Modelling Partnership, Fertility and Employment Changes among Individuals with a Migrant Family Background: A Multistate Microsimulation Approach

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Abstract

This study investigates partnership, fertility and employment trajectories among individuals with a migrant family background in the UK. We use multistate models and microsimulation to estimate transition rates, visualise the life courses of individuals and calculate time they spend in different states during their lives. Our analysis shows that, first, there is significant heterogeneity in the life course trajectories among migrants who arrived as children. Second, we observe a generational shift: patterns among the descendants of migrants are more similar to the native population than those of migrants. Third, there are significant gender differences in employment patterns: women are more likely to be inactive than men, although the gender gap varies across the groups – the gap is large among the population of South Asian origin and non-existent among people of Caribbean descent.

Keywords: Immigrants, second generation, partnerships, fertility, employment, multistate models, microsimulation, UK

Background

European societies have experienced increased immigration streams over the last decades (De Wenden, 2017). Immigrant integration continues to be an important societal topic. With increased immigrant and ethnic minority populations the interest has gradually shifted to also investigate the descendants of immigrants. Previous demographic research has examined fertility, partnerships, employment, education and health of the immigrants' descendants. Research shows that some groups have become indistinguishable from the native population (e.g. for the UK, defined as UK-born people with two UK-born parents), other groups exhibit specific patterns, although those vary across life domains (Hannemann et al., 2020; Ichou 2014; Loi et al., 2021; Pailhé, 2017).

Previous demographic research has analysed different life domains among immigrants and their descendants – mostly in isolation from other life domains. There is a large literature on fertility among immigrants and their descendants (Adsera, 2011; Erman, 2022; Mussino et al., 2021), partnership dynamics including research on the prevalence of mixed marriages (Hannemann et al., 2018; Wachter & de Valk, 2022); labour market participation among the descendants of immigrants (Connor & Koenig, 2015; Longhi et al., 2013; Milewski, 2013); and their health (Loi et al., 2021). This research has significantly advanced our understanding of whether and how patterns among immigrants' descendants differ from those of the native population and what role do various factors play in these differences (e.g. education, family of origin etc). However, the focus on one life domain only lacks a more holistic picture of how different life domains evolve together and are interwoven. For example, with the focus on one domain only it is difficult to understand whether generational changes in different life domains happen in a similar speed or not. Whether they are subject to the same factors some of which may be measured (e.g. increased education) and some may be unmeasured (e.g. values and norms).

The aim of this paper is two-fold. First, we investigate how partnership, fertility and employment trajectories vary between individuals with a migrant family background and the native population in the UK. Second, we simulate life trajectories of immigrants' descendants and calculate time they spend in different life course statuses. Our study is novel in the following ways. First, we simultaneously investigate multiple domains such as partnership, childbearing and labour market changes to provide a more holistic account of how they evolve together in the lives of the descendants of immigrants. Second, we adjust transition rates for observed and also unobserved characteristics of individuals to determine how much they reduce the differences between the groups and between the descendants and the native population. Third, we use microsimulation to visualise life trajectories of the descendants of immigrants. Finally, we move beyond the estimation of the transition rates and calculate time the descendants of immigrants spend in various partnership, fertility and employment states.

Employment among immigrants and their descendants in Europe

A growing body of literature has investigated the employment patterns of the descendants of post-war labour migrants. Studies show that their employment levels remain below those of native populations in Europe (Connor & Koenig, 2015; Dustmann & Theodoropoulos, 2010; Longhi et al., 2013; Milewski, 2013). Research has investigated explanations for these disparities in employment. First, many of the descendants of post-war labour migrants have low educational levels related to their parental background (Clauss & Nauck, 2010; Dustmann & Fabbri, 2005). Second, traditional gender roles and high levels of religiosity may explain the low female labour market participation among some migrant groups (Khoudja & Fleischmann, 2015).

Third, hidden discrimination in the labour market is considered important. Although some studies show that differences in employment vanish after adjusting for individual human capital (Belzil & Poinas, 2010), many studies demonstrate that ethnic gaps persist, particularly among non-Western migrant and minority groups (Khattab & Johnston, 2015). Penalties are considered to be the highest among Caribbean groups and Sub-Saharan Africans and those migrant and minority groups of Turkish, South Asian and North African origin (Khattab & Johnston, 2015; Modood & Khattab, 2016). Research has also argued that women from those groups may face both 'ethnic' and 'motherhood' penalties, particularly in countries with liberal and conservative welfare state provisions (Hartmann, 2016). Finally, state policies are expected to shape the labour market behaviour of immigrants and their descendants. Group differences are expected to be smaller in countries with inclusive integration policies and/or a wide range of policies that reduce differences between population subgroups in an effort to promote social equality (Esping-Andersen, 1999). However, a number of recent studies have challenged these assumptions, showing that 'ethnic' penalties exist in all European countries.

Recent research on immigrant families report a range of family forms that may be distinguished in three broad groups (Andersson et al., 2015; González-Ferrer et al., 2017; Kulu & Hannemann, 2016; Pailhé, 2017). The first group is formed of immigrants from other European countries and their descendants. Many of them are in unions with natives and their partnership and fertility patterns are often similar to those of native couples (Koelet and de Valk 2014). However, these studies also reveal that some groups of descendants of post-war immigrants in Europe (e.g., Southern Europeans) postpone family formation and have relatively low fertility levels (Pailhé, 2017). Several authors attributed this to cultural factors linked to their parents' countries of origin (Impicciatore, 2015); other authors emphasised the issue of unrealised fertility goals related to the challenges minority youth may face when seeking to establish themselves as adults (Andersson et al., 2017).

The second group consists of individuals of Caribbean and Sub-Saharan origin in Western Europe. A portion of these individuals form unions with partners of the same origin, while a significant number are in relationships with natives or partners of other non-native origin. They have low marriage levels and high cohabitation and separation rates (Kulu & Hannemann, 2016; Pailhé, 2017). This diversity is also reflected in differences in family size: some women have small families, whereas others have families with three or more children (Kulu et al., 2017). While group-level indicators show gradual social integration of these groups over time and across generations, the large intra-group heterogeneity requires special attention to determine which family patterns may be seen as reflections of cultural diversity or socioeconomic inequality and how patterns change over the lives of individuals with a migrant family background.

The final group consists of individuals of South Asian, Turkish and North African origin living in Western and Northern European countries. Characteristic of these groups are the high prevalence of intra-group marriages and more conservative partnership forms with high levels of marriage and low levels of cohabitation and union dissolution(Hannemann et al., 2020; Pailhé, 2017). Many women in these groups have large families (Kulu et al., 2017), and transnational marriage formation is common (Carol et al., 2014). The reasons for this are far from clear. First, shared bonds through culture, religion and socioeconomic position may promote intra-group marriages (Bayram et al., 2009); large families of origin may support the desire for large families. Second, high residential and housing segregation may facilitate the spread of intra-group marriages and help sustain a cultural and normative environment that fosters high fertility (Pan Ké Shon & Verdugo, 2015).

Methods

We follow individuals from the time leaving full time education until they reach age 50 or are censored for other reasons (e.g. emigration, mortality, lost to follow up). We focus on modelling full partnership, fertility and employment histories of individuals. Individuals become at risk when they leave full time education; they are single, childless and not employed (Figure 1). They can form a union, have a child (outside of a union) or enter employment. Once they have made their first transition they are subject to make a second transition. If their first transition was partnership formation then they are now at the risk of experiencing a separation, having a child or entering employment. Once they have made their second transition they are subject to a third transition and so on.

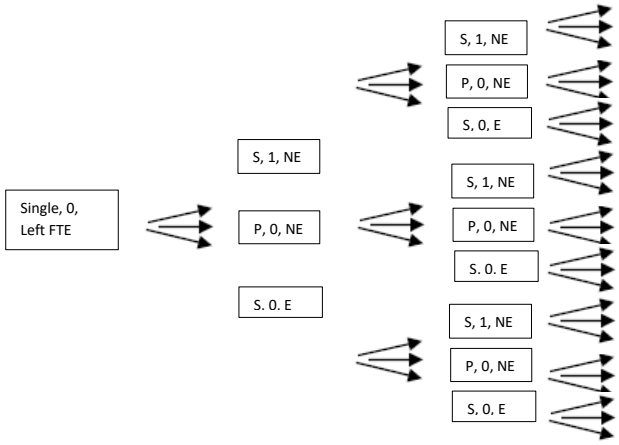

Figure 1. Partnership, fertility and employment transitions modelled in the study

S – single; P – partnered; 0, 1 – parity; NE – not employed, E - employed

Estimation of transition rates

Competing-risks event-history models are the core of multistate approaches (Putter et al. 2007). We define the transition-specific event history model as follows:

$$\ln \mu_{ijk}(t) = \ln \mu_{0,k}(t) + \sum_l \alpha_{kl} x_{ijl} + \sum_m \beta_{km} w_{ijm}(t) + \gamma_k z_{ij} + \varepsilon_{ik} \qquad (1)$$

where μ_{ijk} is the risk of experiencing *j* transition of type k for individual i. $\ln \mu_{0,k}(t)$ is the baseline log-hazard for transition *k*, which is specified as piecewise constant; x_{ijl} represents time-constant and $w_{ijm}(t)$ time-varying variables; z_{ij} is migrant status; ε_i is the individual-level error term to adjust for the nested structure of the data (transitions within individuals). However, this model specification does not allow us to measure the relative importance of each transition by migrant groups. Next, we extend this model as follows:

$$\ln \mu_{ijk}(t) = \ln \mu_0(t) + \sum_l \alpha_l x_{ijl} + \sum_m \beta_m w_{ijm}(t) + \gamma_k z_{ij} + \varepsilon_{ik} \qquad (2)$$

The model (2) is very similar to the previous one (1), except that it assumes a common baseline for all transitions and common effects of covariates. However, the risk of each transition can vary by migrant status; z_{ij} now denotes an interaction term between the type of transition and migrant origin. The advantage of this model is that we can easily compare the risk of each competing outcome and assess their relative importance (Putter et al., 2007). We use an extended dataset to model competing

outcomes simultaneously. Each individual has k records, corresponding to the number of competing transitions in the competing risks model (Mario Alberto Cleves, 2016).

Another novelty of the model (2) is that we can also adjust the transition rates for unobserved co-determinants of all three outcomes (e.g. some individuals may be more family oriented due to conservative gender norms and over-represented in some migrant groups). In order to achieve that we allow correlation between individual-level random effects for different outcomes. We use repeated events for the identification of the model (Kulu & Steele, 2013).

Simulation and visualisation

We will use estimated transition rates to simulate a synthetic population with partnership, fertility and employment histories. Once we have simulated the population, we can then determine the distribution of individuals by partnership, fertility and employment states by age or duration since leaving education. We can calculate summary measures (e.g. the proportion of childless individuals who are partnered and employed by age 30 across various migrant groups) and visualise the results.

Calculation of state expectancies

We will use our simulated population to also calculate the time individuals spend in different states during their family years, e.g. partnered with children and out of employment, and compare the patterns across migrant groups. Such an exercise maximises the use of the results of multistate models and provides rich information on family and employment trajectories of individuals.

Data

We use 9 waves (2009–2019) of the UK Household Longitudinal Study (UKHLS), which is a large, nationally representative, household panel (University of Essex, 2020b). The UKHLS collects retrospective information on year and month of childbirths, changes in employment status, and the formation and dissolution of partnerships. Additionally, information is collected on changes in partnership status, parity, and employment between the waves. We use the Marital and Cohabitation Histories file (University of Essex, 2020a), which combines and harmonises retrospective and prospective information on partnerships. The UKHLS also includes two boost samples (in waves 1 and 6) to ensure a sufficiently large sample size for studying immigrants and descendants by origin. They aimed to include at least 1,000 respondents from each of the five main ethnic groups (Indian, Pakistani, Bangladeshi, Caribbean, and African). Our sample is restricted to natives and immigrants' descendants born between 1940 and 2003.

The native population includes individuals born in the UK with two UK-born parents. We distinguish between migrants who arrived in the UK before age 15 (i.e., the 1.5 generation) and individuals who were born in the UK but at least one of their parents was born outside the UK (i.e., the second generation). We distinguish the following groups: India, Pakistan & Bangladesh, and Caribbean.

In this analysis, we focus on three life course domains: partnerships, fertility and employment. For both partnerships and employment, we examine both exit and entry transitions. Our baseline is time since leaving full time education (0-1 year, 1-3 years, 3-5 years and 5+ years). We adjust our models for age at leaving full time education as people leave education at different ages (<15, 15-19, 20+). We also adjust transition rates for educational level (High, Medium and Low), which is a time-varying variable. Additionally, for higher order events, we also include an order variable for each outcome: birth, partnership, separation, employment spell, unemployment spell; these all are time-varying variables.

Preliminary results

We have estimated models with transition rates for partnership, parity and employment changes adjusted to covariates. Next, we show how these rates translate into the distribution of state spaces by time since leaving education. We have used microsimulation for that purpose. Figure 2 (the panel at the bottom) presents the distribution of the native population by partnership status, fertility and employment over time since leaving education (for most people around age 20), separately for men and women. We see that at the beginning everyone is single and childless; by 30 years since leaving education (i.e. around age 50) most native British are partnered with 1, 2 or 3 children. Some people are unpartnered either because they have not formed a union or because they have experienced separation. We also see that most men are partnered and employed, whereas there is a significant portion of partnered women who are not employed.

Patterns are different among migrants from India who arrived as children (1.5G) and the descendants of immigrants (2G). For 1.5G, almost everyone is partnered by 30 years since leaving education; many have three (or more) children, only a small minority is unpartnered. Our analysis also shows that virtually no one has experienced separation in their lives (Figure 2, the panel at the top). However, similarly to the native men most men from India who arrived as children are employed; the share on individuals who are not employed is larger among partnered women from India than the native women. The patterns among the descendants of immigrants are similar to those of the native population: there are more unpartnered individuals among the descendants than among migrants, fewer individuals with large families and fewer partnered women who are not employed.

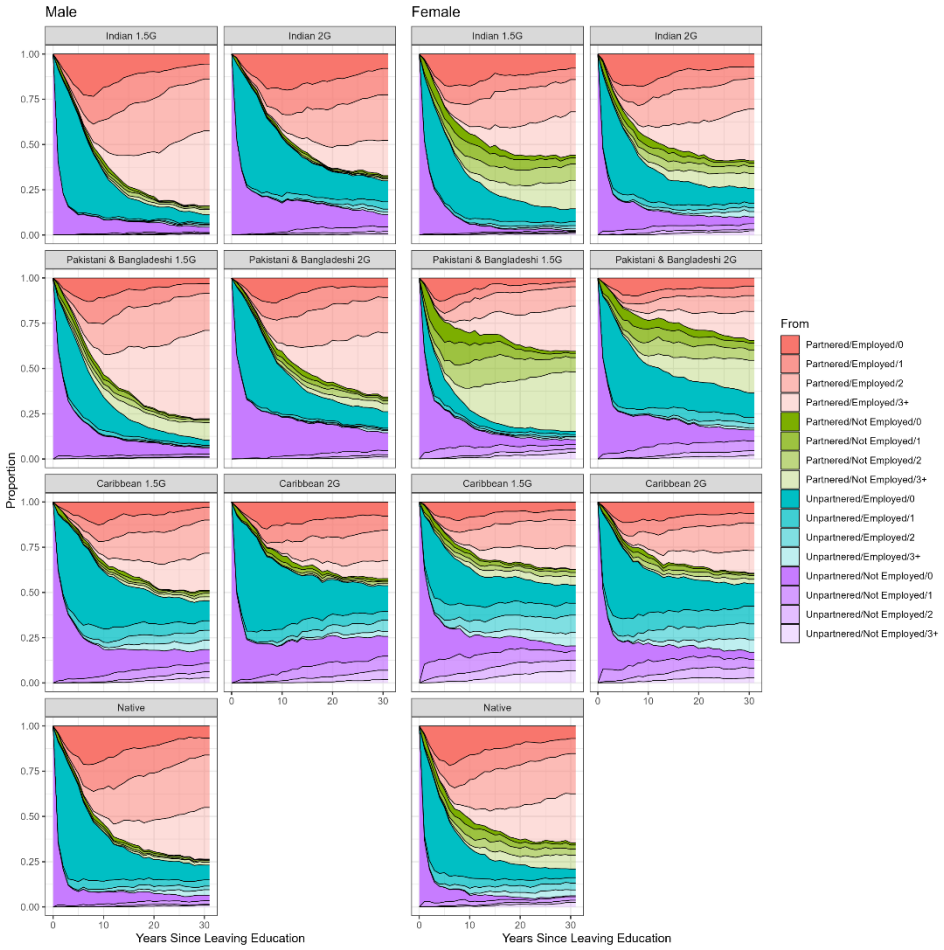

Figure 2. Partnership, parity and activity states for 1.5G and 2G men and women.

At first glance individuals of Pakistani and Bangladeshi descent look rather similar to people of Indian origin in their family and employment patterns. However, there are important differences: first, there are more individuals with large families among them; second, the share of women who are not on the labour market is significantly higher both among Pakistani migrants and immigrants' descendants than among those of Indian descent.

Finally, Caribbean population also exhibits their specific partnership, fertility and employment patterns. Figure 2 (the third panel from the top) shows large heterogeneity among migrants from the Caribbean region who arrived as children. By 30 years since leaving education, a half of them are partnered and have children, another half are single or separated, many of them have children. Characteristic to both men and women of Caribbean descent is relatively high employment levels, especially among partnered individuals. The patterns are relatively similar among migrants who arrived as children and among the descendants of immigrants.

Summary and next steps

This study investigates partnership, fertility and employment trajectories among individuals with a migrant family background in the UK. We show that multistate models and microsimulation are useful tools to estimate transition rates adjusted to socio-economic covariates, present the life courses of migrants and their descendants and calculate time individuals spend in different states during their lives. Our preliminary analysis shows the following. First, there is significant heterogeneity in the life course trajectories among migrants who arrived as children. Second, we observe a generational shift: patterns among 2G are more similar to the native population than those of 1.5G. Third, there are significant gender differences in employment patterns: women are more likely to be inactive than men, although the gender gap varies across the groups – the gap is large among the population of South Asian origin and non-existent among people of Caribbean descent.

In the next step, we will use transition rates to calculate time spent in different states. This will help us better summarise differences across migrant groups and generations. We can also prepare counterfactual scenarios.

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