# *Immigrants and ethnic fertility convergence*

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# 5: Immigrants and Ethnic Fertility Convergence
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As shown in Chapter 1, since the late 1990s net migration has overtaken natural increase in contributing to the UK population growth, largely driven by decreasing number of births until 2001 but mainly by higher immigration since then. Moreover, the rise in the number of children per women of reproductive age since 2001 has been partly attributed – explicitly or implicitly – to immigration, bringing the fertility behaviour of immigrants into the wider public debate. This chapter examines the fertility of both immigrant and UK-born women of ethnic minority heritage in order to assess the contribution of their fertility to the overall rise. The chapter also sheds light on the extent to which fertility behaviours are converging and the role of intergenerational changes in this.

Childbearing 'choices' are arguably among the major and most consequential decisions shaping people's lives and conditioned by multiple factors. Fertility behaviour is also an important dimension of the incorporation of immigrants and their children into their country of resettlement (Massey, 1981; Rumbaut, 2007). Often originating from high-fertility countries, immigrants in the UK and Europe more generally show higher fertility when compared with the norms and patterns in their host society[i], although migration and fertility patterns are changing. Less well documented, however, is the fertility behaviour of the immigrants' children, i.e. second-generation migrants. In part this is a function of data in that vital statistics by the country of birth of women's parents are not available in the UK.

This chapter addresses the challenge of distinguishing between immigrants and women of the second-generation in the UKby drawing upon fertility estimates derived from an alternative source. Until fairly recently, there were relatively few second-generation women aged 30 and over, but as the children of those who migrated to the UK in the 1950s, 1960s and 1970s have themselves reached childbearing age, their numbers have become large enough for analysts to use survey data. Here Labour Force Survey (LFS) data on people's ethnicity and country of birth are used together with the reverse survival Own Child Method to distinguish within ethnic groups between immigrant (*i.e.* foreign-born) women and UK-born (used as a *proxy* for immigrants' children) women, as detailed in Dubuc (2009, 2012). In what follows, we also refer to these two types of women, respectively, as the 'immigrant generation' and 'second generation'.

## Migration and Ethnicity: Background and Definitions

The majority of immigrant women belong to one or other of the various ethnic minorities; according to LFS data averaged for 2002-06, around 82% of foreign-born women aged 15-49 reported themselves as being from an ethnicity other than 'White British' and about a third of ethnic minority women aged 15-49 were born in the UK. As Figure 5.1 shows, the vast majority of non-white minority ethnic women who were born in the UK are aged below 40, and therefore likely to be , mostly of the second-generation in the UK (i.e. the children of women born abroad), although amongst those of Black Caribbean heritage there is a substantial proportion of (young) third-generation women. The proportion of UK-born women who are currently of childbearing age in each ethnic group results from the combination of the level of past fertility and migration history, as we now show.

<<Figure 5.1 about here>>


Immigration to the UK since 1945

Postwar reconstruction and economic recovery in Britain created job opportunities and attracted immigrant workers, especially from New Commonwealth countries. Caribbean immigrants arrived mostly in the 1950s and 1960s and, despite an early wave of employment-related immigration by women (Byron, 1998), they were largely adult men (Foner, 2009). At the same time, temporary, mainly male, migrant workers arrived from the Indian sub-continent (Ballard, 1990; Peach, 1996; Brown, 2006), partly fuelled by the post-colonial Indian partition. Then, however, adoption of restrictive immigration laws in 1962 left workers with the choice of either returning to their place of origin with the risk of not been allowed back or settling in the UK. Many chose to settle, such that in the later 1960s the migration of dependants from the Caribbean (primarily children) and India (mainly women and children) dominated the immigration flow to Britain.

Since the 1970s, immigration from the Caribbean has dwindled, so that today and for some time past (as reflected in the height of both their columns in Figure 5.2) the large majority of Black Caribbean women aged 15-49 comprises the settled immigrants' children and increasingly grandchildren born in the UK). By contrast, at this time the Indian community grew further with the arrival of Indian immigrant families forced to leave East Africa by the insecurity and expulsions resulting from the post-colonial 'Africanisation' movement. These 'twice migrants', mainly from Gujarat originally, had formed the middle class in East Africa and were relatively highly educated and often wealthier than the India-born immigrants to the UK (Bachhu, 1985; Brown, 2006). Since 2000 Indian migration has recorded a new revival (in addition to family reunion migration), with an increase in work

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permits for highly skilled Indian nationals and the result of immigration policy increasingly favouring highly skilled non-EU immigrants workers (Salt and Millar, 2006)[ii]. As a result, first-generation immigrants still count for more than half of Indian women of childbearing age, with the UK-born women of Indian heritage mainly being second generation (Figure 5.2).

<<Figure 5.2 about here>>

Family reunions started later for the Pakistani community and even more recently for the Bangladeshi community, as reflected in Home Office immigration data (Berrington, 1996). The Bangladeshis, along with Black Africans, were the fastest growing groups in the 1980s (Jones, 1993). Analysis of the 2002-06 LFS data shows that the proportion of immigrant women that have arrived within the 9 years prior to the survey varies widely between ethnic groups (Dubuc, 2012)[iii]. For the Pakistani and Bangladeshi groups, the relatively low recent migration and past high fertility combine to explain the rapid increase in the UK-born proportion, mainly second-generation women below 35 years old shown above in Figure 5.1. Immigration of Black Africans from a variety of countries has increased in recent decades (Daley, 1996; Mitton and Aspinall, 2010) and, as a result, the foreign-born Black African population still comprises the majority share of this ethnic group (Figure 5.2). The same also applies to the Chinese population in the UK, although London's Chinatown community first established itself back in the 1950s and 1960s. Early Chinese immigrants mainly originated from Hong Kong, but since the 1980s and the relaxation of emigration policy in China, they have come increasingly from Mainland China.

Most recently, immigrants to the UK have come from increasingly diverse countries of origin (Vertovec, 2007, and see Chapter 4), largely augmenting the ethnic group 'Others'[iv]. Traditionally, non-British white immigrants were mainly from Europe, North America, Australia, New Zealand and South Africa. Since 2004, the ethnic and cultural plurality of the population of the UK has been diversified by substantial immigration flows from the European Union's newest members, especially from Poland (Vertovec, 2007; Tromans et al., 2009). The new EU migrants are mainly young workers enrolled in low-skilled jobs (Salt and Millar, 2006).


Combining Ethnic Categories and Country of Birth

Ethnicity is self-reported by survey respondents but responses are shaped by a predefined nomenclature. The 2001 classification used here has two levels. Level 1 classifies individuals into five broad groups: 'White', 'Mixed', 'Asian or Asian British', 'Black or Black British',

'Chinese', and an additional group 'Other'. Level 2 provides a finer classification nested within Level 1 and distinguishing 16 ethnic groups as follows: The 'White' population is subdivided into White British, White Irish and White Other, 'Mixed' into White and Black Caribbean, White and Asian, White and Black African and Other mixed[v], 'Asian British or Asian' into Indian, Pakistani, Bangladeshi and Other Asian, and 'Black or Black British' into Black Caribbean, Black African and Other Black, and with neither Chinese nor 'Other' being subdivided.

These ethnic categories largely reflect post Second World War migration waves made up of the Caribbean, South Asian and Chinese diasporas. The recent trends and broader geographic origins of immigrants belonging to the 'Black African' ethnic category, however, complicates interpretations of their fertility estimates. Also, since 2001, in an attempt to capture new trends in migration, a category 'Other white' (notably for migrants from Eastern Europe) has been introduced, but the use of this category to approximate the second generation of 'white' migrants is problematic. For one thing, the nature of white migrants' flows has changed drastically over time and UK-born 'White Other' women could be second or higher generations. Importantly, due to the racialized nature of the ethnic nomenclature, the daughters (and grand-daughters) of white migrants may identify with  the group White British, while the daughters of Asian and Black migrants are more likely to identify with their parents' reported ethnicity, whatever their sense of being British is. Newcomers from Eastern Europe contribute to the high proportion of recently arrived women (aged 15-49) who identify with the ethnic category White Other, introduced in 2001. The UK-born White Other group is a much selected one, resulting from the 'statistical disappearance' of the children of white migrants who as they grow older and self-report their ethnicity identify with the White British ethnic category.

Postwar immigration has also resulted in the formation of mixed ethnicity populations. The age structure of the mixed ethnic origin population is very young, and the number of adult women remains low. Of those ethnically mixed women of childbearing ages in 1987-2006, 36% identified as 'White and Black Caribbean', 25% as 'White and Asian', 15% as 'White and Black African' and 25% as 'Other Mixed'.  Altogether, nearly 74% of the mixed groups were born in the UK. Among them the White and Black Caribbean, mainly UK-born, are thought to be predominantly third generation descendants of immigrant Black Caribbeans (Layton-Henry, 2002). The rapidly increasing numbers of children of Mixed ethnic origin further challenge ethnic categorisation within the UK population, complicating research that aims to follow immigrants' descendants across generations in the future (see

Chapter 9 for further detail). Despite these caveats, a fairly clear picture of ethnic convergence in fertility rates can be identified.

## Converging Ethnic Fertility Trends

Differences in fertility by ethnic group in the UK are well documented (e.g. Large et al., 2006; Rees, 2008; Coleman and Dubuc, 2010). Relatively large differences in the estimated levels of fertility between major ethnic groups reflect specific fertility behaviour of immigrant populations and the different levels of fertility experienced in their home country. Fertility estimates  from the late 1960s for ethnic groups originating from relatively high-fertility countries (e.g. South Asian and African countries) show a marked decrease in TFR over time (Coleman and Dubuc, 2010), indicating some convergence in process towards the lower UK average (Dubuc and Haskey, 2010).

Table 5.1 shows less variability in the level of the TFRs across ethnic groups in recent years compared with that in the 1990s, as measured by the decreasing coefficient of variation of TFR by ethnic group over time: from 0.36 in 1987-1997 to 0.27 in 1998-2006. Because White British women constitute the vast majority of women, their total fertility is very close to the UK-average (1.8). Irish women have higher fertility (above 2). In contrast, white women who do not identify as either British or Irish have fertility below the UK-average. Fertility differences across ethnic groups within the White category are substantial. However, distinctions within this category were only introduced in 2001, limiting trend analyses.

<<Table 5.1 about here>>

What explains the fertility convergence across ethnic categories over time that is shown in Table 5.1? Women of the various minority groups were almost exclusively foreign-born in the 1960s and 1970s. The key question therefore is: is convergence due to a change in the level of fertility over successive cohorts of immigrant women or does it reflect the changing composition of these groups, with an increasing share of ethnic minority women being the second- and third-generation descendants of immigrants?

Global Fertility Transition and Immigrants' Decreasing Fertility

The pace of fertility convergence differs across ethnic groups. This is partly related to the differences in initial level of fertility as shown in Figure 5.3; the higher the number of children per women initially, the stronger is the reduction in fertility. Some differences across groups remain, partly linked to the different stage of the demographic transition experienced by international migrants' sending countries. However, those groups with an average larger

family size in the 1970s experienced the most rapid fertility reduction. This reduction reflects the global fertility transition (toward replacement levels) taking place across many traditional countries of emigration. We further observe diverging trends for the Chinese ethnic group, where total fertility has fallen well below the UK average over the last three decades (Dubuc and Haskey, 2010), consistent with trend in mainland China, Hong-Kong and Chinese communities elsewhere.

<<Figure 5.3 about here>>

The decreasing fertility of immigrants not only reflects the demographic transition in their home country, but often tends to precede it. For instance, in the 1970s and 1980s, Indian and Pakistani immigrants showed fertility levels well below those in their home country. Such findings conform to other empirical evidence that immigrants from countries where the fertility transition has not been completed often have lower fertility than the levels in their countries of origin (e.g. examples from various receiving countries in Sobotka, 2008; Dubuc, 2016). Many immigrants come from specific areas and social milieu, which may not represent the national-level fertility of their home country's population. For instance, Indian immigrants are largely members of the urban bourgeoisie, which is leading family and reproductive changes in India. Others belong to the highly educated high middle-class expelled from East Africa in the 1970s ('twice migrants'). In contrast, many Bangladeshi immigrants in the UK have rural origins, notably from the Sylhet region (Eade et al. 1996), where fertility is higher than the national average (Table 5.2), possibly explaining levels still around 6 children per women observed in the early 1980s for the first wave of Bangladeshi female migrants. However, Bangladeshi women in the UK show the most rapid pace of fertility convergence, mirroring the rapid fertility decline in Bangladesh (especially in the last two decades). Differences between family size of immigrants and country of origin have further been attributed to the increasing impact of the receiving country in shaping fertility of immigrants, with duration of settlement being an important factor, notably for those who arrived in their childhood (e.g. Anderson, 2004; Sobotka, 2008**).**

<<Table 5.2 about here>>

Analysing trends in the fertility of immigrants over time and generations is further complicated by a potential change in the socio-demographic characteristics of successive waves of immigrants. Notably, restrictions on immigration from non-EU members are increasingly selective in favour of highly skilled immigration to the UK. For instance, the decrease in the TFR of successive cohorts of immigrant Chinese women, from 2.39 in the early 1970s to 1.26 over 1987-2006, partly reflects the changes in fertility in the country of

origin and partly results from a change in their composition, explaining their extremely low fertility, even below that of UK-born Chinese women. Early waves of Chinese immigrants were largely from Hong Kong and of peasant's background[vi]. Because Hong-Kong's TFR has reached extreme-low levels in recent years, this is likely to impact on the TFR of recent immigrants from Hong Kong, who are increasingly highly educated. Additionally, since the late 1980s and the relaxation of the emigration policy in China, relatively well-off Chinese students and highly skilled young professionals have come increasingly from urban Mainland China, where family planning programs and the One-Child Policy have also contributed to the strong decrease in fertility since the late 1970s.

The Fertility of Immigrants and Second Generation Women

To clarify the role of the second generation in explaining the fertility trends of various minority ethnic groups in the UK, fertility estimates of the UK-born are compared to those of contemporary immigrants for the main ethnic groups in Figure 5.4. For the Pakistani, Bangladeshi, Black African and, to a lesser extent the White Irish and Indian ethnic groups, the total fertility of the UK-born women is lower than that of first-generation immigrants. The difference is especially marked for the Pakistani and Bangladeshi groups. Although still over 40% above the UK overall level, the difference in the total fertility of UK-born Pakistani and Bangladeshi women is less than half the difference recorded by immigrants from those countries[vii]. Total fertility of UK-born Indian women has fallen to 1.5, well below that of the UK-born White British and overall national levels[viii] (about 1.8 over 1987-2010). The TFR is now below the UK average for both immigrant and UK-born women belonging to the Chinese and White Other ethnic groups. In contrast, the total fertility of women of Black Caribbean heritage seems to have stabilised slightly above the UK average since the 1990s (see also table 5.3), for both UK-born and foreign-born women.  The

<< Figure 5.4 about here>>

The shape of the age pattern at childbearing of UK-born Pakistani and Bangladeshi women differs from the immigrant generation and has become closer to that of White British women (Figure 5.4). Notably, the much lower fertility of UK-born ethnic minority women below age 30 largely explains their lower total fertility. This includes a significantly lower ASFR amongst teenage UK-born Bangladeshi, comparable to the White British group. Because the fertility of immigrant Pakistani women has remained stable[ix], consistent with slow decline in Pakistan, the decreasing level of fertility at young age recorded by the

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Pakistani ethnic group since the late 1980s (Dubuc, 2009) appears to be due to the much lower fertility of young UK-born Pakistanis, whose proportion is growing. More generally, the difference in overall fertility between immigrant and UK-born Pakistani, Bangladeshi, Indian and Black African women appears to be due to lower fertility at young ages for the latter. Consequently, the age patterns of childbearing for the UK-born Indian and White British are very close to each other, except at very young age. In contrast to the White British group, teenage births are minimal among British Indian women, who also record lower fertility in their early 20s, explaining their overall lower TFR.

Although the age pattern of childbearing is similar for the UK-born 'White British' and 'White Other' women, levels are lower for the latter group, especially amongst women in their late 20s. For 'White Other' women, the remarkable delayed childbearing profile of immigrants when compared to UK-born generation contrasts with the very similar age pattern of childbearing amongst White British women, regardless of place of birth. In sharp contrast to most minority groups, more than 60% of White British immigrant women are estimated to have come to the UK during their childhood, limiting both the potential disruption effect of migration on fertility and the impact of a foreign context of socialisation in shaping fertility behaviour. Traditional flows of White Other immigrants from Europe, North America and Australia are mainly motivated by study and highly skilled work experience; so more likely to delay childbearing. The recent wave of immigration from EU new members from Eastern Europe, where fertility has declined sharply (*e.g.* to about 1.3 in Poland), further contributes to this pattern (Waller et al., 2014). The low and strongly delayed childbearing of White Other immigrants suggests that migration for this group was not generally linked to family formation but was primarily motivated by work. The Chinese ethnic group is the most extreme example of delayed childbearing of all groups, with fertility largely concentrated after 30 years old[x].

Echoing the TFR results, the ASFRs of the Black Caribbean UK-born and foreign-born are close, showing an atypical age profile with relatively high level of births to women at young ages and in their late 30s (Figure 5.4) instead of the more conventional peak-shape of fertility in the mid-range ages. There was little significant change in the age pattern of the Black Caribbean women over time either. For instance, in comparison with the White groups and the Indian UK-born women, the level of fertility for UK-born Black Caribbean heritage women aged 30 and over was already the highest of the four groups studied in 1987- 1997 (Dubuc and Waller, 2014). Changes in ASFRs between 1987-1997 and 1998-2006 (data not shown) of the White British, White Other and Indian ethnic groups indicate a continuous

decline in fertility amongst young UK-born women, coupled with some increase for those aged over 30, indicating postponed childbearing. These trends are consistent with the overall increasing average age of women at childbearing in the UK, to 30 (ONS, 2013).

Immigration and National Fertility Change

Despite the global fertility transition and immigrants' fertility reduction, the overall number of births to foreign-born women is increasing, now contributing more than a quarter of all births in the UK (26.5% according to ONS, 2013). This is largely due to the younger age structure of immigrant women, with many being within the highest fertility range (20 to 40) and their numbers are growing, as shown by 2001 and 2011 censuses data (Simpson, 2013). However, immigrants' family size has reduced. While Tromans et al. (2009) show that immigrant women have produced the majority of the additional births in the UK, it is UK-born women who have contributed the greater part of the increase in total fertility since 2001 in the UK.

The extent to which the family size of immigrants remains higher than that of the UK-born needs some further clarification. In particular, classical Period TFR calculations[xi] that are based on birth registrations may result in over-estimating the fertility of immigrants, resulting in misrepresentations of immigrants' average family size (Toulemon, 2004; Sobotka, 2008; Sobotka and Lutz, 2009, Parrado, 2011; Dubuc, 2012). This is explained by the association between resettlement and family formation resulting in post-migration high fertility (Anderson, 2004), especially within the few years following migration. In France Toulemon (2004) identified a boost in fertility, especially within four years following immigration, revealing how period fertility based on French birth registrations (*i.e.* solely capturing post-migration fertility) could overestimate the total completed fertility of immigrant women. In line with findings in France (Toulemon, 2004) and the USA (Parrado, 2011), in the UK post-migration fertility boost is balanced by depressed pre-migration fertility among immigrant women, observed for all ASFRs (Dubuc, 2012; Figure 5.5)[xii]. Similarly, the analysis of the fertility of Pakistani and Bangladeshi immigrant women both prior to and after arrival in the UK (Dubuc, 2012) indicated very distinct fertility levels, highlighting high post-migration fertility for women in their 20s. This is consistent with the idea that migration of women from Pakistan and Bangladesh is largely linked to marriage and family formation. Delayed childbearing through migration further contribute to the reduced teenage birth rate for immigrant women when compared to the very high levels in Bangladesh (Coleman and Dubuc, 2010).

<<Figure 5.5 about here if really necessary, see comment above>>

Estimates in Figure 5.4 account for post migration fertility as well as some of the pre-migration fertility history of immigrants, especially for those recently arrived and most susceptible to the effect of migration on their timing at childbearing[xiii], likely minimising the overestimation of fertility levels of immigrants due to migration-specific tempo effects[xiv]. This probably explains why the overall LFS-OCM TFR of immigrant women is lower (1.94 on average over 1987-2006) than ONS estimates based on (post-migration) birth registrations in the UK, despite overall UK estimates from both methods being close (Dubuc, 2009; Coleman and Dubuc, 2010).[xv]

In sum, the fertility of foreign-born women appears only slightly higher than that of the UK-born women (on average, 1.94 and 1.77 respectively over 1987-2006, Dubuc and Haskey, 2010). Total fertility was declining for both UK-born and foreign-born women during the 1990s, after which the trend reversed for both (Dubuc and Haskey, 2010). The completed fertility and thus family size of immigrants and UK-born women are becoming more alike over time. Fertility of the second generation further contributes to the reduction of heterogeneity across ethnic groups. Changes across successive cohorts of migrants and generations support assumptions of overall converging trends in fertility across ethnic groups in population projection models, although the pace of convergence appears to vary across ethnic groups and in step with the stage of fertility transition experienced by the country of origin of the immigrant generation

Intergenerational Fertility Convergence in Context

To what extent is immigrants' fertility behaviour transmitted to the second generation as opposed to the children of immigrants adopting UK childbearing behaviour? Taken together, there is much less variability in the TFRs across UK-born ethnic groups than foreign-born ethnic groups. This is illustrated by the coefficient of variation of TFR across ethnic groups of the two sub-categories indicating that the diversity of fertility level measured between immigrant minority groups is considerably reduced (-43%), when the second and subsequent British generations are considered[xvi]. The UK-born Pakistani and Bangladeshi women have fewer children at young ages compared to their immigrant counterparts. This is consistent with findings in the Netherlands for Turkish and Moroccan women (Alders 2000, Garssen and Nicolaas 2008). At the other end of the spectrum, the remarkably low total fertility of White Other and Chinese women, below the TFR of the White British, is even lower among immigrants, making UK-born generations within these groups contribute to the overall closer

reproductive behaviour (level and timing) of UK-born generations of ethnic minority groups compared with the differences across immigrant groups.

In table 5.3, comparison of columns A and B shows the decreasing fertility of successive cohorts of immigrant women, reflecting in part fertility dynamics at their place of origin (as in table 5.2). For instance, the decreasing level of TFR for the Indian immigrants, at least partly reflects the progression of the demographic transition in India as previously discussed. Older cohorts of migrants (Table 5.3, column A) may be interpreted has a *proxy* for immigrant parents (first generation in the UK) of the UK-born women in 1987-2006 (Table 5.3, column C). The TFR of the second generation women (column C) is lower than their *proxi* parent generation (column A) for all groups. For instance, the TFR of Pakistani women was 5.1 in the 1970s, about 3.1 above the UK average at the time. TFR of the second generation Pakistani women have nearly halved compared to their (*proxy*) parents' generation. The intergenerational convergence is particularly striking for the Pakistani and Bangladeshi UK born women who are driving the TFR of their whole ethnic group closer to the UK TFR over time - although the TFR of UK-born Pakistani and Bangladeshi women is still distinct from the national values in recent years.

[Table 5.3 about here]

Second-generation ethnic-minority women are leading the ethnic fertility convergence in the UK. Because their fertility is closer to that of the UK average, their increasing proportion within their ethnic group accelerates the pace of convergence between ethnic groups. Within groups, the fertility patterns of immigrants' children is closer to the UK-average when compared to their contemporary immigrants' counterparts (i.e. same ethnic group) and suggests i) ethnic minorities intergenerational adaptation of fertility behaviour to the UK context and ii) the country of childbearing and socialisation strongly influence fertility behaviour (for both generations). Overall converging fertility of immigrants' descendants[xvii] is congruent with the intergenerational adaptation/assimilation hypothesis. Consistent with these findings, other studies on immigrants and their children's fertility have observed an inter-generational convergence, in the USA (e.g. Parrado and Morgan, 2008) and Europe (e.g. Garssen and Nicolaas, 2008; Milewski, 2010). However, here and in other studies, potentially due to the short time span, trends have not yet reached full convergence and the social processes at play remain poorly understood.

**Fertility and Education**

Changes in fertility behaviour may be associated with, as well as indicate changes in, other spheres of people's lives and social characteristics. For instance, the much lower fertility of UK-born Pakistani and Bangladeshi women may reflect a greater involvement of the second generation in higher education compared to immigrant women.

We observe strong differences in fertility for all women in the UK by educational attainment. For instance taking 3 broad categories, CGSE and below, A-level and higher education (degree) the average total fertility over the period 1987-2010 for overall UK women was respectively 2.12, 1.70 and 1.47 children per women (using LFS 2001-2010). Unsurprisingly, we observe lower fertility at young ages and relatively high levels for women over 30 associated with higher educational attainment. Shifts toward later childbearing are commonly associated with the degree of education (e.g. Rindfuss et al., 1996; Mayer and Riphaln, 2000; in the UK: Rendall et al., 2004; Berrington and Pattaro, 2014).

The educational attainment of the daughters of post-second world war migrants is relatively high, above the UK average and the White British majority for most ethnic minority groups - with highest proportions of degree level for the second generation Indian and Chinese women (Dubuc, 2015).[xix] The high educational attainment of women of the second generation in the UK is associated with lower fertility, contributing to the fertility convergence across ethnic groups (Dubuc and Waller, 2014). For instance, the very significant lower fertility of young UK-born Pakistani and Bangladeshi women is consistent with their overall higher involvement in full time education (30%) in comparison to immigrant women (7%; Dubuc, 2012) and their higher educational attainment (Dubuc and Waller, 2014).

According to the minority status hypothesis (Goldscheider and Uhlenberg, 1969), higher segments of a minority population, aware of their disfavoured status may reduce their family size in order to facilitate their socio-economic ascent and ensure a brighter future for fewer children. This may contribute to lowering the fertility of immigrant's children in the quest for upward social mobility. Indeed, Heath et al. (2008) analysing employment of the second generation found substantial ethnic penalties in the UK. Dustmann and Theodoropoulos (2010) also found that immigrants' children in the UK had much higher educational attainment than their parents, and often higher than white British, but the average employment probability and return of educational attainment in term of wages was lower for the UK-born ethnic minorities. The relatively lower fertility of many immigrants 'daughters is associated with their high educational attainment; it remains unclear to what extent it can further be explained by the minority status hypothesis, calling for new research.

**Conclusions**

The distinctiveness of fertility across ethnic groups is reducing over time. This reflects both the global fertility transition and intergenerational convergence as second-generation UK-born women constitute a rising proportion of ethnic minority communities. The increasing number of births to immigrants in the UK is primarily the result of the young age structure of immigrant women and their increasing numbers. Over time, immigrants tend to have smaller families and on average, the number of children immigrant women have is only moderately higher than non-migrant women, limiting their contribution to the increase in the overall TFR observed since 2001. Some new migrant groups, notably those from Eastern Europe and China, have remarkably low fertility, below the UK average.

Many women of the second generation in Britain have yet to complete their fertility life cycle. It remains to be seen how well current period total fertility measures are reflecting what the completed family size of young second generation women will be, or if their current low fertility will eventually be compensated by higher childbearing at later age. To date, analyses of the effect of education on the completed family size of British women suggests that the postponed childbearing at younger ages amongst women with high educational attainment has not been compensated for by higher fertility at older ages (Berrington et al., 2015). Future research should clarify if and to what extent this will also apply to the daughters of immigrants in the UK. However, data on recent trends already suggest that the ageing population of Britain is unlikely going to be overturned by immigration in the long-run, as immigrants and their daughters have increasingly less children themselves.

Despite signs of inter-ethnic convergence, the children of immigrants do, however, exhibit ethnic specific fertility profiles that may reflect distinct social and cultural backgrounds, while their high educational attainment is in turn associated with lower fertility and delayed childbearing, reducing socio-demographic differences across ethnic groups. Very low fertility levels for some immigrant and ethnic groups, as well as atypical age patterns in childbearing, seem to depart from the overall converging trends. A better understanding of the socio-demographic processes behind these very low levels and specific age patterns would help to refine current assumptions of fertility convergence toward the national average across ethnic groups in UK population projection models. For instance, projection of fertility by women's educational attainment may increasingly capture more heterogeneity within the UK population than ethnicity. Importantly, analysing intergenerational fertility changes of migrants and second generations through the lenses of ethnicity may hide major social factors

of change, as suggested by first findings on education. Social inequality may lead to large differences in reproductive behaviour across the UK population (Berrington et al., 2015) and analysing fertility convergence between ethnic groups may hide socio-demographic heterogeneity within ethnic minorities. To truly unravel the picture, further research would help to clarify how ethnicity and social inequalities intersect to explain changes in childbearing and family dynamics in the UK.

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[i] For the relevant literature on fertility of immigrants in Europe and emerging evidence for the second generation see Alders, 2000; Garssen et al. 2008; Scott and Stanfors, 2011; Milewski, 2010 and 2011, Dubuc, 2012.

[ii] Professional and managerial occupations counted for 68% of the employed Indian immigrants between 2000 and 2004 against only 39% of their Pakistani and 38% of their Nigerian counterparts (Source: Salt and Millar, 2006; Percentages were calculated by the author based on counts in Table 12: International migration flows of employed migrants between 2000 and 2004).

[iii] More than half of immigrant women of Chinese, White Other and Other ethnic designation arrived less than 10 years prior to the survey. In contrast, 30% of Bangladeshi and Pakistani women and only 15% of foreign-born White British arrived within the nine years prior to the survey (Dubuc, 2012)

[iv] For instance, LFS data from 2001 to 2006 show that about 67% of women aged 15 to 49, came within the nine years preceding the survey (Dubuc, 2012).

[v] Due to small numbers, the 4 mixed origin groups were grouped together to produce fertility estimates.

[vi] The lower socio-economic status of early Chinese immigrants is supported by a study by Dustmann et al. (2010), showing lower level of full time education, and wages of early immigrant Chinese when compared to their contemporary White natives (born between 1933 and 1954),

[vii] For instance, the average 1987-2006 Period TFR of the Pakistani and Bangladeshi UK-born women remained about 47% higher than the UK-born White British, but the difference is about 88% and 123% when foreign-born Pakistani and Bangladeshi women were considered.

[viii] About four out of five of women of fertility age in the UK are White British, largely contributing to the overall UK TFR (1.8 over 1987-2006). Therefore using the White British majority ethnic group, the UK average or all UK-born women as alternative benchmarks to evaluate ethnic fertility convergence in the UK leads to similar results, although conceptually the choice of benchmark does make a difference.

[ix] Fertility of immigrants Pakistani recorded only a small decrease at older age between the periods 1987-1998 and 1998-2006.

[x] ASFR decomposed by migrant status are not reported in figure 5.4; perhaps due to small numbers, the differences in ASFR between the UK-born and immigrant generations of Chinese women were not large enough to be statistically significant.

[xi] Period total fertility estimates the average family size a woman would have if she experienced the age-specific fertility rate in that year across her entire reproductive lifespan. This provides estimates of recent trends but with some uncertainty, notably due to the changes in the timing (tempo effects) in childbearing behaviour.

[xii] Consistently, exploring Longitudinal Study data (LS-ONS), Robards et al. (2012) observed a peak of fertility for migrant women shortly after arrival in the UK.

[xiii] Based on reverse survival techniques, LFS-OCM estimates comprises maximally 15 years of fertility history of immigrant women, including 14 years prior to the survey and independently of their arrival date in the UK (see Dubuc, 2012 on this and Dubuc 2009 for an assessment of the LFS-OCM method).

[xiv] A cohort analysis by ethnic or immigrant groups of women who have completed their fertility (above 45) would provide a good alternative to estimate the fertility of immigrants free of migration-specific tempo effect, providing the fertility history of immigrant women is documented and numbers are large enough. However, such an approach would not allow the analysis of recent fertility patterns (including comparing with fertility of contemporary second generation women).

[xv] The TFR for all immigrants (defined as overseas-born) estimated by the Office for National Statistics based on birth registrations (i.e. post migration births) was 2.3 in 1991, 2.2 in 2001 (ONS, 2009). These estimates are useful for UK population projections; but they probably tend to overestimate immigrants family size.

In addition, the impact of immigrants' children left behind in the country of origin, which could impact on LFS-OCM fertility estimates, was estimated to be very small (overall only 0.2% of the children arrived more than 4 years after their mother (see Dubuc, 2012).

[xvi] The coefficient of variation of TFR across ethnic groups of the two sub-categories (UK-born versus foreign-born women) was respectively 0.21 and 0.39 over 1987-2006; This holds true, when excluding the White British from the analysis.

[xvii] Early developments of the linear assimilation theory hypothesised a convergence in social profile towards the White British group taken as the 'reference group' and the 'mainstream', with the assumption that social convergence would follow cultural assimilation. Later developments relaxed this assumption however, and the segmented assimilation theory (Portes and Zhou, 1993) identified additionally to the mainstream scenario, a downward path and an upward path of social assimilation.

[xix] Other studies (e.g. Rothon, 2005; Heath et al., 2008), have also provided evidence for high educational attainment of the children of Asian migrants to the UK.