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Ethnic Differences in graduate over-education in the UK

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A small number of studies consider whether there are ethnic differences in the UK in the incidence of over-education. Using the SOC (HE), this paper uses a definition of graduate jobs based on qualification concentrations in occupations and job analysis data to examine the incidence of graduate level over-education by ethnicity. Given that ethnic differences exist in levels of educational attainment, we argue that drawing comparisons between people of equivalent levels of educational attainment, such as graduates, provides a better test of ethnic differences than overall measures which include respondents of all qualification levels.

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Abstract

A small number of studies consider whether there are ethnic differences in the UK in the incidence of over-education (Battu and Sloane, 2002, 2004; Lenton and Lindley, 2006; Dex and Lindley, forthcoming). Using the SOC (HE) (Elias and Purcell, 2004), this paper uses a definition of graduate jobs based on qualification concentrations in occupations and job analysis data to examine the incidence of graduate level over-education by ethnicity. Given that ethnic differences exist in levels of educational attainment, we argue that drawing comparisons between people of equivalent levels of educational attainment, such as graduates, provides a better test of ethnic differences than overall measures which include respondents of all qualification levels. This is because having a certain level of qualifications or schooling is a pre-requisite to being over-educated. In addition, we attempt to control for important aspects of qualification heterogeneity between ethnic groups, such as degree topic studied and overseas qualifications, and consider graduate level unemployment as a further indicator of over-education. The results indicate notable ethnic differences in both graduate level over-education and unemployment.

1. Introduction

A small number of studies in the UK consider whether ethnic differences exist in the incidence of over-education (Battu and Sloane, 2002, 2005; Lenton and Lindley, 2006; Dex and Lindley, forthcoming). This research typically focuses on employed populations, defining over-education as where a person's schooling or qualifications are considered to exceed that required to undertake their current job, regardless of

qualification level or occupation. Comparisons using overall measures, which give a unitary estimate covering all levels of education, treat people of different levels of schooling as similarly over-educated if such job/qualification mismatches are identified. For example, someone with an NVQ1 level qualification working as a builder's labourer would be assessed as overqualified in the same way as a graduate doing the same job.

A motivation for examining ethnic differences in over-education is that they could indicate the impact of ethnic discrimination on job matching in the labour market (Battu and Sloane, 2002, 2005; Lenton and Lindley, 2006). However, we are argue that overall measures are of limited interpretation in relation to such issues because they overlook important differences in the qualification level and labour market position of people defined as equally 'over-educated'. An alternative approach is to draw contrasts based on differences in the extent of over-education, such as number of schooling years or educational grades of over-education. Yet because some ethnic groups are more likely to have no qualifications than others, differences would be expected on this basis alone. This is because having no qualifications makes it structurally difficult or impossible to be over-educated, just as having the highest possible level of educational attainment makes it impossible to be defined as under-educated.

Another way to compare levels of over-education is to draw contrasts between ethnic groups at specific levels of educational attainment. Arguably, this approach also has more substantive appeal in relation to ethnic discrimination in that it seeks to answer whether people from different ethnic groups with equivalent qualification levels have more or less difficulty in finding jobs that match their formal education. Although studies that focus on graduate level over-education align well with this approach (e.g. Alpin et al, 1998), past research is confined to comparisons between white and non-white populations so tells little about graduate differences *between* specific ethnic minority groups. Given the heterogeneity that exists in the UK in the labour market position of different ethnic minorities (e.g. Blackaby et al, 1998a;

1999b), such contrasts risk over-simplification, often reflecting survey sample size limitations more than reasoned distinctions between groups.

Most studies of over-education also focus on employed populations. This approach is taken to the detriment of understanding how processes related to over-education may produce barriers to employment entry. Such processes could result in higher rates of unemployment amongst those at a greater risk of being over-educated when in paid-work. Again, there are notable ethnic difference in levels of economic inactivity and unemployment (Blackaby, 1999b), raising sample selection issues in studies that draw comparisons solely based on employed populations. The basic argument here is that there may be people outside employment who have equal or more difficulty in finding a job that matches their schooling compared to those who are in employment and defined as over-educated. This paper thus expands the conception of over-education towards wider notions of under-employment, conceiving ethnic differences in levels of unemployment, particularly amongst the more highly qualified, as a further indicator of over-education.

A classification of graduate jobs (SOC (HE)) was developed by Elias and Purcell (2004) based on statistical and job analysis data used to develop the SOC2000 Standard Occupational Classification. We have used this to define graduate and non-graduate jobs, in order to estimate ethnic differences in graduate over-education. Multinomial probit models are estimated to control for nativity and important aspects of qualification heterogeneity, such as type of qualification and subject. Using a classification of ethnic group based on 2001 UK Census definitions, we have pooled a repeated cross-sectional dataset from the 1992-2005 UK Labour Force Survey (UKLFS) to provide sample sizes to examine differences between ethnic minority groups.

2. Explanations of over-education

Over-education refers to where an individual possesses more education than is required to do a given job, whereas under-education refers to the absence of the educational attainment required to perform a job (e.g. Rumberger, 1987). Efforts to measure over-education have chiefly taken one of three approaches[2] (see Hartog, 2000; Verhaest and Omey, 2006). Firstly, job analyst data has been used to define the skill and educational requirements of occupations. From this, individuals are assessed as to whether or not they have the required education for their occupation or surplus education (e.g. Rumberger, 1987). A second approach is to use self-reported information (e.g. Sicherman, 1991) in which survey respondents' are typically questioned about the level of qualifications required *to get* the job in which they are working, although often this may differ from those required *to do* a given job (Duncan and Hoffman, 1981). A third way, referred to by some as the 'realised match' approach, derives information on the qualification profiles of occupations using measures of central tendency to estimate average qualification levels in occupations (Verdugo and Verdugo, 1989; Kiker, Santos, and Mendes de Oliveira, 1997). This information can then be compared to the actual level of qualification held by an employee, with an assessment of whether they are matched, above, or below this qualification level.

Despite disagreements on the measurement and incidence of over-education (see Green, McIntosh, & Vignoles, 1999b; Burris, 1983; Clogg and Shockey, 1984; Halaby, 1994), studies typically find that in comparison to better matched workers there are wage penalties associated with being over-educated (see Hartog, 2000 for a review of the wage literature). Workers empirically defined as over-educated are also more likely to report lower levels of job satisfaction than those whose educational attainment better matches their occupation (Tsang et al, 1991; Battu et

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[2] More recently, Dex and Lindley (forthcoming) present a further method for estimating levels of over-education through modelling the link between individual educational attainment and occupation using multinomial logistic regression to predict an individual's likely occupation given their (non-ethnic) characteristics, which is then compared with their actual occupation. A person is defined as over-educated if they work in an occupation classified into a SOC grouping with lower average earnings than their expected occupation.

al, 1999) and have higher job turnover rates (Sicherman, 1991; Alba-Ramirez, 1993; Sloane et al, 1995a). From a Government policy perspective, over-education is further important if it reflects skill under-utilisation and macro-economic under-productivity (Green et al, 1999a).

The extent to which labour market disparities related to measured over-education are a point of genuine concern however is debated, with numerous economic perspectives applied to the issue (see Green et al, 1999a; Green and McIntosh, 2007). Several explanations consider over-education in terms of shifts in the supply and demand for qualifications or assignment processes between the supply and demand for skills. Over-education has been considered to reflect temporary disequilibria in skill supply and demand that should correct over-time (Freeman, 1976; Tsang and Levin, 1985); short run skills mismatches between workers and jobs that decline through job matching (Sloane, Battu, and Seaman, 1999), or queuing in the labour market related to competition for jobs (Thurow and Lucas, 1972; Alpin et al, 1998). Drawing on signalling theories (Spence, 1973), over-education has further been discussed in relation to 'qualification inflation', where employers, screening for the most suitable candidates, are purported to have upgraded job requirements in response to rising educational attainment (see Green et al, 2001a).

Although the idea that workers have skills that they are not utilising in their jobs would appear intrinsic to the concept of over-education (see Green and McIntosh, 2007), empirically defined over-educated workers do not necessarily have under-used skills. Based on human capital theory, employers that seek to maximise productivity would be expected to maximise the use of employee skills even if they are not specifically required for positions (Mason, 1995, 1996; Green and McIntosh, 2007). Genuine changes in skill requirements for jobs over time because of technological advancement could also appear as over-education but instead reflect out-dated job definitions. In terms of graduate over-education, due to a shortage of people with good intermediate level skills, graduates have increasingly been recruited to take on traditionally non-graduate occupations, changing the

concentration of qualifications within occupations (Parsons and Marshall, 1996; Gallie, 1991; Gallie and White, 1993).

Other explanations focus on wider differences between over-educated and non-over-educated workers. Qualification heterogeneity refers to where people of the same level of schooling or qualification certificate are not perfect substitutes for each other, such as in their skills (e.g. Halaby, 1994). Regarding degree level qualifications, labour market relevant skills and employability signals may vary in terms of subject studied, institute attended, and degree class obtained (Alpin et al, 1998; Dolton and Silles, 2001). Such differences could result in apparent patterns of over-education, which more accurately reflect individual heterogeneity (Green and McIntosh, 2007). Dolton and Silles (2001) for example found that graduates with art and humanities, or language qualifications were more likely to be over-educated than people with other degrees. Those with better degree results were also less likely to be over-educated (also see Alpin et al, 1998). It may further be the case that some (older) workers substitute experience for qualifications in the labour market (Sloane et al, 1995b, 1996) thus making younger but more qualified workers appear relatively over-educated in occupations.

3. Ethnicity and over-education

Although measured over-education does not necessarily reflect skill under-utilisation, ethnic differences in over-education remain of interest for a number of reasons. Firstly, such differences, if they reflect negative discrimination, raise equality and diversity policy concerns (Battu and Sloane, 2002, 2004; Lenton and Lindley, 2006). An understanding of ethnic variation in over-education can also inform debates on the determinants of wider ethnic differences in the labour market. Research indicates that non-whites in the UK have higher levels of unemployment, lower occupational attainment, and lower pay than the white population (Blackaby, et al 1998, 1999; Sly et al, 1998; Dale et al forthcoming). Although this, in part, could reflect lower levels of educational attainment amongst some ethnic minority

groups, it is unlikely that qualification levels can explain ethnic differences in over-education as having fewer or no qualifications makes being over-educated more unlikely.

It also remains unclear how many standard economic accounts might explain ethnic variation in over-education. In the absence of ethnicity-related penalties, fluctuations in the supply and demand for qualifications, changes to job skill requirements over time, qualification inflation, temporary job mismatches, and so forth, would all be expected to affect different ethnic groups in the same manner. Consequently, similar levels of over-education would be expected across ethnic groups.

Alternatively, if barriers to optimal matching vary by ethnicity, this could produce ethnic variation in levels of over-education. From a job competition perspective, if ethnic minority workers are more likely to be overlooked during recruitment, less likely to be promoted, or are placed at the back of job queues, such practices are likely to cause higher levels of over-education. There is significant evidence of ethnic discrimination in the UK labour market. (e.g. Riach and Rich, 2002; Heath and Cheung, 2006) which differs between ethnic groups suggesting that it is more difficult for some ethnic minorities to obtain employment that fully matches their skill levels than for others. Consequently, some ethnic minority people may be more likely to accept jobs at a lower level than appropriate for their level of qualification than the majority white population. Some employers, because of prejudice, might also only employ ethnic minorities with higher qualifications than the white majority for the same job (Alpin et al, 1998). In addition to equality concerns, ethnic discrimination is therefore an economic productivity issue if it prevents optimal matching between skills supply and demand and so the under-utilisation of skills in the economy.

Nonetheless, beyond the effects of ethnic discrimination, wider individual differences could contribute to varying rates of over-education by ethnicity. In terms of graduate level over-education, qualification heterogeneity in terms of the subject

studied, grade achieved, or type of institution attended pose candidate issues. Research by Connor et al (2004) indicates that ethnic minority university students are less likely to achieve first and upper second level class degrees than white students. This was particularly the case for those who identified themselves as Black African. Overall, ethnic minority students were more likely to attend 'new' post-1992 universities rather than pre-1992 universities. At the same time, white students were less likely than minority ethnic students to study traditional university subjects such as medicine, dentistry, and law, which might be expected to lead to specific professional vocations. They were also less likely to study computer science (also see Connor et al, 1998).

For people who received part or all of their formal education abroad, the relative value of overseas qualifications is a further factor to consider. Some employers may not recognise overseas certificates as equivalent to UK qualifications. Qualifications that allow entry into certain professions can also be country specific. Dale et al (2002) found that, in terms of predicting economic activity for Pakistani and Bangladeshi women, overseas qualifications were of no greater value than having no qualifications. Beyond qualifications, differences in more general skills such as language ability (Battu and Sloane, 2004), particularly for people born or educated in non-English speaking countries, could further place some job candidates at a comparative disadvantage.

4. Data and methods

The following analysis attempts to control for important aspects of individual heterogeneity, such as degree subject studied and nativity, in order to draw comparisons between ethnic groups in their relative risk of over-education. A pooled repeated cross-sectional dataset from years 1992-2005 of UK Labour Force Survey (UKLFS) is used to give sufficient sample sizes for the analysis of smaller ethnic minority groups. The definition of ethnicity used is based on the 2001 census definitions, although after data pooling, Bangladeshi and Pakistani respondents were

grouped due to small graduate level sample sizes. Respondents reporting mixed ethnicity were included in the 'other' category.

Two measures of over-education are used, an overall modal measure for the entire employed population, and a measure of graduate and non-graduate jobs using the SOC (HE) (Elias and Purcell, 2004). We have applied this latter measure to those holding degree level or above qualifications (NVQ level 4 or 5, see figure 1). The first measure allows comparisons with past studies of overall levels of over-education (e.g. Alpin et al, 1998). The modal NVQ qualification level for each SOC two-digit occupational category was calculated for two-year averages and compared to individual levels of educational attainment (see Bauer, 2002). Respondents were defined as over-educated if their level of educational attainment exceeded the modal value for their occupation, and under-educated if it was below the mode. Those who held the modal value are referred to as adequately educated or 'matched' (see Hartog, 2000).

Insert Figure 1 here. NVQ level classification of qualifications

Using qualification level confers a number of advantages over other measures such as years of schooling. A substantial proportion of ethnic minority men and women are born and/or grow up overseas, receiving part or all of their formal education abroad. Cross-national differences in the length of courses, the age at which children start school, as well as the propensity for late or interrupted schooling, raise issues in the construction of a reliable 'years of schooling' indicator based on age of leaving full-time education. It is also well established that many minority ethnic groups take longer to achieve a given qualification than their white counterparts or are more likely to drop out of university (e.g. Connor et al, 1998). We opt for a qualification level definition although the UKLFS questionnaire classifies all overseas qualifications as 'other,' and so as equivalent to NVQ level 1 (GCSE grade D-F). Consequently, our estimates of levels of over-education amongst respondents holding overseas qualifications potentially undervalues many higher level overseas certificates, and so under-estimate levels of ethnic minority over-education.

Our second measure, of graduate over-education, uses the SOC (HE) (Elias and Purcell, 2004). The SOC (HE) is derived from information compiled from nine quarterly Labour Force Surveys (Spring 2001 to Spring 2003), covering more than half a million occupations classified in the 2000 Standard Occupational Classification (SOC2000). These data were analysed by Elias and Purcell (2004) to show the percentage of those in employment holding a first degree within each of the 353 unit groups of SOC2000 for two age categories: those between 21and 35 years and those aged 40-54 years. A file prepared by the UK ONS from the Winter 1996/7 LFS file containing dual coded occupational information (SOC2000 and SOC90), together with text descriptions of job titles, job descriptions and qualifications required for jobs for more than 65,000 employed people were used in combination with this information. Additionally, the construction of the SOC (HE) drew upon resources used in the construction of the National Statistics Socio-economic Classification (NSSEC) for the UK Office for National Statistics (see Elias and McKnight 1997).

The SOC (HE) measure therefore combines statistical information about concentrations of graduates within occupations with job analysis data giving job descriptions and qualification requirements. Four categories of graduate occupations are identified (Figure 2), two of which consist of occupations for which employers typically require a degree - 'traditional' graduate occupations (e.g. solicitors, doctors, scientists, lecturers, and secondary school teachers) and 'modern' graduate occupations. The latter group represents newer professions, which graduates have been entering since the expansion of higher education in the 1960s (e.g. senior managers in large organisations, IT professionals, primary school teachers). The proportion of employed people in 'traditional graduate' occupations in 2001-2003 holding a first degree is greater than 60% in the older age group and considerably higher in the younger age group. For 'modern graduates', the comparable levels with a first degree are 40% in the 40-54 age group and about 50% in the 21-35 age group.

A third category, termed 'new graduate jobs', consists of occupations for which graduates have increasingly been recruited, where the nature of work provides significant scope to exercise degree level skills and knowledge (e.g. occupational therapists, quantity surveyors, medical radiographers, public relations officers, and management accountants). The fourth category, 'niche graduate jobs', is more heterogeneous and represents jobs where, although the majority of those employed in such jobs do not have degrees and most of the occupations do not normally require a degree, there are significant groups of occupations within them that do require degrees or provide scope for the exercise of degree level skills and knowledge. Examples include planning and quality control engineers, hotel and accommodation managers, and nurses. Occupations not classified to one of these four categories are termed 'non-graduate occupations,' reflecting jobs where graduate level skills are inappropriate (See Elias and McKnight, 2004 for further information).

Multinomial probit regression models were estimated to predict the likelihood of being in a SOC (HE) graduate job, for men and women separately, for the working age population holding NVQ 4 and 5 level qualifications. The model is based on a number of underlying latent variables:

$$\eta_{ij} = z_i \alpha_j + \varepsilon_{ij}$$

Where i denotes cases and j denotes alternatives, z_i is a 1 x q row vector containing the case-specific independent variables for the ith case, α_j are the J vectors of regression coefficients, and $\varepsilon_{i1}... \varepsilon_{ij}$ are iid distributed multivariate normal with mean zero covariance significant matrix. For simplicity, we have restricted the dependent measure to five states indicating whether respondents holding degree level qualifications were: 1) in a SOC (HE) defined graduate job, 2) In a non-graduate job 3) ILO unemployed, 4) self-employed, or 5) not in the labour force (NILF). Self-employment was included as a discrete choice as it could present a favourable option for some ethnic minority groups facing barriers within the labour

market[3]. The NILF category was created to represent all respondents with NVQ level 4 and 5 qualifications who were outside employment and not represented by the other categories.

To account for qualification heterogeneity, controls for qualification type, degree subject, and whether or not respondents first entered the UK after age 16 years were included in the models. The latter variable was used to proxy for those who were most likely to have received their formal education outside the UK, and so to have overseas qualifications, and possibly English as a second language. In addition, a trend term (year) was included to represent structural shifts in the qualification composition of occupations between years, changes in job requirements over time, or qualification inflation. Temporal effects were further identified through the inclusion of the annual regional unemployment rate.

Due to data limitations, we have not controlled for degree class obtained or type of university institution attended. Based on previous findings, it is likely that degree class is likely to have a significant effect, particularly for Black African respondents who have particularly lower grade attainment at university level (Connor et al, 2004). However, it is probable that some of the reasons for lower degree class, such as nativity and country of pre-degree level education, are controlled or proxied for by other variables within the current analysis. Other factors not considered in the current paper, such as a lack of networks about job opportunities (Yeandle et al, 2006); or location in areas of limited opportunities (Fieldhouse and Gould, 1998).

5. Results

Estimates of overall levels of over-education

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[3] Separate models including the self-employed in either the over-educated or matched category depending upon their occupation (as opposed to a separate category) did not significantly affect the pattern of results.

Using the modal overall measure outlined above, about a quarter of men and women are over-educated. However, table 1 shows that the highest levels of over-education for both women and men were amongst Black Africans. Lenton and Lindley (2006) also found high levels of over-education amongst Black African men and women (also see Dex and Lindley, forthcoming). With the exception of the Chinese group, men for all ethnic minority groups were more likely to be over-educated than white respondents. Levels of over-education for Pakistani/Bangladeshi, Indian and Black Caribbean men were only a few percentage points higher than for white men (24%). By contrast, Pakistani/Bangladeshi and Indian women exhibited considerably higher levels of over-education than white women (26%), although Black Caribbean women had marginally lower levels. These results are very different from those reported by Battu and Sloane (2002) using a self-reported definition of over-education. They found that only three ethnic groups were more over-educated than the white majority (19.7 percent). These were Indians (33 per cent), African Asians (33.2 per cent), and Chinese employees (30.8 per cent). Bangladeshi respondents were significantly less likely to be over-educated. However, these estimates do not distinguish respondents of Black African ethnic origin from other groups – and combine men and women.

Insert Table 1. Over-education by Ethnicity: Overall (Modal) Measure

The bottom half of table 1 unpacks the overall modal measure of over-education by qualification level. It shows considerable compositional differences between ethnic groups in the levels of educational attainment of those classified as over-educated. Compared to the white majority, over-educated ethnic minority women were more likely to hold degree level qualifications. This finding was most pronounced for Chinese women (51%), followed by Black African women (42%). A very similar pattern is apparent for Chinese and Black African men. Although these estimates use the realised match approach, we would expect similar differences in the qualification distribution of over-education by ethnicity on other measures of over-education.

Graduate level over-education

Alpin et al (1998) found that non-white graduates were more likely to be over-educated and less likely to be under-educated than white graduates. The results in table 1 show that graduate level over-education forms a larger proportion of overall over-education for several ethnic minority groups. Research by Connor et al (1996; 2004) indicates that ethnic minority graduates take a longer time to find their first job following graduation and are more likely to be unemployed for a longer period after leaving university. Using the SOC (HE) definition of graduate jobs, we have therefore focussed our analysis on those with graduate-level qualifications by confining our sample to NVQ 4/5 qualification holders. We also consider levels of unemployment by ethnic group because, as argued earlier, we expect that the barriers in the labour market that produce over-education may also produce unemployment.

Breaking down the overall SOC (HE) measure, for men, the highest representation in traditional graduate jobs was amongst Chinese, Indian, and Pakistani/Bangladeshi groups (Table 2). Although Pakistani/Bangladeshi men with NVQ 4/5 qualifications had higher overall rates of over-education (28%) than white men (18%), they were well represented within traditional and modern graduate jobs. Other ethnic minority groups, and in particular the Black Caribbean, Black African, and Black Other groups, were less represented in such jobs, and this held for both men and women. Thus although Black Caribbean women had comparatively low rates of graduate level over-education, this was largely due to their concentration in 'niche' graduate occupations (42 %) such as nursing. There representation in traditional graduate positions such as doctors was considerably lower (9.4 %) than white women (17 %). Of all the female groups, Pakistani /Bangladeshi women were the most likely to work in traditional graduate jobs (24%).

>*Table 2 SOC (HE) Graduate level Jobs by ethnicity*

Including the ILO unemployed, those 'not in the labour force' (NILF), and self-employed, Graphs 1 and 2 consider levels of graduate over-education as a percentage

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of overall labour market status for men and women respectively. Levels of graduate level unemployment were higher amongst all of the ethnic minority groups than the white group (3%). For both men and women, unemployment was particularly marked amongst the Black African groups. These findings demonstrate how ignoring people outside of the labour market risks under-estimating levels of over-education amongst several ethnic minority groups. Considerable difference were also apparent in the extent to which different ethnic groups were NILF, particularly for women, with Pakistani/ Bangladeshi women being the most likely to be classified as not in the labour force.

Table 3 displays coefficients for the multinomial probit model, which includes controls for degree subject, nativity, family characteristics, age and regional unemployment. Black African and Pakistani and Bangladeshi men were the two groups with highest coefficients on all of the three outcome categories: not in the labour market, unemployed, over-educated. Unlike Black Africans, Pakistani and Bangladeshi men also had the highest coefficients on self-employment. Amongst women with graduate level qualifications, Black Africans and Pakistanis and Bangladeshis also have highest coefficients on unemployment and over-education reflecting their disadvantage in the labour market. However, Pakistani and Bangladeshi women also show very high likelihoods of not being in the labour market whilst Black African women are not significantly different from white women. All minority ethnic men, and all women except the Black Caribbean group, were more likely to be ILO unemployed than their white counterparts.

For men, being born and brought up overseas did not increase the probability of being either unemployed or over-education, controlling for all other characteristics. However, for women both outcomes were statistically significantly higher than for those UK-born and brought up. For women, but not for men, having a dependent child had a positive and significant effect on all three outcomes: not in the labour market, unemployed, over-educated. For men and women, partnership showed the expected positive effect such that the three negative labour market outcomes were significantly less likely for those with a partner. The subject of qualification

showed marked effects on the likelihood of being over-employed, with medical and related qualifications and higher degrees giving the greatest protection against over-education for men and women. By contrast, an arts degree was associated with the greatest likelihood of both unemployment and over-education for men and women.

>>**Insert table 3 here Multinomial Probit**

Covariate Adjusted Estimates of Ethnic Penalties

Applying the argument that ILO unemployment amongst the more highly qualified represents a further form of over-education, the following section goes on to estimate a combined measure of graduate level over-education that incorporates both those in non-graduate jobs and the unemployed. The predicted probabilities were extracted from two separate multinomial probit models, one that contained ethnicity as an explanatory variable, and one that did not. These were used to give two sets of estimates: 1) the mean predicted probability of over-education for each ethnic group based on their non-ethnicity characteristics, and 2) the mean predicted probability for each ethnic group after ethnicity is entered into the model and taken into account. The dependent variable was coded as before, with the exception of the unemployed and non-graduate job categories being joined together to form the combined measure.

Adjusted estimates of ethnic penalties derived from this procedure are presented in Graphs 3 and 4, for men and women respectively. Using the above combined measure, these give the mean predicted probability of over-education for each ethnic group. Based on the model which did not include ethnicity, Black African male graduates on average had a 16 % probability of being over-educated. This was roughly equivalent to white men (18 %). However, after taking ethnicity into account, this rose to 36 % per cent for Black African men. Similarly, although the mean probability of Pakistani/ Bangladeshi men with degree level qualifications being over-educated was similar to whites based on their non-ethnic characteristics (19 %), this rose considerably once ethnicity entered into the model (29 %).

For women, Black African (36 %) and Pakistani/ Bangladeshi (29 %) graduates had the highest predicted probability of being over-educated, whereas white women were least likely (20 %). Some notable gender differences were apparent. Whereas Caribbean graduate men were more likely to be over-educated than white men, Caribbean women had a similar predicted probability of over-education (23 %) to white women, and this did not increase after ethnicity was taken into account. The difference between white women and the black other female category (7 % difference) was also less pronounced than the equivalent difference between white and men in the 'black other' category (14 % difference).

6. Conclusions

In this paper, we demonstrate how past estimates of ethnic differences in the incidence of over-education are problematic in a number of respects. Firstly, measures that incorporate people from across the entire qualification distribution into a single summary measure overlook the fact that differences in levels of educational attainment between ethnic groups are likely to contribute to variation in levels of over-education. There are also considerable compositional differences in the educational profile of respondents in different ethnic groups classed as over-educated on overall measures, with those over-educated from ethnic minorities being more likely to hold degree level certificates. This finding held despite overseas degree qualifications being categorised as NVQ level 1 (GCSE grades D-F equivalent) qualifications in the UK Labour Force Survey, and so arguably under-classified.

Black African, and Pakistani/ Bangladeshi men were the two groups with highest coefficients on all of the three outcome categories: not in the labour market, unemployed, over-educated. Amongst women with graduate level qualifications, Black Africans and Pakistanis/ Bangladeshis also have highest coefficients on unemployment and over-education reflecting their disadvantage in the labour market. However, Pakistani and Bangladeshi women also show very high

likelihoods of not being in the labour market whilst Black African women are not significantly different from white women. All minority ethnic men, and all women except the Black Caribbean group, were more likely to be ILO unemployed than their white counterparts.

When graduate unemployment is taken into account, differences in the incidence of graduate level over-education by ethnicity, although already present, become starker. Studies that exclude the unemployed thus risk under-estimating the extent of ethnic differences in over-education. Our findings provide evidence of labour market disadvantage amongst several ethnic minority groups in terms of their levels of over-education, after controlling for nativity factors and qualification subject. This disadvantage was particularly pronounced in terms of degree level over-education amongst Black African and Pakistani/ Bangladeshi men and women, and was more pronounced amongst men from the Black ethnic groups than for women. If we use an extended measure of over-education that includes unemployment, then graduate-level men in the three Black groups, and Pakistani and Bangladeshi men, are all particularly disadvantaged. Amongst women, Black African and Pakistani/ Bangladeshis remain as the most disadvantaged on this extended measure. It is also notable that the Chinese, both men and women, are not significantly more likely to be over-educated than their white counterparts.

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Tables and Figures

Figure 1. NVQ level classification of qualifications

Degree or higher qualification NVQ and key skills 4 & 5	Higher degrees, first degrees, teaching qualifications, nursing, HNC/HND, BTEC higher, NVQ levels 4 & 5.
A level NVQ and key skills 3	'A' levels typically gained at age 18; required for university entrance; Scottish Highers, advanced craft certificates, NVQ level 3.
O level NVQ and key skills 2	'O' levels, GCSE grades A-C, typically gained at age 16 at the end of compulsory schooling, NVQ level 2, GNVQ intermediate.
Other qualification Key Skills level 1 and entry level	CSE below grade 1, NVQ 1, GNVQ/GSVQ foundation level; Other qualifications incl. overseas qualifications.
No qualifications	No qualification reported, including don't know and no answer.

Figure 2 SOC (HE) Graduate Jobs

SOC (HE) Category	Description	Examples
1. Traditional Graduate occupations	The established professions, for which, historically, the normal route has been via an undergraduate degree programme.	Solicitors; Medical practitioners; HE and secondary education teachers; Biological; scientists/biochemists.
2. Modern graduate occupations	The newer professions, particularly in management, IT and creative vocational areas, which graduates have been entering since educational expansion in the 1960s	Directors, chief executives (major organisations); Software professionals, computer programmers; Primary school and nursery teachers; Authors/writers/journalists.
3. New graduate occupations	Areas of employment, many in new or expanding occupations, where the route into the professional area has recently changed such that it is now via an undergraduate degree programme.	Marketing & sales Managers; Physiotherapists, occupational therapists; Management accountants; Welfare, housing, probation officers; Countryside/park rangers
4. Niche graduate occupations	Occupations where the majority of incumbents are not graduates, but within which there are stable or growing specialist *niches* which require higher education skills and knowledge.	Leisure and sports Managers; Hotel, accommodation Managers; Nurses, midwives; Retail managers;

Adapted from Elias and Purcell (2004)

**Table 1. Over-education by ethnicity (Overall (Modal) Measure, LFS, 1992-05)**

|	White	Black-Car.	Black Afr	Black Oth	Indian	P/B	Chinese	Other
Women								
Over	26.1	25.3	38.7	28.0	31.0	32.8	27.2	27.4
Adeq	47.2	50.1	37.6	44.3	44.7	42.7	50.0	41.6
Unweighted Base	*264086*	*2689*	*1367*	*590*	*3957*	*1031*	*655*	*2803*
Men								
Over	24.1	28.0	39.1	32.1	27.0	27.7	20.0	25.61
Adeq	46.0	40.1	36.5	38.0	44.7	40.3	45.7	41.16
Under	29.9	31.6	24.5	30.0	28.3	32.1	34.4	33.24
Unweighted Base	*265783*	*1968*	*1285*	*469*	*4315*	*2366*	*586*	*2850*
Qualification Level (% of overeducated)								
Women								
Degree	26.4	31.1	41.5	34.2	31.9	32.5	50.8	36.8
A-Level	40.7	40.3	22.0	45.2	28.4	39.0	26.3	28.9
O-Level	17.2	11.1	9.6	11.0	8.4	11.6	3.0	7.1
Other	15.7	17.5	26.9	9.6	31.2	16.9	20.0	27.2
Men								
Degree	26.7	21.5	42.9	25.3	34.6	25.2	49.3	31.6
A-Level	38.3	37.8	22.8	31.7	23.2	22.5	27.1	26.1
O-Level	19.9	20.9	9.9	21.3	15.3	16.3	10.1	9.7
Other	15.1	19.8	24.4	21.7	26.9	36.0	13.5	32.6

Column Percentages

Table 2 SOC (HE) Graduate level jobs by ethnicity: LFS (1992-05) (excluding self-employed)

	White	Black-Car.	Black Afr	Black Oth	Indian	P/B	Chinese	Other
Men								
Trad	18.4	12.2	15.2	15.5	23.9	20.5	27.6	22.4
Modern	17.6	14.4	15.4	19.1	19.0	20.2	17.5	17.6
New	20.6	20.0	15.2	8.2	16.1	14.3	16.7	16.6
Niche	25.6	27.5	21.2	30.0	20.1	17.1	19.5	24.2
Non-grad	17.8	25.8	33.1	27.3	21.0	27.9	18.7	19.2
Unweighted Base	*71676*	*360*	*553*	*110*	*1526*	*516*	*246*	*1022*
Women								
Trad	17.2	9.3	8.0	11.4	19.9	23.6	17.0	20.5
Modern	19.8	15.0	9.5	16.1	15.9	17.0	7.9	11.7
New	12.0	9.2	9.3	14.0	11.6	11.8	16.4	9.2
Niche	28.1	42.3	37.6	32.6	24.4	13.5	34.9	34.8
Non-grad	22.9	24.3	35.6	25.9	28.3	34.0	23.9	23.8
Unweighted Base	*68174*	*787*	*537*	*193*	*1150*	*288*	*318*	*994*

Graph 1 Labour market status of NVQ 4/5 qualification holders by ethnic group, men (LFS, 1992-05)
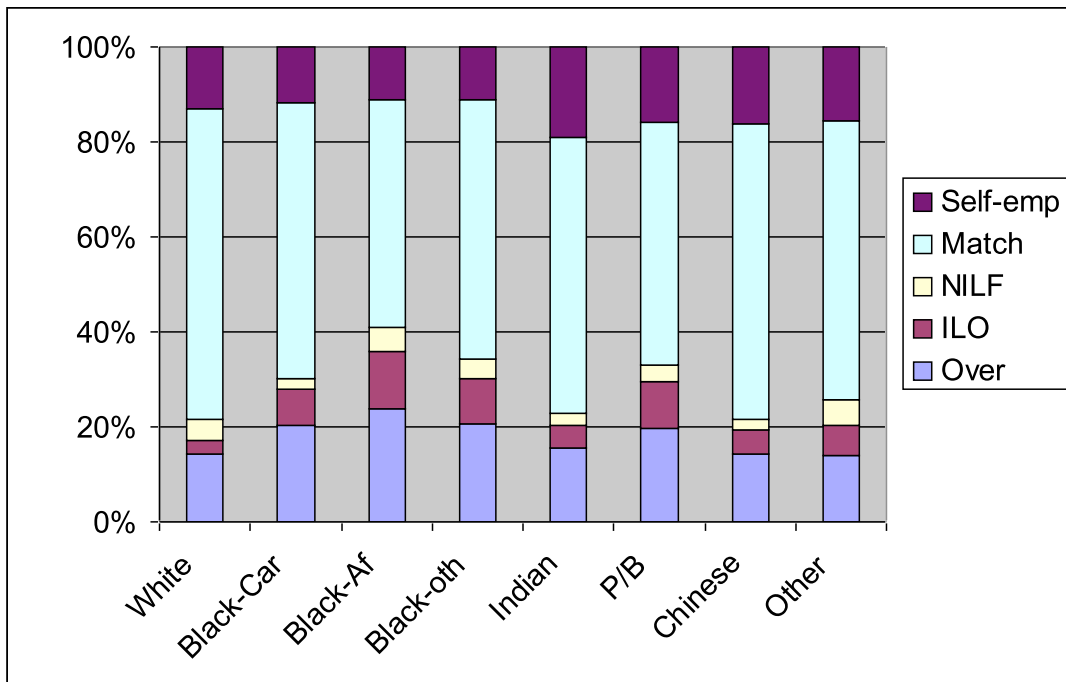
Graph 2 Labour market status of NVQ 4/5 qualification holders by ethnic group, women (LFS, 1992-05)
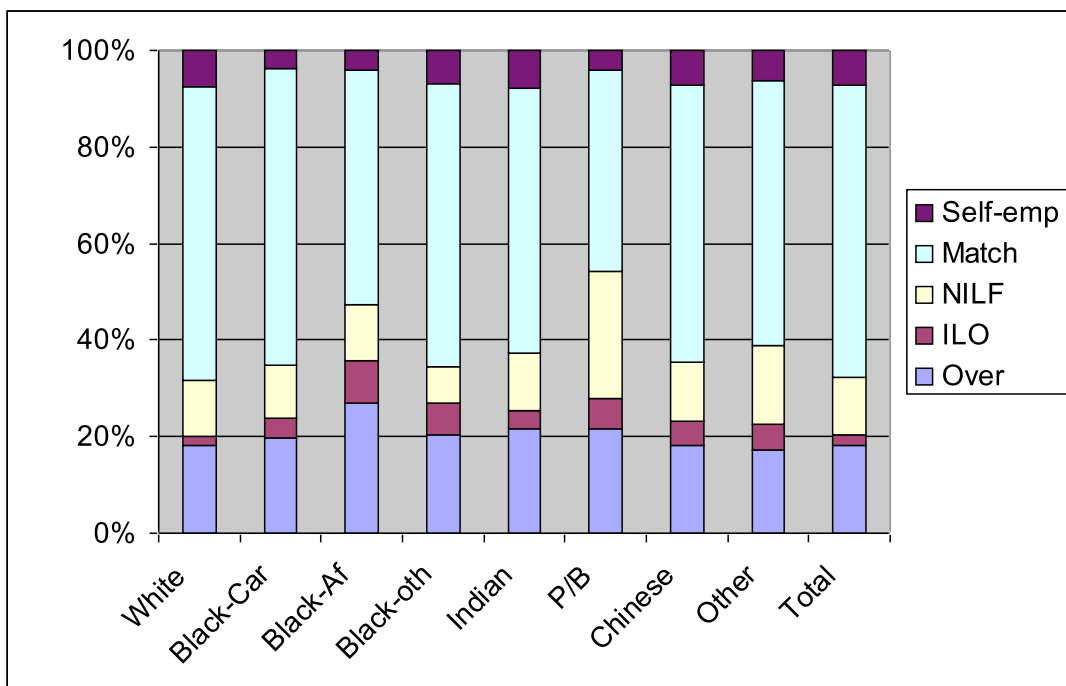
Table 3. Multinomial probit (base category= SOC (HE) graduate job)

	NILF	ILO	Over-Educ.	Self-Emp
MEN				
Ethnicity (0=White)				
Black Caribbean	-0.10	0.51**	0.21*	0.01
Black African	0.66**	1.19**	0.87**	0.14
Black Other	0.41	0.80**	0.32	0.10
Indian	0.02	0.46**	0.30**	0.32**
Pakistani/ Bangladeshi	0.53**	1.02**	0.48**	0.45**
Chinese	0.03	0.36*	0.23	0.24*
Other	0.46**	0.62**	0.26**	0.22**
Arrived UK >16yrs of age? (0=no)	0.11*	0.05	0.02	0.16**
Has Partner? (0=no)	-0.71**	-0.81**	-0.34**	-0.21**
NVQ 4/5 level Qualification				
Medical/ related	-0.05	-0.44**	-0.64**	0.47**
Nursing	0.33**	-0.43**	0.22**	-1.12**
Biological/agricult	-0.01	0.12	0.07	-0.22**
Physics/Maths/Environ Sciences	-0.25**	-0.15*	-0.36**	-0.81**
Architec/Engineer/Technol	-0.28**	-0.13*	-0.25**	-0.57**
Business	-0.19**	-0.06	-0.01	-0.35**
Humanities/ Languages	0.03	0.13	0.02	-0.34**
Arts	0.41**	0.69**	0.33**	0.57**
Education Teaching	0.11	-0.13	-0.08	-0.83**
BTEC/HND	0.23**	0.38**	0.80**	-0.21**
Higher Degree	-0.47**	-0.31**	-0.71**	-0.71**
Combined	-0.07	0.01	-0.04	-0.44**
Age Youngest Dependent Child				
(0=none)				
0<5 yrs	0.12**	0.05	0.01	0.17**
5<11 yrs	-0.07	0.04	0.04	0.11**
11-16 yrs	-0.23**	-0.08	-0.03	-0.01
Regional Unemployment	0.03**	0.06**	0.02**	0.03**
Age	-0.21**	-0.16**	-0.18**	0.01
Age Squared	0.00**	0.00**	0.00**	0.00**
Year	0.03**	-0.01*	0.03**	0.01**

* = p< 0.05, **=p < 0.01

(table 3 continued)

WOMEN	NILF	ILO	Over-Educ.	Self-Emp
Ethnicity (0=White)				
Black Caribbean	-0.23**	0.01	-0.04	-0.51**
Black African	0.06	0.72**	0.48**	-0.29*
Black Other	-0.15	0.47**	0.03	0.01
Indian	0.17**	0.27**	0.22**	0.03
Pakistani/ Bangladeshi	0.95**	0.75**	0.35**	-0.01
Chinese	0.15	0.42**	0.20	-0.08
Other	0.33**	0.48**	0.14*	-0.09
Arrived UK >16yrs of age? (0=no)	0.27**	0.31**	0.06*	0.30**
Has Partner? (0=no)	-0.06**	-0.41**	-0.05**	0.01
NVQ 4/5 level Qualification				
Medical/ related	-0.49**	-0.78**	-0.91**	0.27**
Nursing	-0.06	-0.49**	0.03	-0.63**
Biological/agricult	-0.01	-0.18	-0.04	-0.08
Physics/Maths/Environ Sciences	-0.04	-0.14	-0.12*	-0.27**
Architec/Engineer/Technol	0.01	0.04	-0.25**	0.02
Business	-0.12*	-0.09	0.14**	-0.07
Humanities/ Languages	0.19**	-0.02	0.08	-0.01
Arts	0.53**	0.63**	0.34**	0.92**
Education Teaching	-0.20**	-0.42**	-0.32**	-0.60**
BTEC/HND	0.40**	0.34**	0.97**	0.25**
Higher Degree	-0.42**	-0.30**	-0.78**	-0.32**
Combined	-0.02	-0.02	0.03	-0.08
Age Youngest Dependent Child				
(0=none)				
0<5 yrs	1.67**	.62**	.12**	0.55**
5<11 yrs	.79**	.55**	.34**	0.40**
11-16 yrs	.26**	.23**	.26**	0.05
Regional Unemployment	-.02**	0.01	-.02**	-0.01
Age	-.18**	-.16**	-.20**	0.01
Age Squared	.01**	.01**	.01**	0.01**
Year	-.027**	-.04**	-0.01	-0.02**

*= p< 0.05, **=p < 0.01*

Graph 3. Mean predicted probabilities of graduate level over-education by ethnic group, combined SOC (HE) and ILO unemployment measure, men (LFS, 1992-95)
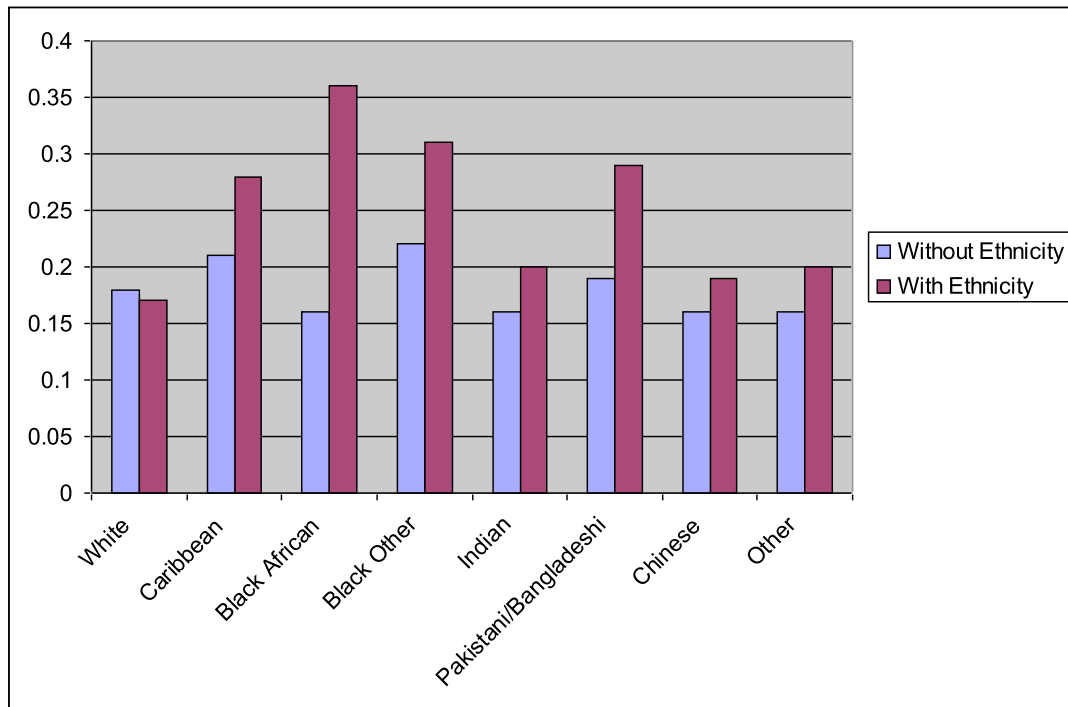
Graph 4. Mean predicted probabilities of graduate level over-education by ethnic group, combined SOC (HE) and ILO unemployment measure, Women, (LFS, 1992-95).
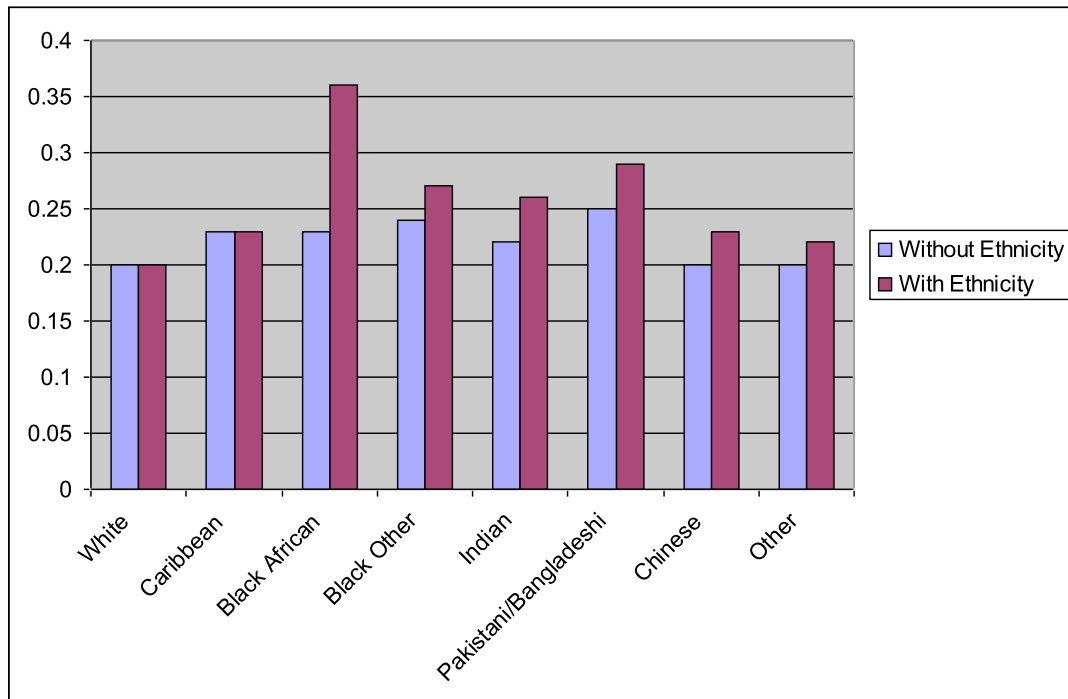
Explanatory variables are identical to those presented in Table 4

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