Exploring ethnic differences in the post-university destinations of Russell Group graduates.

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Abstract

The high aspirations of British ethnic minorities are evident in their high rates of participation in higher education. However, some ethnic minority groups remain strikingly under-represented in the most selective universities, and recent studies have shown that university graduates from ethnic minority backgrounds are less likely than otherwise comparable white graduates to gain employment in a higher salary, graduate-level job after their degree. This is likely to be due partly to the effects on graduate labour market outcomes of subject studied and university attended. However, no study to date has explored the graduate labour market outcomes for ethnic minority students in the UK's most 'prestigious' universities, defined here as one of the twenty-four member institutions of the Russell Group. This article draws on data for recent graduates (2009-2013) from the Destinations of Leavers from Higher Education (DLHE) survey compiled by the UK's Higher Education Statistics Agency (HESA). We explore ethnic differences in attainment in 5 distinct graduate destinations (employment in professional occupations; further study; employment in non-professional occupations; inactivity; and unemployment), controlling for educational and social background. Our results suggest that ethnic minority graduates of Russell Group are less likely than their white counterparts to fare well in the labour market and are more likely to adopt a compensatory strategy of further educational investment; that is, a strategy of entering postgraduate education to avoid short-term unemployment or underemployment in a non-graduate job. Our findings challenge a key assumption of the government's social mobility policy agenda that graduating with a good degree from a highly selective university enables ethnic minorities to realise aspirations for upward social mobility.

Keywords: ethnic minorities; elite universities; labour market outcomes; ethnic penalties.

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Introduction

Young people from British ethnic minority backgrounds are more likely to aspire to university than their white British peers (Berrington, et al., 2016), and are more likely to apply to university after controlling for aspirations, expectations, and achievement at GCSE (Khattab 2015), including highly selective institutions (Boliver, 2013). However, British ethnic minorities fare less well in the labour market than their white British counterparts, being more likely to enter occupations that are less skilled and less well paid (Dustmann and Theodoropoulos, 2010; Heath and Li, 2008; Zuccotti, 2015), and more likely to experience unemployment (Hasmath, 2012; Khattab et al., 2012), especially in times of economic recession (Heath et al., 2008; Li, 2013; Phung, 2011). These disparities, often termed 'ethnic penalties' (Heath and Cheung, 2007), are found even among those who have graduated from university (Zwysen and Longhi, 2016). One likely cause of disparate labour market outcomes for university graduates is that some British ethnic minority groups are less likely than their white peers to have attended an especially prestigious university (e.g. Crozier et al., 2008), a source of horizontal stratification in a system that has seen significant expansion in recent decades (Gerber and Cheung, 2008). Young people of Black Caribbean, Black African, Pakistani, and Bangladeshi ancestry are substantially under-represented among students attending the twenty-four institutions that make up the Russell Group of universities (Boliver, 2015a), which claim to represent the "jewels in the crown" of British higher education (Russell Group, 2012; cf. Boliver, 2015b), and whose graduates enjoy significantly higher earnings compared to graduates from other, less prestigious institutions (Britton et al., 2016). To date, little is known about how ethnic minority graduates of prestigious universities fare upon graduation compared to their ethnic majority peers or, relatedly, whether graduating from a prestigious university constitutes a means of achieving aspirations for upward social mobility for those from ethnic minority backgrounds. Building on initial research in this area (Lessard-Phillips et al., 2014), this paper sets out to explore whether post-graduate destinations differ for ethnic minority as compared to ethnic majority graduates of Russell Group universities in general, and for those from lower social class backgrounds in particular.

Post-graduation destinations are likely to be influenced not only by the prestige of the institution attended, but also by the academic discipline studied at degree level, and the degree classification achieved upon graduation. With regard to academic discipline, the evidence indicates that graduates of science, technology, engineering and medicine (STEM)

disciplines, enjoy higher earnings than graduates in arts and humanities fields (Britton et al., 2016; Walker and Zhu, 2011, 2013). In theory this should benefit graduates from ethnic minority backgrounds, who are statistically over-represented among those studying Medicine and Dentistry, Law, Computer Science, Business Studies and Mathematics at university, and are under-represented among undergraduates in fields such as the Humanities, Education, Languages, and the Creative Arts (Connor et al., 2004; Davies et al., 2013; Pampaka et al., 2013). Similar ethnic group differences in subject choices and aspirations for such subjects have been observed for other educational levels and other countries (e.g. Black et al., 2009; Simpson, 2001; Pásztor, 2012). The over-representation of ethnic minorities in STEM subjects at degree level chimes with Kao and Tienda's (1995) "immigrant optimism" thesis, which states that parents of immigrant origin tend to invest more heavily in their children's educational careers given their own negative experiences in the labour market in their country of settlement. Similarly, it may reflect 'family social mobility projects' (Heath et al, 2008) in which investment in STEM education serving as a means of realising high occupational aspirations by focusing on areas of the labour market where racial discrimination is less likely to be encountered (Heath et al., 2008; Kilpi-Jakonen, 2011; See et al., 2011).

Similarly, there is strong evidence that degree classification achieved is an important predictor of post-graduation employment outcomes, with significantly higher earnings observed for those with first and upper second class degrees compared to those who graduate with lower second class, third class or pass (non-honours) degrees (Walker and Zhu, 2013). In this regard, ethnic minority graduates are likely to be at a disadvantage compared to their white peers, given that ethnic minorities are fifteen percentage points less likely to achieve a first or upper second class degree even after controlling for a range of factors including institution attended, academic discipline studied, and prior achievement at school (HEFCE, 2015). These attainment differences at degree level have been found to hold across a range of specific academic disciplines, including Medicine (Woolf et al., 2011). Some research on the experiences of ethnic minority students in higher education suggest that lack of culturally responsive teaching and representation of ethnic minority groups among teaching staff may well affect the performance of students (Jabbar and Hardaker 2013; Alexander and Arday 2015).

Besides academic discipline and degree classification, prior studies have noted a further influence on post-graduation destinations which is likely to disproportionately disadvantage those from ethnic minority groups, namely socioeconomic background. Higher socioeconomic backgrounds provide resources –economic, cultural, and social – that are invaluable for

academic and labour market success. British ethnic minorities are more likely than their ethnic majority peers to have grown up in lower income families and their parents are more likely to be employed in working class occupations or to be unemployed (Cheung and Heath, 2007; Li and Heath, 2016; Zuccotti, 2015). This matters because prior research has shown that, although degree achievement generally confers significant labour market advantages, it is not the great social leveller that is sometimes claimed. On the contrary, median income has been found to be ten percent lower for graduates from lower income families than for graduates from higher income families even after taking institution attended, degree subject studied, and a range of other student characteristics into account (Britton et al., 2016).

In this paper, we explore whether academic discipline studied, degree classification achieved, and socioeconomic background help to explain any observed differences in the post-graduation destinations of ethnic minority as compared to ethnic majority Russell Group graduates. As such, we take an analytical approach linked to 'ethnic penalties' (Heath and Cheung 2007). This is linked to whether any ethnic differences in outcomes exist once prior (educational) performance and parental social background are taken into account. When negative differences are present, they are referred to as 'ethnic penalties'; when positive differences are present, they are referred to as 'ethnic premiums'. The presence of penalties and premiums may be a manifestation of many underlying processes generating differences in outcomes, including, but not exclusively, discrimination. We therefore examine whether graduating from a Russell Group university offers the same degree of opportunity for upward social mobility for ethnic minorities as it does for their white peers.

Our focus is on exploring ethnic differences in destinations sixth months after graduation from an undergraduate degree programme at a Russell Group university, distinguishing between five alternative destinations loosely ordered from providing more 'positive' to more 'negative' outcomes after graduation. The first destination is employment in a 'professional' occupation, which we take to be the most favourable outcome given that one of the main purposes of attending university is to increase the prospects of gaining a highly skilled and well remunerated job. Professional occupations are synonymous with 'graduate jobs', and are defined here as occupations grouped under the ONS Standard Occupational Classification headings of Managers, Directors and Senior Officials (SOC 1), Professional Occupations (SOC 2) or Associate Professional and Technical Occupations (SOC 3) (HESA, 2017).

The second destination considered is further study on a full-time basis, typically involving the pursuit of a postgraduate qualification. Full-time further study is generally thought to be a positive graduate destination as gaining a postgraduate qualification is likely to improve the

chances of gaining a professional job, at least in the minds of students (Brooks and Everett, 2009; Tomlinson, 2008), particularly in the current era of mass participation in higher education at undergraduate level (Van de Werfhorst and Andersen, 2005; Wakeling, 2005). However, full-time further study is not necessarily a wholly positive destination; it may constitute a 'holding pattern' for graduates who are finding it difficult to obtain employment in a professional occupation (Purcell et al., 2005), a negative driver that is likely to be more common in times of economic recession and for social groups which face discrimination in the labour market, including ethnic minorities. Previous research indicates that British ethnic minorities are statistically over-represented among postgraduate students (Wakeling, 2009), but it is unclear to what extent the drivers of this are positive rather than negative.

The third destination is employment in a non-professional job. Given the assumption that direct entry into a professional occupation or undertaking further study after graduation are key to upward social mobility, we position this destination lower than employment in a professional job or pursuing further studies. The fourth destination considered is inactivity, which involves not being employed but for reasons other than inability to find work, including traveling, illness, or looking after the home. As with full-time further study, it is difficult to discern the extent to which inactivity is positively or negatively driven. However, we regard inactivity as superior to our fifth and final destination of unemployment; that is, not being employed despite looking for work. Unemployment is a negative destination as it is associated, especially if of a long-term nature, with hardship and diminishing life outcomes. It can potentially also have 'scarring' effects with regard to future employment, especially if it occurs early on in a career (Arulampalam et al., 2001; Gregg and Tominey, 2005). Despite the fact that we are only able to measure unemployment 6 months after graduation and thus unable to ascertain that graduates are experiencing long-term unemployment, it is the case that the potential scarring effects may follow them in their career.

Data and methods

In the empirical component of this paper we ask whether the labour market aspirations of Russell Group university graduates are realised by ethnic minority graduates to the same extent as they are for white graduates, both in general and among those from lower social class origins in particular. We examine ethnic group differences with respect to the five post-graduation destinations outlined above using data supplied by the Higher Education Statistics Authority (HESA). HESA collects administrative data from UK universities and other higher education providers on the social and educational background characteristics of students

together with information about institution attended, academic discipline studied, and degree classification achieved. HESA also collects information directly from graduates regarding their main activity six months after the end of their undergraduate courses, via a survey known as the 'Destination of Leavers from Higher Education (DLHE) survey.[1] We draw on linked data from these two sources, covering UK-domiciled students who graduated from first degree courses at Russell Group universities between 2009/10 and 2012/13.[2] The sample for analysis is restricted to those who were under 21 years at the start of their degree, who were not distance learning students, who received a classifiable degree,[3] who had valid information with regard to ethnicity, sex, and region of residence, and who completed the DLHE survey (N=198,430).

The variables used in the paper can be found in Table A1. As we are interested in ethnic inequalities in post-graduation outcomes, our main independent variable of interest is ethnicity. It is based on graduates' self-reported ethnicity as declared on their university application form. The available data allows us to distinguish between the following ethnic groups (all UK-domiciled): white, Bangladeshi, Indian, Pakistani, Black African, Black Caribbean, Chinese, Other Asian and Other ethnicity (including mixed). We begin by reporting descriptive statistics which show the distribution of Russell Group graduates across the five different post-graduation destination categories, broken down by ethnic origin.

Multinomial logistic regression models, which are appropriate for investigating categorical outcome variables but do not assume an ordering to the categories, are then used to estimate the probability of membership in each destination category (Agresti, 1996), controlling first for academic discipline and degree classification, and then additionally for graduates' social background characteristics.[4] In our statistical models, our control for academic discipline studied distinguishes between STEM subjects, non-STEM subjects, and combined subjects. Our control for degree performance is measured using the degree classifications of first, upper second, lower second, third class and pass.[5] We control for social class background (managerial/professional; intermediate; routine and never worked; missing), and type of school attended prior to entering university (state; private; and unknown). We also add controls for region of residence prior to entry (differentiating between London and the rest of the country given that a large proportion of ethnic minority graduates resided in London), age at graduation, and year of graduation.

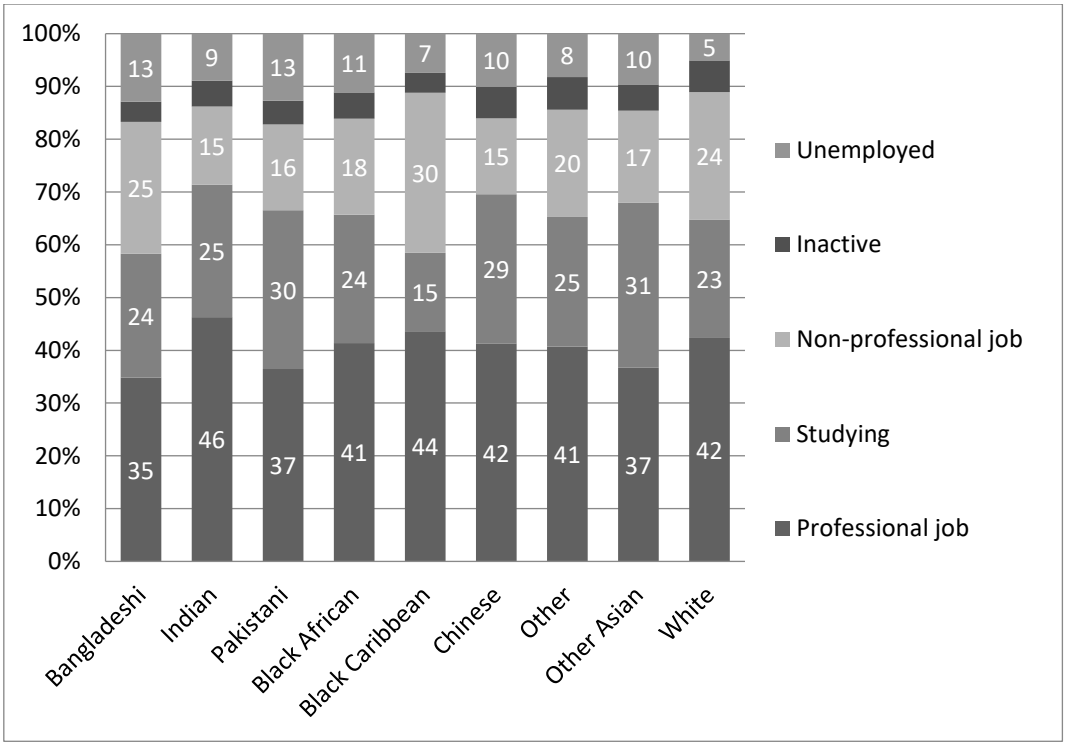
We carry out all of our analyses for female and male graduates separately, given acknowledged gender differences in performance in education and the labour market (Barrow et al., 2009; Gerber and Cheung, 2008). The models are clustered by university attended. For

ease and comparison of interpretation we present estimates of post-graduation destinations in terms of average marginal effects (AMEs) rather than logistic regression coefficients (Mood, 2010). The average marginal effects presented can be interpreted as the extent to which the predicted probabilities of membership in a specific response category differ on average for individuals from each ethnic minority group relative to the white group.

Results

Figure 1 reports the destinations of female graduates of Russell Group universities, broken down by ethnic origin, while Figure 2 reports the same for male Russell Group university graduates. Among female Russell Group graduates, it is clear that those from Bangladeshi, Pakistani and Other Asian backgrounds have lower percentages of graduates in professional employment six months after graduation compared to the white group. However, female Russell Group graduates from the Pakistani and Other Asian groups appear to compensate for this by being in full-time further study in greater proportions than their white counterparts. Interestingly, women from Black Caribbean backgrounds are the only group to have a lower percentage of graduates pursuing full-time study than is the case for white females. Inactivity rates for female ethnic minority graduates are generally equal to or lower than those for the white group, with the exception of those of Black Caribbean ancestry. Unemployment rates, in contrast, are higher for female graduates from all ethnic minority groups than they are for female graduates from the white group.

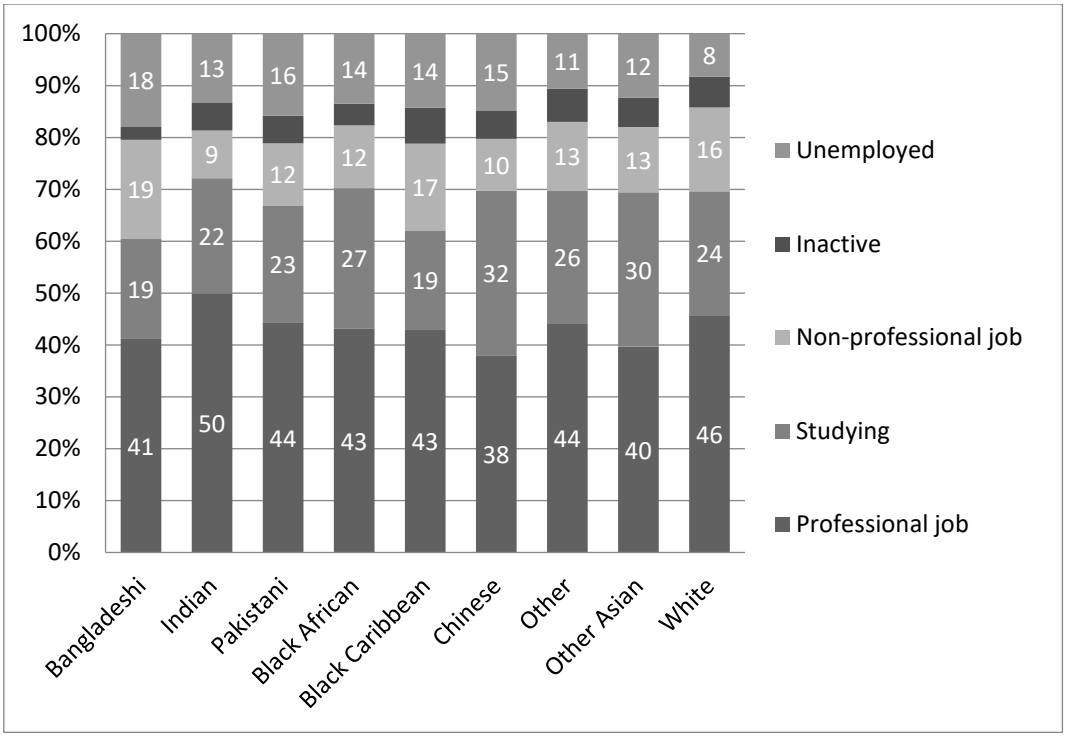
Figure 1 First destinations of female Russell Group university graduates



Source: DHLE data 2009-2013 (authors' calculations)

Focusing on male Russell Group graduates, the picture is quite similar. Those from Bangladeshi, Chinese and Other Asian backgrounds have lower rates of professional employment six months after graduation compared to the white group. However, those from the Chinese and Other Asian groups appear to compensate for this by being in full-time further study, or use this as a pre-emptive strategy. The only ethnic minority groups less likely than the white group to be in one of these two positive destinations are graduates from the Bangladeshi and Black Caribbean groups. Inactivity rates for male ethnic minority graduates are generally equal to or lower than those for the white group, with the exception of those of Bangladeshi origin. Unemployment rates, in contrast, are higher for male graduates from all ethnic minority groups than they are for the white male graduates.

Figure 2 First destinations of male Russell Group university graduates



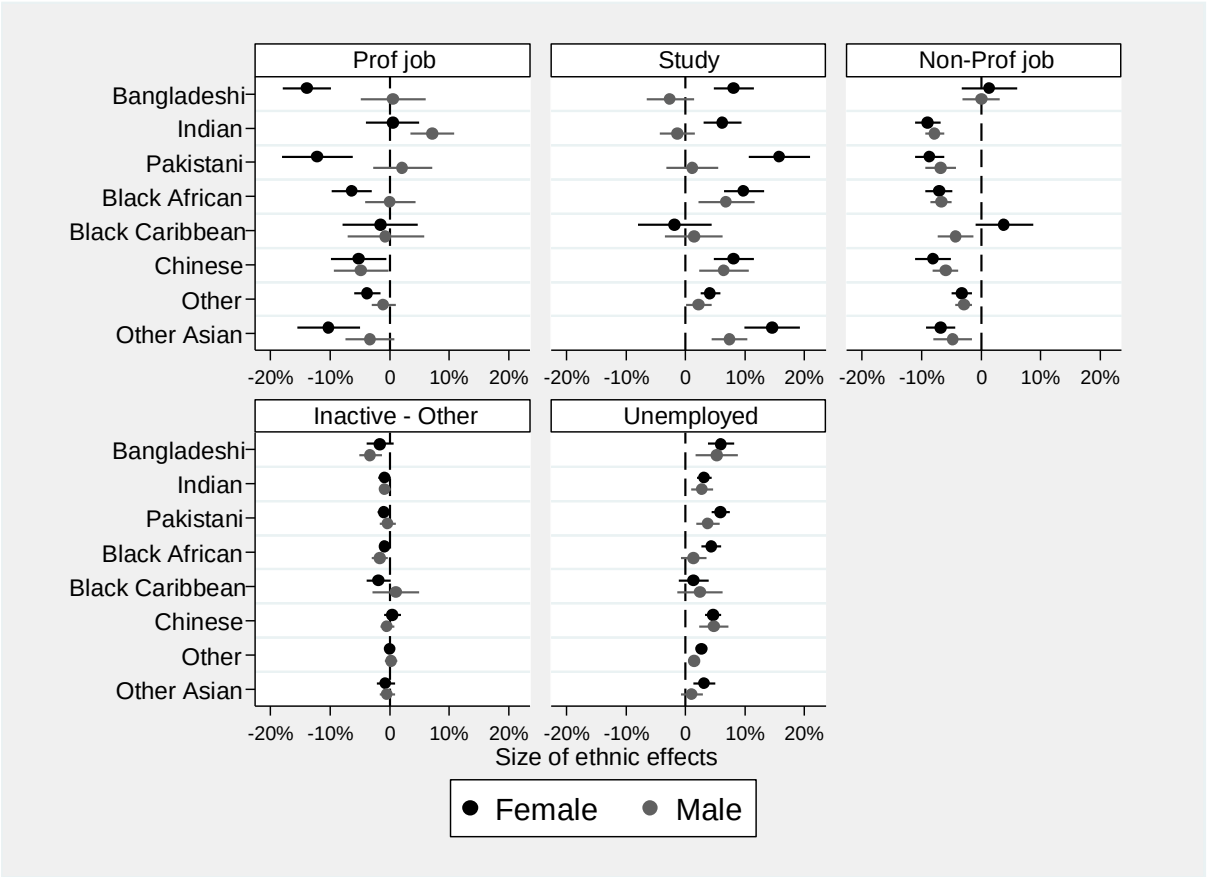
Source: DHLE data 2009-2013 (authors' calculations)

If we compare the descriptive results for female and male graduates, we see that male graduates have generally higher rates of professional employment than their female counterparts, aside from the Black Caribbean and Chinese groups. Female graduates from the Bangladeshi and Pakistani groups have higher rates of participation into education than their male counterparts. Female graduates generally also tend to be found in non-professional employment in greater proportions than males, while male graduates have higher rates of unemployment than their female counterparts. The patterns overall suggest that some ethnic minority groups may be using further study as a means of boosting the chances of ultimately obtaining a professional rather than a non-professional job, and as a means of avoiding unemployment, at least in the interim.

Figure 3 reports the results of a multinomial logistic regression analysis which includes academic and social background as explanatory variables together with other controls. We present the full results in Tables AII and AIII of the appendix. All results are reported in terms of the average marginal effect of being from an ethnic minority group, rather than the ethnic majority, on the probability of being in each of the five post-graduation destinations. Data points to the right of the dotted line in Figure 3, below, indicate a higher probability of being in a particular destination category for the ethnic minority group concerned compared to the white group on average, whereas points to the left of the dotted line indicate a lower probability on

average. Horizontal lines are used to indicate confidence intervals. Any confidence interval that does not cross the dotted line indicates statistical significance at the $p < 0.05$ level.

Figure 3. Average marginal effects of ethnicity on post-graduation outcomes, controlling for academic discipline, degree classification, and social background



Source: DHLE data 2009-2013 (authors' calculations)

After controlling for degree subject, degree classification and socioeconomic background, female Russell Group graduates from Bangladeshi, Pakistani, Black African and Other Asian backgrounds continue to have a lower probability of being in professional employment six months after graduation than their white peers on average. For male Russell Group graduates, Indian males continue to have a higher average probability than white males of being in a professional job.

After the inclusion of controls, Russell Group graduates from ethnic minority backgrounds continue to have average probabilities of continuing in further study that are at least as high as for their white peers, and are higher in fact for ethnic minority women as compared to white women. Ethnic minority graduates of Russell Group universities also have lower average probabilities of entering non-professional jobs than their white peers on average; however, probabilities of unemployment are higher for ethnic minority graduates than for white graduates too on average. Again these findings suggest that ethnic minority graduates may be more likely than their white peers to continue in education beyond first degree level as a means of avoiding under-employment or unemployment in the short-term, and of increasing their chances of professional employment in the longer run. Yet, given current research, this strategy may not be the most useful.

With regard to the individual controls (see Tables AII and AIII for the average marginal effects of all predictor variables), our results indicate that degree classification is a major predictor of post-graduation destination. Lower degree classifications are more likely to lead to non-professional employment outcomes, and, to a lesser extent, to unemployment, and are less likely to lead to further study. Graduates from state schools and those from lower social class backgrounds are more likely to be in non-professional occupations and are less likely to be pursuing further studies than their privately educated and higher social class background peers.

Given that privileged social backgrounds have been found to be beneficial in and of themselves on the labour market (Wakeling, 2005; Wilkins and Burke, 2013), we also present the average marginal effects of ethnic origin on the probability of being in each of the five post-graduation destinations, specifically for those from higher (Figure 4) and lower (Figure 5) social class backgrounds. This comparison is especially important given issues linked to skills

selectivity and mismatch for immigrant parents (Li and Heath, 2016). The error bars are quite large due to the small sub-samples available for analysis once we focus on Russell Group graduates from particular social class backgrounds. Overall, the patterns are similar to those previously observed for all Russell Group graduates. Irrespective of social class origin, the average marginal probabilities of obtaining a professional job or a non-professional job are generally lower for ethnic minority graduates than for their white peers. Conversely, ethnic minority graduates are generally more likely than their white counterparts to engage in further study, but are also more likely to be unemployed. Perhaps unsurprisingly, the disparity in unemployment rates between ethnic minority and ethnic majority graduates is somewhat larger among those from working class backgrounds.

Figure 4: Average marginal effects of ethnicity on post-graduation outcomes for Russell Group graduates from professional/managerial social backgrounds

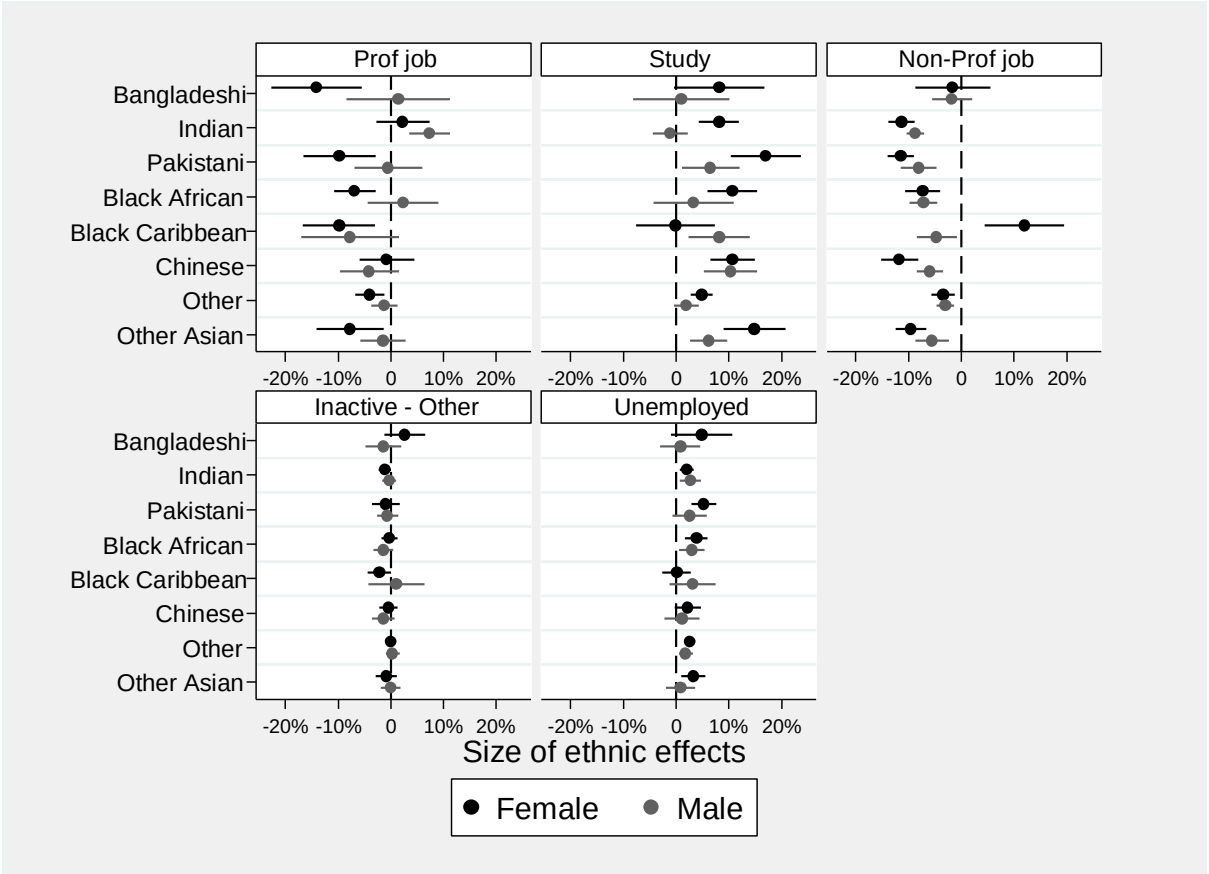
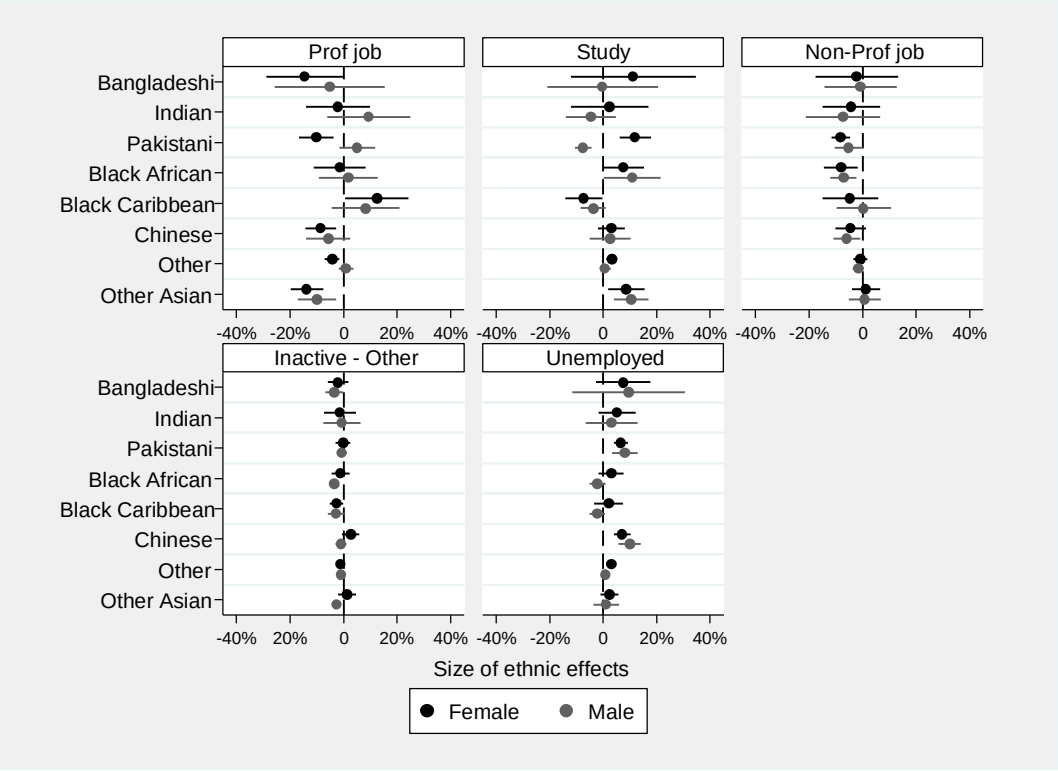


Figure 5: Average marginal effects of ethnicity on post-graduation outcomes for Russell Group graduates from working class backgrounds



Source: DHLE data 2009-2013 (authors' calculations)

Conclusions

Our aim in this paper was to examine whether the labour market aspirations of Russell Group university graduates are realised by ethnic minority graduates to the same extent as they are for white graduates, both in general and among those from lower social class origins in particular. We tackle this question by exploring whether the destinations of recent graduates of prestigious UK universities differ across ethnic groups, and if so what factors help to explain this difference. This interest in early career trajectories was prompted by the acknowledged positive impact on labour market outcomes of a degree from a prestigious university. British ethnic minorities are less well-represented at prestigious universities than their white peers, making it all the more important that post-graduation destinations are as favourable for ethnic minority graduates as they are for the white group.

Our findings suggest attending a Russell Group university does not help ethnic minorities realise their labour market aspirations to the same extent that it does for their white counterparts. As a result, ethnic minority graduates of Russell Group universities are disproportionately likely to adopt a strategy of further, compensatory educational investment in order to offset the immediate impact of unrealised aspirations. Ethnic minority graduates, regardless of gender and social class background, tend to be more likely to engage in further study following their undergraduate degrees, relative to comparable white graduates, and are more likely to be under-employed or unemployed. We speculate that higher rates of further study for ethnic minority graduates of Russell Group universities represents, for some at least, an attempt to mitigate or at least delay the risks of under-employment or unemployment by investing further in educational credentials. The picture for Russell Group graduates is similar to the general pattern of 'ethnic penalties' on the labour market (e.g., Heath and Cheung, 2007; Li, 2015; Zuccotti, 2015; Zwysen and Longhi, 2017).

Despite only measuring graduate destinations at one point in time quite soon after graduation, we may ask ourselves whether this trend is one we may need to seriously worry about. Given what we already know about the negative effect of early unemployment spells on future outcomes, and given the fact that labour market outcomes are worse for ethnic minority groups despite longer time spent in education, we may have reason to be worried, or at least want to monitor, the careers of ethnic minority elite university graduates more closely. Moreover, we may also want to think about the best ways to investigate explanations for such penalties further, such as employment networks, the opportunity for work experience being offered to students, or the possibility that discrimination on the labour market starts early and is blind to the type of university attended (Battu et al., 2011; Blommaert et al., 2014; Chadderton and Wischmann, 2014; Pásztor, 2014; Trentini, 2014). Finding ways to tackle the disadvantages uncovered is important too, and should be part of the wider debate on social mobility within academic and policy circles.

Acknowledgements

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[1] Between 2009/10 and 2012/13, the response rate for the DLHE was between 77-79 per cent for UK and EU domiciled respondents (HESA, 2011, 2012, 2014). For more information on the data collection process, which varies across institutions, see HESA's guidance to institutions for data collection (HESA, 2016).

2 We excluded mature students in order to exclude people with potential prior work experience in the analyses. This also reduced our sample of ethnic minority graduates, as they were in this category in greater proportions. Another reason why we excluded mature students from the sample is because of the lack of variables for conducting the analysis, including parental social background variables (their own social background was measured at admission rather than their parents'). As we deal with graduates who completed a first degree, this not include individuals who have failed their course.

[3] In the case of degree attainment, this implies that degrees that do not allocate degree classification are excluded from the analysis. This includes the majority of graduates in medicine and dentistry and veterinary science.

[4] In order to estimate the proper standard errors for the analyses, clustering for institution attended is included in the models. All variables also include, whenever relevant, categories for missing values for the independent variables.

[5] Given that degree performance is an endogenous predictor, we use the two-stage residual inclusion (2SRI) method suggested by Terza and colleagues (2008).

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Table AI: Variable description and sample descriptive statistics (N=198,430)

Variable	Variable Description	Categories	Statistics
Outcome variable			
Economic activity	Detailed type of economic activity 6 months after graduation. Type of occupation based on SOC2010 codes. [1]	Active - Professional occupation (SOC codes 1, 2, 3) (%) Active - Non-Professional occupation (%) Active - Unemployed (%) Inactive - Pursuing full-time studies (%) Inactive - Other reasons (%)	43.8 (86,815) 19.8 (39,195) 7.2 (14,285) 23.4 (46,500) 5.9 (11,630)
Independent variables			
Ethnicity	Reported ethnicity in UCAS application.	white (reference category) (%) Bangladeshi (%) Indian (%) Pakistani (%) Black African (%) Black Caribbean (%) Chinese (%) Other Asian (%) Other ethnicity (including mixed) (%) *Unknown* (N)^	86.4 (171,380) 0.6 (1,190) 3.8 (7,535) 1.4 (2,690) 1.1 (2,170) 0.3 (670) 1.4 (2,825) 1.1 (2,250) 3.9 (7,730) *3,060*
Gender	Reported gender at time of application.	Female (%) Male (%) *Unknown* (N)^	53.9 (106,855) 46.2 (91,570) *ND*
Degree variables			
Degree attainment	Degree classification. Overall grade of credits accumulated during degree; the range of grades may vary across universities.(Bratti, 2002) [2] Unclassified degrees excluded.	1st – 70%+(reference category) (%) 2.1 – 60-69%(%) 2.2 – 50-59% (%) 3rd and Pass – 40-49% (%)	22.2 (44,005) 60.9 (120,840) 15.1 (29,860) 1.9 (3,720)
Field of study	Based on Level 1 of the Joint Academic Coding System (JACS), which include 18 codes pertaining to field of study and a category for combined fields of study. Distinction between Science, Technology, Engineering and Mathematics (STEM) subjects and non-STEM subject.	STEM field (reference) (%) Non-STEM field (%) Combined JACS codes (%)	39.5 (78,410) 45.8 (90,945) 14.7 (29,080)

Social background variables			
Socio-economic status	National Statistics Socio-Economic Classification (NS-SEC) of student's highest parental occupation at time of application, 3-category measure.	Managerial (reference category) (%) Intermediate (%) Routine & Never worked/long-term unemployed (%) Missing (%)	58.5 (116,060) 16.3 (32,280) 11.8 (23,320) 13.5 (26,770)
School type	Type of school respondent attended prior to entry.	Private (reference category) (%) State school (%) Unknown/not applicable (%)	23.8 (47,210) 74.0 (146,865) 2.2 (4,355)
Controls			
Age	Age at end of graduation year.	Mean age (mean and SD)	21.6 (0.8)
Region	Region of residence before starting university course (London/outside of London).	Outside of London (reference category) (%) London (%) *Unknown* (N)^	84.9 (168,520) 15.1 (29,905) *525*
Year	Academic year of survey/graduation	2009/2010 (reference category) (%) 2010/2011 (%) 2011/2012 (%) 2012/2013 (%)	24.1 (47,785) 25.3 (50,245) 25.1 (49,820) 25.5 (50,580)

^ Exclusion criteria, not included in the analytical sample. All counts rounded according to HESA methodology, which may lead to rounding error. ND: not disclosed because of size.

Notes

[1] The data on occupations before the 2011/2012 DLHE were based on the SOC2000. For the purpose of the analyses, we have recoded the SOC2000 codes (which do not differ much at the higher level with SOC2010) according to the more recent methodology used to regroup the occupation by HESA.

Table AII: Average marginal effects of main indicators, Women (N=106,855)

	Prof	Studies	Non-Prof	Inactive	Unemployed
Ethnicity(ref: white)					
Bangladeshi	**-0.14**	**0.08**	0.01	-0.02	**0.06**
	0.02	0.02	0.02	0.01	0.01
Indian	0.00	**0.06**	**-0.09**	-0.01	**0.03**
	0.02	0.02	0.01	0.01	0.01
Pakistani	**-0.12**	**0.16**	**-0.09**	-0.01	**0.06**
	0.03	0.03	0.01	0.01	0.01
African	**-0.06**	**0.10**	**-0.07**	-0.01	**0.04**
	0.02	0.02	0.01	0.01	0.01
Caribbean	-0.02	-0.02	0.04	-0.02	0.01
	0.03	0.03	0.02	0.01	0.01
Chinese	*-0.05*	**0.08**	**-0.08**	0.00	**0.05**
	0.02	0.02	0.02	0.01	0.01
Other	**-0.04**	**0.04**	**-0.03**	0.00	**0.03**
	0.01	0.01	0.01	0.00	0.00
Other Asian	**-0.10**	**0.15**	**-0.07**	-0.01	**0.03**
	0.03	0.02	0.01	0.01	0.01
Degree Attainment (ref: first)					
2.1	*0.15*	**-0.51**	**0.27**	*0.04*	**0.04**
	0.06	0.07	0.03	0.02	0.01
2.2	0.01	**-0.44**	**0.38**	0.00	0.04
	0.10	0.08	0.10	0.01	0.02
3rd & Pass	**0.75**	**-0.66**	**-0.05**	**-0.03**	**-0.01**
	0.06	0.06	0.01	0.01	0.00
Field of study					
STEM	-0.02	0.00	0.00	0.00	*0.01*
	0.02	0.01	0.01	0.00	0.00
Non-STEM	-0.01	0.00	0.00	0.01	0.01
	0.02	0.01	0.01	0.00	0.00
School type					
State School	0.00	**-0.06**	**0.08**	**-0.01**	0.00
	0.01	0.01	0.01	0.00	0.00
Missing	0.01	*-0.04*	*0.03*	0.00	0.01
	0.02	0.02	0.01	0.01	0.01
Socio-economic status					
Intermediate	0.00	0.00	0.01	0.00	0.00
	0.00	0.00	0.00	0.00	0.00
Routine	**-0.02**	-0.01	**0.03**	**0.00**	*0.00*
	0.01	0.01	0.00	0.00	0.00
Missing	0.01	0.00	-0.01	0.00	*0.01*
	0.01	0.01	0.00	0.00	0.00
Residuals					
Upper SC	-0.02	**0.47**	-0.39	-0.02	-0.04
	0.08	0.11	0.09	0.03	0.03
Lower SC	0.13	**0.30**	**-0.44**	0.03	-0.02
	0.12	0.08	0.09	0.02	0.03
Third class	**-2.88**	0.65	2.18	0.04	0.02
	0.76	0.44	0.60	0.15	0.12

Source: DLHE. AMEs in bold indicate significance at the 0.01 level; 0.05 level for italics. Controls: age, region, year. Models cluster for institution attended and use the 2SRI method to deal with degree attainment as an endogenous predictor.

Table AIII: Average marginal effects of main indicators, Men (N=91,570)

	Prof	Studies	Non-Prof	Inactive	Unemployed
Ethnicity(ref: white)					
Bangladeshi	0.01	-0.03	0.00	**-0.03**	**0.05**
	0.03	0.02	0.02	0.01	0.02
Indian	**0.07**	-0.01	**-0.08**	-0.01	**0.03**
	0.02	0.02	0.01	0.01	0.01
Pakistani	0.02	0.01	**-0.07**	0.00	**0.04**
	0.03	0.02	0.01	0.01	0.01
African	0.00	**0.07**	**-0.07**	*-0.02*	0.01
	0.02	0.02	0.01	0.01	0.01
Caribbean	-0.01	0.01	**-0.04**	0.01	0.02
	0.03	0.02	0.02	0.02	0.02
Chinese	*-0.05*	**0.06**	**-0.06**	0.00	**0.05**
	0.02	0.02	0.01	0.01	0.01
Other	-0.01	*0.02*	**-0.03**	0.00	**0.01**
	0.01	0.01	0.01	0.01	0.01
Other Asian	-0.03	**0.07**	**-0.05**	0.00	0.01
	0.02	0.02	0.02	0.01	0.01
Degree Attainment (ref: first)					
2.1	0.16	**-0.46**	**0.24**	0.02	**0.04**
	0.08	0.08	0.04	0.02	0.01
2.2	0.00	**-0.48**	**0.33**	0.01	*0.14*
	0.11	0.06	0.09	0.02	0.07
3rd & Pass	**-0.26**	0.28	-0.01	-0.02	0.02
	0.07	0.14	0.02	0.03	0.08
Field of study					
STEM	**-0.06**	0.02	0.02	0.00	0.01
	0.02	0.02	0.01	0.01	0.01
Non-STEM	-0.04	0.01	0.01	0.01	0.00
	0.02	0.02	0.01	0.01	0.01
School type					
State School	-0.01	**-0.05**	**0.07**	**-0.02**	**0.01**
	0.01	0.01	0.00	0.00	0.00
	-0.03	0.00	**0.04**	-0.01	0.00
	0.02	0.02	0.01	0.01	0.01
Socio-economic status					
Intermediate	0.00	**-0.02**	**0.02**	0.00	**0.01**
	0.00	0.00	0.00	0.00	0.00
Routine	0.00	**-0.03**	**0.02**	*-0.01*	**0.01**
	0.01	0.00	0.00	0.00	0.00
Missing	0.00	-0.01	*0.01*	*0.00*	0.00
	0.01	0.00	0.00	0.00	0.00
Residuals					
Upper SC	-0.07	**0.36**	**-0.30**	0.02	0.00
	0.11	0.10	0.07	0.03	0.03
Lower SC	0.06	**0.30**	**-0.32**	0.02	-0.05
	0.11	0.09	0.06	0.03	0.04
Third class	0.62	*-0.73*	0.14	0.01	-0.05
	0.49	0.36	0.23	0.13	0.17

Source: DLHE. AMEs in bold indicate significance at the 0.01 level; 0.05 level for italics. Controls: age, region, year. Models cluster for institution attended and use the 2SRI method to deal with degree attainment as an endogenous predictor.