ACCESS TO HIGHER EDUCATION AFTER THE FIRST DEGREE

DO BACKGROUND EFFECTS CONTINUE TO DECLINE?

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Abstract

The effects of background characteristics – notably socio-economic background - have tended to exhibit certain empirical regularities: they are persistent across time, educational level and national context; and they decline with successive educational transitions. This paper investigates whether this holds true for transition into postgraduate study, an area which has experienced phenomenal growth in recent years but has been little researched. Using the UK as a test case, three different large-scale datasets about transition to postgraduate study are investigated. Results indicate that the effect of socio-economic background disappears in immediate transitions to postgraduate study, but that it revives somewhat in later transitions (which are the most common routes taken). The implications of these findings for theory and policy are discussed.

1 Introduction

For some time, social scientists have demonstrated a robust relationship between individuals' backgrounds, particularly in terms of social class or socio-economic status, and their educational outcomes. Those from disadvantaged homes typically are less likely to attain educational qualifications, less likely to attain high grades in such qualifications and less likely to make successive educational transitions than their peers who do not suffer socio-economic disadvantage (Breen, 2005; Heath *et al*, 1992; Shavit and Blossfeld, 1993). To take the UK as an example, there are around sixty years' worth of research studies showing this continued relationship. Whilst those from disadvantaged backgrounds have made some progress in absolute terms, they continue to experience a stubborn relative inequality in relation to those without socio-economic disadvantage. These patterns have been shown to be persistent not only across time, but also place. Studies across the western world have found remarkably similar patterns of educational inequality. Whilst there are undoubtedly variations according to national idiosyncrasies and the level of inequality varies within a defined range from country to country, overall effects are broadly consistent.[2] This phenomenon has been labelled *persistent inequality* by sociologists (Pfeffer, 2008; Shavit and Blossfeld, 1993). Since education is increasingly the means for entry to secure and well-paid employment and other lifechances, inequalities in educational attainment have profound consequences for the achievement of a socially just society, nationally and internationally.

Alongside educational inequality on the grounds of socio-economic background, educational expansion is also ubiquitous. Almost all countries have experienced an expansion in enrolments in successive levels of education, a process which shows no signs of abating and which has also had profound consequences for society (Baker, 2009). As educational provision has expanded, educational inequalities have been carried along: in other words, expansion of provision is not a panacea for inequalities of access (Shavit *et al*, 2007). Sociologists have identified trends of *credential inflation*, whereby the value of higher levels of educational attainment is devalued by their ubiquity (Collins, 1979); and *maximally maintained inequality*, which denotes the tendency for inequalities to 'pass up' to the next educational level once access to the preceding level begins to increase towards universality (Raftery and Hout, 1993).[3]

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[2] One or two countries are sometimes held to be exempt from the general trend (usually Sweden, although sometimes the Netherlands) although this interpretation is contested (Erikson and Jonsson, 1996).

[3] A further trend identified is *effectively maintained inequality* (Lucas, 2001), whereby horizontal stratification is introduced to a level as a means of sustaining unequal value of qualifications. An example would be the differences in status between different kinds of post-compulsory qualifications (academic,

There is, however, a paradox here: a further process consistently identified in educational attainment and access for different groups is the tendency for *background effects to decline* (Hansen, 1997; Mare, 1980). That is, at each successive educational transition background effects reduce in strength. So inequalities in attainment by socio-economic background are strongest in earliest transitions (for instance in selection into school tracks in Germany or the Netherlands) and weakest with transition into higher education.[4] As an example, a recent study of transition to higher education in England was able to use a comprehensive dataset of *all* state-school pupils and their subsequent educational progress. This showed that there were clear inequalities in entry to higher education by those from different socio-economic backgrounds, but crucially, controlling for academic factors such as post-16 attainment reduced the level of inequality which could be attributed directly to background effects to around 1 – 2% (Chowdry *et al*, 2008).[5] Since typically each successive educational transition is conditional on the previous one, it is perhaps not surprising that this trend is observed. In technical terms, we can say that the unobserved heterogeneity in educational transitions reduces with each transition; that is, students who remain in education are increasingly alike in their characteristics, regardless of background. We intuitively recognise that PhD students, for example, can have more in common with each other than with people who may otherwise match them in terms of age, sex, social class, ethnicity (and one might add, nationality) and so on.

An important theoretical and empirical question therefore is: do background effects continue to reduce until they reach zero? Extrapolating the trends observed at earlier levels would suggest that at the very highest levels of education (graduate school, postgraduate study, second and third degrees etc), background effects would be very small and practically irrelevant. In more practical policy-related terms, such a finding would suggest that universities themselves need pay little attention to questions of

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vocational etc) or between the value of credentials from different kinds of higher education institution (research university, teaching university, technical college etc).

[4] Accepting this position means also accepting that what is measured by educational tests and qualifications is a legitimate proxy for ability and that ability itself is a neutral concept. There is another literature entirely which covers the effect of so-called cultural capital or other markers of advantage on attainment (which Boudon (1974) refers to as *primary effects*).

[5] A possible weakness in this study was the use of a proxy for household income as an indicator of socio-economic background. Pupils in England with a household income below a certain threshold are entitled to a free meal at school and this entitlement is recorded on the National Pupil Database. However there are questions about the accuracy of this measure even as a proxy for household income (Hobbs and Vignoles, 2010), which in itself is not necessarily an accurate indicator of socio-economic background or social class.

socio-economic inequality and instead focus on imposing strict meritocracy.[6] It would also justify the increasing role envisaged for higher education as a motor for social mobility, as explicitly suggested in some governments' higher education policies.

Access to postgraduate study therefore represents an interesting test case for understanding the continued influence or not of background effects. If background effects are largely absent (net of other factors), this will confirm previous findings; if apparent or re-emergent, this will have altogether different implications. A third possibility is that class inequalities might actually *reverse* at postgraduate level. Interestingly, despite massive and rapid growth in education after the first degree, there is surprising little research on access to such qualifications; indeed this huge growth itself seems to have gone unnoticed, a quiet revolution within another quiet revolution (Baker, 2009). In this paper I will investigate evidence for continued background effects at postgraduate level in the few existing studies which address the issue, before going on to examine such inequalities in detail in the British case. First however I will briefly outline the nature and growth of postgraduate study internationally.

2 The nature and growth of postgraduate study

By the term 'postgraduate', I am referring to education which is higher in level than a first degree and which typically requires entrants to hold a first degree on commencement. This is what would be referred to as 'graduate school' in North America, as postgraduate study in the UK and as second or third cycle (masters or doctorate) study under the Bologna system. Pre-Bologna, this terminology makes less sense for some European systems where there was a close relationship between the first and second cycles of study (e.g. between *diplomatura* and *licenciatura* in Spain or *licence* and *maitrise* in France) or where the equivalent of the first two cycles was a single integrated qualification (as with Germany, Sweden and Switzerland).[7] Whilst there are broad similarities in terminology across Anglophone systems (and including African higher education), there remains some diversity in cycles even within the Bologna process. However broadly speaking, there is at least a basic level of comparability between different systems of postgraduate study.

[6] The findings regarding access to higher education and background effects reported above would tend to vindicate the opinion often expressed by university leaders that the problem lies with the schools rather than with universities' own admissions or selection practices. However much qualitative research would suggest that this is not necessarily the case (see for instance Reay *et al*, 2005; Steven, 2007; and also Zimdars, 2010).

[7] The difficulty in establishing an exact equivalence for second cycle/masters internationally is reflected in the ISCED categorisation of qualifications, where there is no separate level for masters-level qualifications.

A short numerical review of postgraduate study during the past two to three decades unveils a story of rapid and continued growth. The UK has perhaps seen the very strongest growth at this level, although it is difficult to make precise comparisons for the reasons mentioned above. In the period 1990 – 2006, UK postgraduate enrolments increased by more than 400% (Wakeling, 2009). Some, but by no means the majority of this growth was accounted for by international students (although that is itself evidence of the growing international importance of postgraduate education). Australia also saw staggering levels of expansion, with a 300% increase between 1988 and 2007. In the USA, where postgraduate study has a longer pedigree and tertiary enrolment rates have historically been high, the system grew by about two-thirds between 1976 and 2006. Doctoral enrolments have expanded everywhere, increasing by two thirds in France, for example, between 1985 and 2007. Despite massification of initial entry to higher education, postgraduate enrolment rates have typically grown faster (European Commission, 2007).

This momentous increase in postgraduate numbers has, somewhat surprisingly, not been matched by the volume of research on postgraduate study. Perhaps this is due to the larger absolute numbers of first degree students, which may have focussed researchers' attention on that level; but perhaps it is based on an (untested) assumption that entry to first cycle study is the last meaningful barrier when it comes to educational transitions.

Studies in France (Albouy and Wanecq, 2003; Euriat and Thélot, 1995; MEN and MESR, 2008; Merle, 1996), Germany (Bornmann and Enders, 2004), Finland (Silvennoinen and Laiho, 1994) and Australia (James *et al*, 2008) have all shown that doctoral students are less likely to be from a working class background than first degree holders, although these studies did not investigate whether these differences could be explained by differential attainment or other 'legitimate' factors. In contrast, in his seminal study of educational transitions, Mare (1980) found that background effects were no longer important in access to postgraduate study in the USA. This finding was confirmed by Stolzenberg (1994), but later research found the emergence of socio-economic inequalities in entry to doctorates and 'first professional' postgraduate study (Mullen *et al*, 2003; Zhang, 2005). English research showed little social class effect in *immediate* transition to postgraduate study (HEFCE, 2005). Mastekaasa (2006), basing his study on all Norwegian graduates over several years, used parental education as an indicator of socio-economic background. He showed there was some effect on transition from a first degree to doctoral study, but it was not particularly strong.

Clearly then, there is not a consistent pattern emerging from the few studies which have been undertaken across the world on access to postgraduate study. Some report

continued effects of socio-economic background on the transition to postgraduate education, others do not. In order better to understand this process, I investigated transitions to postgraduate study using three different datasets about postgraduate students in the UK. These provide three different views of the transition process at different stages in order to give a more longitudinal picture. Entry to postgraduate qualifications in the UK is not a one-off opportunity available only at the point of completing the first degree, but rather is open to graduates at a later point, sometimes more than twenty years after first graduation. Indeed it would seem that delayed entry to postgraduate study is the norm rather than an exception. I now turn to a description of the study undertaken and datasets used.

3 Data and methods

The study comprised three datasets covering three different, although in some cases slightly overlapping populations. Using these different datasets it is possible to obtain views of the process of transition to postgraduate study at three different points post-first degree. Inevitably these datasets give a somewhat partial view of the process in general, being sample surveys of varying size and relating to particular points in time, but by using the three datasets in concert it is possible to gain a more holistic view of entry to postgraduate study than has been obtained in many other studies.

The first dataset comprises all UK-domiciled first-degree graduates from state-funded UK higher education institutions for the academic years 2001/02 – 2004/05 inclusive ($N \approx$ 900,000). The data is sourced from the Higher Education Statistics Agency (HESA) Student Record. This is effectively an obligatory annual census of all students in publicly-funded higher education institutions in the UK. The dataset also includes details of the 'first destination' of the graduates, that is their activity approximately six months to one year following graduation. This includes employment, further study, unemployment, travelling and so on. The destinations data is taken from HESA's Destination of Leavers from Higher Education survey (DLHE), an annual survey of graduates which attempts 100% coverage.[8] With this data it is possible to compare the background characteristics of those making different transitions.

As noted above however, most of those who enrol in postgraduate study have not entered directly from a first degree. This *is* a common transition, but it is does not represent the path taken by the majority. Figure 1 shows this diagrammatically: only

[8] The DLHE survey typically attains around 85% response, meaning destination data is missing for some graduates. Data reported in this paper have been adjusted to account for nonresponse and missingness – full details are available in Wakeling (2009), Chapter 5.

43,000 (or 23%) of the 189,000 new postgraduates in 2004/05 had completed a first degree in 2003/04. There is a distinct possibility that later transitions to postgraduate study (i.e. those that are not contiguous with first-degree graduation) exhibit different patterns of background effect. The second dataset (the HESA DLHE Longitudinal Study) gives a slightly different view of postgraduate transitions, which will help to address this possible shortcoming of the first dataset. It comprises a re-survey of a small sample of 2002/03 graduates some three years after their graduation (n = 12,766) to ascertain their later (as opposed to first) destination. Data were weighted for nonresponse.

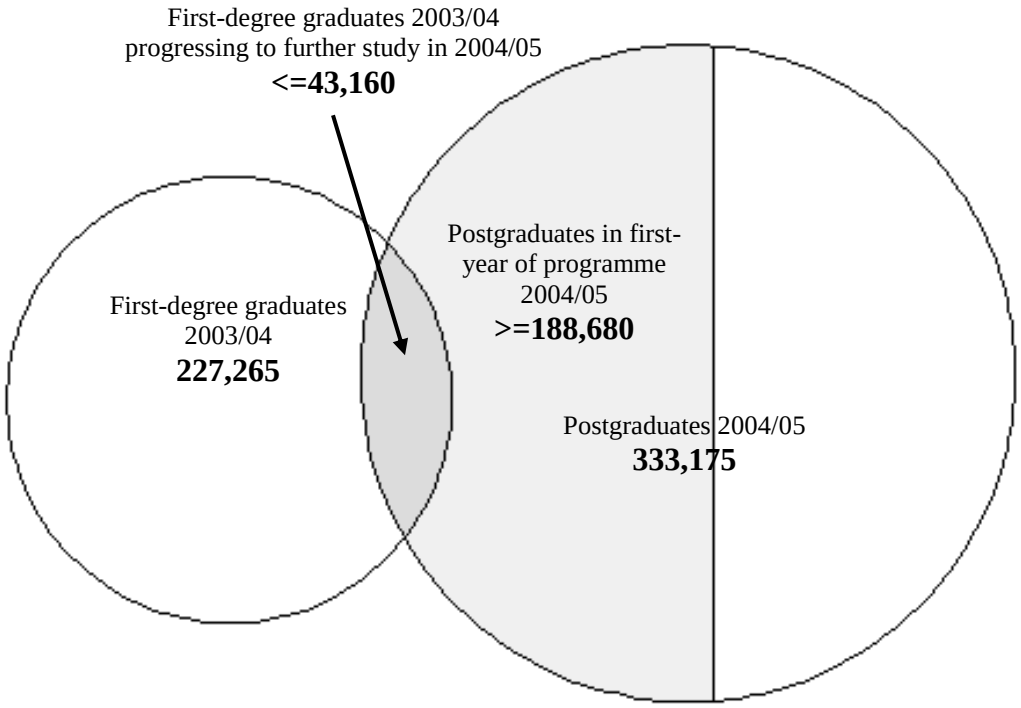

Figure 1: Venn diagram showing the overlap between first degree graduates 2003/04 and postgraduates 2004/5

Finally, the third dataset is an online survey I conducted during summer 2007 of enrolled postgraduates at nine English higher education institutions (n = 2,181; henceforth 'the online survey').[9] This aims to represent all postgraduates in the participating institutions. Although the selection of institutions is such that it is not possible to generalise with certainty from the results to all UK higher education

[9] Nonresponse was also an issue with this survey. See Wakeling (2009) Chapter 5 for a full discussion.

institutions, a variety of types of institution took part, taking in a range of locations across England. The respondents to the survey had entered at many different points post-graduation – the mean for doctoral students was five years' delay, but with quite a broad range (Wakeling and Kyriacou, 2010). This dataset gives a third angle on the background of postgraduates, covering some students who would not have been within the purview of the DLHE Longitudinal Study.

With the HESA datasets it was possible to specify logistic regression models in order to predict the likelihood that an individual graduate would enter or complete a postgraduate qualification, controlling for various academic and background factors. Since the online survey covered only enrolled postgraduates, it was not possible to fit a similar model; however the social class background (and other characteristics) of the sample can be compared to those found in the other datasets.

4 Results

For the DLHE dataset a multilevel model was fitted to predict the likelihood that a graduate would progress to postgraduate study as their first destination. Two different kinds of postgraduate study were included as dependent variables: progression to a taught higher degree (i.e. a masters degree in the British system) or to a higher degree by research (typically a doctorate).[10] A range of independent variables were included in the model.

Since students are taught within institutions, it is to be expected that students who are selected into an institution share certain unobserved characteristics prior to entry and certainly share certain conditions related to their studies. Indeed it has been shown elsewhere that there is a strong association between first degree institution and progression to postgraduate study in the UK (House, 2010; Wakeling, 2005). The nature of the dataset allows identification of graduates' first degree institution, which is included in the model as the level 2 unit, with *type* of institution as a level 2 variable. In the UK, as elsewhere, there is long-standing and growing stratification of institutions based on age, research profile, reputation and so on (Halsey, 1992; Leathwood, 2004; Shavit *et al*, 2007), with institutions forming 'mission groups' of similarly-profiled institutions. These groups correspond to empirical regularities in the distribution of students by attainment, social class, ethnicity and so on. To aid parsimony, a simplified categorisation of institution has been adopted. This divides the institutions into the Russell Group of the most selective (and typically most prestigious) universities; other

[10] It is possible to proceed from a first degree immediately to a doctorate in the UK, although this transition is increasingly less common, particularly outside the natural sciences.

universities which attained university status prior to 1992 (often called 'old' universities in the UK); universities which obtained their status in 1992 or afterwards (all of which were formerly polytechnics or higher education colleges); higher education colleges which teach a range of subjects; and specialist higher education colleges (something of a mixed group, comprising *inter alia*, medical schools, art and design institutions, performing arts colleges and so on).

Other independent variables included in the model are subject discipline of first degree; classification of the first degree; gender; and social class. Subject discipline is an important confounding factor in this analysis because there are substantially different rates of progression to postgraduate study across different areas of higher education (Wakeling, 2009). Whereas those graduating in Medicine and Dentistry invariably enter directly into medical practice, Law graduates in the UK very often enter directly onto a postgraduate legal practice course to complete their training as a lawyer. In some disciplines, notably Chemistry, there is a high rate of progression to a research degree (this being an established route into both academic research and industrial chemistry). Furthermore, previous research, particularly the work of Herman van de Werfhorst, has shown both the structured pattern of the distribution of students from different social class background across subject disciplines and the variation in outcomes for graduates along similar lines (Jackson *et al*, 2008; van de Werfhorst and Luijkx, 2010; Wakeling, 2005). If graduates from different socio-economic backgrounds are differently distributed across subject disciplines, different gross enrolment rates in postgraduate study may simply be an artefact of this selection into subject areas.

As noted earlier, educational transitions are strongly conditioned by attainment. British degrees are typically graded using a four or five point scale, with first, upper second, lower second and third class honours and sometimes a 'pass' grade (without honours). Entry to a research degree usually requires at least upper second class honours and many masters programmes have a similar requirement, especially for recent graduates. As social class is known to be associated with attainment, including at degree level (Smith and Naylor, 2001, 2005), it follows that unequal rates of progression to postgraduate study after a first degree could simply reflect differences in attainment (primary effects, in Boudon's terms). There is also a case for treating first degree institution as a (limited) proxy for attainment. The more prestigious institutions have stiffer entry requirements and a stronger performance in the UK's Research Assessment Exercise, suggesting that undergraduates in those institutions may be more academically-inclined, and therefore perhaps more amenable to postgraduate study.

We might charitably consider these variables as 'legitimate' academic factors influencing progression to postgraduate study. It would be naïve to believe they are

perfect indicators of merit, but finding that they influence access to higher degrees would not perhaps be a direct cause for concern. The other two independent variables in this model – gender and social class – are, net of the other factors, likely to indicate direct inequalities in progression.[11] Social class is measured in this dataset using the UK's official categories, Registrar General's Social Class (RGSC, 2001/02 and 2002/03) and the National Statistics Socio-Economic Classification (NS-SEC, 2003/04 onwards). For this dataset, RGSC has been recoded into NS-SEC categories following Heath *et al* (2003), as explained in Wakeling (2009), Appendix 6. Essentially NS-SEC is an occupationally-based scheme based on that originally developed by Goldthorpe and colleagues in the Nuffield Mobility Studies.

Table 1 gives model outputs, as fitted in MLwiN. The model confirms the importance of academic factors in influencing progression to postgraduate study. There are notable differences in progression to both kinds of higher degree according to subject discipline of first degree and a monotonic decline in progression rates by degree classification, with first class honours (the reference category) showing the highest rate of progression. Furthermore, there is considerable level 2 variance and clear differences between institutional groups in rates of progression, especially to research degrees. Here, the Russell Group, followed by other pre-1992 universities, have the highest rates of progression by some way. The inter-institutional differences are less stark when it comes to progression to taught higher degrees, but present nonetheless.

Turning to social class and gender, the model gives contrasting and in some respects surprising, results. Although gender is not the focus of this paper, the model gives an alarming, although alas not particularly shocking statistic: women are considerably less likely to progress to a higher degree than men, controlling for other factors. There is a substantial literature on women's position in science, engineering and technology (Xie and Shauman, 2003, among many others), but little attention has been paid to women's access to postgraduate study in other subjects. The model suggests a stark 'raw' effect of

[11] That is, assuming that there are not other unobserved characteristics which legitimately influence progression. I was of course limited by the extent of the datasets used. Since progression to postgraduate study is elective – and remains *relatively* unusual despite rapid expansion of numbers, the process by which any inequalities in progression detected arise cannot be determined (at least not from data of this nature). For more on the mechanisms by which any inequalities may arise, see Wakeling (2009), Chapters 3 and 7 – 9. I am also conducting qualitative research on this issue in the UK.

A quite separate question is whether progression to postgraduate study is necessarily a 'good thing'. Evidence in the UK in the past has been somewhat equivocal on this subject, with some studies showing little net positive lifetime earnings associated with holding a research degree over a first degree (e.g. Rudd 1986, 1990). However more recent studies do show a positive effect in financial terms (see O'Leary and Sloane, 2005; Machin and Murphy, 2010; and Wakeling and Kyriacou, 2010 section 4.3 for a summary)

Table 1:Multilevel models of progression to selected postgraduate destinations by full-time first-degree graduates 2001/02 – 2004/05

Explanatory variable	Higher degree by research				Taught higher degree			
	β		S.E.	(OR)exp β	β		S.E.	(OR)exp β
Constant ($ß_{0j}$)	-3.314		0.159		-2.016		0.083	
Level 2 variance ($\sigma^2 u_{0j}$)	0.265		0.041		0.123		0.010	
Subject of study								
Medicine	(reference category)				(reference category)			
Subjects Allied to Medicine	1.635	***	0.134	5.129	-0.339	***	0.080	0.712
Biological Sciences	2.168	***	0.131	8.741	0.600	***	0.076	1.822
Agriculture & Veterinary Sciences	1.217	***	0.172	3.377	0.291	**	0.099	1.338
Physical Sciences	2.704	***	0.131	14.939	0.691	***	0.077	1.996
Mathematical and Computing Sciences	1.139	***	0.133	3.124	0.377	***	0.077	1.458
Engineering	1.554	***	0.133	4.730	0.131	*	0.078	1.140
Technology	2.516	***	0.151	12.379	0.303	**	0.105	1.354
Architecture, Building & Planning	-0.301	n.s.	0.206	0.740	0.132	n.s.	0.088	1.141
Social Studies	0.019	n.s.	0.139	1.019	0.666	***	0.076	1.946
Law	-0.227	n.s.	0.152	0.797	0.424	***	0.078	1.528
Business & Administrative Studies	-0.791	***	0.159	0.453	-0.134	*	0.078	0.875
Mass Communications & Documentation	-0.519	*	0.230	0.595	0.045	n.s.	0.085	1.046
Linguistics, Classics etc.	0.278	*	0.139	1.320	0.696	***	0.077	2.006
European Languages etc.	-0.098	n.s.	0.166	0.907	0.311	***	0.082	1.365
Non-European Languages etc.	0.180	n.s.	0.184	1.197	0.511	***	0.093	1.667
Historical & Philosophical Studies	0.633	***	0.135	1.883	0.795	***	0.076	2.214
Creative Arts & Design	0.072	n.s.	0.151	1.075	0.238	***	0.078	1.269
Education	-0.831	***	0.235	0.436	-0.852	***	0.096	0.427
Combined	1.108	***	0.140	3.028	0.544	***	0.080	1.723

Table 1 (continued): Multilevel models of progression to selected postgraduate destinations by full-time first-degree graduates 2001/02 – 2004/05

Explanatory variable	Higher degree by research				Taught higher degree			
	β		**S.E.**	**(OR)exp β**	**β**		**S.E.**	**(OR)exp β**
Degree classification								
I	(reference category)				(reference category)			
II(i)	-1.369	***	0.020	0.254	-0.401	***	0.015	0.670
II(ii)	-2.913	***	0.041	0.054	-0.746	***	0.017	0.474
III/Pass	-4.354	***	0.163	0.013	-1.323	***	0.038	0.266
Unclassified	-2.845	***	0.095	0.058	-1.905	***	0.061	0.149
Gender								
Male	(reference category)				(reference category)			
Female	-0.481	***	0.021	0.618	-0.207	***	0.011	0.813
Social class								
1 Higher managerial/professional	(reference category)				(reference category)			
2 Lower managerial/professional	0.008	n.s.	0.024	1.008	-0.090	***	0.014	0.914
3 Intermediate occupations	0.023	n.s.	0.034	1.023	-0.115	***	0.019	0.891
4 Small employers etc	-0.494	***	0.129	0.610	-0.029	n.s.	0.048	0.971
5 Lower supervisory/technical	0.144	***	0.034	1.155	-0.139	***	0.020	0.870
6 Semi-routine occupations	0.151	***	0.042	1.163	-0.108	***	0.023	0.898
7 Routine occupations	0.096	n.s.	0.080	1.101	-0.158	***	0.040	0.854
Institution type (level 2)								
Other pre-1992 universities	(reference category)				(reference category)			
Specialist HE colleges	-2.534	***	0.396	0.079	-0.577	***	0.079	0.562
Generalist HE colleges	-1.685	***	0.177	0.185	-0.899	***	0.060	0.407
Post-1992 universities	-1.287	***	0.128	0.276	-0.481	***	0.046	0.618
Russell Group	0.251	*	0.147	1.285	-0.092	*	0.053	0.912

gender which cannot be attributed to academic factors. This requires further research. The coefficients for social class are perhaps equally surprising, but in a different respect. For progression to a research degree in particular, they imply that there is little social class difference in immediate progression after a first degree by social class. This would suggest that, on the face of it, background effects have declined to almost nothing and are not always statistically significant – indeed they have gone beyond that, since those from 'lower' social class backgrounds are very slightly *more* likely to make the transition, net of other factors. For taught higher degrees, there is some continuation of previous trends in social class and educational transition, but the apparent effects are quite weak.[12]

As stated already, the set of postgraduates who have progressed directly from a first degree to postgraduate study is a relatively small proportion of the whole (less than one-quarter). Thus it remains a possibility that the apparent minimal differences in net rates of progression by social class mask more substantial inequalities introduced among delayed entrants. To investigate this possibility, I used the online survey dataset. Although it is not possible to model progression with this dataset, it can at least provide a crude indication of social class differences between the postgraduate student body and a comparator group of first degree graduates.

Figure 2 shows a comparison of the proportion of first degree graduates from NS-SEC Class 1 'Higher Professional/Managerial' progressing to postgraduate study in participating institutions, alongside the proportion of postgraduates from the same social class background (according to their parents' occupations). A sharp upward shift in the proportion from Class 1 is evident, moving from first-degree graduates to postgraduate students. This is consistent across the participating institutions and it is notable that institutions in the post-1992 sector ('new universities', marked by an asterisk in the figure) show particularly large swings. Although it is not possible to account for the contribution of compositional factors (such as subject discipline) to this quite radical change, there is *prima facie* evidence of a marked *increase* in background effects in later entry to postgraduate study. That is whilst the results from the DLHE dataset seem to indicate a withering away of background effects in the immediate transition to postgraduate study, they have reappeared when including those who have delayed their entry.

[12] Note that the results for Class 4 'Small employers' are not always consistent with the other findings. This is an unusual grouping, particularly in its relationship to education (Scase and Goffee, 1982) and is difficult to recode from RGSC data. Results for Class 4 should be treated with caution.

Of course some caution is required. The set of all postgraduate students includes individuals who entered initial higher education many years ago when there was an even smaller representation of those from non-service-class backgrounds. There is the possibility of some measurement error in the social class variable between the DLHE dataset and online survey and it should also be borne in mind that the respondents cannot be taken as wholly representative of their institution and certainly not of all UK institutions.[13] However the extent of the shift in social class background between the two datasets is enough to suggest that there is a genuine difference between the two sets of postgraduates which cannot be written off as statistical error.

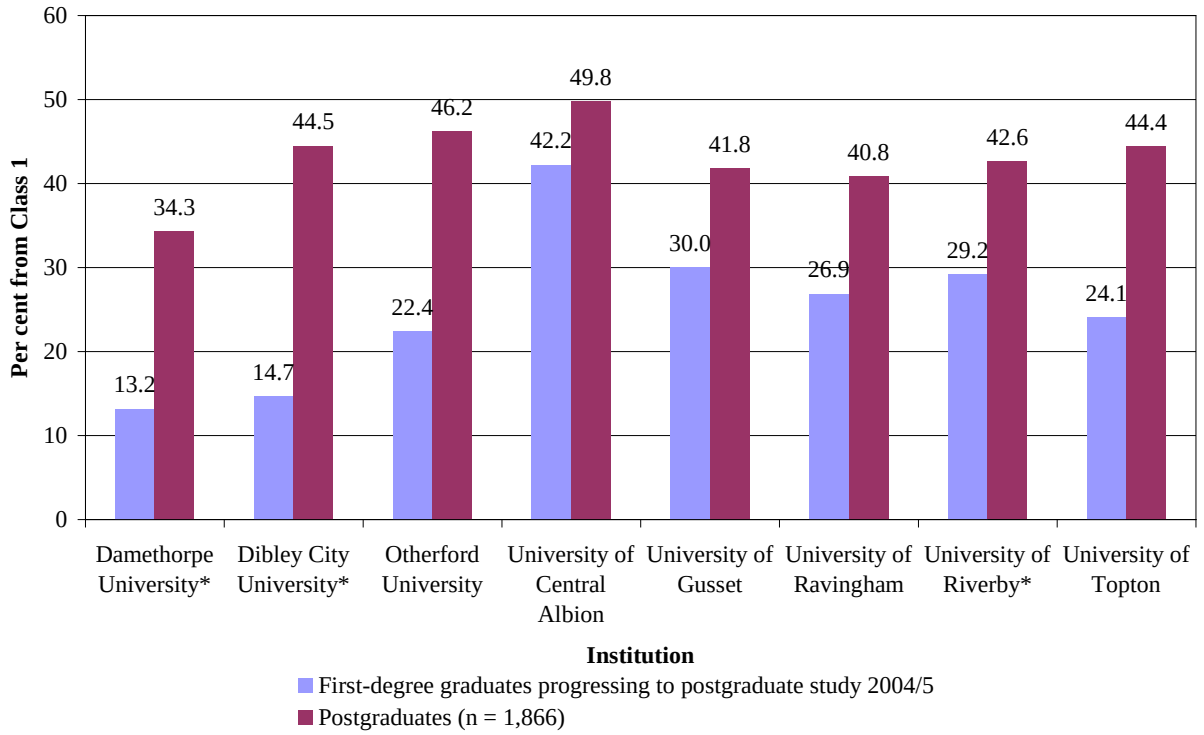

Figure 2: Proportion of first-degree graduates 2004/05 and current postgraduate students 2007 from NS-SEC Class 1 'Higher managerial/professional' by institution (pseudonymous)

The DLHE Longitudinal Study represents a 'bridge' or 'missing link' between the two sets of contrasting results presented so far. Whilst again this is less comprehensive than the original DLHE dataset, it is based on a more rigorous sample survey than the online survey reported here. It reports whether or not a graduate has completed and/or is currently working towards a postgraduate qualification. Thus it is possible to model whether a graduate has entered postgraduate study at any point up to three years after

[13] Responses to the online survey were adjusted to account for nonresponse (see footnote 9).

Table 2: Logistic regression model of entry to postgraduate study, 2002/03

Explanatory variable	Odds ratio		S.E.
Degree classification			
First class honours	(reference category)		
Upper second class honours	0.561	***	0.044
Lower second class honours	0.282	***	0.028
Third class honours/Pass	0.162	***	0.039
Unclassified	0.058	***	0.022
Institution type			
Russell Group	(reference category)		
Other pre-1992 institutions	0.862	*	0.060
All other institutions	0.382	***	0.032
Social class			
I – Professional	(reference category)		
II – Managerial/technical	0.822	*	0.063
IIIN – Skilled nonmanual	0.768	*	0.083
IIIM – Skilled manual	0.806	*	0.088
IV – Semi-skilled	0.527	***	0.081
V – Unskilled	0.726	n.s.	0.213
Gender			
Male	(reference category)		
Female	0.865	*	0.056
Subject discipline of first degree			
Medicine & dentistry	(reference category)		
Subjects allied to medicine	0.476	n.s.	0.190
Biological sciences	0.954	n.s.	0.369
Veterinary science	0.125	n.s.	0.182
Agriculture & related subjects	0.150	**	0.106
Physical sciences	1.203	n.s.	0.469
Mathematical sciences	0.477	n.s.	0.195
Computer science	0.540	n.s.	0.216
Engineering & technology	0.528	n.s.	0.209
Architecture, building & planning	0.635	n.s.	0.279
Social studies	0.603	n.s.	0.234
Law	0.408	*	0.166
Business & administrative studies	0.243	***	0.097
Mass communications & documentation	0.299	*	0.140
Languages	0.545	n.s.	0.213
Historical & philosophical studies	0.686	n.s.	0.268
Creative arts & design	0.414	*	0.167
Education	0.135	***	0.071

Notes:
Source: HESA Longitudinal Study.
Model statistics: $p < 0.001$; pseudo $r^2 = 0.12$

completing a first degree qualification. Such a model will give an indication of whether there is indeed a shift to exclusivity in later transitions.[14]

Table 2 reports the output from this model. The dependent variable in the logistic regression was whether or not the graduate had entered postgraduate study. The independent variables were degree classification, gender, subject discipline of first degree, institution type of first degree (this time with only three categories) and social class (measured using the RGSC scheme). The model confirms the importance of academic factors, with a clear monotonic decline in transition according to degree classification, as with the original DLHE dataset. Again there are differences according to subject discipline of first degree (although these are less likely to be statistically significant, possibly due to the large number of categories in a smaller *n* dataset) and institution group, which also repeats the finding that Russell Group graduates are most likely to make the transition to postgraduate study, followed by graduates of other pre-1992 institutions.

Among the non-academic factors, the gender effect reduces in comparison to the original DLHE dataset, but only slightly. The change is in the opposite direction for social class: differences which were largely absent in the immediate transition to postgraduate study now begin to reappear with the addition of later entrants. There is a clear and statistically significant reduction in the probability of entering postgraduate study for those from non-professional backgrounds holding other factors constant.

Taking the three datasets together, there appears to be a sequence whereby entry to postgraduate study becomes progressively more exclusive in social class terms the longer the time since first graduation. Social class has the least noticeable association with progression as an immediate 'first destination', a greater association three years after graduation and a seemingly even stronger relationship with entry to a higher degree taking into account all entrants.

5 Discussion

What implications do these findings have for theory and for policy? Regarding the theory of declining background effects, the results suggest that background effects do indeed decline in the transition to postgraduate study in the UK – that is, socio-

[14] Unfortunately the DLHE Longitudinal Study dataset does not give data on the point of entry to postgraduate study, although there is some indication of a shift in social class backgrounds across those who have completed a postgraduate qualification (who we might classify as early entrants) and those currently studying towards one (and therefore more likely to contain later entrants).

economic background has a less apparent influence on whether an individual makes the transition to postgraduate study, holding other factors constant, than is the case in earlier transitions (including initial entry to higher education). However taking a longitudinal view of the transition suggests that rather than declining in a consistent way, the weakest effects of socio-economic background are felt in the earliest transition, with something of a *revival* of effects at later points. This is a somewhat novel finding.

How might we understand this trend? One potential explanation is that, in the face of 'credential inflation' (Collins, 1979) and a glut of first-degree graduates, those from more advantaged backgrounds are better able to use postgraduate study as a means to circumvent underemployment. That is, among those entering the labour market with only a first degree, some graduates will not be able to find employment commensurate with their graduate status. One possible remedy open to them is to undertake further study to give them an edge in the competition for jobs. In such a situation, there is less advantage in immediate entry to a higher degree if there is the opportunity to obtain a graduate job quickly; however when such a position is not obtained, further study becomes more attractive. Here the financing of postgraduate study, which in the UK is largely unregulated and without large-scale fees and maintenance support, becomes an additional potential factor.

On a slightly different note, the evident importance of first-degree institution in progression to postgraduate study may mask what are 'really' the effects of socio-economic background. If there is sorting into different kinds of institution on initial entry to higher education, the lack of further social class differences in later transitions may mean that one's later educational fate is set at an earlier point. Processes of institutional stratification (Shavit *et al*, 2007) are likely to intensify this separation into *de facto* academic and vocational tracks, despite formal equality across UK universities.

Perhaps the most interesting question is whether the patterns observed for the UK are also to be seen in other countries. This is a particularly interesting question at this point in higher education's history for two reasons. Firstly, the expansion of postgraduate study provides the conditions for a 'passing upwards' of various social and educational inequalities. Secondly the Bologna reforms have created, in many countries, an additional, post-bachelor's degree transition which did not previously exist. The various national iterations of this transition will provide fertile ground for re-testing of the observations made here.

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