Chapter 10
Occupational Mobility in the Life Course of Intermarried Ethnic Minorities

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10.1 Introduction

Current stratification research usually takes on an individualistic perspective focusing primarily on a social and economic position of individual men and women in the labour market. This approach, however, fails to recognise family and household context that plays a key role in understanding social inequality. Although early stratification research considers the role of family in social stratification, it emphasises only the status of the male family head as a key factor determining a social position of other family members (e.g. Blau and Duncan 1967; Goldthorpe 1980). It was not until recently, that family (all family members as a whole) was recognised as a key unit of analysis in explaining social inequality. Drobnič and Blossfeld (2004) highlight the importance of family properties – the properties of the relationships between individuals in the family – as one mechanism underlying a stratified access to positions in the labour market. Subsequently, they conduct an empirical research investigating how socio-economic assortative matings as well as upward and downward marriages affect labour market achievement of husbands and wives during the family life cycle.

While the study of the effects of marriage homogamy (e.g. in terms of education levels, income and occupational scores) on couples' socio-economic outcomes has become more common in stratification research, there have been fewer studies that focus on economic consequences of ethnic homogamy. Ethnic attachment is claimed to be one key factor inhibiting labour market achievement of immigrants (Gordon 1964). Lesser the contact with the native population, the lesser an opportunity for them to acquire language skills, human, cultural and social capital that could be

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M. Wingens et al. (eds.), *A Life-Course Perspective on Migration and Integration*,
DOI 10.1007/978-94-007-1545-5_10, © Springer Science+Business Media B.V. 2011

useful for socio-economic advancement in the host country. On the other hand, marrying to a native could facilitate economic integration of an immigrant through enhancement of their social networks and having the know-how of a host country labour market. A study of the consequences of ethnic homogamy or interethnic marriages on immigrants' economic outcomes could thus add to the understanding of social stratification particularly among immigrant populations.

Not until recently have the economic consequences of intermarriage been investigated in immigrant populations. Recent economic studies on labour market outcomes of intermarried immigrants commonly find a positive association between marriage to a native and immigrants' economic achievement. Dribe and Lundh (2008) find that intermarried immigrant men and women in Sweden have higher individual and household income and are more likely to be employed than their non-intermarried counterparts. This study however does not deal with a plausible endogeneity problem of marital choice, that is immigrants who are successful in the host country labour market might be selected individuals who are also more likely to marry a native.

Other extant studies employ two-stage procedure and instrumental variable methods to deal with the endogeneity issue of intermarriage decision. It is reported that foreign-born men and women who are intermarried in Australia and France earn approximately 5% and 9–10% higher than their non-intermarried counterparts respectively (Meng and Gregory 2005; Meng and Meurs 2009). Meanwhile, Kantarevic (2004) does not find any wage premium for intermarried immigrants in the USA whereas Futardo and Theodoropoulos (2010) observe that the probability of employment for male immigrants married to natives increases by 2.5%. Although these studies control for the endogeneity of the intermarriage decision, they employ cross-sectional designs whereby factors associated with the probability of intermarriage are measured at the same time as an observed marital status. This makes it difficult to establish causal relationships between intermarriage decision and underlying factors that drive it.

Another issue with the previous studies of economic benefits from intermarriage is the definition of who belongs to a 'native' population. Regardless of ethno-cultural groups, extant studies treat any individuals who were born in a studied country as 'native'. As a result, a partnership between an immigrant and any individual born in the host country is regarded as 'intermarriage'. However, it is evident that native born children of foreign born parents do not necessarily achieve similar socio-economic attributes as the native population (Heath and Cheung 2007). Treating second and successive generation as 'native' could have affected the assessment of the economic benefits from intermarriage in the previous studies.

The present study expands the scope of the study of economic benefits from intermarriage in three respects:

First, this study uses longitudinal data which have the advantage in solving the problem of including prevailing partnerships in the analysis. The data allow us to select only single individuals at one time point as a study sample and observe the change in their marital status and socio-economic outcomes after a certain period

of time. This way we can use premarital characteristics to predict a partner choice. We can also avoid including partnerships contracted overseas in the sample.[1]

Second, this study distinguishes between first and second generation immigrants. Commonly studies on intermarriage premium treats the second generation as 'native' (See for example: Kantarevic 2004; Meng and Gregory 2005; Meng and Meurs 2009; Futardo and Theodoropoulos 2010). However, this could be misleading because the second generation do not necessarily share similar socio-economic and demographic characteristics with the majority native population. A union between first and second generation is unlikely to yield a similar influence on economic mobility to a union between a native and an immigrant. Thus, it is crucial for the study of the intermarriage premium to distinguish between native population and immigrants and among the immigrants, between first and second generations.

Third, this study provides new empirical evidence on economic benefits from intermarriages in Britain, a country that has not yet been explored. Britain has a long history of immigration and is one of the largest immigration countries in Europe. After the Irish immigration in the nineteenth century and the Jewish migration from Eastern Europe and the Russian Empire before the Great War, another major wave of immigration into Britain is that of the migrants from British former colonies such as the Indian subcontinent, West Indies, Hong Kong and Africa after the Second World War (Pilkington 2003). The 2001 Census reports that 4.6 millions or 7.9% of the population in Britain belong to non-White ethnic background. Indians were the largest non-white population (1.8% of the total population), followed by Pakistanis (1.3%), individuals with Mixed ethnic background (1.2%), Black Caribbeans (1%), Black Africans (0.8%), Bangladeshis (0.5%) and Chinese (0.4%) (Office for National Statistics 2004).

A significant proportion of these ethnic minorities are married to a native White British spouse. According to the 2001 Census, almost 2% of all marriages (or 198,000 marriages) in Britain involve one White British person and one minority ethnic member (Office for National Statistics 2005). The rates of intermarriage however vary by ethnic groups ranging from 6% or lower for Indians, Pakistanis and Bangladeshis to almost 30% for Black Caribbean men and Chinese women. Although it is found that interethnic marriage is on the rise (Muttarak 2010), still there has not been much empirical research on intermarriage in Britain (as compared to the USA, Canada and Australia) and particularly no research on the benefits from intermarriage.

Despite their relatively successful educational attainment, non-White ethnic minorities remain disadvantaged in the British labour market. They have lower wages, lower chance of occupational mobility and higher chance of being unemployed

[1]Partnerships contracted overseas are embedded in a different context with partnerships formed in the host country. Including these partnerships in the analysis could bias the estimation of immigrants' partner choice in the host country.

compared to British born white persons (Dustmann and Theodoropoulos 2010; Heath and McMahon 2005). One explanation for poor labour market outcomes of members of minority groups is that they lack bridging social ties which can link them to social resources and access to labour market in a host society (Portes 1995). Marrying a native can intuitively provide access to host country networks and facilitate immigrants' social mobility likewise. A study of economic consequences of intermarriage thus is one way to understand labour market inequality of ethnic minorities.

The present study draws on a life course approach and a sample of 2,041 ethnic minorities from the Longitudinal Study (LS), a dataset comprising linked censuses and event records for 1% of the population of England and Wales, to examine the relationship over time between interethnic union and occupational mobility (a measure of economic success in this study). Using the linked 1991 and 2001 Censuses, this study selects a sample of ethnic minority members who were single in 1991 and investigates whether those who intermarried by 2001 have a better chance of moving to a higher occupational position in 2001, accounting for the endogeneity of being in an interethnic union. Here interethnic union refers to a marriage or cohabitation where one partner is a native and the other is a minority ethnic member.[2] We find that having a native spouse increases the chance of occupational mobility for immigrant men and women by 6 and 14% respectively. The likelihood of achieving upward occupational mobility is slightly lower for the intermarried of the second generation as compared to the first generation. Our interpretation is that the union with a native spouse facilitates immigrants' socio-cultural integration and subsequently enhances their labour market achievement.

The paper is organised as follows. The next section draws upon theoretical concepts that explain the underlying mechanisms of how intermarriage could affect socio-economic attainment of immigrants. Specific hypotheses to be tested are then derived from the theoretical discussion. Next the data is described and a descriptive result is presented. Following this, statistical methods and results of a multivariate analysis are discussed. The concluding section discusses the implications of the empirical results in answering the research hypotheses.

10.2 Theoretical Considerations and Research Hypotheses

The hypothesised economic premium from interethnic unions can be explained through the two key principles in the life course paradigm, namely, linked lives and human agency.

[2] In this study, 'native' refers to individuals who chose the ethnic category 'White British' according to the ethnic classification in the 2001 Census. Ethnic minorities are identified through a self-reported ethnicity question in the 2001 Census. Individuals who reported their ethnic group other than 'White British' in the 2001 Census ethnic classification are treated as an ethnic minority.

10.2.1 Principle of Linked Lives

The principle of linked lives emphasises that lives are lived interdependently and individuals are embedded in social relationships (e.g. couples, families, and peers) (Elder 1975, 1994). The initiation of new relationships can lead to a change in behaviour as well as form the transitions and trajectories of an individual. Accordingly, marriage can provide new social connection and shape an individual's life course. For example, since a married individual generally has an opportunity to meet some of his/her partner's contacts, this expanded social network can benefit one's labour market performance likewise (Erickson 2004).

This kind of capital generated from the structure of personal relationships is coined 'social capital'. Social relationships create social capital through various mechanisms: establishing obligations and expectations; providing information channels; and creating norms and effective sanctions (Coleman 1990). In the area of labour market performance, it is found that social ties lower job search costs and increase the probability of getting a job, especially a job with a higher wage (Granovetter 1974). The influence of social capital on one's economic success, however, appears to vary with social class, gender, and ethnicity. Lin (1999) reports that the positive influence of social capital on economic success is mostly due to having a connection with middle-class networks. In terms of gender, men are documented to have more diverse, larger, work, and organisation related ties, whereas female ties tend to be located among kin and neighbours (Campbell 1988; Moore 1990). Male networks thus expose men to information about possible job openings, business opportunities and chances for professional achievement whereas female networks are disadvantaged from an economic perspective due to their smaller size and lesser diversity.

The diversity of social networks also varies between ethnic groups. There is evidence that blacks and other minority groups in the USA have less diverse networks than whites. Ethnic minorities' networks tend to involve local ties, stronger ties, and family and kin ties, all of which might not be useful within the mainstream labour market (Portes 1998; Green et al. 1999). The lack of diverse social connections to mainstream institutions could result in the labour market disadvantage of ethnic minorities (Heath and McMahon 2005).

The social capital literature implies that individuals from a lower social class, women, and members of minority ethnic groups are not well-connected in social networks that can promote their labour market success. Nevertheless, the diversity of one's social capital could be increased through the social connections of a spouse (Erickson 2004). It is, therefore, sensible to assume that an immigrant whose partner belongs to the native population will naturally be connected with the native partner's social ties. Once receiving recognition in the native partner's social resources, the intermarried immigrants are expected to benefit from the flow of useful job related information, the advantage of having connections in the organisation, and so on.

10.2.2 Principle of Human Agency

The principle of human agency holds that life course is largely constructed by individuals' decisions and actions taken within opportunities and structural constraints (Elder et al. 2003). With respect to assimilation, apart from the influences of social, economic and political conditions in destination countries, the progress of migrants after immigration depends on both their initial characteristics at entry and their decisions to adapt and assimilate such as decisions to acquire host country language skills or qualifications and to naturalize (Jasso 2003).

Accordingly, in a host country, where the melting-pot or Anglo conformity is a model of assimilation as perhaps in the USA, it was argued that it is beneficial for immigrants to give up their ethnic identification and languages and instead conform to the dominant culture (Park 1950; Gordon 1964). This is because ethnic attachment (e.g. ethnic culture, identity, norms, social networks, and institutional affiliations) may induce social marginality and limit the acquisition of human, social, and cultural capital which in turn impedes social mobility.

Generally, intermarriage discourages ethnic attachment because it reduces the opportunity for families to transmit a coherent ethnic culture to children (Pagnini and Morgan 1990). Intermarriage also lessens the social distance between immigrants and natives. For example, associating with a native spouse should improve an immigrant's language proficiency, which is one crucial human capital for labour market success. The native spouse can also provide knowledge about the host society's culture and manners and assist with cultural adaptation which may help to reduce discrimination in the labour market. It thus can be assumed from the assimilation perspective that intermarriage helps to minimize ethnic distinction and facilitates socio-economic integration of intermarried immigrants.

This socio-economic benefit from intermarriage however, might be less applicable to second and successive generations. According to the classic assimilation theory, assimilation occurs in a 'straight-line' process whereby the foreign-born first generation are the least assimilated because they are less exposed to host society culture (Park and Burgess 1921; Gordon 1964). Subsequently, the native born second generation are better assimilated than their parents because growing up in the host society gives them opportunities to acquire language proficiency and adopt native culture from the first stage of their socialisation. Brought up by parents born in the host society, the successive generations will eventually become like the mainstream natives. If this thesis holds true, the second and successive generations will not benefit as much as the first generation from having a native spouse because they themselves grew up and are well connected in the host society.

The above theoretical accounts suggest the following hypotheses:

Hypothesis 1 Intermarried immigrants have better labour market outcomes than those who are not because the native spouse enhances their social networks and social integration.

Hypothesis 2 Intermarried immigrant women receive larger economic premium than intermarried immigrant men because they are connected to native male networks which are reported to have more job-related resources than female networks.

Hypothesis 3 The intermarried of the second generation receive lower intermarriage premium than the first generation because they have already been socialized in the host country culture so the native spouse does not facilitate their integration as much as in the first generation.

10.3 Data and Measures

The empirical analysis is based on the Office for National Statistics (ONS) Longitudinal Study data (LS) which links successive Censuses from 1971, 1981, 1991, and 2001, covering 1% sample of the population of England and Wales.[3] The sample was initially obtained from the 1971 Census, based on four birth dates (day and month) in the calendar year. The sample is updated at each Census year and accounts for approximately 540,000 people at any one census.

The LS data are the most appropriate to investigate the economic consequences of interethnic partnerships because it is the largest longitudinal dataset available in Britain and contains a sufficient number of individuals with immigration background to perform statistical analyses. The LS also includes information on household members making it possible to identify whom an LS member is married to or cohabiting with.

Since a direct ethnicity question was asked only in 1991 and onwards, this study employs a linked LS data from the 1991 and 2001 Censuses. The sample selected for the analysis consists of LS members who: (a) were present both in 1991 and 2001; (b) were usual residents in private households; (c) aged between 18 and 55 years old in 1991; (d) were single in 1991; and (e) reported their ethnicity other than 'White British, White Irish or White other' in the 2001 Census ethnic classification. Same sex couples are excluded from the analysis. Finally a sample of 945 men and 1,096 women from non-white minority ethnic groups was obtained.

10.3.1 Measure of the 'Intermarriage Premium'

In this study, occupational mobility is used as an indicator of labour market success.

Occupations are grouped according to the National Statistics Socio-economic Classification (NS-SEC). This scheme is an occupationally based classification

[3] See http://www.celsius.lshtm.ac.uk for more details about the data.

that has rules to provide coverage of the whole adult population. Individuals are coded to NS-SEC according to their occupational categories, the size of the establishment they work at and their employment status (e.g. employer, self-employed, or employee). NS-SEC does not only incorporate individuals who are in paid employment but also provides separate categories for economically inactive individuals such as those who are in long-term unemployment, those who never worked, and full-time students.

In this study, NS-SEC is collapsed into five socio-economic classes: (1) higher managerial and professional occupations; (2) lower managerial and professional occupations; (3) intermediate occupations; (4) lower supervisory and technical occupations; and (5) semi-routine and routine occupations.[4] Those who are unemployed, never worked, and those who are economically inactive are classified into a separate category.

Occupational outcome is then compared across different marital statuses and types of union as of 2001. Marital status is divided into three categories: single, co-ethnic married, and intermarried. (See Appendix for the distribution of marital statuses in 2001 by gender, generation and ethnicity.) 'Single' refers to an individual who was not married or cohabiting during the period of study 1991–2001. 'Co-ethnic married' refers to an individual who was married to or cohabiting with a spouse from the same ethnic group in 2001. 'Intermarried' refers to an individual who is married to or cohabiting with a native spouse in 2001. The union between immigrants from different ethnic groups is excluded from the analysis because of very small numbers and because our main research question is to investigate the influence of the unions with a native spouse on the labour market outcomes of intermarried immigrants.

It should also be noted that the LS data does not record the date of marriage/cohabitation making it impossible to identify whether during the two Census years, 1991 and 2001, occupational mobility is achieved before or after a union was formed. If a union was formed after occupational mobility is achieved, a causal direction is then reverse. Still, the LS has an advantage over cross-sectional data used by previous studies. The data allows us to examine whether amongst immigrants who were single in 1991, but were intermarried in 2001 achieved better occupational attainment compared to those who remained single or became co-ethnic married. This way prevailing partnerships are excluded from the analysis.

[4]This five-class version is different from that given by the ONS (See https://www.ons.gov.uk/about-statistics/classifications/current/ns-sec for information on NS-SEC classes and user guideline). This paper distinguishes between higher and lower managerial and professional occupations while the original ONS version does not. In addition, while the original version distinguishes between intermediate occupations and small employers and own account workers, the two classes are combined in this paper. Technically it is recommended that the self-employed should be treated as a separate class because they are distinctive in their life chances and behaviour. This paper nevertheless combines the self-employed with those in intermediate occupations for an analytical purpose.

10.4 Descriptive Results

The percentage distribution of occupational positions (NS-SEC) in 2001 according to marital status in 2001 is given in Tables 10.1 and 10.2, for men and women respectively. Note that the sample used to present the distribution of occupational positions in 2001 excludes individuals who were in higher professional/managerial occupations in 1991.

Tables 10.1 indicates that for most ethnic groups, men who were intermarried in 2001 have better occupational attainment than their counterparts who remained single or who were co-ethnic married, i.e., a higher proportion of individuals in professional/managerial occupations and a lower proportion of individuals in routine/manual occupations. This pattern is evident for Black Caribbean, Indian and Pakistani & Bangladeshi men whereby around half of the intermarried secured higher and lower professional/managerial occupations in 2001 and only one-fifth of them were present in routine/manual occupations.

Table 10.2 displays a similar occupational attainment pattern for intermarried women in 2001. Not only that ethnic minority women with a native partner generally have lower proportion of those in routine/manual occupations, for some groups such as Black Caribbean, Indian and other ethnic, the proportion of those in higher professional/managerial occupations is also notably much higher amongst the intermarried compared to the single or co-ethnic married.

As for generational difference, it is evident that the labour market attainment gap between the intermarried and the single or the co-ethnic married is higher among the first generation than the second generation. For both men and women alike, the intermarried first generation exhibit much higher proportion of those in higher professional/managerial occupations and much lower proportion of those in routine/manual occupations than their single or co-ethnic married peers. Intermarried second generation men on the other hand do not necessarily have better occupational attainment than the single and the co-ethnic married while intermarried second generation women show slightly better labour market attainment than other partnership types.

The descriptive results suggest that, in general, those who are intermarried have better occupational attainment than those who are not. The pattern of occupational distribution is rather similar for men and women whereby intermarried first generation fare distinctively better in the labour market than those who stay single or are co-ethnic married. There is however no distinctively clear pattern with respect to ethnic difference in intermarriage premium. This is probably because the distribution of partnership type differs substantially between ethnic groups and the sample size could get very small for certain ethnic groups especially for those in an interethnic partnership.

Table 10.1 Percentage distribution of men's occupational position in 2001 by marital status in 2001

	High professional/ managerial	Low professional/ managerial	Intermediate	Low supervisory	Routine & manual	N
First generation						
Stay single	14.6	18.5	20.8	8.5	37.7	130
Co-ethnic married	13.7	15.2	29.7	7.2	34.2	263
Intermarried	27.6	31.0	24.1	0.0	17.2	29
Second generation						
Stay single	9.8	27.5	23.0	13.5	26.2	244
Co-ethnic married	20.9	20.1	17.9	16.4	24.6	134
Intermarried	10.6	28.3	19.5	13.3	28.3	113
Mixed						
Stay single	5.7	30.0	18.6	15.7	30.0	70
Co-ethnic married	0.0	57.1	0.0	0.0	42.9	7
Intermarried	19.0	20.7	22.4	12.1	25.9	58
Black Caribbean						
Stay single	8.4	27.4	22.1	10.5	31.6	95
Co-ethnic married	7.9	26.3	23.7	18.4	23.7	38
Intermarried	10.8	27.0	10.8	16.2	35.1	37
Black African and Black other						
Stay single	7.1	28.6	28.6	7.1	28.6	42
Co-ethnic married	36.4	22.7	9.1	0.0	31.8	22
Intermarried	0.0	40.0	0.0	60.0	0.0	5
Indian						
Stay single	15.5	28.2	23.9	12.7	19.7	71
Co-ethnic married	26.1	16.3	19.6	11.8	26.1	153
Intermarried	8.3	41.7	29.2	8.3	12.5	24
Pakistani and Bangladeshi						
Stay single	20.5	11.4	18.2	11.4	38.6	44
Co-ethnic married	4.4	12.6	33.3	10.4	39.3	135
Intermarried	0.0	60.0	40.0	0.0	0.0	5
Other ethnic						
Stay single	18.2	13.6	31.8	18.2	18.2	22
Co-ethnic married	20.0	24.0	24.0	0.0	32.0	25
Intermarried	0.0	37.5	0.0	37.5	25.0	8

Source: ONS longitudinal study (2001)
Note: (1) The sample excludes those who were in higher professional/managerial positions in 1991 (2) The results for Chinese cannot be shown here for a confidentiality reason

Table 10.2 Percentage distribution of women's occupational position in 2001 by marital status in 2001

	High professional/ managerial	Low professional/ managerial	Intermediate	Low supervisory	Routine & manual	N
First generation						
Stay single	7.7	36.2	32.1	3.6	20.4	221
Co-ethnic married	5.6	22.4	25.9	7.0	39.2	143
Intermarried	20.8	37.5	27.1	4.2	10.4	48
Second generation						
Stay single	10.5	34.9	26.2	5.0	23.4	401
Co-ethnic married	7.1	32.1	34.3	4.3	22.1	140
Intermarried	10.5	35.8	28.4	4.2	21.1	95
Mixed						
Stay single	11.3	30.9	24.7	9.3	23.7	97
Co-ethnic married	0.0	50.0	0.0	0.0	50.0	4
Intermarried	10.9	30.9	32.7	5.5	20.0	55
Black Caribbean						
Stay single	7.2	36.6	30.8	2.9	22.5	276
Co-ethnic married	3.2	27.0	39.7	6.3	23.8	63
Intermarried	8.7	34.8	26.1	0.0	30.4	23
Black African & Black other						
Stay single	9.2	40.8	14.3	3.1	32.7	98
Co-ethnic married	11.5	42.3	19.2	0.0	26.9	26
Intermarried	0.0	42.9	57.1	0.0	0.0	7
Indian						
Stay single	17.7	31.6	32.9	5.1	12.7	79
Co-ethnic married	8.3	29.6	29.6	5.6	26.9	108
Intermarried	22.2	37.0	29.6	0.0	11.1	27
Pakistani & Bangladeshi						
Stay single	0.0	26.3	63.2	0.0	10.5	19
Co-ethnic married	4.5	15.2	24.2	7.6	48.5	66
Intermarried	0.0	37.5	37.5	0.0	25.0	8
Other ethnic						
Stay single	9.4	40.6	31.3	6.3	12.5	32
Co-ethnic married	12.5	37.5	18.8	12.5	18.8	16
Intermarried	29.4	47.1	11.8	0.0	11.8	17

Source: ONS longitudinal study (2001)
Note: (1) The sample excludes those who were in higher professional/managerial positions in 1991
(2) The results for Chinese cannot be shown here for a confidentiality reason

10.4.1 Multivariate Models

Although the descriptive findings provide an introductory view of the occupational attainment pattern of intermarried immigrants, Tables 10.1 and 10.2 ignore the human capital and demographic differences between those who are intermarried and those who are not. It is also important to consider the endogeneity of marital choice. For example, if highly ambitious individuals are more likely to be intermarried, then they will unsurprisingly have better labour market outcomes than other groups. These unobserved characteristics raise both their chance of partnering with a native spouse as well as being successful in a host country labour market. To address these issues, we employ instrumental variable models which take into account the influences of socio-economic characteristics on immigrants' labour market outcomes and the endogeneity of intermarriage.

Dependent variable:

- Moving to a higher occupational position

Because the key interest is to assess whether interethnic unions enhance the social mobility of ethnic minority members or not, the dependent variable is a binary response coding '1' for those who moved to a higher occupational position in 2001 and '0' for those who did not change their occupation or moved to a lower occupational position.

10.4.1.1 Estimation Equations

The baseline equation for the probability of achieving upward mobility in 2001 can be specified as follows:

$$\begin{aligned} Y_i^* &= X'_i\beta_{10} + Z'_i\beta_{11} + R'_i\beta_{12} + \delta_1 C_i + \delta_2 I_i + \varepsilon_i \\ Y_i &= 1 \, if \; Y_i^* > 0 \end{aligned} \tag{10.1}$$

where i indexes individuals and Y^* is an unobserved latent variable. Y_i equals one if an individual$_i$ has moved to a higher occupation in 2001 (in which case $Y_i^* > 0$), and zero otherwise ($Y_i^* \leq 0$). X_i is a vector of demographic variables including ethnic group, religion, age in 2001 and place of birth. Z_i is a vector of measure of human capital in 1991 including educational qualification, Cambridge Scale of Occupations, and health condition in 2001. R_i is a region of residence in 1991. The variable C_i is the indicator for individuals who are co-ethnic married in 2001; and I_i is the indicator for individuals who are intermarried in 2001. Individuals who remain single (from 1991 to 2001) are used as a reference group. There is an intermarriage premium if $\delta_2 > \delta_1$.

We can examine the effect of the change in marital status on occupational mobility straightforwardly by fitting Eq. 10.1 to the data. However, marital choice

might not be a random process, i.e., individuals may be self-selected into being single, co-ethnic married or intermarried. It is possible that some unobserved characteristics such as motivation or ability that yield positive effects on labour market achievement also promote interethnic partnerships. In this case, the chance of achieving upward mobility and the chance of being in an interethnic union vary jointly. If intermarriage is determined endogenously with occupational mobility, then δ_2 is biased and using a probit model to estimate the effect of intermarriage on occupational mobility will yield unreliable estimates of the causal effect. Hence, it is necessary to account for this joint distribution when estimating the coefficients.

This potential endogeneity bias can be written in the form of simultaneous equations where Eq. 10.1 presents the probability of achieving upward mobility and Eq. 10.2 presents the probability of being in an interethnic union.

$$\begin{aligned} I_i &= X'_i\beta_{10} + Z'_i\beta_{11} + A'_i\beta_{13} + v_i \\ I_i &= 1 \; if \; I_i^* > 0 \end{aligned} \tag{10.2}$$

where I* is an unobserved latent variable taking the value of one if the individual$_i$ is intermarried in 2001 ($I_i^* > 0$) and zero otherwise ($I_i^* \leq 0$). A_i is the vector of instrumental variables that are correlated with I_i but not ε_i. These variables include group size and sex ratio. These exogenous observables, which are assumed to affect marital choice but not directly affect occupational outcomes, serve as instruments, allowing I_i to be identified.

The coefficient of interest is δ_2. Because the occupational outcome and marital choice are both discrete, bivariate probit is an appropriate model to estimate this type of simultaneous equation. This model is equivalent to an instrumental variables model and is used when both the dependent variable and endogenous variable are binary (Wooldridge 2002:477–478). The probability that an individual moved up to a higher occupational position given that s/he is intermarried, then, is

$$\Pr(Y = 1 | M_2 = 1) = \frac{\Pr(Y = 1, M_2 = 1)}{\Pr(M_2 = 1)}$$

Equations 10.1 and 10.2 are estimated simultaneously with recursive bivariate probit analysis. This method allows a correlation between the residuals of the two equations. We assume that the error terms ε_i and v_i are correlated and have a bivariate normal distribution.

$$\begin{bmatrix} \varepsilon \\ \upsilon \end{bmatrix} \sim N \left(\begin{bmatrix} 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 1 & \rho \\ \rho & 1 \end{bmatrix} \right)$$

Maximum likelihood is used to obtain parameter estimates with $\text{cov}(\varepsilon_i, v_i) \neq 0 = \rho$. ρ is an auxiliary parameter that accounts for the correlation across the two equations. If a likelihood ratio test shows ρ is insignificant, it means there is no correlation

between the residuals of the two equations, i.e., no endogeneity bias is present. In this case, it is sufficient to use the probit model to estimate Eq. 10.1. If ρ is non-zero, then intermarriage is regarded as endogenous. In this case, the probit results are biased, and the bivariate probit model should be used.

10.4.1.2 Empirical Specification

Equation 10.1: Probability of Moving to a Higher Occupational Position

Independent Variable

Marital status. Measured in 2001, marital status is categorised into three marital statuses: single, co-ethnic married and intermarried.

Control Variables

Ethnicity. Measured in 2001, ethnicity is categorised into seven ethnic categories: Black Caribbean, Black African & Black other, Mixed ethnic, Indian, Pakistani & Bangladeshi, Chinese and other ethnic group.[5] The chance of achieving upward mobility in Britain is generally found to vary considerably with ethnic origins (Heath and McMahon 2005; Platt 2005).

Generation. Generation is divided into two categories. Ethnic minorities who were born outside Britain are classified as 'first generation' whereas those who were born in Britain are classified as 'second generation'. The labour market outcomes of the two groups could differ whereby the second generation, who were brought up and received education in Britain, are more likely to fare better in the labour market because they have closer socio-cultural characteristics to the native White British (Dustmann et al. 2003).

Age. Measured in 2001, age is divided in to seven age groups: 26–35, 36–40, 41–45, 46–50, 51–55, 56–60, and 61–65. Age is coded as a categorical variable because the effect of age on occupational mobility is assumed to be non-linear.

Religious affiliation. Measured in 2001, religious affiliation is classified into eight categories: Christian, Jewish, Hindu, Sikh, Muslim, other religion, no religion, and information on religion not available. There is evidence that labour market attainment varies not only with ethnic background but also with religious affiliation (Brown 2000; Lindley 2002).

Having a limiting long-term illness. Measured in 1991, this is a dummy variable coded 1 if an individual had a limiting long-term illness, health problem or disability

[5] Although interethnic unions between Irish or White other with native White British are very common, they are excluded from this study. This is because their migration history, cultural and language background as well socio-economic composition differ substantially from non-White minority groups.

and 0 otherwise. Being in poor health conditions could limit individuals' daily activities or the work they can do which consequently hinder their labour market performance.

Educational qualification. Measured in 1991, educational qualification is categorised into three hierarchical categories: none or other qualification, sub-degree qualification (professional or vocational qualifications) and degree or postgraduate qualification.[6] Educational attainment plays a key role in labour market success particularly for immigrants (Dustmann and Theodoropoulos 2010).

Cambridge scale of occupations. Measured in 1991, Cambridge Scale is a continuous score representing an occupational unit's relative position within the national order of social interaction and stratification, taking the value 00.01–99.99. Higher scores reflect greater advantage along the stratification dimension.[7] This variable is introduced as a control for the origin state occupation.

Economic activity. Measured in 1991, economic activity is divided into four categories: working full-time, working part-time, self-employed, and other economic position. Employment status can affect occupational mobility. Part-time employment, for example, is found to be negatively associated with upward mobility because a part-time job commonly involves low-paid and low-status job (Elliott and Egerton 2001).

Region of residence. Measured in 1991, region of residence is divided into five regions: London, North, Midlands, South and Wales. This variable is added to account for regional differences in the labour market structure.

Equation 10.2: Probability of Intermarriage

Independent Variables

The independent variables selected in the equation estimating the probability of marriage are demographic and socio-economic characteristics found to be associated with the propensity to intermarriage in previous literature on interethnic partnership formation (Muttarak and Heath 2010). All variables are measured in 1991 except for religious affiliation. Note that ideally, religion measured in 1991 should be used but this question was asked only in the 2001 Census. Thus, readers should be aware that in this case religion might not be a determinant of intermarriage but a consequence of certain individuals converting to the religion of the spouse.

[6]It should be noted that the 1991 Census records limited details of educational qualifications. Only the information about higher qualifications obtained after the age of eighteen was collected. This study therefore could only distinguish between 'degree' and 'sub-degree' qualifications while the rest includes all individuals with other/ no qualification or missing information on qualification.

[7]For further information on Cambridge Scale of Occupations see http://www.camsis.stir.ac.uk for a detailed background of the scale development and Prandy (1990) for a thorough evaluation of the scale.

Ethnicity, Generation, Religious affiliation and Educational qualification – as described above.

Birth cohort. This is divided into seven cohorts: 1936–1940, 1941–1945, 1946–1950, 1951–1955, 1956–1960, 1961–1965 and 1966–1975 cohorts.

Employment status. This is divided into three categories: in employment, unemployed/economically inactive and full-time student. Employment status implies an opportunity context where individuals can meet their potential partners. Those in employment or full-time education might have wider contact with native population in the workplace and educational institutions.

Instrumental Variables

Group size. Group size is measured as:

$$Group\ size^{e}_{ic} = \frac{n^{w}_{c}}{n^{e}_{c}}$$

where the group size of individual i from ethnic group e equals the ratio of the number of white natives in county c to the number of members from ethnic group e in county c. We take the log of group size to reduce the degree of skewness. This variable is measured at a county level (geographical area of residence in 1991) rather than at a national one because inter-group contacts are likely to take place locally. Although the exact information on date of marriage/cohabitation is not available in the LS data, we know that the LS members selected in our sample formed a partnership some time between 1991 and 2001. Our measurement of the effect of group size on the propensity to intermarry in this data is therefore rather accurate since we know that the area of residence in 1991 is not a consequence of individuals changing address after partnership formation.

Sex ratio. This variable is also measured at a county level and is based on the geographical area of residence in 1991. The sex ratio for an individual i is defined as:

$$Sex\ ratio^{f}_{iec} = \frac{n^{m}_{ec}}{n^{f}_{ec}}$$

where n^{m}_{ec} and n^{f}_{ec} are the number of males and females, respectively, from ethnic group e living in county c. The log transformation of sex ratio is used to reduce skewness. A sex ratio greater than 1 indicates that the number of men from ethnic group e living in county c exceeds that of women from ethnic group e living in county c. This could promote out-group marriage for men and in-group marriage for women.

10.4.1.3 Results from Probit and Bivariate Probit Models

As described above, we estimate the occupational mobility equation jointly with the probability of the intermarriage equation using bivariate probit models. Table 10.3

Table 10.3 Probit estimates of probability of intermarriage by gender

	Men		Women	
	B	*S.E.*	*B*	*S.E.*
Ethnic group: Black Caribbean (ref)				
Mix	**0.743**	0.155	**1.001**	0.158
Black African & Black other	**−0.594**	0.256	−0.172	0.201
Indian	*0.440*	0.230	**0.531**	0.266
Pakistani & Bangladeshi	−0.171	0.318	0.409	0.347
Chinese	−0.292	0.287	0.366	0.310
Other ethnic	0.226	0.277	**0.984**	0.236
Second generation	**0.402**	0.153	0.036	0.134
Birth cohort: 1966–1975 (ref)				
1961–1965	**0.308**	0.137	−0.199	0.136
1956–1960	*0.321*	0.184	**−0.435**	0.196
1951–1955	*−0.567*	0.338	**−0.429**	0.223
1946–1950	−0.585	0.526	−0.444	0.299
1941–1945	−0.394	0.447	−0.599	0.381
1936–1940	−0.393	0.424	**−8.449**	0.167
Religious affiliation: Christian (ref)				
Religion NA	**−0.404**	0.192	*−0.370*	0.204
Hindu	**−1.156**	0.263	**−0.618**	0.274
Muslim	**−0.663**	0.247	**−0.628**	0.297
Sikh	**−1.197**	0.299	**−1.029**	0.393
Other religion	**−6.993**	0.355	−0.454	0.307
No religion	0.068	0.157	−0.188	0.182
Education: Degree qualification (ref)				
Subdegree qualification	−0.380	0.306	0.249	0.228
No/other qualification	0.004	0.215	**−0.362**	0.179
Employment status: In employment (ref)				
Unemployed-economically inactive	−0.239	0.149	−0.096	0.148
Full-time student	**0.510**	0.216	**0.517**	0.164
Instrumental variables				
Log group size	**0.057**	0.029	0.022	0.031
Log sex ratio	−0.219	0.141	−0.089	0.115
Constant	−1.380	0.305	−0.900	0.264
N	945		1,096	

Source: ONS longitudinal study (1991) and (2001)
Note: Statistically significant results at least at the .05 and .10 levels are highlighted in bold and italicised respectively

reports the estimation results for the intermarriage equation. Tables 10.4 and 10.5 report the estimation results for the occupational mobility equation for men and women, respectively. The sample selected for this analysis excludes individuals who were in higher professional/managerial position in 1991 because there is no room for these people to move up higher (N = 2,041).

Table 10.4 Probit and bivariate probit estimates of probability of moving to higher occupation in 2001 for ethnic minority men

	Probit models				Bivariate probit models			
	Model 1		Model 2		Model 1		Model 2	
	B	*S.E.*	*B*	*S.E.*	*B*	*S.E.*	*B*	*S.E.*
Marital status: Stay single (ref)								
Co-ethnic married	0.308	0.252	0.048	0.111	0.059	0.101	0.044	0.103
Intermarried	0.072	0.110	0.517	0.357	**1.775**	0.342	**1.885**	0.433
Interaction terms								
Intermarried*Second generation	−0.405	0.282	**−0.663**	0.309	**−0.579**	0.222	**−0.741**	0.255
Intermarried*Mix			0.327	0.317			0.143	0.269
Intermarried*South Asian			−0.350	0.370			−0.184	0.304
Intermarried*other ethnic group			−0.411	0.480			−0.403	0.378
Ethnic group: Black Caribbean (ref)								
Mix	0.148	0.152	0.013	0.185	−0.171	0.169	−0.222	0.186
Black African & Black other	−0.116	0.183	−0.119	0.185	0.032	0.179	0.028	0.182
Indian	**0.492**	0.192	**0.557**	0.207	0.276	0.197	0.328	0.220
Pakistani & Bangladeshi	0.235	0.227	0.277	0.236	0.179	0.215	0.213	0.226
Chinese	**0.500**	0.243	**0.547**	0.254	**0.485**	0.242	**0.546**	0.245
Other ethnic	0.173	0.227	0.246	0.240	0.046	0.224	0.127	0.230
Second generation	0.097	0.118	0.119	0.119	0.014	0.112	0.033	0.116
Age: 26–35 years old (ref)								
36–40 years old	**−0.492**	0.116	**−0.491**	0.118	**−0.512**	0.108	**−0.515**	0.110
41–45 years old	*−0.144*	0.153	−0.161	0.153	−0.227	0.147	−0.237	0.148
46–50 years old	**−0.547**	0.217	**−0.547**	0.219	**−0.485**	0.216	**−0.487**	0.217
51–55 years old	**−0.619**	0.288	**−0.619**	0.285	*−0.470*	0.288	*−0.476*	0.288
56–60 years old	**−0.741**	0.285	**−0.741**	0.287	**−0.668**	0.281	**−0.673**	0.283
61–65 years old	−0.365	0.254	−0.370	0.256	−0.304	0.242	−0.310	0.245

Religious affiliation: Christian (ref)								
Religion not available	−0.234	0.167	−0.239	0.167	−0.059	0.164	−0.072	0.169
Hindu	−0.315	0.207	*−0.357*	0.210	0.043	0.227	0.002	0.245
Muslim	−0.243	0.195	−0.256	0.198	−0.002	0.199	−0.017	0.209
Sikh	*−0.419*	0.229	**−0.459**	0.234	−0.029	0.247	−0.067	0.267
Other religion	−0.548	0.361	−0.585	0.371	−0.203	0.372	−0.251	0.383
No religion	**−0.378**	0.148	**−0.378**	0.148	**−0.341**	0.144	**−0.345**	0.145
Have limiting long term illness	**−0.430**	0.145	**−0.419**	0.146	**−0.335**	0.145	**−0.336**	0.150
Education: Degree qualification (ref)								
High qualification	0.140	0.245	0.130	0.245	0.227	0.235	0.218	0.235
No/other qualification	**−0.516**	0.185	**−0.525**	0.187	**−0.432**	0.183	**−0.447**	0.186
Cambridge scale of occupations score	**−0.010**	0.003	**−0.009**	0.003	**−0.009**	0.003	**−0.009**	0.003
Employment status: Full-time (ref)								
Part-time	−0.168	0.204	−0.156	0.207	−0.200	0.178	−0.187	0.181
Self-employed	**−0.557**	0.165	**−0.586**	0.165	**−0.496**	0.154	**−0.524**	0.156
Other economic activities	0.067	0.106	0.075	0.106	0.088	0.100	0.093	0.100
Region of residence: London (ref)								
North	−0.093	0.131	−0.098	0.132	−0.078	0.117	−0.085	0.119
Midlands	**−0.334**	0.126	**−0.331**	0.126	**−0.284**	0.120	**−0.288**	0.122
South	−0.128	0.122	−0.126	0.123	−0.131	0.109	−0.134	0.110
Wales	*−0.659*	0.351	−0.680	0.344	*−0.518*	0.312	*−0.538*	0.311
Constant	0.867	0.290	0.861	0.295	0.560	0.294	0.568	0.307
ρ (correlation between two equations)					**−0.784**	0.176	**−0.755**	0.214
	χ^2	p-value	χ^2	p-value	χ^2	p-value	χ^2	p-value
Wald z-test for coethnic = interethnic	0.89	0.346	1.7	0.192	24.79	0.000	17.84	0.000
Log-likelihood (df)	−591.553	(33)	−589.534	(36)	−901.134	(61)	−900.065	(64)
N				945				

Source: ONS longitudinal study (1991) and (2001)
Note: Statistically significant results at least at the .05 and .10 levels are highlighted in bold and italicised respectively

Table 10.5 Probit and bivariate probit estimates of probability of moving to higher occupation in 2001 for ethnic minority women

	Probit models				Bivariate probit models			
	Model 1		Model 2		Model 1		Model 2	
	B	*S.E.*	*B*	*S.E.*	*B*	*S.E.*	*B*	*S.E.*
Marital status: Stay single (ref)								
Intermarried	**−0.254**	0.109	**−0.266**	0.110	**−0.263**	0.102	**−0.271**	0.102
Co-ethnic married	0.205	0.201	0.353	0.312	**1.574**	0.342	**2.186**	0.335
Interaction terms								
Intermarried*Second generation	−0.388	0.242	−0.465	0.267	**−0.394**	0.196	**−0.486**	0.189
Intermarried*Mix			−0.019	0.314			**−0.445**	0.226
Intermarried*South Asian			−0.264	0.351			−0.396	0.247
Intermarried*other ethnic group			−0.184	0.398			**−0.615**	0.299
Ethnic group: Black Caribbean (ref)								
Mix	0.195	0.133	0.179	0.151	−0.178	0.154	−0.164	0.143
Black African & Black other	0.191	0.132	0.195	0.132	0.206	0.128	*0.218*	0.130
Indian	0.186	0.194	0.238	0.205	−0.043	0.201	−0.030	0.205
Pakistani & Bangladeshi	−0.224	0.263	−0.170	0.270	−0.362	0.251	−0.311	0.251
Chinese	0.000	0.274	0.030	0.282	−0.159	0.266	−0.075	0.261
Other ethnic	**0.564**	0.194	**0.600**	0.211	0.164	0.224	0.195	0.205
Second generation	**0.352**	0.110	**0.365**	0.112	**0.319**	0.106	**0.329**	0.105
Age: 26–35 years old (ref)								
36–40 years old	**−0.212**	0.103	**−0.207**	0.103	−0.135	0.103	−0.136	0.089
41–45 years old	**−0.319**	0.146	**−0.308**	0.147	−0.171	0.142	−0.144	0.137
46–50 years old	*−0.322*	0.188	*−0.315*	0.189	−0.176	0.184	−0.126	0.173
51–55 years old	*−0.476*	0.251	*−0.469*	0.252	−0.309	0.250	−0.230	0.228
56–60 years old	−0.668	0.340	**−0.669**	0.342	−0.464	0.325	−0.359	0.316
61–65 years old	−0.747	0.463	−0.741	0.462	−0.519	0.454	−0.529	0.445

Religious affiliation: Christian (ref)								
Religion not available	0.017	0.159	0.025	0.159	0.114	0.148	0.142	0.146
Hindu	0.149	0.216	0.126	0.218	0.344	0.218	*0.356*	0.215
Muslim	0.099	0.227	0.081	0.229	0.307	0.224	0.332	0.220
Sikh	0.247	0.251	0.222	0.254	**0.558**	0.257	**0.594**	0.255
Other religion	0.310	0.275	0.293	0.276	0.420	0.264	0.401	0.257
No religion	0.005	0.153	0.010	0.153	0.034	0.152	0.043	0.152
Have limiting long term illness	**−0.371**	0.134	**−0.374**	0.134	**−0.358**	0.123	**−0.380**	0.122
Education: Degree qualification (ref)								
High qualification	**−0.469**	0.204	**−0.459**	0.204	**−0.477**	0.196	**−0.448**	0.192
No/other qualification	**−0.424**	0.157	**−0.428**	0.157	−0.256	0.158	−0.217	0.156
Cambridge scale of occupations score	**−0.011**	0.003	**−0.011**	0.003	**−0.010**	0.003	**−0.009**	0.003
Employment status: Full-time (ref)								
Part-time	**0.309**	0.133	**0.306**	0.133	**0.255**	0.120	**0.233**	0.113
Self-employed	−0.869	0.551	−0.862	0.549	−0.832	0.524	*−0.857*	0.510
Other economic activities	0.155	0.097	0.156	0.097	0.143	0.091	0.124	0.090
Region of residence: London (ref)								
North	**0.345**	0.119	−0.084	0.128	−0.090	0.116	−0.091	0.109
Midlands	*0.266*	0.151	**−0.346**	0.119	**−0.306**	0.110	**−0.289**	0.107
South	0.128	0.147	*−0.223*	0.121	**−0.203**	0.106	**−0.213**	0.100
Wales	−0.054	0.359	−0.406	0.350	−0.375	0.294	−0.360	0.286
Constant	0.065	0.264	0.394	0.257	0.128	0.246	0.033	0.246
p(correlation between two equations)					**−0.763**	0.156	**−0.887**	0.122
	χ^2	p-value	χ^2	p-value	χ^2	p-value	χ^2	p-value
Wald z-test for coethnic = interethnic	4.70	0.030	3.66	0.056	26.63	0.000	48.75	0.000
Log-likelihood (df)	−677.641	(33)	−677.291	(36)	−1033.747	(61)	−1032.619	(64)
N				1,096				

Source: ONS longitudinal study (1991) and (2001)
Note: Statistically significant results at least at the .05 and .10 levels are highlighted in bold and italicised respectively

Table 10.3 shows that the propensity to intermarriage varies significantly with ethnicity. This finding corresponds with previous studies of interethnic unions in Britain (Berrington 1996; Muttarak and Heath 2010). Generally, Mixed ethnic individuals have the highest rates of intermarriage, followed by those from black ethnic background. South Asians including Indians, Pakistanis and Bangladeshis are commonly found to have the lowest likelihood to intermarry. Although the results show that Indians especially Indian women have higher probability of intermarriage than Black Caribbeans, this is because the analysis includes both those who remained single and who were married/cohabiting. Since the proportion of those in partnership is relatively low among Black Caribbeans, this also lowers down their estimated likelihood of being intermarried.

As expected, second generations have a higher likelihood of intermarriage than the first generation. Born and grown up in Britain, the former are naturally more exposed to British culture, norms and language, which are one of the key factors facilitating interethnic partnerships, than the latter. Birth cohorts affect the likelihood of having a native partner especially for ethnic minority women whereby the youngest birth cohort has a significantly higher chance of engaging in an interethnic union than the older cohorts born in the late 1950s or earlier.

Compared to those with a degree qualification, having other or no qualification significantly reduces the chance of interethnic partnerships for women. It appears that for both men and women, those who were in full-time education in 1991 are significantly more likely to have a native partner than those who were in employment in 1991. Employment status might be correlated with age, whereby those in full-time education in 1991 were from younger age groups, who are generally more likely to intermarry than the older ones.

The likelihood of intermarriage varies significantly with religious affiliation. Ethnic minorities of the Christian faith have a higher probability of intermarriage than their non-Christian counterparts. However, it should be noted that this could be a result of an intermarried individual converting to the religious faith of their spouse. Sex ratio does not have any relationship with the likelihood of intermarriage whereas group size, i.e. the ratio of whites to co-ethnic members in a county of residence, poses a positive effect on the likelihood of intermarriage of the ethnic minorities, especially for men.

The results from the probit estimates of the intermarriage equation suggest that interethnic partnerships do not occur at random. Generally, younger members from the minority ethnic groups who were in full-time education or highly educated in case of women and live in the area with a higher proportion of native whites to co-ethnic members are more likely to have a native spouse. If these characteristics are also correlated with an individual's labour market outcomes, the estimation of the occupational mobility equation where intermarriage is treated as exogenous could be biased. Thus, in the following analysis, the probability of moving to a higher occupational position in 2001 is estimated both independently (in probit models) and jointly with the intermarriage model (in bivariate probit models). The results are presented in Tables 10.4 and 10.5 for men and women respectively.

Tables 10.4 and 10.5 show that the estimated correlation (ρ) between the error terms affecting occupational mobility and intermarriage is statistically significant both for men and women. The significant and negative correlation (ρ) suggests that the unobserved factors that influence the likelihood of intermarriage are likely to be inversely related with the chance of achieving upward occupational mobility. The null hypothesis that the random errors between the occupational mobility and intermarriage equations are uncorrelated is strongly rejected at the .05 significance level for both men and women alike. This implies that the estimation from the probit model could be biased and the bivariate probit model is more appropriate.

Table 10.4 shows that immigrant men who are partnered with a native woman have a significantly better chance of achieving upward mobility than their single and co-ethnic married counterparts. The interaction terms of the generation*intermarried and the ethnicity*intermarried are included in Models 1 and 2 respectively to test if this intermarriage premium varies with generation and ethnic origins. The results from Model 1 suggest that intermarried first generation men have a significantly higher chance of achieving upward occupational mobility than intermarried second generation men. In Model 2, Wald tests of coefficients are performed to test whether each ethnicity*intermarried coefficient is significantly different from one another (results are available upon request). The test results reject the null hypothesis that these coefficients are different from one another implying that the probability of upward mobility is the same for intermarried men in all the ethnic groups.

Ethnic minority women who are in an interethnic union also have a significantly better chance of achieving upward occupational mobility than those who stay single or are married to/cohabiting with a co-ethnic partner. Similar to their male counterparts, intermarried first generation women significantly have higher chance of moving to a higher occupational position than intermarried second generation women. Meanwhile, the interaction terms of ethnicity*intermarried are statistically significant for some ethnic groups whereby intermarried women with mixed or other ethnic background have lower likelihood of achieving occupational mobility than intermarried Black Caribbean or Black African & Black other women.

It is rather difficult to interpret the coefficient estimates obtained from a probit model because the discrete choice model is actually of a probability. In order to make the results easier to interpret, marginal effects are computed. The marginal effects represent a percentage change in the predicted probability of moving to higher occupational positions given a one unit change in a particular independent variable when the other covariates are kept constant. For the technical details of the calculations see Greene (1996: 712–713).

The marginal effects of selected variables calculated from the bivariate probit models are presented in Table 10.6.

Table 10.6 shows that for ethnic minority men and women, having a native partner would induce an increase in the probability of moving up to a higher occupational position by about 6% points and 14% points respectively. This indicates that intermarried immigrant women gain twofold in partnering with a native spouse as compared to their male counterparts.

Table 10.6 Marginal effects obtained from selected variables in bivariate probit models in Tables 10.4 and 10.5

	Men		Women	
	Model 1	Model 2	Model 1	Model 2
Co-ethnic married	0.13	0.11	−1.39	−0.30
Intermarried	6.03	6.43	14.30	14.40
Intermarried second generation	−0.82	−1.21	−1.72	−0.32
Intermarried Mix		−1.21		−0.29
Intermarried South Asian		−0.41		−0.26
Intermarried other ethnic		−0.75		−0.29

Source: ONS longitudinal study (1991) and (2001)

It can also be inferred from Table 10.6 that the second generation gain less from the intermarriage premium than the first generation. The marginal effects obtained from Model 1 show that for ethnic minority men and women who are intermarried, being born in Britain decreases their propensity to achieve upward occupational mobility by 1% and 2% points, respectively.

With respect to ethnic differences, there is not much evidence supporting that intermarriage premium varies substantially by ethnic origins. The only minor difference is for intermarried ethnic minority women whereby being in mixed or other ethnic groups significantly decreases their probability of occupational mobility by 0.3% points compared to Black Caribbean or Black African & Black other.

10.5 Conclusion and Discussion

Using the LS data, the bivariate probit estimates of the probability of moving to a higher occupational position provide evidence that there exists an economic benefit from intermarriage for intermarried immigrant men and women. The four main findings from the empirical analysis suggest the following:

First, immigrants who are intermarried have better occupational outcomes than those who are not, supporting Hypothesis 1. Also, second generation immigrants are found to gain less from an interethnic union than the first generation, in accordance with Hypothesis 2. This finding is in line with the linked lives principle (i.e. social capital gain from marriage) and the human agency principle (i.e. partner choice and a decision to achieve assimilation). Born and bred in Britain, the second generation naturally acquire better language skills, a better knowledge of British culture and custom, and closer contacts with the white natives than their parents. Hence, the partnership with a white Briton does not contribute to the upward economic mobility of the second generation as much as the first generation because this generation has already been relatively well-integrated into British society.

Second, this study finds that immigrant women, regardless of their ethnic origin, gain the most from an interethnic partnership in accordance with Hypothesis 3.

The union with a native white man links immigrant women with mainstream white male networks which are documented to be particularly useful for career prospects. Similarly, intermarried immigrant men also gain economic benefits from partnering with a native white woman, but to a lesser extent. This is because although a union with a native white woman facilitates the socio-economic integration of intermarried immigrant men, the networks of white women are likely to be less diverse and more domestic compared to white male networks. This could be the reason why we observe the higher intermarriage premium for intermarried immigrant women.

Third, there is no clear evidence that intermarriage premium varies by ethnic origins. In fact, controlling for demographic and human capital characteristics, the propensity of upward occupational mobility no longer significantly differs between ethnic groups. Similarly, among those who are intermarried, the probability of achieving upward occupational mobility also does not vary with ethnic origins. This implies that once ethnic differences in socio-economic attributes are taken into account, all ethnic groups experience a similar gain from having a native partner.

Fourth, the finding that the selection into interethnic unions contributes negatively to occupational mobility is similar to the previous studies on the intermarriage premium. Meng and Gregory (2005) and Meng and Meurs (2009) documented that the earnings of intermarried individuals estimated in the two-stage least squares regression and instrumental variable models is higher than in the OLS estimate. Similarly, we also find that intermarried immigrants in Britain receive a higher intermarriage premium in the bivariate probit models which correct for the endogeneity of intermarriage compared to the probit model.

This result is quite puzzling because we expect a positive selection into intermarriage whereby the unobserved characteristics (e.g. ability and cultural similarity) increase both the chance of being in an interethnic union and achieving better labour market outcomes. One plausible explanation is that immigrants in an interethnic partnership are relatively liberal and have less socio-economic commitment to their ethnic community. Co-ethnic married immigrants, on the other hand, maintain a strong link with the traditional ethnic community which can impose a powerful sense of communal base for entrepreneurial dedication and motivation for upward economic mobility, as in the case of South Asians and Chinese in Britain (Modood 2004). The union with a native spouse does enhance social capital of the intermarried immigrants but they might be less ambitious or materialistic than their co-ethnic married counterparts. This might explain why we observe a negative relation between the likelihood of intermarriage and upward occupational mobility. Survey data that contains attitude questions would enable us to test this hypothesis.

This study shows that immigrants who are married to or cohabiting with a native spouse have higher chance of achieving occupational mobility than those who are not intermarried. However, this study has a limitation for it is not possible to identify neither the exact date of partnership formation nor the exact timing of occupational mobility making it difficult to draw a causal conclusion. It is feasible that an individual firstly moved up to a higher occupational position and then formed a partnership with a native partner afterwards. If this is the case, then the causal direction is reversed. Nevertheless, within limits this study shows that there is a

significant relationship between being in an interethnic union and upward mobility. Partnership formation is a crucial transition in one's life and because lives are linked, whom one is married to or cohabiting with can alter life course outcomes. Particularly for immigrant population, partner choice can play a major role in one's integration success. In order to gain better understanding of the mechanisms underlying the economic premium from a partnership, it is important to expand the study to investigate if there is also a marriage premium from the union between the first and the second generation and the union between immigrants from different ethnic groups. This is one crucial research question to be investigated in a further study on partnership formation and life course outcomes of immigrants.

Acknowledgments The permission of the Office for National Statistics to use the Longitudinal Study is gratefully acknowledged, as is the help provided by staff of the Centre for Longitudinal Study Information & User Support (CeLSIUS) particularly Christopher Marshall and Julian Buxton. This work contains statistical data from ONS which is Crown copyright and reproduced with the permission of the controller of HMSO and Queen's Printer for Scotland. The use of the ONS statistical data in this work does not imply the endorsement of the ONS in relation to the interpretation or analysis of the statistical data. This work uses research datasets which may not exactly reproduce National Statistics aggregates.

10.A.1 Appendix

Table 10.A.1 Percentages distribution of partnership type in 2001 by ethnicity and gender

	Men				Women			
	Stay single	Coethnic married	Intermarried	N	Stay single	Coethnic married	Intermarried	N
First generation	35.5	58.0	6.5	696	46.8	43.5	9.6	705
Second generation	53.6	27.3	19.1	801	64.0	21.9	14.1	1,006
Mixed	58.7	5.8	35.6	208	66.1	1.7	32.2	239
Black Caribbean	62.0	19.4	18.6	263	76.1	17.1	6.8	497
Black African	51.2	41.7	7.1	84	64.0	31.6	4.4	136
Black other	85.7	10.2	4.1	49	87.5	3.8	8.8	80
Indian	32.3	58.9	8.9	406	40.8	48.8	10.4	346
Pakistani	31.4	64.6	4.0	226	28.3	65.8	6.0	184
Bangladeshi	21.7	75.9	2.4	83	10.8	89.2	0.0	65
Chinese	53.9	32.9	13.2	76	58.2	21.8	20.0	55
Other ethnic	44.1	45.1	10.8	102	45.0	29.4	25.7	109

Source: ONS longitudinal study (2001)

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