

March 2014/02

Research

This report analyses trends in continuation rates in English higher education, and uses statistical modelling techniques to isolate the effect of institutional bursaries on retention.

An interim report:

**Do bursaries
have an effect on
retention rates?**

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An interim report:

Do bursaries have an effect on retention rates?

Of interest to those responsible for

Institutional strategy for both widening participation and student success and progression; policy development; development and implementation of access agreements

Reference

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Enquiries to

Patrick Jennings, Data Analyst
Email: patrick.jennings@offa.org.uk
Tel: 0117 931 7386

Executive summary

What does this analysis investigate?

1. This interim paper seeks to investigate the effect that institutional bursaries¹ had between the academic years 2006-07 and 2010-11 on the retention rates of young full-time first degree students.
2. We are not seeking to understand the role that institutional bursaries play in the post-2012 system of student fees, as this data is not yet available. This research provides an initial analysis of the effect of institutional bursaries on continuation rates. OFFA intends to publish further analysis in due course.

Key findings and analysis

3. We have not found any evidence that institutional bursary schemes in operation between 2006-07 and 2010-11 had an observable effect on the continuation rates of young full-time first degree students.
4. The raw data shows us that disadvantaged students, whether defined directly by income or indirectly by area-based measures, have the lowest expected rates of continuation:
 - Where we have an assessment of a student's Household Residual Income (HRI), there is a clear relationship between a student's HRI and their likely continuation rate. In 2010-11, 2.6

¹ These are schemes covered by access agreements approved by the Director of Fair Access to Higher Education.

per cent fewer students from the low income group (an HRI of less than £25,000 per annum) continued their studies compared to the middle income group (£25,001-£50,020²) and 3.8 per cent fewer students from the low income group continued their studies compared to the high income group (more than £50,020).

- Students from areas where young people are least likely to participate in higher education are less likely to continue their studies than those from areas of higher participation: 89.1 per cent of students from POLAR³ quintile 1 (the most disadvantaged areas) who entered higher education in 2010-11 continued with their studies, compared with 93.5 per cent of students from quintile 5 (the least disadvantaged areas).
5. Even after we use statistical modelling to adjust for a number of factors that have been shown to affect retention rates, disadvantaged students still have the lowest expected rates of continuation.
 6. There is evidence that a student's prior attainment is the most significant factor in predicting the likelihood that they will continue their studies. Generally, the better a student's A-Level results (or equivalent qualification), the more likely they are to continue with their studies after they enter higher education. Our modelling shows that this prior attainment is a significant factor in continuation, rather than the selectivity of the institution attended.
 7. Our analysis does not have access to the exact amount of financial support each student received, nor does it present a complete picture of the total support available to students. We therefore conclude that although it is possible that financial support is having an effect on an individual's likelihood of continuing with their studies, we have not been able to detect this effect using the data available to us.

Further work

8. This report estimates the amount students received through institutional bursaries based on the criteria set out in each access agreement. Following a request from OFFA, data capturing further detail of student support will be available on the HESA student record from the 2013-14 academic year. This richer data set will allow for a much more detailed analysis as the exact amounts of financial support each individual received will be known. We will analyse this new data in due course.
9. Some institutions tell us that bursaries aid retention at their particular institution. We are encouraging these institutions to provide us with evidence of any such impact to help us build our understanding of the impact of institutional bursaries.

² £50,020 was the upper threshold for partial state support in 2010-11.

³ POLAR - The Participation of Local Areas classification. This shows how the chances of young people entering HE vary by where they live in the UK. It classifies students into five groups (quintiles 1 to 5) based on where they live prior to starting their first degree. Quintile 1 areas are those where there is the lowest participation in higher education by young people, and which tend to be areas of the most disadvantage; quintile 5 areas are those with greater HE participation and generally the least disadvantage; quintiles 2, 3 and 4 are in between. Throughout this report we use the POLAR2 classification as this is the most suitable POLAR classification for the reporting period.

Introduction

10. Between 2006-07 and 2011-12, higher education institutions (HEIs) and further education colleges (FECs) wishing to charge higher tuition fees for undergraduate higher education courses were obliged to provide bursaries to students with the lowest household incomes. This report examines the effect of these bursaries on the retention rates of young⁴ full-time first degree students in England.

11. It provides an analysis of the impact of institutional core bursary schemes that were in operation between 2006-07 and 2010-11 – the last year for which we had retention data at the time when our analysis was conducted. As such, it does not offer any comment on the impact of financial support under the new system of fees and student support, introduced in 2012.

12. Using raw data, **Part 1** of this research analyses the impacts of various factors on continuation rates. In **Part 2**, we make use of statistical modelling techniques⁵ to isolate the effect of bursaries on retention, enabling us to control for the various factors that have been shown to affect continuation rates, and thus attempt to isolate the effect of bursaries.

13. We use individual level data from a sub-set of 87 English institutions which had access agreements in place between 2006-7 and 2010-11. We use this subset because they have not undergone any structural changes (for example mergers) during the time period. The subset is the same group as was used for OFFA *analysis on Trends in Young Participation by Selectivity*⁶.

Setting the report in context

14. Institutions charging higher fees were initially required to provide a minimum bursary to students eligible for the full Maintenance Grant⁷ that covered the difference between the grant received and the tuition fee charged. From 2010-11, the minimum bursary was determined by the Director of Fair Access to Higher Education and set at 10 per cent of the tuition fee charged.

15. In the main, institutions sought to go beyond this minimum amount and provide additional financial support to students from a range of income backgrounds.

16. While the most prevalent reason (81 per cent) given by HEIs and FECs in setting their financial support criteria was to increase the number of applications from low-income and under-represented groups to their institution, 59 per cent stated that they used their financial support to improve student retention and completion⁸.

17. Institutions charging above the basic fee for undergraduate fee-regulated courses must have an access agreement approved by the Director of Fair Access to Higher Education. Access agreements set out how institutions will safeguard and promote fair access for under-represented groups – in particular for students from low income groups – through bursary and other financial support, outreach work and other measures. Institutions are required to set out what financial support is available and how students will be assessed for eligibility⁹. Since 2012, access agreements have also included details of activities focusing on retention and student success.

⁴ HESA define young students are those starting the academic year aged 20 and under.

⁵ Logistic regression modelling is used, both single level and multi-level models.

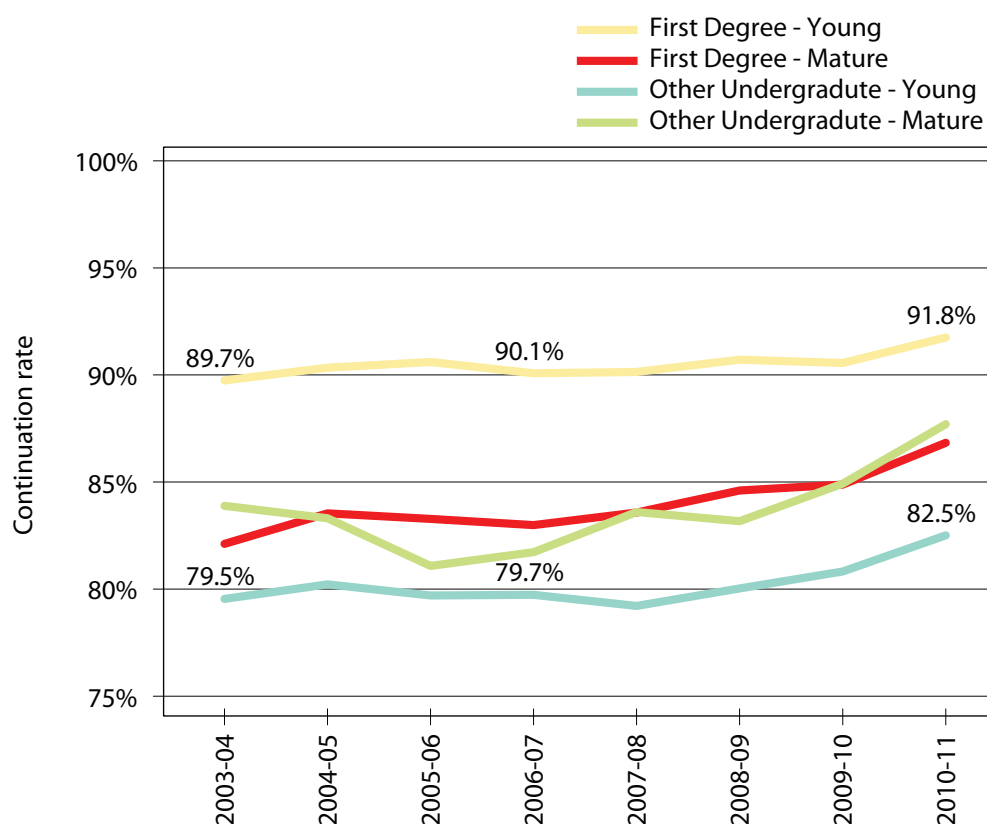
⁶ OFFA publication 2010/03 *What more can be done to widen access to highly selective universities?* Annex C paragraph 11. Available from www.offa.org.uk/publications.

⁷ Details of the loans available and income thresholds that apply can be found at <http://www.offa.org.uk/universities-and-colleges/guidance-and-useful-information/fee-and-bursary-limits-including-exceptions-and-state-support-thresholds/>.

⁸ OFFA publication 2009/07 *Strategies Undertaken By Higher Education Institutions In England To Increase Awareness, Knowledge And Take-Up Of Their Bursaries And Scholarships*. Available from www.offa.org.uk/publications.

⁹ OFFA publication 2004/01 *Producing access agreements: OFFA guidance to institutions*. Available from www.offa.org.uk/publications.

Figure 1: Trends in continuation rates by age and level of qualification



Trends in non-continuation since the early 2000s

18. The Higher Education Statistics Agency (HESA) produces a range of indicators, including on student retention, to provide comparative data on the performance of HEIs¹⁰. Continuation rates for full-time students are calculated by tracking students from the year they enter an institution and recording whether they are still at that institution (or whether they have qualified) by the following year. Different groups of students have very different rates of continuation and therefore are reported on separately by HESA. The trends in continuation rates for these different groups are shown in Figure 1.

19. Following a relatively static period from 2003-04, there has been a significant upward trend in continuation rates from 2007-08 onwards, among all

groups of students. Young full-time first degree¹¹ students exhibit the highest rate of continuation, with young full-time other undergraduate students exhibiting the lowest continuation rates. There is little discernible difference in the retention rates of mature students, whether undertaking a first degree or other undergraduate course.

20. The young full-time first degree entrants make up three quarters of the total entrants to higher education. As Figure 1 shows, the patterns of retention are different for the different populations in higher education and the factors that affect the retention rates of these different groups can also be different. It is harder to identify disadvantaged students within the mature population using the administrative data sources available to us¹², and due

¹⁰ HESA definitions of student retention can be found at http://www.hesa.ac.uk/index.php?option=com_content&task=view&id=2064&Itemid=141.

¹¹ More details on the qualifications included in the first degree and other undergraduate can be found at the HESA website <http://www.hesa.ac.uk/content/view/2379/#qual>.

¹² The relationship between income and retention is different for mature students than younger students, with little differentiation in outcomes for mature students by income level. There is also much less differentiation when looking at mature participation rate classifications (an area based measure of the number of adults holding an HE qualification) compared to young participation area based measures.

to the relatively small numbers of students taking other undergraduate qualifications in comparison to the first degree population, this analysis focuses on young full-time first degree students.

HEFCE's research on continuation rates and the factors that affect them

21. The Higher Education Funding Council for England's (HEFCE) publication 2013/07 *Non-continuation rates at English HEIs: Trends for entrants 2005-06 to 2010-11*¹³, split non-continuation rates by a number of institutional, student and course characteristics. The report highlighted a number of characteristics that affect a student's likelihood of continuing with their studies including: age; entry qualifications; subject of study; sex; ethnicity; disability; POLAR classification; and region of institution.

22. HEFCE's report highlighted the effect of entry qualifications on non-continuation rates. The report shows there is a amount of variation amongst the different categories of entry qualifications used in the HESA Performance Indicator benchmarks. Students that are most likely to continue with their studies are those entering higher education with 4 As at A-level (equivalent to 480 UCAS tariff points¹⁴), with only 1.3 per cent of young full-time first degree entrants no longer in HE a year after starting their course. This compares to young entrants entering HE with between 0 and 100 UCAS tariff points, where 13.9 per cent of these students are no longer in HE after the first year of their course. There is also a large amount of variation by subject of study, with medicine and dentistry students having the lowest percentage of students no longer in HE and computer science having the largest, 1.8 per cent and 12.2 per cent respectively for young entrants.

¹³ Available from www.hefce.ac.uk/pubs.

¹⁴ UCAS tariff points are a system of comparing a wide range of qualifications used for entry to HE. Further details of the points awarded for qualifications can be found at <http://www.ucas.com/how-it-all-works/explore-your-options/entry-requirements/tariff-tables>.

Part 1: Examining the raw data

23. In this section:

- We examine trends in continuation by institutional bursary generosity. See paragraphs 36-37 and Figure 3 for further information.
- We examine trends in continuation by a student's background (see paragraphs 38-41 and Figure 4) and then combine this with our analysis on bursary generosity in paragraphs 42-45 and Figure 5.
- We examine trends in continuation by institutional selectivity. See paragraphs 46-52 and Figures 6-9 for further information.
- We analyse continuation rates based on a student's household income in paragraphs 53-59 and Figures 10 and 11.

How we analyse the raw data

24. We have tracked students from the year they started a course to the following year, to see whether they have continued with their studies, qualified or not continued at that institution.

25. Using this information in combination with OFFA's statistical databases, we look at patterns in continuation rates by:

- a. Bursary group, where we classify institutions based on their mean bursary offer to students that qualify for the full Maintenance Grant. Please see paragraphs 32 and 33 and Figure 2 for more information on bursary groups. Area based classifications of disadvantage, where we classify students into quintiles based on the participation rates of the areas from which they come.
- b. Selectivity of the institution, where we look at average entry UCAS tariff points of those students that register at the institutions.
- c. An income based measure of disadvantage (the reported HRI of the individual based on data from their Student Loans Company (SLC) application).

Measuring non-continuation rates and bursary amounts

26. We have applied the same methodology used by HESA in their performance indicators throughout our analysis to produce a continuation rate for young full-

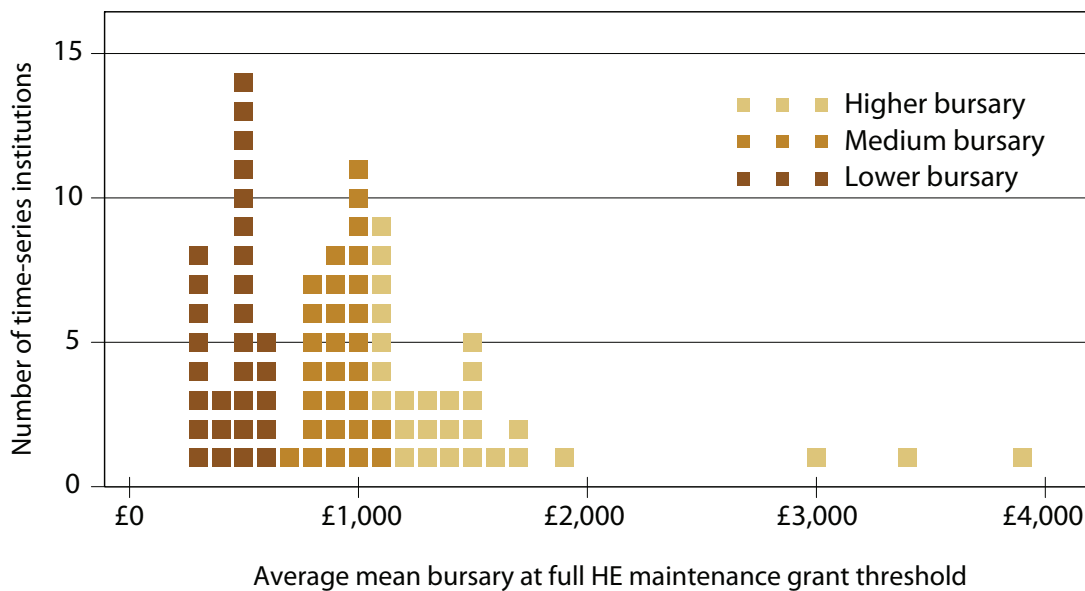
time first degree students. Given that we are assessing institutional bursaries as a retention tool, for the purpose of this report, we consider all transfers as a non-continuation, although we accept that a transfer can often be a positive outcome for a student.

27. OFFA has undertaken a thorough analysis of institutional bursary schemes outlined in access agreements from academic years 2006-07 to 2010-11. The 2010-11 academic year was the latest year for which we carried out the analysis for this report. The institutional bursary schemes set out within these access agreements displayed a wide range of variability both in terms of eligibility criteria and award amounts. These bursary amounts varied from a few hundred pounds to over £4,000 for those students that received the full Maintenance Grant. Eligibility criteria were mainly dependent on HRI, although some schemes gave more generous bursaries if an individual fulfilled additional criteria.

28. The establishment of these bursary schemes by institutions coincided with the establishment of the Higher Education Bursary and Scholarship Scheme (HEBSS). HEBSS was set up to facilitate the take-up of bursaries and their administration. This service was run by SLC with around 70 per cent of institutions subscribing to this scheme.

29. HEBSS allowed for an individual's eligibility to be automatically assessed through their SLC application, and their payment automatically processed. However the scheme relied upon individuals actively consenting to share their financial information supplied to the SLC with their HEI, in order to receive an award. Many students misunderstood this requirement and subsequently did not automatically receive their payment. This requirement to opt-in to share information was changed to an opt-out option on SLC forms from 2009-10 onwards. SLC data shows that the institutions used within this analysis have very similar consent-to-share rates. Given this we would not expect to see any differences in results between the bursary groupings or institutional selectivity groupings (described in paragraphs 32 and 33) based on bursary take-up rates.

30. The change to an opt-out system on information sharing, along with the considerable efforts of institutions to increase bursary take-up, resulted in the take-up rate (the number of individuals paid a

Figure 2: Distribution of institutions by mean bursary at full HE maintenance threshold for first year entrants

bursary against the number estimated to be eligible) increasing significantly. The take-up rate increased from 80 per cent in 2006-07 to 92 per cent in 2007-08; this increased further to 96 per cent in 2008-09. Therefore any possible effects of bursaries are likely to be more pronounced from 2008-09 onwards, as the take-up of bursaries increased.

31. Given this issue with take-up of bursaries that students were eligible for, when we discuss bursaries throughout the rest of the paper, we refer to all bursaries that students were eligible for (including those they did not necessarily receive). However, from 2008-09 onwards we assume that the student is 96 per cent or more likely to have received the bursary for which they were eligible.

32. In this analysis we group institutions into three roughly equal sized groups (such that they contain a similar number of students, but not necessarily the same number of institutions) that are defined by both bursary level and selectivity. We use a sub-set of institutions as defined in previous OFFA analysis on *Trends in Young Participation by Selectivity*¹⁵, as these institutions have been shown to be stable in respect of institutional level data and structures over time (so, for example, they have not merged with

another institution) which means our sub-set of institutions is suitable for trend analysis.

33. The bursary groups are defined as: higher bursary institutions (where the bursary on offer is greater than £1,060); medium bursary institutions (those offering bursaries between £700 and £1,060); and lower bursary institutions (those offering bursaries of less than £700). These groups differ slightly from those reported on in OFFA publication: *Have bursaries influenced choice of institution?*¹⁶, as some institutions weight their bursary schemes more heavily towards first year entrants. The distribution of these average bursary amounts by institutional bursary groupings is shown in Figure 2.

Our analysis of the raw data - what we found

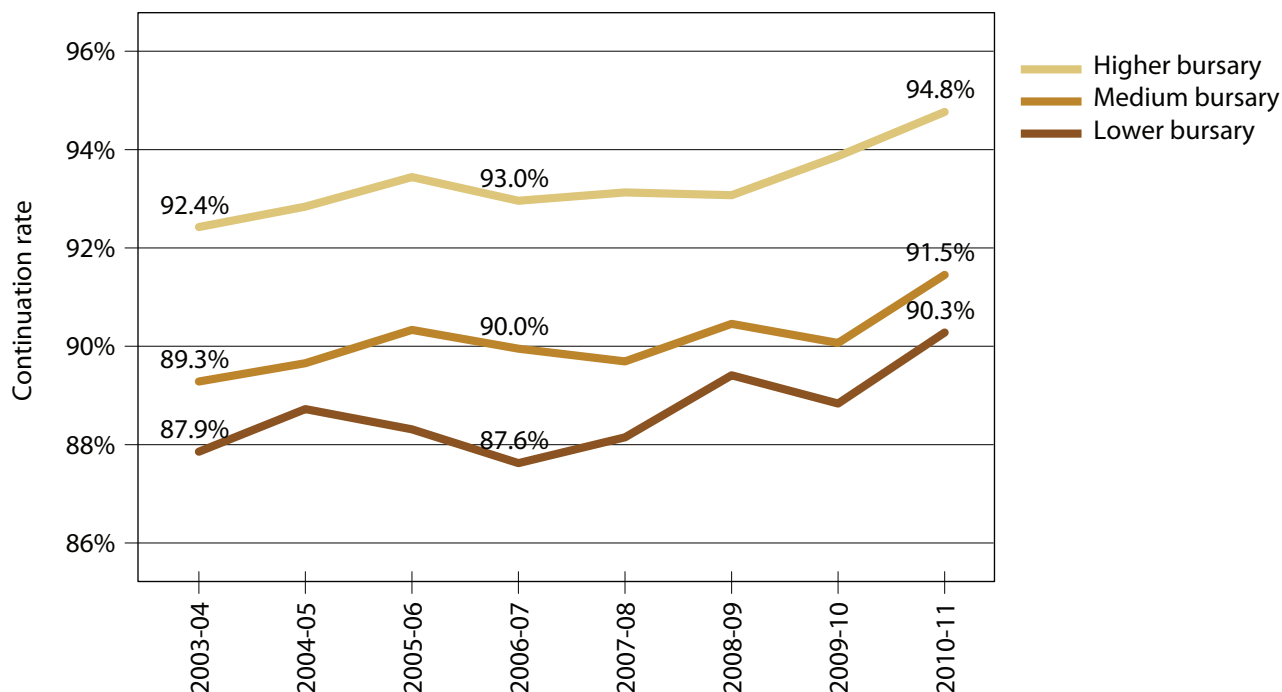
34. We know that there are a number of factors that affect retention rates of the individuals within these institutions. The analysis that follows does not attempt to compensate for these factors, but simply presents the raw findings.

35. In Part 2 of the report we use statistical modelling techniques in order to isolate the impact, if any, of bursaries.

¹⁵ OFFA publication 2010/03 *What more can be done to widen access to highly selective universities?* Annex C paragraph 11. Available from www.offa.org.uk/publications.

¹⁶ OFFA publication 2010/06 *Have bursaries influenced choices between universities?* Available from www.offa.org.uk/publications.

Figure 3: Continuation rates of young full-time first degree entrants in bursary groupings



Trends in continuation rates by size of bursary

When we look at continuation rates by institutional bursary generosity, the data shows that there have been improvements over time at groups of institutions offering higher, medium and lower levels of bursary.

36. As has been emphasised, the following paragraphs deal only with raw data – Part 2 of the report isolates bursaries to analyse if there they have an effect on retention. However, we can hypothesize that if larger bursaries had a positive impact on continuation, we might expect to see greater increases in the retention rate of those institutions offering larger bursaries. Similarly, if possession of the minimum bursary improved the continuation rates equally for all students¹⁷ that were eligible, we would expect to see the greatest improvement at lower bursary institutions, as these are the

institutions with the greatest proportions of students that qualify for the full maintenance loan¹⁸.

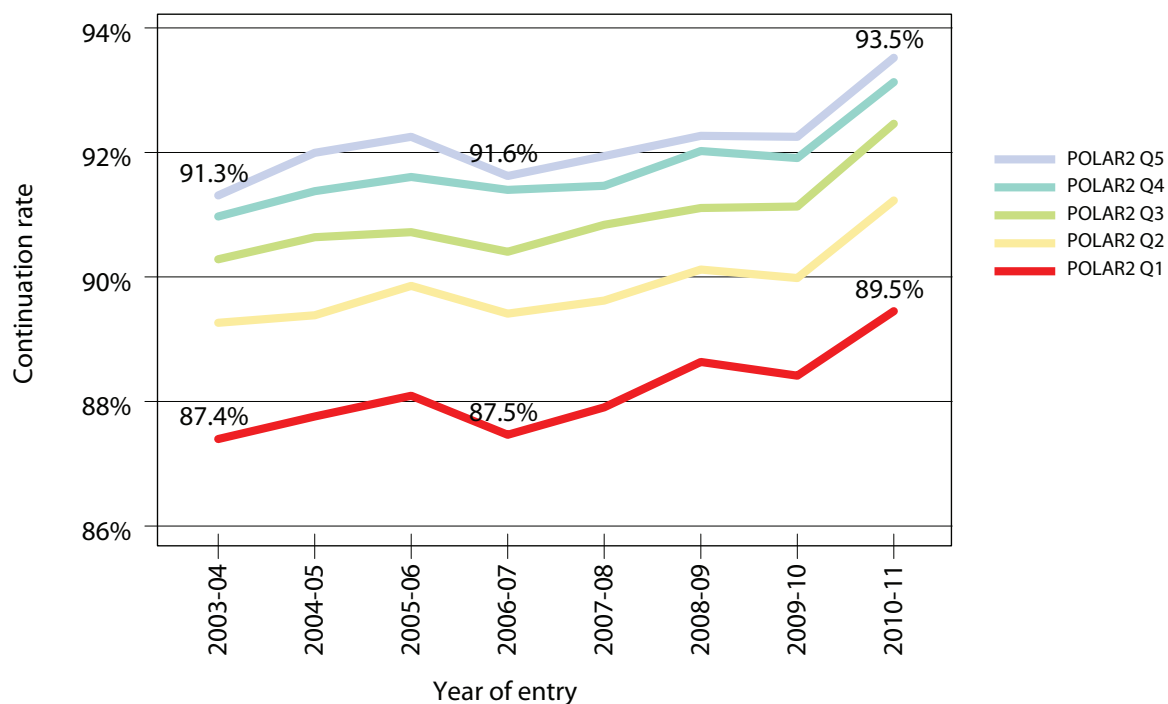
37. Figure 3 shows the trend in continuation rates for all young full-time first degree entrants by the three bursary groupings. We can see similar improvements over time at groups of institutions offering higher, medium and lower levels of bursary.

Trends in continuation rates by background of student

When we look at continuation rates by background of student, the data shows increased continuation for all students over time. However, those students from areas of high participation in higher education are, on average, more likely to continue their studies than those students from areas where participation is lower.

¹⁷ Analysis of 'Opportunity Bursaries' introduced for a short period in 2001-02 showed some evidence that it was the possession of a bursary rather than the amount per se that was a factor in improving first year retention rates. For further details, please see: West, A., Emmerson, C., Frayne, C. and Hind, A. (2008) *Examining the Impact of Opportunity Bursaries on the Financial Circumstances and Attitudes of Undergraduate Students in England*. Higher Education Quarterly, 63(2), 112-140.

¹⁸ 41 per cent of entrants at the lower bursary institutions qualified for the full maintenance loan in 2010-11 compared to 26 per cent at the higher bursary institutions.

Figure 4: Trend in young full-time first degree continuation rate by POLAR2 quintile

38. We can also look at the effect of bursaries by the background of the student. Again we can hypothesize that if bursaries were having a positive impact on retention rates, one place this might be evident would be in trends by background, as it has been shown that more low income students come from areas with low HE participation¹⁹.

39. We know that bursaries are generally means-tested and that most of the institutions in our analysis use the full maintenance threshold as the main qualifying criteria to receive the full award. We can identify students that are more likely to receive these bursary awards using the POLAR classification.

40. HEFCE's widening participation²⁰ allocation was awarded, in part, based on the proportion of students attending an institution that are domiciled in POLAR quintiles 1 and 2, which represents the most

disadvantaged 40 per cent of areas in respect of participation in higher education. This POLAR classification allows us to examine long term trends with regard to the background of individual students, and although not all students in quintiles 1 and 2 will be financially disadvantaged, the POLAR classification is positively correlated with those students that are likely to receive a bursary based on their HRI²¹. If bursaries were having a positive effect on retention rates, we would expect that any influence of bursaries on retention rates would be likely to affect students from quintiles with lower higher education participation rates more than students from quintiles with higher participation rates. Figure 4 shows the continuation rates of all students split by POLAR quintiles.

41. Continuation rates by POLAR2 quintile²² reveal quite substantial variation, as shown in Figure 4, with

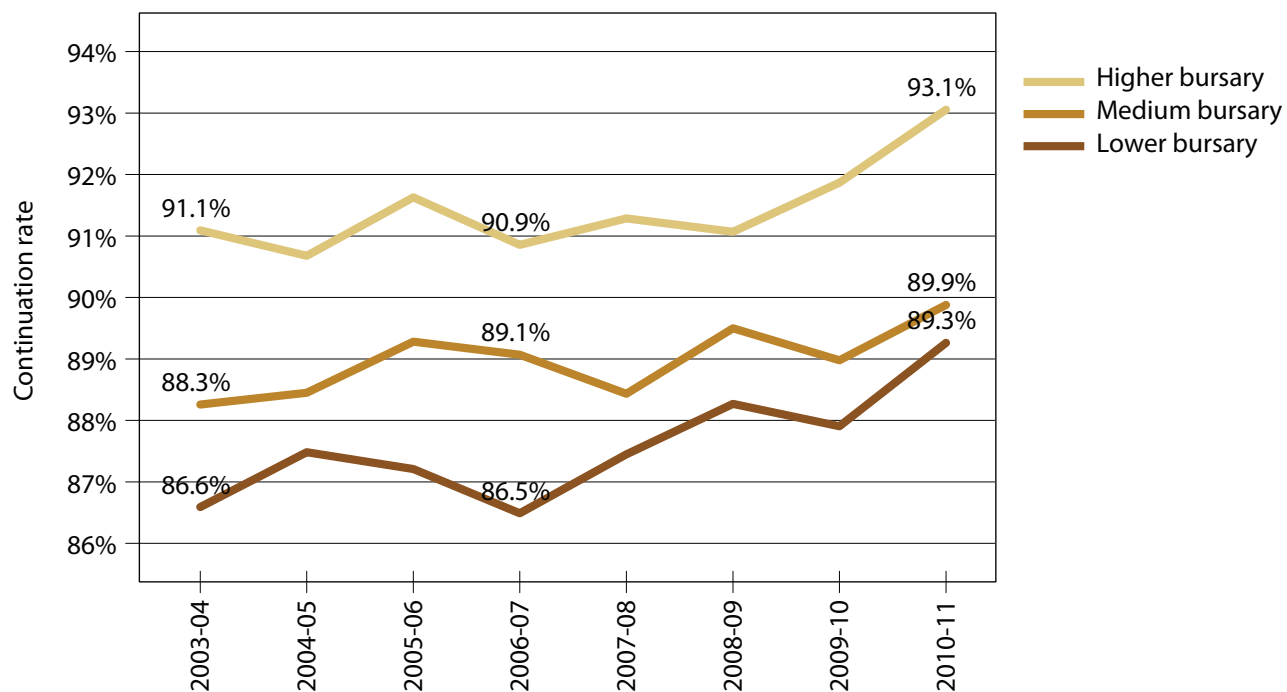
¹⁹ See paragraph 22 of OFFA publication 2010/06 *Have bursaries influenced choices between universities?* Available from www.offa.org.uk/publications.

²⁰ This is now called the student opportunity allocation.

²¹ In 2010-11, 57 per cent, 51 per cent, 43 per cent, 37 per cent and 33 per cent of students from quintiles 1, 2, 3, 4 and 5 respectively were eligible for a bursary award.

²² Measuring disadvantage using IDACI (Income Deprivation Affecting Children Index) quintiles, an area based measure using proportions of children from low income households reveals a similar trend. The most disadvantaged 40 per cent of young people within this classification have a slightly below trend improvement compared to the other quintiles, although this is in part due to the IDACI measure reflecting the higher transfer rates of students in Greater London, where the highest proportion of IDACI quintile 1 and 2 areas are found.

Figure 5: Continuation rates of disadvantaged young people in institutional bursary groups



those from the most disadvantaged 20 per cent of areas exhibiting much lower rates of continuation than those from the least disadvantaged 20 per cent of areas. There is a notably large gap between the most disadvantaged 20 per cent compared to the rest of the young full-time first degree population. The overall trend for each quintile is very similar, with students from all areas exhibiting increases and decreases in line with one another. The increase in rates since the introduction of variable fees in 2006-07 has not been more pronounced in any one quintile from another.

Trends in continuation rates by both size of bursary and background of student

When we look at continuation rates by combining the size of bursary with a student's background, the data shows that the greatest overall improvements in continuation rates for young people from disadvantaged backgrounds are for those students at institutions offering lower bursaries. We know that institutions that offer proportionately lower bursaries tend to be those with the largest number of disadvantaged students, so this data shows encouraging progress.

42. Figures 3 and 4 show the overall trend for all students by bursary groupings and an area based measure of disadvantage. We can combine these two measures to see if there is any differential effect for students at different bursary levels for those students that are most likely to receive a bursary. Figure 5 uses the same three bursary groups of institutions, but plotted for those students that are from the bottom two POLAR2 quintile areas.

43. When we compare Figure 5 to Figure 3, we can see that there is a more pronounced increase in continuation rates at higher bursary institutions for disadvantaged students compared to all students. However, the greatest overall improvements in continuation rates for young people from disadvantaged backgrounds are at lower bursary institutions. The medium bursary institutions do not exhibit as large an increase for disadvantaged young people as either the higher or lower bursary institutions.

44. The relationship we see here between bursary grouping and retention for the most disadvantaged groups has not been adjusted for any other factors that could be driving these differences. For example,

differences could be caused by the entry qualifications of the individuals, or indeed the additional financial support offered to students at these institutions that is not reported to us (it is likely that institutions offering higher institutional bursaries would also offer higher additional financial support outside of the core bursary schemes we are analysing within this report).

45. The data shown in Figure 5 could, however, suggest that we are seeing both an effect of the possession of a bursary at the lower bursary institutions increasing the retention rates of the students (where the greatest proportion of students qualify for a bursary), as well as an effect of the size of bursary for students at higher bursary institutions. We model the potential impact of bursaries in Part 2.

Trends in continuation rates by selectivity of institution

When we look at continuation rates by selectivity of institution, the data shows us that students attending institutions with a higher entry tariff exhibit higher continuation rates than those students attending institutions with a medium or lower entry tariff.

46. Given that non-continuation rates show such variability by entry qualifications, and that institutional selectivity is pertinent in the debate around fair access, we can see what effect this has at an institutional level using an institution's average UCAS entry tariff points as a measure of institutional selectivity. The sub-set of institutions is grouped by entry qualifications such that each group contains roughly an equal number of entrants across the 2009-10 and 2010-11 cohorts. Figure 6 shows these three groups as follows: higher entry tariff (greater than 382 points); medium entry tariff (between 264 and 382 points); and lower entry tariff (less than 264 points).

47. The data in Figure 6 and Figure 7 is presented in a box and whisker plot, which is used to show the distribution of a statistic within a group. The box encompasses the middle 50 per cent of observations; the line within the box denotes the median (middle observation). The whiskers represent the top and bottom 25 per cent of observations within each group.

48. Figure 7 shows the variation in mean bursary amounts for students on full state support by selectivity of institution. The range of bursaries on offer at the low and medium selectivity groups appear to be very similar, although lower bursaries are more often given to students in the least selective group. The median bursary amount for the least selective group is the lowest of all these groups at £525. The most selective group have the largest bursaries on offer, with a number of institutions offering bursaries of over £2,000. In the main the more selective an institution, the greater the bursary amount being offered.

49. Figure 8 shows continuation rates over time, using institutional groupings of selectivity. The continuation rates of young people at highly selective institutions have been high in comparison to the rest of the sector, increasing steadily over time up to 96.2 per cent in 2010-11. The medium selectivity grouping follow a very similar trend, however the rates are somewhat lower, with a continuation rate of 91.7 per cent in 2010-11. The least selective group of institutions exhibit the lowest continuation rates of all the institutional groups, and a continuation rate that remained fairly static up until 2007-08. Subsequently, however there have been sharp improvements in the rate, to 89.4 per cent in 2010-11.

50. The differences in these selectivity groupings for young entrants are more stark than the differences shown earlier by bursary groupings. This could indicate that the prior attainment of students is a better predictor of continuation rates than the generosity of the bursary they receive. As we know that the lower entry tariff institutions have higher proportions of students eligible for bursaries²³, if the minimum bursary had a positive effect on continuation rates, this would be seen in off-trend improvements to continuation rates at lower entry tariff institutions.

51. The rates outlined above are subject to a certain amount of variation, as they denote the overall average within each selectivity grouping. The continuation rates of each institution within these groupings can vary significantly, and there is a degree

²³ 42 per cent of students at lower entry tariff institutions were eligible for the full maintenance in 2010-11 compared to 22 per cent from higher entry tariff institutions.

Figure 6: Distribution of mean entry tariff points for institutional groupings

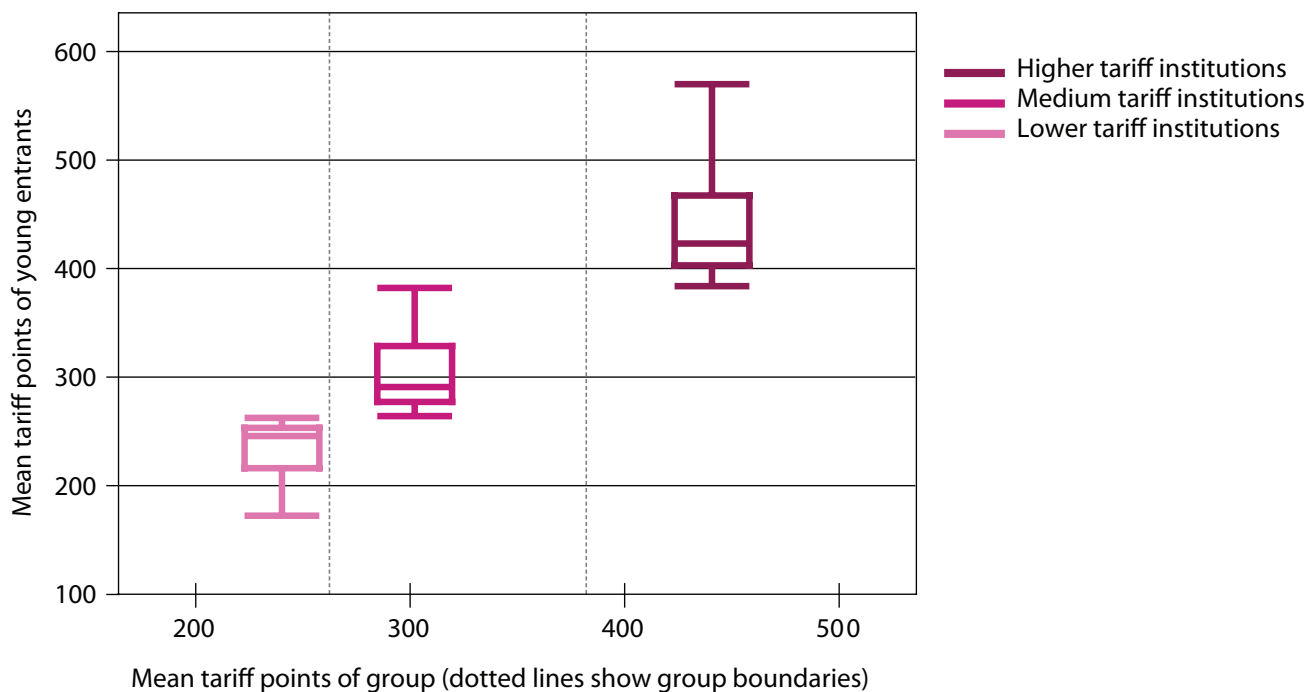


Figure 7: Distribution of mean bursary at full HE maintenance threshold by institutional selectivity groups

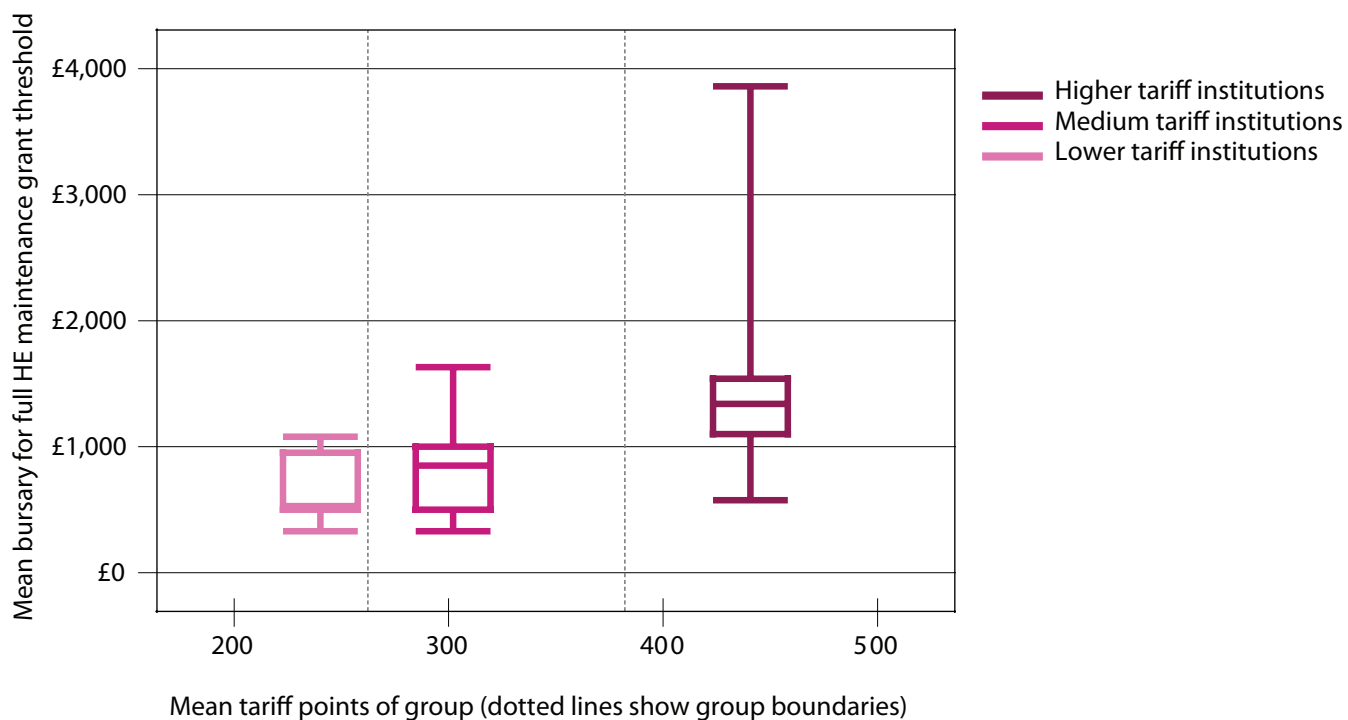


Figure 8: Time series of continuation rates for young full-time first degree entrants at OFFA HEIs by selectivity groupings

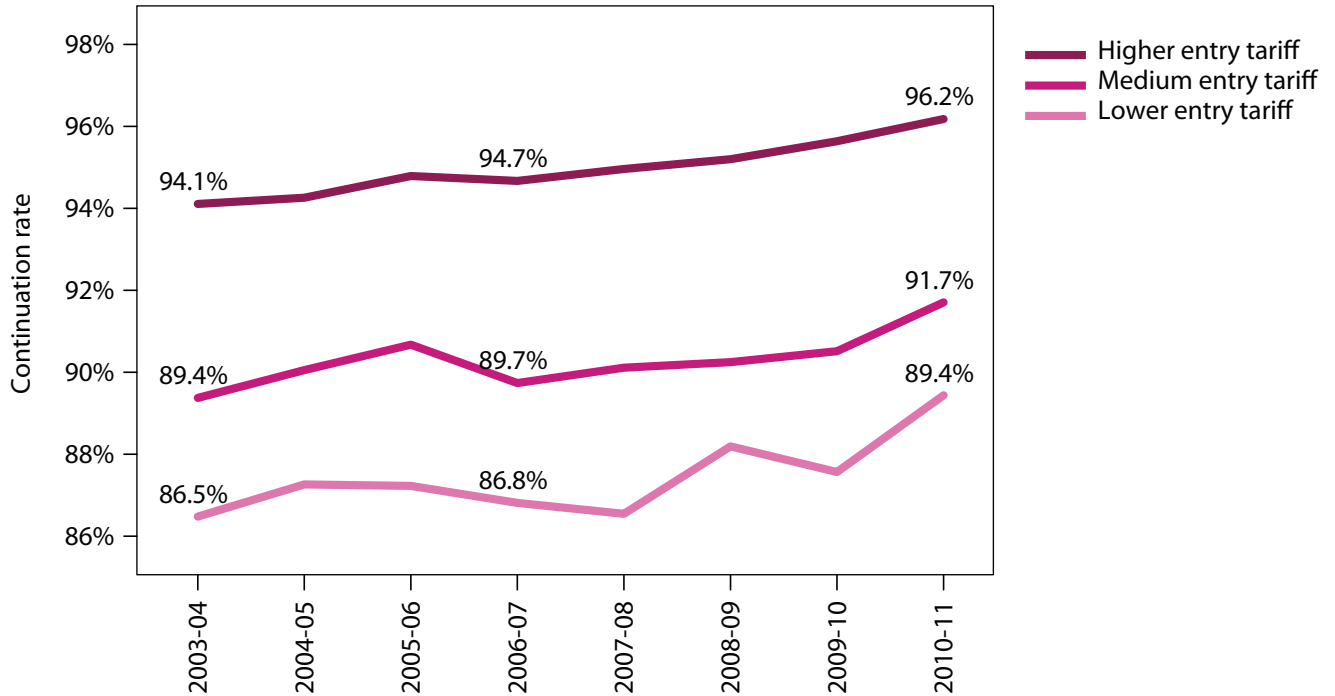
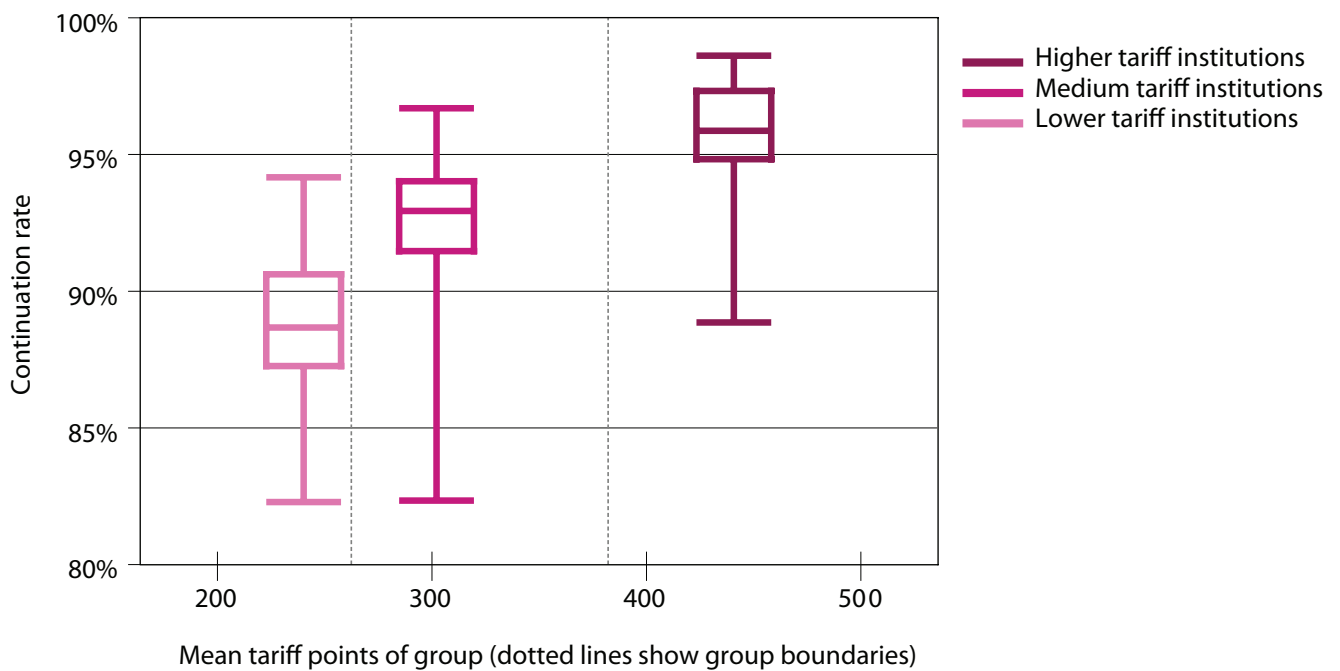


Figure 9: Distribution of continuation rates for young entrants at institutions by selectivity groupings



of overlap between institutional groups. Figure 9 shows the distribution of continuation rates of institutions by selectivity group. We can see that the rates amongst the most selective institutions exhibit the least variability as the box is the smallest of the three with the whiskers also the shortest. The medium selectivity grouping has a similar amount of variability within the middle 50 per cent of institutions but has a much larger overall range, while the least selective group, although not the largest range, exhibits the most variability across the middle 50 per cent of institutions.

52. It has been shown that an institution's average entry requirements are positively correlated with an institution's likely bursary offer – so, the greater the entry requirements, the higher the likely bursary offer. When we group institutions by their average entry requirements, we see greater differentiation in the continuation rates of these groups. This could be showing that any differences seen in the bursary groupings are actually reflecting differences in entry requirements, rather than the level of bursary at a particular institution. This is explored further in Part 2 – see paragraph 71 for more information.

Trends in continuation rates by income

When we look at continuation rates by income, the data shows that, when we have an assessment of HRI, higher income students are more likely to continue their studies than students with a medium income and they in turn are more likely to continue than those students with a lower income.

53. We have seen the trends in continuation from 2003-4 to 2010-11 with respect to institutional measures of bursary generosity, area based measures of disadvantage and institutional selectivity. Data has been made available through the SLC which has allowed us to link through individual records from 2007-08 to 2010-11.

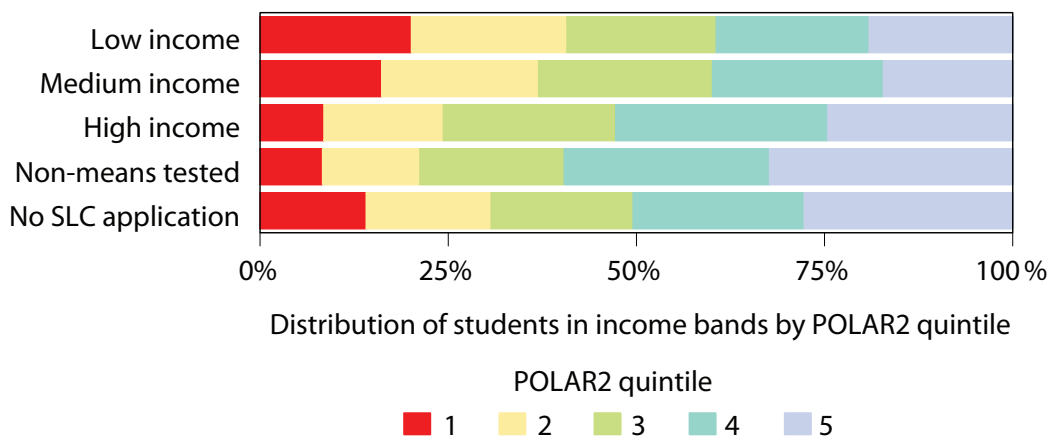
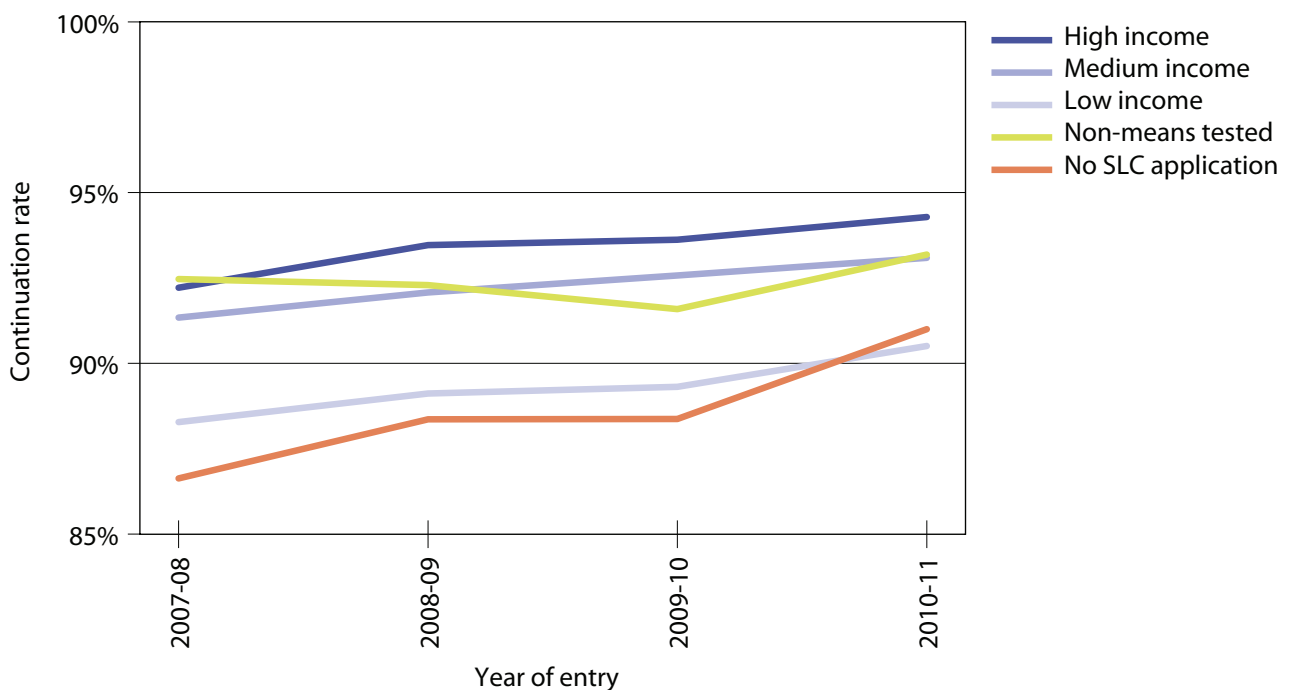
54. For those students that apply for a means-tested loan, an assessment of their HRI is available. Roughly a third of entrants do not have an income assessment on their SLC record. These students are classified as non-means-tested. A number of students do not apply to the SLC for any support,

means-tested or not, and these students are classified as “no SLC application”. It is assumed high income is the main reason for some students not applying for support that is means-tested. The students that do not apply to the SLC for any support are categorised separately, but unlike the non-means-tested group are not considered to be high income students, as the reasons for not making an application are unknown.

55. Although we do not have income data for any of the non-means tested students or the students that do not make any application to the SLC (approximately 10 per cent of young full-time first degree entrants), we can look at the proportions of students living in the different POLAR quintile areas compared to those that we have known income data for, to see how advantaged or disadvantaged they are in terms of higher education participation. We know that roughly two thirds of students apply for means tested support each year, but not all of these students will qualify.

56. In order to make comparisons between the non-means tested group and those that do not apply to the SLC, it is helpful to breakdown the means tested group further. We therefore derive five different income groups: low income if HRI is less than £25,000 (the full state support threshold from 2008-09); medium income as between £25,001 and £50,020 (the partial state support threshold in 2010-11); high income as any HRI greater than £50,020; non-means tested students; and a no SLC application group.

57. Figure 10 shows the proportions of these derived income groups in each of the five POLAR2 quintiles. We can see that the income group with the largest proportion of students in POLAR quintiles 1 and 2 is the low income group, with 40.9 per cent of students. This proportion is less in the medium income group with 37 per cent of students and less again in the high income group with just 24.4 per cent of students coming from the most disadvantaged 40 per cent of areas. The group defined as non-means tested have the lowest proportion of students from disadvantaged areas of all the income groups, as well as the highest proportion of students from the most advantaged areas. The no SLC application group should not, to

Figure 10: Distribution of students in income groups by POLAR2 quintile**Figure 11:** Trend in continuation rate by income group for young full-time first degree entrants

any extent, be considered a homogenous group – the ‘group’ has a high proportion of students from the most advantaged areas, with a greater proportion of students from quintile 5 than the high income group; however they also have a greater proportion of students from the most disadvantaged 40 per cent of areas than the high income group.

58. Figure 11 plots the short term trend in continuation rates for each of the different income groups. Where we have an assessment of an

individual’s HRI there is a clear relationship between income group and continuation rate, with those students with the lowest incomes experiencing the lowest continuation rates. The difference between the low income group and the medium income group is much wider than that of the medium income and high income group. The medium and high income groups exhibit quite similar rates, although the high income group has persistently greater continuation rates than the medium income group.

59. Where we do not have an assessment of HRI, the non-means tested group exhibits more random behaviour, with a continuation rate above that of the high income group in 2007-08 but much lower in both 2008-09 and 2009-10, before picking back up again in 2010-11. The group that have made no SLC application generally have the worst continuation rates of all the groups, although they have slightly better outcomes on average in the 2010-11 cohort than students from the lowest income group. When looking at this group of students by POLAR2 quintile we see that they appear to be relatively advantaged compared to the other income groups, but they have the worst outcomes in terms of continuation rates, and could be linked to the fact that this is the only group of students not to access any form of government student support.

Part 2: Using statistical models to isolate the effect of bursaries – what we found

60. In this section, our findings after using statistical models to isolate the effect of bursaries show:

- our modelling from this data does not show that bursaries have an observable effect on continuation rates. See paragraphs 66-69 for further information
- students on low incomes have worse outcomes than those students on higher incomes even when adjusting for other factors included in our modelling. See paragraph 70 for further information
- a student's prior attainment is the most significant predictor of their likelihood of continuation. Generally, the higher the attainment at A-Level (or equivalent qualification), the greater likelihood that a student will continue his or her studies. See paragraph 71 for further information
- there are some institutional differences in continuation rates. See paragraph 72 for further information.

How we use statistical models to isolate the effect of bursaries

61. This report uses statistical modelling techniques²⁴ to investigate the effect of bursaries on retention. The modelling allows us to control for those factors that have been shown to affect continuation rates, and therefore attempt to isolate the effect of bursaries. These statistical modelling techniques predict an individual's likelihood of continuing with their studies, based on a number of different factors, including any possible effects of bursaries, at institutions within England with OFFA access agreements. We look at whether there has

been any influence of differential bursary schemes on retention, but do not seek to explain why different groups of students have different expected levels of retention or why different institutions perform differently from one another, nor do we examine any other possible effects of institutional bursaries.

62. Our analysis of continuation rates and HEFCE's recent report on trends in non-continuation²⁵ has led us to include the following factors in our modelling of continuation rates:

- Prior attainment of individuals (models are fitted using the 26 HESA benchmark categories)
- Subject of study (subjects are coded using the 18 Joint Academic Coding System (JACS) subject area²⁶ codes)
- Sex
- Whether or not a student is in receipt of Disability Student Allowance (DSA)
- Ethnicity (White, Black, Asian, Other and Unknown). These are the same 5 broad categories used in the recent HEFCE report on non-continuation²⁷).
- POLAR quintile
- Socio-economic class²⁸ (SEC)
- Income (models are fitted using either the income bands derived in paragraph 56 or the HRI assessment from an individual's SLC record)
- *Institutional selectivity (mean tariff points achieved by the entrants at each institution averaged over 2009 and 2010 entrants)*
- *Region of institution attended*

²⁴ Logistic regression modelling is used, both single level and multi-level models.

²⁵ HEFCE publication 2013/07 *Non-continuation rates at English HEIs: Trends for entrants 2005-06 to 2010-11*. Available from www.hefce.ac.uk/pubs.

²⁶ HESA performance indicator subject areas are defined at http://www.hesa.ac.uk/index.php?option=com_content&task=view&id=2379#subject.

²⁷ HEFCE publication 2013/07 *Non-continuation rates at English HEIs: Trends for entrants 2005-06 to 2010-11*. Available from www.hefce.ac.uk/pubs.

²⁸ A full coding frame for the SEC can be found on the Office of National Statistics website at <http://www.ons.gov.uk/ons/guide-method/classifications/current-standard-classifications/soc2010/soc2010-volume-3-ns-sec--rebased-on-soc2010--user-manual/index.html>.

- *Bursary (We fit statistical models using institutional level measures of bursary generosity and individual level bursary eligibility amounts when we have an assessment of a student's HRI).*

Note: Those factors in italics are not found to be significant in predicting continuation rates

63. Continuation rates have improved over recent years, with an upward trend from 2007-08, and models including a year variable show this effect to be significant, however modelling the cohorts separately gives very similar parameter estimates for all the variables within the model. So for ease of computation and understanding, we use the 2010-11 cohort. This also aids our assumption that the vast majority of the individuals eligible for a bursary will receive one, as the take-up rates rose to 96 per cent and above in 2008-09 and beyond.

64. The data here has a hierarchical (multi-level) structure. For example, students are registered at institutions, so students are considered to be the first level and institutions are considered to be the second level. This means we can model a student's likelihood of continuing their studies in relation to the factors listed in paragraph 62 but also allow this estimate to differ depending on which institution that student attends.

65. A number of different models are fitted (multi-level logistic regression models²⁹) that take account of the inherent hierarchical structure of the data mentioned above. These models are found to be generally unbiased in predicting continuation rates. The majority of factors listed in paragraph 62 are found to be important in predicting continuation rates³⁰, with entry qualifications consistently being selected as the most important factor.

What do the models tell us about the effect of bursaries?

66. Models were fitted to the data using an institutional (second level) measure of bursary generosity, which was applied to both the whole population (all income groups) and to just the

population that we have an income assessment for, and also just the population of students identified to be eligible for a bursary within our dataset. All of these models show that this institutional measure of bursary generosity is not a significant predictor of an individual's likelihood of continuing with their studies.

67. We also fitted models where we derived an exact amount of bursary that a student was eligible for, given their HRI assessment from the SLC and other data on their HESA record, and used this individual eligibility as a predictor in our models.

68. Using sub-sets of the population that are eligible for a bursary award, we found no significant positive effect on an individual's likelihood of continuing with their studies. In other words, once all the significant factors listed in paragraph 62 are taken into account, there is no additional influence of bursaries.

69. The bursaries we are analysing within this report are the core bursary schemes that institutions are obliged to include within their access agreements, and do not therefore present a complete picture of the total support actually given to students. Combined with the fact that we do not know for certain which individuals received a bursary and those that didn't, it is possible that financial support is having an effect on an individual's likelihood of continuing with their studies. However we have not been able to detect this effect using the data available to us.

What else do the models tell us?

Income

70. There is a persistent large positive effect of HRI in all of the models that include it as a variable³¹, showing that students on low incomes have poorer continuation rates than those students on higher incomes even when adjusting for other factors included in the model. When modelling all the income groups, including those that we do not have a HRI income for (the non-means tested and the no SLC application groups) we find that the non-means

²⁹ Information around the implementation and uses of multi-level modelling can be found at the University of Bristol's dedicated web pages: <http://www.bristol.ac.uk/cmm/learning/>.

³⁰ Interactions between variables are found to be significant in some models, such as entry requirements and income group.

³¹ When modelling the effect of HRI we can only include those observations where we have an assessment recorded, i.e. the low, medium and high income banded students, as the model will not accept missing values for any of the variables that it includes.

tested students have worse outcomes than the low income group when at lower tariff institutions, but better outcomes when at high tariff institutions. The no SLC application group perform the worst of all groups, especially so at lower tariff institutions.

Prior attainment

71. We investigated the possible effect of institutional selectivity in paragraphs 46-52, whereby institutions were classified as higher, medium or lower entry tariff institutions, and we saw that there was a high degree of discrimination between the likely outcomes for students within those groups. When we model the likelihood of retention based on all the factors listed in paragraph 62, we find that an individual's prior attainment (a first level factor) is the most prominent factor in predicting retention rates, but that the additional effect of how selective the institution is (second level factor), is not significant. So, if two students, both with 300 UCAS tariff points, attended different institutions, one with mean entry tariff points of 400 and another with mean entry tariff points of 200, there would be no difference in their likely retention rate. It is the prior attainment of the individuals that drives the differences seen in Figure 10, not the attributes of the institution itself.

Institutional level effects

72. The hierarchical models used in this analysis allow for an individual's predicted continuation rate to differ depending on the institution they attend. The model highlights reasonably large differences in the expected continuation rates of individuals based on which institution they attend, but we cannot identify institutional factors that explain the differences we see here. There must, therefore, be other factors that are not identifiable through the data sources we have access to, whether this is differences in curriculum design, first year induction programmes, pastoral support, or other factors that drive these differences we see between individuals within these institutions.

Conclusion

73. As we have pointed out throughout this report, the data available to us at the time of analysis was somewhat limited and this meant that we had to make a number of assumptions on bursary take-up and eligibility.

74. Given the lack of actual individual data on financial support amounts, we conclude that although it is possible financial support has an effect on retention, we are unable to find evidence that the core bursary schemes delivered between 2006-07 and 2010-11 had any effect on the retention rates of the students that received them.

75. From our analysis, both of the raw data and the use of statistical modelling techniques, we find a number of factors which seem to affect retention. These include, but are not necessarily limited to: prior academic achievement; a student's HRI; and whether they are from an area of high participation in higher education or not.

Further work

76. There is more work to be done before we fully understand the effect of financial support on retention. Our recent literature review³², as part of the development of the national strategy for access and student success, suggests that one of the emerging conclusions from the evidence around financial support is that its main impact, especially cash awards, may indeed be on retention rather than access.

77. More granular detail from HESA in the 2013-14 student record (available in January 2015) on the actual amount individual students receive will allow OFFA to undertake much more powerful analysis of bursary effects, both in terms of the amounts and types of financial support that students receive. Combining this data with other central financial support schemes will also enhance our future work. Analysis on retention using this individual level data can be undertaken in early 2016.

78. Throughout this analysis we have focused on young full-time first degree students, as they make up three quarters of students in the sector. However, students that are mature, part-time or take qualifications that are not classed as first degree are of interest to OFFA and are pertinent in the debate on fair access. Understanding the factors that affect the continuation rates of these groups of students will be important in helping institutions to improve their continuation rates for these students..

79. As part of our work on the national strategy for access and student success, we have identified part-time study as a priority. The data used to inform this analysis was not suitable to use in the case of part-time learners³³. The financial support element in the HESA 2013-14 student record does cover both full-time and part-time learners, and will allow us to analyse the effect of financial support for part-time learners from January 2015³⁴.

80. The analysis conducted here has been undertaken for students registering on a higher education course before the introduction of the new system of fees and student support in 2012-13. The first opportunity to undertake an analysis of the effect of financial support on retention rates under the new system will be in 2015, although again we will have to use an institutional level assessment of the bursary generosity. Data available in January 2016 will tell us whether a student has progressed, as well as giving details of the amount of support they received.

³² ARC Network: *Literature review of research into widening participation to higher education* (2013). Review undertaken by ARC Network, on behalf of OFFA and HEFCE as part of the development of the national strategy for access and student success.

³³ This is because there was no minimum bursary for part-time learners and any likely support they would have received from institutions would have depended on their intensity of study as well as the fees paid for the course.

³⁴ Retention rates are calculated differently for part-time learners, whereby the HESA record is examined in the following two years rather than the following year, as is the case for full-time students.

Office for Fair Access

Northavon House
Coldharbour Lane
BRISTOL

BS16 1QD

tel 0117 931 7171

fax 0117 931 7083

www.offa.org.uk