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Employment and earning differences in the early career of ethnic minority British graduates: the importance of university career, parental background and area characteristics

Wouter Zwysen[a] and Simonetta Longhi[b]

[a]Department of Sociology, University of Essex, Colchester, UK; [b]Department of Economics, University of Reading, Reading, UK

ABSTRACT

Ethnic minorities in the U.K. are more likely than the white majority to gain university qualifications, but experience worse labour market outcomes on average. This paper compares employment and earnings of British graduates from ethnic minorities to those of white British graduates to analyse whether ethnic labour market differences exist among the highly qualified, and whether they can be explained by differences in parental background, local area characteristics or differences in university careers. These factors account for a substantial part of persistent ethnic differences in earnings, but explain very little of the differences in employment. Compared to the literature estimating ethnic labour market inequalities on people with any level of qualification, we find smaller ethnic differences in employment and almost no differences in earnings among graduates entering the labour market. The results are robust to various changes in model specification.

1. Introduction

Ethnic minorities in the U.K. are more likely to have university qualifications than white British, but still face substantial disadvantage in the labour market on average (Algan et al. 2010; Modood 2005). Most of the previous literature compares people with different levels of education and at different points in their career, thus conflating various possible explanations for the observed ethnic employment and wage inequalities. In this paper we focus on a relatively homogeneous group of graduates from U.K. universities at the beginning of their labour market career to analyse whether labour market inequalities exist among university graduates and to evaluate three possible explanations for such inequalities. By analysing labour market outcomes six months and three and a half years after graduation we can provide evidence on the mechanisms through which ethnic differences arise among graduates, without confounding them by inequalities arising over the life course.

Using data from the Destination of Leavers of Higher Education (DLHE) this paper aims to answer two main research questions. First, we ask whether there are ethnic differences in labour market outcomes among university graduates at the beginning of their careers, six months after graduation. We also ask how these differences evolve over a relatively short period of time (i.e. three years) to provide new longitudinal evidence on how labour market inequalities evolve over the career.

The second research question asks what may be the determinants of these early labour market differences. We address three possible reasons. First, the university degrees gained by ethnic minority graduates may be less valued in the labour market than those of white British graduates. This could be because minorities attend worse universities, obtain worse degree classifications or study less valued subjects. Second, ethnic minority graduates may not have access to the same resources in terms of parental socio-economic background as white British, and this may put them at a disadvantage (Li and Heath 2016; Zuccotti 2015). Third, there are important differences between minorities and the majority in the economic and demographic conditions of the area where graduates were living before entering university. These are likely to influence graduates' networks and resources available within the community with a consequent impact on labour market outcomes (Patacchini and Zenou 2011, 2012).

A report commissioned by the U.K. Department for Education and Skills addressed some of these questions in studying ethnic inequality in higher education in the U.K. (Connor et al. 2004). The report finds substantial ethnic inequality in employment six months after graduation, but no disadvantage in terms of the quality of jobs for the employed. While this study suggests several potential mechanisms that may lead to disadvantage, including family support, these mechanisms are not tested. Other studies have considered the outcomes of graduates in the U.K. using pooled cross-sectional data and find that non-white British nationals are more likely to be overqualified and face disadvantage in terms of employment and earnings compared to their white British peers (Battu and Sloane 2004; Lindley 2009; Rafferty 2012).

Our paper contributes to this growing literature by using large-scale data to study the extent and determinants of ethnic differences in labour market outcomes of graduates at the beginning of their career. We consider whether any differences remain after accounting for parental background, area characteristics and the type of degree obtained. To the best of our knowledge this is the first paper to test the contribution of these factors to ethnic differences in graduate labour market outcomes. We are also among the first to provide longitudinal evidence of how ethnic differences evolve over graduates' early career.

2. Possible reasons for ethnic differences in labour market outcomes

One reason for ethnic inequalities in labour market outcomes among graduates may be that ethnic minorities generally graduate from less prestigious universities, with lower degree classifications than white British students, and in different subjects (Connor et al. 2004; Modood 2005; Richardson 2015). Jackson (2012) shows that ethnic minorities are more likely than their white British peers to enter university after their A-levels, despite lower average performance and worse socio-economic background. This can account for worse performance at university. The push to pursue high education may be the result of strategic choices to prevent expected discrimination (Colding, Husted, and Hummelgaard

2009; Connor et al. 2004; Heath, Rothon, and Kilpi 2008). In addition, while minorities do not differ substantially from the majority in their university applications, they are on average less likely to receive an offer, especially from more prestigious universities (Boliver 2013; Shiner and Modood 2002; Shiner and Noden 2015).

We also consider parental background as an important source of ethnic differences, fitting within the literature on intergenerational social mobility and particularly ethnic social mobility (e.g. Li and Heath 2016; Platt 2005; Zuccotti 2015). Ethnic minority graduates in the U.K. are more likely to come from a lower socio-economic background than white British graduates. This is a consequence of ethnic inequality among the parental generation as well as downward mobility experienced by parents who are immigrants (Platt 2005). Parental socio-economic background can affect labour market outcomes both directly and indirectly through education (Zuccotti 2015). Parents from a higher socio-economic background transmit soft skills to their children which are valued in the labour market (Bowles, Gintis, and Groves 2005). In addition, young adults often rely on their parents' social networks to find work, and these networks are likely to be more effective for those from higher socio-economic background (Holzer 1988; Kadushin 2012; Patacchini and Zenou 2012). Receiving financial support may also allow graduates to search for longer and to be more selective in accepting employment and (unpaid) internships. Because of their lower parental background, ethnic minorities may be at a disadvantage already before entering the labour market as they can access fewer resources and information (Flap and Völker 2008; Zuccotti 2015).

The third source of ethnic differences in labour market outcomes considered here is the local area. The local area may matter for two reasons. First, it is a source of potentially useful contacts that can help graduates in their job search and supplement parental resources (Patacchini and Zenou 2011), thus affecting labour market outcomes (Bayer, Ross, and Topa 2008). The weak ties within the local community can provide information on job opportunities or referrals. This can be especially important for ethnic minorities who often rely more on social networks in job search than white British job-seekers (Battu, Seaman, and Zenou 2011; Dustmann, Glitz, and Schonberg 2016). A second reason for studying the local community is that ethnic minority graduates also come on average from more deprived areas which may offer few (graduate) employment opportunities, making it harder to find work (Feng, Flowerdew, and Feng 2015). Persistent differences in outcomes may be the result of ethnic minority graduates not living near where the jobs are (Hellerstein, Neumark, and McInerney 2008; Zenou 2013). Previous research found that ethnic minority graduates are less mobile than white British graduates and are therefore especially likely to be affected by the conditions of the area where they lived before entering university (Abreu, Faggian, and McCann 2015).

In summary, university career, parental background, networks and economic opportunities within the local area may all lead to ethnic differences in labour market outcomes.

3. Data and descriptive statistics

3.1. The destination of leavers of higher education

The DLHE is a dataset which includes administrative data collected by U.K. universities on students' background such as ethnicity, parental occupation, and area of residence upon

entry to university. These are combined with data on students' careers such as field of study, degree classification, etc. In addition, six months after graduation universities carry out a survey of all their graduates asking about their labour market status and job characteristics, with response rates around 75%. Three years after the first survey, and at alternate years, a small representative sample (15–20%) of those who responded to the first survey is surveyed a second time, with response rates around 45%. These respondents are contacted sequentially via email, through the post and then by telephone. All other graduates for whom an email address is available are also contacted once via email to take part in the online survey; about 10% of them complete the survey (HESA 2009; Shury and Vivian 2013). Hence the longitudinal sample is smaller and less representative than the six months sample.

We study the labour market outcomes of students who graduated from 2004/2005 to 2011/2012. The cohort of those who graduated in 2004/2005; 2006/2007 and 2008/2009 are the ones that have been followed up longitudinally. To retain a homogeneous group we restrict the sample to graduates younger than 24 when entering their final year, who did not report a disability, are British nationals, and lived in England before entering university, resulting in 993,735 respondents. Since graduates with a joint/combined degree are recorded twice (or more) in the data, each row of observation is given a correction factor equal to $1/n$ where n is the number of times the graduates appears in the data, so that the correction factor sums to one for every graduate.

In line with previous studies, we focus on the largest ethnic minority groups in the U.K.: Indians, Pakistanis, Bangladeshis, black Caribbeans, black Africans and Chinese and compare them to white British. These ethnic categories are common to most U.K. surveys and build on historic migration patterns to the U.K. It is important to note that ethnicity is self-reported and previous studies have found that there may be some instability in these categories when they cover heterogeneous groups (Connor et al. 2004; Simpson, Warren, and Jivraj 2015). After exclusion of students from all other minorities (38,621 respondents) and listwise deletion of missing data (309,496 respondents) we consider the outcomes of 645,618 respondents six months after graduation. Our main focus lies on those graduates who enter paid employment (406,812 respondents) or are unemployed (48,330), rather than pursuing further studies (152,845 respondents), doing unpaid or voluntary work (9,966 respondents) or being out of the labour market altogether (27,665 respondents). We therefore consider employment outcomes for 455,142 graduates six months after graduation and 16,942 graduates three years later.

There are substantial gender differences in the choices made in higher education as well as labour market outcomes (Connor et al. 2004; Rafferty 2012). Gender differences may be particularly relevant for some groups, for example, Pakistani and Bangladeshi female graduates who face different cultural and labour market constraints than their male counterparts (Rafferty 2012; Shah, Dwyer, and Modood 2010). We therefore analyse men and women separately.

3.2. Labour market outcomes

Our dependent variables are employment status and earnings. Employment is measured by a dummy which is one for those who have a paid job or are self-employed, and zero for the unemployed, excluding the inactive, those in further study and carrying out

unpaid or voluntary work from the whole analysis. Yearly earnings, deflated to 2011 prices using the Consumer Price Index (CPI) provided by the Office for National Statistics (ONS), are provided for people in paid jobs only (and exclude the self-employed). To eliminate possible outliers and coding errors we exclude graduates in the highest and lowest 1% of observations for earnings. Earnings information is only available for graduates who are working and since we find that ethnic minorities are less likely to find employment this may generate issues of differential selection into paid jobs. Unfortunately, the DLHE does not include variables we can use to model this selection into employment so we model employment and earnings independently.

Descriptive statistics of all variables are available in Tables A1 and A2 in the supplementary material. These tables show that the proportion of graduates who have a job six months after graduation varies between 77% for Pakistani and 90% for white British graduates. Perhaps surprisingly, most minority groups seem on average to have higher earnings than white British graduates. Three and a half years after graduation differences in the proportions of those who have a job decrease while differences in earnings increase.

3.3. Parental background

We measure parental background by parental social class and the type of school the graduate attended before university. Parental social class is measured in four categories: managerial and professional occupations (high class); intermediate and lower supervisory and technical occupations (middle class); semi-routine or routine occupations or long-term worklessness (working class), and self-employment. Self-employment is kept separate because of its relevance among ethnic minority groups (Light 2005).

Parental social class may measure skills that parents transmit to their children, as well as networks. To separate that part which may be related to human capital investment we also compute a dummy for having attended a private school before university. Private schools are expensive and tend to affect labour market outcomes positively, representing an investment on the part of the parents (Macmillan, Tyler, and Vignoles 2015).

Between 23% and 51% of ethnic minority graduates are from a working class background, compared to 14% of white British graduates. The difference in parental class in our sample of graduates and in the population as a whole (from the 2001 census for England) is also much larger among white British than among ethnic minorities (Table A3 in supplementary material). This supports the idea that parental class is correlated with the probability of graduating from university more among the white British population than among ethnic minorities (Modood 2005), and this may partly explain ethnic differences in labour market outcomes.

3.4. Characteristics of the area of residence before entering university

The DLHE reports the area where the graduate lived before going to university which we use to measure the economic opportunities and social networks available to the graduate. In this paper we include information at the local authority district level[1], which is relatively large geographically, allowing us to capture economic opportunities.

As a measure of job opportunities in the labour market we use the share of claimants of unemployment benefit. These are available yearly from the Department for Work and

Pensions through the ONS. The second indicator we use is the ethnic diversity in the local area, which can affect social capital (Schaeffer 2014; Vervoort, Flap, and Dagevos 2010). We measure ethnic diversity through the inverse Herfindhal index, using the shares of each ethnic group in the local authority district from the 2001 and 2011 census and linearly imputing intra-census years. This index can be interpreted as the probability that two persons randomly drawn from the population of that district have the same ethnicity (Vervoort, Flap, and Dagevos 2010, 5).

We measure the information available through social networks by the local employment rate and the share of graduates, obtained from the 2001 and 2011 censuses with intra-census years linearly imputed. The employment rate measures job availability and the likelihood that people hear about new jobs, while the share of graduates indicates the human capital available within the local network which can be particularly important to find graduate level work. Ethnic minority graduates are more likely to come from more diverse areas with fewer jobs, but also from areas with on average a higher share of graduates compared to white British graduates.[2]

3.5. Type of degree

Earnings and the probability of finding a job may be higher for those who graduate from more prestigious universities, with higher degree classifications and who studied fields more valued in the labour market. Similar to Boliver (2013) we differentiate between graduates from Russell-group universities, from new universities, and from all remaining older universities. At the higher end of the spectrum the Russell-group comprises 24 highly ranked research-intensive universities; these are generally considered to be the most prestigious. At the lower end of the spectrum are new universities which became independent universities following the Further and Higher Education Act of 1992. These new institutes are generally considered less prestigious and have higher shares of ethnic minority students (Connor et al. 2004; Shiner and Modood 2002). Following Richardson (2015) we also account for three degree classifications: first-class honours, upper second-class honours (2:1) or any lower distinction. Finally, we differentiate between nine groups of subjects categorised based on the joint academic coding system following Abreu, Faggian, and McCann (2015).[3]

Pakistani, Bangladeshi, black African and black Caribbean graduates attended less prestigious universities on average than white British students while Indian and Chinese students graduate from better universities. In addition, 13% of white and Chinese graduates obtain first-class honours, but only 5% of black and 7–9% of south-Asians do. There are also substantial differences in the field of study. With some exceptions, ethnic minorities are generally more likely to graduate from health sciences, social sciences and business than white British students and less likely to graduate from humanities and creative arts.

4. Method

To assess whether differences in parental background, local area characteristics or university choices account for ethnic differences in employment and earnings six months after graduation we estimate regression models in which these three factors are included first separately and then jointly to a base model including only ethnicity E_i and year of

graduation dummies C_i (Equations (1) and (2)):

$$\text{Empl}_{it} = \alpha_1 + \beta_1 E_i + \gamma_1 C_i + \delta_{11} Z_{1i} + \delta_{12} Z_{2i} + \delta_{13} Z_{3i} + \varepsilon_{1i}, \tag{1}$$

$$\text{Earn}_{it} = \alpha_2 + \beta_2 E_i + \gamma_2 C + \delta_{21} Z_{1i} + \delta_{22} Z_{2i} + \delta_{23} Z_{3i} + \delta_{24} Z_{4it} + \varepsilon_{2i}. \tag{2}$$

The dependent variable is either the dummy for employment (Empl_{it}), or the log of labour market earnings (Earn_{it}) of individual 'i' at time 't' (i.e. six months after graduation). Here we are interested in the ethnic differences with the white British majority, shown by the coefficients β_1 and β_2, and how these ethnic differences change when including additional explanatory variables (the Z). As our graduates are all between 21 and 24 years old and have essentially no graduate work experience we start with a model that includes only E_i and C_i. We then re-estimate our model adding one of the mechanisms to the base model: parental background (Z_1), local area characteristics (Z_2) or university characteristics (Z_3). For the earnings outcomes we also include a model with indicators for working on a temporary contract, working part-time or working in London (Z_4). We estimate one final model including all explanatory factors jointly (as in Equations (1) and (2)).

If the labour market disadvantage faced by ethnic minority graduates is partly mediated by their parental background, university careers, or the characteristics of the area they come from, we expect the inclusion of the variables in Z to result in β coefficients which are closer to zero (a coefficient of zero would indicate no ethnic differences). The comparison of β across specifications indicates which set of control variables explains a larger part of the ethnic differences.

We further compare career trajectories of ethnic minorities in terms of employment probability and earnings to those of white British graduates as shown in Equations (3) and (4). These models indicate whether and how ethnic inequalities change over the career.

$$\text{Empl}_{i,t+1} = \alpha_3 + \beta_3 E_i + \gamma_3 C_i + \delta_{31} Z_i + \delta_{32} Z_{2i} + \delta_{33} Z_{3i} + \theta \text{Empl}_{it} + \eta \text{Empl}_{it} * E_i$$
$$+ \varepsilon_{3i}, \tag{3}$$

$$_t\Delta_{t+1}\text{Earn}_i = \alpha_4 + \beta_4 E_i + \gamma_4 C_i + \delta_{41} Z_{1i} + \delta_{42} Z_{2i} + \delta_{43} Z_{3i} + \delta_{44} Z_{4it} + \delta_{45} Z_{4it+1}$$
$$+ \varepsilon_{4i}. \tag{4}$$

The dependent variable in Equation (3) is the dummy for employment three and a half years after graduation (Empl_{it+1}). This model is similar to the one in Equation (1), but estimated on data from the longitudinal survey. It is estimated with the inclusion of all controls[4] with the addition of dummies for employment at the time of the first survey (Empl_{it}). Hence, we allow employment three and a half years after graduation to depend on initial employment status. Previous unemployment may be more detrimental for ethnic minority graduates than for white British graduates if, for example, it strengthens already existing stereotypes (Birkelund, Heggebø, and Rogstad 2017). We test if this is the case by adding an interaction between ethnicity and employment six months after graduation.

The dependent variable in Equation (4) is the difference in log earnings ($_t\Delta_{t+1}\text{Earn}_i$) between six months and three and a half years after graduation conditional on having

non-zero earnings at both times. The coefficient β_4 is a measure of how changes in earning of ethnic minority graduates differ from changes in earning of white British graduates and whether there are ethnic differences in earning growth over the career.

Both employment models are estimated using binary logistic regressions with results shown as average marginal effects while both earning models are estimated by OLS regressions. Standard errors are clustered by local authority district of residence prior to university.

To analyse whether our variables classifying universities in three types (Russell group, new institutes and others) capture institutional variability sufficiently, we also carry out sensitivity tests where the university type is substituted by university fixed effects. Similarly, we also estimate models including fixed effects for the local authority district. In both cases the results show little difference with the more parsimonious models (see Section 6.3).

Due to the small sample size for the longitudinal models, for the estimation of Equations (3) and (4) we group black Caribbean with black African graduates and Pakistani with Bangladeshi graduates.

5. Results

5.1. Ethnic differences in employment six months after graduation

Table 1 shows ethnic differences in the probability of being in employment six months after graduation; the top part of the table refers to men and the bottom part to women. The full set of coefficients of the final joint model is presented in Table A5 in the supplementary material (coefficients for each separate model are available upon request).

The probability of employment for graduates increased slightly from 2005 to 2007, but then decreased substantially during the economic crisis with those graduating in 2009 being 2–5p.p. (percentage points) less likely to be employed than those graduating in 2005. By 2012 the employment probability was still 1p.p. below that of those graduating in 2005. Parental background affected the employment probability of graduates, with male graduates from a high class background being 1p.p. more likely than those from working class to be employed while female graduates who attended private schools were 1–2p.p. less likely than their peers who attended state schools to be in employment. A 1p.p. increase in the share of claimants of unemployment benefit, indicating fewer economic opportunities, was associated with a 0.5p.p. lower probability of employment. The share of graduates also had a small negative effect for female graduates.

Graduating with first-class honours substantially increased the probability of employment, by 3p.p. for women and 7p.p. for men. Graduates from Russell-group universities were 1–2p.p. less likely to be employed than those graduating from other universities, which could indicate a longer search for better jobs. Graduates with a degree in education or health sciences were the most likely to be employed and those who studied humanities or creative arts the least.

Table 1 shows that all ethnic minority graduates were on average less likely to be employed than white British graduates when only controlling for year of graduation. Black Caribbean graduates were 3–4p.p. less likely to be employed than white British graduates; but for Pakistani and Bangladeshi graduates as well as Chinese male graduates

Table 1. Employment probability six months after graduation.

	(1) Basic model	(2) Parental background	(3) Local area	(4) University	(5) Full model
Men Obs. = 196,976					
Ethnicity (ref. white British)					
Black Caribbean	−0.034**	−0.033**	−0.020*	−0.027**	−0.016+
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Black African	−0.072**	−0.071**	−0.057**	−0.073**	−0.061**
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Indian	−0.066**	−0.063**	−0.054**	−0.074**	−0.060**
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Pakistani	−0.109**	−0.103**	−0.093**	−0.117**	−0.098**
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Bangladeshi	−0.107**	−0.098**	−0.091**	−0.113**	−0.093**
	(0.015)	(0.015)	(0.014)	(0.015)	(0.014)
Chinese	−0.128**	−0.121**	−0.122**	−0.126**	−0.115**
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Women Obs. = 258,166					
Ethnicity (ref. white British)					
Black Caribbean	−0.037**	−0.038**	−0.028**	−0.032**	−0.027**
	(0.007)	(0.007)	(0.006)	(0.007)	(0.006)
Black African	−0.084**	−0.085**	−0.070**	−0.082**	−0.074**
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Indian	−0.076**	−0.076**	−0.071**	−0.082**	−0.077**
	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)
Pakistani	−0.156**	−0.155**	−0.148**	−0.165**	−0.156**
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Bangladeshi	−0.128**	−0.127**	−0.116**	−0.134**	−0.123**
	(0.014)	(0.014)	(0.013)	(0.014)	(0.014)
Chinese	−0.099**	−0.095**	−0.094**	−0.095**	−0.089**
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)

Note: Marginal effects of binary logistic regressions, standard errors are clustered by local authority district of origin. Explanatory variables: Basic model: dummies for year of graduation; Parental background: dummies for year of graduation, for parental social class and for having attended private school before university; Local area: dummies for year of graduation, ethnic dissimilarity index (Herfindhal), proportion of co-ethnics, proportion of claimants, employment rate, share of graduates; University: dummies for year of graduation, for Russell group and former polytechnic, dummies for degree classification and for subject studied. The Full model includes all covariates.
+$p < .1$.
*$p < .05$.
**$p < .01$, two-tailed significance tests.

this difference was 10–16p.p. In the literature considering the whole population Indian and Chinese minorities are often found to be more likely to be employed than their white British peers (e.g. Blackaby et al. 2005), but we found no relative advantage among graduates.

In contrast to our expectations, including parental background in Column (2) did not reduce ethnic differences, suggesting that the lower socio-economic background was not the reason why minority graduates are less likely to be employed than white British graduates. Local area characteristics, in contrast, explained some of the ethnic inequalities, which in this model were reduced by 1–2p.p. for all ethnic minority groups bar the Chinese (Column 3). Similarly to parental background, university career (Column 4) did not explain ethnic inequalities in employment. Instead, ethnic inequalities increased for some groups, thus suggesting that ethnic minority graduates were not rewarded for their degrees the same way as white British graduates were.

The model in Column (5) of Table 1 includes all covariates. Employment inequalities were similar to the models in which only the characteristics of the local area where graduates come from are included. The only exception is the employment gap for black

Caribbean men, which is no longer statistically significant ($p < .05$). Hence, we conclude that differences in parental background, local area characteristics and university career did not systematically explain ethnic inequalities in employment.

5.2. Earning gaps six months after graduation

Table 2 shows the estimated ethnic gaps for yearly earnings for men (top part of the Table) and women (bottom part of the Table); full coefficients for the joint model are shown in Table A5 in the supplementary material. Entry earnings of graduates grew from 2005 to 2012, although they reduced slightly from 2008 to 2009 in real terms. As expected, graduates working in part-time jobs or on temporary contracts had substantially lower annual earnings, while working in London was associated with much higher earnings. Graduates from a high class background earned 4–5% more than their working class counterparts while having attended a private school was associated with 9–11% higher earnings. We

Table 2. Earnings six months after graduation.

	(1) Basic model	(2) Job type	(3) Parental background	(4) Local area	(5) University	(6) Full model
Men Obs. = 75,831						
Ethnicity (ref. white British)						
Black Caribbean	−0.026+	−0.053**	−0.013	−0.048**	0.030*	−0.001
	(0.015)	(0.011)	(0.014)	(0.012)	(0.014)	(0.010)
Black African	0.042**	−0.007	0.052**	0.016	0.064**	0.015
	(0.013)	(0.013)	(0.013)	(0.014)	(0.012)	(0.012)
Indian	0.079**	0.056**	0.089**	0.069**	0.065**	0.048**
	(0.014)	(0.009)	(0.012)	(0.010)	(0.012)	(0.007)
Pakistani	−0.008	−0.000	0.012	−0.004	−0.007	0.009
	(0.015)	(0.009)	(0.014)	(0.012)	(0.015)	(0.009)
Bangladeshi	0.034+	0.009	0.065**	0.030+	0.042*	0.033*
	(0.019)	(0.016)	(0.019)	(0.018)	(0.019)	(0.016)
Chinese	0.092**	0.061**	0.097**	0.084**	0.041**	0.021+
	(0.015)	(0.013)	(0.015)	(0.015)	(0.014)	(0.012)
Women Obs. = 112,033						
Ethnicity (ref. white British)						
Black Caribbean	0.006	−0.041**	0.015	−0.029**	0.040**	−0.021*
	(0.012)	(0.011)	(0.012)	(0.010)	(0.013)	(0.010)
Black African	0.071**	−0.001	0.078**	0.031**	0.081**	−0.004
	(0.010)	(0.009)	(0.010)	(0.012)	(0.008)	(0.008)
Indian	0.049**	0.032**	0.056**	0.027**	0.038**	0.014*
	(0.014)	(0.009)	(0.013)	(0.009)	(0.013)	(0.006)
Pakistani	−0.035*	−0.010	−0.021	−0.042**	−0.045**	−0.022*
	(0.016)	(0.011)	(0.016)	(0.012)	(0.016)	(0.011)
Bangladeshi	−0.033+	−0.047**	−0.013	−0.050**	−0.029+	−0.044**
	(0.017)	(0.015)	(0.017)	(0.014)	(0.017)	(0.015)
Chinese	0.088**	0.046**	0.095**	0.072**	0.064**	0.029**
	(0.013)	(0.011)	(0.012)	(0.012)	(0.012)	(0.010)

Note: Standard errors are clustered by local authority district of origin. Explanatory variables: Basic model: dummies for year of graduation; Job type: dummies for year of graduation, for working part-time, for temporary jobs, and for working in London; Parental background: dummies for year of graduation, for parental social class and for having attended private school before university; Local area: dummies for year of graduation, ethnic dissimilarity index (Herfindhal), proportion of co-ethnics, proportion of claimants, employment rate, share of graduates; University: dummies for year of graduation, for Russell group and former polytechnic, dummies for degree classification and for subject studied. The Full model includes all covariates.

+$p < .1$.
*$p < .05$.
**$p < .01$, two-tailed significance tests.

also find that coming from an area with higher diversity, a higher share of graduates or a higher average employment rate was associated with higher annual earnings. Those who graduated with first-class honours earned substantially more than those who graduated with lower second-class honours. There was a clear university hierarchy with graduates of new universities earning the least and Russell-group graduates earning the most.

From results not shown here (but available upon request) it appears that part of the effect of parental class, type of school, share of graduates and diversity in the local area operated through the university career and job characteristics as the effects were substantially reduced when including all control variables. While more research is needed on this, since background remained important and also explained some of the negative ethnic earnings inequalities, we tentatively conclude that the provision of additional support and soft skills could benefit graduates from low parental background and may enable them to close the gap with those from high parental background.

The base model in Column (1) of Table 2 shows the ethnic earning inequalities estimated when accounting for year of graduation only. Pakistani and Bangladeshi women and black Caribbean men earned around 3% less than white British graduates on average although this effect is only statistically significant ($p < .05$) for Pakistani women, but black African, Indian and Chinese graduates earned 4–9% more. After controlling for job characteristics, the advantages of Bangladeshi men and black African men and women disappeared as did the negative difference for Pakistani women, while differences for Indian and Chinese were substantially reduced. This indicates that a substantial part of the inequality was due to the type of jobs taken by minorities and their location (London).

When controlling for parental background in Column (3) the negative earning differences disappeared and the advantages increased, indicating the lower parental background of ethnic minority graduates contributed to some groups' comparatively lower earnings. After controlling for characteristics of the local area in Column (4) negative earning differences remained only for Pakistani and Bangladeshi women and black Caribbean men and women. When controlling for university career in Column (5) only the differences of Pakistani women remained. Finally, only minor ethnic differences remained when accounting for all explanatory variables (Column 6). Black Caribbean, Pakistani and Bangladeshi women earned 2–4% less than their white British counterparts, while Indian and Chinese graduates and male Bangladeshi graduates earned 2–5% more than white British graduates. For male Chinese graduates this effect was not statistically significant (at $p < .05$) however.

In summary, for ethnic minority British graduates we found only small earning differences which are mostly due to lower parental background and differences in degrees. The average earning gaps for graduates are substantially smaller than those found in the literature on ethnic gaps in the U.K. among the population as a whole, especially for Pakistani and Bangladeshi men (see e.g. Longhi, Nicoletti, and Platt 2013; Longhi and Platt 2008). Our tentative conclusion here is that graduating from university for ethnic minorities can be a route to improved earning equality compared to their white British peers, although some inequalities in the employment probability still remain. The lower employment probability for ethnic minorities may also mean that employed ethnic minorities who have a job may be more positively selected than white British graduates. In addition, although we found no earning inequalities among graduates when they enter their first jobs, these may still develop through the career, a point we discuss in more details in the next section.

5.3. Trajectories

Differences in the employment and earning trajectories of white British and ethnic minority graduates between six months and three and a half years after graduation are shown in Table 3. Columns (1) and (2) show the ethnic employment inequalities (marginal effects) compared to white British graduates by employment status (employed or unemployed). We find some indication that female ethnic minority graduates were less likely to be employed than their white British peers three and a half years after graduation, although the difference is only marginally significant ($p < .1$) and only for Indian and Pakistani/Bangladeshi women, as well as for Black Caribbean women who were initially employed. Initial unemployment seems to have long-lasting effects as ethnic minority women were estimated to be between 2 and 3p.p. less likely to be employed than similar white British if they were employed six months after graduation, but were between 6 and 26p.p. less likely to be employed if they were initially unemployed. Pakistani and Bangladeshi women who were initially unemployed were significantly ($p < .05$) less likely to be employed than similar white British women, while this difference was only marginally statistically significant ($p < .1$) and much smaller for Pakistani and Bangladeshi women who were initially employed. These estimates, although imprecise, suggest that unemployment scarring may be aggravated for ethnic minority women, possibly due to stereotypes or uncertainty about the skills of ethnic minority women being reinforced by the experience of unemployment (Birkelund, Heggebø, and Rogstad 2017). Among men almost all marginal effects were negative, but not statistically significant, suggesting that ethnic differences in employment diminished or even disappeared over time for men, when taking initial employment into account.

Table 3. Labour market trajectories.

	Men			Women		
	(1) Employed (initially unemployed)	(2) Employed (initially employed)	(3) Earnings	(1) Employed (initially unemployed)	(2) Employed (initially employed)	(3) Earnings
Black African/ Caribbean	−0.015	−0.032	−0.015	−0.078	−0.033+	−0.086+
	(0.073)	(0.020)	(0.049)	(0.060)	(0.017)	(0.049)
Indian	0.009	−0.020	0.039	−0.091+	−0.022+	0.067
	(0.029)	(0.013)	(0.041)	(0.055)	(0.013)	(0.046)
Pakistani / Bangladeshi	−0.075	−0.001	−0.026	−0.260**	−0.031+	0.002
	(0.068)	(0.014)	(0.084)	(0.085)	(0.018)	(0.051)
Chinese	−0.022	−0.032	0.021	−0.062	−0.029	−0.062
	(0.067)	(0.031)	(0.069)	(0.106)	(0.026)	(0.080)
Obs.	7318	7318	2612	9624	9624	4035

Note: Standard errors are clustered by local authority district of origin. Marginal effects of employment and changes in earnings between six months and three and a half years are shown. Employment models show the probability of being employed three and a half years after graduation conditional on the interaction between previous employment status and ethnicity, and employment six months after graduation. Changes in log earnings are conditional on non-zero earnings in both waves. Models control for university characteristics, local area, parental background and (for earnings) job characteristics six months and three and a half years after graduation.
+$p < .1$.
*$p < .05$.
**$p < .01$, two-tailed significance tests.

Black Caribbean women further experienced marginally significantly ($p < .1$) lower growth in earnings than white British women conditional on having worked at both points in time, but this was not the case for other minorities.

While these differences can only be indicative, given the small sample size and the possibly selected subsample used here, they indicate that ethnic minority graduates, and especially women, may not catch up over time in terms of employment probability. On the other hand, we found that ethnic minorities tend to have higher earning than white British graduates and similar earning trajectories if they remain employed. This may suggest that the consistently lower employment probability is what may generate earning gaps in the long run over people's careers.

6. Model extensions

6.1. Minority-specific mechanisms

We have shown that ethnic differences in the transition from university to the labour market can partly be explained by differences in the resources graduates have access to. We have assumed, however, that these resources affect minorities and majority in the same way.

The association between parental background and their children's labour market outcomes may be different for white British and ethnic minority graduates if the association between social class and cultural capital or social networks differ. Minorities' higher drive to higher education might mean that working class ethnic minorities are less self-selected compared to their white British counterparts. If this is the case, parental class could have a larger impact on the transition to the labour market among minorities than among the majority (Jackson 2012; Li and Heath 2016; Modood 2005; Zuccotti 2015). Similarly, if information on job opportunities is shared more along ethnic lines than between them (Patacchini and Zenou 2012), it is possible that the characteristics of the local co-ethnic community affect minorities more than the majority.

We test the importance of these ethnic-specific effects by estimating models as in Equations (1) and (2), but adding an interaction between ethnicity and parental background; and in a second model replacing the overall share of graduates in the local area by the share of graduates among co-ethnics in the local area interacted with ethnicity. The share of graduates among co-ethnics is computed from the 2001 and 2011 censuses with linear imputation for the years in between. The estimated ethnic differences in employment and earnings are shown in Table A6 in the supplementary material. Employment differences compared to similar white British graduates were generally smaller for ethnic minority graduates of higher parental class than for those of working class background, particularly for black Caribbean, black African and Chinese graduates. The estimated ethnic employment difference with white British graduates also tended to be slightly larger for ethnic minorities who lived in areas with fewer co-ethnic graduates (lowest 25%) rather than those in areas with more highly educated co-ethnics. This was particularly the case among women.

Ethnic minority graduates of high parental class background had better relative earnings compared to their white British peers than those of working class background. Ethnic differences in earnings were generally more positive for ethnic minorities who lived in areas with more co-ethnic graduates, but the differences by local area were only small.

These differences follow our expectations as ethnic minorities had relatively worse outcomes than similar white British graduates if they had access to fewer resources through parental background or the local area. The differences were generally rather small however and did not change our general conclusions. We still found that ethnic minority graduates were less likely to be employed while there were few negative earnings differences.

6.2. Alternative labour market statuses

The analyses in this paper are restricted to graduates who enter the labour market. It is nevertheless interesting to study the other destinations of graduates and how these differ by ethnicity. We therefore estimate a multinomial logistic model similar to Equation (1) where the dependent variable is the main activity six months after graduation with the following categories: paid employment, unpaid work, unemployment, further full-time or part-time studies, not available for employment. Table A7 in the supplementary material shows the predicted probabilities, accounting for all control variables, by ethnicity and gender. There is a large difference in the share of graduates who enter paid work, with 65–69% of white British and black Caribbean graduates having entered paid work, but only between 46% and 57% of the other ethnic groups. Ethnic minorities were also more likely to be unemployed, but the differences were less stark. Female graduates were less likely to be unemployed six months after graduation. The difference was largest for white British graduates where 9% of male graduates were unemployed but only 5% of female graduates, and was smallest for Pakistani graduates where there was no clear gender difference. While 21–23% of white British and black Caribbean graduates studied for another degree, this was the case for 28–38% of other ethnic groups and it was particularly high for Pakistanis (35–38%) and Bangladeshis (32–33%). White British graduates were the most likely to be neither in employment or further education (4%), followed by Chinese graduates. In this early career stage we did not find a self-selection of women into inactivity or further education. Ethnic minority graduates were indeed more likely than white British graduates to go into further education, possibly because of perceived disadvantage on the labour market (Connor et al. 2004). This paper pertains to the selected, but very important, group of minorities who enter the labour market after their first degree.

6.3. Sensitivity

The small earning inequalities and some of the ethnic advantages we find in Table 2 may be due to selection into paid employment, where ethnic minority graduates that do find a job are more positively selected than white British graduates. We tested the importance of this selection through a Heckman selection model which models earnings conditional on employment (Heckman 1979). Ideally we would have included a set of variables which affect employment but not earnings. As we have no appropriate instrument, we estimated a Heckman correction model which relied on the functional form to correct the earnings estimates. The similarity between the coefficients from the OLS and Heckman correction model (shown in Table A8 of the supplementary material) indicates that selection into employment did not seem to drive the ethnic earning inequalities.

Another potential issue for our analysis is the grouping of universities. For the sake of simplicity we accounted for only three types of university attended (Russell group, new

universities and other older universities). However, this may hide substantial heterogeneity in terms of specialisations, location and support and benefits available. Hence, we re-estimated the earning and employment models six months after graduation including fixed effects for all 118 institutions in the dataset (Tables A9 and A10 of the supplementary material). These models compare graduates from different ethnicities who went to the same institution. University fixed effects explained some of the positive earning inequalities for Indian and Chinese graduates and revealed an earning advantage for Pakistanis. The results on employment differences however did not change and our main conclusions remained.

Similarly to the case of institutions, to better control for the local area characteristics we re-estimated the models including local area fixed effects through 335 dummy variables (Tables A9 and A10 in the supplementary material). This compares graduates from different ethnicities who lived in the same local authority district prior to entering university. The results did not change, thus indicating that the area characteristics included in the main models captured the differences by local area sufficiently well.

Finally, while the local authority district generally captures the local labour market, this may be too small geographically in London which is divided into over 20 local authority districts. To analyse whether this impacted our results we re-estimated the models after aggregating all London districts into one single (London) area and computing the average local area characteristics as an average weighted by population size. The results are shown in Table A11 in the supplementary material. The estimated ethnic differences did not change substantially meaning the fact that in our analysis London is divided into more than 20 districts did not affect our results.

7. Conclusions

Higher education is often seen as a pathway to better outcomes and to social mobility (Lindley 2009). As a higher proportion of ethnic minorities in the U.K. gain higher qualifications, overall inequalities in labour market outcomes should decrease over time. In this paper we focus on employment and earning inequalities among British people of different ethnicity graduating from U.K. universities. We show that ethnic inequalities in earnings and employment among graduates are substantially lower than what is generally found in the literature including all levels of education (Blackaby et al. 2002). We find almost no earnings differences by ethnicity between graduates six months after graduation, and when continuously employed there is little difference in earnings growth. Nevertheless, substantial inequalities remain in the probability of being employed, with ethnic minority graduates much less likely to find employment six months after graduation. While these employment differences remain constant or even become smaller for ethnic minority male graduates compared to white British male graduates with initially similar employment outcomes, the differences seem to persist and even increase for women, particularly if they were initially unemployed. These findings suggest that earnings three and a half years after graduation are similar for ethnic minority graduates compared to white British graduates, if they find work in the first six months after graduation. Employment differences are larger for those ethnic minorities who did not find employment early on, indicating the long-term effect this early scarring can have.

We address several possible mechanisms that may explain ethnic labour market inequalities, namely differences in the qualifications obtained and their prestige, and differences in the support, resources and opportunities available through parents and the local community where graduates lived prior to university. While all these factors affect the probability of employment six months after graduation, only the resources in the local area account for some of the ethnic differences in employment. Parental background accounts for the lower average earnings black Caribbean men and Pakistani and Bangladeshi women compared to their white British peers. The importance of local area characteristics and parental background suggests that part of the ethnic differences in employment and earning are due to a lack of networks and support which could help facilitate the transition to the labour market. This may suggest that providing support in terms of career advice to students from more disadvantaged areas may help reduce ethnic differences in employment of graduates, at least at the beginning of their career. This is also supported by our tentative finding that ethnic minority graduates who can access more resources through their parental background or the local co-ethnic community have relatively better employment and earnings outcomes, although this is not the case for all groups.

As differences remain, it is also important to consider other possible mechanisms in future research, such as a lack of career training in terms of how to apply for jobs and find internships, which may impede finding appropriate work soon after graduation. There may also be other differences in the competitiveness of minority graduates that are not observed here, such as extra-curricular activities or unobserved soft skills. Finally, some of the hiring practices of large graduate employers may indirectly discriminate against ethnic minorities, for instance by targeting their recruitment at universities which fewer minorities attend (Connor et al. 2004; Nandi and Nicoletti 2009).

Notes

1. Between the 2001 and 2011 censuses some local authority districts have been aggregated; for consistency we use the 2009 administrative boundaries, resulting in 326 districts.
2. The focus here is on the area where people lived before university since this is a better measure of parental networks. In principle it would be useful to include in the analysis information on the area where the university is located and the area of residence after graduation. However, the comparison of the relevance of these three types of areas would make the models too complicated for the scope of this paper and is therefore left for future research. In addition, while we know the area where graduates currently work, we do not know current address for the unemployed.
3. Health sciences (A and B); biological sciences (C and D); physical sciences (F, G, H and J); social sciences (K, L and M); business (N); humanities (Q, R, T and V); creative arts (P and W); education (X) and a combined degree.
4. One issue with the longitudinal analysis is the extent to which the longitudinal sample is self-selected compared to the cross-sectional sample. We find that the longitudinal sample is on average more academically successful, although no different in socio-economic origin, than those who only participate in the six months sample (see Table A4 in the supplementary material). We partially account for this type of selection by always including the full set of covariates in the models.

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