Changing Patterns of Ethnic Minority Self-Employment in the UK: Evidence from Census Microdata

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Abstract

The over-representation of certain non-white immigrant groups in self-employment is, in common with other developed countries, a notable feature of the UK labour market. During the 1980s the non-white self-employment rate grew by 95% compared to growth of 52% for whites. The 1990s, however, have seen overall self-employment rates plateau. Despite this, some minority groups have seen continued growth whilst others, particularly Chinese and Indian males and Pakistani, Bangladeshi and Chinese females, have seen their self-employment propensities decline. In this paper we use evidence from microdata samples from the 1991 and 2001 UK Censuses to investigate these trends in ethnic entrepreneurship. Using decomposition methods we find that, for males from the Asian groups, changes in observable characteristics associated with an increasing proportion of second generation individuals explains much of the decline in self-employment. This is also true of Chinese females. The dynamics of Black male and Pakistani/Bangladeshi female entrepreneurship are less easy to explain.

Keywords: self-employment, entrepreneurship, ethnicity, immigrants.

JEL Codes: J23, J7.

1. Introduction

There is considerable ethnic diversity in self-employment rates in the UK. While some immigrant ethnic groups are much more likely than the majority white community to be found in self-employment, other groups belie the stereotype of the minority businessperson. Furthermore ethnic entrepreneurship matters for welfare: self-employment may be a positive choice to exploit particular talents or motivations and may be rewarding both financially and in terms of life or job satisfaction. On the other hand, running a marginal business may be the only alternative to a labour market in which discrimination limits the opportunities available to certain groups. In this paper we use Census microdata to examine how patterns of ethnic entrepreneurship have changed in the UK between 1991 and 2001.

Compared to the 1980s, when there was a rapid rise in self-employment in the UK, the self-employment rate remained relatively static in the following decade. Some aggregate statistics are presented in Figure 1. Growth in the 1980s has been attributed to a number of factors including changes in attitudes to entrepreneurship and business, the prevailing policy environment which encouraged business start-ups and the push from (long-term) unemployment (Weir, 2003). By contrast the 1990s saw a generally much more favourable paid labour market than the previous decade which may have accounted for the slow-down in the growth rate of entrepreneurship.

By the time of the 2001 Census it remained the case, however, that there was considerable ethnic diversity in self-employment. In this paper we describe patterns and trends in ethnic self-employment between the two Census years of 1991 and 2001, to examine both the dynamics and diversity of how ethnic entrepreneurship

changed over this period. It turns out to be of particular importance to consider how the growth of the numbers and characteristics of second-generation immigrants (a term we apply to the UK born offspring of immigrant, non-white, ethnic minority individuals) have impacted on the self-employment rates of different groups.

The remainder of the paper proceeds as follows. In the next section we describe that data sets used in the paper, while section 3 describes the nature of ethnic self-employment. Section 4 presents a decomposition analysis of changes in self-employment rates through time while section 5 concludes.

2. Data and Descriptive Statistics

We employ data from the 1991 and 2001 population censuses. These are known as the Individual Samples of Anonymised Records (SARs) and consist of a 2% (in 1991) and 3% (in 2001) sample of all Census returns. The detailed empirical investigation of ethnic minority self-employment rates over this period of time can only be undertaken using Census data as no other data set contains sufficient observations from each separate ethnic minority group to enable detailed disaggregation by ethnicity. Such disaggregation is necessary due to the diverse behaviour of different ethnic groups.

Clark and Drinkwater (2005) provide more detail on the issues involved in matching the data between the two Census data sets and deriving the relevant variables. In this paper we consider the following 8 ethnic groups which can be consistently identified in both data sets: White, Black African, Black Caribbean, Indian, Pakistani, Bangladeshi, Chinese, Other (see Simpson and Akinwale, 2004 and ONS, 2006 for

justification for using these groups). In some analyses we combine the two Black groups and the Pakistani and Bangladeshi groups. Self-employment is identified by Census respondents' answers to questions about their economic activity. It is thus self-assessed and is not checked by the Census authorities. However, since the self-employed and paid-employed are taxed in distinct ways in the UK, it seems likely that the vast majority of individuals will be able to correctly assign themselves to the appropriate sector.

In Figure 2 we put into context ethnic minority self-employment in the UK by graphing the distribution of activity of the working age population excluding students. This is done by ethnicity, gender and year for the eight ethnic groups described above. For males in Figure 2(a), overall around 13-14% of the working age population is engaged in self-employment but there is considerable ethnic variation around this. Chinese and Indian males have relatively high proportions in self-employment, followed by Pakistanis, Whites and Bangladeshis. The two Black groups have the lowest self-employed proportions. The figure also demonstrates the substantially higher unemployment rates faced by non-white ethnic groups in the UK (this is analysed in more detail by Blackaby et al., 2002 and Clark and Drinkwater, 2005).

Over time, for males, there has not been a lot of change in the proportions who are self-employed. Slight increase for Whites, Pakistanis, Bangladeshis, and the Black groups contrast with declining proportions for Indians and Chinese. The fall for the latter group is particularly noticeable. The overall trend of relatively flat self-employment rates across the 1990s is in line with other research (Weir, 2003). More noticeable about the comparison through time for males is the quantitatively greater

change in the other proportions: paid-employment has grown for Black Africans, Indians, Pakistanis, Bangladeshis and the Chinese however economic inactivity has also grown for all these groups. Indeed every one of the groups exhibits an increase in the proportion economically inactive. This has been a general trend for males in the UK linked in part to higher numbers claiming Invalidity or Incapacity Benefit (Gregg and Wadsworth, 1999; Disney, 1999).

Turning to Figure 2(b), it is clear that self-employment is much less important for females, with negligible proportions for some groups. The only exception is for the Chinese where 12-13% of the working age population were self-employed. Female self-employment is generally thought to have been on the increase (Parker, 2004) but there is little evidence of that here. Paid-employment, on the other hand, has increased for females from all of the ethnic groups, with a corresponding shrinkage in the proportions of females counted as inactive.

Table 1 presents, *inter alia*, an alternative measure of the extent of self-employment namely self-employment rates calculated as the proportion of all those in paid and self-employment. This is the standard measure used in the literature and, expressing the numbers self-employed over a different denominator emphasises a number of features of the data. The decline in self-employment rates amongst Chinese and Indian males is apparent, however it is clear that rising female paid-employment among Pakistani and Bangladeshi females has accompanied a substantial decrease in the self-employment rate for these groups. It is likely that for Indian and Chinese males, as well as South Asian women, younger cohorts entering the labour market are choosing paid-employment rather than self-employment. Further exploration of this

point is warranted by these initial tabulations. Table 1 also shows that, for males, Black Caribbean self-employment has risen as a proportion of total employment between 1991 and 2001 while Chinese females have seen a decline in their rate, albeit by less in percentage point terms than their male counterparts.

Table 1 also presents estimates of the proportion of the self-employed with employees for each of the ethnic groups. This could be viewed as a measure of the prosperity of the individual's business however care should be taken with this interpretation as no distinction is made between, on the one hand, a shopkeeper employing his/her spouse or children, and on the other, a factory owner with hundreds of employees. For males, Black Africans and Black Caribbeans, as well as being the least likely groups to be self-employed, are also the least likely to have employees if they do happen to be self-employed. The White self-employed are also relatively unlikely to have employees. Bangladeshis, Chinese and Indians are most likely to employ others. Females in 1991 were much less likely than males to employ others although the gap had narrowed by 2001. Chinese and Pakistani women were most likely to have employees in 1991 and these two groups together with Indians and Bangladeshis were most likely to have employees in 2001. Over time the propensity to have employees has increased for most groups, whether males or females are considered.

Table 2 provides self-employment rates, calculated in the same way as Table 1, for the 8 ethnic groups subdivided into native born and immigrant workers. Most immigrant members of the main ethnic groups in the UK arrived prior to the 1980s hence many of the people who now identify themselves as members of these groups are, in fact, second-generation. It seems likely that their experience of socialisation

and acquisition of formal and informal human capital will be quite different to that of their parents, hence it is useful to examine them separately. It is clear that those born abroad (here described as immigrants) are more likely to be self-employed than the native-born, irrespective of ethnic group. This may reflect unobservable motivational factors which drive both the desire to migrate and the desire to start a business. On the other hand some of this may reflect differences in age as, certainly for the non-white ethnic groups, the UK born will be younger on average. Nevertheless some of the native-immigrant differences in Table 2 are substantial. For males from the Indian, Pakistani and Chinese groups, these are 10 percentage points or more. Similarly large differences are apparent for females from some of the groups.

Table 3 continues the theme of describing the nature of ethnic self-employment by tabulating self-reported hours of work for the paid and self-employed by ethnicity and year. As is well-known, (see Parker, 2004, p. 197) the self-employed uniformly report working longer hours than the paid-employed. At least for males, the size of the differential is broadly correlated with a group's propensity for self-employment. The number of hours worked by entrepreneurs is likely to reflect the industry of their (self-) employment – those in the retail or the food service sectors work longer hours than those who are, for example, self-employed tradespersons. Blanchflower (2004) notes that, although entrepreneurs work longer hours in a large number of countries around the world, it is also the case that they report higher levels of job satisfaction than the paid-employed.

3. A Probit Model of Self-Employment

To further explore ethnic differences in self-employment rates, we estimate probit regression models based on a sample of the paid and self-employed. The dependent variable takes the value 1 if the individual is self-employed and 0 otherwise and the models are estimated separately for males and females for each of the two Census years. Ethnic differences are accounted for by intercept shift dummy variables. The other explanatory variables are chosen to exploit the information on individual characteristics contained in the Census and to include variables identified as important in previous research.

Table 4 reports the results and presents the marginal effects of the explanatory variable on the probability of being self-employed calculated at the sample mean. Standard errors, computed using the delta method, are also reported. The excluded ethnic group is White hence the marginal effects associated with the ethnic group dummy variables can be interpreted as the average difference between the relevant group and Whites controlling for the other explanatory variables.

The results are broadly confirmatory of other work in the literature. For males, self-employment propensity is strongly increasing in age. This is a common finding in studies of self-employment and reflects the greater accumulation of capital, both physical and human, of older workers. It is important to note, however, that the type of human capital which is productive in entrepreneurship may be quite different to that which is rewarded in paid-employment. There is mixed evidence in the literature on the impact of educational qualifications on self-employment probabilities and, in our Census microdata, we find, for males, a significant negative coefficient on higher educational qualifications with a large marginal effect in both years. Previous

research, using different data sets, has found the same effect for the UK (Clark and Drinkwater (1998). This might be considered as supportive of the view that entrepreneurs are likely to be in possession of a multi-faceted skill set acquired over years of labour market experience – the Jack of all trades view (Lazear, 2002) – rather than "academically" qualified. It seems likely that those with formal qualifications will reap the returns to education available in the paid-employment sector. Note however that Blanchflower (2004) reports a negative effect of education for European countries but a positive effect for the US

Both single and married men had lower self-employment propensities than the widowed, divorced or separated (the excluded category for this dummy variable set) although we may want to be wary about inferring causality here. Married men have higher rates than those who were single and the presence of dependent children was positively associated with self-employment for males.

In the previous section we noted the negative association between being born in the UK and the self-employment probability for each of the ethnic groups. In the regression models we are able to control for other factors which are likely to differ between the native born and immigrants, particularly age and education. The results suggest that, controlling for these factors, for males in both 1991 and 2001, immigrants had a self-employment probability which was around 1 percentage point higher than the native born. This could reflect the `rare talent' for self-employment possessed by immigrants or the difficulties of obtaining paid-employment jobs for such individuals.

Housing tenure is included in the model to proxy access to capital and the results suggest that, relative to the excluded category of individuals who own their houses outright, those with every other type of housing tenure had lower self-employment propensities. Social renters, i.e. those who rent from the local authority or housing association had a particularly low propensity to be self-employed. The models also contained regional dummies and all regions had higher self-employment rates than the excluded region of Scotland.

Controlling for the characteristics mentioned above does not change our broad conclusions about the relative likelihood of self-employment between different ethnic groups. At the mean of the sample the Asian groups are predicted to have higher self-employment rates than Whites (significantly in all cases except the Bangladeshis in 1991). The Black groups are predicted to have lower rates than Whites. The ranking of the groups in terms of their self-employment rate differentials with Whites is virtually identical for both years to that in the raw data reported in Table 1 and, indeed, the magnitude of the differentials has hardly changed when controlling for these variables. This is *prima facie* evidence that the differences *between groups* are not the result of different observable characteristics such as endowments of human capital.

There are many similar effects for females. Age is highly significant although the slope is less steep than for males. Interestingly the effect of higher qualifications is positive for females in 2001 and, while the marginal effect is small, this suggests that female entrepreneurship is driven by different factors than male. Examination of the industrial structure of female entrepreneurship reveals that many female self-

employed individuals work in the health care sector where educational qualifications may be important for entry. Being married increases the likelihood of self-employment for women relative to single or separated women as does having dependent children in the household. In both 1991 and 2001 UK born women were less likely to be self-employed. Like males, long-term illness was associated with higher self-employment rates and housing tenure was also significant.

4. Decomposing the Dynamics of Ethnic Entrepreneurship

In this section we examine the changing probabilities of self-employment for different ethnic groups using a modification of the decomposition procedure outlined in Gomulka and Stern (1990). This is a method of applying the Oaxaca (1973) decomposition to the case of a discrete dependent variable model.[1]

Suppose we have estimated probit models of the self-employment choice for each group in each year. For each ethnic group, we then use the coefficients from the probit models in the following decomposition[2]:

$$\hat{P}^{01} - \hat{P}^{91} = \{\bar{P}(x^{01}\hat{\beta}^{*}) - \bar{P}(x^{91}\hat{\beta}^{*})\} + \{[\bar{P}(x^{01}\hat{\beta}^{01}) - \bar{P}(x^{01}\hat{\beta}^{*})] - [\bar{P}(x^{91}\hat{\beta}^{91}) - \bar{P}(x^{91}\hat{\beta}^{*})]\}. \quad (2)$$

Here $\hat{P}^{01}$ is the average of the predicted employment probabilities for the relevante ethnic group in 2001 and $\hat{P}^{91}$ is the same for1991. $\hat{\beta}$ is the vector of estimated coefficients from the probit model and $\hat{\beta}^{*}$ is a vector of estimated coefficients from a probit model estimated on a pooled sample (1991 and 2001 samples pooled for the relevant ethnic group), $\bar{P}(x^{91}\hat{\beta}^{91})$ is the average of the fitted probabilities from the

[1] Fairlie (2006) presents a similar estimator.
[2] See Blackaby *et al*. (2002) for a discussion of this formula.

probit model estimated using the observations in 1991 and the estimated coefficients in 2001 and so on. The first term in the braces is the component of the probability difference over time due to observed characteristics, while the second term in braces is the effect of coefficients which corresponds to unobservable influences on the employment probability. The decomposition allows us to estimate what proportion of the change over time for any ethnic minority group is due to differences in observed characteristics. The remaining 'unexplained' component may reflect changes in differential treatment by the labour market such as employer discrimination, or cultural/ethnic differences in motivation or preferences.

Performing the decomposition involves estimating separate probit regression models for each group for both 1991 and 2001. The analysis is performed separately for males and females. The marginal effects of these probit models are contained in the Appendix and are not discussed in detail here.

The decomposition results are contained in Table 5. The first row of the table reports for each ethnic group the change in the self-employment rate between 1991 and 2001. The next two rows decompose this into the amount due to differences in observable characteristics between the two years and the amount due to changes in the estimated probit coefficients. For males, as already shown in Table 1, three of the groups saw a decline in their self-employment rate over this period: the Indian and Chinese by 2.3 and 7.5 percentage points respectively[3] while the Pakistani/Bangladeshi combined group saw a much smaller decline. For the Indians, the vast majority of this reduction in the self-employment rate is attributable to changes in observable characteristics

[3] In fact there are some slight discrepancies in these changes over time compared to Table 1. This is due to the regression sample being slightly different to that used to compute the descriptive statistics.

while for the Chinese the change is more evenly split between characteristics and coefficients with characteristics responsible for over half the change. The Pakistani/Bangladeshi group is unusual here in that decomposition suggests that the small reduction in self-employment rates is due to two offsetting sets of factors. Changes in the characteristics of the Pakistani and Bangladeshi group tended to reduce self-employment but this was almost entirely counteracted by a positive coefficients effect. Alternatively put, had only the characteristics of the Pakistani and Bangladeshi workers changed, their self-employment rate would have been almost 3 percentage points lower in 2001 compared to 1991.

Alone of the ethnic groups considered here, the Black group (which combines Black Africans and Black Caribbeans) saw a substantial increase in the self-employment probability. The majority of this was attributable to changes in coefficients, that is, was not explainable by changes in observable characteristics.

The remainder of Table 5(a) breaks down the characteristics effect into its component parts. These are calculated using the method in Even and MacPherson (1993). Entries in the table here reflect the proportion of the characteristics effect which is due to the relevant explanatory variable. Thus, for example, the 26% of the characteristics effect due to age for the Pakistani/Bangladeshi group implies that 26% of the reduction in the self-employment probability due to characteristics can be attributed to that variable. A negative entry in this part of the table would suggest that the explanatory variable in question was working in the opposite direction to the overall characteristics effect. Considering first the three Asian groups who experienced declining self-employment rates, it is clear that age, education, marital status and

country of birth were important influences on the characteristics effect and, hence, on the change in self-employment propensity over this period. As noted earlier, an important change in the characteristics of immigrant ethnic minority groups in the UK is that first-generation (i.e. foreign born) immigrants are being replaced in the workforce by the UK born children of immigrants. In part this reflects changes in immigration policy which have restricted immigration from British Commonwealth countries and in part the propensity of certain ethnic groups to have relatively large numbers of children. Thus, in our sample, the proportion of Pakistani and Bangladeshis males who were aged under 30 in 1991 was 35%. By 2001 this had risen to 40%. For Indians the corresponding percentages were 27% in 1991 and 29% in 2001. Although these are not huge increases in percentage point terms, the strong positive influence of age on self-employment probabilities makes this shift in the age distribution of ethnic minorities a contributory factor to the reductions in entrepreneurship for these groups.

In a similar vein, increasing educational attainment has been a feature of the experience of young members of these ethnic groups in the UK: over the period in question the proportion of Indians in our sample with a higher qualification grew from 24% to 41%. The equivalent figures for the Pakistani/Bangladeshi (Chinese) groups are 14% and 27% (33% and 43%). The importance for self-employment rates is clear from the regression models: higher qualifications are associated with paid-employment rather than self-employment and the increasing educational attainment of these groups has contributed to a reduction in self-employment.

In 2001 members of the Indian and Chinese groups were less likely to be married and more likely to be single. Given the association between marital status and self-employment this contributed to the reduction in self-employment. Similarly, the proportions of the three Asian groups who were born in the UK rose from 14% to 31% for Indians, 13% to 26% for Pakistanis and Bangladeshis and 9% to 19% for the Chinese. The regression models show that immigrants are more likely to be self-employed than the UK born and again this contributed to reductions in self-employment propensity.

For these three groups the results suggest that, relative to their parents, second generation immigrants find self-employment a less attractive form of activity than the paid labour market. To some extent this may reflect the age and stage in the life-cycle of the second generation: as they get older and settle down entrepreneurship may again grow, however it is interesting to note that, for the Indians and Chinese, the decompositions pick out qualifications and immigrant status, more than age *per se* as the key influences driving the characteristics effect. For the Pakistani/Bangladeshi group, age itself is an important factor and it is interesting that for this group the positive coefficients effect suggests that there exist positive influences on self-employment which are not being captured by observable characteristics. Any discussion of what these factors might be is necessarily speculative, nonetheless there is evidence that this group is likely to face discrimination in the paid labour market and also that these predominantly Muslim individuals may prefer to be isolated from the majority white community or from other groups, a taste which it may be easier to indulge by working for themselves rather than by doing paid work.

Like the Pakistanis and Bangladeshis, the Black group exhibits a positive characteristics effect however, for this group, the positive effect is the major component of an increasing self-employment rate between the two years. Again this may reflect paid employment discrimination or more positive pull factors leading Black workers to set up in employment for themselves.

Table 5(b) reports the results of a similar exercise for females. It should be noted here that the smaller samples of economically active females and relatively low female self-employment rates suggest that these results should be treated with more caution than those for males. Two groups stand out: the Pakistani/Bangladeshi group experienced a large decline in their self-employment rate over the period, most of which was not attributable to observable characteristics. On the other hand characteristics changes were responsible for the declining Chinese rates. In fact, for Chinese women, qualifications, marital status and country of birth acted in much the same way as for their male counterparts.

5. Conclusions

Entrepreneurship is important for many of Britain's ethnic groups and in this paper we have attempted to provide a description of and some explanations for changes in self-employment rates for separate ethnic groups through time. For some groups, it seems likely that self-employment rates will decline in the future as the proportion of first generation immigrants in the population declines. This is also consistent with increasing educational attainment among some groups. Whether, on balance, this represents economic progress for the groups concerned is an important point. Blanchflower (2004) emphasises that self-employment is hard work but that the self-

employed tend to be more satisfied with their jobs than the paid-employed. But if paid-labour market discrimination is partly responsible for pushing people into self-employment, as previous research has suggested, is this reflected in higher job or life satisfaction?

For other groups it is less easy to explain the observed differences in self-employment rates and further research is required here. In this paper we have not considered the roles of time spent in the UK labour market, religion or local labour market characteristics as determinants of changes and differences in ethnic self-employment rates. Future work will seek to remedy this.

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Figure 1 – UK Self-Employment Rate

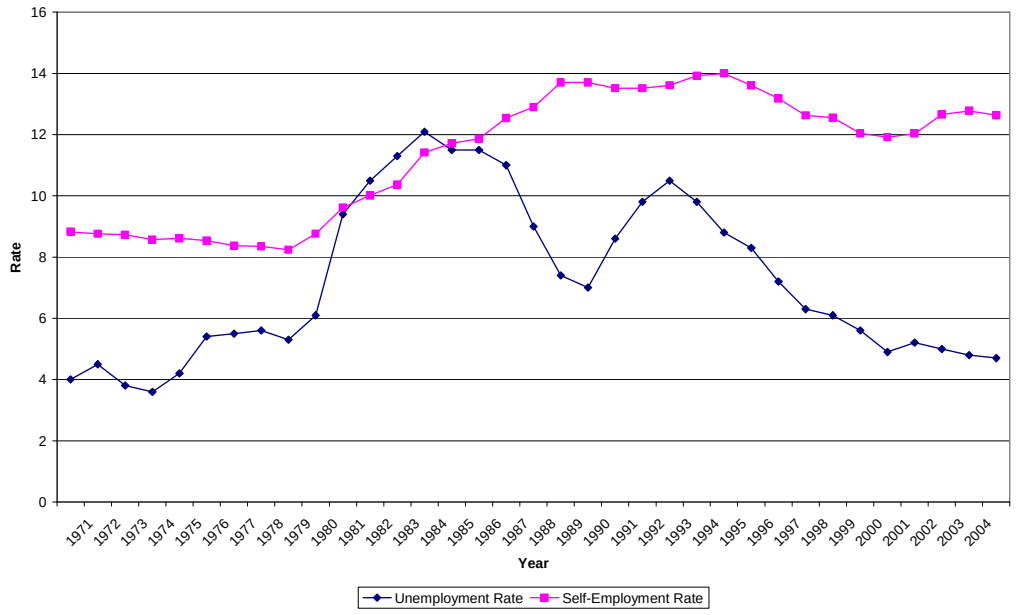

Figure 2(a) – Self Employment in Context – Males 1991 and 2001

Figure 2(b) – Self Employment in Context – Females 1991 and 2001

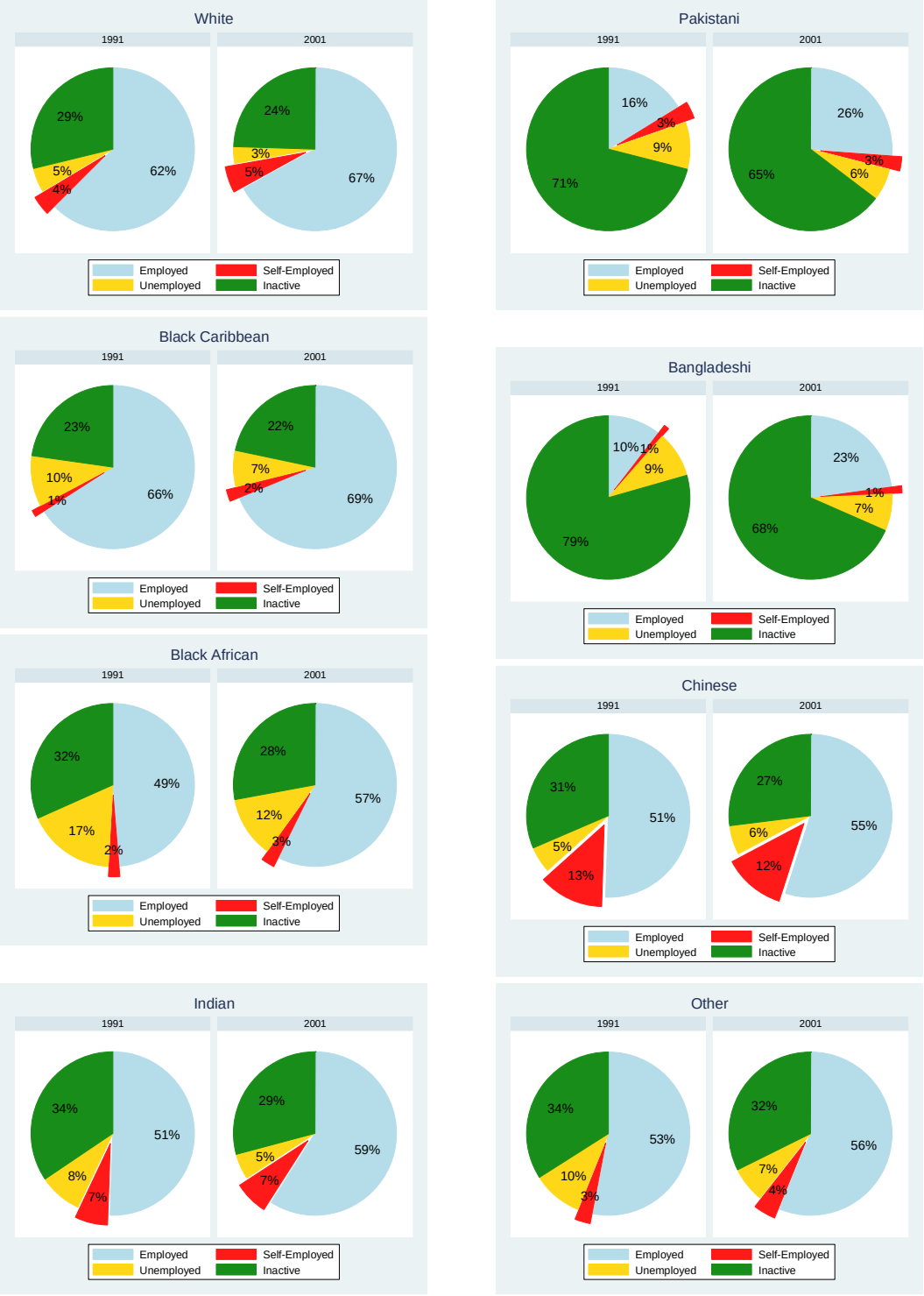

Table 1 - Self Employment Rates by Ethnic Group

(a) Males

	1991			2001		
	Self-Employment Rate (%)	% of Self-Employed with Employees	N	Self-Employment Rate (%)	% of Self-Employed with Employees	N
White	16.6	31.1	247,074	17.0	35.6	398,278
Black Car	9.1	17.9	1,975	13.0	32.3	3,470
Black Afr	12.2	28.4	608	13.5	40.7	2,869
Indian	23.7	44.9	3,777	21.4	52.0	8,002
Pakistani	26.6	38.3	1,364	26.5	46.4	4,073
Bangladeshi	18.8	75.3	431	19.1	62.6	1,433
Chinese	34.1	58.8	663	27.8	68.1	1,667
Other	13.4	40.0	2,321	16.2	47.3	6,645
All Non-White	19.1	42.8	11,139	19.3	49.4	28,159

(b) Females

	1991			2001		
	Self-Employment Rate (%)	% of Self-Employed with Employees	N	Self-Employment Rate (%)	% of Self-Employed with Employees	N
White	6.0	34.8	188,439	7.3	34.5	331,540
Black Car	2.0	16.7	2,136	3.3	40.4	4,150
Black Afr	4.4	16.7	545	4.5	38.5	2,600
Indian	11.5	37.3	2,645	10.3	51.4	6,457
Pakistani	17.6	50.0	420	9.9	56.3	1,753
Bangladeshi	9.1	28.6	77	5.9	58.1	527
Chinese	20.3	54.9	558	18.3	62.1	1,533
Other	5.5	28.0	1,811	7.3	36.8	5,848
All Non-White	8.1	38.2	8,192	8.0	48.6	22,868

Table 2 Self-Employment Rates by Country of Birth (%)

	Males				Females			
	1991		2001		1991		2001	
	UK Born	*Immigrant*	*UK Born*	*Immigrant*	*UK Born*	*Immigrant*	*UK Born*	*Immigrant*
White	16.5	18.7	16.9	18.8	5.8	8.4	7.1	10.3
Black Caribbean	7.1	10.4	10.6	16.4	1.6	2.3	3.0	3.7
Black African	9.4	13.0	11.7	13.9	5.1	4.2	3.4	4.8
Indian	15.2	25.1	13.1	25.0	6.8	12.3	4.8	13.2
Pakistani	15.3	28.5	18.1	30.0	9.6	21.5	5.3	15.4
Bangladeshi	15.2	19.1	11.2	20.5	5.3	10.3	5.3	6.2
Chinese	12.3	36.1	13.3	31.2	9.5	21.1	9.2	20.5
Other	12.7	13.6	12.8	18.4	3.5	6.7	6.0	8.3

Table 3 - Hours of Work: Paid and Self-Employed by Gender and Ethnicity

	Males				**Females**			
	1991		2001		1991		2001	
	Paid	*Self*	*Paid*	*Self*	*Paid*	*Self*	*Paid*	*Self*
White	40.5	46.9	41.8	45.8	30.3	37.6	31.3	33.7
Black Caribbean	39.0	43.3	39.4	42.9	33.8	37.7	33.6	35.0
Black African	38.7	43.0	37.7	42.8	34.0	33.4	33.1	33.9
Indian	40.7	51.2	39.9	50.0	34.5	47.2	33.2	42.9
Pakistani	40.3	48.1	37.5	43.8	33.4	43.2	30.0	34.3
Bangladeshi	38.9	48.2	32.4	41.1	33.2	38.6	29.3	30.7
Chinese	41.4	49.6	38.9	48.4	34.8	46.8	33.8	43.1
Other	40.2	48.2	39.4	44.1	33.6	36.9	32.9	34.4

Table 4 – Pooled Regression Results
Probit Marginal Effects on the Probability of Self-Employment

	male91	male01	female91	female01
Age 20-24	0.123***	0.116***	0.056***	0.060***
	(0.008)	(0.007)	(0.007)	(0.007)
Age 25-29	0.202***	0.218***	0.105***	0.114***
	(0.009)	(0.008)	(0.009)	(0.008)
Age 30-44	0.221***	0.270***	0.110***	0.139***
	(0.007)	(0.006)	(0.007)	(0.005)
Age 45-59	0.255***	0.354***	0.131***	0.180***
	(0.008)	(0.007)	(0.008)	(0.007)
Age 60-65	0.279***	0.471***		
	(0.011)	(0.009)		
High Quals	-0.063***	-0.038***	-0.005***	0.005***
	(0.002)	(0.001)	(0.001)	(0.001)
Single	-0.037***	-0.025***	0.002	-0.004**
	(0.003)	(0.002)	(0.002)	(0.002)
Married	-0.027***	-0.013***	0.007***	0.009***
	(0.003)	(0.002)	(0.002)	(0.001)
Dep. Children	0.031***	0.024***	0.017***	0.013***
	(0.002)	(0.001)	(0.001)	(0.001)
UK Born	-0.007*	-0.012***	-0.014***	-0.015***
	(0.003)	(0.002)	(0.002)	(0.002)
Long term ill	0.001	0.014***	0.010**	0.016***
	(0.004)	(0.002)	(0.003)	(0.002)
Owns, mortgage	-0.055***	-0.048***	-0.015***	-0.025***
	(0.002)	(0.002)	(0.002)	(0.001)
Social Renter	-0.108***	-0.079***	-0.046***	-0.047***
	(0.002)	(0.002)	(0.001)	(0.001)
Other Renter	-0.041***	-0.029***	0.005*	-0.009***
	(0.003)	(0.002)	(0.002)	(0.001)
Black Car.	-0.080***	-0.049***	-0.037***	-0.038***
	(0.006)	(0.005)	(0.003)	(0.002)
Black Afr.	-0.035*	-0.033***	-0.016*	-0.032***
	(0.014)	(0.006)	(0.008)	(0.003)
Indian	0.046***	0.031***	0.027***	0.011***
	(0.007)	(0.005)	(0.005)	(0.003)
Pakistani	0.077***	0.108***	0.109***	0.035***
	(0.012)	(0.008)	(0.019)	(0.007)
Bangladeshi	0.018	0.043***	0.051	0.001
	(0.019)	(0.011)	(0.038)	(0.012)
Chinese	0.168***	0.099***	0.096***	0.071***
	(0.019)	(0.011)	(0.014)	(0.008)
Other	-0.014***	-0.027***	0.000	-0.007**
	(0.004)	(0.003)	(0.003)	(0.002)

North	0.014*** (0.004)	0.007* (0.003)	0.004 (0.003)	0.006** (0.002)
Yorksshire & Humberside	0.017*** (0.004)	0.005 (0.003)	0.007* (0.003)	0.007*** (0.002)
E. Midlands.	0.051*** (0.005)	0.033*** (0.003)	0.012** (0.004)	0.014*** (0.002)
E. Anglia	0.072*** (0.006)	0.077*** (0.004)	0.033*** (0.004)	0.069*** (0.004)
Inner London	0.043*** (0.004)	0.049*** (0.003)	-0.002 (0.002)	0.010*** (0.002)
Outer London	0.048*** (0.003)	0.033*** (0.003)	0.010*** (0.002)	0.018*** (0.002)
Rest of South East	0.081*** (0.004)	0.045*** (0.003)	0.023*** (0.003)	0.029*** (0.002)
S. West	0.011** (0.004)	0.006* (0.003)	0.001 (0.002)	0.004 (0.002)
W. Midlands	0.012** (0.004)	0.005 (0.003)	0.002 (0.002)	0.002 (0.002)
N. West	0.045*** (0.005)	0.027*** (0.004)	0.012*** (0.003)	0.009*** (0.003)
Wales	-0.363*** (0.008)	-0.429*** (0.006)	-0.239*** (0.006)	-0.276*** (0.004)
N	254,084	423,058	194,203	352,433

Table 5(a) Timewise decomposition of the change in the self-employment probability by ethnic group: Males

	White	Black	Indian	Pakistani/ Bangladeshi	Chinese	Other
Differential $(P_{01} - P_{91}) \times 100$	0.30	3.34	-2.31	-0.17	-7.48	2.65
Coefficients	-0.36	2.73	-0.97	2.77	-3.45	3.10
Characteristics	0.66	0.69	-1.35	-2.94	-4.03	-0.45
% of characteristics due to:						
Age	61	122	13	26	13	5
Qualifications	-30	3	32	31	49	23
Marital Status	-10	-1	38	6	34	71
Children	-9	7	8	7	8	21
UK Born	1	-6	19	3	8	19
Illness	6	-1	-6	-1	1	-33
Housing Tenure	71	-43	10	25	-7	-28
Region	11	19	-13	3	-7	21

Note: Black refers to both Black Caribbean and Black African groups combined. The Pakistani and Bangladeshi groups have also been merged. Groups were merged to increase sample sizes as the decomposition procedure can be sensitive to missing cells in categorical variables.

Table 5(b) Timewise decomposition of the change in the self-employment probability by ethnic group: Females

	White	Black	Indian	Pakistani/ Bangladeshi	Chinese	Other
Differential ($P_{01} - P_{91}$) x 100	1.31	1.28	-1.16	-7.33	-2.43	1.94
Coefficients	0.74	1.04	-0.93	-5.17	0.50	1.75
Characteristics	0.57	0.23	-0.23	-2.16	-2.93	0.19
% of characteristics due to:						
Age	45	71	-28	12	12	70
Qualifications	4	36	-78	11	55	92
Marital Status	-13	-4	105	8	33	-60
Children	7	1	44	1	9	-23
UK Born	2	-6	123	31	5	-16
Illness	7	7	-33	0	-4	38
Housing Tenure	43	-11	-42	22	-13	64
Region	5	7	9	16	1	-65

Note: See the note to Table 5(a).

Appendix

(Note: All regressions also included regional dummies.)

Separate Regressions for 1991: Males

	White	Black	Indian	Pak./ Bang.	Chinese	Other
Age 20-24	0.121*** (0.008)		0.101 (0.075)	0.105 (0.080)		0.059 (0.056)
Age 25-29	0.201*** (0.009)	0.084** (0.037)	0.134* (0.079)	0.204** (0.086)	0.073 (0.109)	0.015 (0.046)
Age 30-44	0.218*** (0.007)	0.141*** (0.038)	0.204*** (0.068)	0.307*** (0.070)	0.197** (0.093)	0.086* (0.044)
Age 45-59	0.252*** (0.008)	0.109*** (0.042)	0.224*** (0.083)	0.290*** (0.087)	0.279** (0.110)	0.133** (0.062)
Age 60-65	0.277*** (0.011)	0.090 (0.064)	0.157 (0.102)	0.210* (0.126)	0.162 (0.164)	
High Quals	-0.063*** (0.002)	-0.005 (0.015)	-0.020 (0.016)	-0.064** (0.027)	-0.252*** (0.038)	-0.050*** (0.014)
Single	-0.038*** (0.003)	-0.014 (0.023)	0.068 (0.066)	-0.032 (0.091)	-0.198* (0.109)	-0.085*** (0.031)
Married	-0.027*** (0.003)	-0.016 (0.022)	0.092** (0.047)	0.000 (0.091)	-0.033 (0.123)	-0.037 (0.035)
Dep. Children	0.030*** (0.002)	0.045*** (0.014)	0.054*** (0.016)	0.038 (0.026)	0.018 (0.046)	0.015 (0.016)
UK Born	-0.011*** (0.004)	0.006 (0.019)	-0.006 (0.027)	-0.005 (0.037)	-0.106 (0.085)	0.028 (0.019)
Long term ill	-0.000 (0.004)	0.020 (0.031)	0.076* (0.042)	-0.043 (0.041)	-0.062 (0.132)	0.076 (0.049)
Owns, mortgage	-0.056*** (0.002)	0.003 (0.020)	-0.026 (0.021)	0.023 (0.028)	-0.061 (0.062)	-0.012 (0.028)
Social Renter	-0.108*** (0.002)	-0.025 (0.021)	-0.105*** (0.029)	-0.093*** (0.036)	-0.210*** (0.059)	-0.089*** (0.020)
Other Renter	-0.040*** (0.003)	-0.029 (0.023)	0.017 (0.035)	-0.059 (0.039)	-0.166*** (0.061)	-0.068*** (0.024)
N	243,231	2,523	3,727	1,777	632	2,194

Separate Regressions for 2001: Males

	White	Black	Indian	Pak./ Bang.	Chinese	Other
Age 20-24	0.118*** (0.007)		0.199*** (0.077)	0.115** (0.049)		-0.035* (0.021)
Age 25-29	0.218*** (0.008)	0.049 (0.030)	0.319*** (0.077)	0.253*** (0.052)	0.349*** (0.090)	0.003 (0.022)
Age 30-44	0.270*** (0.006)	0.130*** (0.019)	0.341*** (0.060)	0.310*** (0.043)	0.416*** (0.063)	0.073*** (0.020)
Age 45-59	0.352*** (0.007)	0.171*** (0.033)	0.468*** (0.071)	0.451*** (0.053)	0.502*** (0.079)	0.106*** (0.026)
Age 60-65	0.472*** (0.009)	0.169*** (0.046)	0.549*** (0.075)	0.518*** (0.060)	0.683*** (0.061)	
High Quals	-0.038*** (0.001)	-0.004 (0.009)	-0.028*** (0.010)	-0.072*** (0.013)	-0.182*** (0.021)	-0.015 (0.009)
Single	-0.024*** (0.002)	-0.028 (0.017)	-0.040 (0.030)	-0.044 (0.045)	-0.112** (0.053)	-0.074*** (0.020)
Married	-0.014*** (0.002)	-0.017 (0.016)	0.032 (0.027)	0.002 (0.045)	0.008 (0.052)	-0.028 (0.020)
Dep. Children	0.024*** (0.001)	0.011 (0.010)	-0.010 (0.010)	0.015 (0.013)	0.063** (0.026)	0.019* (0.010)
UK Born	-0.009*** (0.003)	-0.024** (0.010)	-0.011 (0.012)	-0.004 (0.016)	-0.011 (0.036)	-0.026** (0.011)
Long term ill	0.014*** (0.002)	-0.018 (0.017)	0.022 (0.018)	0.026 (0.023)	-0.012 (0.050)	0.062*** (0.021)
Owns, mortgage	-0.050*** (0.002)	-0.002 (0.016)	-0.013 (0.011)	0.012 (0.015)	-0.007 (0.029)	-0.056*** (0.013)
Social Renter	-0.080*** (0.002)	-0.037** (0.015)	-0.067*** (0.019)	-0.062*** (0.018)	-0.156*** (0.029)	-0.080*** (0.012)
Other Renter	-0.026*** (0.002)	-0.038** (0.015)	-0.075*** (0.014)	-0.046** (0.019)	0.033 (0.038)	-0.086*** (0.012)
N	395,175	6,268	7,940	5,483	1,636	6,456

Separate Regressions for 1991: Females

	White	Black	Indian	Pak./ Bang.	Chinese	Other
Age 20-24	0.062*** (0.008)	-0.015 (0.009)	-0.041* (0.022)	-0.068 (0.046)	-0.031 (0.078)	-0.015 (0.028)
Age 25-29	0.113*** (0.010)	-0.016 (0.011)		0.082 (0.088)		0.004 (0.035)
Age 30-44	0.115*** (0.007)	-0.005 (0.016)	0.057*** (0.018)	0.073 (0.069)	0.082 (0.051)	0.011 (0.034)
Age 45-59	0.138*** (0.009)	-0.022* (0.013)	0.053* (0.027)	0.164 (0.107)	0.009 (0.062)	-0.013 (0.030)
High Quals	-0.004*** (0.001)	0.002 (0.006)	0.018 (0.018)	-0.064** (0.032)	-0.136*** (0.032)	0.011 (0.012)
Single	0.003 (0.002)	0.008 (0.012)	-0.016 (0.032)	0.017 (0.107)	-0.150*** (0.055)	-0.029 (0.018)
Married	0.006*** (0.002)	0.021* (0.012)	0.039 (0.024)	0.093 (0.083)	-0.048 (0.068)	-0.007 (0.018)
Dep. Children	0.017*** (0.001)	-0.001 (0.006)	0.037*** (0.014)	0.065** (0.032)	0.091** (0.036)	-0.009 (0.010)
UK Born	-0.015*** (0.003)	-0.002 (0.007)	0.005 (0.022)	-0.008 (0.042)	-0.052 (0.054)	-0.022* (0.012)
Long term ill	0.009*** (0.003)	0.020 (0.019)	0.070 (0.044)		-0.026 (0.090)	0.052 (0.037)
Owns, mortgage	-0.015*** (0.002)	-0.010 (0.010)	0.021 (0.016)	0.066* (0.038)	-0.089* (0.047)	-0.016 (0.018)
Social Renter	-0.046*** (0.001)	-0.014* (0.008)	-0.000 (0.035)	-0.031 (0.061)	-0.141*** (0.027)	-0.024 (0.015)
Other Renter	0.004* (0.002)	0.022 (0.021)	0.127*** (0.045)	0.014 (0.087)	-0.111*** (0.034)	-0.030** (0.013)
N	186,172	2,610	2,621	494	543	1,763

Separate Regressions for 2001: Females

	White	Black	Indian	Pak./ Bang.	Chinese	Other
Age 20-24	0.063*** (0.007)	0.049 (0.053)	-0.015 (0.017)	0.000 (0.026)	-0.005 (0.050)	0.003 (0.022)
Age 25-29	0.118*** (0.008)	0.053 (0.051)		0.047 (0.034)		0.044 (0.028)
Age 30-44	0.142*** (0.006)	0.051** (0.025)	0.087*** (0.014)	0.111*** (0.037)	0.136*** (0.038)	0.062*** (0.022)
Age 45-59	0.182*** (0.007)	0.101* (0.060)	0.141*** (0.022)	0.159*** (0.059)	0.160*** (0.052)	0.073** (0.031)
High Quals	0.006*** (0.001)	0.005 (0.005)	0.018** (0.008)	-0.000 (0.011)	-0.137*** (0.018)	0.008 (0.007)
Single	-0.005*** (0.002)	-0.003 (0.008)	0.009 (0.020)	-0.027 (0.023)	-0.093** (0.038)	-0.012 (0.012)
Married	0.008*** (0.001)	0.012 (0.008)	0.049*** (0.013)	0.005 (0.021)	0.008 (0.034)	0.002 (0.011)
Dep. Children	0.013*** (0.001)	0.001 (0.005)	0.006 (0.008)	-0.014 (0.011)	0.017 (0.020)	0.021*** (0.007)
UK Born	-0.015*** (0.002)	-0.003 (0.005)	-0.023** (0.009)	-0.021* (0.012)	-0.005 (0.031)	0.001 (0.008)
Long term ill	0.016*** (0.002)	0.009 (0.010)	0.027* (0.014)		0.071 (0.054)	0.021 (0.015)
Owns, mortgage	-0.026*** (0.001)	0.010 (0.009)	-0.013 (0.008)	-0.014 (0.012)	-0.023 (0.023)	-0.024*** (0.009)
Social Renter	-0.047*** (0.001)	0.003 (0.010)	-0.014 (0.016)	-0.046*** (0.012)	-0.069** (0.030)	-0.054*** (0.007)
Other Renter	-0.008*** (0.001)	-0.002 (0.010)	-0.002 (0.013)	-0.027* (0.014)	0.019 (0.031)	-0.032*** (0.008)
N	329,873	6,663	6,402	2,271	1,508	5,716