The over-education of UK immigrants and minority ethnic groups: Evidence from the Labour Force Survey.

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Abstract

The paper explores the incidence of over and under education and the effect on earnings for immigrants and natives who hold UK qualifications, drawn from the Quarterly Labour Force Survey 1993-2003. The paper also compares earnings penalties associated with over and under education across immigrant and minority ethnic groups for men and women. The results show that compared to Whites, Black African, Other Non-White and Indian men are more likely to be over-educated, whilst for women it is Indian and Pakistani/Bangladeshi's who are more likely to be over-educated. Estimating earnings equations shows significantly large over-education penalties for South Asian immigrant and native men, as well as White immigrant men, Black women and White UK born women. However, there are large returns to occupational skills for some minority ethnic and immigrant groups, over and above the returns to qualifications. It is suggested that these groups may therefore find it easier to find a suitable job for their UK education level if higher or further education programmes for immigrants were combined with occupational specific training. [JEL Classifications: J24, J7].

Keywords: over-education, earnings, immigrants, ethnic minorities

1. Introduction

The current UK immigrant population is fairly ethnically diverse. Before the Second World War approximately half of Britain's immigrants came from Old Commonwealth countries such as Canada, Australia and New Zealand.[1] From the 1950s onwards there were growing numbers from New Commonwealth countries such as the Caribbean, Africa and India (see Bell 1997). During the 1960s, UK immigration surged from Pakistan and Hong Kong, which peaked in the 1970s, and also from Bangladesh which reached its height in the 1980s. Changes in UK immigration legislation and membership of the European Community resulted in changes in the national-origin mix of immigration cohorts throughout the 1980s. There were large declines from India and East Africa and rises in the numbers coming from Europe. During the 1990s the UK experienced large numbers of asylum seekers from Eastern European Communist countries, but more recently these have been coming from a far wider range of countries that have no colonial or linguistic connections with Britain.[2]

Recent empirical evidence suggests that on average, UK immigrants perform better than natives in the UK labour market, both in terms of higher employment and earnings.[3] However ethnic differences still exist, with non-white immigrants tending to perform worse, compared to both white natives and white immigrants (Clark and Lindley 2005). A standard argument in the literature is that racial inequality in the labour market can be reduced by encouraging investments in human capital. However if disadvantaged workers possess higher levels of education and cannot successfully find employment in inappropriately skilled occupations, then the return to their qualifications will be relatively lower. This paper investigates whether there is a higher propensity for over-education and a lower return to

education for minority ethnic groups and immigrants, after conditioning on differences in other socio-economic characteristics.

Previous evidence suggests that the consequences of over-education on earnings are mostly negative. Empirical studies find that the returns to over-education, whilst positive, are generally less than the returns to required education.[4] Hence there is a negative earnings effect associated with not utilizing education fully. However, there have been few British studies investigating over-education amongst immigrant workers.[5] Exceptions include Battu and Sloane (2004), as well as Dex and Lindley (2007) who focus on ethnic differences. The former find that workers from different ethnic groups have varying levels of mismatch between education and occupation. For non-whites, they find evidence that the effect of an over-education on earnings is larger for immigrants compared to those born in the UK.

Of course ethnic differentials in over-education may be observed without necessarily attributing this to labour market discrimination. For example, there may be differences in the `quality' of education in terms of subjects, grades and institutions attended. Battacharya, Ison and Blair (2006) show that UK minority ethnic groups under perform in terms of achieving 5 or more GCSE grades A-C.[6] Jones and Elias (2005) show that UK minority ethnic groups are far less likely than Whites to obtain a first or upper second class graduate degree, with Black Caribbean and African, as well as Pakistani/Bangladeshi students performing particularly low compared to White students.[7] In addition, some workers may have lower levels qualifications but higher levels of job experience to compensate, so that skills and experience are also important (Sicherman 1991). Immigrants are likely to possess much lower levels of UK labour market experience on average, although it is assumed that they accumulate UK specific knowledge and skills with time spent in the UK labour market. Finally, over-education differences may be a consequence of career mobility, since some

higher educated workers may be in the early stages of their career and awaiting accelerated progression (see Dex and Lindley 2007).

This study adds to this literature by focusing specifically on the over-education of UK immigrants. This is undertaken in two ways. Firstly, an ordered logit analysis is undertaken to determine whether non-white immigrants and natives with British highest qualifications are more likely to be over and under-educated compare to their white counterparts. Second, earnings equations are estimated to examine whether British educated immigrants and minority ethnic groups exhibit a larger or smaller earnings difference as a consequence of over-education compared to natives. Attention is also paid to the return on occupational skills that may exist over and above qualifications. A further novelty here is that the data set allows the distinction between composite minority ethnic groups.

The paper proceeds as follows. The next section provides an overview of the data and presents some descriptive statistics for the over and under-education of immigrants and natives. Section 3 describes the econometric models used in the paper, whilst sections 4 and 5 provide the empirical results for the incidence of over and under-education, as well as the determinants of earnings, respectively. The final section concludes.

2. Data and descriptive statistics

The data are drawn from the Quarterly Labour Force Survey (QLFS), conducted by the Office for National Statistics (ONS), and represent pooled cross-sections over the period 1993-2003.[8] The QLFS collects information on earnings, employment and socio-economic characteristics such as age and martial status, but also human capital information in the form of years of schooling and the highest qualification held by the respondent. The definition of a native is being born in the UK.[9] However, the QLFS codes all foreign qualifications into

the one composite category of `other' qualification regardless of the level. Consequently, the sample of immigrants used throughout this analysis is restricted to those with UK highest qualifications.[10]

Despite the large sample size of the QLFS, there is still a need in some cases to combine ethnic groups into: `White', `Black Caribbean and Black Other', `Black African', `Indian', `Pakistani and Bangladeshi', `Chinese and Other groups'.[11] Overall after excluding observations with missing data and trimming outliers the sample is made up of 250,742 native and 13,894 immigrant men and women aged between 16 and 65.[12]

Lindley (2007) showed that most UK immigrant and minority ethnic groups are better educated on average, compared to their White counterparts, in terms of their highest National Vocational Qualification (NVQ).[13] Consequently, it might be interesting to see whether they are also more or less likely to be over-educated. The existing literature provides a number of approaches for measuring over-education.[14] Following Battu and Sloane (2004), this paper adopts a distributional approach where a comparison is made between the occupational mode highest NVQ to that highest NVQ held by the respondent. That is, `required' education is equal to the mode NVQ qualification for that individual's three-digit occupation, calculated separately for a younger age group (16-35) and an older age group (36-65), as well as by survey year in order to minimise bias associated with occupational skill upgrading. Over-education is defined as having highest NVQ level above the required level. Contrariwise under-education is defined as having a NVQ level below the required level.[15]

Table 1 shows the percentage of educational mismatch for immigrants and natives by ethnicity. The final rows show that male natives tend to have the required level of schooling (48.4%) compared to being under-educated (29.1%) or being over-educated (22.5%). Compared to men, there are more females over-educated (28.7%) and with required

education (50.6%) and fewer with under-education (20.6%). However, we might expect some degree of gender difference given that women are over represented in lower NVQ level occupations (see Dex and Lindley 2007). Amongst the British born, most minority ethnic groups are more likely to be over-educated compared to Whites, with Black Caribbean/other workers being the only exception.

[Table 1 here]

Clearly, immigrants are more likely to be over-educated (27.3 % compared to 22.5 % for native men) and less likely to be have the required highest qualification or be under-educated compared to white natives. Furthermore, immigrants are generally more likely to be over-educated than their own ethnic native-born counterparts, with Pakistani/Bangladeshis, Indian women and Black Caribbean/other women being exceptions. Those which stand out in terms of over-education are Black African immigrants and natives (men and women), Indian men, Indian UK born women, Pakistani/Bangladeshi UK born men, Pakistani/Bangladeshi women and `other non-white' UK born and immigrant workers. These results are consistent with Dex and Lindley (2007) who found higher percentages of over-education for Black African, Chinese and Other non-white groups.

3. The econometric modelling

Following the existing literature on mismatch between education and occupation, the econometric model incorporates a three-regime ordered logit model.[16] The latent variable S_m^* represents the worker being in any one regime. Following Table 1, this takes one of the three discrete values, 0, 1 and 2 for under-educated, required and over-educated respectively. To compare the likelihood of required, under and over-education between immigrants and natives the ordered logit model is estimated on separate equations for

immigrants and natives. A typical set of controls thought to influence the likelihood of over-education are included (region of residence, marital status, presence of children, age and size of firm), as well as ethnicity and immigrant assimilation variables such as arrival cohorts.[17] Assimilation can be measured by comparing the respective age profiles of immigrants and natives.[18] To control for English language proficiency, a binary variable is included indicating whether English is generally spoken in the country of origin.[19] Also included is the national unemployment rate at the time of entry into the UK labour market in order to identify any economic scarring effects on the incidence of over and under required education.[20]

To assess the effect of education on earnings, two alternative specifications are estimated for the earnings equation.[21] First, a variation of the over-required and under-required (ORU) specification by Hartog 1997; Groeneveld and Hartog 2004 is estimated:

$$Y_i = X_{ik}\beta_k + \gamma_1 S^R + \gamma_2 S^O + \gamma_3 S^U + \varepsilon_i \quad (1)$$

where Y_i are log gross weekly earnings and X_{ik} is a vector of k covariates containing the usual socio-economic characteristics (size of firm, region of residence, marital status, age, ethnicity, English speaking country of origin and immigrant arrival cohorts).[22] Human capital is measured using required education (namely the mode highest qualification per three digit occupation of employment) denoted here as S^R, as well as binary variables to measure over-required S^O and under-required S^U education. Hence γ_1 in equation (1) measures the return to those who have the required education for their occupation and γ_2 measures the return to

those whose highest NVQ level is above the required education level in their occupation (over-educated).[23] Similarly, γ_3 measures the return to being under-educated.[24]

In the second specification for the earnings equation, over-required S^O and under-required S^U education are replaced with five highest NVQ dummies in equation (1). In this `hedonic' model the coefficient on required schooling now measures the returns to the occupational skill level over and above the returns to highest qualifications. All earnings equations are estimated separately by gender and for white natives, white immigrants, all non-white natives, South Asian natives, Black natives, all non-white immigrants, South Asian immigrants and Black immigrants.

A final word on the specification of the wage equations, given that the ORU variables use occupational status, is that it is not possible to correct for employment selection bias.[25] However, all the results presented are robust to employment selection for the hedonic specification.[26] Similarly, it is not possible to control for endogenous education choices using these data.[27] However, the clear advantage of using the QLFS is that it is the only UK survey to provide adequate sample sizes for analyzing immigrant and ethnic minority groups.[28]

4. The determinants of required, over and under-education.

The key marginal effects for the ordered logits are contained in Table 2 for immigrants and natives separately as well as by gender.[29] For natives, most minority ethnic men are more likely to be over-educated compared to Whites, with the largest is for Black African men (16.2 percentage points) and the only exception being for Black Caribbean men (2.2 percentage points less likely to be over-educated).[30] For immigrants, where `White immigrant' is the comparison group, Black African men are 15.2 percentage points and Other non-whites are 0.5 percentage points more likely, whilst Pakistani/Bangladeshi men

are 0.3 percentage points less likely to be over-educated. Interestingly there is no evidence that coming from an English speaking country reduces the likelihood of over-education which is consistent with the findings of Battu and Sloane (2004).

[Table 2 here]

The immigrant arrival cohort variables are positive and significant which supports the existence of detrimental immigrant cohort quality effects to those who arrived later than 1959, with much larger differences to those who arrived after 1990**.** This may reflect changes in immigration brought about by enlargement of the European Union which led to more low ability workers coming to the UK.[31] Unemployment rate on entry to the labour market has the expected positive sign, which provides some evidence of detrimental scarring on over-education incidence.

To say something about assimilation towards natives, one can compare the effect of age across immigrant and native groups. Immigrants demonstrate a slightly steeper profile than natives which provides little evidence of economic assimilation effects. Immigrants that arrived into the UK education system are 8.7 percentage points more likely to be over-educated compared to those who arrived directly into the labour market, whilst arriving in a period of high unemployment has a positive effect of around 1.3 percentage points.

For under-education, most non-white native men are less likely to be under-educated compared to white native men, with Black Caribbean/Other men being 2.7 percentage points more likely. For immigrants, Black African men are 11 percentage points, whilst Other non-whites are 4 percentage points less likely to be under-educated, whilst Pakistani/Bangladeshi men are 3.5 percentage points more likely to be under-educated, relative to White immigrants. The arrival cohort variables show both improvements over time amongst immigrants but fail to show assimilation effects towards natives (given that

immigrant age profiles are steeper than those for natives). Finally, immigrants that arrived into the UK education system are 8.9 percentage points less likely to be under-educated compared to those who arrived into the labour market.

For women, Indian and Pakistani/Bangladeshi's are 11.7 and 7.5 percentage points more likely to be over-educated compared to White British born women, whilst Black Caribbean immigrant women are 7.2 percentage points less likely to be over-educated than White immigrants. Unlike men, immigrant arrival cohort effects are generally insignificant in explaining over-education and there is also little evidence of assimilation. For under-education, there are significant ethnicity effects (positive for Caribbean immigrant women), as well as immigrant cohort effects that again suggest detrimental effects for those who arrived more recently**,** compared to those who arrived before 1959. Being an education entrant increases (decreases) the likelihood of over-education (under-education) but there is no evidence of unemployment scarring effects.

5. The effect of over and under-education on earnings.

To assess the effect of education on pay, both the `ORU' and the `hedonic' earnings specifications are estimated, as described in section 3. The equations are estimated separately for white natives, non-white natives, South Asian natives (Indian and Pakistani), Black natives (Black Caribbean/other and African), white immigrants, non-white immigrants, South Asian immigrants and Black immigrants.[32] The results for the `Other' non-white group are not presented because this group is considered too heterogeneous to provide sensible analyses.

The estimates for immigrants and natives are presented in Table 3.[33] Again only key results concerning returns to education and English language are discussed.[34] There is a

positive return for English spoken in the country of origin of around 2 percent for white men and women, although interestingly this effect is not statistically significant for non-white immigrants. This again may provide some evidence of increased immigration from largely White non-English speaking countries such as those in the European Union.

[Table 3 here]

In the ORU for men, over and above all other characteristics (including ethnicity and English spoken in the country of origin) the premium to required education is higher for South Asian immigrants at 0.204 log points (22.6%) and White immigrants at 0.180 log points (19.7%), whilst this is lower for Black natives at 0.158 log points (17.1%), compared to White natives of 0.171 log points (18.5%).[35] The premium for the over-educated is positive and significant across all groups (except South Asian natives), although the coefficients are smaller than for required education in all cases as one would expect. Therefore, an over-educated worker earns more than a worker with the required schooling level (employed in their own occupation) but less than they could earn should their actual and required education be equalized.

Comparing across groups, the over-education return is largest for white natives at 0.117 log points (12.4%) which is consistent with Battu and Sloane (2004) who found around 13 percent for whites using a different UK data set.[36] The return is smaller for the composite group of non-white immigrants (11.6%) and non-white natives (10.1%) but is smaller still for white immigrants (8.5%) and also when further distinction is made between Black and South Asian immigrants (both around 8%). There is no significant over-education premium for South Asian native men.

Over-education penalties are given by the difference between the required education and over-education returns, since this provides the benefit of attaining a match between actual

highest qualifications held and those required in the occupation of employment. These penalties are largest for South Asian natives (19.7%), followed by South Asian immigrants (13.2%), white immigrants (10.4%), white natives (5.5%), Black immigrants (4.3%) and are the smallest for Black natives (3.7%).[37] The negative earnings effect associated with being under-educated ranges between 1 and 2.3 percent across all groups, where these are smaller than the returns for required education for all groups (except South Asian immigrants) which is in keeping with the consensus in the existing literature (see Hartog 2000).

In the hedonic model, the return to occupational skill level (over and above highest qualifications) is noticeably larger for South Asians (12.6% for natives and 11.1% for immigrants) and also White immigrants (11.7%), whilst the return to having a higher degree (NVQ level 5) is also much lower for South Asian natives (40%) and White immigrants (45.8%) relative to the default of no qualifications. This supports the ORU results since South Asian natives and White immigrants exhibit a greater return to working in a highly skilled occupation, and a smaller return on graduate qualifications (NVQ levels 4 and 5) compared to the other groups. Interestingly, South Asian immigrants have the most to gain from investing in higher degree qualifications (NVQ level 5) because they receive 0.624 log points (86.6%) higher earnings compared to having no qualifications. The returns on higher degrees are much lower for white natives of 0.424 log points (52.8%) for NVQ level 5. Some interesting differences are shown between the return to first degrees (NVQ level 4) since South Asian natives and Black immigrants both receive noticeably lower returns compared to the other groups.

For women, the returns to required education are generally higher compared to comparative figures for men (with South Asian natives at 15.1%, and the composite non-white group at 17.8% being the exceptions). White native women have the largest required

premium (24.6%), followed by South Asian immigrants (23.9%), white immigrants (21.8%), Black natives (17.4.9%), Black immigrants (16.9%) and South Asian natives (15.1%). The pattern for over-education penalties differs to that for men since it is Black natives (17.3%) that exhibit the highest difference between required and over education, given that there is no significant over-education premium for this group. This is followed by white natives (12.2%), South Asian immigrants (8.4%), Black immigrants (6.1%) and South Asian natives (6.1%).

In terms of gender differences, Black native women exhibit higher over-education penalties compared to their male counterparts (3.7% for men compared to 17.3% for women). White native women also show large gender differences (5.5% for men compared to 12.2% for women). Conversely, female South Asian immigrants and natives, as well as Black immigrants exhibit lower over-education penalties compared to their male counterparts (South Asian immigrants penalties are 13.2% for men compared to 8.4 percent for women). This suggests the detrimental gender differences observed for White women do not extend across all ethnic groups, despite South Asian women showing similar percentages of graduates compared to South Asian men in Lindley (2007) and exhibiting much higher rates of over-education in Table 1.

The hedonic model shows similar returns to working in a highly skilled occupation for white natives (12.8%), Black natives (11.5%) and white immigrants (12%) and South Asian immigrants (14.2%), but lower returns for Black immigrants (8.9%) and South Asian natives (7.1%). Non-white natives also appear to suffer lower returns to graduate highest qualifications since NVQ level 4 earn 32.9 percent and NVQ level 5 earn 39.8 percent more than those with no qualifications, compared to white natives (49.4 % and 67.7 % respectively). This result holds across separate South Asian and Black native equations.

White and non-white immigrants appear somewhere in between these two extremes but unlike men, ethnic differences for female immigrants are not overly apparent.

6. Conclusions

This paper investigates whether immigrants are more or less likely to be over and under-educated in the labour market and whether there is evidence of economic assimilation. The data allow the distinction between immigrant groups whilst controlling for important ethnic differences. Secondly, the paper compares earnings premiums associated with required, over and under-education, as well as occupational skill levels and returns to highest NVQ levels, for separate ethnic groups within our native born and immigrant set.

After conditioning on socio-economic characteristics, some non-white natives (all men, as well as Indian and Pakistani/Bangladeshi women) are more likely to be over-educated compared to White natives. Relative to White immigrants, Black African and Other non-white immigrants are more likely to exhibit over-education. The results also suggest that the most recent immigration cohorts are more likely to experience over-education, whereby there is little evidence of economic assimilation effects. This is perhaps as a consequence European Union enlargement reducing the average ability level of more recent immigration cohorts.

In terms of the returns to education and the effect of over-education on earnings, South Asian men (immigrants and natives), White immigrant men , Black native women, White native women and White immigrant women all exhibit high penalties in terms of the loss associated from not being matched into an appropriate occupation. The observation of higher over-education penalties for White UK born women relative to those for men, although applicable also to Black natives, does not hold for South Asian groups or Black

migrants. The hedonic earnings equations show that graduate returns are lower for South Asian native men, White immigrant men, Black immigrants (for a first degree) and non-white native women. This may suggest that non-white and immigrant groups could achieve higher earnings should they attain a successful match into an occupation appropriate to their UK highest education level. However, care should be taken in attributing this to racial discrimination, given that ethnic differences exist in the quality of NVQ level 2 (Battacharya et al 2006) and NVQ level 4 education (Jones and Elias 2005), where this quality is particularly low for Black Africans.

Finally, they are large returns to occupational skills for South Asian men (immigrants and natives) and White immigrant men, as well as Black native women and White immigrant women, over and above the returns to qualifications. In terms of policy, this suggests that minority ethnic groups and immigrants (including Whites) could benefit more than native born workers if their university or college UK education was accompanied with occupational specific training for jobs commensurate with their education level.

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Table 1. Required, over and under-education (percent).

Panel (i)Men

	Over-educated		Required		Under-educated	
	Natives	**Immigrants**	**Natives**	**Immigrants**	**Natives**	**Immigrants**
White	22.47	25.96	48.46	47.31	29.08	26.73
Black Car/other	20.03	23.74	47.26	48.63	32.71	27.63
African	41.38	45.90	37.93	38.36	20.69	15.74
Indian	26.04	28.18	52.30	45.14	21.66	26.68
Pakistani/Bangladeshi	28.51	21.23	44.74	45.44	26.75	33.33
Other	28.57	32.59	41.54	46.30	29.89	21.11
Total	22.51	27.29	48.43	46.49	29.06	26.22

Panel (ii) Women

	Over-educated		Required		Under-educated	
	Natives	**Immigrants**	**Natives**	**Immigrants**	**Natives**	**Immigrants**
White	28.93	33.53	50.71	48.73	20.66	17.74
Black Car/other	28.63	25.11	50.76	53.83	20.61	21.06
African	38.10	40.66	45.24	44.32	16.67	15.02
Indian	43.90	29.72	39.48	54.79	16.62	15.49
Pakistani/Bangladeshi	36.42	33.55	49.67	44.74	13.91	21.71
Other	33.70	33.73	47.24	51.11	19.06	15.16
Total	28.73	32.77	50.64	49.81	20.62	17.42

Notes: Data are unweighted and show row percentages separately for immigrants and natives.

Table 2.
Separate immigrant/native ordered logit marginal effects for over and under-education. (Base category is required education).

Panel i) Men

	Over-Education				Under-Education			
	Natives		Immigrants		Natives		Immigrants	
	ME	SE	ME	SE	ME	SE	ME	SE
Caribbean	-0.0216**	0.0015	-0.0078	0.0195	0.0273**	0.0156	0.0077	0.0196
African	0.1621*	0.0475	0.1517*	0.0289	-0.1323*	0.2392	-0.1101*	0.0157
Indian	0.0769*	0.0184	0.0047	0.0133	-0.0753*	0.0147	-0.0045	0.0127
PB	0.0739*	0.0264	-0.0032*	0.0166	-0.0728*	0.0215	0.0347**	0.0186
Other Eth	0.0386*	0.0174	0.0492*	0.0159	-0.0414*	0.0169	-0.0437*	0.0128
Arrived 1960-9	-	-	0.0271*	0.0159	-	-	-0.0256**	0.0146
Arrived 1970-9	-	-	0.0577*	0.0201	-	-	-0.0525*	0.0171
Arrived 1980-9	-	-	0.0959*	0.0269	-	-	-0.0806*	0.0195
Arrived 1990-9	-	-	0.1555*	0.0322	-	-	-0.1183*	0.0193
Arrived 2000-3	-	-	0.2142*	0.0539	-	-	-0.1386*	0.0233
Age	0.0137*	0.0052	0.0232*	0.0029	-0.0163*	0.0006	-0.0225*	0.0028
Age sq	-0.0002*	0.00001	-0.0002*	0.00004	0.00018*	0.00001	0.0002*	0.00003
Speak Eng	-	-	0.0095	0.0095	-	-	-0.0092	0.0091
Edu entrant	-	-	0.0867*	0.0123	-	-	-0.0894*	0.0135
U rate	0.0046*	0.0039	0.0131*	0.0019	-0.0055*	0.0047	-0.0126*	0.0018
N	**155018**		**7879**		**155018**		**7879**	

Panel ii) Women

	Over-Education				Under-Education			
	Natives		Immigrants		Natives		Immigrants	
	ME	SE	ME	SE	ME	SE	ME	SE
Caribbean	-0.0063	0.0143	-0.0722*	0.0206	0.0051	0.0118	0.0541*	0.0179
African	0.0785	0.0485	0.0331	0.0297	-0.0523**	0.0270	-0.0199	0.0167
Indian	0.1169*	0.0239	-0.0116	0.0179	-0.0723*	0.0115	0.0076	0.0121
PB	0.0750*	0.0355	-0.001	0.0361	-0.0504*	0.0201	0.0007	0.0233
Other Eth	0.0322	0.0218	0.0051	0.0182	-0.0238	0.0149	-0.0032	0.0115
Arrived 1960-9	-	-	0.0218	0.0216	-	-	-0.0137	0.0133
Arrived 1970-9	-	-	0.0521	0.0259	-	-	-0.318*	0.0150
Arrived 1980-9	-	-	0.0929	0.0341	-	-	-0.0527*	0.0171
Arrived 1990-9	-	-	0.0769	0.0371	-	-	-0.0443*	0.0191
Arrived 2000-3	-	-	0.0205	0.0562	-	-	-0.0126	0.0331
Age	0.0098*	0.0008	0.0174*	0.004	-0.0078*	0.0006	-0.0112*	0.0026
Age sq	-0.0002*	0.00001	-0.0002*	0.00005	0.0001*	0.00001	0.00013*	0.00003
Speak Eng	-	-	0.0204	0.0124	-	-	-0.0129**	0.0078
Edu entrant	-	-	0.0239	0.0164	-	-	-0.0155	0.0107
U rate	-0.0014*	0.0006	0.0025	0.0026	0.0011*	0.0005	-0.0016	0.0017
N	**95724**		**6015**		**95724**		**6015**	

Notes: QLFS 1993-2003 Data are unweighted.
* denotes significant at 5 percent level, whilst ** significant at the 10 percent level.
The dependent variable takes the value 0 for under-educated, 1 for matched and 2 for over-educated. Unreported controls include survey year, marital status dummy, children dummy, 2 firm size dummies, 10 regional dummies and a manufacturing dummy. Default category is unmarried, not a home owner, has no children, employed in a firm with less than 25 employees, lives in the South East, not employed in manufacturing and white. For the immigrant equation there is the extra default of arriving in the UK before 1959.

Table 3.
Key results for the effect of education on earnings.

Panel(i) Men

	Natives								Immigrants							
	White		All non-white		South Asian		Black		White		All non-white		South Asian		Black	
	ORU	Hedonic	ORU	Hedonic	ORU	Hedonic	ORU	Hedonic	ORU	Hedonic	ORU	Hedonic	ORU	Hedonic	ORU	Hedonic
R education	0.171*	0.092*	0.167*	0.091*	0.180*	0.119*	0.158*	0.088*	0.180*	0.110*	0.192*	0.097*	0.204*	0.105*	0.126*	0.067*
	(0.0009)	(0.0010)	(0.0096)	(0.0106)	(0.0182)	(0.0206)	(0.0147)	(0.0155)	(0.0056)	(0.0063)	(0.0065)	(0.0077)	(0.0091)	(0.0112)	(0.0132)	(0.0134)
O education	0.117*	-	0.096*	-	0.065	-	0.122*		0.081*	-	0.110*	-	0.080*	-	0.084*	-
	(0.0028)		(0.0245)		(0.0421)		(0.0392)		(0.0158)		(0.0198)		(0.0285)		(0.0393)	
U education	-0.139*	-	-0.114*	-	-0.093*	-	-0.091*		-0.149*	-	-0.201*	-	-0.231*	-	-0.104*	-
	(0.0025)		(0.0227)		(0.0420)		(0.0333)		(0.0151)		(0.0204)		(0.0279)		(0.0419)	
NVQ5	-	0.424*	-	0.454*	-	0.337*	-	0.534*	-	0.377*	-	0.595*	-	0.624*	-	0.483*
		(0.0064)		(0.0595)		(0.1026)		(0.1022)		(0.0309)		(0.0365)		(0.0535)		(0.0764)
NVQ4	-	0.351*	-	0.343*	-	0.285*	-	0.311*	-	0.330*	-	0.371*	-	0.395*	-	0.208*
		(0.0045)		(0.0455)		(0.0788)		(0.0723)		(0.0026)		(0.0300)		(0.0421)		(0.0608)
NVQ3	-	0.170*	-	0.162*	-	0.165*	-	0.132*	-	0.185*	-	0.168*	-	0.169*	-	0.058
		(0.0039)		(0.0433)		(0.0778)		(0.0669)		(0.0242)		(0.0281)		(0.0406)		(0.0514)
NVQ2	-	0.135*	-	0.143*	-	0.119	-	0.125**	-	0.411*	-	0.111*	-	0.145*	-	0.002
		(0.0043)		(0.0428)		(0.0762)		(0.0665)		(0.0277)		(0.0324)		(0.0438)		(0.0645)
NVQ1	-	0.069*	-	0.123*	-	0.098	-	0.126**	-	0.091*	-	0.119*	-	0.145*	-	-0.029
		(0.0044)		(0.0477)		(0.0854)		(0.0709)		(0.0312)		(0.0362)		(0.0486)		(0.0727)
Speak Eng	-	-	-	-	-		-		0.023**	0.016	-0.023	-0.015	-0.021	-0.007	-0.045	-0.054
									(0.0139)	(0.0138)	(0.0199)	(0.00197)	(0.0294)	(0.0290)	(0.0464)	(0.0452)
Const	-8.113*	-8.041*	-14.79*	-15.16*	-31.89*	-31.42*	-8.176	-8.49	-6.584	-6.012	-8.280	-6.648	-8.114	-7.199	-20.19	-20.96
	(0.6774)	(0.6745)	(6.607)	(6.541)	(11.47)	(11.42)	(10.089)	(9.985)	(5.107)	(5.082)	(7.493)	(7.357)	(11.15)	(11.01)	(14.11)	(13.75)
R Squared	0.4161	0.4245	0.4441	0.4558	0.460	0.4670	0.4092	0.4233	0.3851	0.3920	0.3887	0.4112	0.4665	0.4829	0.2570	0.2977
		153068		1950	685		810			4647		3222	1669		743	

Panel (ii) Women

	Natives								Immigrants							
	White		All non-white		South Asian		Black		White		All non-white		South Asian		Black	
	ORU	**Hedonic**	**ORU**	**Hedonic**	**ORU**	**Hedonic**	**ORU**	**Hedonic**	**ORU**	**Hedonic**	**ORU**	**Hedonic**	**ORU**	**Hedonic**	**ORU**	**Hedonic**
R education	0.220*	0.120*	0.164*	0.089*	0.141*	0.069*	0.160*	0.109*	0.197*	0.114*	0.190*	0.118*	0.215*	0.133*	0.156*	0.086*
	(0.0011)	(0.0013)	(0.0102)	(0.0107)	(0.0809)	(0.0216)	(0.0135)	(0.0146)	(0.0056)	(0.0068)	(0.0064)	(0.0083)	(0.0108)	(0.0148)	(0.0098)	(0.0129)
O education	0.105*	-	0.079*	-	0.081**	-	0.0393	-	0.114*	-	0.094*	-	0.134*	-	0.097*	-
	(0.0031)		(0.0231)		(0.0450)		(0.0317)		(0.0160)		(0.0192)		(0.0315)		(0.0317)	
U education	-0.207*	-	-0.160*	-	-0.127*	-	-0.144*	-	-0.136*	-	-0.158*	-	-0.143*	-	-0.145*	-
	(0.0033)		(0.0264)		(0.0543)		(0.0352)		(0.0187)		(0.0227)		(0.0383)		(0.0347)	
NVQ5	-	0.517*	-	0.335*	-	0.227**	-	0.268*	-	0.419*	-	0.469*	-	0.489*	-	0.513*
		(0.0081)		(0.0747)		(0.1372)		(0.0861)		(0.0365)		(0.0442)		(0.0746)		(0.0743)
NVQ4	-	0.401*	-	0.284*	-	0.1869	-	0.284*	-	0.321*	-	0.285*	-	0.305*	-	0.264*
		(0.0057)		(0.0655)		(0.1215)		(0.0861)		(0.0312)		(0.0345)		(0.0594)		(0.0544)
NVQ3	-	0.214*	-	0.139*	-	0.003	-	0.209*	-	0.145*	-	0.183*	-	0.187*	-	0.141*
		(0.0054)		(0.0651)		(0.1196)		(0.0853)		(0.0300)		(0.0350)		(0.0573)		(0.0547)
NVQ2	-	0.154*	-	0.099	-	-0.040	-	0.177*	-	0.051*	-	0.124*	-	0.095**	-	0.134*
		(0.0049)		(0.0636)		(0.118)		(0.828)		(0.0302)		(0.0321)		(0.0516)		(0.0499)
NVQ1	-	0.028*	-	0.003	-	-0.012	-	0.032	-	0.067*	-	0.060**	-	0.072	-	0.0193
		(0.0055)		(0.0702)		(0.1313)		(0.0921)		(0.0335)		(0.0359)		(0.0567)		(0.0539)
Speak Eng	-	-	-	-	-	-	-	-	0.024	0.023	-0.0004	0.015	-0.002	0.006	-0.028	-0.018
									(0.1506)	(0.0149)	(0.0193)	(0.0272)	(0.0309)	(0.031)	(0.0401)	(0.0398)
Const	-8.205	0.120	-21.82	-20.91	-22.2**	18.39	17.57*	16.08**	-9.45**	-11.52*	-16.63*	-15.77*	-9.32	-8.103	-9.03	-9.99
	(0.4433)	(0.0013)	(6.478)	(6.461)	(12.95)	(12.93)	(8.891)	(8.91)	(5.591)	(5.524)	(7.732)	(7.665)	(13.14)	(13.07)	(11.93)	(11.69)
R Squared	0.4433	0.4522	0.3977	0.4027	0.4071	0.4178	0.3430	0.3465	0.4090	0.4252	0.4257	0.4336	0.5001	0.5053	0.3837	0.4001
		94019		1705	536		807			4647		2278	862		743	

Notes: QLFS 1993-2003. Data are unweighted. Standard errors are in parentheses.
The base model contains no controls. Unreported controls include survey year, marital status dummy, children dummy, 2 firm size dummies, 10 regional dummies, a manufacturing dummy, four ethnicity dummies, age, age squared and five immigrant arrival cohort dummies.
The default category is unmarried, employed in a firm with less than 25 employees, lives in the South East, not employed in manufacturing. For the non-white equations there is the extra default of being Caribbean, whilst in the Black equations this is Black Caribbean and in the South Asian equation this is being Indian. For the immigrant equation there is the extra default of arriving in the UK before 1959.

Notes

[1] See *Census of Population,* 1951, Vol. 23, Table 39 and Table 33.
[2] A report from the United Nations High Commissioner for Refugees (2001) showed that the main applications in Europe came from the Federal Republic of Yugoslavia (10.3 percent), Iraq (8.4 percent), Afghanistan (7.0 percent), Iran (6.6) and Turkey (5.7 percent).
[3] See Bell 1997, as well as Clark and Lindley 2005.
[4] See Sicherman 1991; Sloane, Battu and Seaman 1999; Dolton and Vignoles 2000; Hartog 2000.
[5] Australian studies include Junakar and Mahuteau (2005) and Kler (2006).
[6] Battacharya et al (2006) uses 1992 UK data to show that only 24 percent of Black (Caribbean & African) pupils, 27 percent of Pakistani pupils and 14 percent of Bangladeshi pupils achieved 5 or more GCSE grades A-C (NVQ level 2) in 1992, compared to 36 percent for white pupils.
[7] Jones and Elias (2005) use data from the UK Higher Education Statistics Agency to show that in 1997 the percentages with a first and upper second class degree (NVQ level 4) were 6.1 percent and 45.2 percent for whites respectively. Figures for Black Caribbean (2.2% and 35%), Black African (2.5% and 25.9%), Pakistani (2.6% and 29.1%) and Bangladeshi (2.8% and 25.7%) students are noticeably lower. Although Jones and Elias (2005) also show that grades for UK minority ethnic groups are fast improving See Appendix 12 in Jones and Elias (2005). This shows the percentages with a first and upper second class degree are: whites (9.0% and 48.4%), Black Caribbean (3.8% and 32.7%), Black African (4.25% and 32.7%), Pakistani (5.0% and 34.9%) and Bangladeshi (3.1% and 31%).
[8] Since 1992 the Quarterly LFS (QLFS) has been based on a systematic random sample design, which makes it representative of the whole of Great Britain. Further details on the sampling methodology and questionnaires are available from the ONS at http://www.ons.gov.uk.
[9] One advantage of using the QLFS is that is provides adequate sample sizes for analyzing immigrant and ethnic minority groups.
[10] The sample therefore excludes 1982 and 1722 men and women (around 20 percent of the total immigrant sample) who have an `other' highest qualification and who arrived in the UK after they had left full time education (labour market entrants), since these immigrants should be the only group that with foreign qualifications as their highest qualification attained. Table A1 in Lindley (2007) shows that the excluded sample, are on average, slightly younger, more likely to live in the South East, as well as arriving relatively more recently. This may suggest a recent increase in the number of migrants entering the UK with foreign qualifications as their highest, but it also suggests that a substantial proportion of recent migrants entered directly into the UK labour market and somehow acquired UK qualifications. Not surprisingly, the excluded sample have slightly higher average schooling levels supporting the decision to exclude these immigrants from the lowest National Vocational Qualification (NVQ) category, where `other' qualifications are placed. Moreover, labour market entrants with foreign qualifications as their highest exhibit slightly lower gross weekly earnings on average, this may provide some evidence that foreign gained qualifications are undervalued in the UK labour market.
[11] Black Caribbean and Black Other groups generally both share a Caribbean background and are therefore combined (see Holdsworth and Dale 1999). The numbers of Chinese are too small to be reliable in most analyses and we therefore exclude them from our discussion.
[12] Trimming the top and bottom 1 percent of the earnings distribution involved a further loss of 7624 observations from our sample.
[13] Highest National Vocational Qualification levels are generated as per the guidelines provided in the QLFS user guide. This is a 5 point scale where an NVQ level 5 represents a post-graduate qualification and a NVQ level 1 represents high school level qualifications. Details are provided in Table A2 of Lindley (2007).
[14] The `objective' measure based on the Dictionary of Titles definition of a graduate job is based on the level of education required for a particular occupation, but as shown by Van der Velden & Van Smoorenburg (2000) it may overestimate the incidence of over-education because it does not cover the full range of jobs in a particular occupation and some job evaluations may have grown obsolete. Secondly, there is the `subjective' definition of over-education which is based on whether a respondent feels that their job is commensurate with their qualification level (see Chevalier (2003). This measure is not possible using the QLFS since this question is not contained in the survey. Finally, there is the `distributional' measure of over-education which is usually defined as possessing some level of education above the mean or mode occupational level. Dex and Lindley (2007) provide a detailed comparison of ethnic differences derived using different methods for calculating over-education. Generally, over-education is lower and ethnic differences are smaller using occupational mode highest NVQ levels compared to using occupational schooling averages.
[15] A more accurate measure for over-education could be attained if occupation data were available at a more detailed level than the 3 digit. The main advantage of these data however, is that they are drawn from one of the only UK data sets that allow the comparison of immigrants with UK qualifications to natives, whilst making the distinction between minority ethnic groups.
[16] The results are qualitatively robust to the choice of error structure implied by the ordered logit model when compared to a multinomial logit. A full set of estimates are available from the author on request.
[17] All these variables are thought to influence the likelihood of over-education. There is some evidence that those living in the South East (especially in London) are more likely to accept a position for which they are over-educated possibly because of the positive experience (and relatively higher wages) associated with living in London, although larger labour markets may allow for better matches especially for dual earner couples. Marriage and children might impede geographical mobility,

whilst the prospect of working in a large firm may also be seen as a concession for accepting a job for which one is over-qualified. There is also some evidence that younger workers are more likely to be over-qualified. Dolton and Silles (2001) provide a more detailed discussion on the determinants of over-education.

[18] For immigrants there is a linear relationship between survey year (Y), arrival cohort (C) and years since migration (M), whereby Y=C+M. Hence the years since migration cannot be included in the equations.

[19] See http://www.aneki.com/english.html for a list of English speaking countries.

[20] For natives and immigrants who arrived in the UK as children or students (education entrants) this is the unemployment rate for the year the worker left full time education. For immigrants who arrived directly into the UK labour market (labour market entrants) this is the unemployment rate during the year of arrival.

[21] All earnings data were deflated to a common year. All models are estimated using weekly earnings, although using hourly wages provides qualitatively similar results.

[22] Careful attention is paid to the specification of the wage equation by progressively building up the controls from an initial `base' model which contained only education. These results are available from the author on request.

[23] If $\gamma_2 > 0$ this suggests that an over-educated worker will exhibit a higher return than a worker with the required education employed in their own occupation. If $\gamma_1 > \gamma_2$ then an over-educated worker will have a smaller return than a worker with required education but who is efficiently matched into an appropriate occupation.

[24] One would expect $\gamma_3 < 0$ since such a worker will exhibit lower returns than all workers with the required level (within their own occupation and those who have the same level NVQ as themselves). This model is linked to the `job competition' model where marginal productivity resides in the job rather than the worker (productivity and wages are assumed fixed in relation to specific jobs).

[25] The unemployed, by definition, do not have an occupational status.

[26] The results are robust to selectivity correction and a full set of results are available on request. However, please note that the choice of instruments is a contentious issue. The instruments used here included `unemployment rate on entry into the UK labour market' `partner's wage', `local unemployment rates' and `home ownership' All these instruments were found to be correlated with wages. The selectivity corrected estimates are in line with Blackaby *et al.* (2002) who correct for selectivity bias and observe small changes in the white/non-white earnings differential of around only one percent.

[27] The QLFS is a cross-section survey of adults and there are no retrospective questions asking about childhood, family background, number of siblings or any potential instrument for education. Fortunately, a valuable literature has emerged that evaluates the accuracy of OLS coefficients against results derived from careful elimination of a range of biases, including measurement error and endogenous education choices (see Dearden 1999a, 1999b). The conclusion of this literature is that failure to control for ability and family background characteristics that influence education choices will bias OLS estimated upwards, while measurement error can lead to a downward bias. Hence OLS estimates provide quite reasonable estimates of the true returns to education.

[28] Furthermore, the sampling design implies excellent coverage for immigrants since it uses stratification and avoids clustering, thus providing good geographical reporting. This is important because many immigrants are concentrated in specific areas and a clustered sampling design could well omit coverage of key immigrant conurbations.

[29]Likelihood ratio tests (test statistics of 131.12 for men and 96.90 for women) reject the null hypotheses of common slope coefficients between immigrants and natives. Hence the structural determinants of over/under education are immigrant status specific. Similarly, a likelihood ratio test (test statistic of 1270.85) rejects the null hypothesis of common slope coefficients between men and women. Hence the structural determinants of over/under education are gender specific. A full set of estimates are available from the author on request.

[30] The default category consists of white with no qualifications, unmarried, has no children, employed in a firm with less than 25 employees, lives in the South East and is not employed in the manufacturing sector.

[31] In 1981Greece became a member of the EU, whilst in 1986 Spain and Portugal also joined. In 1995 there was further enlargement when Austria, Finland and Sweden joined.

[32] Chow tests (test statistics of 9.32 for men and 5.21 for women) reject the null hypotheses of common slope coefficients between immigrants and natives. Hence the structural determinants of earnings differ across immigrant status. Further Chow tests (test statistics of 2.05 for men and 4.55 for women) reject the null hypotheses of common slope coefficients between native born ethnic groups, as well as between immigrant ethnic groups (test statistics of 6.79 for men and 4.05 for women).

[33] The default category consists of unmarried, no children, employed in a firm with less than 25 employees, lives in the South East and is not employed in the manufacturing sector. There are extra defaults of being Caribbean in the non-white equations, being Black Caribbean in the Black equations and being Indian in the South Asian equations, as well as arriving in the UK before 1959 and not being from an English speaking country of origin in the immigrant equations.

[34] A base model containing no controls for the ORU variables was estimated and in most cases this shows that including controls does not change the results substantially. A full set of results are available on request.

[35] Where percentages can be calculated using $[\exp(\beta)-1] \times 100$. It is acknowledged that some differences are small and therefore may not be statistically significant.

[36] Battu and Sloane (2004) used the Fourth National Survey of Ethnic Minorities 1994.

[37] These are calculated as $[e(\gamma_1 - \gamma_2)]x100$ using equation (1). For example this is $[e(0.171-0.117)]x100 = 5.5$ percent for white natives and $[e(0.180-0)]x100 = 19.7$ for South Asian men.