Labour market disadvantage of ethnic minority British graduates: university choice, parental background or neighbourhood?

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Non-technical summary

Despite their high education on average, ethnic minorities in the UK tend to face disadvantage in the labour market. This paper analyses the importance of various factors to explain such a disadvantage by comparing transitions to the labour market of ethnic minority and white British graduates. There are several reasons for ethnic differences in employment or wage among graduates. First of all ethnic minorities are more likely to hold degrees from less prestigious universities and have on average lower grades than white British. Ethnic minority graduates are also less likely to come from a high social class parental background which may mean that they cannot access the same financial or social resources as white British graduates. Besides the immediate family, these resources can also originate in the local community; ethnic minorities tend to be disadvantaged by living in more deprived areas. This lack of opportunities is likely to affect employment and wages.

We find that six months after graduation ethnic minority graduates are substantially less likely to be employed than white British, but these employment gaps are not explained by differences in the local area, qualifications obtained or parental background. However, three and a half years after graduation such gaps are substantially reduced once we control for employment status six months after graduation. This suggests the importance of the first transition to the labour market as it can have long-lasting effects on later wages and employment probability. In terms of earnings we find small ethnic gaps six months after graduation, which disappear (for men) or reduce significantly (for women) after taking into account differences in resources and qualifications. Three and a half years after graduation differences in earnings, especially for women, tend to become larger which could indicate that ethnic minority graduates experience less career progression than their white British peers.

We find that resources through the family or the co-ethnic community are important in determining the labour market outcomes of ethnic minorities. We find that ethnic earning (and employment) gaps are quite large for ethnic minority graduates from low parental background and those who lived in a small and lowly educated co-ethnic community. On the other hand, minorities whose parents are better off and who can count on a large co-ethnic community that is more highly educated, have similar or even higher earnings than white British. This supports the idea that, especially for ethnic minorities, the information and resources available in the community can provide support in finding good jobs.

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Abstract

We compare school-to-work transitions of British graduates belonging to ethnic minorities to those of white British. Six months after graduation ethnic minorities are substantially less likely to be employed than white British even after accounting for parental background, local area characteristics and detailed differences in qualifications. We show that university quality has a little impact while resources measured by parental background and the characteristics of the local area are more important for the labour market outcomes of ethnic minority graduates than for white British. Minorities lacking these resources earn less and are less likely to be employed compared to white British.

Keywords: School-to-work transitions; graduates; ethnic gaps; UK

JEL Classification: I24; J15; R23

1. Introduction

Most ethnic minority groups in Britain are highly educated on average and more likely to attend university than white British people (Modood, 2005). It has been suggested that the comparatively higher level of education of ethnic minorities may be the results of strategic choices to signal the quality of the job seeker and to prevent expected (statistical) discrimination (Colding et al., 2009; Heath et al., 2008; Modood, 2005). Having higher qualifications increases the labour market success of ethnic minority workers, but does not eliminate the ethnic penalty altogether. For the UK, Rafferty (2012) shows that ethnic minority graduates are less likely to find employment than white British people, and are more likely to find jobs for which they are overqualified. Battu and Sloane (2004) and Lindley (2009) show that ethnic minority workers, including those born in the UK, are more likely to be over-educated for their jobs and are paid less than white British for their higher qualifications.

In this paper we contribute to the literature on employment and earning inequalities of ethnic minorities by analysing the transition from university to the labour market of graduates who are British nationals. We focus on ethnic penalties in employment and earnings and address reasons for these penalties by analysing the impact of three types of factors: educational choices, family background, and neighbourhood. The aim is to gain a deeper understanding of factors leading to labour market inequalities and of possible ways in which policy may reduce them.

By focusing on graduates who are British nationals we exclude minorities who may face language barriers or lack familiarity with UK institutions and labour market. However, differences across ethnic groups remain in terms of parental background and resources in the neighbourhood, which may negatively affect their education (Modood, 2005; Rafferty, 2012) and opportunities, and therefore labour market outcomes (see e.g. Crawford and Vignoles, 2014; Macmillan et al., 2015, who however do not study ethnic minorities). By using the Destination of Leavers of Higher Education (DLHE), a rich dataset on graduates in the UK we can compare the contribution of educational choices, parental background and social class on ethnic penalties in employment and earnings both six months and three and half years after graduation. To the best of our knowledge this is the first paper that accounts for the separate contribution of these factors and focuses on how ethnic disadvantage may affect the transitions to the labour market. We further contribute to the literature by studying how the outcomes of ethnic minority graduates differ depending on resources such as information and

support which they may have access to through parents or the local co-ethnic community. We also analyse whether these resources help ethnic minority graduates to find better work through social networks. If ethnic minority graduates lose out compared to their white British counterparts because they lack the right networks to find good jobs, then more external guidance and support may be needed in facilitating their transition into the labour market. Finally, the analyses of outcomes of graduates six months after graduation allow us to focus on a homogeneous group of graduates at the start of their working career. By following a subsample again three and a half years after graduation we can study how these inequalities evolved after the career path has stabilised.

In the remainder of this paper we first discuss the background provided by the existing literature (Section 2). We then describe the dataset in more detail and elaborate on how parental background, differences in qualifications and the local community are measured (Section 3). We find that ethnic minority graduates are indeed more likely to come from lower socio-economic background, attend less prestigious universities and obtain lower grades than their white British peers and grew up in more deprived areas. There is substantial variation between ethnic groups in the co-ethnic resources they have access to. Section 4 describes the methods and models used after which we discuss the results (Section 5). We find substantial employment gaps for ethnic minority graduates and a more varied picture when studying earnings. Earning gaps are substantially reduced when accounting for the differences in composition but employment gaps remain. We then show that the gaps between ethnic minority graduates and their white British peers differ depending on the resources available through parents and the local co-ethnic community. Ethnic minority graduates from a lower social class background and with a weaker co-ethnic community are at a substantial disadvantage while those from higher backgrounds and with a stronger community have labour market outcomes much more similar to their white British peers.

2. Ethnic differences among graduates

Ethnic minorities differ from the white British majority in the choice of type of university, subject of study and academic performance (Modood, 2005; Richardson, 2015): they are more likely to graduate from less prestigious universities and to obtain lower grades than white British students with similar qualifications upon entry to university (Richardson, 2015). These choices and outcomes may have an impact on labour market outcomes of ethnic minorities if they are seen by employers as signalling lower quality job applicants (and may be mistaken as statistical discrimination when not included in the analysis). To avoid

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additional complications we do not model university choices and outcomes directly but only analyse to what extent ethnic minority penalties in the labour market are explained by university choices[1].

Ethnic minorities may also differ from white British graduates in their social networks. Using contacts is a common and often highly successful method of gaining a good job, especially for young adults who can make use of their parents' networks (Holzer, 1988; Kadushin, 2012; Patacchini and Zenou, 2012). Since ethnic minority graduates are less likely than white British graduates to be of high social class background their parents may lack information and resources to help their children find a graduate level job (Flap and Völker, 2008; Zuccotti, 2015). Parents with more financial resources may also allow graduates to search for longer and be more selective in accepting employment and (unpaid) internships.

Besides parental class, the local community may also be a source of potentially useful contacts that can differentiate between graduates. Patacchini and Zenou (2011) suggest that the human capital in the neighbourhood may help parents to improve their children's education and that this can be especially important for parents with fewer resources, while Bayer et al. (2008) show that having neighbours with better socio-economic positions increases labour force participation and earnings. In addition, many ethnic minority graduates tend to work quite close to where they grew up (Abreu et al., 2014) and often live in less well-off areas which can affect labour market outcomes (Feng et al., 2015).

The aim of our paper is to analyse these three compositional factors, namely the type of qualifications obtained, parental background and resources in the local area where the graduate grew up to ascertain how much they contribute to explaining ethnic penalties. We address whether differences in social networks play a role in the difference between majority and ethnic minorities. Finally, some of these factors may be more important for ethnic minority graduates than for their white British peers which we consider below.

Gaining high qualifications is one of the main pathways through which parental background may affect labour market outcomes (Torche, 2011; Triventi, 2013). UK studies have shown that ethnic minorities are more likely to enter university than white British regardless of their background. Hence, the correlation between parental background and own education is weaker for ethnic minorities (Jackson, 2012; Modood, 2005). In this case, parental social

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[1] Although ethnic minority applicants seem to be less likely to receive an offer or have an offer confirmed from pre-1992 and by more prestigious universities (Shiner and Modood (2002) Boliver (2013)), there seems to be no difference by ethnicity in the tendency to apply to more prestigious universities once previous attainment is accounted for (Boliver, 2013; Shiner and Noden, 2014).

class should be more important for labour market outcomes among ethnic minorities than among their white British counterparts.

As parents of ethnic minority graduates are more likely to be from a lower socio-economic background, ethnic minority graduates may be less likely than white British to have access to high-quality resources or networks. On the other hand, because of discrimination or because networks are more divided among ethnic lines (Dustmann, 2008; Zuccotti, 2015), ethnic minority and white British parents from the same social class may still have different quality networks. We test whether accounting for parental background explains ethnic differences in labour market outcomes and whether parental background is less important for white British than for ethnic minorities, but find no evidence of this.

Ethnic minorities have been shown to be highly influenced by their community (Dustmann, 2008) and to rely more often on social networks to find work than white British do (Battu et al., 2011; Dustmann et al., 2011). These social networks are often ethnic-specific which means that exchange of information is more likely along ethnic lines than between (Patacchini and Zenou, 2012). Several qualitative studies have shown how a co-ethnic community can help instil cultural values and the importance of higher education in the younger generation (Shah et al., 2010; Zhou, 2005) while quantitative studies found correlations between the average education in the ethnic community and the education of co-ethnics (Borjas, 1992, 1995; Edin et al., 2003; Luthra and Soehl, 2015). In this paper we include information on the local area where graduates grew up and account for the human capital of the co-ethnic community there. The opportunities in the area can affect labour market outcomes and for ethnic minority graduates we expect that growing up with a larger and more highly educated co-ethnic community increases the probability of finding a good job.

3. Data and descriptive statistics

3.1 The destination of leavers of higher education

The destination of leavers of higher education (DLHE) dataset is unique in combining administrative and survey data relating to students graduating from UK universities. The dataset includes administrative data collected when the graduate entered university together with data on their university career such as the university attended and its postcode, the degree studied and the grades obtained. All graduates are surveyed six months after graduation (we use data from 2005 to 2012), and every other year (2005, 2007 and 2009) a

small subsample is selected to be re-interviewed three and a half years after graduation about their labour market status and job characteristics.

We exclude the heterogeneous group of mature students and restrict the sample to graduates younger than 24 (when entering their final year) who are British nationals and who lived in England before entering university. In line with previous studies, we focus on the largest ethnic minority groups in the UK: Indian, Pakistani, Bangladeshi, black Caribbean, black African and Chinese and compare them to the white British. To exclude the gender gap we compare men to men and women to women.

We are interested in labour market outcomes of graduates and study employment status (having a job or not) and earnings. 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 (excluding the self-employed). To eliminate possible outliers and coding errors we also exclude graduates in the highest and lowest 1% of observations for earnings. We use the yearly earning without controlling for the type of job or hours worked in order to estimate the overall difference in labour market earnings, regardless of segregation into different sectors or employment contracts. Employment is measured by a dummy which is one for those who have a paid job or are self-employed, and zero for those who are unemployed, excluding the inactive from the whole analysis.

Table A1 in the appendix shows the activity status for respondents by parental class, university type and grades obtained. Around 30% of all graduates are inactive six months after graduation with most of them pursuing further studies. Three years later 17.5% of graduates are inactive. Graduates from a higher social class background, those who graduated from the most prestigious universities and with the highest grades are more likely to be inactive and far less likely to be unemployed, both six months and three and a half years after graduation. The largest differences between graduates are due to grades with those who graduated with low honours twice as likely to be unemployed than those who graduated with the highest degree six months after graduation and four times as likely three and a half years after graduation. Since, as we discuss in the following sections, minorities tend to make different choices in term of university and tend to have different parental backgrounds and grew up in different neighbourhoods, part of the ethnic inequalities in employment and earnings may be due to such characteristics and choices.

3.2 Parental background

Descriptive statistics of all variables are shown in table A2 in the appendix. We analyse the impact of family background by means of information on parental social class and the type of high school the graduate attended. Parental social class is measured in four categories: managerial and professional occupations (high class); small self-employed, intermediate and lower supervisory and technical occupations (intermediate); semi-routine or routine occupations or long-term workless (working class). Self-employment is kept separate because of its relevance among ethnic minority groups (Light, 2005). We use parental class rather than education firstly because education is only measured through a dummy variable from 2008 onwards and secondly because we believe class to be more appropriate. As many of the parents of ethnic minority graduates are first generation migrants the correlation between their education and social class is low (Dustmann, 2008) and social class is generally more closely linked to social capital and financial resources than education (Platt, 2005).

We compute a dummy for attending private schools which in the UK are usually rather expensive rather than state schools which are publicly funded and may vary in quality. It is likely that those who attended private schools have more affluent parents and/or parents who highly value education as a mean to succeed in the labour market.

We show differences among ethnic groups in family background in our sample and the population in England in Table 2. We compare the distribution of parental class among graduates with the class distribution in the whole population from the 2001 English census – this is a more accurate representation of the population of parents for graduates in the sample than the 2011 census – to assess the degree of self-selection of graduates. While 59% of white British graduates have a high class background only 37% of white British in the population do. The discrepancies are substantially smaller among ethnic minority graduates, especially Indian, Bangladeshi and Chinese. More than a quarter of ethnic minority graduates come from a working class background, compared to only 14% of white British graduates. This higher drive for education among ethnic minority graduates of all backgrounds is consistent with Modood (2005).

Table 1: Parental background among graduates (DLHE) and in the population (census)

		white British	black Caribbean	black African	Indian	Pakistani	Bangladeshi	Chinese
Working class	Graduates	0.14	0.23	0.25	0.30	0.31	0.51	0.43
	Population	0.31	0.37	0.43	0.36	0.60	0.67	0.30
Self-employed	Graduates	0.07	0.04	0.03	0.10	0.24	0.21	0.15
	Population	0.09	0.05	0.04	0.10	0.11	0.07	0.19
Middle class	Graduates	0.20	0.25	0.18	0.22	0.15	0.08	0.11
	Population	0.22	0.25	0.18	0.18	0.12	0.13	0.14
High class	Graduates	0.59	0.48	0.53	0.38	0.30	0.20	0.31
	Population	0.37	0.33	0.35	0.35	0.18	0.14	0.38
Private school	Graduates	0.12	0.03	0.06	0.11	0.06	0.04	0.17
Observations	Graduates	451,458	4,862	5,048	22,772	7,693	2,436	4,117

Figures for graduates are computed from the 2005-2012 DLHE; figures for the population are computed using the 2001 census for England.

3.3 University choice

Wages and the probability of finding a job may be higher for those who graduate from more prestigious universities, with higher grades and who studied disciplines more valued in the labour market. As universities differ substantially in prestige and this affects labour market outcomes we differentiate between graduates from Russell-group universities[2], those from the least prestigious former polytechnic institutes, and all others (Boliver, 2013). As ethnic minorities may perform less well in their degrees than white British we also account for grades obtained: a first-class honour; an upper second-class honour (2:1) or any lower distinction (Richardson, 2015). To account for different degrees we measure nine groups of subjects, categorised based on the joint academic coding system following Abreu, Faggian and McCann (2014)[3].

Consistent with Shiner and Modood (2002) and Boliver (2013) descriptive statistics on our data show that that Pakistani, Bangladeshi, black African and black Caribbean students on average graduate from less prestigious universities than their white British peers while Indian and Chinese students graduate from better universities. In addition 13% of white British and Chinese students graduate with first-class honours, but only 5% of black graduates and 7% to 9% of those of south-Asian ethnicity do so. Chinese, Indian, Pakistani and Bangladeshi graduates are more likely than white British to study a STEM (Science, Technology, Engineering and Mathematics) subject and black Caribbean and black African graduates least likely. These substantial ethnic differences in the type of degree obtained indicate that some observed differences in returns to qualifications may be due to such choices and outcomes.

Based on their types of degree, we expect black Caribbean, black African, Pakistani and Bangladeshi students to have a more difficult transition to the labour market while Indian and Chinese students, who have similar educational attainments to the white British, should do similarly well.

3.4 Characteristics of the area of residence before entering university

The DLHE provides the postcode of the parents' home so we can then identify the area where the graduate lived prior to university. As we are interested in the resources available in the community we need to decide on an appropriate geographical level for the analysis. Most

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[2] The Russell group comprises 24 research-intensive highly ranked universities.
[3] 9 categories based on JACS codes: 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); doing a combined degree.

studies on social networks focus on the neighbourhood and use rather small geographical areas. However, as we aim to capture labour market opportunities we need larger areas. We use local authority districts [4] as they are closer to travel-to-work areas than other administrative geographies at which census data are available.

The local area can influence labour market outcomes through the local opportunities available as well as through the local network which can help people with their job search. Although these can be personal networks, graduates entering the labour market are likely to rely heavily on their parents' networks (Holzer, 1988).

Ethnic minorities tend to live in less advantaged areas which can limit their opportunities in the labour market (Feng et al., 2015). To account for deprivation we include the indices of multiple deprivation (IMD), available from ONS. The IMD rank districts based on a weighted average of scores on seven domains of disadvantage including income, health and living conditions (McLennan et al., 2011). As the IMD are only available in 2004, 2007 and 2010 we assign the ranking on the IMD of the closest year for each year where it is not provided. We then group the ranked areas in five quintiles from least to most deprived. To better measure opportunities in the labour market we also use data on the share of claimants of job-seeker's allowance. These data are available yearly from the Department for Work and Pensions through the ONS.

Diversity in a community may reduce social capital overall (Schaeffer, 2014; Vervoort et al., 2010). We therefore include the Herfindhal index as a measure of ethnic diversity in each district. The Herfindahl index is computed as one minus the sum, over ethnic groups, of the square of the proportion of people belonging to that ethnic minority to the overall population (Alesina et al., 2003). This index can be interpreted as the probability that two persons randomly drawn from the population of that district have the same ethnicity (Vervoort et al., 2010). The shares of each ethnic group, which we use to compute the Herfindhal index, are available by district through the census in 2001 and 2011. We use linear interpolation of the ethnic shares for the intra-census years.

We also account for the potential information available through the local area. Studies have shown that information on jobs is more likely to be found through employed acquaintances (Cingano and Rosolia, 2012). As the type of information available in the network depends on the quality of the network and information on graduate level jobs is more likely to be

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[4] 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.

available from other graduates we also compute the share of graduates in the local area (Bayer et al., 2008).

To account for the information possibly available through the co-ethnic community we compute three additional variables: the share of co-ethnics; the employment rate among co-ethnics; and the ratio of the share of graduates in the co-ethnic community to the share of graduates overall. The last variable is included in logs and aims to capture whether being part of an ethnic minority that is on average more (or less) highly educated than the average in the area has an effect on top of the average characteristics of the local area. If information on jobs travels faster along ethnic lines, being part of a more highly educated community would increase the chances of hearing about graduate-level jobs (Borjas, 1995; Patacchini and Zenou, 2012). As the size of the co-ethnic communities differs substantially across groups we centre the share of co-ethnics on its mean. We also compute the interaction between the share of co-ethnics and the ratio of graduates in the co-ethnic community to the average. This interaction term measures whether the quality of co-ethnic human capital matters more if the co-ethnic community is larger (Edin et al., 2003). As white British are always by far the majority in each local authority district and therefore make up the bulk of the averages at the local area the indicators of co-ethnic resources are restricted to zero for them.

The employment rates, share of graduates and share of co-ethnics are computed from the censuses of 2001 and 2011 through NOMIS[5]. We use linear interpolation to calculate the employment rates, share of co-ethnics, and share of graduates for the intra-census years.

Before entering university, ethnic minority graduates were more likely to live in more diverse and in more deprived areas with higher rates of benefit claimants, but also in areas with a slightly higher share of graduates compared to white British (see table A2). For Indian, Chinese and Black African graduates the ratio of the share of graduates among co-ethnics to the share of graduates in the district is higher than one, while the reverse is true for Black Caribbean and Bangladeshi graduates. If this influences the opportunities and information available through the co-ethnic network, it would lead to better outcomes for Indian, Chinese and Black African graduates and worse outcomes for Black Caribbean and Bangladeshi graduates on average.

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[5] www.nomisweb.co.uk, the hub for regional data of the office for national statistics.

4. Method and models

We analyse what disadvantages ethnic minority graduates face compared to white British graduates in the labour market and whether these can be attributed to compositional differences in parental background, opportunities in the local community and university attainment (section 4.1). We then study more in detail what resources are especially important for ethnic minorities compared to their white British peers (section 4.2). Finally we address whether there are ethnic differences in the probability of finding a job through social networks. We study how parental background and the local community affect ethnic minorities more than white British through influencing their networks (section 4.3). Taken together, these three aspects then provide an overview of the situation and of possible mechanisms through which many ethnic minority graduates may miss out on better jobs.

4.1 Ethnic gaps on the labour market

To assess whether parental background, the characteristics of the local area and differences in degrees account for ethnic differences in employment and earnings we estimate models in which these three factors are added sequentially to analyse the impact that each have on labour market inequalities, as shown in equation 1:

$$Y_i = \alpha + \beta E_i + \gamma X_i + \delta Z_i + \varepsilon_{1i} \qquad \text{(Equation 1)}$$

Y is one of the labour market outcomes: either a dummy for employment or the log of labour market earnings, for individual "i". The employment models are estimated using binary logistic regressions while the wage models are estimated by OLS regressions. The results of the logistic regression are shown as marginal effects. We use weights provided by the DLHE to account for graduates studying more than one degree. To account for the fact that local area characteristics are the same for people from the same district of origin we cluster the standard errors of all models by the local authority in which the respondent lived before university. All models are estimated separately for men and women; six months, and then three and a half years after graduation.

E are dummies for ethnicity and can be interpreted as the ethnic gaps. X contains the explanatory variables included in all models: a dummy for whether the graduate has a disability and dummies for the year of graduation to control for cohort shocks such as the business cycle or share of graduates. No additional controls are needed as our graduates are all between 21 and 24 years old and have essentially no work experience. Besides year and disability dummies, the wage models also include a dummy for those who, at the time of the

survey, work in London, where minorities concentrate and wages are comparatively high (Dustmann and Theodoropoulos, 2010). While we only include those who enter the labour market straight after graduation in the models six months after graduation, we include a more heterogeneous group for the models three and a half years after graduation. In these models we also control for economic activity six months after graduation through four dummies with employed or self-employed as reference category: unemployed; unpaid employment; further study; other inactivity.

Z includes the variables identifying family background, university choices, and the characteristics for the local area that are not ethnic-specific as explained in section 3.4. We first include these three sets of variables separately and then include them jointly. If the labour market disadvantage faced by ethnic minority graduates is partly mediated by their family background, university choices, or the characteristics of the community 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 gaps).

4.2 Minority-specific resources

The previous section considers characteristics that are common to both ethnic minorities and the white British majority. As mentioned above there are reasons to expect that resources which can help with job search – either through the family or the co-ethnic community – are especially important for ethnic minorities. In an extension to equation 1, shown in equation 2, we therefore include factors specific to ethnic minorities to assess whether inequalities in labour market outcomes are different depending on the resources someone can access.

$$Y_i = \alpha + \beta E_i + \gamma X_i + \delta Z_i + \zeta FB_i * M_i + \eta R_i + \varepsilon_{2i} \qquad \text{(Equation 2)}$$

We include an interaction term between belonging to an ethnic minority M and a dummy for high parental class FB (parental class for all ethnic groups is already included in Z). A positive ζ coefficient indicates that the impact of a high parental class on labour market outcomes is larger for ethnic minority graduates than for white British graduates. Ethnic minority graduates from a lower social class background would then be disproportionally at a disadvantage. We make the assumption that parental class affects all ethnic minorities in the same way. We also add the term R which includes the characteristics of the co-ethnic community in the local area: its size, employment rate, the ratio of human capital in the co-ethnic community compared to the average and the interaction between the size and human capital of the co-ethnic community. If information 'travels faster' within an ethnic community we expect that the characteristics of the co-ethnic community affect employment

probability and earnings even after controlling for the general share of graduates and employment rate within the local area. According to Dustmann et al. (2011) co-ethnic networks are more likely to affect early matches and might have a stronger effect in the first six months than three and a half years after graduation.

4.3 Social networks

Parental class and the local community can influence the smoothness of the transition from university to the labour market through providing information about opportunities as well as advice and resources. The literature on ethnic enclaves suggests that co-ethnic communities can help ethnic minorities find work by sharing information about job opportunities within the local network (Dustmann et al., 2011; Patacchini and Zenou, 2012). The DLHE includes a question about the method through which the graduate found their job with one option being through friends and relatives. We can therefore test whether graduates from a higher socio-economic background and from an area with a higher share of graduates, especially within the co-ethnic community, are more likely to have found their job through friends and relatives. As we are interested in the initial transition to the labour market we only study how the first job, six months after graduation, was found.

We test the use of social networks through two models. The first model (equation 3) has the same explanatory variables as in equation 2 but the dependent variable is a dummy for having found a job through friends and relatives (S).

$$S_i = \alpha + \beta E_i + \gamma X_i + \delta Z_i + \zeta FB_i * E_i + \eta R_i + \varepsilon_{3i} \qquad \text{(Equation 3)}$$

To analyse whether social contacts lead to good jobs we also test whether a job found through friends and relatives is better paid on average (Battu et al., 2011). To do this we estimate equation 4.

$$Y_i = \alpha + \beta E_i + \gamma X_i + \delta Z_i + \zeta FB_i * E_i + \eta R_i + \theta S_i + \iota M_i * S_i + \varepsilon_{4i} \qquad \text{(Equation 4)}$$

The dependent variable (Y) is the log of yearly earnings and all other variables are the same as in equation 3 with an interaction between belonging to an ethnic minority M and having found the job through social networks. The coefficient θ in this case indicates – for white British – whether jobs found through social networks are on average better paid. The coefficient of the interaction term ι shows the difference in the returns from having found a job through social networks for ethnic minority graduates compared to their white British peers. A negative coefficient for ι indicates that for ethnic minorities jobs found through

social networks are on average worse than those found through social networks by white British, thus indicating a disadvantage in ethnic minorities' transition to the labour market.

These models (equations 3 and 4) can indicate whether social networks are an important channel through which the early career of ethnic minority graduates differs from that of white British. However, as we only have information on successful job searches, these models are not informative on the extent to which ethnic minorities successfully use this search channel (Frijters et al., 2005; Giulietti et al., 2013).

5. Results

5.1 Ethnic gaps in the labour market

5.1.1 *Employment gaps six months after graduation*

We first discuss the probability of employment six months after graduation and how ethnic minorities differ from white British. These probabilities are shown in figure 1. The full coefficients are shown in tables A2 and A3 in the appendix. As the results are similar for men and women we discuss them together. Model 1 (individual differences) shows employment gaps when only accounting for year of graduation and disability. Ethnic minority graduates are on average less likely to be employed than white British graduates. The employment gaps are slightly larger for women than for men although the patterns are the same. Black Caribbean graduates face the smallest gap of around 3-4 percentage points (p.p.) and Pakistani and Bangladeshi the largest gap as they are 10 to 15 p.p. less likely to be employed than white British graduates. While the existing literature, which includes people of various ages and education levels, normally finds the best labour market outcomes for Indian and Chinese minorities (Blackaby et al., 2005) here we find that, compared to their white British counterparts, Indian and Chinese graduates experience similar employment gaps as the other minority groups.

Including controls for parental background (model 2, social class) does not reduce ethnic disadvantage in employment. Employment gaps remain in Model 3 (local area) after controlling for the deprivation and resources in the area of residence before entering university. This includes the measures of ethnic diversity, general deprivation, employment rate, the share of people on jobseeker's allowance and finally the share of graduates in the local authority. The ethnic employment gaps are lowest in this model but are reduced only by

around 1 to 2 p.p. for all ethnic groups bar the Chinese; and this reduction is not statistically significant.

Figure 1: Employment difference with white British six months after graduation
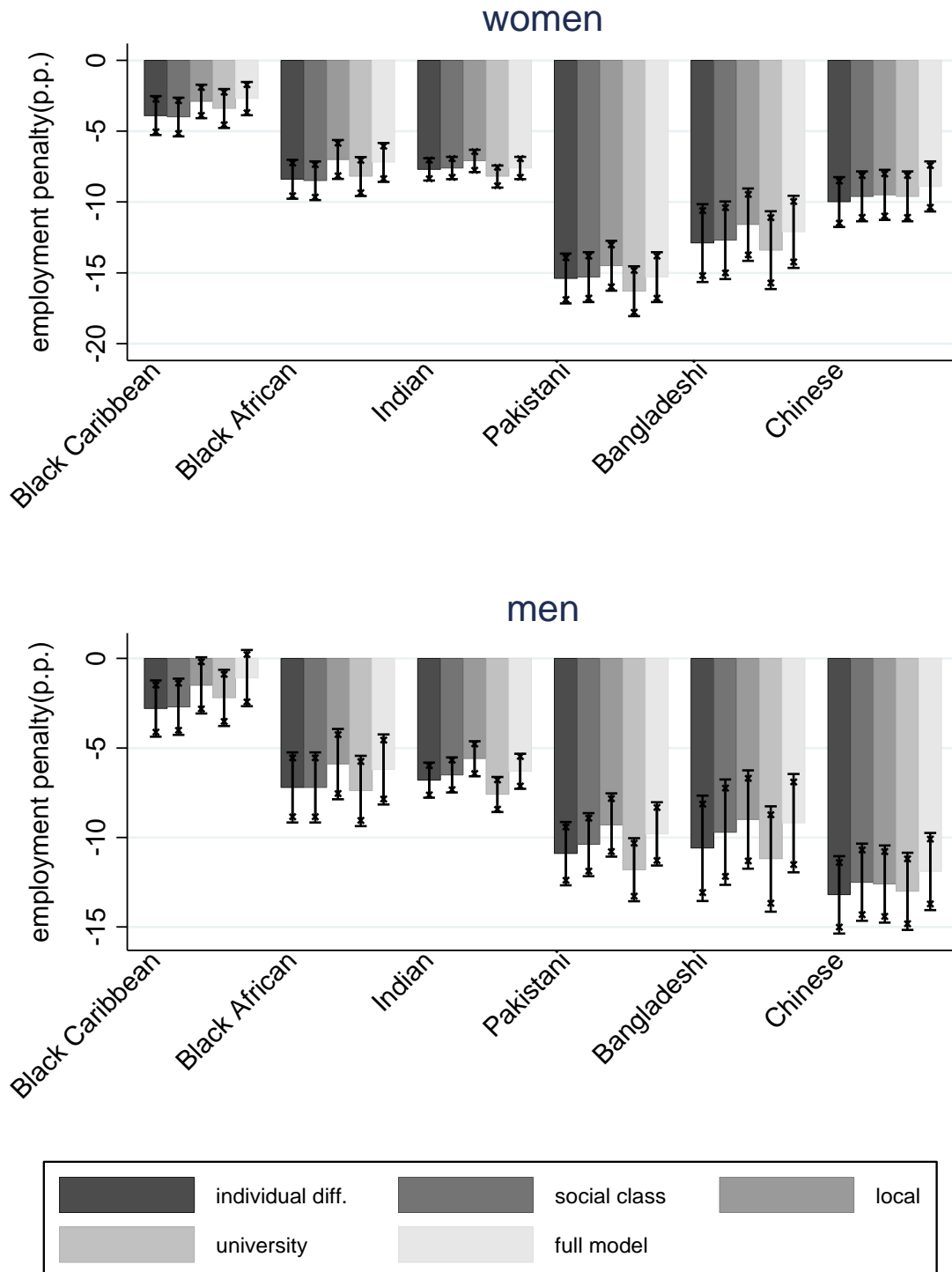
Note: Ethnic penalties controlling for different composition factors, showing 90 and 95% confidence intervals.

The last group of covariates (university) does not explain the lower employment probability of minorities either. Finally we show gaps estimated by the full model in which all these covariates are included together. The total employment gaps are only slightly reduced and are very similar to the models in which only the characteristics of the local area in which graduates grew up are included. However, in this model employment gaps for black Caribbean men are no longer statistically significant (at p<0.05).

5.1.2   Employment gaps three and a half years after graduation

Graduates from different ethnic and socio-economic backgrounds may have different patterns of transitions into the labour market. For example, those from more advantaged background may be more likely to take gaps years, may afford to have longer job search spells and wait for a better job match, or may take unpaid internships that boost their future careers. The comparison of labour market outcomes six months after graduation may be affected by these factors and underestimate ethnic penalties. Here we focus on ethnic gaps in employment three and a half years after graduation. At this point graduate careers should be more stable, but the analysis is based on a much reduced sample size (see section 2.1) and on a much more heterogeneous group in terms of family commitments (e.g. in terms of marital status, and presence of dependent children). Figure 2 shows the estimated employment gaps and full results can be found in tables A5 and A6 in the appendix.

The analysis is essentially the same as the one we presented for labour market outcomes six months after graduation except that in all models we also control for the activity status six months after graduation. As the samples are much smaller in these analyses the estimates are less precise, especially for Bangladeshi graduates. The activity status six months after graduation is strongly related to employment probabilities three and a half years after graduation with early employment being a good indicator of later employment. Those who were unemployed initially are 5-8 percentage points less likely to be employed three years later showing a scarring effect, consistent with, among others, Gregg and Tominey (2005). Being inactive or pursuing further education six months after graduation is also associated with a slightly lower employment probability after three and a half years. The large employment gaps found six months after graduation for ethnic minorities can therefore have long-lasting effects.

Figure 2: Employment difference with white British three and a half years after graduation

Note: Ethnic penalties controlling for different composition factors, showing 90 and 95% confidence intervals.

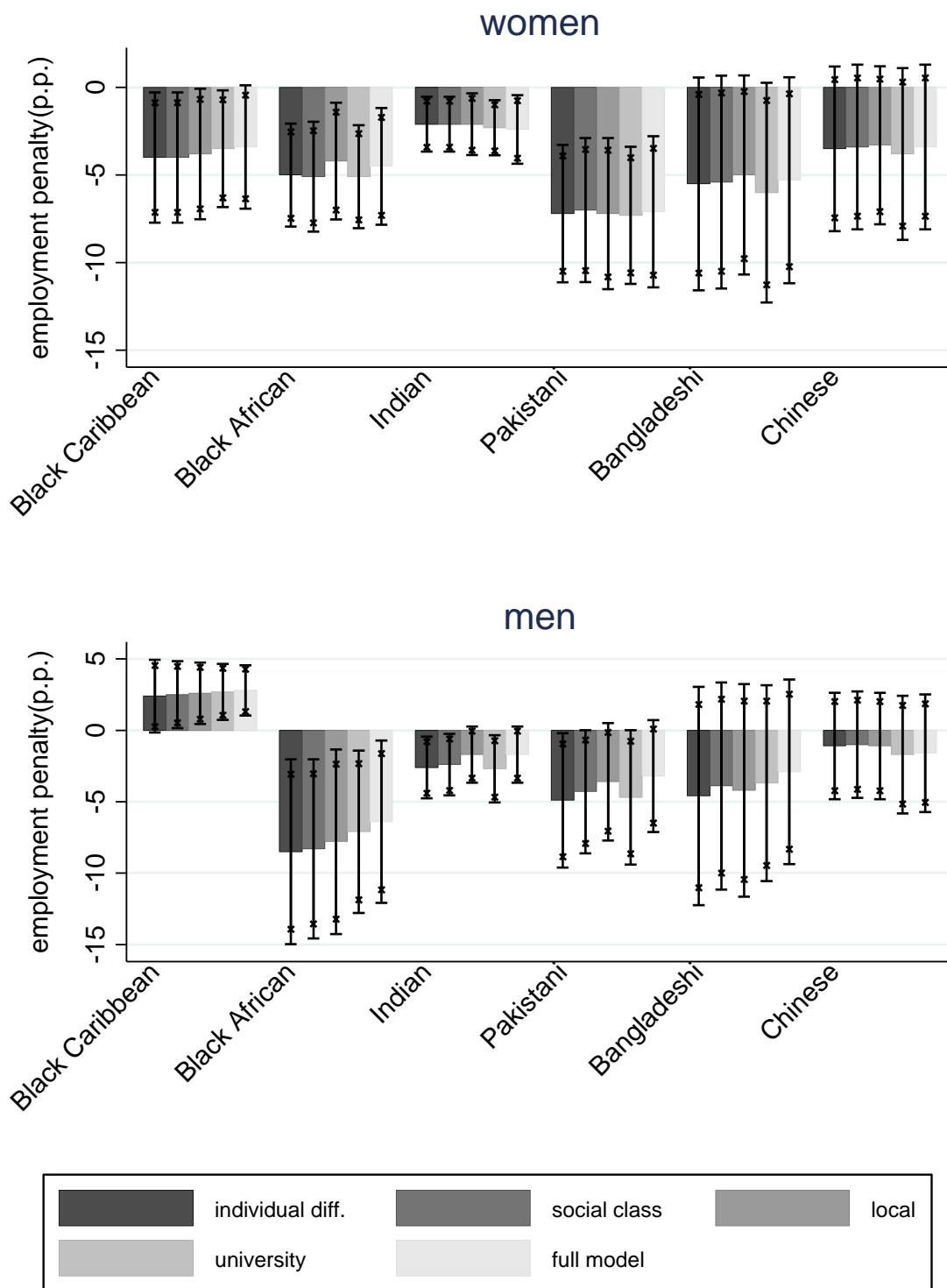We still find employment gaps especially among women where all groups bar Bangladeshi and Chinese are significantly less likely to be employed. For men the largest gaps are for

black African graduates who are still almost 9 p.p. less likely to be employed than their white British counterparts. On the other hand male black Caribbean graduates are around 3 p.p. more likely to be employed than their white British counterparts and for Bangladeshi and Chinese graduates no statistically significant differences remain. The different characteristics we include in the models have no significant impact on employment gaps three and a half years after graduation. Including local area characteristics reduces the ethnic gap slightly and renders employment gaps of Indian and Pakistani men statistically insignificant (at $p<0.05$) but the reduction is not substantial or significant.

This suggests that background characteristics may be less important three and a half years after graduation than six months after graduation. This fits with the idea that social networks, especially through the parents, are more important for young adults who have not built up their own networks yet (Holzer, 1988; Loury, 2006). In addition, finding employment soon after graduation has beneficial effects on the later career as well so it is important to address employment gaps early on.

5.1.3 Earning gaps six months after graduation

Figure 3 shows the estimated ethnic gaps for yearly earnings. The full models can be found in tables A7 and A8 in the appendix. As earnings are log transformed it can be interpreted as the estimated percentage difference in earnings between ethnic minority graduates and their white British counterparts. Model 1 (individual differences) shows the average difference in earnings by ethnicity when accounting for disability, year of graduation and whether working in London. Black African and black Caribbean graduates earn less on average than white British graduates, as do Pakistani and Bangladeshi women. The negative earning gaps range between 2 and 7% for men and women. Indian and Chinese graduates earn on average 2 to 5% more than white British graduates.

Accounting for parental background (model 2: social class) reduces the earning gaps for black African graduates which become statistically insignificant and reduces the gaps for Pakistani and Bangladeshi women by about 1 p.p.. This indicates that while parental background does not seem to explain the lower employment outcomes for ethnic minority graduates it nevertheless explains a part of the earning differences. Including the characteristics of the local area (model 3) changes women's gaps only little but clearly reduces gaps for black Caribbean and black African men. The type of degrees obtained (model 4, university) explains the advantage faced by Indian and Chinese graduates although

there is still a statistically significant small positive effect for Indian men. Pakistani men and women and Bangladeshi women earn between 3 and 8% less than their white British peers. Accounting for the types of qualifications therefore increases the disadvantage faced by Pakistani and Bangladeshi graduates.

Figure 3: Earning difference with white British six months after graduation
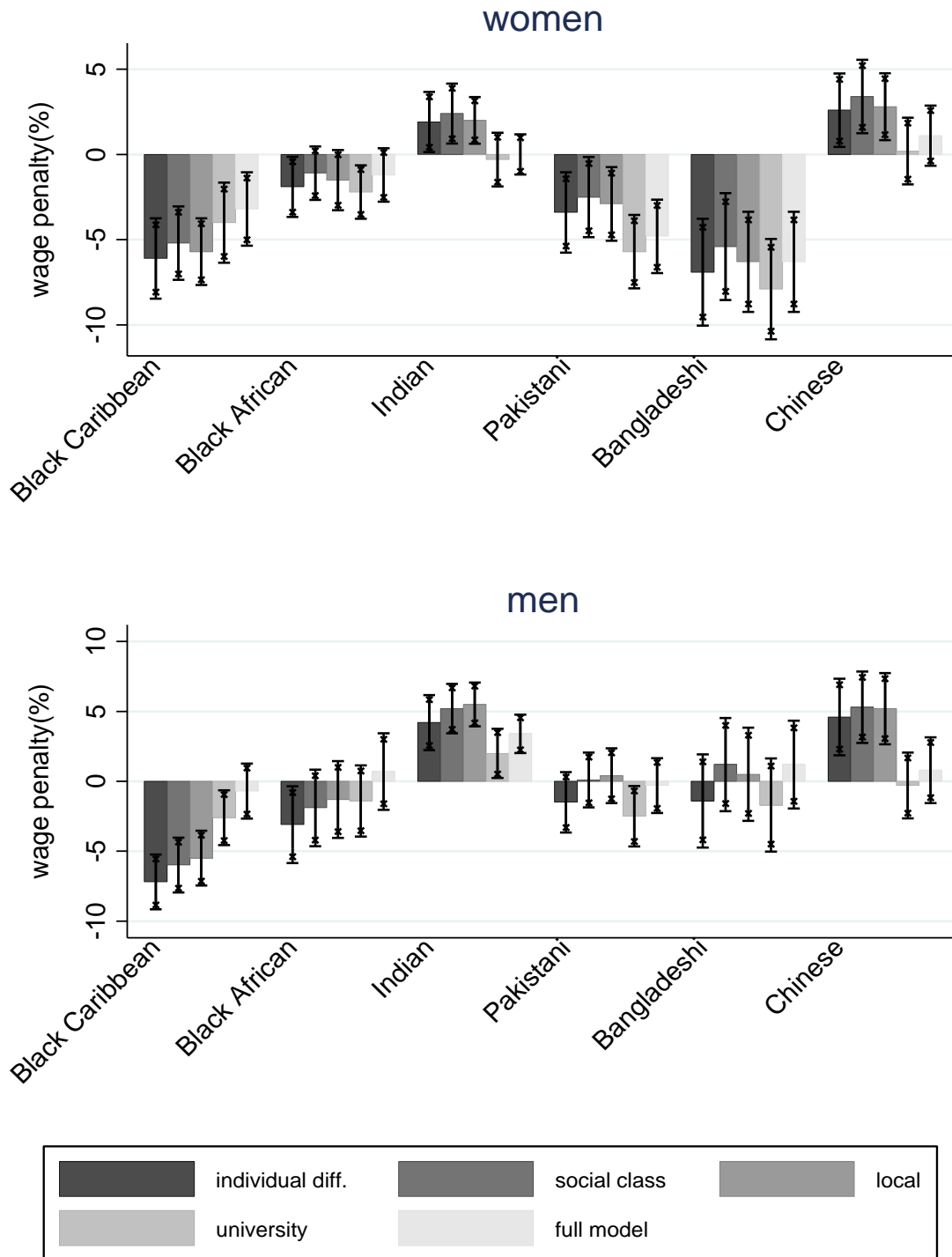
Note: Ethnic penalties controlling for different composition factors, showing 90 and 95% confidence intervals.

When we account for all these factors together there are no earning gaps among men while Black Caribbean, Pakistani and Bangladeshi women earn between 3 and 6% less than similar white British graduates. The average earning gaps are then substantially lower than the average gap of 7-8% found by Blackaby et al. (2002, 2005) or the 4-9% gap found by Dustmann and Theodoropoulos (2010). So, at least initially in graduates' careers, there are fewer ethnic inequalities in earning than in the population at large. Gaining higher qualifications may therefore be a good route towards reducing overall ethnic inequalities.

5.1.4   Earning gaps three and a half years after graduation

Figure 4 presents earning gaps three and a half years after graduation and full results are shown in tables A9 and A10 in the appendix. As with employment we find a scarring effect of early unemployment on earning. Graduates who were unemployed or who worked unpaid six months after graduation earn 20-25% less than those who were initially employed. Ethnic employment gaps early in people's careers can therefore have long-lasting effects. Due to the smaller sample size all gaps are very imprecisely estimated.

Ethnic minority women – with the exception of Chinese and Indian graduates – earn 12-15% less than white British women, while black Caribbean and black African men earn 19 and 12% less than white British graduates. There are no statistically significant earning gaps for the other minority groups (Model 1, individual differences).

After accounting for parental background, the local area and the desirability of qualifications together the ethnic earning penalties for black Caribbean and black African men are no longer statistically significant (Model 5, full model). The earning gaps for black Caribbean, black African, Pakistani and Bangladeshi women are also reduced. Only black Caribbean and Pakistani women have a statistically significant earning gap of 8 to 9%. The gap for black African women is only statistically significant at p<0.1.

In the full model, we find an earning gap for female ethnic minority graduates, except Indian and Chinese, and to some extent also for black Caribbean men, that is quite similar to what is found in the literature for the whole population (Blackaby et al., 2002, 2005; Dustmann and Theodoropoulos, 2010). This disadvantage seems to increase over time, and this may be due to working in jobs with less career progression. This is striking as our sample consists of the most advantaged ethnic minorities who have British nationality and hold a UK university

degree. This highlights the importance of studying labour market outcomes longitudinally, especially for ethnic minorities.

Figure 4: Earning difference with white British three and a half years after graduation
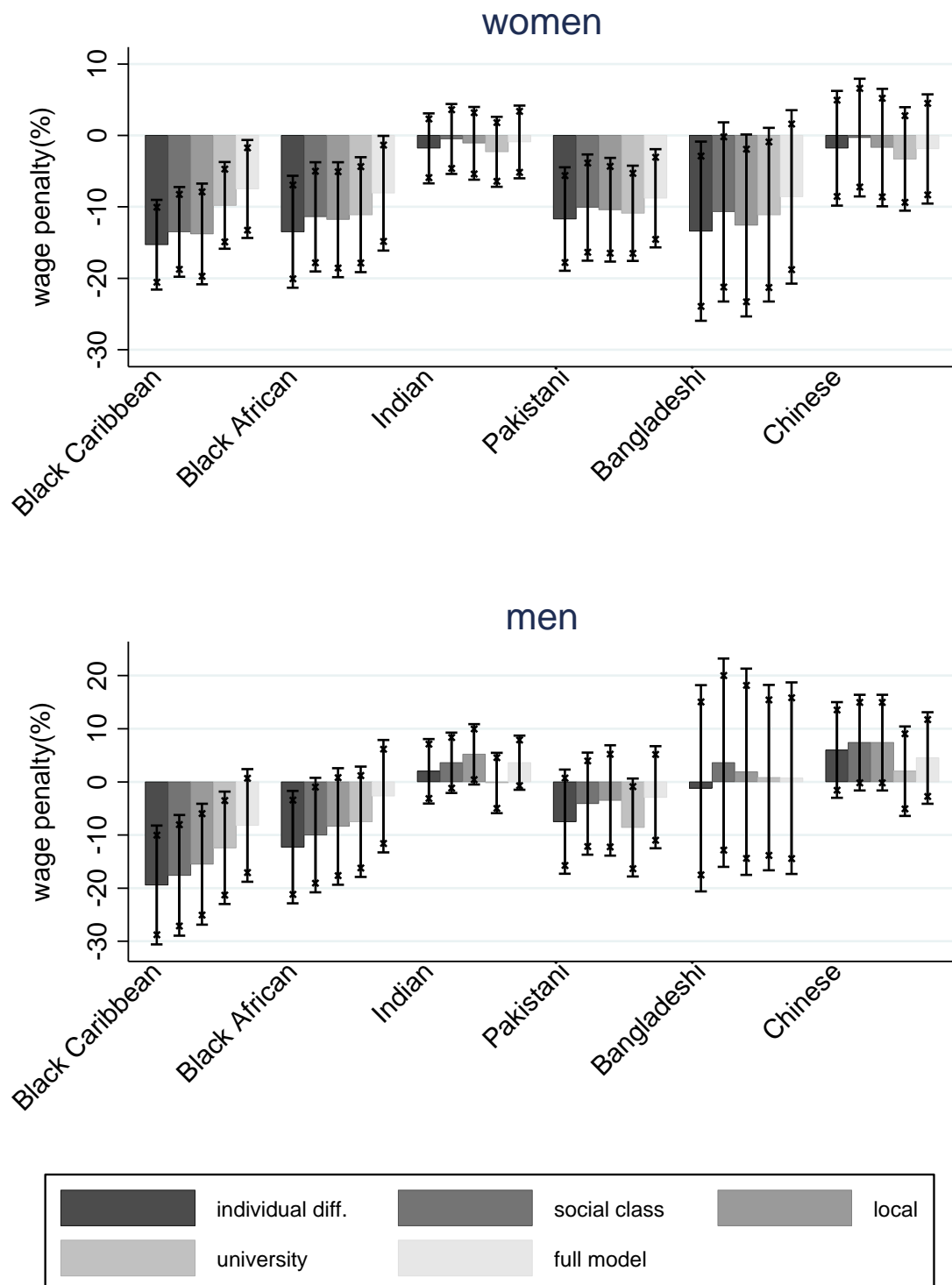
Note: Ethnic penalties controlling for different composition factors, showing 90 and 95% confidence intervals.

5.1.5   Description of the covariates

This section briefly discusses the main findings from the other covariates of the previous models, shown in tables A3 to A10 in the appendix. The employment probability is affected by the 2008 financial crisis as in 2008, 2009 and 2010 graduates were less likely to be employed than in other years. Real (entry) earnings of graduates have however increased consistently over time. Those who are employed earn 20-25% more if they work in London. Having a disability is associated with a lower employment probability and lower earnings both six months and three and a half years after graduation.

Socio-economic background only has a small effect on employment but is quite important for earnings. Graduates from a high rather than working class background are 0.5 to 1.2 p.p. more likely to be employed six months after graduation but there is no class difference three and a half years after graduation. Having attended a private school has a slightly negative effect for women six months after graduation but does not seem to affect employment later on. Being from high rather than working class background is associated with 3-7% higher earnings and having attended a private rather than state school is associated with 5-8% higher earnings. These effects are somewhat reduced but remain statistically significant when including local area and university characteristics, indicating that socio-economic background partly captures the effects of higher qualifications and better neighbourhoods.

The characteristics of the local area affect employment in varied ways. Graduates who used to live in an area with more claimants of jobseeker's allowance are less likely to be employed six months after graduation but this does not have an effect three and a half years after graduation. For women, the share of graduates in the local area is associated with a lower employment rate both six months after graduation and three years later. Having lived in the 20% least rather than most deprived areas is associated with 5-9% higher earnings both six months and three and a half years after graduation.

Graduating with first-class honours rather than lower second-class honours or less is associated with a 3 to 7 p.p. higher employment probability and 10 to 15% higher earnings for women and men respectively. Three and a half years after graduation these graduates are still 2 p.p. more likely to be employed and the differences in earnings have increased to around 20%. Graduates from a Russell group university are slightly less likely to be employed but earn 2 to 5% more than those from other old universities six months after graduation. Three years later this earning difference has increased to 6 and 8% for women and men respectively. Graduating from health sciences is associated with the highest

employment probability both six months and three and a half years after graduation while graduates from creative arts and the humanities are least likely to be employed. These same advantages and disadvantages are found in earnings both six months and three and a half years after graduation.

5.2 Minority-specific resources

The previous section shows gaps between ethnic minority graduates and their white British counterparts in earnings and employment after graduation. Ethnic minority graduates are less likely to be employed than white British graduates six months after graduation. This lower employment probability in turn affects the employment probability and earnings three years later. In general, both the employment and earnings gaps among graduates six months after leaving university are substantially smaller than the employment and earning gaps found among ethnic minorities in the UK as a whole. We also show that ethnic differences in parental background, local area and qualifications obtained account for substantial parts of the earning gap but do not explain the employment gap.

As explained in section 4.2 we hypothesize that being from a higher class background or being able to rely on a stronger co-ethnic community may affect ethnic minorities positively and increase their resilience to disadvantage. We expect that ethnic minority graduates who have no resources and networks through their parents or the local area will have the largest gaps compared to white British. Table 2 shows the coefficients of the interaction term between parental class and belonging to an ethnic minority (equation 2). This tests whether parental class affects ethnic minorities differently than white British people. The coefficients in table 2 only show how the effect of parental class for ethnic minorities differs from that of white British (it shows the interaction terms but not the levels). We also show the impact of the co-ethnic community: the share of co-ethnics; their employment rate; the ratio of graduates in the co-ethnic community compared to average; and the interaction between the share of graduates and the size of the community, as explained in section 2.4. These only have an effect for minorities and are constrained to zero for white British graduates. The full results are shown in the last columns in tables A3 through A10 in the appendix.

We first discuss employment and labour market earnings six months after graduation. We find that co-ethnic resources do not substantially affect the employment probability of men and women but do affect earnings. Women living in an area with more employed co-ethnics and all ethnic minorities who are part of a more highly educated ethnic minority have higher

earnings, but this last effect is only statistically significant for men. The share of co-ethnics is negatively associated with earnings for both men and women, consistent with previous studies suggesting that jobs found within the ethnic community are associated with lower wages (Hellerstein et al., 2014; Light, 2005; Semyonov and Herring, 2007). The effects of parental class on earnings are substantially larger for ethnic minority men than for their white British counterparts. The difference between being high rather than working class is 5 p.p. higher for minority men than for white British. For women being from a self-employed class has a less positive impact on employment and earnings for ethnic minorities than for white British. Three and a half years after graduation the differences in parental class disappear and the effects of co-ethnic resources become small. Resources accessed through the family – especially for men – and the co-ethnic community mainly affect the earnings of ethnic minority graduates six months after graduation.

Figures 5 and 6 show the estimated employment and earning gap for an average graduate[6] in two different situations six months after graduation. The gaps are shown for those coming from a disadvantaged background (i.e. working class and from a co-ethnic community at the 10th ethnic-specific percentile for the ratios of co-ethnic graduates, co-ethnic size and co-ethnic employment rate) and an advantaged background (i.e. high class and from a co-ethnic community at the 90th ethnic-specific percentile for the ratios of co-ethnic graduates, co-ethnic size and co-ethnic employment rate). Figures A1 and A2 in the appendix show the ethnic gaps when only parental class or the co-ethnic community is changed, indicating that both factors are important.

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[6] A graduate who does not work in London, graduated from social sciences with an upper second-class honour from an old but not Russell group university in 2009, attended a state school and grew up in an area with average deprivation, diversity, employment rate and share of claimants and graduates.

Table 2: The effect of ethnic-specific resources on employment and labour market earnings

	Six months after graduation				Three and a half years after graduation			
	Employment[2]		Wage		Employment[2]		Wage	
	Women	Men	Women	Men	Women	Men	Women	Men
Self-employed[1]	-0.013 *	0.007	-0.025*	-0.001	0.005	0.000	-0.004	0.032
	(0.005)	(0.008)	(0.011)	(0.014)	(0.013)	(0.017)	(0.046)	(0.058)
Intermediate[1]	-0.005	0.002	0.005	0.036**	-0.018+	0.014	-0.012	-0.022
	(0.004)	(0.007)	(0.010)	(0.011)	(0.010)	(0.017)	(0.045)	(0.064)
High class[1]	0.002	0.005	0.013	0.049**	-0.011	0.023	-0.010	0.021
	(0.004)	(0.006)	(0.008)	(0.009)	(0.009)	(0.014)	(0.041)	(0.041)
Employment rate co-ethnics	-0.000	-0.000	0.001**	-0.000	0.001	-0.001	0.001	0.005+
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.002)	(0.002)
Share co-ethnics	-0.000+	0.000	-0.001*	-0.001+	0.000	-0.000	0.005+	-0.002
	(0.000)	(0.000)	(0.001)	(0.000)	(0.001)	(0.001)	(0.003)	(0.003)
Ratio graduates co-ethnics	-0.001	0.009	0.015	0.036*	0.010	0.011	0.082	0.005+
	(0.007)	(0.01)	(0.015)	(0.017)	(0.010)	(0.016)	(0.057)	(0.002)
Interaction share and graduates	0.001*	0.001	0.000	-0.002	-0.002	0.001	0.001	-0.014*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.006)	(0.006)

*+: p<0.1; *: p<0.05; **: p<0.01*

1: the interaction term so the effect of being a minority relative to the effect for white British.

2: the effect is shown as marginal effects from a logistic regression.

Figure 5: Ethnic gaps in employment 6 months after graduation by different co-ethnic resources
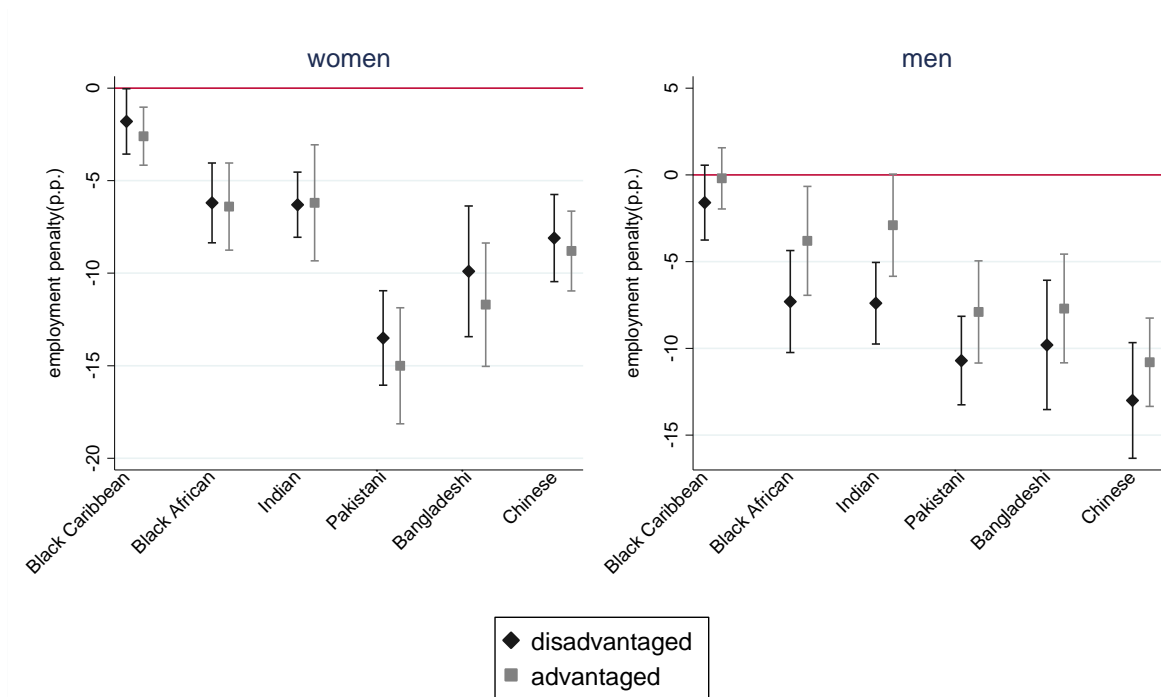
Note: Ethnic penalties controlling for all composition factors, showing 95% confidence intervals and estimated for an average graduate.

The employment gaps of women remain similar regardless of resources (figure 5). For men the gap is substantially smaller for those from a more advantaged background. Indian men from high class background and a strong co-ethnic community are no longer less likely to be employed six months after graduation than white British.

Figure 6 shows that the wage gap for both men and women depends on the resources available to ethnic minorities. Those from higher parental class and a larger, more highly educated and employed co-ethnic community earn similar or even more than white British graduates from the same class. On the other hand, minorities from working class background and a small and less economically advantaged community earn substantially less than their white British peers. Ethnic minority women from a less advantaged background – except Indian and Chinese women – then earn significantly less. For men black Caribbean, black African and Pakistani graduates earn less than white British when disadvantaged.

This highlights the vulnerability of ethnic minority graduates who cannot access resources such as networks or support compared to white British. Ethnic minorities who can access support through their community or their parents seem to be able to avoid disadvantage in

earnings. It is then important to ensure that ethnic minority graduates without those extra resources receive more external help. If the problem is that they lack social networks to find well-paying jobs more active guidance towards labour market transitions can be offered, for instance by universities or career services. The next section analyses whether ethnic minority graduates differ from the majority in their use of social networks to find work.

Figure 6: Ethnic gaps in wage 6 months after graduation by different co-ethnic resources
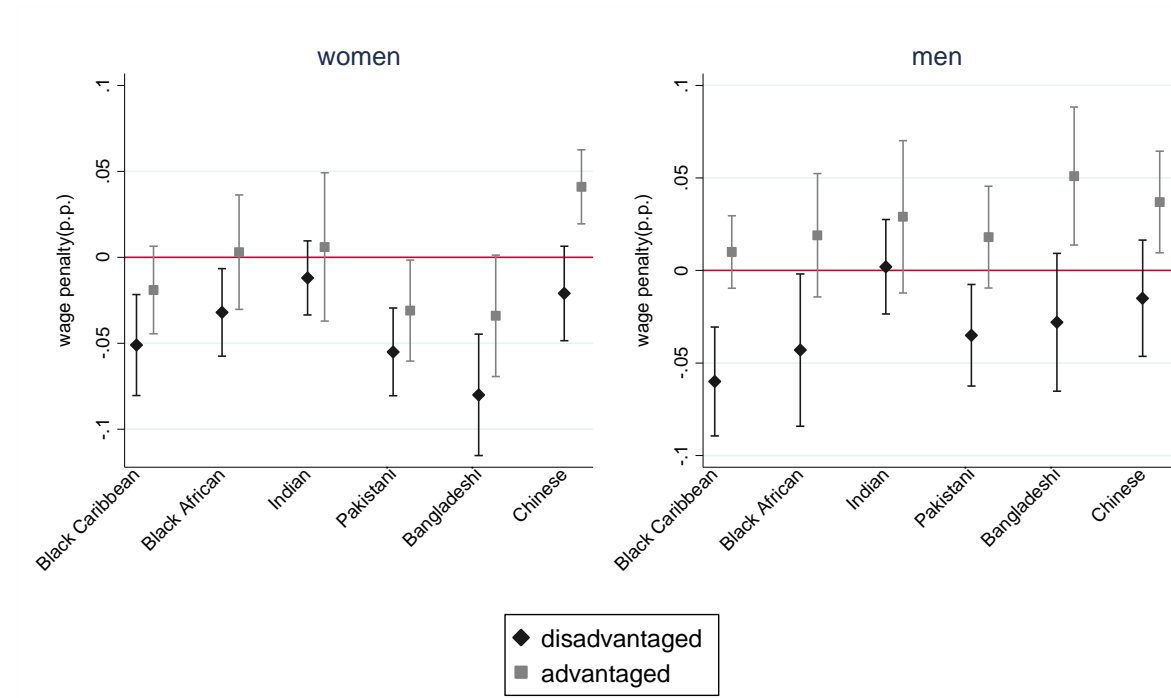
Note: Ethnic penalties controlling for all composition factors, showing 95% confidence intervals and estimated for an average graduate.

5.3 The use of social networks

In this section we analyse indirectly how parental resources and the community help graduates gain jobs through social networks. We expect that graduates from a higher class background and those who lived in an area with more graduates, especially within the co-ethnic community, are more likely to receive information on graduate-level jobs and are therefore more likely to find good jobs via those networks. We estimate equations 3 and 4 as explained in section 4.3.

The coefficients of the full models[7] are shown in table A11 in the appendix. Ethnic minority graduates are on average slightly less likely to have found their work through friends and

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[7] We do not include an interaction between the share of co-ethnics and their relative share of graduates as this coefficient is very small and statistically insignificant.

relatives but this difference is not statistically significant (at $p<0.05$). Graduates from a high class rather than working class background or who attended private rather than state school are respectively 2 and 5 p.p. more likely to have found their job through friends and relatives. This supports the idea that those from a higher class background are more likely to successfully use their networks. This positive effect of parental class on having found work through networks is not present for ethnic minority women and is non-statistically significant higher for ethnic minority men than for their white British counterparts. Among women those from the most deprived areas are 3p.p. more likely to have found their job through social networks than those from the least deprived areas. Coming from an area with a higher share of graduates in general also increases the probability that the current job has been found via networks, which could indicate that graduates are more likely to have useful information on graduate level jobs if there are more graduates in their local community. These findings point to a duality where the more advantaged in terms of social background but also the least advantaged in terms of university characteristics make most use of social networks. Being part of a more highly educated ethnic community also increases the probability of having found the job through networks, but this is only statistically significant (at $p<0.1$) for women.

Figure 7 shows the gap in the probability of having found the job through friends and relatives for an average person from working class background (working class); for a person from a high background (high class); and for persons from intermediate parental class who grew up with low co-ethnic or high co-ethnic capital (10th vs 90th percentile in share of co-ethnics, co-ethnic employment rate and the ratio of co-ethnic graduates to the average). For women the gap in the probability that the job has been found through social contacts relative to their white British counterparts is larger for those from higher class rather than working class. Among men the gap is largest for those from a working class background indicating they are unlikely to have found their job through social networks. For Indian and Pakistani men this difference disappears among those from a higher class background. The local co-ethnic community also matters, especially among women. Ethnic minority women with low co-ethnic capital are 2 to 7 p.p. less likely than their white British peers to have found their job through social networks. This difference is substantial as on average only around 18% of similar white British graduate women found their job through social networks. If they grew up with a strong co-ethnic community there is no difference with white British in the probability of having found a job through social networks – except for black Caribbean women. For men the co-ethnic community is less important. This supports the idea that,

while for men the most important resources come from their parental background – as also found in the earning models – women are more influenced by their local community and are more invested in local networks. Ethnic minority graduates with fewer resources are less likely, on average, to have found their work through social contacts than similar white British.

Graduates who found their jobs through friends and relatives earn 4% less and this is the same for white British or ethnic minorities. Hence, this cannot be the reason why ethnic minority graduates earn slightly less than white British on average. However, it is possible that these jobs have other benefits such as better career progression which make them desirable. It may also be that the alternative to finding these jobs through social contacts is not finding employment at all but as we have no information on the job search among unemployed graduates we cannot test this here.

Figure 7: Ethnic differences in network use by different values of resources
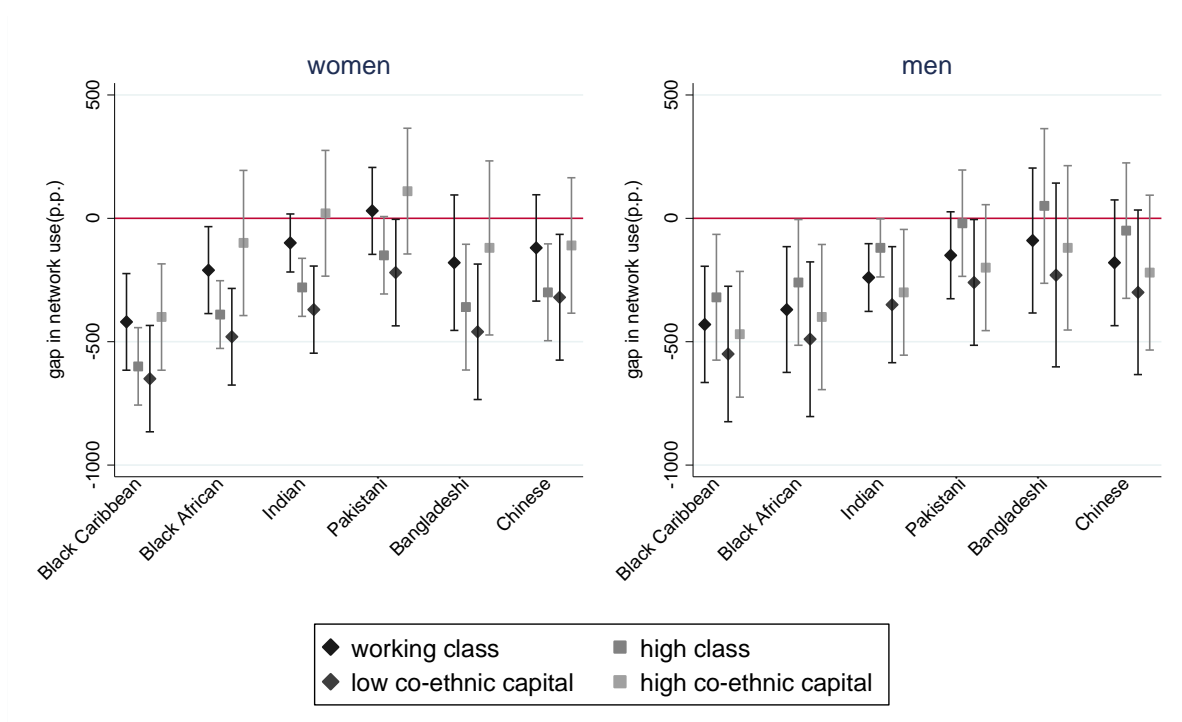
Note: Ethnic penalties controlling for all composition factors, showing 95% confidence intervals and estimated for an average graduate.

6. Conclusions

Higher education is often seen as a pathway to better outcomes and to social mobility (Lindley, 2009). As ethnic minorities are gaining higher qualifications regardless of their socio-economic background overall inequality in labour market outcomes is likely to decrease over time. In this paper we focus on inequalities within the group of UK graduates, rather than in the whole population. Even among graduates we find substantial employment gaps and some gaps in earnings, consistent with a recent Runnymede report (Lessard-Phillips et al., 2015). The largest inequalities are in the probability of employment six months after graduation where the gaps range from 3-4 p.p. for black Caribbean women to 15 p.p. for Pakistani women. It is important to reduce employment gaps in the early career as we find that early unemployment significantly reduces the employment probability three and a half years after graduation by 5-8 p.p. compared to those who were employed. Early unemployment is also associated with 20-25% lower earnings per year when employed. However, even after controlling for early employment status black Caribbean women, black African and Indian men and women and Pakistani women are still less likely to be employed three and a half years after graduation. This persistent difference over the career suggests that additional sources of ethnic disadvantage may be present.

We also find earning gaps which are more pronounced among graduate women than among graduate men (in contrast with what is found in the general population). This may indicate a stronger effect of occupational sorting among ethnic minority women than men (Brynin and Guveli, 2012). Among men only black Caribbean men earn significantly less on average than white British 6 months after graduation. As opposed to employment gaps, earning differences increase substantially three and a half years after graduation for black African and Caribbean men and for all women but Indian and Chinese. This could indicate that ethnic minority graduates experience less progression in their career than the majority.

This paper analyses three factors that could account for these differences: socio-economic background; opportunities and networks gained through the local community; and differences in qualifications obtained. Neither parental background nor differences in qualifications can account for ethnic gaps in employment either six months or three and a half years after graduation and the fact that many ethnic minority graduates tend to come from less desirable areas accounts for only a small part of the employment differences. Ethnic penalties in employment are reduced somewhat three and a half years after graduation which indicates that the largest inequalities appear early in the transition to the labour market.

Earning differences six months after graduation are mainly due to ethnic differences in educational attainment. Differences in parental background and the local area are also relevant and indicate that background remains important even among university graduates.

We also analyse how resources, such as support and networks, can help people find work and may be especially important for ethnic minorities. We find that ethnic gaps in employment and earnings are substantially larger when ethnic minorities lack these resources. Graduates from a working class background who come from an area with a small and low educated co-ethnic community earn on average about 5% less than their white British peers six months after graduation while those whose parents are higher class and who can build on a strong co-ethnic capital earn the same or even more than their white British peers. We also find that ethnic minorities are on average less likely to have found their job through social contacts than white British. This again is especially the case for those who lack resources through their parents or through a stronger co-ethnic community.

This paper highlights the importance of taking parental background and the resources available in the local community into account when considering labour market outcomes of ethnic minorities. It also points towards the fact that even among graduates ethnic minorities experience disadvantage and if they lack the right networks they may have to worse labour market outcomes compared to similar white British. If one of the main problems is that ethnic minority graduates experience more problems in finding employment after graduation, additional resources could be given to these vulnerable groups through employability programs or guidance. If ethnic minority graduates lack the contacts to find good first jobs, job centres and universities could provide additional guidance with initial job search and help establish contacts with employers.

There are several important venues for further research. First it would be important to study whether these same patterns of resilience to disadvantage through the community and the family can be found in the population at large. It is also important to study the career progression over time of ethnic minorities as we found indications that disadvantage in terms of earnings increase over time. Finally, further studies should address whether there are differences in the use of social networks among unemployed ethnic minorities and whether this can partly explain the observed employment gaps.

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Appendix

Tables

Table A1: Employment status six months and three and a half years after graduation (row percentages) by background

	six months after graduation				three and a half years after graduation			
	Paid employment	Self-employed	Unemployed	Inactive	Paid employment	Self-employed	Unemployed	Inactive
Parental class								
working class	63.77	2.16	9.02	25.30	78.22	5.66	3.11	16.23
self-employed	61.17	2.79	8.64	27.60	77.71	5.05	3.57	13.85
Intermediate	62.55	2.04	7.72	27.90	77.98	2.39	2.59	17.18
High	59.14	2.47	7.20	31.46	76.12	3.38	2.42	18.31
University type								
former polytechnic	67.74	2.45	8.75	21.25	82.08	3.67	3.17	11.28
mid-range	63.80	3.10	7.37	26.06	78.88	3.89	2.96	14.42
Russell-group	51.04	1.57	7.00	40.63	72.18	2.36	2.03	23.65
Grades obtained								
At most lower second class honours	66.06	2.19	10.25	21.68	80.49	3.06	4.20	12.35
Upper second-class honours	59.92	2.30	6.97	31.06	78.07	3.09	2.44	16.55
First-class honours	52.56	2.92	5.20	39.68	68.25	3.66	0.99	27.55
Observations	429,107	16,717	54,341	209,254	25,857	1,073	881	5,891

Share (%)	60.64	2.36	7.68	29.57	76.86	3.19	2.62	17.52

Inactivity contains further education, unpaid work and otherwise inactive

Table A2: mean (standard error) by ethnicity for all variables

	White British	Black Caribbean	Black African	Indian	Pakistani	Bangladeshi	Chinese
Dummy: disability	0.09	0.09	0.07	0.05	0.05	0.04	0.04
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Dummy: men	0.43	0.33	0.38	0.47	0.47	0.45	0.48
	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
Private school	0.12	0.03	0.06	0.11	0.06	0.04	0.17
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
Parental background							
Working class	0.14	0.23	0.25	0.30	0.31	0.51	0.43
	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
Self-employed	0.07	0.04	0.03	0.10	0.24	0.21	0.15
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
Intermediate	0.20	0.25	0.18	0.22	0.15	0.08	0.11
	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)
High	0.59	0.48	0.53	0.38	0.30	0.20	0.31
	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)

home in London	0.03	0.38	0.52	0.10	0.09	0.28	0.15
	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)
Herfindahl index	0.18	0.54	0.53	0.49	0.44	0.44	0.31
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Share of co-ethnics (%)	0	4.83	7.47	11.17	7.58	4.19	0.92
	constrained	(0.05)	(0.07)	(0.06)	(0.07)	(0.15)	(0.01)
Share claimants (%)	2.70	4.05	3.82	3.52	3.85	3.76	3.00
	(0.00)	(0.02)	(0.02)	(0.01)	(0.02)	(0.03)	(0.02)
Employment rate	74.91	70.05	70.87	70.57	69.52	69.48	73.05
	(0.01)	(0.08)	(0.07)	(0.04)	(0.07)	(0.13)	(0.09)
Employment rate co-ethnics	76.15	68.55	59.29	74.90	49.20	49.33	59.89
	(0.01)	(0.08)	(0.10)	(0.05)	(0.07)	(0.17)	(0.21)
Share graduates (%)	25.02	29.99	32.92	26.20	24.86	28.71	27.39
	(0.01)	(0.13)	(0.13)	(0.05)	(0.09)	(0.20)	(0.13)
Ratio co-ethnic graduates	1	0.89	1.33	1.43	0.94	0.72	1.49
	constrained	(0.00)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)
Index of multiple deprivation (5 groups)	2.90	4.10	4.04	3.72	4.03	3.90	3.25
	(0.00)	(0.02)	(0.02)	(0.01)	(0.01)	(0.03)	(0.02)
Distance home-work	111.78	62.28	83.48	62.86	39.06	40.82	90.82
	(0.14)	(1.02)	(1.15)	(0.46)	(0.66)	(1.36)	(1.35)

Distance university-work	91.39	55.16	73.25	59.35	40.58	41.54	75.57
	(0.17)	(1.27)	(1.53)	(0.61)	(0.93)	(1.83)	(1.85)
Distance home-work	57.34	25.35	30.51	27.95	23.87	20.89	55.05
	(0.15)	(0.88)	(1.05)	(0.44)	(0.76)	(1.17)	(1.75)
Grades							
At most lower second class honours	0.31	0.52	0.51	0.45	0.52	0.49	0.36
	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
Upper second-class honours	0.55	0.43	0.44	0.46	0.41	0.44	0.50
	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
First-class honours	0.13	0.05	0.05	0.09	0.07	0.07	0.13
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
University							
Former polytechnic	0.34	0.50	0.40	0.46	0.50	0.56	0.31
	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
Russell group	0.30	0.10	0.17	0.26	0.17	0.14	0.44
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)
STEM-subject	0.35	0.29	0.34	0.42	0.43	0.38	0.47
	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
Average tariff course	201.85	181.95	191.91	197.99	178.40	176.07	215.04
	(0.08)	(0.80)	(0.83)	(0.41)	(0.65)	(1.18)	(1.02)
Employed	0.90	0.87	0.82	0.83	0.77	0.79	0.79

(six months)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)
Yearly salary (six months)	16,780.46	16,727.32	18,140.43	18,098.45	16,711.84	17,019.42	18,561.42
	(12.01)	(121.11)	(126.63)	(64.97)	(106.08)	(183.40)	(171.48)
qualifications not required	0.38	0.52	0.43	0.36	0.41	0.47	0.34
	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
temporary job	0.32	0.28	0.31	0.33	0.34	0.32	0.34
	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
part-time work	0.17	0.31	0.25	0.20	0.26	0.33	0.20
	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
job found through network	0.23	0.19	0.21	0.21	0.21	0.21	0.22
	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
work in London	0.15	0.41	0.50	0.27	0.16	0.31	0.30
	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)
employed (three and a half years)	0.97	0.96	0.91	0.95	0.90	0.92	0.95
	(0.00)	(0.01)	(0.02)	(0.01)	(0.02)	(0.03)	(0.02)
Yearly salary (three and a half years)	25,784.16	20,854.49	22,956.36	28,521.28	24,084.72	28,408.22	26,746.26
	(253.70)	(539.67)	(754.05)	(1,239.25)	(1,291.18)	(5,432.48)	(1,204.74)
Observations	450,570.00	4,857.00	5,041.00	22,749.00	7,688.00	2,435.00	4,109.00

Table A3: women employed six months after graduation (marginal effects)

Obs = 281,832	Basic model	Family background	Local area	University	All	Co-ethnic resources
Dummy: disability	-0.027**	-0.026**	-0.027**	-0.025**	-0.024**	-0.024**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Year of graduation (ref. 2005)						
2006	0.007*	0.007**	0.008**	0.005*	0.006*	0.006*
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
2007	0.008**	0.009**	0.009**	0.007**	0.007**	0.007**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
2008	-0.022**	-0.022**	-0.018**	-0.024**	-0.021**	-0.021**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
2009	-0.035**	-0.035**	-0.026**	-0.038**	-0.030**	-0.030**
	(0.003)	(0.003)	(0.004)	(0.003)	(0.004)	(0.004)
2010	-0.023**	-0.023**	-0.015**	-0.026**	-0.020**	-0.020**
	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)
2011	-0.024**	-0.024**	-0.014**	-0.028**	-0.020**	-0.020**
	(0.003)	(0.003)	(0.004)	(0.003)	(0.004)	(0.004)
2012	-0.012**	-0.012**	-0.003	-0.017**	-0.009**	-0.009**
	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)
Ethnicity (ref. white British)						
black Caribbean	-0.039**	-0.040**	-0.029**	-0.034**	-0.027**	-0.008
	(0.007)	(0.007)	(0.006)	(0.007)	(0.006)	(0.016)
black African	-0.084**	-0.085**	-0.070**	-0.082**	-0.072**	-0.050**
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.019)
Indian	-0.077**	-0.076**	-0.071**	-0.082**	-0.076**	-0.046*
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.022)
Pakistani	-0.154**	-0.153**	-0.145**	-0.163**	-0.153**	-0.123**
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.023)
Bangladeshi	-0.129**	-0.127**	-0.116**	-0.134**	-0.121**	-0.092**
	(0.014)	(0.014)	(0.013)	(0.014)	(0.013)	(0.023)

	(1)	(2)	(3)	(4)	(5)	(6)
Chinese	-0.100**	-0.096**	-0.095**	-0.096**	-0.089**	-0.064**
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.020)
Parental class (ref. working class)						
self-employed		0.001			-0.000	0.003
		(0.002)			(0.002)	(0.003)
intermediate		0.004*			0.004*	0.005*
		(0.002)			(0.002)	(0.002)
high		0.004*			0.005**	0.005*
		(0.002)			(0.002)	(0.002)
Dummy: private school		-0.015**			-0.011**	-0.011**
		(0.002)			(0.002)	(0.002)
Ranking of multiple deprivation (ref. most deprived)						
least deprived (1st quintile)			0.002		0.001	0.001
			(0.004)		(0.004)	(0.004)
2nd quintile			-0.003		-0.004	-0.004
			(0.004)		(0.004)	(0.004)
3rd quintile			0.001		-0.001	-0.001
			(0.003)		(0.003)	(0.003)
4th quintile			0.002		0.001	0.001
			(0.002)		(0.003)	(0.003)
Rate of jobseekers' claimants			-0.004**		-0.004**	-0.004**
			(0.001)		(0.001)	(0.001)
Herfindahl index of diversity			0.004		0.004	0.005
			(0.005)		(0.005)	(0.006)
Share of graduates in local authority			-0.001**		-0.000**	-0.000**

	(1)	(2)	(3)
	(0.000)	(0.000)	(0.000)
Employment rate in local authority	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Study subject (ref. health sciences)			
biological sciences	-0.043**	-0.043**	-0.043**
	(0.002)	(0.002)	(0.002)
physical sciences	-0.047**	-0.048**	-0.047**
	(0.002)	(0.002)	(0.002)
social sciences	-0.035**	-0.035**	-0.035**
	(0.002)	(0.002)	(0.002)
business	-0.028**	-0.028**	-0.028**
	(0.002)	(0.002)	(0.002)
humanities	-0.057**	-0.056**	-0.056**
	(0.002)	(0.002)	(0.002)
creative arts	-0.057**	-0.058**	-0.058**
	(0.002)	(0.002)	(0.002)
education	0.005*	0.005*	0.005*
	(0.002)	(0.002)	(0.002)
studying combined degree	-0.035**	-0.035**	-0.034**
	(0.007)	(0.007)	(0.007)
Grades obtained (ref. at most lower second-class)			
upper second-class honours	0.020**	0.019**	0.019**
	(0.001)	(0.001)	(0.001)
first-class honours	0.028**	0.027**	0.027**
	(0.002)	(0.002)	(0.002)

University attended (ref. other old)			
former polytechnic	-0.004**	-0.003*	-0.003*
	(0.001)	(0.001)	(0.001)
Russell group	-0.015**	-0.013**	-0.013**
	(0.002)	(0.002)	(0.002)
Share co-ethnics			-0.000+
			(0.000)
Log of ratio co-ethnic graduates			-0.001
			(0.007)
Employment rate co-ethnics			-0.000
			(0.000)
Interaction share and graduates co-ethnics			0.001*
			(0.001)
Parental class for minorities (ref. working class)			
self-employed			-0.013*
			(0.005)
intermediate			-0.005
			(0.004)
high			0.002
			(0.004)

*+: p<0.1; *: p<0.05; **: p<0.01, standard errors are clustered by local authority of origin.*

Table A4: men employed six months after graduation (marginal effects)

Obs = 216,553	Basic model	Family background	Local area	University	All	Co-ethnic resources
Dummy: disability	-0.035**	-0.036**	-0.036**	-0.032**	-0.033**	-0.033**
	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)
Year of graduation (ref. 2005)						
2006	0.008+	0.008+	0.008+	0.006	0.006	0.006
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
2007	0.024**	0.024**	0.023**	0.021**	0.020**	0.020**
	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)	(0.004)
2008	-0.029**	-0.028**	-0.026**	-0.032**	-0.030**	-0.030**
	(0.004)	(0.004)	(0.005)	(0.004)	(0.005)	(0.005)
2009	-0.055**	-0.055**	-0.046**	-0.059**	-0.053**	-0.053**
	(0.004)	(0.004)	(0.005)	(0.004)	(0.005)	(0.005)
2010	-0.029**	-0.029**	-0.024**	-0.034**	-0.031**	-0.031**
	(0.004)	(0.004)	(0.005)	(0.003)	(0.005)	(0.005)
2011	-0.035**	-0.034**	-0.027**	-0.040**	-0.035**	-0.036**
	(0.004)	(0.004)	(0.006)	(0.004)	(0.005)	(0.005)
2012	-0.010**	-0.010**	-0.004	-0.019**	-0.014**	-0.015**
	(0.004)	(0.004)	(0.005)	(0.004)	(0.005)	(0.005)
Ethnicity (ref. white British)						
black Caribbean	-0.028**	-0.027**	-0.015+	-0.022**	-0.011	-0.006
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.022)
black African	-0.072**	-0.072**	-0.059**	-0.074**	-0.062**	-0.062*
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.024)
Indian	-0.068**	-0.065**	-0.056**	-0.076**	-0.063**	-0.060*
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.027)
Pakistani	-0.109**	-0.104**	-0.093**	-0.118**	-0.098**	-0.094**
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.023)
Bangladeshi	-0.106**	-0.097**	-0.090**	-0.112**	-0.092**	-0.082**
	(0.015)	(0.015)	(0.014)	(0.015)	(0.014)	(0.027)

Chinese	-0.132**	-0.125**	-0.126**	-0.130**	-0.119**	-0.121**
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.029)
Parental class (ref. working class)						
self-employed		0.003			-0.001	-0.003
		(0.003)			(0.004)	(0.004)
intermediate		0.008**			0.006*	0.006+
		(0.003)			(0.003)	(0.003)
high		0.014**			0.012**	0.011**
		(0.002)			(0.002)	(0.003)
Dummy: private school		-0.001			0.001	0.001
		(0.002)			(0.002)	(0.002)
Ranking of multiple deprivation (ref. most deprived)						
least deprived (1st quintile)			-0.006		-0.008	-0.009
			(0.006)		(0.006)	(0.006)
2nd quintile			-0.006		-0.007	-0.008
			(0.005)		(0.005)	(0.005)
3rd quintile			-0.002		-0.004	-0.004
			(0.005)		(0.005)	(0.005)
4th quintile			-0.003		-0.004	-0.004
			(0.004)		(0.004)	(0.004)
Rate of jobseekers' claimants			-0.006**		-0.005**	-0.005**
			(0.002)		(0.002)	(0.002)
Herfindahl index of diversity			-0.008		-0.010	-0.013
			(0.008)		(0.007)	(0.008)
Share of graduates in local authority			-0.000		0.000	0.000

	(0.000)		(0.000)	(0.000)

Employment rate in local authority	0.001+		0.001+	0.001+
	(0.000)		(0.000)	(0.000)

Study subject (ref. health sciences)

biological sciences		-0.042**	-0.042**	-0.042**
		(0.005)	(0.005)	(0.005)
physical sciences		-0.066**	-0.066**	-0.066**
		(0.004)	(0.004)	(0.004)
social sciences		-0.045**	-0.046**	-0.046**
		(0.004)	(0.004)	(0.004)
business		-0.026**	-0.027**	-0.027**
		(0.005)	(0.005)	(0.005)
humanities		-0.083**	-0.083**	-0.083**
		(0.005)	(0.004)	(0.004)
creative arts		-0.081**	-0.081**	-0.081**
		(0.005)	(0.005)	(0.005)
education		0.023**	0.023**	0.023**
		(0.006)	(0.006)	(0.006)
studying combined degree		-0.056**	-0.056**	-0.056**
		(0.014)	(0.015)	(0.015)

Grades obtained (ref. at most lower second-class)

upper second-class honours		0.036**	0.035**	0.035**
		(0.002)	(0.002)	(0.002)
first-class honours		0.068**	0.067**	0.067**
		(0.002)	(0.002)	(0.002)

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University attended (ref. other old)			
former polytechnic	-0.012**	-0.010**	-0.010**
	(0.002)	(0.002)	(0.002)
Russell group	-0.023**	-0.024**	-0.024**
	(0.002)	(0.002)	(0.002)
Share co-ethnics			0.000
			(0.000)
Log of ratio co-ethnic graduates			0.009
			(0.010)
Employment rate co-ethnics			-0.000
			(0.000)
Interaction share and graduates co-ethnics			0.001
			(0.001)
Parental class for minorities (ref. working class)			
self-employed			0.007
			(0.008)
intermediate			0.002
			(0.007)
high			0.005
			(0.006)

+: p<0.1; *: p<0.05; **: p<0.01, standard errors are clustered by local authority of origin.

Table A5: women employed three and a half years after graduation (marginal effects)

Obs = 15,825	Basic	Family	Area	University	All	Co-ethnic
Dummy: disability	-0.016**	-0.016**	-0.015**	-0.013**	-0.013**	-0.013**
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Year of graduation (ref. 2005)						
2007	-0.007+	-0.007+	-0.006	-0.009*	-0.007*	-0.008*
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
2009	-0.002	-0.002	-0.004	-0.003	-0.005	-0.006
	(0.003)	(0.003)	(0.005)	(0.003)	(0.005)	(0.005)
Ethnicity (ref. white British)						
black Caribbean	-0.040*	-0.040*	-0.038*	-0.035*	-0.034+	-0.116
	(0.019)	(0.019)	(0.019)	(0.017)	(0.018)	(0.125)
black African	-0.050**	-0.051**	-0.042*	-0.051**	-0.045**	-0.128
	(0.015)	(0.016)	(0.017)	(0.015)	(0.017)	(0.103)
Indian	-0.021**	-0.021**	-0.021*	-0.023**	-0.024*	-0.139
	(0.008)	(0.008)	(0.009)	(0.008)	(0.010)	(0.139)
Pakistani	-0.072**	-0.070**	-0.072**	-0.073**	-0.071**	-0.151
	(0.020)	(0.021)	(0.022)	(0.020)	(0.022)	(0.107)
Bangladeshi	-0.055+	-0.054+	-0.050+	-0.060+	-0.053+	-0.110
	(0.031)	(0.031)	(0.029)	(0.032)	(0.030)	(0.094)
Chinese	-0.035	-0.034	-0.033	-0.038	-0.034	-0.130
	(0.024)	(0.024)	(0.023)	(0.025)	(0.024)	(0.124)
Parental class (ref. working class)						
self-employed		-0.007			-0.009	-0.011
		(0.006)			(0.006)	(0.008)
intermediate		-0.001			-0.001	0.004
		(0.005)			(0.005)	(0.006)
high		-0.003			-0.003	-0.000
		(0.004)			(0.004)	(0.004)
Dummy: private school		0.003			0.003	0.003

	(0.004)		(0.005)	(0.005)

Ranking of multiple deprivation (ref. most deprived)			
least deprived (1st quintile)	0.010	0.011	0.010
	(0.009)	(0.009)	(0.009)
2nd quintile	0.002	0.002	0.002
	(0.008)	(0.008)	(0.008)
3rd quintile	0.004	0.004	0.003
	(0.007)	(0.007)	(0.007)
4th quintile	0.004	0.005	0.004
	(0.005)	(0.005)	(0.005)
Rate of jobseekers' claimants	0.002	0.002	0.002
	(0.003)	(0.003)	(0.003)
Herfindahl index of diversity	0.014	0.015	0.016
	(0.009)	(0.009)	(0.010)
Share of graduates in local authority	-0.001*	-0.001*	-0.000
	(0.000)	(0.000)	(0.000)
Employment rate in local authority	0.001	0.001	0.001
	(0.000)	(0.000)	(0.000)
Study subject (ref. health sciences)			
biological sciences	-0.007	-0.008	-0.007
	(0.006)	(0.006)	(0.006)
physical sciences	-0.009	-0.010	-0.010
	(0.006)	(0.006)	(0.006)
social sciences	-0.005	-0.005	-0.005
	(0.006)	(0.005)	(0.005)
business	0.001	0.001	0.001
	(0.005)	(0.005)	(0.005)
humanities	-0.016**	-0.016**	-0.016**

	(1)	(2)	(3)	(4)	(5)	(6)
				(0.006)	(0.005)	(0.005)
creative arts				-0.020**	-0.020**	-0.020**
				(0.006)	(0.006)	(0.006)
education				-0.002	-0.002	-0.001
				(0.006)	(0.006)	(0.006)
studying combined degree				-0.025	-0.025	-0.024
				(0.024)	(0.024)	(0.024)
Grades obtained (ref. at most lower second-class)						
upper second-class honours				0.011**	0.011**	0.011**
				(0.004)	(0.004)	(0.004)
first-class honours				0.023**	0.023**	0.023**
				(0.004)	(0.004)	(0.004)
University attended (ref. other old)						
former polytechnic				0.004	0.004	0.004
				(0.003)	(0.003)	(0.003)
Russell group				0.002	0.003	0.003
				(0.004)	(0.004)	(0.004)
Activity status six months (ref. employed)						
Unpaid work	-0.004	-0.005	-0.004	-0.002	-0.003	-0.003
	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)
Unemployed	-0.054**	-0.054**	-0.053**	-0.048**	-0.047**	-0.047**
	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)
Further study	-0.005	-0.005	-0.005	-0.006+	-0.006+	-0.006+
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Inactivity	-0.018*	-0.018*	-0.018*	-0.019*	-0.019*	-0.019*
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Share co-ethnics						0.000
						(0.001)
Log of ratio co-						0.010

ethnic graduates

	(0.010)
Employment rate co-ethnics	0.001
	(0.000)
Interaction share and graduates co-ethnics	-0.002
	(0.002)
Parental class for minorities (ref. working class)	
self-employed	0.005
	(0.013)
intermediate	-0.018+
	(0.010)
high	-0.011
	(0.009)

*+: p<0.1; *: p<0.05; **: p<0.01, standard errors are clustered by local authority of origin.*

Table A6: men employed three and a half years after graduation (marginal effects)

Obs = 11,902	Basic	Family	Area	University	All	Co-ethnic
Dummy: disability	-0.030**	-0.031**	-0.031**	-0.027**	-0.027**	-0.027**
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Year of graduation (ref. 2005)						
2007	-0.017**	-0.017**	-0.017**	-0.018**	-0.017**	-0.017**
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
2009	-0.009	-0.008	-0.013+	-0.010+	-0.016*	-0.016*
	(0.005)	(0.005)	(0.008)	(0.005)	(0.008)	(0.008)
Ethnicity (ref. white British)						
black Caribbean	0.024+	0.025*	0.026*	0.027*	0.028**	0.038*
	(0.013)	(0.012)	(0.011)	(0.010)	(0.009)	(0.016)
black African	-0.085**	-0.083**	-0.078*	-0.071*	-0.064*	-0.028
	(0.033)	(0.032)	(0.033)	(0.029)	(0.029)	(0.061)
Indian	-0.026*	-0.024*	-0.017+	-0.027*	-0.017+	0.016
	(0.011)	(0.011)	(0.010)	(0.012)	(0.010)	(0.037)
Pakistani	-0.049*	-0.043+	-0.036+	-0.047+	-0.032	-0.002
	(0.024)	(0.022)	(0.021)	(0.024)	(0.020)	(0.037)
Bangladeshi	-0.046	-0.039	-0.042	-0.037	-0.029	0.007
	(0.039)	(0.037)	(0.038)	(0.035)	(0.033)	(0.037)
Chinese	-0.011	-0.010	-0.011	-0.017	-0.016	0.009
	(0.019)	(0.019)	(0.019)	(0.021)	(0.021)	(0.038)
Parental class (ref. working class)						
self-employed		-0.007			-0.008	-0.009
		(0.008)			(0.008)	(0.010)
intermediate		-0.001			-0.002	-0.006
		(0.007)			(0.006)	(0.008)
high		0.005			0.003	-0.002
		(0.005)			(0.005)	(0.006)
Dummy: private school		0.007			0.004	0.004
		(0.005)			(0.006)	(0.006)

Ranking of multiple deprivation (ref. most deprived)			
least deprived (1st quintile)	-0.006	-0.007	-0.009
	(0.015)	(0.015)	(0.015)
2nd quintile	0.001	0.001	-0.001
	(0.012)	(0.012)	(0.012)
3rd quintile	0.011	0.011	0.010
	(0.010)	(0.009)	(0.009)
4th quintile	0.000	0.001	-0.000
	(0.007)	(0.007)	(0.007)
Rate of jobseekers' claimants	0.001	0.002	0.002
	(0.004)	(0.004)	(0.004)
Herfindahl index of diversity	-0.032*	-0.032*	-0.031*
	(0.013)	(0.013)	(0.014)
Share of graduates in local authority	0.001*	0.001*	0.001*
	(0.000)	(0.000)	(0.000)
Employment rate in local authority	-0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)
Study subject (ref. health sciences)			
biological sciences	-0.020+	-0.021+	-0.021+
	(0.012)	(0.012)	(0.012)
physical sciences	-0.008	-0.008	-0.009
	(0.010)	(0.010)	(0.010)
social sciences	-0.017	-0.018+	-0.018+
	(0.011)	(0.011)	(0.011)
business	-0.008	-0.008	-0.009
	(0.011)	(0.010)	(0.010)
humanities	-0.034**	-0.035**	-0.036**
	(0.011)	(0.011)	(0.011)

creative arts				-0.018	-0.018	-0.019
				(0.012)	(0.012)	(0.012)
education				-0.002	-0.003	-0.003
				(0.022)	(0.022)	(0.022)
studying combined degree				-0.060	-0.063	-0.066
				(0.050)	(0.050)	(0.050)
Grades obtained (ref. at most lower second-class)						
upper second-class honours				0.011*	0.011*	0.011*
				(0.005)	(0.005)	(0.005)
first-class honours				0.030**	0.030**	0.030**
				(0.005)	(0.005)	(0.005)
University attended (ref. other old)						
former polytechnic				-0.004	-0.003	-0.003
				(0.005)	(0.005)	(0.005)
Russell group				0.009+	0.008	0.008
				(0.005)	(0.005)	(0.005)
Activity status six months (ref. employed)						
Unpaid work	-0.007	-0.007	-0.007	-0.005	-0.006	-0.005
	(0.014)	(0.014)	(0.014)	(0.013)	(0.013)	(0.013)
Unemployed	-0.077**	-0.076**	-0.076**	-0.067**	-0.066**	-0.066**
	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)
Further study	-0.011*	-0.011**	-0.010*	-0.012**	-0.012**	-0.012**
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Inactivity	-0.018+	-0.019+	-0.018+	-0.019+	-0.019+	-0.019+
	(0.010)	(0.011)	(0.010)	(0.011)	(0.010)	(0.010)
Share co-ethnics						-0.000
						(0.001)
Log of ratio co-ethnic graduates						0.011
						(0.016)

Employment rate co-ethnics	-0.001
	(0.001)
Interaction share and graduates co-ethnics	0.001
	(0.001)
Parental class for minorities (ref. working class)	
self-employed	0.000
	(0.017)
intermediate	0.014
	(0.017)
high	0.023
	(0.014)

*+: p<0.1; *: p<0.05; **: p<0.01, standard errors are clustered by local authority of origin.*

Table A7: Log wage for women six months after graduation

Obs = 126,877	Basic	Family	Area	University	All	Co-ethnic
Dummy: disability	-0.013**	-0.016**	-0.015**	-0.004	-0.008*	-0.008*
	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)
Year of graduation (ref. 2005)						
2006	0.082**	0.081**	0.080**	0.073**	0.071**	0.071**
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
2007	0.149**	0.148**	0.148**	0.138**	0.136**	0.135**
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
2008	0.208**	0.207**	0.204**	0.189**	0.187**	0.186**
	(0.004)	(0.004)	(0.005)	(0.004)	(0.005)	(0.005)
2009	0.204**	0.203**	0.197**	0.182**	0.179**	0.178**
	(0.004)	(0.004)	(0.007)	(0.004)	(0.007)	(0.006)
2010	0.233**	0.233**	0.227**	0.214**	0.212**	0.212**
	(0.004)	(0.004)	(0.006)	(0.004)	(0.006)	(0.006)
2011	0.274**	0.275**	0.266**	0.255**	0.253**	0.252**
	(0.004)	(0.004)	(0.007)	(0.003)	(0.007)	(0.007)
2012	0.355**	0.355**	0.348**	0.328**	0.325**	0.324**
	(0.004)	(0.004)	(0.007)	(0.003)	(0.007)	(0.007)
Ethnicity (ref. white British)						
black Caribbean	-0.061**	-0.052**	-0.057**	-0.040**	-0.032**	-0.120**
	(0.012)	(0.011)	(0.010)	(0.012)	(0.011)	(0.036)
black African	-0.019*	-0.011	-0.015+	-0.022**	-0.012	-0.096**
	(0.009)	(0.008)	(0.009)	(0.008)	(0.008)	(0.028)
Indian	0.019*	0.024**	0.020**	-0.003	-0.000	-0.101**
	(0.009)	(0.009)	(0.007)	(0.008)	(0.006)	(0.034)
Pakistani	-0.034**	-0.025*	-0.029*	-0.057**	-0.048**	-0.107**
	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)	(0.025)
Bangladeshi	-0.069**	-0.054**	-0.063**	-0.079**	-0.063**	-0.118**
	(0.016)	(0.016)	(0.015)	(0.015)	(0.015)	(0.032)
Chinese	0.026*	0.034**	0.028**	0.002	0.011	-0.070*
	(0.011)	(0.011)	(0.010)	(0.010)	(0.009)	(0.029)
Dummy: work in	0.198**	0.190**	0.192**	0.218**	0.208**	0.208**

	(1)	(2)	(3)	(4)	(5)	(6)
London						
	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)
Parental class (ref. working class)						
self-employed		0.013**			0.010**	0.012**
		(0.004)			(0.004)	(0.004)
intermediate		0.021**			0.017**	0.016**
		(0.003)			(0.003)	(0.003)
high		0.028**			0.023**	0.022**
		(0.003)			(0.002)	(0.002)
Dummy: private school		0.049**			0.038**	0.037**
		(0.003)			(0.003)	(0.003)
Ranking of multiple deprivation (ref. most deprived)						
least deprived (1st quintile)			0.051**		0.055**	0.053**
			(0.009)		(0.009)	(0.009)
2nd quintile			0.026**		0.026**	0.025**
			(0.009)		(0.009)	(0.009)
3rd quintile			0.027**		0.024**	0.022**
			(0.007)		(0.007)	(0.007)
4th quintile			0.016**		0.016**	0.014**
			(0.005)		(0.005)	(0.005)
Rate of jobseekers' claimants			0.003		0.002	0.002
			(0.002)		(0.002)	(0.002)
Herfindahl index of diversity			0.033*		0.043**	0.045**
			(0.014)		(0.014)	(0.014)
Share of graduates in local authority			0.000		-0.000	-0.000
			(0.000)		(0.000)	(0.000)
Employment rate in local authority			0.001		0.001	0.001
			(0.001)		(0.001)	(0.001)

Study subject (ref. health sciences)			
biological sciences	-0.233**	-0.235**	-0.235**
	(0.004)	(0.004)	(0.004)
physical sciences	-0.093**	-0.095**	-0.095**
	(0.004)	(0.004)	(0.005)
social sciences	-0.166**	-0.168**	-0.168**
	(0.004)	(0.004)	(0.004)
business	-0.120**	-0.124**	-0.124**
	(0.004)	(0.004)	(0.004)
humanities	-0.230**	-0.233**	-0.233**
	(0.004)	(0.004)	(0.004)
creative arts	-0.279**	-0.281**	-0.281**
	(0.004)	(0.004)	(0.004)
education	0.006	0.006	0.006
	(0.005)	(0.005)	(0.005)
studying combined degree	-0.224**	-0.226**	-0.226**
	(0.013)	(0.012)	(0.012)
Grades obtained (ref. at most lower second-class)			
upper second-class honours	0.045**	0.043**	0.043**
	(0.002)	(0.002)	(0.002)
first-class honours	0.102**	0.100**	0.100**
	(0.003)	(0.003)	(0.003)
University attended (ref. other old)			
former polytechnic	-0.015**	-0.011**	-0.011**
	(0.002)	(0.002)	(0.002)
Russell group	0.020**	0.014**	0.014**
	(0.003)	(0.003)	(0.003)
Share co-ethnics			-0.001*
			(0.001)
Log of ratio co-			0.015

ethnic graduates

	(0.015)
Employment rate co-ethnics	0.001**
	(0.000)
Interaction share and graduates co-ethnics	0.000
	(0.001)
Parental class for minorities (ref. working class)	
self-employed	-0.025*
	(0.011)
intermediate	0.005
	(0.010)
high	0.013
	(0.008)

*+: p<0.1; *: p<0.05; **: p<0.01, standard errors are clustered by local authority of origin.*

Table A8: Log wage for men six months after graduation

Obs = 86,862	Basic	Family	Area	University	All	Co-ethnic
Dummy: disability	-0.014**	-0.021**	-0.017**	0.000	-0.008*	-0.008*
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Year of graduation (ref. 2005)						
2006	0.110**	0.110**	0.109**	0.089**	0.088**	0.087**
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
2007	0.178**	0.178**	0.177**	0.158**	0.157**	0.157**
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
2008	0.231**	0.230**	0.229**	0.203**	0.201**	0.201**
	(0.005)	(0.005)	(0.006)	(0.005)	(0.006)	(0.006)
2009	0.212**	0.211**	0.208**	0.185**	0.181**	0.181**
	(0.006)	(0.006)	(0.008)	(0.005)	(0.007)	(0.007)
2010	0.246**	0.246**	0.242**	0.224**	0.221**	0.221**
	(0.005)	(0.005)	(0.007)	(0.005)	(0.006)	(0.006)
2011	0.294**	0.295**	0.289**	0.275**	0.273**	0.273**
	(0.005)	(0.005)	(0.008)	(0.005)	(0.007)	(0.007)
2012	0.385**	0.385**	0.379**	0.355**	0.353**	0.352**
	(0.005)	(0.005)	(0.008)	(0.005)	(0.007)	(0.007)
Ethnicity (ref. white British)						
black Caribbean	-0.072**	-0.060**	-0.055**	-0.026*	-0.007	-0.008
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.035)
black African	-0.031*	-0.019	-0.013	-0.014	0.007	-0.014
	(0.014)	(0.014)	(0.014)	(0.013)	(0.014)	(0.032)
Indian	0.042**	0.052**	0.055**	0.020*	0.034**	0.023
	(0.010)	(0.009)	(0.008)	(0.009)	(0.007)	(0.036)
Pakistani	-0.015	0.001	0.004	-0.025*	-0.003	-0.003
	(0.011)	(0.010)	(0.010)	(0.011)	(0.010)	(0.028)
Bangladeshi	-0.014	0.012	0.005	-0.017	0.012	0.029
	(0.017)	(0.017)	(0.017)	(0.017)	(0.016)	(0.031)
Chinese	0.046**	0.053**	0.052**	-0.003	0.008	-0.003
	(0.014)	(0.013)	(0.013)	(0.012)	(0.012)	(0.029)
Dummy: work in	0.229**	0.217**	0.225**	0.221**	0.211**	0.211**

London

	(1)	(2)	(3)	(4)	(5)	(6)
	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)
Parental class (ref. working class)						
self-employed		0.011*			0.008	0.007
		(0.005)			(0.005)	(0.005)
intermediate		0.022**			0.015**	0.010**
		(0.004)			(0.004)	(0.004)
high		0.042**			0.026**	0.020**
		(0.004)			(0.003)	(0.004)
Dummy: private school		0.077**			0.059**	0.058**
		(0.004)			(0.004)	(0.004)
Ranking of multiple deprivation (ref. most deprived)						
least deprived (1st quintile)			0.053**		0.060**	0.058**
			(0.011)		(0.010)	(0.010)
2nd quintile			0.031**		0.036**	0.033**
			(0.009)		(0.009)	(0.009)
3rd quintile			0.020**		0.024**	0.022**
			(0.007)		(0.006)	(0.006)
4th quintile			0.011+		0.017**	0.016**
			(0.006)		(0.005)	(0.005)
Rate of jobseekers' claimants			0.001		0.002	0.002
			(0.002)		(0.002)	(0.002)
Herfindahl index of diversity			0.008		0.024*	0.030**
			(0.011)		(0.011)	(0.011)
Share of graduates in local authority			0.000		-0.001+	-0.000
			(0.000)		(0.000)	(0.000)
Employment rate in local authority			0.001+		0.001+	0.001*
			(0.001)		(0.001)	(0.001)

Study subject (ref. health sciences)			
biological sciences	-0.134**	-0.135**	-0.135**
	(0.007)	(0.007)	(0.007)
physical sciences	0.057**	0.057**	0.058**
	(0.006)	(0.006)	(0.006)
social sciences	-0.042**	-0.047**	-0.047**
	(0.007)	(0.007)	(0.007)
business	0.002	-0.002	-0.002
	(0.007)	(0.007)	(0.007)
humanities	-0.171**	-0.176**	-0.176**
	(0.007)	(0.007)	(0.007)
creative arts	-0.184**	-0.183**	-0.183**
	(0.007)	(0.007)	(0.007)
education	0.034**	0.038**	0.038**
	(0.010)	(0.010)	(0.010)
studying combined degree	-0.120**	-0.122**	-0.121**
	(0.020)	(0.020)	(0.020)
Grades obtained (ref. at most lower second-class)			
upper second-class honours	0.066**	0.065**	0.065**
	(0.002)	(0.002)	(0.002)
first-class honours	0.155**	0.156**	0.156**
	(0.003)	(0.003)	(0.003)
University attended (ref. other old)			
former polytechnic	-0.036**	-0.031**	-0.031**
	(0.003)	(0.003)	(0.003)
Russell group	0.051**	0.042**	0.041**
	(0.003)	(0.003)	(0.003)
Share co-ethnics			-0.001+
			(0.000)
Log of ratio co-			0.036*

ethnic graduates

	(0.017)
Employment rate co-ethnics	-0.000
	(0.000)
Interaction share and graduates co-ethnics	-0.002
	(0.001)
Parental class for minorities (ref. working class)	
self-employed	-0.001
	(0.014)
intermediate	0.036**
	(0.011)
high	0.049**
	(0.009)

*+: p<0.1; *: p<0.05; **: p<0.01, standard errors are clustered by local authority of origin.*

Table A9: Log wage for women 3.5 year after graduation

Obs = 12,980	Basic	Family	Area	University	All	Co-ethnic
Dummy: disability	-0.074**	-0.076**	-0.074**	-0.055**	-0.056**	-0.056**
	(0.015)	(0.015)	(0.015)	(0.014)	(0.015)	(0.014)
Year of graduation (ref. 2005)						
2007	0.032**	0.032**	0.030**	0.023*	0.023*	0.021*
	(0.011)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)
2009	0.133**	0.134**	0.129**	0.124**	0.120**	0.114**
	(0.011)	(0.011)	(0.020)	(0.010)	(0.019)	(0.020)
Ethnicity (ref. white British)						
black Caribbean	-0.153**	-0.135**	-0.138**	-0.098**	-0.075*	-0.142
	(0.032)	(0.032)	(0.036)	(0.031)	(0.035)	(0.149)
black African	-0.135**	-0.114**	-0.118**	-0.111**	-0.081+	-0.162
	(0.040)	(0.039)	(0.041)	(0.041)	(0.041)	(0.125)
Indian	-0.018	-0.005	-0.011	-0.023	-0.009	-0.120
	(0.025)	(0.025)	(0.026)	(0.025)	(0.026)	(0.152)
Pakistani	-0.117**	-0.101**	-0.104**	-0.109**	-0.088*	-0.133
	(0.037)	(0.038)	(0.037)	(0.034)	(0.035)	(0.112)
Bangladeshi	-0.134*	-0.107+	-0.126+	-0.111+	-0.086	-0.110
	(0.064)	(0.064)	(0.065)	(0.062)	(0.062)	(0.119)
Chinese	-0.018	-0.003	-0.017	-0.033	-0.019	-0.116
	(0.041)	(0.042)	(0.042)	(0.037)	(0.039)	(0.121)
Dummy: work in London	0.237**	0.223**	0.229**	0.233**	0.220**	0.220**
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Parental class (ref. working class)						
self-employed		0.040*			0.028	0.030
		(0.020)			(0.019)	(0.022)
intermediate		0.051**			0.041*	0.042*
		(0.016)			(0.016)	(0.018)
high		0.061**			0.045**	0.047**
		(0.014)			(0.013)	(0.015)

Dummy: private school	0.071**		0.041**	0.041**
	(0.014)		(0.014)	(0.013)
Ranking of multiple deprivation (ref. most deprived)				
least deprived (1st quintile)		0.069+	0.074*	0.069+
		(0.037)	(0.036)	(0.037)
2nd quintile		0.047	0.052+	0.048
		(0.031)	(0.030)	(0.031)
3rd quintile		0.040	0.042+	0.039
		(0.025)	(0.025)	(0.026)
4th quintile		0.011	0.016	0.016
		(0.021)	(0.021)	(0.021)
Rate of jobseekers' claimants		0.001	0.003	0.004
		(0.010)	(0.010)	(0.010)
Herfindahl index of diversity		0.039	0.048	0.035
		(0.030)	(0.031)	(0.031)
Share of graduates in local authority		-0.000	-0.001	-0.000
		(0.001)	(0.001)	(0.001)
Employment rate in local authority		0.001	0.001	0.001
		(0.002)	(0.002)	(0.002)
Study subject (ref. health sciences)				
biological sciences			-0.188**	-0.186**	-0.185**
			(0.020)	(0.020)	(0.020)
physical sciences			-0.070**	-0.067**	-0.066**
			(0.019)	(0.019)	(0.019)
social sciences			-0.139**	-0.136**	-0.135**
			(0.019)	(0.019)	(0.019)
business			-0.071**	-0.070**	-0.070**
			(0.020)	(0.020)	(0.020)

	(1)	(2)	(3)	(4)	(5)	(6)
humanities				-0.230**	-0.229**	-0.229**
				(0.020)	(0.020)	(0.020)
creative arts				-0.269**	-0.269**	-0.268**
				(0.020)	(0.020)	(0.020)
eudcation				-0.062**	-0.055*	-0.054*
				(0.023)	(0.023)	(0.023)
studying combined degree				-0.171**	-0.169**	-0.167**
				(0.046)	(0.045)	(0.045)
Grades obtained (ref. at most lower second-class)						
upper second-class honours				0.094**	0.092**	0.092**
				(0.011)	(0.011)	(0.011)
first-class honours				0.151**	0.148**	0.149**
				(0.015)	(0.015)	(0.015)
University attended (ref. other old)						
former polytechnic				-0.028*	-0.021+	-0.020+
				(0.011)	(0.011)	(0.011)
Russell group				0.067**	0.063**	0.063**
				(0.011)	(0.011)	(0.011)
Activity status six months (ref. employed)						
Unpaid work	-0.191**	-0.197**	-0.191**	-0.175**	-0.176**	-0.177**
	(0.031)	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)
Unemployed	-0.201**	-0.200**	-0.200**	-0.177**	-0.175**	-0.175**
	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Further study	0.074**	0.069**	0.075**	0.052**	0.050**	0.050**
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Inactivity	-0.013	-0.020	-0.015	-0.035	-0.040	-0.040
	(0.026)	(0.026)	(0.027)	(0.027)	(0.027)	(0.027)
Share co-ethnics						0.005+
						(0.003)
Log of ratio co-ethnic						0.082

graduates

	(0.057)
Employment rate co-ethnics	0.001
	(0.002)
Interaction share and graduates co-ethnics	0.001
	(0.006)
Parental class for minorities (ref. working class)	
self-employed	-0.004
	(0.046)
intermediate	-0.012
	(0.045)
high	-0.010
	(0.041)

+: p<0.1; *: p<0.05; **: p<0.01, standard errors are clustered by local authority of origin.

Table A10: Log wage for men three and a half years after graduation

Obs = 9,296	Basic	Family	Area	University	All	Co-ethnic
Dummy: disability	-0.117**	-0.121**	-0.121**	-0.076**	-0.081**	-0.082**
	(0.020)	(0.020)	(0.020)	(0.019)	(0.019)	(0.019)
Year of graduation (ref. 2005)						
2007	0.061**	0.061**	0.058**	0.046**	0.045**	0.043**
	(0.013)	(0.013)	(0.014)	(0.013)	(0.014)	(0.014)
2009	0.166**	0.168**	0.173**	0.142**	0.146**	0.145**
	(0.014)	(0.014)	(0.023)	(0.013)	(0.023)	(0.023)
Ethnicity (ref. white British)						
black Caribbean	-0.194**	-0.176**	-0.155**	-0.124*	-0.082	-0.417*
	(0.057)	(0.058)	(0.058)	(0.054)	(0.054)	(0.176)
black African	-0.123*	-0.107+	-0.084	-0.075	-0.027	-0.324*
	(0.054)	(0.055)	(0.056)	(0.053)	(0.054)	(0.146)
Indian	0.020	0.036	0.052+	-0.002	0.036	-0.337+
	(0.031)	(0.029)	(0.029)	(0.029)	(0.026)	(0.177)
Pakistani	-0.075	-0.041	-0.035	-0.086+	-0.029	-0.275*
	(0.050)	(0.049)	(0.053)	(0.047)	(0.049)	(0.126)
Bangladeshi	-0.012	0.036	0.019	0.008	0.070	-0.173
	(0.099)	(0.100)	(0.099)	(0.089)	(0.092)	(0.166)
Chinese	0.060	0.074	0.074	0.021	0.045	-0.243+
	(0.046)	(0.046)	(0.046)	(0.043)	(0.044)	(0.142)
Dummy: work in London	0.279**	0.266**	0.274**	0.261**	0.253**	0.251**
	(0.012)	(0.013)	(0.012)	(0.012)	(0.012)	(0.012)
Parental class (ref. working class)						
self-employed		-0.015			-0.028	-0.036
		(0.030)			(0.028)	(0.030)
intermediate		0.064**			0.048*	0.045*
		(0.019)			(0.019)	(0.020)
high		0.065**			0.038*	0.032+
		(0.017)			(0.017)	(0.018)

	(1)	(2)	(3)	(4)
Dummy: private school	0.079**		0.045**	0.044**
	(0.015)		(0.015)	(0.015)
Ranking of multiple deprivation (ref. most deprived)				
least deprived (1st quintile)		0.091*	0.089*	0.090**
		(0.036)	(0.035)	(0.034)
2nd quintile		0.050	0.049	0.049
		(0.032)	(0.030)	(0.030)
3rd quintile		0.047+	0.047+	0.044+
		(0.026)	(0.024)	(0.024)
4th quintile		0.025	0.031	0.028
		(0.022)	(0.021)	(0.021)
Rate of jobseekers' claimants		-0.005	-0.001	-0.002
		(0.010)	(0.010)	(0.010)
Herfindahl index of diversity		-0.036	-0.016	0.002
		(0.037)	(0.036)	(0.037)
Share of graduates in local authority		0.000	-0.001	-0.001
		(0.001)	(0.001)	(0.001)
Employment rate in local authority		-0.000	0.001	0.000
		(0.002)	(0.002)	(0.002)
Study subject (ref. health sciences)				
biological sciences		-0.214**	-0.219**	-0.216**
		(0.039)	(0.040)	(0.040)
physical sciences		-0.029	-0.032	-0.029
		(0.034)	(0.035)	(0.035)
social sciences		-0.096**	-0.102**	-0.100**
		(0.037)	(0.037)	(0.037)
business		-0.017	-0.022	-0.020
		(0.034)	(0.034)	(0.035)

humanities				-0.259**	-0.265**	-0.262**
				(0.038)	(0.038)	(0.038)
creative arts				-0.350**	-0.351**	-0.348**
				(0.037)	(0.038)	(0.038)
eudcation				-0.045	-0.039	-0.036
				(0.052)	(0.052)	(0.053)
studying combined degree				-0.183*	-0.200*	-0.195*
				(0.081)	(0.079)	(0.079)
Grades obtained (ref. at most lower second-class)						
upper second-class honours				0.112**	0.111**	0.111**
				(0.012)	(0.012)	(0.012)
first-class honours				0.219**	0.217**	0.218**
				(0.014)	(0.014)	(0.014)
University attended (ref. other old)						
former polytechnic				-0.026+	-0.018	-0.017
				(0.015)	(0.014)	(0.014)
Russell group				0.090**	0.086**	0.086**
				(0.012)	(0.012)	(0.012)
Activity status six months (ref. employed)						
Unpaid work	-0.257**	-0.258**	-0.255**	-0.239**	-0.236**	-0.235**
	(0.037)	(0.038)	(0.037)	(0.036)	(0.036)	(0.036)
Unemployed	-0.207**	-0.203**	-0.204**	-0.168**	-0.163**	-0.162**
	(0.017)	(0.017)	(0.017)	(0.016)	(0.016)	(0.016)
Further study	0.004	-0.001	0.005	-0.027*	-0.028*	-0.027*
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Inactivity	-0.030	-0.036	-0.035	-0.066**	-0.072**	-0.071**
	(0.024)	(0.024)	(0.024)	(0.022)	(0.022)	(0.022)
Share co-ethnics						-0.002
						(0.003)
Log of ratio co-ethnic						0.010

graduates

	(0.062)
Employment rate co-ethnics	0.005+
	(0.002)
Interaction share and graduates co-ethnics	-0.014*
	(0.006)
Parental class for minorities (ref. working class)	
self-employed	0.032
	(0.058)
intermediate	-0.022
	(0.064)
high	0.021
	(0.041)

*+: p<0.1; *: p<0.05; **: p<0.01, standard errors are clustered by local authority of origin.*

Table A11: Coefficients of probability to find a job through networks and wage returns of network

	Network		**Wage**	
Outcome	women	men	women	men
Dummy: work in London			0.209**	0.210**
			(0.005)	(0.005)
Dummy: disability	0.003	0.014**	-0.008*	-0.008*
	(0.003)	(0.003)	(0.003)	(0.004)
Year of graduation (ref. 2005)				
2006	-0.008+	-0.017**	0.070**	0.087**
	(0.004)	(0.006)	(0.004)	(0.005)
2007	-0.013**	-0.024**	0.135**	0.157**
	(0.004)	(0.005)	(0.004)	(0.005)
2008	-0.054**	-0.068**	0.183**	0.201**

	(0.005)	(0.006)	(0.005)	(0.006)
2009	-0.044**	-0.044**	0.176**	0.182**
	(0.005)	(0.007)	(0.007)	(0.007)
2010	-0.045**	-0.051**	0.210**	0.223**
	(0.005)	(0.007)	(0.006)	(0.007)
2011	-0.036**	-0.038**	0.252**	0.276**
	(0.005)	(0.007)	(0.007)	(0.007)
2012	-0.039**	-0.032**	0.321**	0.355**
	(0.005)	(0.007)	(0.007)	(0.007)
Ethnicity (ref. white British)				
black Caribbean	-0.055+	-0.051	-0.129**	-0.008
	(0.029)	(0.035)	(0.038)	(0.036)
black African	-0.040	-0.048	-0.107**	-0.018
	(0.025)	(0.031)	(0.030)	(0.033)
Indian	-0.034	-0.036	-0.112**	0.022
	(0.031)	(0.038)	(0.037)	(0.038)
Pakistani	-0.004	-0.020	-0.115**	-0.001
	(0.025)	(0.028)	(0.028)	(0.030)
Bangladeshi	-0.019	-0.009	-0.132**	0.033
	(0.029)	(0.033)	(0.033)	(0.032)
Chinese	-0.034	-0.029	-0.077*	-0.009
	(0.025)	(0.033)	(0.032)	(0.032)
Parental class (ref. working class)				
self-employed	0.023**	0.029**	0.013**	0.008
	(0.004)	(0.006)	(0.004)	(0.005)
intermediate	0.005	0.002	0.016**	0.011**
	(0.003)	(0.004)	(0.003)	(0.004)
high	0.017**	0.018**	0.022**	0.021**
	(0.003)	(0.004)	(0.002)	(0.004)
Dummy: private school	0.046**	0.054**	0.039**	0.061**
	(0.003)	(0.004)	(0.003)	(0.004)

Ranking of multiple deprivation (ref. most deprived)				
least deprived (1st quintile)	-0.029**	-0.005	0.052**	0.059**
	(0.006)	(0.008)	(0.009)	(0.010)
2nd quintile	-0.017**	0.003	0.024**	0.035**
	(0.006)	(0.007)	(0.009)	(0.009)
3rd quintile	-0.014**	-0.000	0.023**	0.025**
	(0.005)	(0.006)	(0.007)	(0.007)
4th quintile	-0.008*	-0.001	0.014**	0.018**
	(0.004)	(0.005)	(0.005)	(0.005)
Rate of jobseekers' claimants	-0.001	-0.000	0.001	0.002
	(0.002)	(0.002)	(0.002)	(0.002)
Herfindahl index of diversity	0.011	0.013+	0.050**	0.032**
	(0.007)	(0.008)	(0.014)	(0.011)
Share of graduates in local authority	0.002**	0.001**	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Employment rate in local authority	0.001+	-0.000	0.001	0.001+
	(0.000)	(0.000)	(0.001)	(0.001)
Study subject (ref. health sciences)				
biological sciences	0.099**	0.086**	-0.231**	-0.131**
	(0.003)	(0.007)	(0.004)	(0.007)
physical sciences	0.083**	0.042**	-0.091**	0.059**
	(0.004)	(0.007)	(0.005)	(0.006)
social sciences	0.087**	0.060**	-0.164**	-0.046**
	(0.003)	(0.007)	(0.004)	(0.007)
business	0.079**	0.051**	-0.119**	0.001
	(0.004)	(0.007)	(0.004)	(0.007)
humanities	0.102**	0.082**	-0.229**	-0.174**
	(0.003)	(0.007)	(0.004)	(0.007)
creative arts	0.135**	0.115**	-0.276**	-0.177**

	(0.003)	(0.007)	(0.005)	(0.007)
education	0.026**	0.036**	0.007	0.039**
	(0.004)	(0.009)	(0.005)	(0.010)
studying combined degree	0.106**	0.080**	-0.226**	-0.114**
	(0.013)	(0.021)	(0.013)	(0.019)
Grades obtained (ref. at most lower second-class)				
upper second-class honours	-0.020**	-0.032**	0.042**	0.065**
	(0.002)	(0.002)	(0.002)	(0.003)
first-class honours	-0.035**	-0.066**	0.099**	0.154**
	(0.003)	(0.004)	(0.003)	(0.003)
University attended (ref. other old)				
former polytechnic	-0.004+	0.011**	-0.010**	-0.031**
	(0.002)	(0.003)	(0.002)	(0.003)
Russell group	-0.002	-0.007*	0.015**	0.041**
	(0.002)	(0.003)	(0.003)	(0.003)
Share co-ethnics	0.001	-0.000	-0.001*	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Log of ratio co-ethnic graduates	0.028+	0.012	0.015	0.036*
	(0.015)	(0.017)	(0.015)	(0.017)
Employment rate co-ethnics	0.000	0.000	0.001*	-0.000
	(0.000)	(0.001)	(0.000)	(0.001)
Interaction share and graduates co-ethnics			-0.000	-0.002
			(0.001)	(0.001)
Parental class for minorities (ref. working class)				
self-employed	-0.008	0.000	-0.023*	-0.002
	(0.013)	(0.013)	(0.012)	(0.014)
intermediate	-0.011	-0.009	0.004	0.035**

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	(0.010)	(0.012)	(0.010)	(0.011)
high	-0.019*	0.015	0.014+	0.050**
	(0.009)	(0.010)	(0.008)	(0.010)
job found through network			-0.040**	-0.044**
			(0.002)	(0.003)
Interaction minority and network			0.008	-0.011
			(0.009)	(0.009)
Observations	242,005	171,087	118,974	80,752

+: p<0.1; *: p<0.05; **: p<0.01, standard errors are clustered by local authority of origin.

Figures

Figure A1: ethnic penalties in employment six months after graduation by resources
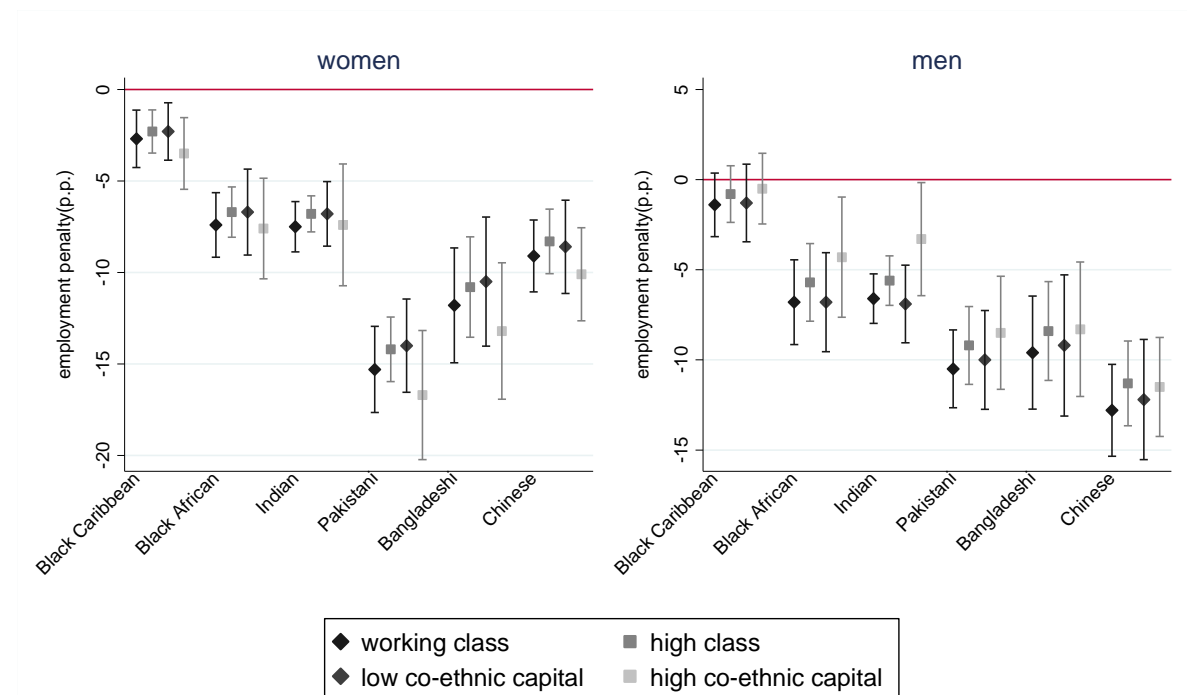
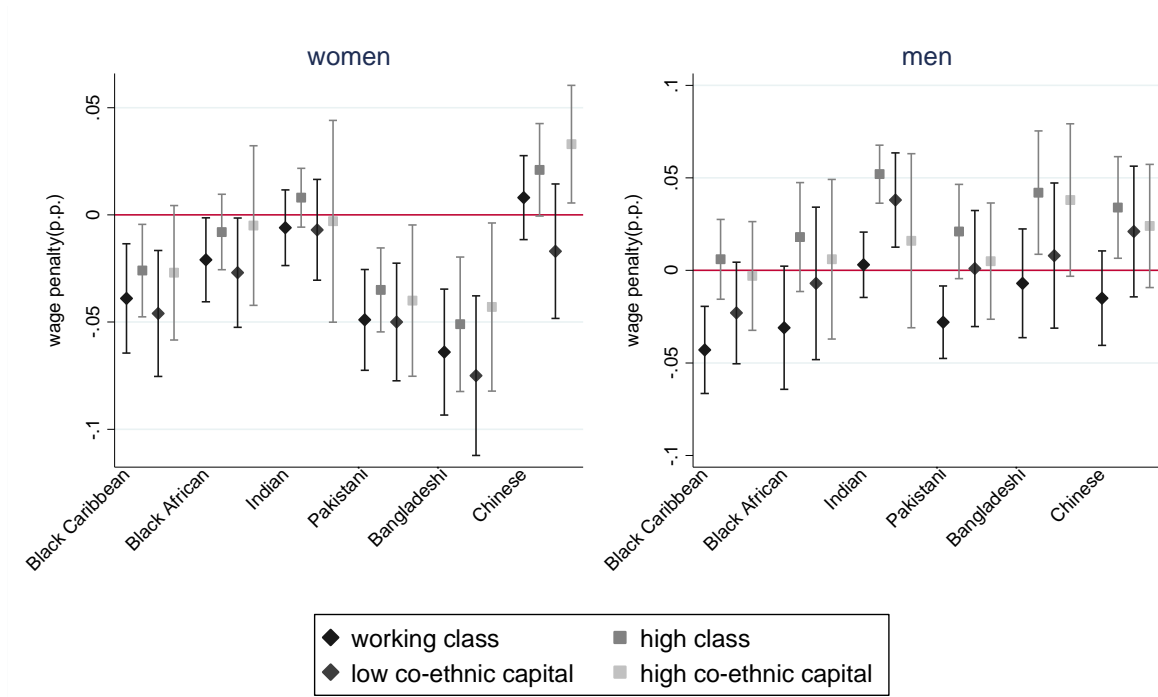*Figure A2:* ethnic penalties in wage six months after graduation by resources

Figure A3: ethnic penalties in employment three and a half years after graduation by resources
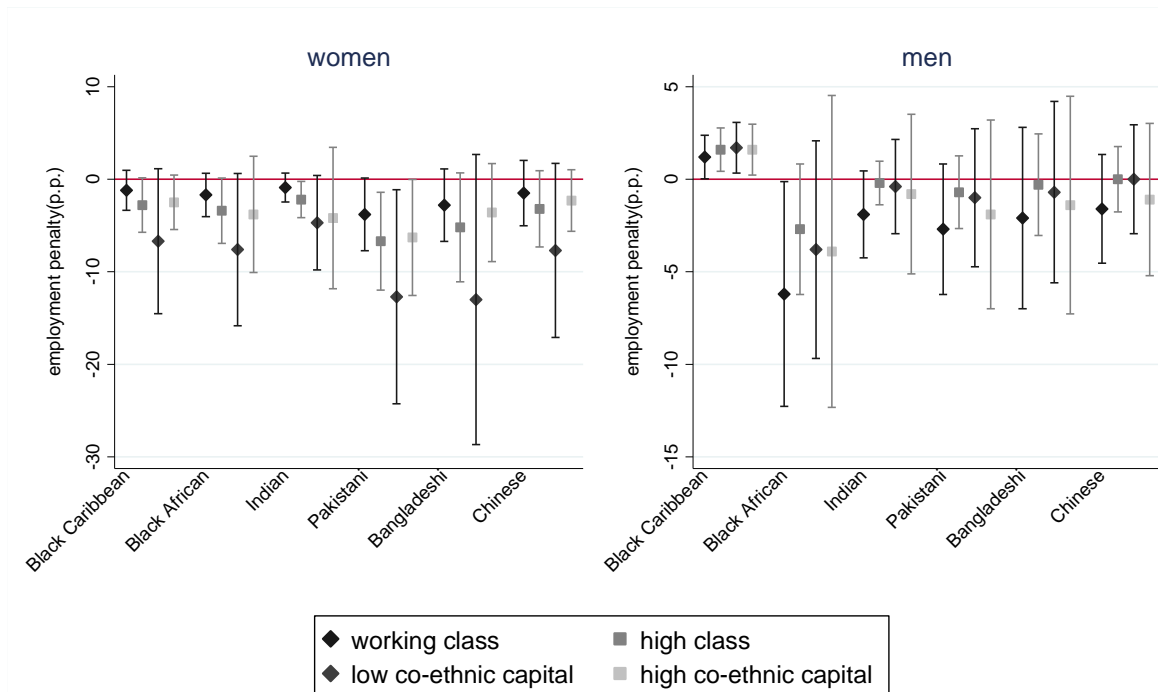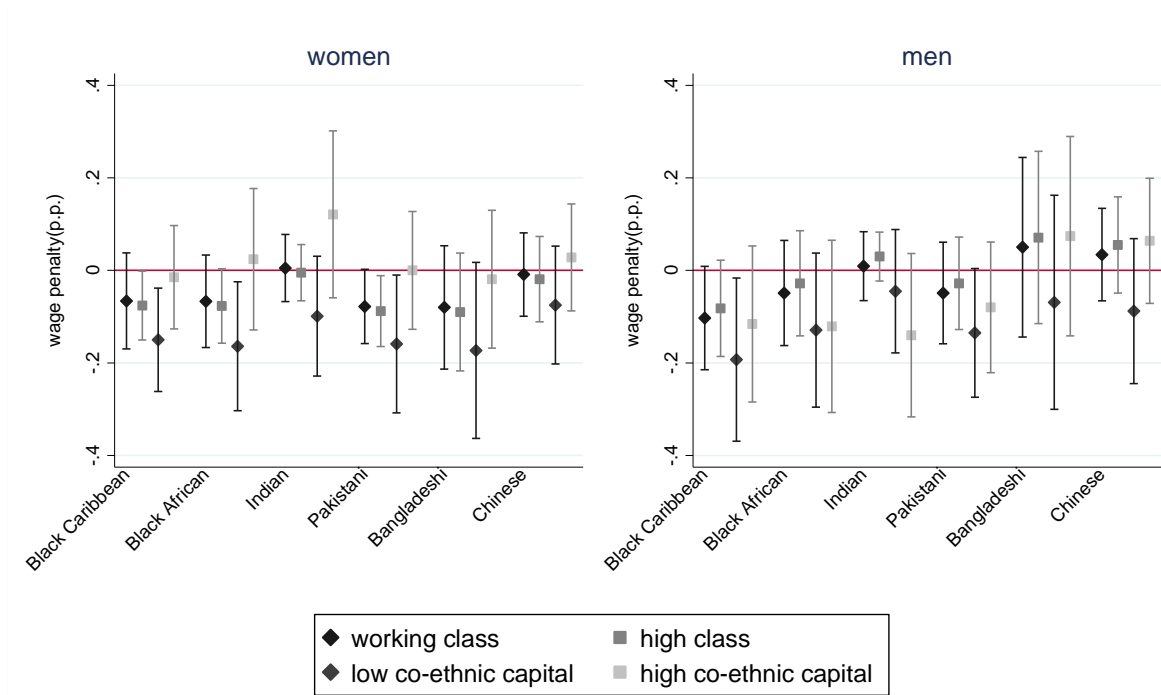
Figure A4: ethnic penalties in wage three and a half years after graduation by resources

The figures shows 95% confidence intervals around the ethnic penalty for an average person from working class background or high class background; or for a person from intermediate background in an area with the ethnic-specific 10th percentile of share of co-ethnics, co-ethnic employment rate and share of graduates or 90th percentile of those factors.