First Draft

Immigrant mothers, Spanish babies:
Longing for a baby-boom in a lowest-low fertility society

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Introduction

After nearly three decades of below replacement fertility in Europe, there is general acceptance that low fertility is here to stay and that population ageing is an unavoidable prospect. But acceptance does not imply full resignation. In recent years, increasing attention has been paid to the role of immigrant populations, and on whether their youthful age pyramids and higher fertility would help lessen the anticipated consequences of Europe's subfertile, labor-short, ageing and declining populations (United Nations, 2001; Lutz and Scherbov, 2002; Teitelbaum, 2004). The debate has mainly focused on the rejuvenating effect of sustained entries of young adults, and less attention has been paid to the contribution of immigrant fertility, despite the fact that the proportion of children from foreign-born mothers is increasing significantly (Haug, Compton and Courbage, 2002).

In Spain, the immigration debate is relatively recent and has mainly focused on economic integration and social cohesion issues (Pérez Díaz *et al.*, 2001; Arango and Sandell, 2004). However, since Spain has had for several years one of the lowest fertility rates in the world (less than 1.2 children per woman in the period 1995-1999) and has been singled by the United Nations as one of the countries with possibly the oldest age structure in the world in 2050 (United Nations, 2003), the demographic impact of immigration is no longer absent from the debate. In particular, since the modest but sustained rise in fertility observed in recent years has coincided with an increase in immigration, such rise has been attributed to the presence of immigrant women (*Instituto Nacional de Estadística*, 2005). Yet information on the fertility of foreign or foreign-born women is not as easily available as recent news articles[1] would suggest and measures used have serious limitations. How much do we know about the reproductive behaviour of immigrant women in Spain? Are there significant differences between their fertility patterns and those of Spanish women? And if so, are these differences likely to persist over time?

The existing literature has put forward different hypotheses to explain and predict the fertility patterns of immigrants. Some authors suggest that the first generation of certain immigrant groups tend to *maintain* the reproductive norms and patterns of the country of origin (Abbasi-Shavazi and McDonald, 2002). A considerable number of studies support the *adaptation* hypothesis, which predicts that immigrants gradually adjust their reproductive behaviour to that of the host country (Andersson, 2004). Past research has also shown that convergence between

[1] "La natalidad sigue en alza impulsada por las madres inmigrantes" (*El País*, 29 June 2004); "La natalidad continúa en alza por sexto año consecutivo, sobre todo gracias a las inmigrantes" (*El País*, 23 June 2005).

the fertility patterns of migrants and those of the host country cannot be entirely attributed to fertility change but also to the fact that migrants are a *selected* group of individuals, regarding both observed characteristics, such as education, marital status or parity, and unobservable traits, such as social mobility aspirations and family preferences (Feliciano, 2005). There is also evidence that the *disruption* caused by international migration depresses fertility, at least temporarily, because of the economic costs and the separation from partners it often involves as well as the difficulties of the settling-in process (Carter, 2000). However, challenging this view, some authors have documented a fertility-enhancing effect of migration: immigrants would experience high fertility shortly after arrival at destination, particularly when migration is motivated by union formation and family building (Alders, 2000; Andersson, 2004). In the same line, Toulemon (2004) argues that higher-than-average fertility among immigrant women in France is partly due to a deliberate postponement of childbearing until the post-arrival period. The fact that all of these hypotheses have received support in some studies, but have been challenged in others could suggest that are more complementary than competing and that the effect of migration on fertility may be contingent on social context, time period and immigration group. More recent studies have placed special emphasis on the socioeconomic and political context of the host society. According to Frank and Heuveline (2005), social stratification and differential opportunity structures at destination are more relevant in shaping immigrants' reproductive behaviour than influences from the home society and might even encourage earlier and higher fertility. The fertility patterns adopted by irregular immigrants might also be influenced by the legitimacy that children could provide in their families, since children status as citizens by virtue of birth may facilitate their parents' right to legal residence (Bledsoe, 2004).

This paper aims at providing some insights into the reproductive behaviour of foreign women in Spain, taking into account the heterogeneity of the immigrant population, in terms of origin, demographic and socioeconomic characteristics. We examine differentials in fertility levels as well as in other reproductive indicators, such as proportion of adolescent births, non-marital births and low-weight births. We also conduct a multivariate analysis on current fertility to determine to what extent observed differentials are due to demographic and educational composition. Lastly, since some of the hypothesized effects of migration on fertility are contingent on duration of stay in the host country, we examine changes in reproductive dynamics over length of residence.

Spain: a new country of immigration

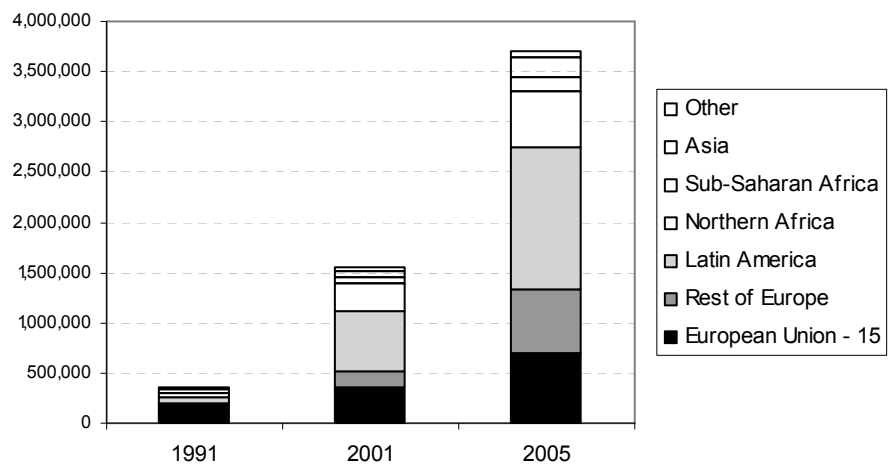
Spain, a country of emigration until the early 1970s, has become a receiving country in the last twenty years. According to the continuous population register, this Southern European country hosted 3.7 million foreigners in early 2005, up from less than 400,000 in 1991 and over 1.5 million in 2001. Immigration has therefore experienced a rapid and accelerated growth. With an inflow of almost 500,000 foreigners in 2003, Spain is currently the main receiving country of Europe (Eurostat, 2004).

At the onset of the current wave, a majority of immigrants originated in other European countries. Most European immigrants were highly-skilled professionals, frequently intra-company transferees, but also, and increasingly, entrepreneurs attracted by the expanding tourism industry, which has also drawn an important contingent of European retirees. Throughout the 1970s, there were also former Spanish emigrants returning home after decades abroad, often with their foreign-born children (Colectivo IOE, 1987). Labour migration from non-European countries started to grow in the mid-1970s. When the Western European countries that had earlier on fostered the admission of foreign workers decided to close their borders, immigrants from Northern Africa, who had traditionally migrated to France, Belgium and the Netherlands, started to migrate to Spain. Most of the 44,000 applications for regularization lodged during the regularization drive of 1985-86 were filed by Moroccan citizens (SOPEMI, 1998).

As immigration increased, origins diversified. Since the mid-1990s, Spain has received massive waves of immigrants from Latin America –mainly Ecuador and Colombia, but also Peru, Argentina and the Dominican Republic– and a significant number of entries from Eastern European nationals –mostly Rumanians–. The inflow of Latin Americans is not new: Spain was the main destination for individuals moving from Argentina, Chile, Uruguay or Cuba for political reasons, mostly after 1975. However, while migration for political reasons tapered off quickly after 1980, return migration and, increasingly, labour migration, have experienced an unprecedented growth (Izquierdo *et al*., 2003). The number of Latin Americans increased from over 66,000 in 1991 to 594,000 and reached over 1.4 million in early 2005 (see figure 1). Latin Americans currently constitute 38 per cent of the total immigrant population. The Eastern European population has also grown considerably, from over 150,000 in 2001 to close to 600,000 in early 2005. At present, Eastern Europeans comprise 16% of all foreigners, a percentage similar to that of Northern Africans (15%). It is important to note that many of these foreigners are in an irregular situation. Namely, the number of foreigners with a valid residence permit was of 2 million in early 2005, 1.7 million below the number of foreigners enumerated by the population

register. The number of applications lodged in the latest regularization process, which ended on 7 May 2005, was around 700,000, or 1.1 million if dependants are included (Sandell, 2005).

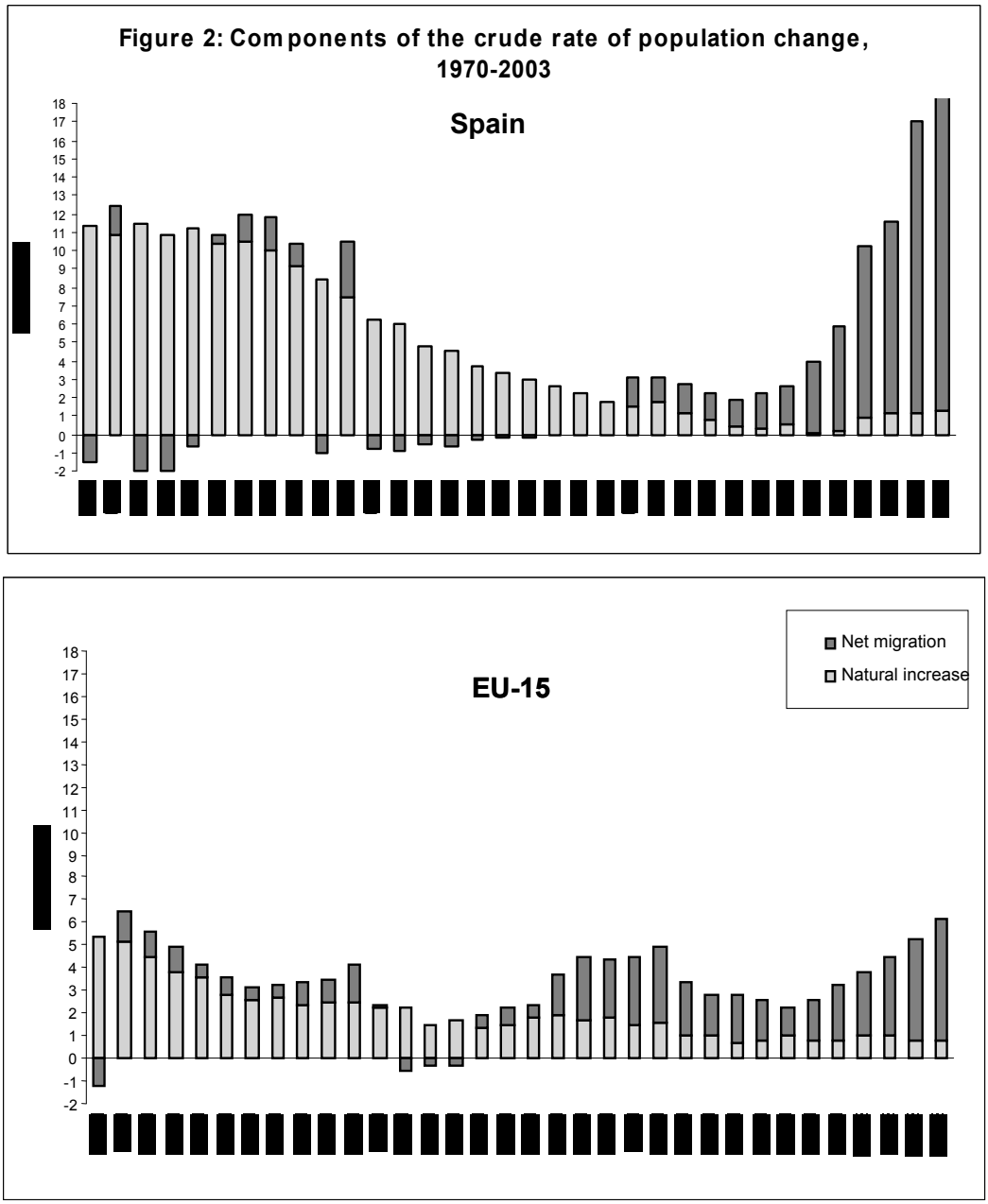
Figure 1: Number of foreigners in Spain by region of nationality



Sources: Census 1991, Census 2001, Population Register 2005 (www.ine.es)

As a result of these trends, the proportion of foreigners over the total population of Spain has increased from 0.9% in 1991 to over 8% in 2005. The significance of recent migration trends is even more remarkable if we consider the direct impact of net migration on total population change. As shown in Figure 2, while the contribution of net international migration to the country's growth was either negative or insignificantly positive during the 1970s and 1980s, its weight rose swiftly during the 1990s. By 2003, net migration accounted for 93% of Spain's population growth. The net migration rates observed in Spain in recent years are unique in the European context: Spain's net migration rate of 17.6 per thousand in 2003 contrasts with that recorded for the old European Union of 15 members for the same year –5.4 per thousand– and is even above those recorded by Germany in the early 1990s –a maximum of 9.6 per thousand in 1992– or by France in the early 1970s (Annex Figure A.1).

Figure 2: Components of the crude rate of population change, 1970-2003

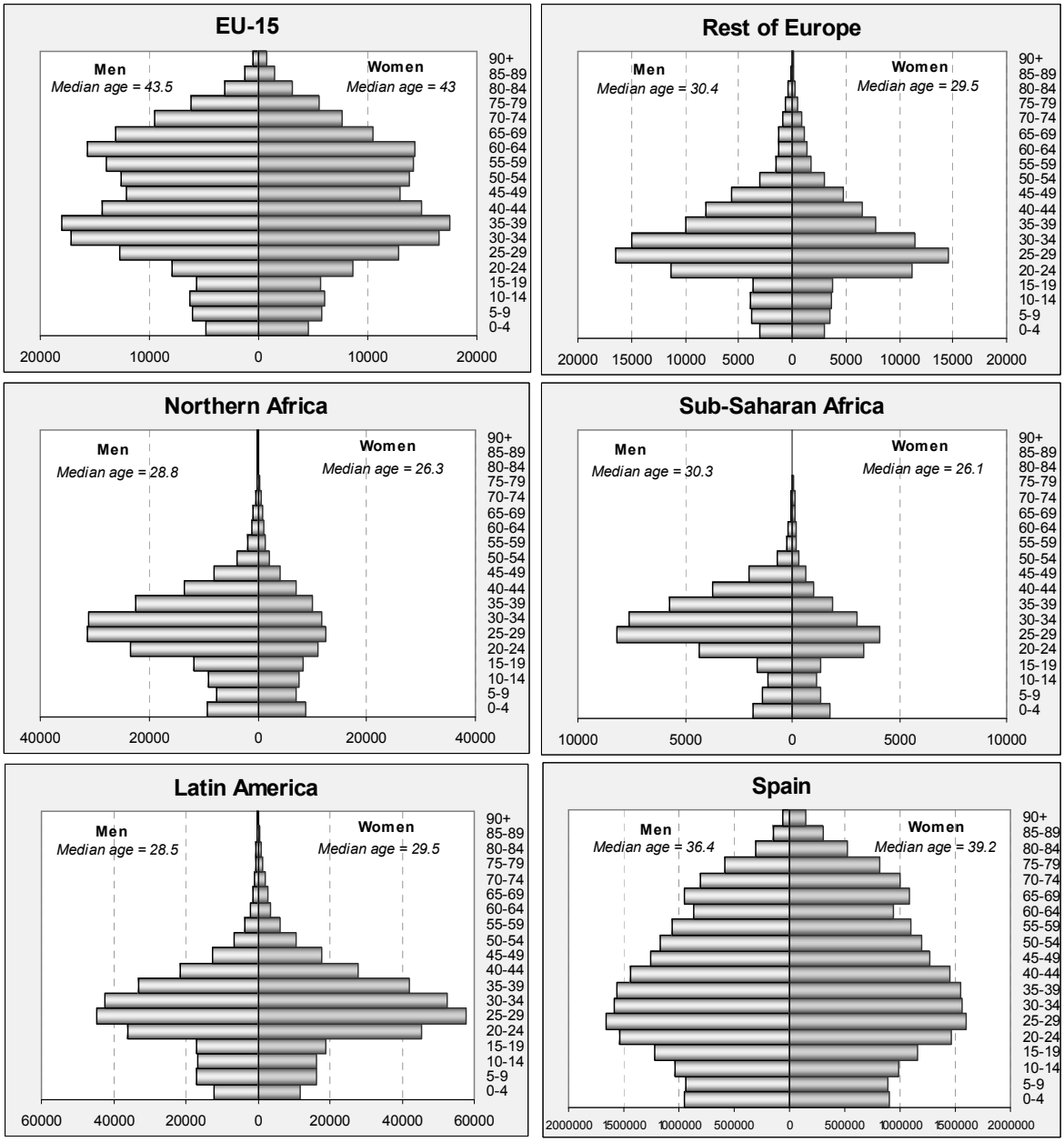


Source: EUROSTAT, Newcronos database.

Coinciding with the increasing presence of immigrants, there has also been an increase in the population's natural growth. In particular, the crude birth rate increased from 9.1 per thousand in 1996 to 10.5 per thousand in 2004. This coincidence is not fortuitous: in 2004, the crude birth rate of the foreign population was 20.5 per thousand, double that of Spaniards (9.7). Indeed, the foreign population has an age structure conducive to higher natality. The median age of the foreign population, 31.2 years in 2001, is well below that of the Spanish population (37.8), and the proportion of women in childbearing age is significantly higher among foreigners (70.6% of all women) than among nationals (52%). However, the distribution of the foreign population by

age and sex varies greatly by origin. As shown in figure 3, individuals from other countries of the former European Union are, on average, older than Spaniards, while those born in developing countries, the majority of which arrived in the last decade, are younger. The proportion of women also differs significantly by region of origin. Women are slightly underrepresented in the total foreign population (48.1% in 2001) and strongly underrepresented among Africans (34%), but the opposite is true for immigrants originating in Latin America, 55.3% of which are women.

Figure 3: Population pyramids by region of nationality



Source: National Institute of Statistics, 2001 Census.

Data and methods

The data available to measure immigrant fertility have serious limitations. The coverage of birth statistics is virtually complete, but data on live-births by nationality only became available in 1996. Therefore, the period available for fertility trend analysis is rather short. In order to calculate fertility rates, we need to resort to the continuous population register for immigrant population estimates by age[2]. Registration in the municipal population registers is assumed to be high, since it provides access to education and health services and is a prerequisite to obtain a legal residence permit, for those lacking it upon arrival, but it is probably not complete. In fact, previous research suggests that the register may undercount certain foreign population groups more than others (Devolder, Domingo and García, 2003). There may also be a time-lag between arrival and registration. If we compare the number of births in the period 1999-2003 from vital statistics and the number of children aged 0-4 born in Spain counted in the municipal population register as of January 1st, 2004, we find an overall level of underregistration of 7.3%,[3] and the level is probably higher among immigrants.

Another limitation of these sources is that they contain little information on background characteristics of the population. Vital registration statistics record mother's nationality, age, marital status and parity, but they provide no information on education, and population registers only contain data on age, sex, nationality and country of birth. Because of these data limitations and the problems associated with combining two different data sources, we turn to the 2001 Census, which contains extensive information on the characteristics of immigrants, in order to examine fertility differentials among various immigrant groups. Our analysis is conducted at the individual level and is based on a 5 per cent systematic census sample of households.

For the first time since 1920, the census did not include a question on children ever born. Hence, fertility can only be estimated indirectly, that is, matching children enumerated in the household records to mothers within the household. We base our analysis on an indicator of current fertility: co-residing with a child under age one. We focus on current fertility because children under one are most likely to reside with their mothers, irrespective of mothers' nationality, and because a large proportion of immigrant women arrived to Spain in the two year

[2] Population registers constitute a more reliable source of information on the immigrant population than alternative sources such as the Ministry of Interior Foreign Yearbook, which only covers immigrants with legal residence permits.

[3] Underregistration is highest among children aged 0-3, but diminishes after that age because a certificate from the municipal population register is required for school admission.

prior to the census and hence have had a limited exposure to giving birth in Spain. Comparison with birth statistics provides an estimated under-enumeration of children under age one in the census of 3%.

The analysis is based on a sample of 528,511 women of reproductive age (15 to 49), 4.8% of which are foreigners (25,620). Although the census provides information on both country of birth and country of citizenship, we use the latter so as to keep comparability with vital statistics data.[4] In order to capture the heterogeneity of immigrants in relation to fertility patterns, we have classified foreign women in six main categories: those from countries of the former European Union of 15 members, those from other European countries –88% of them come from Eastern Europe–, Northern Africans –mostly Moroccans (94%)–, Sub-Saharan Africans, Latin Americans –who represent 51% of all foreign women in reproductive age– and Asia.

A series of logistic regression models have been estimated to compare the probability of having a birth in the year prior to the census for various immigrant groups and Spanish women, before and after controlling for age, marital status, education and a proxy of parity –the number of children in the household. Age is coded into five-year age groups and marital status differentiates between single, married and previously married women. Education refers to the highest completed level of education and is coded into five different categories: no schooling, primary education, lower secondary, upper secondary and university studies. The results are presented as odds ratios, keeping Spanish women as the reference category.

Since fertility patterns have been shown to be influenced by duration of stay in the host society and stage in migratory cycle, we have also examined the combined effect of region of citizenship and length of residence, distinguishing the following arrival cohorts: pre-1990, 1990-1994, 1995-1999 and 2000-2001. Ideally, the pre-1990 immigrant groups should be further disaggregated into several cohorts. Adaptation, in the sense of adoption of the social norms and behaviours of the host country, may occur very gradually. However, given the recency of immigration to Spain, such level of aggregation is unavoidable at this point.

[4] The number of foreign-born women 15-49 in the 5% census sample is 752,112, while only 528,511 (70% of all foreign-born) are of foreign nationality. The percentage of foreign-born Spanish citizens varies greatly by region of origin. For instance, only 50% of women born in countries of the EU-15 are foreigners, as opposed to 77% of Latin Americans, 75% of Africans or 81% of Asians. Given Spain's past as a country of emigration, a significant number of women born abroad are, in fact, descendants of former Spanish emigrants.

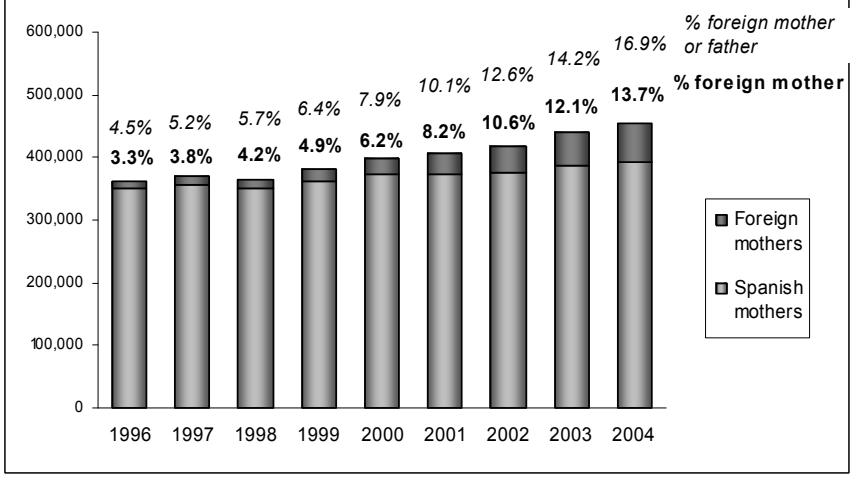
Reproductive patterns of immigrants

Measuring the fertility gap

Spain has one of the lowest fertility in the world. In 1981 the country crossed over the replacement threshold and in 1993 it entered the lowest-low fertility group (<1.3 children per woman), remaining there since then (Billari and Kohler, 2002). The total fertility rate for some northern regions, like Asturias or Galicia, has been below 1 for more than a decade. Although the late timing of fertility –Spain also has one of the oldest age at first birth in the world (29.2 in 2002)– may be underestimating the true level of cohort fertility (Ortega and Kohler, 2001), there is no sign yet that postponement of fertility is receding.

In this context of lowest-low and latest-late fertility, the 24% increase in the absolute number of births in the past 6 years –from 365,193 in 1998 to 453,278 in 2004–, after decades of uninterrupted decline, and the slight rise in the total fertility rate –from 1.16 in 1998 to 1.32 in 2004– has attracted great attention. The National Institute of Statistics (2005) and the media have emphasized the role of immigrants' fertility in what they portray as a turning trend towards higher fertility. However, the role of immigrants' childbearing needs a more careful examination.

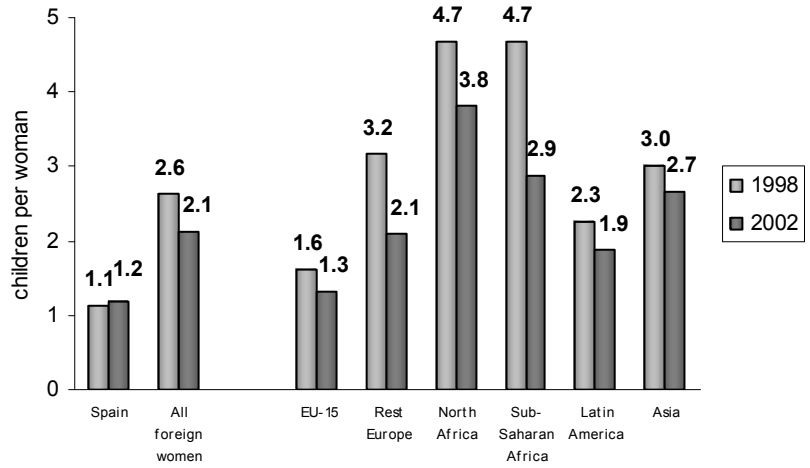
Figure 4: Number and proportion of births to foreign mothers and to at least one foreign parent, 1996-2004



At first sight, the proportion of births whose mother has foreign nationality has experienced a remarkable increase in recent years (Figure 4). In 2004, 13.7% of all live-births were to foreign mothers –and 16.9% to either foreign mother or father–, a proportion that exceeded the proportion of foreign nationals in the overall population (7%). As noted earlier, the crude birth rate of the foreign population is twice that of Spaniards, but this could be partly due to their younger age profile.

Total fertility rates can obviate the problem of different age structures. However, this synthetic indicator assumes a stable population, whereas the foreign population resident in Spain is far from stable. Due to the continuous addition of new immigrants, the foreign population varies considerably from one year to another, and each immigration cohort has a different sociodemographic make-up. Period fertility rates are also affected by the age at childbearing. Since migrant women have an earlier fertility schedule, differentials with native women tend to be overestimated. An unbiased comparison of fertility levels would require cohort data, but they are not available. We need also to bear in mind that fertility rates do not take into account the fertility realized by migrant women before they came to Spain and hence, fertility differentials among migrant groups will be influenced by age at migration and by whether they left behind any children in the country of origin. Despite all these limitations, we will compare estimated fertility rates as a preliminary assessment of the fertility gap between native and foreign women.

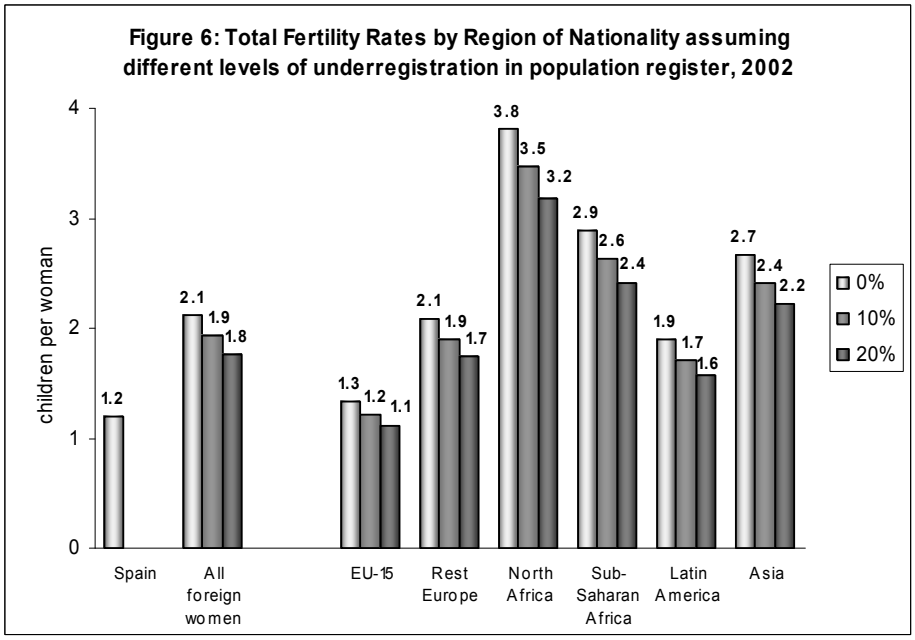
Figure 5: Total Fertility Rates by Region of Nationality, 1998/2002



Sources: Birth Statistics and Population Register

According to Figure 5, in 2002, the total fertility rate for foreign women residing in Spain was 2.12 children compared to 1.19 children for Spanish women. There are, however, large differences according to region of origin. We find the highest fertility level among Northern African women (3.81), followed by Sub-Saharan African women (2.89), and Latin American women (1.9). The accuracy of these rates is highly dependent on the reliability of population denominators. Figure 6 illustrates how the fertility gap narrows if we assume different hypothetical levels of underregistration in the population register. Estimated fertility differentials based on fertility rates, hence, should be taken with caution.

With regard to recent trends, the comparison of the fertility rates for 1998 and 2002 points towards a downward trend in the fertility level of all immigrant groups, particularly Sub-Saharan and Northern African women. The narrowing of the fertility gap between foreign and national women could be interpreted as evidence of a process of convergence towards the host society, although not necessarily, because during this recent period, the composition of many immigrant groups has changed –regarding country of origin and time elapsed since migration–, the coverage of the population register has improved, and fertility reduction has also taken place in the regions of origin.



Sources: Birth Statistics and Population Register

Immigrant fertility: In-between the country of origin and the country of destination

In order to explore the interactions between migration and fertility, reproductive patterns of immigrant women can be compared with those of native women, but also with women in their home country. We will focus next on five countries with a relatively large number of migrants in Spain. Women from Morocco, Ecuador, Colombia, Peru and the Dominican Republic comprised 49.7% of all foreign women aged 15-49 in the 2001 Census and contributed nearly half (49.3%) of all births to foreign mothers in the period 1998-2002. Table 1 compares the total fertility rate of women residing in Spain and in the country of origin, as well as their educational composition.

Table 1: Total Fertility Rates and educational composition of immigrant women aged 15-49 in Spain and in country of origin

	Total Fertility Rate				Women with Secondary+ Educ	
	Women in Spain	*Women in country of origin*			*Women in Spain*	*Women in country of origin*
	TFR (2002)	TFR (2000-2005)	TFR Women Secondary+	Projected TFR 2015-2020	%	%
Morocco	3.81	2.76	2.0	2.30	36.2	19.8
Ecuador	2.31	2.82	2.2	2.22	71.7	52.5
Colombia	1.69	2.62	2.2	2.22	76.0	64.8
Peru	1.32	2.86	2.2	2.36	86.2	66.2
Dominican Republic	1.29	2.73	2.5	2.29	52.3	50.6

Sources: Fertility estimates and projections in countries of origin: *United Nations, World Population Prospects: The 2004 Revision.* Educational composition and fertility estimates by education in countries of origin: *Morocco DHS 1992, Ecuador ENDEMAIN 2004 and Census 2001, Colombia DHS 2000, Peru DHS 2000, Dominican Republic DHS 2002.*

The fertility of women residing in Spain is lower than the fertility of women in the country of origin for all Latin American countries examined, but higher for Moroccan women. This pattern could be due to selection. Latin American women who migrated to Spain are more educated and probably more urban than those who remained in the country of origin and, as several studies have shown, the fertility levels in metropolitan areas of Latin America (Rosero-Bixby, 2004) and among highly educated women (United Nations, 2005) are close to replacement level. According to Table 1, the proportion of women with secondary or higher education is significantly larger among Ecuadorian, Colombian and Peruvian women residing in Spain than among women in their home countries, providing some evidence of this selection effect. An additional explanation is that immigrants' fertility rates only take into account the fertility that took place in Spain. A large proportion of Latin American women have recently arrived to Spain and many had children before migrating[5] but left them with relatives in the country of origin until they obtain the legal residence and a stable job. Through family reunification, many of these children will eventually come to Spain, although they will not be reflected in the birth statistics.

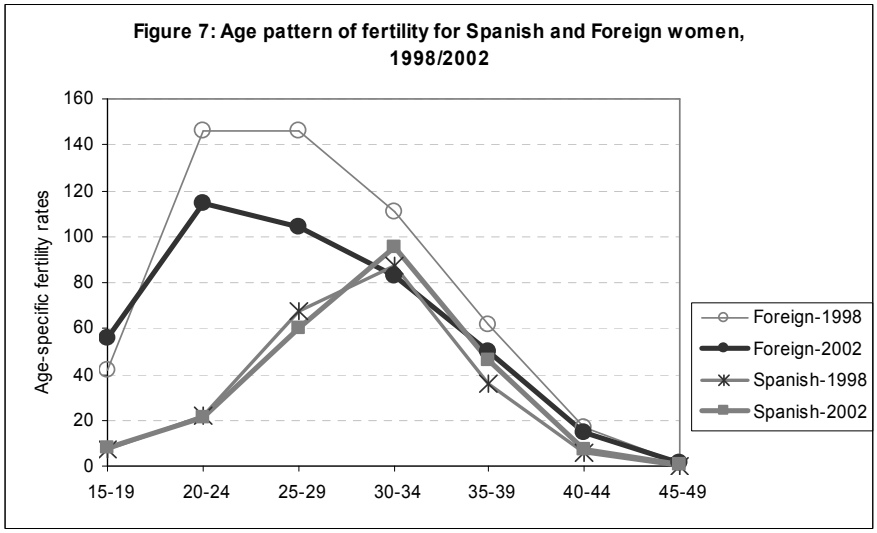
With regard to the foreseen future, according to United Nations projections, the fertility in the five countries examined will range from 2.22 to 2.36 in 2015-2020 (United Nations, forthcoming).[6] Thus, in the next decade, immigrants not only will depart from a country with an average fertility close to replacement, but if educational selection continues at play, they will have lower fertility than the national average.

[5] The mean age at arrival to Spain for recent female immigration cohorts (1995-2001) from Latin America is 28.8 while the average age at first birth in most Latin American countries ranges from 21 to 24 (United Nations, 2004).

[6] The Latin American and Caribbean region is foreseen to reach replacement level fertility in 2020-2025 (United Nations, forthcoming).

Other divergences in reproductive behaviour

Differentials between immigrant and native women are not confined to fertility levels but encompass other reproductive dimensions as well, such as the timing and the marital context of fertility. We have already mentioned that differentials in the timing of childbearing could be amplifying the gap between the total fertility rate of national and foreign women. Figure 7 shows that foreign women have a considerably earlier pattern of childbearing than Spanish women. If we compare the curves for 1998 and 2002, we observe a general decline of immigrant's fertility in all age groups except adolescents, but practically no change in the fertility calendar.



Sources: Birth Statistics and Population Register

Table 2 summarizes several indicators related to reproductive behaviour by region of origin. We can observe that the earlier timing of fertility –as reflected in adolescent fertility rates and the mean age at first birth– prevails among foreign women from all regions except EU-15. It is also important to highlight the large differentials observed among regional groups regarding the marital context of fertility: the proportion of out-of-wedlock births ranges from 13.1% among Northern African women to 59.6% among Latin American women.[7] These indicators point towards a certain maintenance of family formation patterns from the region of origin.

[7] Since we do not have data on cohabitation at the time of birth, we cannot ascertain whether the mother is a single parent or is living in a household with the father of the newborn. However, if we take the declaration of father's age in the birth certificate as a proxy for father's acknowledgement of the child, the proportion of births to Latin American women recognized by the father (93.5%) is only slightly lower than among Spaniards (98.7%). Hence, the large proportion of out-of-wedlock births among Latin

Another relevant aspect related to inequality that can be analyzed through vital statistics is whether there are significant health differentials among newborns according to mother's immigrant status. Table 2 displays the proportion of preterm (less than 37 completed weeks of gestation) and low weight births (less than 2500 grams) by region of nationality, two indicators that have been shown in the literature to reflect mothers' reproductive health and predict child morbidity as well as long-term health and psychosocial development (Conley and Bennet, 2000). The figures in Table 2 suggest that the health status of newborns to immigrant mothers is similar –and for some regions superior– to that of newborns to Spanish women. Since these results could be influenced by differences in mothers' age at birth, we have estimated the probability of having a preterm and a low weight birth, controlling for age, marital status and parity, with a logit model. The odds ratios presented in Table 3 confirm the health advantage of newborns to immigrant women. This is an encouraging result, which may reflect the selectivity of migrants, in terms of good health and other unmeasured characteristics, but also the benefits of the universal access to the health care system that prevails in Spain.

Table 2: Reproductive Indicators by Region of Nationality, 1998/2002

	Spanish women		*All foreign women*		*Region of origin*											
					EU-15		**Rest Europe**		**N Africa**		**SS Africa**		**Latin America**		**Asia**	
	1998	**2002**	**1998**	**2002**	**1998**	**2002**	**1998**	**2002**	**1998**	**2002**	**1998**	**2002**	**1998**	**2002**	**1998**	**2002**
Adolescent fertility rate	7.2	7.9	41.9	55.8	20.5	13.9	63.9	80.6	72.5	60.6	90.3	65.2	39.2	68.1	23.7	21.6
Mean age at first birth	28.9	29.7	28.1	27.0	29.5	30.3	26.9	26.0	27.3	27.2	26.5	26.7	28.2	26.3	27.8	27.7
% 3rd+ births	11.3	9.8	15.0	15.1	12.7	12.4	8.7	6.3	19.5	21.1	26.4	21.2	11.8	15.2	10.6	10.5
% non-marital births	13.8	19.3	29.6	43.0	40.4	45.7	34.9	44.8	13.5	13.1	24.5	30.5	41.9	59.6	19.8	26.5
% pre-term births	7.1	7.8	6.7	7.1	6.9	8.4	7.5	7.3	6.3	6.1	7.3	7.5	7.1	7.3	5.0	5.2
% low weight births	7.3	8.3	7.4	7.0	7.6	8.4	9.7	7.4	6.9	6.6	9.7	9.4	6.8	6.5	6.8	7.0
Contraceptive prevalence rate	72.5		65.1													
Ideal number of children	2.08		2.18													

Source: Birth statistics microdata and Fertility Survey 1999 (for data on contraceptive prevalence rate and ideal number of children).

American women residing in Spain is probably linked to their higher likelihood to form consensual unions, a pattern that prevails also in their home countries (Castro Martín, 2002).

Table 3: Odds ratios from logistic regression models on the effect of nationality on the probability of having a pre-term birth and a low weight birth, 2002

	Pre-term birth		Low birth weight (≤2500 gr)	
	Unadjusted	*Adjusted* [a]	*Unadjusted*	*Adjusted* [a]
Nationality (Region)				
Spain	1.00	1.00	1.00	1.00
EU-15	1.07	1.02	1.02	0.94
Rest of Europe	0.93	0.94	0.88 *	0.89 *
North Africa	0.77 ***	0.70 ***	0.79 ***	0.73 ***
Sub-Saharan Africa	0.96	0.86 *	1.15 *	1.04
Latin America	0.93 *	0.83 ***	0.77 ***	0.67 ***
Asia	0.64 ***	0.64 ***	0.83 *	0.82 *

[a] Adjusted for age, marital status and parity.

* p<.05, ** p<.01, *** p<.001

In brief, we have seen that the fertility level of immigrant women lies in-between their home country and the host country, but that they maintain family formation patterns similar to their home countries, as reflected in the timing and the marital context of childbearing. In contrast, the distance with respect to their countries of origin with regard to indicators of newborns' health is considerable.

New findings from the 2001 Census

In order to overcome the limitations inherent to combining vital statistics and the population register for the estimation of fertility, we now confine our analysis to the 2001 census. Table 4 describes the main characteristics of the women in our sample. From a socioeconomic perspective, women in reproductive ages from developing countries constitute a heterogeneous group. For instance, over 60 per cent of Northern African women and close to 45 per cent of sub-Saharan African women have completed less than secondary education, as compared to 20 per cent of Spaniards. In contrast, Latin American women and those from non-EU countries are almost as educated as nationals. Past research has documented analogous educational differentials by region of origin among men, and shown that the proportion of foreigners without schooling is larger among recent arrivals across all immigrant groups (Recaño and Roig, 2004). There are also noticeable differences in work status. Labour market participation is lower among Northern African women (47% are either employed or unemployed) than among Spaniards (62%), but higher for all other foreign groups. Although their occupational structure is far from homogenous, foreign women are generally drawn to unskilled manual activities and, in particular, to domestic work. It can be noted, for instance, that despite having an educational composition similar to Spanish women, 42.1% of employed Latin American women and 34% of Eastern European women are occupied in domestic jobs, often part of the informal economy.

Table 4: Sociodemographic background and household composition by region of nationality. Women aged 15-49.

	Spanish women	*All foreign women*	*Region*					
			EU-15	Rest Europe	N. Africa	SS Africa	Latin America	Asia
Sociodemographic background								
Age								
15-19	11.5	7.6	6.5	6.1	13.3	9.5	6.9	7.7
20-24	14.6	16.0	9.3	19.5	16.3	22.0	17.2	13.6
25-29	15.9	21.0	15.7	24.5	19.0	27.6	22.3	19.9
30-34	15.5	19.5	17.9	18.9	19.1	19.9	20.6	17.8
35-39	15.4	16.4	19.3	12.9	16.0	12.0	16.3	18.8
40-44	14.5	11.7	17.1	10.4	11.2	5.5	10.6	12.4
45-49	12.6	7.7	14.2	7.6	5.2	3.6	6.1	10.0
Marital Status								
single	45.5	45.0	43.7	38.9	35.3	49.2	49.7	37.6
married	49.2	46.8	46.7	52.3	59.4	45.3	41.5	56.5
sep/div/widow	5.3	8.2	9.6	8.8	5.4	5.5	8.8	5.9
Education								
no schooling	3.9	10.3	4.2	6.9	35.5	20.5	6.6	11.3
primary	16.1	18.1	13.3	16.9	26.8	24.2	17.7	18.8
lower secondary	31.0	27.7	25.5	27.6	20.3	32.3	30.1	31.0
upper secondary	28.8	28.7	31.8	31.8	12.6	18.8	31.6	24.9
University	20.1	15.1	25.3	16.7	4.9	4.3	13.9	14.1
Work Status								
employed	49.7	54.0	50.3	57.4	35.6	46.0	59.3	54.4
unemployed	11.9	12.8	12.5	13.3	11.6	15.1	13.0	11.7
student	16.3	8.7	9.9	7.7	8.8	10.7	8.0	11.0
inactive	22.1	24.6	27.2	21.6	43.9	28.2	19.7	22.9
Employed in domestic service (among those employed)	8.0	33.5	7.3	34.0	30.6	28.7	42.1	30.0
% home ownership	83.7	35.0	58.8	29.5	31.6	31.7	28.6	40.0
Household composition								
mean household size	3.8	4.7	3.2	4.3	5.2	4.9	5.1	4.8
% in one-person household	3.8	6.5	12.9	6.0	4.5	6.0	5.1	5.6
% in households with 6+ members	9.4	29.5	7.3	24.2	39.7	31.3	35.8	31.6
% 2+ families in household	0.7	13.3	3.1	14.1	9.2	11.5	18.0	10.5
% households with 1+ unrelated members	2.2	30.1	14.0	36.1	24.7	37.1	36.1	22.7
% monoparental families	13.5	15.9	13.5	10.2	7.7	22.8	20.5	11.1
No. of co-resident children								
0	53.5	69.4	62.6	75.9	67.1	69.5	70.9	71.1
1	17.0	15.3	17.4	14.9	12.6	13.9	15.5	14.2
2	22.6	10.0	15.2	6.7	8.7	8.8	9.2	10.3
3+	6.9	5.3	4.8	2.5	11.7	7.8	4.5	4.4

Source: Census 2001, 5% sample microdata.

Information on household composition indicates that foreigners live more often alone or in non-traditional household structures. One-person households are more frequent among foreigners (6.5%) than among nationals (3.8%), and so are single-parent families, although their prevalence varies greatly by origin –they are less common among Northern African and Eastern European women than among Spaniards, but more frequent among women from Latin America and Sub-Saharan Africa. In addition, except for women from EU-15, foreign women tend to live in larger households than Spanish women. For instance, the proportion of Northern African and Latin American women living in households with 6 or more members is 39.7% and 35.8% respectively compared to 9.4% among Spaniards. It is also much more frequent to find more than one family and non-relatives living in foreign women's households. An unexpected finding is that

the proportion of women in reproductive age with no children present in the household is significantly higher among foreigners –particularly from Latin America (70.9%) and from Eastern Europe (75.9%)– than Spaniards (53.5%). This could be due to the fact that a large proportion of these immigrant groups have arrived to Spain in recent years.

The effect of region of origin on current fertility

The results of the logistic regression modelling *current fertility*, defined as the occurrence of a birth in the year prior to the census, are presented in Table 5. The first model includes only the effects of region of nationality on the odds of having a birth in the last year, the second model controls for women's age and the third model controls also for marital status, number of children present in the household one year prior to the census (as a proxy for parity) and educational level. Other variables available, such as work status and household composition, were not included in the analysis because the lack of retrospective information makes it difficult to discard reverse causality.

Table 5: Results of logistic regression models of current fertility by nationality (odds ratios)

	Birth in last year		
	Unadjusted	*Adjusted* [a]	*Adjusted* [b]
Nationality (region)			
(Spain)	1.00	1.00	1.00
EU-15	0.86 †	0.79 **	0.79 *
Rest of Europe	1.06	0.91	0.60 ***
Northern Africa	2.36 ***	2.14 ***	1.23 **
Sub-Saharan Africa	1.68 ***	1.38 *	0.99
Latin America	1.32 ***	1.09 *	0.95
Asia	1.24	1.09	0.71 *

†p<.10, * p<.05, ** p<.01, *** p<.001

[a] *Adjusted for age.*
[b] *Adjusted for age, marital status, no. of co-resident children and education*

The unadjusted odds ratios show that all foreign women but those from other European countries present significantly higher levels of current fertility than Spanish women. Northern African women, in particular, present a risk of current fertility that is 2.4 times that of Spanish women. Also, the odds of having a recent birth are 68% higher among women from Sub-Saharan Africa and 32% higher among Latin American women as compared to Spanish women.

The age-adjusted ratios shown in model 2 are consistent with the fertility rates formerly presented, although differentials are of lesser magnitude. These adjusted ratios indicate that observed fertility differentials are partly due to the younger age composition of foreign women. Once we control for age, the fertility gap between Spanish and foreign women narrows, although for most regions differentials remain statistically significant.

However, when differences in marital status, parity and educational level are controlled for, only Northern African women present significantly higher risks of current fertility. In fact, the relative risk of having a recent birth among Sub-Saharan African and Latin American women is not significantly different from that of Spanish women. We can conclude, hence, that the observed fertility gaps between women from these regions and Spaniards are largely attributable to their different socio-demographic composition. These results also suggest that observed fertility differentials between certain immigrant groups and native would probably diminish if their demographic and socioeconomic characteristics converged with those of the Spanish population.

The influence of length of residence

One of the reasons for the relatively lower fertility of Latin American women, as compared to Northern African women, may be that a larger proportion of the former arrived in Spain very recently, and their reproductive patterns may have been disrupted by the move. Table 6 shows that, although most immigrants have arrived in recent periods –nearly two-thirds of all foreign women arrived 0 to 7 years prior to the Census (1995-2001)– there are significant differences by region of origin: 40 per cent of Latin American women arrived in 2000-2001, as compared to 20 per cent of Northern Africans.

Table 6: Percentage distribution of foreign women 15-49 according to year of arrival to Spain

	Year of arrival			
	before 1989	**1990-1994**	**1995-1999**	**2000-2001**
All foreign women	24.5	11.8	32.5	31.2
EU-15	44.1	16.7	24.9	14.3
Rest of Europe	17.4	9.0	33.8	39.8
Northern Africa	22.4	16.1	41.6	20.0
Sub-Saharan Africa	29.8	17.2	36.0	17.0
Latin America	19.0	8.8	32.3	39.9
Asia	32.2	18.8	34.2	14.8

Source: Census 2001, 5% sample microdata.

Several studies have shown that length of residence in the host country influences the fertility patterns of immigrant women (Andersson, 2004; Frank and Heuveline, 2005). Despite the limitations of cross-sectional information to study processes that take place over time, the analysis of successive arrival cohorts of immigrants has been often used to test the adaptation or disruption hypotheses.

Table 7: Results of logistic regression models of current fertility among foreign women aged 15-49 by period of arrival to Spain (odds ratios)

	Birth in last year *Unadjusted*				Birth in last year *Adjusted* [a]			
	<1989	**1990-94**	**(1995-99)**	**2000-01**	**<1989**	**1990-94**	**(1995-99)**	**2000-01**
All foreign women	0.43 ***	0.70 ***	1.00	0.61 ***	0.56 ***	0.72 ***	1.00	0.66 ***
EU-15	0.52 **	0.99	1.00	0.63	0.70	0.98	1.00	0.75
Rest of Europe	0.52 *	0.67	1.00	0.62 *	0.74	0.74	1.00	0.57 *
Northern Africa	0.43 ***	0.69 †	1.00	0.79	0.63 *	0.71 †	1.00	0.92
Sub-Saharan Africa	0.46 †	0.78	1.00	0.48	0.50	0.55	1.00	0.60
Latin America	0.48 ***	0.61 **	1.00	0.59 ***	0.54 ***	0.63 **	1.00	0.59 ***

†p<.10, * p<.05, ** p<.01, *** p<.001

[a] *Adjusted for age, marital status, number of co-resident children and education*

Although adaptation is a gradual process –which may take place through more than one generation–, and most immigrants have arrived to Spain in recent years, we can tentatively explore whether their fertility patterns vary as a function of duration of stay. Table 7 compares current fertility for successive immigration cohorts among the various regional groups. The results reveal that the period of arrival has a relevant influence on the odds of having a recent birth. The unadjusted risk of current fertility falls with duration of stay in Spain across all major immigrant groups. For instance, Latin American women who arrived before 1989 have 52% lower birth risks than their counterparts who arrived in 1995-1999. After controlling for age, marital status, parity and educational level, the basic pattern of declining birth risks with increasing duration of stay in Spain remains, although in some groups with relatively few observations per period, like Sub-Saharan African women, differentials lose statistical significance. Recently arrived women (2000-2001) constitute an exception to this pattern, since their current fertility is lower than that of women who arrived in the period 1995-1999. This could reflect a temporary disruption of their reproductive trajectories due to the economic costs and uncertainty associated with an international move. It is also more coherent with a pattern of labour-oriented "chain migration" involving temporal marital separation than with a pattern of migration linked to family building.

Table 8: Results of logistic regression models of current fertility among Spanish women and Foreign women by immigration cohort (odds ratios)

	Birth in last year		
	Unadjusted	Adjusted [a]	Adjusted [b]
Nationality (Region)			
(Spain)	1.00	1.00	1.00
EU-15	0.86 †	0.79 **	0.79 †
Rest of Europe	1.06	0.91	0.60 ***
N Africa <1989	1.30	1.32	0.94
N Africa 1990-94	2.09 ***	1.83 ***	1.11
N Africa 1995-99	3.03 ***	2.65 ***	1.43 ***
N Africa 2000-01	2.39 ***	2.15 ***	1.13
SS Africa <1989	1.08	0.93	0.74
SS Africa 1990-94	1.84 †	1.27	0.90
SS Africa 1995-99	2.37 ***	1.95 **	1.47
SS Africa 2000-01	1.14	1.03	0.58
Latin America <1989	0.91	0.85	0.71 **
Latin America 1990-94	1.15	0.88	0.84
Latin America 1995-99	1.87 ***	1.41 ***	1.32 ***
Latin America 2000-01	1.11	0.95	0.79 **
Asia	1.24	1.09	0.71 *
Other	1.25	1.24	0.94

†p<.10, * p<.05, ** p<.01, *** p<.001

[a] Adjusted for age.
[b] Adjusted for age, marital status, no. of co-resident children and educational level.

When we combine in a single model the effect of region of origin and arrival cohort (Table 8), the results are equivalent. When controlling for age, marital status, parity and educational level, the odds of a recent birth among African and Latin American women who arrived in Spain before 1995 did not diverge significantly from those of Spaniards. Only those women who arrived in 1995-1999 display higher fertility than Spanish women. In fact, the risks of a recent birth among Latin American women who arrived before 1990, as well as among those in the most recent arrival cohorts (2000-2001), are even lower than those among Spaniards. Our results are in line with those of Andersson (2004), who found that after a period of approximately five years, the fertility of recent immigrants in Sweden did not deviate much from that of the native-born population.

Summary and discussion

Although immigration is commonly portrayed as a potential solution to the aging of populations in the developed world, the prevailing opinion among demographers is that the likely efficacy of immigration as a means of halting the inevitable demographic aging process is limited, because immigrants themselves age and because the root cause of population aging is

fertility decline (Grant *et al*., 2004). Most studies have focused on the direct demographic impact of immigration, but not on immigrant fertility. However, we cannot discard a priori the potential rejuvenating impact that the joint effect of sustained immigration flows and higher immigrant fertility could have in a lowest-low fertility country like Spain.

The impact of immigrant fertility largely depends on the size and composition of the immigrant population –particularly with regard to region of origin and education–, the fertility gap between immigrants and natives, and the persistence of this gap over time. This paper has examined all these issues. Our results show that foreign women, particularly those from North African and Sub-Saharan African countries, have higher fertility rates than Spanish women. Nevertheless, although their weight among women of childbearing age has significantly increased (from 1.8% in 1998 to 10.6% in 2005), their impact on period fertility rates is still modest. In 2002, the total fertility rate in absence of immigration would have been 1.19 instead of 1.27; that is, immigration increased the national fertility rate in 0.08 children. While the presence of immigrants is on the rise, we should also take into account that fertility will decline in the countries of origin of future immigration cohorts. Our results also suggest that the fertility gap between foreign and Spanish women has narrowed in recent years, but these trends should be interpreted with caution. At this point, it is unclear whether such decline is due to behavioural changes in such a short period of time (1998-2002) or, rather, to improved coverage of the population register or to changes in the composition of the immigrant population.

In order to simultaneously incorporate various socio-demographic factors that shape fertility decisions, we performed an individual-based analysis of a 5% sample of the 2001 Census. Our findings show that, net of the effect of age, marital status, parity and educational composition, the fertility gap between foreign and Spanish women narrows considerably. In fact, after controlling for these factors, only Northern African women present a higher risk of current fertility than Spaniards. This may reflect the fact that women from this region are more likely to migrate for marriage or family reunification rather than for work –as reflected in their low participation in the labour force–, the opposite that occurs with the rest of the immigration groups.

Since large-scale immigration is still quite a recent phenomenon in Spain, it might be too early to test appropriately whether a process of convergence towards the reproductive patterns of Spanish women is taking place, but it is important to keep track of ongoing changes. On one hand, several indicators of immigrants' reproductive behaviour resemble those of their home countries. For instance, the timing of childbearing is considerably earlier than that of Spaniards and, in the case of Latin American women, the prevailing context of childbearing is non-marital.

On the other hand, the effect of length of residence in Spain is consistent with the adaptation hypothesis: the risk of current fertility declines with increasing time in Spain. The most recent arrival cohort (2000-2001) does not follow this pattern, since it has lower risks of current fertility than the preceding cohort (1995-1999). This would be consistent with the disruption hypothesis, but also shows that this disruption effect is temporary.

These findings have important implications, given the rapid growth of immigration in Spain. However, they have significant limitations as well. Namely, in order to assess whether differences across arrival cohorts are actually due to temporary disruption –and possible "catch-up" afterwards– or to adaptation, in the sense of convergence of cultural norms regarding childbearing preferences,[8] longitudinal analyses are necessary. Immigrants from different arrival cohorts and natives may not be comparable, even when differences in age, marital status, parity and education are accounted for. Beyond different motivations and expectations by immigrants from different arrival cohorts, there may be issues related to immigrant status and social capital that cannot be measured with census information. Also, different immigration cohorts have faced different housing and labour market opportunities. Whether gradual fertility adjustment occurs because of immigrants' adoption of low fertility norms or because increased material and opportunity costs of having children is another issue that deserves further research. Informal and temporary labour relations, long and atypical work hours and low availability of close kin support networks are likely to discourage childbearing even if fertility preferences remain unchanged.

There is another effect of immigration on Spanish fertility that we have not examined, but that is worth mentioning. In Spain, as in other developed countries, immigrant women are filling the domestic "caring gap", taking care of the old, the disabled, and the children. Even if their direct contribution to Spanish fertility is still modest, their indirect contribution is possibly notable. Given the lack of child care services in Spain and men's limited involvement in family responsibilities, women's labour force participation and childrearing is usually reconciled relying on the care provided by grandparents or immigrants (Tobío, 2001). Hence, if fertility levels are now among the lowest ones in the world, they would certainly be even lower without the contribution of immigrants to child care.

The other side of the coin is that many immigrant women must leave their own children in their home countries with relatives, in order to care for others' children. Since the sources available only measure the number of children born in Spain, the relatively low fertility levels

[8] Although the Fertility Survey 1999 does not allow meaningful analyses by region of origin because of small sample sizes, it shows that the ideal number of children among all foreign women (2.18) is only slightly higher than among Spanish women (2.08) (Table 2).

found among certain groups of immigrant women –namely, Latin American– is probably linked to this pattern. Therefore, low fertility should not be necessarily interpreted as a sign of integration in the host society, but could reflect difficult settlement experiences, particularly the barriers to attaining the legal residence and a stable job, prerequisites to both bring children left behind in the home country and to have additional children in Spain.

Further research is clearly needed. Not only has immigrants' childbearing behaviour emerged as an interesting research topic in itself –it provides the opportunity to examine how a rapid change of socioeconomic and cultural context affects fertility dynamics–, but it could also contribute to enhance our understanding of recent fertility trends and of the future demographic and social reality of many lowest-low fertility societies. However, cross-sectional data, such as those used in this paper, are ill-equipped for a proper assessment of fertility dynamics or to comprehend the multiple mechanisms through which migration affects fertility. Longitudinal data with complete migration and birth histories would allow a better understanding of the complex interplay of migration and fertility. But currently available surveys with retrospective biographies include too few immigrants in their samples to permit a meaningful analysis. The *National Survey of Immigrants,* which is to be conducted in early 2006 by the National Institute of Statistics, could potentially fill these gaps.

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ANNEX

Figure A.1: Components of the crude rate of population change, 1970-2003