

Ethnic Differences in Women's Employment:

The changing role of qualifications

Occasional Paper No. 26

Ethnic Differences in Women's Employment:

The changing role of qualifications

by

Joanne Lindley*, Shirley Dex** and Angela Dale*

* Centre for Census and Survey Research, University of Manchester, Manchester, M13 9PL.
email: joanne.lindley@man.ac.uk

** Institute of Education, University of London.

Acknowledgements

Many thanks to Professor Derek Leslie and the CCSR seminar series for their comments. We are grateful to the Leverhulme Trust for funding this research and to the Office for National Statistics and the Economic and Social Data Service for making available the data from the Labour Force Survey.

Abstract

We pool eight Spring QLFS quarters to examine female employment changes by ethnic group and qualification. Employment significantly increased for all women except Black Caribbean/Other women. Qualifications have played an increasingly important role and show increased polarisation between women with a degree compared to those without. This is especially large for Pakistani/Bangladeshi women. Decomposition analysis shows changes between the two time periods to be mainly a consequence of differences in characteristics, the main element of which was having a degree. However, decomposing white/non-white mean employment demonstrates significant unexplained ethnic penalties that cannot be explained as a characteristic problem.

Keywords: Qualifications; discrimination; employment; non-whites

JEL Classification: J15 J61

1. Introduction

Access to higher education has been increasing with uptake rising more steeply for women than for men. This increase in qualifications has clearly fed through into higher employment rates among women over time (Elliott, J., Dale, A. and Egerton, M., 2001). The relationship between employment and qualification level may be even stronger for women from minority ethnic groups. Younger cohorts are more likely to have been born and educated in the UK than older cohorts. This is particularly apparent for more recent migrants, in particular Pakistanis and Bangladeshis. Previous work indicates substantial employment differences between immigrant and native women (Leslie and Lindley, 2001 and Dale et al, 2002), partly explained by differences in qualification levels and fluency in English. However, for ethnic groups of longer standing in the UK, for example, Indians, one might expect cohort changes more similar to white women. Women who came to the UK as economic migrants (eg Black Caribbeans) may, in fact, have higher levels of employment than the second, UK-born generation of women with the same ethnic origin. In this paper we use logistic regression models and the Gomulka and Stern (1990) decomposition method to examine female employment changes over the last decade by ethnic group and qualification levels. We pay particular attention to differences between ethnic groups and to changes for women with a degree, compared to women without a degree.

Changes in women's employment status by ethnic origin can be examined using the Quarterly Labour Force Survey (QLFS) data. Using four pooled Spring QLFS data sets for two periods, 1992-1995 and 2000-2003, sufficient sample sizes for examining minority

and poorly-qualified women, in terms of continuity of employment and earnings. Women with higher qualifications – a growing percentage – are increasingly likely to retain continuous full-time employment during family formation whilst women without qualifications are still likely to leave the labour force when they have children (Dex, et al, 1998; Macran et al, (1996); Elliott, et al 2001). Cohort comparisons show that the ‘educational differential’ has become wider and this has resulted in an increase in wage dispersion for women (Rake, 2000; Joshi and Davies, 2002).

However, all women from minority ethnic groups have higher post-16 staying-on rates than white women (Drew et al, 1997) and entry to higher education is increasing more rapidly for South Asian women than for other ethnic groups (UCAS statistics). Again, amongst the more recent migrants (Pakistanis and Bangladeshis in particular) there is a considerable gap between the qualifications of first generation women and those of young women born or educated in the UK. In short, explaining employment changes over time for women from minority ethnic groups involves many considerations. Changes in human capital as well as demographic and socio-economic characteristics need to be controlled for.

Against the background of multiple explanations, this paper focuses on one main element, educational qualifications, to see how far minority ethnic female employment has been changing, and the extent to which this is being driven by changing qualification levels. We investigate whether changes in human capital accumulation have resulted in the same employment changes for women from all ethnic groups and whether the last decade witnessed polarisation in the employment of all women with a degree compared to those without a degree.

3. The data

The Labour Force Survey is conducted by the Office for National Statistics and available for academic use through the UK Data Archive. 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. Each quarter's LFS sample of 60,000 private households is made up of 5 'waves', each of approximately 12,000 households. Each wave is interviewed in 5 successive quarters, such that in any one quarter, one wave will be receiving their first interview, one wave their second, and so on, with one wave receiving their fifth and final interview.

The QLFS collects family and demographic information on each member of the household and therefore allows for the identification of household and family structure. One can relate information about one family member to that of others in the family. It also asks extensive information on employment and unemployment, as well as ethnicity, country of birth and year of arrival in the UK. In Spring 2001 the ethnicity questions were changed. It was therefore necessary to reclassify data after Spring 2001 into the old ethnicity categories.¹ A detailed discussion of this process is provided in Lindley et al (2003).² The ethnicity categories we could identify are as follows: white, Caribbean, African, Black other, Indian, Pakistani, Bangladeshi, Chinese and other. Respondents who answered 'Black Other' or 'Other' were also asked to further classify themselves as 'Mixed' or 'Non-Mixed'. We do not disaggregate further into these mixed and non-mixed groups. The numbers of Chinese women were too small to be reliable in most analyses and were combined, therefore, with 'other' groups. Clearly this 'other' group is too heterogeneous to be of analytic value. We have included this group in most analyses for completeness. However, this category and the Chinese are not considered in this paper.

(unemployed or inactive). Full-time students were considered to be inactive and were excluded from our sample. We estimated the model of being in employment as follows

$$y_i^* = X_i' \alpha + u_i \quad (1)$$

where y_i^* refers to the propensity to be employed and is unobservable. X_i' is a vector of human capital qualification levels, personal and socio-economic characteristics. We only observe, y_i , whether an individual is in employment or not and this binary employment variable is determined according to

$$\begin{aligned} y_i &= 1 \text{ if } y_i^* > 0 \\ y_i &= 0 \text{ otherwise} \end{aligned} \quad (2)$$

The underlying statistical model is probabilistic. We estimated equation (1) using a logit model where the residual term u_i is assumed to follow a logistic distribution. The probability, therefore, of the i th individual being employed is given by

$$P(y_i) = \frac{1}{1 + \exp(-\alpha X_i')} \quad (3)$$

Since our primary concern is with ethnic differences in women's employment we included in X_i' those covariates related to human capital (highest qualifications) and family composition (partnership status, presence of children and partner's employment status), as well as age, age squared, age on arrival in the UK and ethnicity.⁵ We also controlled for regional variations in employment and included a period dummy to capture changes over time. Given there was

Qualifications showed the expected strong relationship with the likelihood of being employed. Women with degree level qualifications were most likely to be employed followed by those with A-level, then O-level/GCSE. Finally women without any qualifications were least likely to be employed.

The negative effect of a non-employed partner was as expected from the literature. The coefficient results for regions were small with a negative effect associated with living in Wales or Scotland and a positive effect associated with living in the South or the Midlands by comparison with London.

By comparison with being UK born, there was a negative effect for being born overseas which was largest for women who arrived less than 5 years ago.⁶ Black Caribbean/Other women displayed a higher propensity for being employed, compared to white women, although the difference was not statistically significant. Black African women were less likely to be employed than white women, as were South Asian women. Pakistani and Bangladeshi women both had very large negative coefficients on the ethnic group dummy suggesting they were far less likely than white women to be employed. The expected gradient was present for age of youngest child. The period dummy was positive and significant suggesting an increase in female employment took place over this period, over and above changes in other employment-related characteristics.

The statistical significance of the ethnicity variables in Table 4 confirmed our expectation that the structural determinants of employment might vary significantly by ethnic origin. As a consequence we re-estimated equation (1) separately by ethnic group. The default categories

were the same as in Table 4, women with degree level qualifications women chosen in order to provide levels of employment as similar as possible across all ethnic groups (Table 3).

Separate ethnic origin equation models

The results of the separate estimations for each ethnic group are presented in Table 5. The category of 'Other' women has been omitted.

We performed a chi squared likelihood ratio test for the joint hypothesis of coefficient equality across the 5 equations (one for each separate ethnic group). A test statistic of 1959.38 with 19 degrees of freedom suggested the null hypothesis of common slope coefficients should be rejected.

For all groups there was a steady negative gradient as level of qualification fell although the size of the coefficient on 'no qualifications' is larger for Black African and Pakistani and Bangladeshi women than for other groups suggesting a greater difference in the likelihood of being employed between those with higher qualifications and those with no qualifications.

Comparing across ethnic groups, the effects of age were similar (Table 5). Generally, an employed partner had a significant positive effect whilst a non-employed partner had a significant negative effect by comparison with the reference group (no partner). However, for Black Caribbean and Black African women a non-employed partner did not have a significant negative effect, perhaps reflecting a higher level of independence amongst these groups than among other women. For Pakistani and Bangladeshi women, the positive effect on their employment of an employed partner was much smaller (although significant) than for other groups. For all groups, arrival in the UK in the last 5 years had a large negative effect

although this was smaller for white and Black women than for others. For white and Pakistani/Bangladeshi women, arrival as an adult more than 5 years ago was also negative and statistically significant. Generally, the negative effect reduced in size with increased length of residence in the UK. Children had a negative effect on employment across all groups, with largest coefficients for white women. In general coefficients declined as the age of the youngest child increased. . However, having a child aged above 10 and over was statistically insignificant for Black African and Indian women.

The period effect was positive and significant for white women and negative and significant for Black Caribbean and Black Other women. This suggests a fall in the employment of Black Caribbean and Black Other women over the period that was over and above all other characteristics changes. The period dummy was statistically insignificant for all other ethnic groups. Changes over the decade, therefore, were found to be ethnicity specific.

Separate ethnic origin and period equations

Lastly, we allowed for variation in the coefficients by both ethnic origin and period., Thus the structural determinants of employment were allowed to be both period-specific and ethnicity-specific. This breakdown will offer us a more detailed perspective on the way in which policy changes over the period in question may be having an impact on minority ethnic women's employment opportunities. From a largely non-interventionist approach to race relations from the passing of the Race Relations Act in 1976 to the early 1990s, the period 2000-3 saw a new era of government intervention. The *Race Relations (Amendment) Act* was passed in November 2000 in response to the Macpherson Report in 1999.

Key estimates are provided in Table 6.⁷ Two chi squared likelihood ratio tests were carried out to test for the joint hypothesis of coefficient equality across the two equations (one for each separate period) separately for each of the five equations in Table 5. The null hypothesis of common slope coefficients across periods was rejected for the white and Pakistani/Bangladeshi equations only.⁸ The parameters in Table 5 were found to be period-specific, therefore, only for white and Pakistani/Bangladeshi women.

These results allow us to compare qualification coefficients across the two periods. We focus on white and Pakistani/Bangladeshi women since the chi squared likelihood ratio tests suggested that parameters were only significantly different between periods for these two groups of women. The effect on the propensity to be employed for women without any qualification fell (become more negative) compared to having a degree between the two periods. This provides some evidence that polarisation between women with higher level qualifications compared to those with other or those without any qualifications was increasing over this period. For white (and Indian) women the effect of having an A-level qualification increased (become less negative) compared to having a degree over the period. For Pakistani/Bangladeshi women the effect of having an A-level qualification became negative and significant in 2000-2002 where it was statistically insignificant in the earlier period, 1992-5.

In order to display the marginal effects and impact of having a degree Figure 1 presents the predicted probabilities of being employed (from Table 6) for a hypothetical woman when the parameters in our model are allowed to vary both across ethnic groups and periods. Our hypothetical woman is age 35, with an employed partner and a youngest child age less than 5, lives in London and is British born. (The full set of estimates are provided in Table A3 of the

Appendix). The predicted probabilities of being employed increased over the decade for all women with a degree, except Indian women, whereas they fell for minority ethnic women without a degree - except Black Caribbean women – and remained static for white women. Figure 1 clearly illustrates a dichotomy between the employment chances of all women with a degree compared to those without a degree, over the last decade.

7. Decomposition Analysis

The separate estimates of equation (1) for each ethnic group and period, allow us to use the Gomulka and Stern (1990) method to decompose the variation in likelihood of employment into the amount explained by characteristic differences and the amount explained by coefficient differences. The analysis leads to two alternative decompositions, which are as follows:

$$\hat{I}^A - \hat{I}^B = [\bar{P}(\hat{\alpha}^A X^B) - \bar{P}(\hat{\alpha}^B X^B)] + [\bar{P}(\hat{\alpha}^A X^A) - \bar{P}(\hat{\alpha}^A X^B)] \quad (4)$$

or

$$\hat{I}^A - \hat{I}^B = [\bar{P}(\hat{\alpha}^A X^A) - \bar{P}(\hat{\alpha}^B X^A)] + [\bar{P}(\hat{\alpha}^B X^A) - \bar{P}(\hat{\alpha}^B X^B)] \quad (5)$$

where A refers to those respondents in group A and B refers to group B, with $\hat{\alpha}^A$ and $\hat{\alpha}^B$ the vectors of estimated coefficients from the logit equations. \hat{I}^A and \hat{I}^B are the respective predicted average of the predicted probabilities of being employed for group A and group B. $\bar{P}(\hat{\alpha}^A X^A)$ is the average predicted probability of being employed across the sample using group A coefficients and group A characteristics and similarly for the other terms. The first term in square brackets in Equations 4 and 5 measures the difference in means which is

ethnic groups of women, all of the cohort increase in employment can be explained by differences in characteristics (including having a degree). In fact, the coefficients on qualifications in Tables A3a and A3b are larger than any of the other (dummy) variables in the model suggesting that it is mainly differences in qualifications (especially for other qualification and no qualification) that mainly account for these period changes .

Finally, following Gomulka and Stern (1990), we decompose the white/non-white employment differential, where white women are the benchmark comparison group. We do this for separate periods and then compare changes between the two periods. Because women are now split only by ethnicity, coefficient differences can be identified as the 'ethnic' effect. In this case, equation 5 is the preferable decomposition method, since non-white workers (group B) constitute a small minority of the workforce and average white activity rates are almost identical to those for the overall sample. The results are displayed in Table 8.

The first row presents the raw mean differential in employment rates between white and non-white women separately by period (again from Table 2). Generally, the relative position of non-white women compared to whites has remained fairly constant over the last decade. Only Black Caribbean women have experienced any slight worsening compared to whites although the employment gap between these two groups is the smallest; the white/Black Caribbean employment differential increased from 5.2 percentage points in 1992-5 to 6.6 percentage points in 2000-3. The relative position of Black African women improved slightly since the white/Black African differential decreased from 17.4 percentage points in 1992-5 to 15.3 percentage points in 2000-3. For Indian women, the raw White/Indian mean employment differential suggests there has been little change between the two periods (around 8.8 percent

in 1992-5 and 8.9 percent in 2000-3). The largest employment differential is for the White/Pakistani and Bangladeshi comparison (49 percentage points in 2000-3).

Turning to the decomposition, for white in comparison with Indian women, the decomposition displays a large fall in the unexplained component (90% to 60% of the total differential) and an increase in the component explained by characteristics over the period. Of course this unexplained component contains language fluency, cultural and religious effects, as well as discrimination. Pakistani/Bangladeshi women also display a small fall in the unexplained component although they also demonstrate much stronger characteristic differences (50% of the total differential in 1992-5) than Indian women. Moreover, this characteristic component increased over the period (at 53% of the total differential in 2000-3). This suggests that Pakistani/Bangladeshi women were additionally penalised in having poorer average characteristics (which include qualifications) than white women, which contribute to being employed.

For Black Caribbean/Other women, the proportion of variation explained by the characteristic component fell between the two periods. In period 1 the proportion of the employment gap due to characteristics was even bigger than it was in period 2, although in period 1 it was counterbalanced by a sizeable difference in coefficients promoting Black Caribbean/Black Other over white women's employment. In period 2 the coefficient difference has fallen to approximately zero. It would be possible to argue that this change represented an increase in discrimination between the two periods. However, the overall gap is small and changes should not be over interpreted therefore. For Black African women, an increasing coefficient effect (from -7% in 1992-5 to 48% in 2000-3 of the total White/Black African employment differential) in favour of white women's employment could more confidently be interpreted

as reflecting an increase in discrimination, although language fluency, cultural and religious differences are likely to account for more of the unexplained difference in this case.

8. Conclusions

Employment has significantly increased among white, Black African, Indian and Pakistani/Bangladeshi women between the early 1990s and the early 2000s. Women from other minority ethnic groups (including Black Caribbean/Other) did not exhibit significant employment increases even in a period of relatively high employment. The overall employment position of Black African and Pakistani/Bangladeshi women has improved very slightly, relative to white women. For Indian women there has been little change relative to white women. For Black Caribbean/Black Other women the employment gap relative to white women got slightly worse over the period. The employment differential between Pakistani/Bangladeshi and white women still remained the largest at 48.5 percentage points in 2000-03.

Our results suggest that qualifications have played an increasingly important role in explaining women's ethnic employment. Indeed the evidence presented here suggests there is increasing polarisation between women with a degree compared to those without a degree for all ethnic groups, and this is especially large for Pakistani/Bangladeshi women. The Gomulka and Stern period decompositions supported this finding. Decomposing mean period differences into their coefficient and characteristic component shows changes between the periods to be mainly a consequence of differences in characteristics, the main element of which was having a degree.

Decomposing white/non-white mean employment differences demonstrated the increasing importance for South Asian women of characteristics and particularly having degree level qualifications, although there is still a large unexplained component in the case of Pakistani/Bangladeshi women. However, ethnic differences between white and non-white women's employment, while heavily influenced by qualifications, cannot be explained in total as a characteristic problem (such as poor qualifications or unfavourable regional distributions). Even after the *Race Relations (Amendment) Act (2000)* and with increased employment levels for everyone, a significant unexplained racial discriminatory component may still exist.

Table 1 Percentage of women in each ethnic group a) with a degree and b) without any qualifications.

	1992-1995			2000-2003		
	With a Degree	No qualifications	N	With a Degree	No qualifications	N
White	17.72 (0.001)	30.90 (0.001)	134,136	26.82 (0.001)	19.69 (0.001)	115,290
Black	19.27 (0.010)	28.36 (0.011)	1,650	28.43 (0.011)	14.76 (0.001)	1,558
Caribbean & Other						
Black African	22.22 (0.017)	23.38 (0.017)	603	33.69 (0.015)	17.00 (0.009)	941
Indian	15.37 (0.008)	40.88 (0.010)	2,297	28.53 (0.010)	23.79 (0.009)	2,194
Pakistani &	5.72 (0.006)	61.47 (0.013)	1,469	13.11 (0.008)	46.81 (0.012)	1,769
Bangladeshi						
Chinese &	22.32 (0.010)	28.50 (0.011)	1,649	31.35 (0.009)	18.49 (0.008)	2,472
Other						
Total	17.65 (0.001)	31.29 (0.001)	141,804	26.82 (0.001)	20.05 (0.001)	124,224

Source QLFS Spring Quarters for GB

Notes: For women age 19-60, excluding full time student. Data are unweighted.
Figures in parentheses are standard errors.

Table 2 Percentage of British women employed, by ethnic group.

	1992-1995		2000-2003	
	Percentage employed	N	Percentage employed	N
White	68.79 (0.001)	134,136	73.29* (0.001)	115,290
Black Caribbean & Other	63.58 (0.012)	1,650	66.69 (0.012)	1,558
Black African	51.41 (0.020)	603	58.02* (0.016)	941
Indian	59.99 (0.010)	2,297	64.40* (0.011)	2,194
Pakistani & Bangladeshi	19.20 (0.010)	1,469	24.76* (0.010)	1,769
Chinese & other	55.25 (0.012)	1,649	57.69 (0.009)	2,472
Total	67.84 (0.001)	141,804	71.94* (0.001)	124,224

Source: *QLFS Spring Quarters for GB*

Notes: *For women age 19-60, excluding full time student. Data are unweighted. Figures in parentheses are standard errors.*

** Denotes a statistical significance between the two means for period 1992-1995 period 2000-2003.*

Table 3 Percentage employed for those with a degree/without a degree.

	1992-1995		2000-2003	
	With a degree	Without a degree	With a degree	Without a degree
White	84.48* [23, 766] (0.002)	65.41* [110,370] (0.001)	87.24* [30, 926] (0.002)	68.18* [84,364] (0.002)
Black Caribbean & Other	84.59 [318] (0.020)	58.56 [1332] (0.014)	85.33 [443] (0.017)	59.28 [1,115] (0.015)
Black African	70.90 [134] (0.039)	45.84 [469] (0.023)	79.81 [317] (0.023)	46.96 [624] (0.020)
Indian	84.14 [353] (0.019)	55.61 [1944] (0.011)	84.35 [626] (0.015)	56.44 [1,568] (0.013)
Pakistani & Bangladeshi	55.95* [84] (0.054)	16.97 [1385] (0.010)	71.98* [232] (0.030)	17.63 [1,537] (0.0098)
Chinese & other	79.35 [368] (0.022)	48.32 [1281] (0.014)	77.16 [775] (0.015)	48.79 [1,697] (0.012)
Total	84.23* [25,023] (0.002)	64.32* [116,781] (0.001)	86.75* [33,319] (0.002)	66.51* [90,905] (0.002)

Source: *QLFS Spring Quarters for GB*

Notes: *For women age 19-60, excluding full time students. Data are unweighted.*

Figures in parentheses are standard errors, whilst sample sizes are in square brackets.

** Denotes a statistical significance between the two means for period 1992-1995 and period 2000-2003.*

**Table 4 Logit coefficients for all women,
QLFS 1992-1995 & 2000-2003.**
Dependant variable = 1 if employed and zero otherwise

Variable	Coefficient	Standard Error
Age	0.139*	0.004
Age Squared*100	-0.002*	0.000
A Level	-0.600*	0.017
O Level	-0.688*	0.016
Other Qual	-0.913*	0.017
No Qual	-1.631*	0.015
Partner Not Employed	-0.370*	0.024
Partner Employed	0.9720*	0.011
Youngest Child <5	-2.244*	0.015
Youngest Child 5-10	-1.144*	0.016
Youngest Child >10	-0.509*	0.018
Lives in North	0.033	0.018
Lives in Midlands	0.111*	0.019
Lives in South (Not London)	0.118*	0.017
Lives in Celtic Fringe	-0.027	0.020
Black Caribbean or Black Other	0.055	0.044
Black African	-0.162*	0.063
Indian	-0.233*	0.039
Pakistani or Bangladeshi	-1.652*	0.050
Chinese or Other	-0.455*	0.040
Arrived UK age <15	-0.058	0.030
Arrived UK >16 & more than 5 years ago	-0.109*	0.027
Arrived UK >16 & less than 5 years ago	-0.817*	0.038
Period (2000-2003)	0.101*	0.010
Constant	0.195*	0.068
N	266028	
Log Likelihood	-133560.74	
Pseudo R Squared	0.1809	

Source: QLFS Spring Quarters 1992-1995 & 2000-2003 for UK.

Notes: For women age 19-60, excluding full time students.

* denotes significant at the 1 percent level.

The default category consist of women who are white, single, UK born,
without children, living in London, have a degree (or higher degree)
as their highest qualification and were sampled in from the earlier 1992-1995 data.

**Table 5. Logits coefficients estimated separately by ethnic group
QLFS 1992-1995 & 2000-2003.**

Dependant variable = 1 if employed and zero otherwise

Variable	Whites		Black Caribbean & Black Other		Black African		Indian		Pakistani & Bangladeshi	
	Coeff	S.E.	Coeff	S.E.	Coeff	S.E.	Coeff	S.E.	Coeff	S.E.
Age	0.140*	0.004	0.2173*	0.031	0.116*	0.050	0.091*	0.030	0.100*	0.045
Age Squared	-0.002*	0.000	-0.003*	0.000	-0.002*	0.001	-0.002*	0.000	-0.002*	0.001
A Level	-0.595*	0.018	-0.821*	0.145	-0.666*	0.192	-0.686*	0.144	-0.629*	0.190
O Level	-0.677*	0.017	-0.796*	0.143	-0.574*	0.239	-0.702*	0.145	-1.220*	0.190
Other Qual	-0.887*	0.018	-1.246*	0.146	-1.031*	0.159	-1.101*	0.123	-1.775*	0.179
No Qual	-1.607*	0.016	-1.778*	0.141	-2.101*	0.184	-1.854*	0.119	-2.900*	0.173
Partner Not Employed	-0.388*	0.026	-0.258	0.227	0.033	0.240	-0.279	0.165	-0.163	0.209
Partner Employed	0.979*	0.011	1.175*	0.108	0.959*	0.145	0.985*	0.086	0.621*	0.127
Lives in North	0.045*	0.019	-0.151	0.136	-0.138	0.270	-0.491*	0.115	0.074	0.134
Lives in Midlands	0.120*	0.021	0.093	0.110	0.199	0.267	0.060	0.087	0.007	0.152
Lives in South (Not London)	0.121*	0.019	0.084	0.130	0.532*	0.222	0.242*	0.110	0.238	0.174
Lives in Celtic Fringe	-0.021	0.021	0.189	0.326	-0.643	0.388	0.376	0.272	-0.004	0.265
Arrived UK age <15	-0.114*	0.037	-0.111	0.125	-0.139	0.247	0.135	0.128	-0.226	0.147
Arrived UK >16 & more han 5 years ago	-0.102*	0.036	0.045	0.165	-0.058	0.190	0.091	0.137	-0.672*	0.174
Arrived UK >16 & less than 5 years ago	-0.636*	0.050	-0.637*	0.229	-0.504*	0.196	-1.237*	0.168	-1.657*	0.249
Youngest Child <5	-2.291*	0.015	-1.703*	0.115	-1.362*	0.155	-1.542*	0.101	-1.610*	0.153
Youngest Child 5-10	-1.160*	0.017	-0.915*	0.126	-0.941*	0.178	-0.660*	0.117	-0.790*	0.171
Youngest Child >10	-0.520*	0.019	-0.585*	0.161	-0.411	0.237	0.065	0.127	-0.504*	0.209
Period (2000-2003)	0.111*	0.010	-0.026	0.089	0.041	0.125	-0.025	0.076	-0.267*	0.112
Constant	0.176*	0.070	-1.710*	0.565	-0.430	0.890	0.875	0.536	0.279	0.758
N	249426		3208		1544		4491		3238	
Log Likelihood	-124712.83		-1742.9747		-877.31684		-2431.5407		-1219.5915	
Pseudo R Squared	0.1712		0.1601		0.1732		0.1838		0.2892	

Source QLFS Spring Quarters 1992-1995 & 2000-2003 for UK.

Notes: For women age 19-60, excluding full time students.

* denotes significant at the 5 percent level.

The default category consist of women who are single, UK born,
without children, living in London, have a degree (or higher degree)
as their highest qualification and were sampled in from the earlier 1992-1995 data.

Table 6. Selection of logit coefficients (qualifications only) estimated separately by ethnic group and period
Dependant variable = 1 if employed and zero otherwise

QLFS 1992-1995										
Variable	Whites		Black Caribbean & Black Other		Black African		Indian		Pakistani & Bangladeshi	
	Coeff	S.E.	Coeff	S.E.	Coeff	S.E.	Coeff	S.E.	Coeff	S.E.
A Level	-0.639*	0.026	-0.593*	0.220	-0.407	0.299	-0.731*	0.233	0.264	0.365
O Level	-0.621*	0.024	-0.623*	0.217	0.302	0.378	-0.696*	0.225	-0.915*	0.337
Other Qual	-0.833*	0.026	-0.959*	0.217	-0.796*	0.262	-1.051*	0.188	-1.279*	0.298
No Qual	-1.440*	0.023	-1.566*	0.197	-1.488*	0.286	-1.702*	0.178	-2.431*	0.284
N	134136		1650		603		2297		1469	
Log Likelihood	-69064.449		-904.09587		-359.39389		-1228.165		-524.44713	
Pseudo R Squared	0.1706		0.1645		0.1396		0.2056		0.2700	

QLFS 2000-2003										
Variable	Whites		Black Caribbean & Black Other		Black African		Indian		Pakistani & Bangladeshi	
	Coeff	S.E.	Coeff	S.E.	Coeff	S.E.	Coeff	S.E.	Coeff	S.E.
A Level	-0.528*	0.026	-0.982*	0.192	-0.712*	0.255	-0.628*	0.185	-1.001*	0.230
O Level	-0.720*	0.024	-0.889*	0.192	-1.131*	0.311	-0.657*	0.194	-1.333*	0.235
Other Qual	-0.922*	0.027	-1.433*	0.199	-1.124*	0.205	-1.116*	0.167	-2.041*	0.235
No Qual	-1.835*	0.024	-2.013*	0.209	-2.445*	0.251	-2.034*	0.162	-3.200*	0.230
N	115290		1558		941		2194		1769	
Log Likelihood	-55381.796		-826.08554		-501.59143		-1165.5233		-663.63565	
Pseudo R Squared	0.1722		0.1668		0.2164		0.1841		0.3297	

Figure 1 (a)

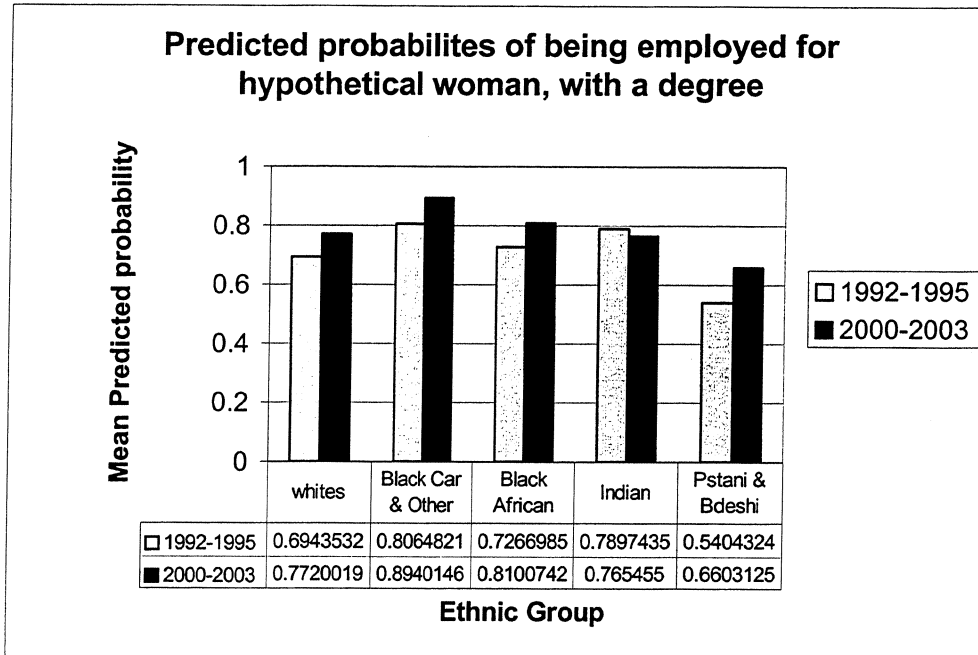
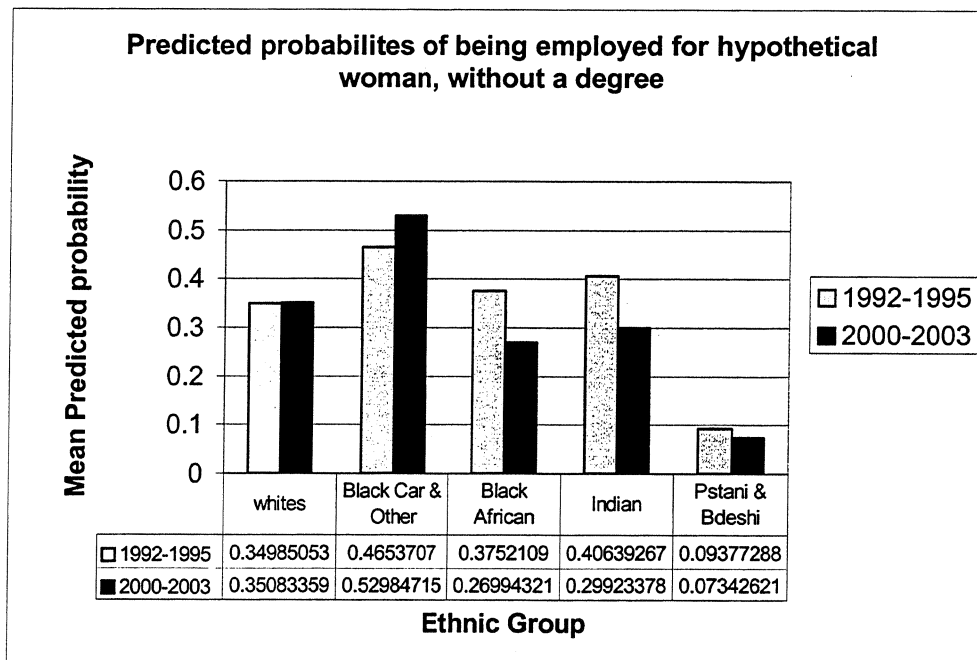


Figure 1 (b)



Based on the coefficients from Tables A3a and A3b.

Hypothetical woman is age 35 with youngest child aged less than 5, partner employed, lives in London and British born.

**Table 7 Decomposition result across two periods,
QLFS 1992-1995 & 2000-2003.**
Dependant variable = 1 if employed and zero otherwise
A= Period 2000-2003 and B= Period 1992-1995

	All Women	White Women	Black Caribbean and Black Other Women	Black African Women	Indian Women	Pakistani and Bangladeshi Women
Differences in Means						
$\hat{I}^A - \hat{I}^B$	0.0411	0.0451	0.0311	0.0661	0.0440	0.0556
Differences in Coefficients						
$[\bar{P}(\hat{\alpha}^{AX^B}) - \bar{P}(\hat{\alpha}^{BX^B})]$	0.0132 (32%)	0.0155 (33%)	-0.0014 (-45%)	0.0013 (2%)	-0.0165 (-37%)	-0.0258 (-46%)
$[\bar{P}(\hat{\alpha}^{AX^A}) - \bar{P}(\hat{\alpha}^{BX^A})]$	0.0162 (39%)	0.0210 (46%)	-0.0015 (-4%)	-0.0416 (22%)	0.0052 (11%)	-0.0314 (-56%)
Differences in Characteristics						
$[\bar{P}(\hat{\alpha}^{AX^A}) - \bar{P}(\hat{\alpha}^{AX^B})]$	0.0278 (67%)	0.0301 (66%)	0.0466 (145%)	0.0648 (98%)	0.0605 (137%)	0.0814 (146%)
$[\bar{P}(\hat{\alpha}^{BX^A}) - \bar{P}(\hat{\alpha}^{BX^B})]$	0.0485 (61%)	0.0241 (54%)	0.0479 (104%)	0.0515 (77%)	0.0388 (88%)	0.0871 (156%)
N	266028	249426	3208	1544	4491	3238

Source: QLFS Spring Quarters 1992-1995 & 2000-2003 for UK.

Notes: For white women age 19-60, excluding full time students.

* This includes 4121 Chinese and Other women. Figures in parentheses are percentages of the total differential.

**Table 8 Decomposition across White/Non-white groups,
QLFS 1992-1995 & 2000-2003.**

Dependant variable = 1 if active and zero otherwise
A= White Women and B= Non-White Women

	White/Black Caribbean and Black Other Women		White/Black African Women		White/Indian Women		White/ Pakistani& Bangladeshi	
	Period 1	Period 2	Period 1	Period 2	Period 1	Period 2	Period 1	Period 2
Differences in Means $\hat{I}^A - \hat{I}^B$	0.0521	0.0661	0.1738	0.1527	0.0879	0.0889	0.4959	0.4854
Differences in Coefficients								
$[\bar{P}(\hat{\alpha}^{AX^B}) - \bar{P}(\hat{\alpha}^{BX^B})]$	-0.0216 (-42%)	0.0025 (4%)	0.1249 (72%)	0.0469 (31%)	0.0257 (29%)	0.0593 (66%)	0.2632 (53%)	0.2951 (61%)
$[\bar{P}(\hat{\alpha}^{AX^A}) - \bar{P}(\hat{\alpha}^{BX^A})]$	-0.0400 (-77%)	-0.0024 (-4%)	-0.0129 (-7%)	0.0735 (48%)	0.0792 (90%)	0.0534 (60%)	0.2477 (50%)	0.2293 (47%)
Differences in Characteristics								
$[\bar{P}(\hat{\alpha}^{AX^A}) - \bar{P}(\hat{\alpha}^{AX^B})]$	0.0737 (142%)	0.0636 (96%)	0.0489 (28%)	0.1058 (69%)	0.0622 (71%)	0.0296 (33%)	0.2327 (46%)	0.1903 (39%)
$[\bar{P}(\hat{\alpha}^{BX^A}) - \bar{P}(\hat{\alpha}^{BX^B})]$	0.0921 (177%)	0.0685 (104%)	0.1867(107%)	0.0792 (52%)	0.0087 (10%)	0.0355 (40%)	0.2482 (50%)	0.2561 (53%)

QLFS Highest Qualification Variables

	Hiquap 1992	Hiquap 1993-1995	Hiquap 2000-2003
Degree	(1) Higher degree (2) First degree (3) Other degree (4) HND-HNC, BTEC etc Higher (5) Teaching-further education (6) Teaching-secondary (7) Teaching-primary (8) Teaching-level not stated (9) Nursing	(1) Higher degree (2) First degree (3) Other degree (4) Diploma in higher education (5) HND-HNC, BTEC etc Higher (6) Teaching-further education (7) Teaching-secondary (8) Teaching-primary (9) Teaching-level not stated (10) Nursing (11) Other higher education degree (12) RSA higher diploma	(1) Higher degree (2) NVQ level 5 (3) First degree (4) Other degree (5) NVQ level 4 (6) Diploma in higher education (7) HNC/HND, BTEC higher etc (8) Teaching, further education (9) Teaching, secondary (10) Teaching, primary (11) Teaching, level not stated (12) Nursing etc (13) RSA higher diploma (14) Other higher education below degree level (15) NVQ level 3 (16) GNVQ advanced
A Level	(11) City & Guilds craft (12) A-level or equivalent (13) Trade apprentice	(13) A level or equivalent (14) RSA advanced diploma (15) OND/ONC, BTEC etc National (16) City & Guilds advanced craft (17) Scottish 6th year certificate or (18) SCE higher or equivalent (19) AS level or equivalent (20) Trade apprenticeship (21) RSA diploma (22) City & Guilds craft (23) BTEC etc First or General diploma (28) SCOTVEC National certificate	(17) A level or equivalent (18) RSA advanced diploma or certificate (19) OND/ONC, BTEC/SCOTVEC national (20) City and Guilds advanced craft (21) Scottish 6th year certificate (CSYS) (22) SCE higher or equivalent (23) AS level or equivalent (24) Trade apprenticeship (25) NVQ level 2 or equivalent (26) GNVQ intermediate (27) RSA diploma (28) City and Guilds craft (29) BTEC/SCOTVEC first or general diploma
O Level	(14) O-level or equivalent	(24) O-level or equivalent	(30) O level, GCSE grade A- C or equivalent (31) NVQ level 1 or equivalent (32) GNVQ/GSVQ foundation level
Other	(10) BTEC etc First or General certificate (15) CSE below grade (16) YT/YTP certificate (17) RSA (18) Other	(25) CSE below grade 1 (26) BTEC etc First or General certificate (27) YT/YTP certificate (29) RSA other (30) City & Guilds other (31) Other	(33) CSE below grade 1, GCSE below grade C (34) BTEC first or general certificate (35) SCOTVEC modules or equivalent (36) RSA other (37) City and Guilds other (38) YT/YTP certificate (39) Other qualification
None	(19) No qualification (20) No answer	(32) No qualification (33) No answer	(40) No qualifications (41) Don't know (-8) No answer

Table A2 Percent of ethnic group economically active by highest qualifications.

	1992-1995		2000-2003	
	With a degree	Without a degree	With a degree	Without a degree
White	87.47* [23, 766] (0.0022)	70.63* [110,370] (0.0113)	88.93* [30, 926] (0.0018)	71.27* [84,364] (0.0016)
Black Caribbean & Other	89.94 [318] (0.0168)	71.47 [1332] (0.0123)	89.16 [443] (0.0150)	69.51 [1,115] (0.0138)
Black African	88.06 [134] (0.0281)	63.75 [469] (0.0222)	86.75 [317] (0.0193)	58.49 [624] (0.0197)
Indian	89.24 [353] (0.0165)	63.73 [1944] (0.0109)	87.38 [626] (0.0132)	61.29 [1,568] (0.0123)
Pakistani & Bangladeshi	63.10* [84] (0.0529)	23.32 [1385] (0.0114)	75.43* [232] (0.0283)	22.19 [1,537] (0.0105)
Chinese & other	85.60 [368] (0.0183)	57.92* [1281] (0.0137)	82.84 [775] (0.0135)	53.86* [1,697] (0.0121)
Total	87.42* [25,023] (0.0021)	69.79 [116781] (0.0013)	88.65* [33,319] (0.0017)	69.83 [90,905] (0.0015)

Source: *QLFS Spring Quarters for GB*

Notes: *For women age 19-60, excluding full time students. Data are unweighted.*

Figures in parentheses are standard errors, whilst sample sizes are in square brackets.

** Denotes a statistical significance between the two means for period 1992-1995 and period 2000-2003.*

Table A3a. Logit coefficient estimates by ethnic group and period
Dependant variable = 1 if in work and zero otherwise
QLFS 1992-1995

Variable	Whites		Black Caribbean & Black Other		Black African		Indian		Pakistani & Bangladeshi	
	Coeff	S.E.	Coeff	S.E.	Coeff	S.E.	Coeff	S.E.	Coeff	S.E.
Age	0.132*	0.005	0.286*	0.047	0.109	0.085	0.166*	0.045	0.002	0.063
Age Squared	-0.002*	0.000	-0.004*	0.001	-0.001	0.001	-0.003*	0.001	-0.000	0.001
A Level	-0.639*	0.026	-0.593*	0.220	-0.407	0.300	-0.731*	0.233	0.264	0.365
O Level	-0.621*	0.024	-0.623*	0.217	0.302	0.378	-0.696*	0.225	-0.915*	0.337
Other Qual	-0.833*	0.026	-0.959*	0.217	-0.796*	0.262	-1.051*	0.187	-1.279*	0.298
No Qual	-1.440*	0.023	-1.566*	0.197	-1.488*	0.286	-1.702*	0.178	-2.431*	0.284
Partner Not Employed	-0.494*	0.031	-0.016	0.278	-0.145	0.303	-0.314	0.200	-0.478	0.290
Partner Employed	0.989*	0.015	1.149*	0.150	0.660*	0.234	1.098*	0.124	0.557*	0.198
Lives in North	0.078*	0.025	0.090	0.186	-0.039	0.342	-0.666*	0.159	0.134	0.207
Lives in Midlands	0.147*	0.027	0.371*	0.154	0.047	0.472	-0.024	0.126	0.037	0.238
Lives in South (Not London)	0.125*	0.025	0.256	0.185	0.461	0.381	0.290	0.157	-0.093	0.263
Lives in Celtic Fringe	-0.007	0.028	0.402	0.678	0.659	0.629	0.332	0.383	-0.251	0.417
Arrived UK age <15	-0.093	0.050	-0.207	0.177	-0.288	0.398	0.168	0.201	-0.130	0.247
Arrived UK >16 & more than 5 years ago	-0.122*	0.048	0.166	0.258	-0.135	0.294	0.189	0.219	-0.533	0.290
Arrived UK >16 & less than 5 years ago	-0.673*	0.077	-0.489	0.432	-0.594*	0.288	-1.331*	0.267	-1.985*	0.380
Youngest Child <5	-2.365*	0.020	-1.931*	0.163	-1.051*	0.233	-1.676*	0.156	-1.380*	0.233
Youngest Child 5-10	-1.192*	0.023	-1.052*	0.177	-0.874*	0.268	-0.845*	0.163	-0.537*	0.246
Youngest Child >10	-0.499*	0.026	-0.661*	0.232	0.405	0.442	-0.104	0.180	-0.211	0.301
Constant	0.271*	0.094	-3.158*	0.841	-0.850	1.484	-0.351	0.793	1.354	1.122
N	134136		1650		603		2297		1469	
Log Likelihood	-69064.449		-904.09587		-359.39389		-1228.165		-524.44713	
Pseudo R Squared	0.1706		0.1645		0.1396		0.2056		0.2700	

Table A3b. Logit coefficient estimates by ethnic group and period
Dependant variable = 1 if employed and zero otherwise
QLFS 2000-2003

Variable	Whites		Black Caribbean & Black Other		Black African		Indian		Pakistani & Bangladeshi	
	Coeff	S.E.	Coeff	S.E.	Coeff	S.E.	Coeff	S.E.	Coeff	S.E.
Age	0.145*	0.006	0.154*	0.044	0.127	0.066	0.013	0.043	0.191*	0.066
Age Squared	-0.002*	0.000	-0.002*	0.001	-0.002*	0.001	-0.001	0.001	-0.003*	0.001
A Level	-0.528*	0.026	-0.982*	0.192	-0.712*	0.255	-0.628*	0.185	-1.001*	0.230
O Level	-0.720*	0.024	-0.889*	0.192	-1.131*	0.311	-0.657*	0.194	-1.333*	0.235
Other Qual	-0.922*	0.027	-1.433*	0.199	-1.124*	0.205	-1.116*	0.167	-2.041*	0.235
No Qual	-1.835*	0.024	-2.013*	0.209	-2.445*	0.251	-2.034*	0.162	-3.120*	0.230
Partner Not Employed	-0.077	0.051	-0.805*	0.393	0.068	0.406	-0.024	0.320	0.221	0.317
Partner Employed	0.968*	0.016	1.236*	0.159	1.116*	0.190	0.879*	0.120	0.653*	0.169
Lives in North	-0.011	0.030	-0.407*	0.202	-0.191	0.415	-0.325	0.170	0.057	0.180
Lives in Midlands	0.076*	0.032	-0.203	0.161	0.386	0.331	0.132	0.125	0.015	0.200
Lives in South (Not London)	0.105*	0.029	-0.119	0.186	0.686*	0.288	0.172	0.156	0.540*	0.235
Lives in Celtic Fringe	-0.041	0.032	0.050	0.370	-1.339*	0.500	0.347	0.402	0.092	0.359
Arrived UK age <15	-0.133*	0.056	-0.027	0.187	-0.001	0.331	0.074	0.176	-0.244	0.190
Arrived UK >16 & more than 5 years ago	-0.098	0.053	-0.203	0.225	0.019	0.254	-0.089	0.179	-0.714*	0.229
Arrived UK >16 & less than 5 years ago	-0.625*	0.067	-0.670*	0.277	-0.484	0.271	-1.144*	0.223	-1.220*	0.328
Youngest Child <5	-2.193*	0.024	-1.524*	0.166	-1.604*	0.209	-1.452*	0.157	-1.829*	0.207
Youngest Child 5-10	-1.115*	0.025	-0.798*	0.182	-1.002*	0.246	-0.518*	0.170	-1.029*	0.243
Youngest Child >10	-0.541*	0.029	-0.490*	0.230	-0.745*	0.306	0.225	0.181	-0.759*	0.291
Constant	0.221*	0.106	-0.405	0.796	-0.340	1.172	2.119*	0.786	-1.262	1.070
N	115290		1558		941		2194		1769	
Log Likelihood	-55381.796		-826.08554		-501.59143		-1165.5233		-663.63565	
Pseudo R Squared	0.1722		0.1668		0.2164		0.1841		0.3297	

References

- Bell, B.D. (1997), 'The performance of immigrants in the United Kingdom: Evidence from the GHS', *Economic Journal*, 107, pp. 333-345.
- Berthoud, R. (2000), 'Ethnic employment penalties in Britain' *Journal of Ethnic and Migration Studies*, Vol 26. No. 3. pp. 389-416.
- Blackaby, D.H., Leslie, D.G., Murphy, P.D. and O'Leary, P.C. (2002), 'White/ethnic minority earnings and employment differentials in Britain: Evidence from the LFS', *Oxford Economic Papers*, 54, pp. 270-297.
- Clark, K. and Lindley, J. (2003), 'Immigrant arrival effect and labour market assimilation: Evidence from the Labour Force Survey' *MIMEO* University of Manchester.
- Dale, A., Shaheen, N., Kalra, V. and Fieldhouse, E. (2002) 'Routes into education and employment for young Pakistani and Bangladeshi women in the UK' *Ethnic and Racial Studies*. Vol. 25, No. 6, November 2002. pp. 942-968.
- Dex, S. and Joshi, H. (1996) 'A widening gulf among Britain's mothers' in *Oxford Review of Economic Policy*, Vol.12 No.1, pp.65-75.
- Dex, S., Joshi, H., Macran, S. and McCulloch, A. (1998) 'Women's employment transitions around childbearing' in *Oxford Bulletin of Economics and Statistics*, Vol.60, No.1 pp.97-115.
- Drew, D., Gray, J. and Sporton, D. (1997). in Karn, V. (ed), *Ethnic differences in the educational participation of 16-19 year olds, Employment, Education and Housing amongst Ethnic Minorities in Britain*, London: HMSO
- Elliott, J., Dale, A. and Egerton, M. (2001) 'The influence of qualifications on women's work histories, employment status and earnings at age 33' *European Sociological Review*, 17, 2, pp. 145-168
- Gomulka, J. and Stern, N. (1990), "The employment of married women in the United Kingdom 1970-83," *Economica*, 57, pp. 171-99.
- Holdsworth, C. and Dale, A. (1997) 'Ethnic differences in women's employment.' *Work, Employment and Society*. Vol. 11, No. 3. September 1997. pp. 435-457.
- Holdsworth, C. and Dale, A. (1999) 'Ethnic homogeneity and family formation: Evidence from the 1991 Household SAR.' *CCSR Occasional Paper No 7*.
- Joshi, H. and Davies, H. (2002) 'Women's incomes over a synthetic lifetime' in E. Ruspini and A. Dale (eds) *The Gender Dimension of Social Change*, Bristol: The Policy Press

Leslie, D. and Lindley, J (2001). 'The impact of language ability on the employment and earnings of Britain's ethnic communities'. *Economica*, November 2001, pp.587-606.

Leslie, D., Lindley, J. and Thomas. R.L. (2001) 'Decline and fall: Unemployment among Britain's non-white ethnic communities 1963-1998'. *Journal of Royal Statistical Society, Series A (Statistics in Society)* Vol 164 Part 2, 2001. pp.371-387.

Lindley, J., Dale, A. and Dex, S. (2003) 'Ethnic differences in women's demographic and family characteristics and employment profile 1992-2002' CCSR Working Paper, University of Manchester.

Macran, S., Joshi, H. and Dex, S. (1996) 'Employment after childbearing: a survival analysis' *Work, Employment and Society*, 10, 2, pp.273-296

Modood, T. (1997), *Ethnic minorities in Britain: Diversity and disadvantage*, Policy Institute, London.

Rake, K (ed) (2000) *Women's incomes over the lifetime*. A Report to the Women's Unit, Cabinet Office. London: The Stationery Office.

Notes

¹ The consequences of this recoding are as follows. First the composition of 'Black-Other' is not entirely comparable between the two time points. Second, one is unable to make any comparison over time between the 'other' and 'other mixed race groups'. Finally, there are likely to be differences in the definitions of black, Asian or Chinese over the two time periods, because of the wording and ordering of the questions.

² The introduction of the new ethnicity questions in Spring 2001 resulted in missing ethnicity data for 7188 respondents. It was therefore necessary to roll forward their ethnicity from Winter 2000. Lindley et. al (2003) provide a detailed discussion.

³ These include respondents who have no missing data.

⁴ These are a consequence of higher economic activity levels amongst white and Pakistani/Bangladeshi women with degrees. (See Table A2 in the appendix).

⁵ See Lindley et al (2003).

⁶ This could be associated with cultural differences between cohorts, since ethnicity is held constant. According to Bell (1997) the 1960's and 1970's saw increases in immigrants from India, East Africa, the Caribbean and Pakistan. However from the 1980's onwards there were large declines in the flows of immigrants coming from India and East Africa and rises in the numbers coming from Ireland and Europe. See Clark and Lindley (2004) for a detailed discussion of this issue.

⁷ Estimates are for all women are provided in Table A3 in the Appendix.

⁸ Test statistics for white, Black Caribbean/other, Black African, Indian and Pakistani/Bangladeshi with 18 degrees of freedom are 604.08, 24.75, 28.36, 26.07 and 36.63 respectively.