly more likely to carry on to postgraduate education than otherwise similar state educated university students<sup>11</sup>.

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<sup>11</sup> The difference – 1% - is small but statistically significant.

## Earnings

The study also surveys the earnings of postgraduates in comparison with undergraduates, using the national Labour Force surveys. Postgraduates with a Masters degree earn on average £1.75 million over their lifetimes, while postgraduates completing a PhD earn on average £1.9m over their lifetimes – 15% and 23% more respectively than a university graduate with £1.5m in average lifetime earnings<sup>12</sup>. Those completing other postgraduate qualifications such as PGCEs or professional qualifications<sup>13</sup> actually earn less over their life time than an average graduate, receiving £1.45m.

The analysis of HESA data found that the proportion of undergraduates in full time employment 6 months after graduation has fallen from 74% for 2004 graduates to 68% for 2008 graduates, whilst for postgraduates this proportion has dropped only slightly from 86% to 85%.

The average starting salary for home undergraduates (6 months after graduation) in 2008 was £19,500, up from £16,500 in 2004, whilst the average starting salary for a postgraduate (6 months after graduation) in 2008 was £24,000, up from £20,000 in 2004. The starting salary premium for postgraduates over undergraduates had not changed over the period 2004-2008<sup>14</sup>.

Over the 2004-2008 period the average premium in starting salary for a postgraduate degree compared with a undergraduate degree is 8% -- when taking into account the age of the student, subject of degree and the occupation and industry the student takes up.

### *Undergraduate earnings*

Comparing like-for-like university graduates (from the same ethnic group, subject of degree, class of degree, university, family background, occupation and industry the that the individual is employed in), those educated in independent schools earned 3% more 6 months after graduation on average than otherwise similar state educated university students<sup>15</sup>.

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<sup>12</sup> Figures are in 2009 prices and computed over 2000-2008 period, assuming continuous employment until age 65 from 21 for Graduates, 22 for Masters Graduates and Other Postgraduate Qualifications, and 25 for those completing PhDs

<sup>13</sup> Other Postgraduate Qualifications include: PGCEs, Professional Qualifications & Other

<sup>14</sup> The starting salary premium also remains when comparing postgraduates with undergraduates with First class degrees (13%)

<sup>15</sup> This compares with a 5% difference between like-for-like students who get a first class degree and a second class honours on average. For more recent years, there are increasing returns for first class degrees.

## Discussion and policy implications

This research provides, for the first time we believe, a detailed breakdown of the social and educational backgrounds of postgraduate students, in a sector that has grown rapidly in size and financial importance in the UK during the last 15 years.

### *Social make-up of postgraduates and undergraduates*

The emerging picture is that the social composition of the postgraduate population -- taking Masters degree courses, PhDs or professional qualifications -- is largely driven by the social make-up of undergraduate intakes to begin with, coupled with factors such as undergraduate degree attainment and university choice.

In 2008, 30% of graduates studying six months after graduation were from highest social class group -- similar to the 27% of undergraduate students, the 13% of the population as a whole. There are similar patterns in terms of the school backgrounds of students. One in six (17%) postgraduates studying six months after graduation in 2008 were educated at independent schools compared with 14% of undergraduate students, and 7% of school pupils.

Access to degree courses in leading research universities is particularly important in terms of the supply of PhD students. Figures presented here document again the stark divide between the state and independent school sectors in terms of the types of universities at which their pupils are predominantly enrolled. Three quarters (76%) of those who attended independent schools who went to university graduated from leading research universities, compared with four in ten (39%) state schools pupils who went on to higher education.

### *The impact of school background on the likelihood of postgraduate study*

These figures represent 'raw' differences in the social or educational backgrounds of students - they do not take into account the factors that will impact on the likelihood of doing a postgraduate course. The research then deploys a statistical analysis to consider these range of factors - individual university studied, the geographical region of the university, the social background and ethnicity of students, degree subject studied, and the degree grades awarded - to compare two students similar in all these respects, with the one exception that they have different school backgrounds.

This allows us to consider whether one characteristic on its own - namely whether a student is from an independent school background rather than a state school background - has an impact on their likelihood of undertaking postgraduate study. Any large differences would indicate that factors others than those listed above are affecting the uptake of postgraduate study for those from less privileged backgrounds - a lack of financial support, or reticence to spend more time in education, for example.

Comparing students with the same characteristics, and averaging over the years 2004/06/08, those educated in independent schools are found to be 1.2% *more likely* to carry on to postgraduate education than their state educated counterparts. This difference is small but it is statistically significant. It is also present despite the fact that university students educated at independent schools were found to be slightly *less likely* to achieve a First or Upper Second class degree than otherwise similar students educated in state schools.

To put this figure into perspective getting a 1st or 2:1 (while holding all other factors constant) increases the chances of postgraduate study by 12% - a large difference that one might expect, while having parents from the top social class grouping (and holding all other factors constant) increases the chances of postgraduate study by an additional 3.2% compared with students with parents from a lower social class grouping<sup>16</sup>

The overall conclusion then is that the under-representation of postgraduates from poorer backgrounds is largely a function of the social make-up and school backgrounds of undergraduate university intakes to begin with – and the performance and choices of students during their first degrees. In many ways this report provides further evidence for the importance of improving the enrolment onto degree courses of those students from non-privileged backgrounds in the first place. A good undergraduate degree is the gateway to a Masters or PhD course, which these figures show will generate significant extra lifetime earnings compared with single degree-holders. Currently these rewards are mainly benefitting those already from prosperous backgrounds.

#### *Potential barriers to postgraduate entry*

There are however a few important caveats to this overall finding. The first is that among the very latest cohorts of university graduates, those from independent school backgrounds are becoming increasingly more likely than their otherwise similar state educated peers to undertake a postgraduate course even when they have the academic credentials to do so.

In 2002 university graduates who had attended independent school were no more likely to carry on to postgraduate education than otherwise similar state educated counterparts; by 2008 however independently educated graduates were slightly – and statistically significantly (by 2%) - more likely than their state educated peers to be studying six months after graduating. These emerging differences suggest that a lack of financial support at the time of postgraduate entry may be starting to deter those from poorer backgrounds from further study.

The second caveat is that the figures presented here are average statistics for the entire postgraduate sector, comprising 250,000 full time students -- pursuing a range of diverse qualifications, in different subjects with different fee levels.

It is highly likely that barriers to entry apply particularly to those 'gateway' postgraduate courses that ensure access to a range of professions, from journalism to law. Increasing fees and living costs effectively make these off-limits for those students from poorer homes who do not have sponsorship, or family support, and who do not live near the appropriate university – issues recently highlighted by Alan Milburn's panel on access to the professions. This is also the case where fee levels are particularly high for sought-after Master of Business Administration (MBA) courses, for example.

It is also unclear whether these overall trends are reflected similarly for Masters degree courses, PhDs or professional qualifications, which attract different levels of state support. Available funding for those undertaking postgraduate courses currently comprises a combination of Government grants for PhDs (mostly in the sciences), commercial bank loans and government backed loans (for PGCE students only) and often limited support for Masters courses.

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<sup>16</sup> Specifically the class group 'Small employers & Own account workers'

### *Concerns over access to the most sought-after postgraduate courses*

The final report will explore any differences that might exist in the likelihood of different types of postgraduate study, whether by qualification or subject. But the concern is that lack of support for the most sought-after postgraduate courses – those with particularly buoyant earnings returns in the jobs market but with little sponsorship or support available – may become another limiting factor on future social mobility levels in the UK.

This also prompts the question whether the Government could do more to subsidise loans or offer grants to help the less advantaged to pursue postgraduate study – an issue the Government's review of higher education funding and student finance is currently investigating as part of the wider debate about the future support and fees for undergraduates in England.

A related concern is that higher fees and more limited state support for undergraduates could have a longer term impact of deterring greater numbers of non-privileged students from undertaking postgraduate courses in the future. That would be a significant step backwards in terms of ensuring that the brightest and best, regardless of background, have the opportunity to apply their talents through further study.