Can higher education compensate for society? Modelling the determinants of academic success at university

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Abstract

This paper examines the role that social characteristics play in determining the academic success of students who begin university with roughly similar entry grades. The data used were drawn from the administrative records of over 38,000 UK-domiciled undergraduate students from one British university between 1998 and 2009. Results show that the characteristics of entrants have varied only slightly over this period and intake is still largely in favour of ‘traditional’ entrants: namely those from professional occupational backgrounds, the privately educated and those of traditional age. The relationship between background characteristics and eventual academic success also reflect patterns seen at earlier education stages. However, when prior attainment was taken into account, the link between degree outcome and many social characteristics does diminish – notably for students who were privately educated and who came from professional occupational groups. This suggests that once students have overcome barriers to admission; it is entry grades rather than social characteristics that may most strongly influence eventual academic success.

Introduction

The title of this paper is taken from Basil Bernstein's widely referenced work '*Education cannot compensate for society*' that appeared in *New Society* in 1970. Bernstein's concern in this article was largely about the contexts in which children learn and the 'social assumptions underlying the organisation, distribution and evaluation of knowledge' (347). In particular he contested the assumption that there is just one - often a largely middle class - way of educating our children. Arguing that the compensatory programmes that support those children of 'low social class whose *material* circumstances are inadequate' (Bernstein 1970:344, original emphasis) offer a deficit model of education in which schooling is expected to compensate for something that is perceived to be missing from within the family.

Although Bernstein was not explicit here in suggesting that education policy cannot act as a replacement for social policy, the title of his paper has become synonymous with the argument that social class and education are 'inextricably linked'; that academic progress is largely determined by family circumstances and that there is little that schooling can do about it (Davidson, 2010:145, Coleman et al. 1966, Halsey et al., 1980). While we might wish to 'reject the stance that attempts to reduce educational inequalities are inevitably futile' (Power 2008:19), it is well established that academic success is socially stratified and that educational inequalities persist across the life course (e.g. Smith 2012). Although it is important to note that the academic achievement of children and young people in schools in England continues to improve.

The expansion of the UK Higher Education system over the last three decades has provided numerous opportunities for examining the extent to which social inequalities are replicated in post compulsory education. This is particularly pertinent as the Higher Education student population becomes more diverse as a consequence of initiatives to both widen and increase participation during this phase (e.g. DfES 2003). Therefore it is important to consider the extent to which educational inequalities that are present during the compulsory phase continue into Higher Education. For example, it might be argued that once students have met threshold academic levels and gained admittance to university, the effect of social characteristics on academic attainment might be reduced, as entrants will now share a similar educational experience over the course of their undergraduate careers. With this in mind, the main aim of this paper is to examine the role that social characteristics play in determining eventual academic success for students who enter university with roughly similar entry

grades. Essentially, it asks how sensitive is the Higher Education system to background characteristics such as class, ethnicity and previous schooling experience. It will address the following research questions:

1. What are the characteristics of full-time, home-domiciled undergraduate students studying at this University?
2. To what extent have these characteristics changed since the late 1990s?
3. Once prior attainment has been controlled for, what is the relationship between student background characteristics and the likelihood of graduating with a ‘good’ degree?

The move to mass Higher Education in the UK

The expansion of the HE system in the UK can be traced to 1963 when the Macmillan government commissioned Lord Robbins to review the medium and long-term expansion of the universities. The impetus for the Robbins Review, as it was to become known, was the predicted shortfall of university places caused by the large numbers of young people who were born after the War and who would be eligible to enter higher education in the late 1960s (Committee of Higher Education 1963). The university system at the time of this Review was arguably a system for the elite, starkly segregated according to social background. While Robbins recognised that ‘the reserves of untapped ability may be greatest in the poorest sections of the community’ (Committee on Higher Education, 1963, para. 142), there were no specific recommendations about how participation might be widened. In fact it was not until the 1990s that widening access to university became a key focus of national education policy with the publication, towards the end of that decade, from the National Committee of Inquiry into Higher Education (NCIHE 1997). This report placed an emphasis on widening access to an expanding university system and its aims were quite explicit: that the future of Higher Education in the UK would require institutions to...

...encourage and enable all students – whether they demonstrate the highest intellectual potential or whether they have struggled to reach the threshold of higher education – to achieve beyond their expectations (para. 5).

As Figure 1 shows, the number of people who apply and are accepted to study at university has increased steadily over the last twenty five years. This growth in applications is mirrored by growth in the number of acceptances, as the number of university places available increased to accommodate demand.

Figure 1: Higher Education applicants and acceptances, all home candidates 1987 to 2013

Source: Smith 2010, with updated figures

Even though Higher Education has been transformed over this period from an ‘elite to a mass experience’, the experience of students from less financially well-off families is ‘impoverished’ in comparison to those from more affluent groups (Furlong and Cartmel 2009:121). While going to university has now become part of the ‘normal taken for granted experience of the middle classes’ (Furlong and Cartmel 2009:145, see also Blanden and Machin 2004 and Mangan et al. 2010), it is still the case that fewer than one in five young people from the most disadvantaged geographical areas enter HE compared to more than one in two for the most advantaged areas (HEFCE 2011).

In short, recent research suggests that two things have happened to university participation in the UK. First that the number of people entering Higher Education has increased and applicants who have the required grades have usually been able to secure a place. On the other hand, there is compelling evidence to suggest that many students from previously under-represented groups, notably older students as well as those from certain ethnic minority

and occupational groups, are less likely to study at 'elite'¹ universities. As Ball (2013:15) argues, 'if we look at participation in higher education, the continuation of class inequalities is very clear'. However in this paper the aim is to examine inequalities in academic outcomes at university and to consider the extent to which class differences, in particular, persist at the end of an undergraduate degree

The determinants of academic success in Higher Education

The issue of which characteristics are associated with educational success at university is a topical one. The move towards a mass system of higher education, the rising cost of tuition fees and an increasingly competitive graduate labour market are all factors that may have implications for ensuring 'fair and equal' access to university as well as reinforcing Higher Education's purported status as 'an engine of economic growth and social justice' (Naylor and Smith 2004:416, HEFCE 2003).

Prior attainment is usually the key factor determining whether or not a student is offered a place in Higher Education. However, research has shown that during compulsory education, academic success is predicated on success at the previous educational stage and that at the aggregate level young people from less affluent social groups achieve at lower levels throughout schooling (e.g. Gorard *et al.* 2007). This means that when it comes to applying for and being successfully admitted to university, intake is likely to be socially as well as academically stratified. However once students have met threshold academic levels and gained admittance to HE, the effect of social characteristics on academic attainment might be less pronounced, as students could now share a relatively similar educational experience.

Previous work into the determinants of educational success in HE has identified an association between certain student characteristics and the likelihood of achieving a 'good'² degree. For example, research has shown that, in general, female students are more likely than men to achieve a 2:1 degree or higher, but this is contingent on the subject studied (for example, Naylor and Smith 2004, Barrow *et al* 2009, Richardson and Woodley 2003). There is also some evidence that women tend to be less likely to graduate with a first class degree. This may be accounted for by the increased propensity for male undergraduates to study subjects that tend to award a higher proportion of first class degrees, although this pattern is not apparent in all studies (see: Mellanby *et al* 2000, Woodfield and Earl-Novell 2006,

Farsides and Woodfield 2007). Recent initiatives to widen access to HE have focused on the participation of older students as well as those belonging to ethnic minority groups. However, according to Naylor and Smith (2004:418) there appears to be 'no general consensus' on the effect of age upon degree success with findings varying depending on the data sets used. With regard to attainment according to ethnic group, research has tended to suggest that those from minority ethnic groups are less likely than white students to achieve a 'good' degree (Richardson 2008, Leslie 2005). A number of explanations have been offered: students from ethnic minority groups are more likely to be accepted into HE (they have a higher age participation index, possibly indicating a broader academic mix of students), they tend to be less well qualified upon entry and they also tend to study subjects that are less likely to award first and upper second class degrees.

Perhaps unsurprisingly there is a large body of evidence that indicates that there is a substantial relationship between A-level score and the likelihood of doing well at university (see for example, McManus *et al* 2003, Barrow *et al* 2009 and McNabb 2002). Smith and Naylor (2001), for example, estimate that each additional grade awarded in each of their three A-level subjects (i.e. from BBB to AAA) is associated with around a 10 percentage point increase in the likelihood of graduating with a 'good' degree. The impact of previous education experiences have also been widely scrutinised, particularly with regard to the effect that school sector has on degree outcomes. Work on this so called 'school-type effect' suggests that those who are educated in the independent sector perform less well at university than 'equivalent' students from the state sector (see for example Naylor and Smith 2004, Ogg *et al* 2009, HEFCE 2003). According to Smith and Naylor (2001), in order to equalize the likelihood of obtaining a good degree for those who come from the state and the independent sector, applicants from the latter group would need to achieve approximately one grade higher in each of three A-levels. These findings could lend support to arguments for a process of affirmative action in university admissions whereby lower admissions offers are made for state school students than for those from the independent sector (but see Smithers 2003, The Guardian 2003). This evidence is also congruent with the hypothesis that independent schools give an 'artificial' short term boost to A-level performance which is not sustained at university - a finding that is worthy of further future consideration. In addition, as Naylor and Smith (2004) argue, the finding that a selective education may have a limited effect on eventual degree success might suggest a similar relationship for those who come from a more 'privileged' family background. They argue that a student with BBB at A-level from a

professional occupational background could have less potential for successful attainment at degree level than an equivalent student from a routine occupational background who perhaps had a less privileged academic upbringing. As with those from state schools, the student from the routine occupational background would then perform at a higher level at university than their peer with similar A-level grades but from a professional occupational background. There is only limited empirical evidence to support this hypothesis however and as Naylor and Smith (2004:439) report ‘academic performance at university is better the more “advantaged” is the student’s home background’.

So in general, previous work suggests that for equivalent students there are differences in degree performance that are associated with characteristics such as ethnicity, age, gender, occupational background, pre-university educational attainment and degree subject. In the present study these differences are reconsidered for successive cohorts of students from one ‘elite’ university. Data analysis extends over nine years and provides unparalleled detail of the characteristics and academic outcomes of tens of thousands of undergraduate students.

Research approach

As described above, a key aim of this paper is to examine the determinants of degree success. It considers the relationship between the social, geographical, and academic characteristics of entrants and their academic outcomes at the end of university. The data used in this analysis are drawn from individual student administrative records that were collected by one large, British university. Data were available for the whole of the university student population but for the purpose of this paper were restricted to full-time, home-domiciled undergraduate students who entered the university between 1998 and 2006. This corresponds to the majority of students graduating between 2001 and 2009. There were two reasons for selecting this group for the study. First there are relatively few part-time students at this university and secondly by considering only UK domiciled entrants it focuses on a group who will have shared a reasonably common pre-university educational experience.

The final population comprised between 3,000 and 4,000 students in each cohort, giving a total of 38,236 students. Despite providing a rich source of high quality contextual data, as with all secondary (and particularly administrative) data sets, information was not available on all the variables that could plausibly be related to academic outcomes. For example, the

data can tell us nothing about the many unobserved or unrecorded factors or events that will have occurred in these students' lives, as well as their levels of motivation and interest in their subject or the quality of teaching on their course (see for example Mellanby *et al.* 2013).

In addition to summative data on a student's degree performance, the data used in this study provides a wealth of information on each individual. The variables used in the analyses can be grouped into the following categories:

Birth characteristics: These variables include all those characteristics respondents could be considered to have from birth, including: sex; ethnic group; parental occupational class and age. Categorising student data in this way is not without difficulty, however. The large number of ethnic group categories can result in small cell sizes when the data are analysed, for example. The distribution of students' ages reflected the structure of common post-compulsory educational trajectories but also included substantial numbers of 'mature' entrants. Additionally, allocating HE students to an occupational group that depends on their family circumstances can be particularly problematic, especially for older entrants (Gorard 2008, Harrison and Hatt 2009). With this in mind, data preparation and analysis was informed by theoretical, practical and statistical considerations and a number of adjustments were made to the variables:

Ethnic group: This was self-declared by the applicant and coded into 10 categories as specified by the University Central Admissions Authority (UCAS). In order to aid comparison students were grouped as either being from the majority ethnic group (i.e. White) or from a minority ethnic group. The limitations of this approach are recognised and an analysis of patterns for the largest minority ethnic groups was also undertaken, however due to lack of space they are not included in this paper.

Occupational class: Data on occupational class were collected in four categories based on the SOC 2000 scale. For the purpose of multivariate analysis these were collapsed into two groups: Higher/Lower Professional and Intermediate/Routine occupations. This categorisation has been used in many previous analyses of class differences in higher education participation.

Age: Two categories were used: students aged 17-20 years on entry and those aged 21+. This division reflects the distinction between students entering HE shortly after leaving school or college and those ‘mature’ entrants who participate later in life.

Geographical characteristics

Geographical characteristics of the student population are important to consider when investigating participation and outcomes in HE. This is particularly relevant in terms of an institution having a representative mix of students from the local area and is a key element of this university’s fair access agreement (Office for Fair Access 2014). The data used in this analysis are derived from the students’ home postcode at the time they made their original application to the university. They enable the distance from each student’s home address to the university campus to be calculated, in turn allowing them to be categorised as ‘local’ to the university (notionally residing less than 20 km from campus) or ‘non local’ (residing at a distance of greater than 20km from campus). By combining this postcode data with HEFCE Participation of Local Areas (POLAR) maps it was also possible to classify students according to rates post-compulsory educational participation in their area of residence. Two of the POLAR indicators of participation were used in the analyses: the young participation rate; and the adult Higher Education engagement rate. The POLAR area classifications are presented as five ordered quintile groups (HEFCE 2013).

Academic characteristics

These include the previous educational establishment that the student attended (four categories of data) and entry qualifications (in terms of A-level grades). Students were separated into two groups according to their entry qualifications: those who entered with grades ABB or above and those whose grades were below ABB. ABB+ was chosen to differentiate students with the highest entry grades because at the time of writing it is the level the government adopts as part of its ‘high grades’ policy that allows universities and colleges to recruit unlimited numbers of students with the highest grades (HEFCE 2013).

Academic outcomes

The academic outcome variable used in the multivariate analysis was dichotomous, with students divided into those who graduated with 2(i) or 1st class degree and those who received a 2(ii) or below³. Across the cohort, 66% of students fell into the 2:1/1st category with 34% graduating with a 2:2, 3rd or fail, a distribution of grades that reflects the pattern

nationally (HESA 2014). The reason for collapsing the data in this way is because of the premium that appears to be attached to a 2(i) or 1st class degree in today's graduate labour market. For example, research by the Association of Graduate Recruiters suggests that over three quarters of graduate employers will only interview candidates with a 2(i) degree or higher (BBC 2010). Similarly those who graduate with 2(ii) or below might also see many opportunities for postgraduate study closed to them: entry for many initial teacher training courses, particularly those who train for the primary sector, require at least a 2(i) degree. Thus the 'life chances available to a student with a 2(i) and a student with a 2(ii) are very different indeed' (Seaton 2011) and it is pertinent that potential determinants of success that lie outside the influence of the university itself (in terms of background, geographical and academic characteristics) are subject to greater scrutiny.

Analysis

Patterns in the data were first explored using univariate and bivariate techniques. These are described before the results of the multivariate analyses are presented. Logistic regression analysis was used to identify the social, economic and educational characteristics most strongly associated with achieving a 2:1 degree or higher at the end of university. A number of different models were run and variables were retained in the models based on theoretical assumptions derived from the literature and the extent to which they contributed to the explanatory power of the model. At all times the aim was to balance the explanatory power of the model with parsimony and the need to control for theoretically important independent variables. As the data used in this model represent the entire population of home domiciled undergraduate students at this university, no sampling was necessary and therefore it would not be appropriate to use inferential statistics to draw probability based conclusions about levels of statistical significance (e.g. Gorard 2003, White 2014).

Variables were entered into the models in a series of 'blocks'. These blocks correspond to the chronological order in which they occurred in a students' life in an attempt to differentiate between the relative explanatory power of the different groups of variables. Only variables that improved the predictive power of the model were retained at this stage. The first block contained information relating to the social and economic backgrounds of students and included variables relating to: sex, age, occupational class and ethnicity. These variables were all dichotomous. Students were divided according to whether they were: male or female;

‘traditional age’ or ‘mature’ entrants; from a professional or other occupational background; and whether they identified themselves as ‘white’ or as a member of a minority ethnic group. The second block features geographical characteristics while the third included information relating to students’ education before entering higher education. Students were grouped according to whether they had attended a fee-paying or state-funded school or college (including comprehensive and grammar schools as well as FE colleges) when they applied to the university and whether they had achieved grades of AAB or above in their A-levels. Block four contained interaction terms for a number of key variables. For reasons of space discussion is limited to patterns across all subjects (an analysis of differences between subjects is presented elsewhere (Smith and White , 2014)).

Results

The resulting multivariate models are discussed later in the paper. Before examining these in detail, the results of exploratory univariate and bivariate analyses are described directly below.

The characteristics of home domiciled undergraduate students

Before considering the characteristics of students who attend this university, it is worth examining the national context for the same period. Selected background characteristics for all home-domiciled undergraduate entrants to all UK universities between 1998 and 2006 are shown in Figure 2. National patterns of participation in terms of students’ age, ethnic group and occupational background remain relatively unchanged over the period. In comparison with the national profile, the university considered here recruited fewer students aged 21 and over (around 10% compared with 16% nationally) and more students from higher professional occupational backgrounds (around 24% compared with 18% nationally) (see Table 1 for institutional data).

Figure 2: Higher Education undergraduate entrants by age, class and ethnicity, all institutions 1998-2006.

Source: Smith (2010)

Looking at recruitment trends within the university from 1998 to 2006, there has been a slight increase in the proportion of female entrants, from 53% to 60%, as well as those from higher professional occupational groups, which have increased from 21% to 26% (Table 1). Despite a reduction in the proportion of entrants from independent schools over the same period, the university still recruited a disproportionate number of students from this sector. In 1998 26% of entrants were privately educated and by 2006 this had fallen to 20%. This is approximately three times the national level of 7% to 8% of undergraduate students coming from the fee paying sector (UCAS 2013).

In terms of geographical characteristics, there has been a slight increase in the proportion of ‘local’ entrants (here defined as living within 20km of campus), with this group comprising a quarter of all entrants in 2006. Recruitment from areas with low levels of participation in post compulsory education and where few adults hold HE qualifications continues to be lower than the national average. This analysis indicates that not only have the demographics of the university shown little variation over the last decade, but that entrants are disproportionately from groups that are over-represented in Higher Education in the UK. Over the nine years studied there has been little progress in terms of widening participation at this institution, indeed not only does the university appear to mirror national patterns in terms of changing rates of participation among under-represented groups (e.g. Smith and Gorard 2011), it appears to represent an exaggerated ‘elite’ version of them.

Table 1: Characteristics of university population, 1998-2006 entrants, selected variables

	1998	1999	2000	2001	2002	2003	2004	2005	2006
Total (N)	3880	3951	4166	4685	5014	4721	4622	4073	3124
Female (%)	53	53	55	57	55	56	56	57	60
White (%)	81	73	69*	74	75	75	75	78	78
Indian (%)									
Age 21+ (%)	8	9	11	12	10	9	9	9	8
NS-SEC (gp.1, higher professional)	21	20	20	19	22	27	26	27	26
NS-SEC (gp.4, routine)	6	6	7	8	14	15	15	14	15
Independent school (%)	26	25	25	23	21	19	21	22	20
ABB+ at A-level (%)	47	39	42	40	42	45	47	49	50
Non A-level entrant (%)	18	20	13	13	11	8	8	8	11
Local resident (%)	20	23	24	26	25	27	26	23	25
Participation lowest quintile (%)	7	7	7	7	8	7	7	7	8
HE qualification lowest quintile (%)	9	10	10	11	12	11	10	10	11
Graduate with 1 st or 2(i) (%)	69	66	64	65	65	65	63	70	68

*variation here can be explained by large amount of missing data (16%) for this year

The determinants of degree performance

This section presents the findings from the multivariate analysis in two parts. First it considers the relationship between prior attainment (here A-level success) and student characteristics. Secondly a fuller model is then developed that explores the relationship between degree outcome and a number of key explanatory variables (including prior attainment), as well as accounting for any interactions between theoretically important variables.

The relationship between prior attainment and student characteristics

As outlined above, prior attainment is one of the key determinants of academic success at university. This is unsurprising as it might be expected that students who were academically successful at school or college would also be successful at university. However, research has also shown that measures of prior attainment, such as the A-level, are not socially neutral; ABB+ students are likely to be different to lower attaining students in their social characteristics as well as their academic ability. Indeed, this is a key problem with using prior attainment data to predict future academic success because academic attainment can be socially stratified: girls often outperform boys in certain subject areas and students who are

eligible for free school meals perform at the lowest levels on aggregate measure throughout compulsory schooling.

In this first model in order to examine the interaction between prior attainment and student background characteristics, a binary logistic regression model was run with A-level grades as the dependent (or outcome) variable. Students were allocated to one of two groups: those who achieved ABB+ and those who achieved lower A-level grades. Table 2 shows the fit of the model and provides the odds ratios for students with different educational characteristics achieving grades ABB or higher at A-level for each of the nine cohorts. A number of points are worth noting. First of all students who were educated in the state sector were less likely to achieve ABB+ than those from the independent sector (odds ratios are less than 1); so students entering the university with the highest grades were already likely to be different from other students because they were more likely to have been educated privately. A second feature is that female students were more likely to have higher entry grades (for some years they were almost twice as likely as males) and there is a similar, although less pronounced, pattern for non-local students. Interestingly there appears to be little difference in the likelihood of achieving ABB+ for students from different professional occupational backgrounds. However this model is relatively weak in terms of its explanatory power and given that none of the models explain more than a minority of the variation in degree outcomes, it is important not to place too much weight on the absolute size of the odds ratios associated with individual characteristics. In general the model suggests that being female, not local and privately educated are associated with a somewhat enhanced likelihood of attaining ABB+ at A-level. Indeed this analysis offers support to previous work that has suggested that the academic outcomes from schooling are socially stratified, although interestingly differences according to parental occupational group and membership of the ethnic majority group do not appear to be very pronounced at this stage.

Table 2: Odds ratios for logistic regression model prior attainment at A-level, all cohorts

	1998	1999	2000	2001	2002	2003	2004	2005	2006	All years
Female	1.43	1.28	1.44	1.55	1.83	1.76	1.61	1.66	1.79	1.60
White	0.91	1.11	0.80	1.10	1.13	1.03	0.95	1.22	1.23	1.04
Professional occupational group	1.37	1.34	1.27	1.11	1.22	1.20	1.28	1.05	1.15	1.20
Not local	1.23	1.14	1.18	1.41	1.22	1.24	1.40	1.77	1.59	1.34
State educated	0.78	0.68	0.75	0.74	0.61	0.78	0.61	0.70	0.75	0.71

% predicted correctly (before model)	52.1	60.5	56.7	58.9	56.5	53.8	51.5	51.1	51.2	54.3
% predicted correctly (with model)	56.3	60.0	56.9	59.1	59.7	58.2	58.3	58.4	59.3	57.6
Unexplained variation explained (%)	8.8	1.2	0.5	0.5	7.4	9.5	14.0	14.9	16.6	7.2
Nagelkerke pseudo R ²	0.026	0.025	0.023	0.031	0.051	0.037	0.047	0.050	0.050	0.035
Sample N	2783	2560	2776	3496	3426	3273	3609	2995	2296	27214

The relationship between student characteristics and degree outcome

This section presents the findings for the multivariate model that considers the relationship between all the explanatory variables (including prior A-level attainment) and degree outcome. Adding prior attainment to the model now lets us consider the impact of student characteristics on HE attainment while taking prior attainment into account. In order to gauge the effect of these different variables on the final model, variables were entered in four blocks (birth, geographic and academic characteristics, followed by interaction terms in model 4, see Table 3). Data is presented for the entire cohort (outputs for each individual cohort are presented in the Appendix).

By far the strongest determinant of degree success is, unsurprisingly, A-level grades on entry. Being educated in the state sector, coming from a professional family, being white, female and coming more than 20km from the university are all associated with better degree performance. Students who were white appear to be twice as likely to graduate with a 2(i) or First than non-white students (odds ratio = 2.03), although this effect appears to diminish once geographic and academic characteristics are taken into account in Models 2 and 3. For students from professional backgrounds the odds ratios are close to 1, suggesting little difference in the chances of students from professional and non-professional backgrounds graduating with a 'good' degree. For those from state schools, odds ratios are around 1.2, showing a slight advantage over those from independent schools. Note how this is different to the odds ratios for school sector when A-level scores are the outcome variable. Students from the independent sector were more likely to achieve the highest grades at A-level but with regard to outcomes at the end of university, the advantage appears to lie with students who had been educated in the state sector. Finally and perhaps unsurprisingly, students who entered the university with grades ABB or higher, were 3.7 times more likely to graduate with a 'good' degree (when other characteristics are taken into account) than those with lower entry grades. Including interaction terms is useful in helping to see whether the impact of school type, for example, is moderated by students' A-level scores. The coefficients for the

interaction variables, as presented in Model 4, were very close to 1 and suggest little difference in the odds ratios between the two groups.

Finally, the pseudo R^2 provides an indication of the amount of variance in degree outcome that can be accounted for by this model. At around 17% for model 3, this number is relatively small and this does add further weight to the argument that background characteristics play a reduced role in mediating the effects of academic attainment at university, especially when compared with analysis of similar variables undertaken at the level of compulsory education (e.g. Smith, 2003).

Table 3: Odds ratios for logistic regression model of degree outcome, all cohorts

	Model 1	Model 2	Model 3	Model 4
Birth characteristics				
Female	1.91	1.92	1.77	1.80
Professional group	1.26	1.19	1.13	1.13
White	2.12	1.92	1.76	1.74
Geographical characteristics				
Non local		1.53	1.41	1.41
Academic characteristics				
State educated			1.21	1.22
ABB+ at A-level			3.70	3.76
Interaction effects				
Gender/A-level score				0.96
School type/A-level score				0.97
Occupational group/A-level score				0.99
Ethnic group/A-level score				1.04
Percentage of cases predicted correctly (base model 67.6%)	68.2	68.0	70.2	70.2
% unexplained variation explained by model	1.85	1.23	8.02	8.02
Nagelkerke Pseudo R^2	0.061	0.069	0.163	0.163
N	27092	26862	23793	23793

Discussion

The title of this paper references an important work in the sociology of education: Basil Bernstein's renowned piece 'Education cannot compensate for society' (1970). In this paper Bernstein draws attention to the complex social, cultural and economic factors that influence

education outcomes and question how they might be overcome by the school system. As Gorard, in a paper echoing Bernstein's title, also argues: 'to a very large extent then, schools simply reflect the local population in their intakes, while being relatively ineffective in addressing the stratification of attainment that results' (2010:59). In the current paper we continue this consideration of the relationship between an individual's background and their academic attainment by focusing on achievement in Higher Education. The premise for the paper is as follows. It is well established that academic success is socially stratified and that educational inequalities persist across the life course. However once students have met threshold academic levels and gained admittance to HE, the effect of social characteristics on academic attainment might arguably be limited, as students will now share a common educational experience. With that in mind, this paper has examined the role that background characteristics play in determining eventual academic success for students who enter HE with roughly similar entry grades. The data used in the analysis were drawn from individual student administrative records that were collected by one British university. They span the period 1998 to 2009 and correspond to a time of significant change in UK Higher Education: from policies aimed at widening access, to the introduction of tuition fees. The scale of the data has enabled participation in terms of the characteristics of applicants to be tracked over time and the determinants of academic success to be modeled.

Recent research suggests that two things have happened to university participation in the UK over the period examined in this paper. First the numbers of people entering HE from under-represented groups have increased and applicants who have the required grades have usually been able to secure a place (Gorard *et al* 2007). However, on the other hand, recent research suggests that many students from these previously under-represented groups are less likely to study the most prestigious subjects at the elite universities (e.g. Furlong and Cartmel 2009, Mangan *et al.*, 2010, Guardian 2011). This horizontal stratification of Higher Education can be seen in the data for the institution considered here. Over the decade long period of analysis, the characteristics of students who enter this university have varied only slightly and intake is still largely skewed in favour of traditional entrants: namely those from professional occupational backgrounds, the privately educated and those of traditional age. However, the extent to which these same groups of students are successful at the end of their undergraduate careers is less certain. This is particularly noticeable in a weakening of the relationship between school sector and academic outcomes from A-level to university. We note, in

common with Ogg *et al* (2009), that being privately educated does not appear to confer an advantage, in terms of degree success, when compared with those who were state educated.

Indeed, when looking at prior attainment, the influence of background variables as determinants of degree success appear to be less strong in Higher Education, as exemplified by this institution, than they do during the compulsory phase. While it is certainly the case that pre-university attainment is not socially neutral (for example, students from the independent sector arrived at the university with the highest A-level grades) when prior attainment is taken into account there appears to be a weaker relationship between student background and likelihood of graduating from this institution with a 2nd or 1st. In addition, not only does the relationship between academic attainment and school sector lessen at university, the same is true for the outcomes of students from professional occupational backgrounds. However the models produced in this analysis are relatively weak in terms of their predictive power, suggesting that most of the variation in degree outcome might be attributed to non-standard variables of socio-economic status (i.e. variables other than parental occupational class) as well as variables that are not related to academic attainment (such as those related to engagement and motivation).

In short this paper has contributed to the literature on inequalities and participation in post compulsory education by suggesting that while social, economic and cultural factors are strongly associated with academic success during the compulsory phase; their influence might be less strong for students at this university. While the results can only relate to a single institution it is reasonable to assume that they would also be relevant to similar types of 'elite' UK institutions. A number of key findings emerge, first, that the relationship between occupational background and degree outcome appears to be relatively weak. Secondly it provides no evidence that students from independent schools outperform those from the state sector, even when prior attainment is accounted for. And finally the model presented here accounts for relatively little of the variance in degree outcome at this university, suggesting that birth, geographical and academic characteristics may play a smaller role in determining degree outcomes than they during the earlier stages of education. Indeed the results of this analysis suggest that once students have overcome barriers to gain admission to this institution then it is their entry grades and not their social characteristics that appear to most strongly influence eventual degree success; although even prior attainment is not a strong predictor of future academic success at this university.

Two possible implications from this research come to mind. First that the variables researchers use to measure inequality during the earlier phases of education may be inadequate for explaining patterns in Higher Education and alternative measures might need to be sought. As the findings presented here show, standard measures of inequality, such as age and occupational background, appear to be of limited use when it comes to explaining variation in degree outcomes at this institution. The availability of such data through institutional and national administrative datasets means that this is a fruitful area for analysis. However there are limitations in terms of the breadth and scope of the data that is available and further large scale research that gathers data on other potential determinants of academic success in Higher Education would be worthwhile.

Secondly, to return to the title of the paper and the extent to which Higher Education might be able to ‘compensate’ for inequalities that persist during compulsory education. If standard measures of social inequality *are* useful in explaining academic outcomes at university then we might argue that Bernstein’s contention is incorrect and that Higher Education may be able to compensate for some of the educational inequalities that persist at the earlier phases, notably attendance at a fee paying school and family occupational background. However that the characteristics of entrants to this institution have hardly varied over the period considered is of course, a concern. So what does this mean for university admissions? One response might be to call for a programme of affirmative action that removes pre-university qualifications as the discriminating factor in determining access to university. This would then open up university access to a wider range of applicants. As Walford (2004) argues, the possession of qualifications are too often seen as an end in themselves or as a screening process to ‘thin’ the applicant field whereby potentially very able students might be overlooked. In this way the democratic nature of the universities as espoused by RH Tawney far back in 1914 would still be relevant today:

There ought to be a system of higher education which aims at... universal provision, which is accessible to all who care to use it, and which is maintained not in order to enable intellect to climb from one position to another, but to enable all to develop the faculties which, because they are the attributes of man, are not the attributes of any particular class or profession of man (Tawney 1964:73)

Appendix

Fit of logistic regression model, likelihood of graduating with 2(i) or 1st (full model), successive cohorts.

	1998	1999	2000	2001	2002	2003	2004	2005	2006
Birth characteristics									
Female	1.90	2.33	2.11	1.52	1.55	1.71	1.75	1.44	2.05
White	1.77	1.79	1.74	1.82	1.76	1.69	1.80	1.62	1.82
Professional occupational group	1.27	1.14	1.09	1.29	1.22	1.18	1.00	0.88	1.09
Geographical characteristics									
Not local to university	1.28	1.37	1.34	1.41	1.54	1.23	1.35	1.61	1.67
Academic characteristics									
State school educated	1.16	1.36	0.98	1.34	1.22	1.02	1.40	1.07	1.43
ABB+ at A-level	3.67	3.95	3.40	3.28	3.83	3.66	3.69	4.06	4.00
% predicted correctly (before model)	69.8	65.8	66.0	68.3	66.3	66.8	66.7	73.0	70.5
% predicted correctly (with birth characteristics)	70.0	66.9	66.7	69.5	67.2	66.8	67.0	73.0	70.9
Unexplained variation explained (with birth characteristics) (%)	0.7	3.2	2.1	3.8	2.7	0	0.9	0	1.4
% predicted correctly (with geographical characteristics)	70.2	67.0	66.7	68.8	67.3	66.8	67.0	72.8	70.8
Unexplained variation explained (with geographical characteristics) (%)	0.7	0.3	0	-	0.3	0	0	-	-
% predicted correctly (with academic characteristics)	71.6	69.5	68.6	70.3	68.9	68.9	69.7	73.7	73.4
Unexplained variation explained (with academic characteristics) (%)	4.7	7.6	5.7	4.8	4.9	6.3	8.2	3.3	8.9
Sample N	2465	2200	2380	2977	2941	2825	3149	2769	2087
Nagelkerke pseudo-R ² (birth)	0.064	0.074	0.067	0.052	0.062	0.058	0.054	0.033	0.076
Nagelkerke pseudo-R ² (geographic)	0.067	0.078	0.072	0.058	0.072	0.062	0.059	0.048	0.089
Nagelkerke pseudo-R ² (academic)	0.165	0.178	0.157	0.137	0.171	0.159	0.162	0.161	0.199

Notes

¹ The term ‘elite universities’ is used as shorthand for research-intensive universities who generally (although not exclusively) require the highest entry grades. They tend to comprise those institutions that attained university status prior to the 1992 Higher and Further Education Act. The Russell group comprises 24 of these institutions.

² For the purpose of this paper, a ‘good’ degree is defined as a 2(i) classification or higher.

³ Most universities in the UK use a five point classification for the awarding of undergraduate degrees

Table: British undergraduate degree classifications and USA GPA equivalents

British degree classification	Marks achieved (%)	Percentage of awards nationally (2009/10)*	USA Grade Point Average equivalent
First	70+	15	A (4.00)
Upper Second	60-69	51	A-/B+ (3.33-3.67)
Lower Second	50-59	28	B (3.00)
Third	40-49	6	C+ (2.30)
Ordinary Pass	35-39	-	C(2.00)

Source: Fulbright Commission

*Source: HESA (2013). Please note figures are for full-time home domiciled undergraduate students, HESA do not disaggregate awards at Third/Pass

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