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■ Abstract

Spain, a country of emigration during centuries, has turned into a country of immigration in the last twenty years—the foreign population increased from 0.9% in 1991 to 8.5% in 2005. Since Spain also has one of the lowest fertility rates in the world, the potential impact of immigration on the demographic future of the country is large. Yet immigrants' fertility patterns have received relatively little attention. This study compares a series of reproductive indicators for Spanish and foreign women using birth microdata and presents an analysis of recent fertility by region of origin based on the 2001 Census. The results show that observed fertility gaps between Spanish and foreign women are largely explained by differential socio-demographic characteristics, in particular, by age and education. Since some of the hypothesized effects of migration on fertility are contingent on length of residence, the study also compares fertility levels across migrant cohorts and detects patterns consistent with both the adaptation and the disruption hypotheses.

■ Key words

Immigration, fertility, Spain.

■ Resumen

España, un país de emigración durante siglos, se ha convertido en las dos últimas décadas en un país de inmigración —la población extranjera ha pasado de representar el 0,9% del total de la población en 1991 al 8,5% en 2005—. Dado que España tiene uno de los niveles de fecundidad más bajos del mundo, el impacto potencial de la inmigración en el futuro demográfico del país es elevado. No obstante, nuestro conocimiento de los patrones reproductivos de la población inmigrante es limitado. Este estudio compara una serie de indicadores reproductivos para las mujeres españolas y extranjeras utilizando los microdatos de nacimientos y presenta un análisis de los niveles recientes de fecundidad de las mujeres extranjeras según región de origen basado en el Censo de 2001. Los resultados muestran que las diferencias observadas en los niveles de fecundidad entre las mujeres españolas y las extranjeras son en parte debidos a disparidades sociodemográficas, en particular a la estructura por edades y al nivel educativo. Puesto que algunas de las hipótesis que relacionan migración y fecundidad están condicionadas por la duración de la residencia en el país de acogida, también se comparan los niveles de fecundidad de varias cohortes de inmigrantes, detectándose patrones que son consistentes con la hipótesis de adaptación y con la hipótesis de interrupción.

■ Palabras clave

Inmigración, fecundidad, España.

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Immigrant Mothers, Spanish Babies: Childbearing Patterns of Foreign Women in Spain

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EDITA / PUBLISHED BY
Fundación BBVA, 2007
Plaza de San Nicolás, 4. 48005 Bilbao

DEPÓSITO LEGAL / LEGAL DEPOSIT NO.: M-33717-2007
IMPRIME / PRINTED BY: Roelma, S.L.L.

Impreso en España – Printed in Spain

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C O N T E N T S

1. Introduction	5
2. Spain: A New Country of Immigration	8
3. Data and Methods	13
4. The Gap in Fertility Rates	16
5. Immigrant Fertility: In Between the Country of Origin and the Country of Destination	20
6. Other Divergences in Reproductive Behaviour	22
7. New Insights from the 2001 Census	25
7.1. The influence of region of origin	27
7.2. The influence of length of residence	28
8. Summary and Discussion	32
References	36
About the Authors	39

1. 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, Álvarez-Miranda and González-Enríquez, 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 (INE, 2005). There are, however, important gaps in the available evidence. 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 (Kulu, 2005).

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 the fertility patterns of migrants and those of the host country cannot be entirely attributed to behavioural change but also to the fact that migrants are a *selected* group of individuals, regarding education, marital status or parity, as well as other characteristics which are not as easily measured, such as work ethic and social mobility aspirations (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). 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.

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 could even encourage earlier and higher fertility. The fertility patterns adopted by irregular immigrants might also be influenced by the legal rights that children could provide to their families, as childrens' status as citizens by virtue of birth may facilitate their parents' access to legal residence (Bledsoe, 2004). The fact that all of these hypotheses have received support in some studies, but have been challenged in others suggests that they are more complementary than competing and that the effect of migration on fertility might be contingent on socioeconomic context, legislation, time period and immigrants' origin.

This paper aims at providing some insights into the reproductive behaviour of foreign women in Spain, taking into account the hetero-

geneity of the immigrant population, in terms of origin, demographic and socioeconomic characteristics. We first examine differentials in total fertility rates and discuss the limitations of this measure. We also compare foreign and Spanish women regarding other reproductive indicators, such as proportion of adolescent births, non-marital births and low-weight births. Then, based on census data, we conduct a multivariate analysis on recent fertility to assess the influence of demographic and educational composition on observed fertility differentials. Lastly, since some of the hypothesized effects of migration on fertility are contingent on duration of stay in the host country, we compare recent fertility behaviour for successive migrant cohorts.

2. Spain: A New Country of Immigration

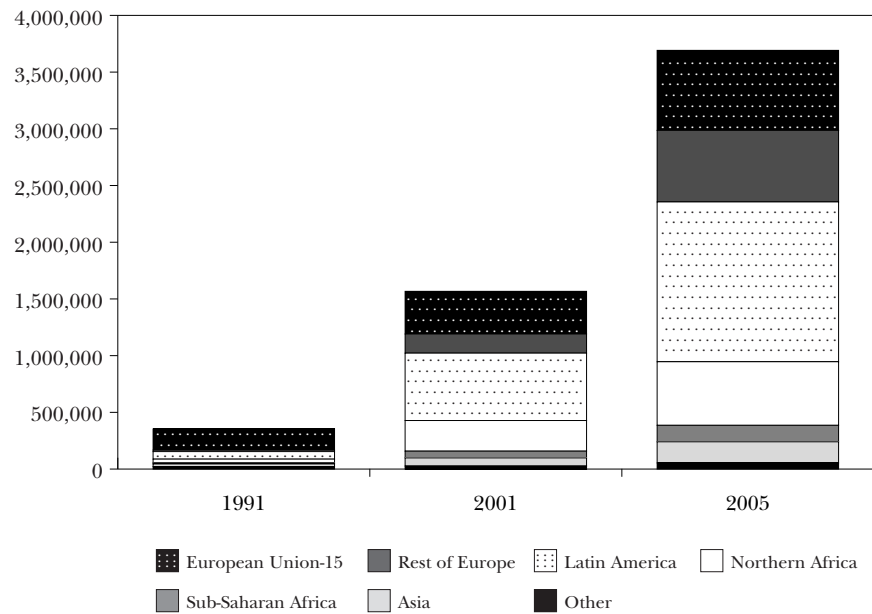
SPAIN, a country of emigration during centuries, has turned into a country of immigration in the last twenty years (Arango, 2000). According to the continuous population register, Spain hosted less than 400,000 foreigners in 1991, 1.5 million in 2001 and 3.7 million in early 2005. With a net inflow of 652,300 foreigners in 2005, Spain is currently the main receiving country of Europe (Eurostat, 2006).

At the onset of the current migration wave, a majority of immigrants originated in other European countries. Most European immigrants were highly-skilled professionals, frequently intra-company transferees, but also entrepreneurs attracted by the expanding tourism industry, which has also drawn an important contingent of European retirees (Rodríguez, Fernández-Mayoralas and Rojo, 2004). 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 a large number 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 countries—mostly from Romania. 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, experienced an unprecedented growth (Izquierdo, López de Lera and Martínez Buján, 2003). The number of Latin Americans increased from 66,000 in 1991 to 594,000 in 2001 and reached over 1.4 million in early 2005 (see Figure 2.1). Latin Americans currently constitute 38% of the total immigrant population. The Eastern European population has also grown considerably, from 150,000 in 2001 to nearly 600,000 in early 2005. At present, Eastern Europeans comprise 16% of all foreigners, a percentage similar to that of North 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 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).

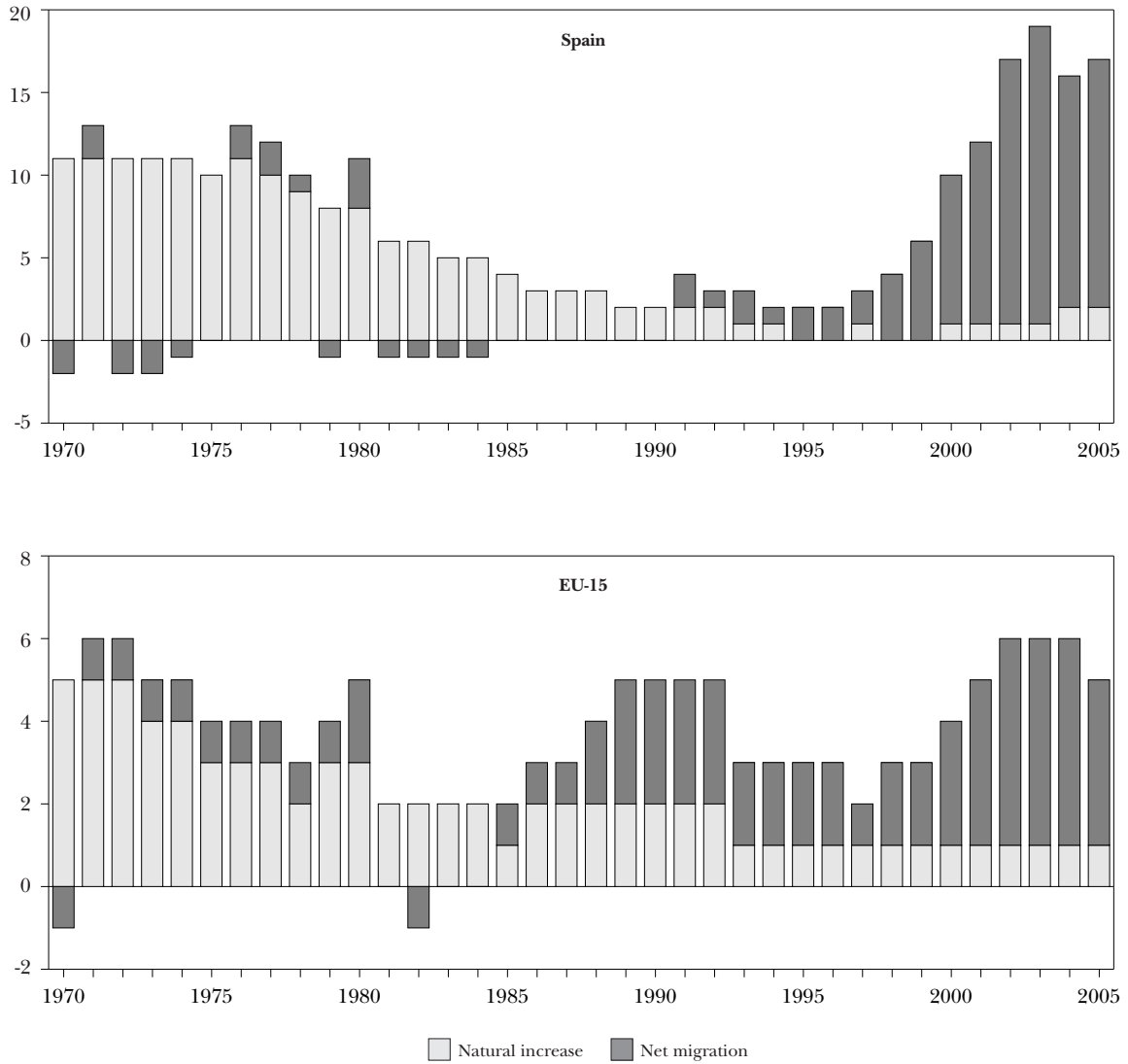
FIGURE 2.1: Number of foreigners in Spain by region of nationality



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

As a result of recent migration trends, the proportion of foreigners in the total population of Spain has increased rapidly: from 0.9% in 1991 to 8.5% in 2005. The demographic effects of these trends have become evident in the increasing contribution of immigration to sustaining population growth. As shown in Figure 2.2, the contribution of net international migration to the country's growth was either negative or insignifi-

FIGURE 2.2: Components of the crude rate of population change, 1970-2005

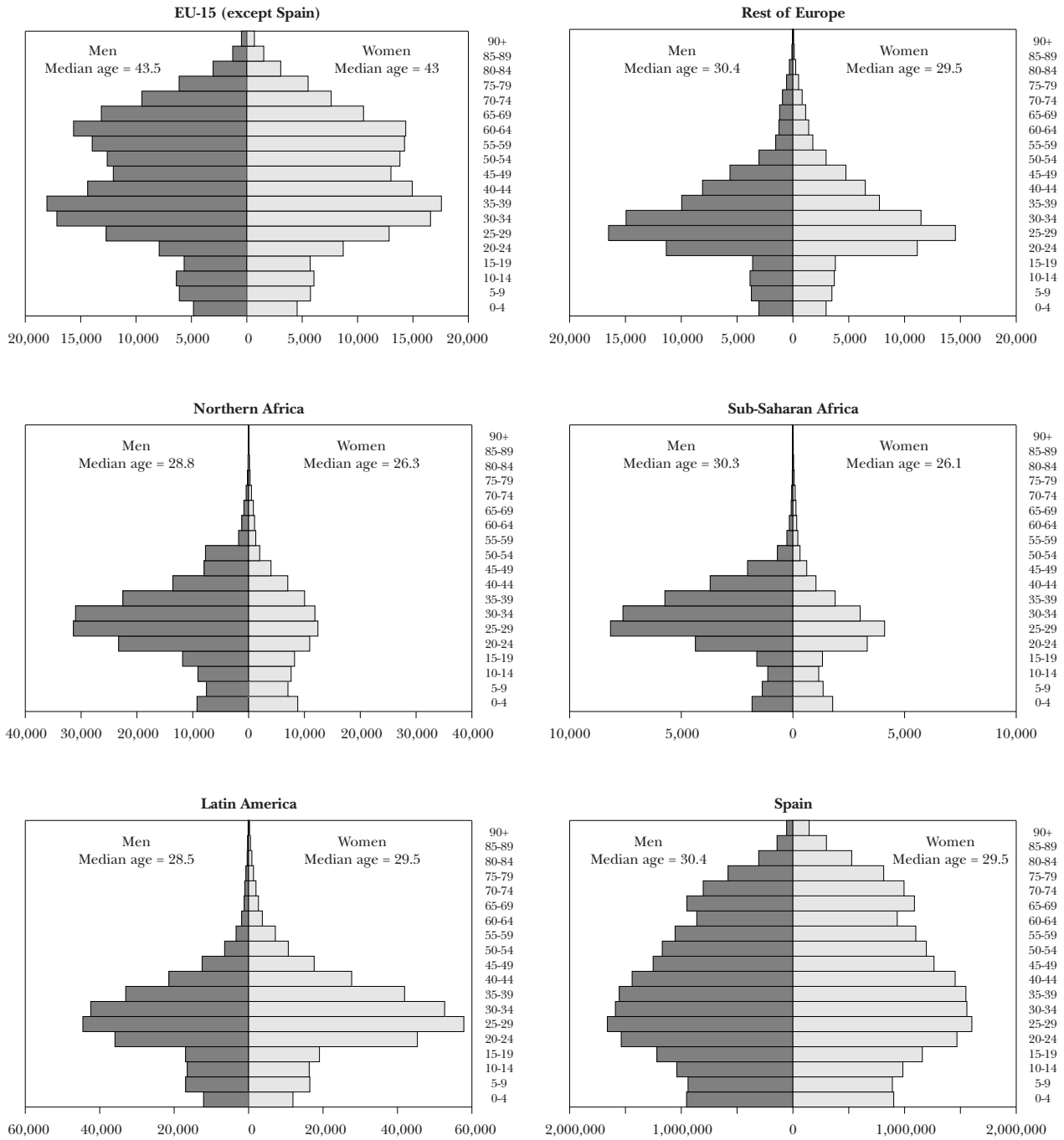


Sources: EUROSTAT, Newcronos database.

cant during the 1970s and 1980s, but 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 is well above the average of the European Union of 15 members (EU-15) (5.4 per thousand) and is even above the peak rates recorded by Germany in the early 1990s (9.6 per thousand in 1992) or by France in the early 1970s.

Coinciding with the growing presence of immigrants, there has also been a rise in the crude birth rate (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). This gap is partly explained by differences in age structure, since 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%) than among nationals (52%). There is, however, considerable variability in the age distribution of the foreign population according to region of origin. As shown in Figure 2.3, individuals from EU-15 countries other than Spain are, on average, older than Spaniards, while those from 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 whom are women.

FIGURE 2.3: Population pyramids by region of nationality



Sources: National Institute of Statistics, 2001 Census.

3. Data and Methods

THE data available to measure immigrant fertility have important 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 age¹. The coverage of municipal population registers is assumed to be high, since registration 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. Previous research has detected that certain foreign groups are undercounted (Devolder, Domingo and García, 2003) and that there is a time-lag between arrival and registration. Overregistration is also possible as immigrants do not usually deregister when they leave. We compared the number of births in the period 1999-2003 from vital statistics and the number of Spanish-born children aged 0-4 counted in the population register as of January 1st, 2004, and we found an overall level of underregistration of 7.3%², although we cannot be certain whether this level applies also to 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 also examine fertility differentials among

1. 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.

2. 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.

various immigrant groups using the 2001 Census, which contains extensive information on the characteristics of immigrants. The analysis is conducted at the individual level and is based on a 5% 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 recent fertility: co-residing with a child under age one. We focus on recent 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 years prior to the census. Comparison with birth statistics provides an estimated under-enumeration of children under age one in the census of 3% for the overall population.

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 data³. In order to capture the heterogeneity of immigrants in relation to fertility patterns, we have classified foreign women in six main categories: those from EU-15 countries other than Spain, 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 of 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 for Spanish women aged 15 to 49, 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

3. 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 other than Spain 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 Spanish emigrants.

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 the migratory cycle, we have also examined the combined effect of region of origin 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 Gap in Fertility Rates

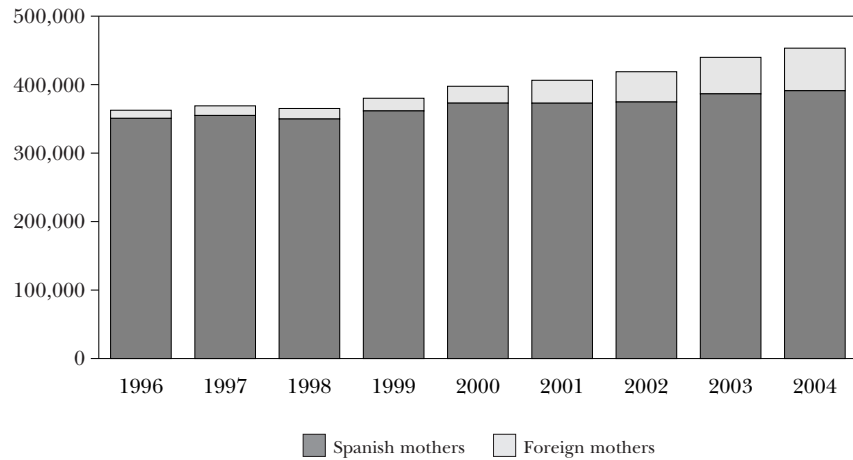
SPAIN has one of the lowest fertility levels in the world. In 1981 the country crossed over the replacement threshold and in 1993 it entered the lowest-low fertility group (<1.3 children per woman) (Billari and Kohler, 2002). The total fertility rate for some northern regions, like Asturias or Galicia, has been below 1 for more than a decade. Although the late timing of fertility—Spain also has one of the oldest mean age at first birth in the world (29.2 in 2003)—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 registered in the 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 total fertility—from 1.16 children per woman in 1998 to 1.32 in 2004—has attracted considerable attention. The National Institute of Statistics (2005) and the media⁴ have emphasized the role of immigrants’ childbearing in what they portray as a turning trend towards higher fertility. However, the impact of immigrants’ fertility on recent trends needs a more careful examination.

It is unquestionable that the proportion of births whose mother has foreign nationality has experienced a remarkable increase in recent years (Figure 4.1). In 2004, 13.7% of all live-births were to foreign mothers—and 16.9% to either a foreign mother or a foreign father—, a proportion that exceeded the proportion of foreign nationals in the overall population (7%). Also, we have noted earlier that the crude birth rate of the foreign population is twice that of Spaniards. However, these disparities could be partly due to immigrants’ younger age profile.

4. “Births on the rise for the sixth consecutive year thanks to immigrants” (*El País*, 23 June 2005).

FIGURE 4.1: Number and proportion of births to foreign mothers and to at least one foreign parent, 1996-2004



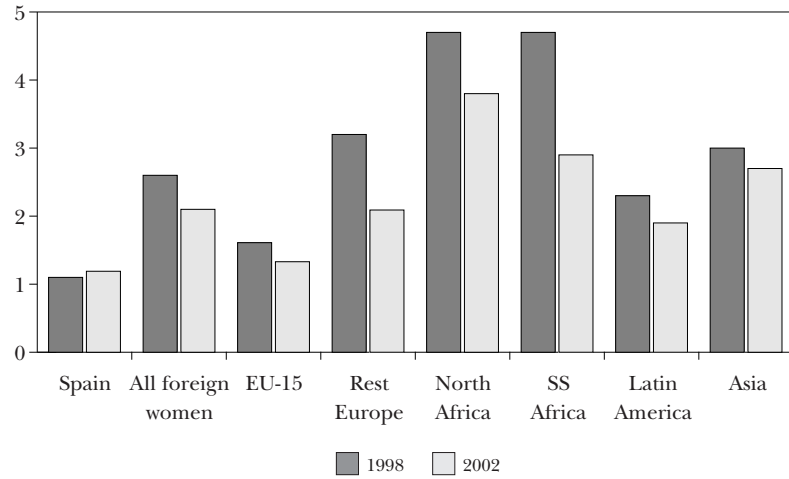
Sources: National Institute of Statistics, Birth Statistics.

Total fertility rates can obviate the problem of different age structures. However, this synthetic indicator is typically applied to relatively stable populations, 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 profile, making it difficult to interpret trends. Period fertility rates are also affected by the timing of childbearing. Since migrant women have an earlier fertility schedule, differentials with native women are probably overestimated relative to completed fertility. We need also to keep in mind that fertility behaviour among immigrant women is probably influenced by age at migration (Toulemon and Mazuy, 2004) and by whether they left behind any children in the country of origin, information which is not available at present. Despite all these limitations, we will compare region-specific fertility rates as a preliminary assessment of the fertility gap between native and foreign women.

According to Figure 4.2, 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),

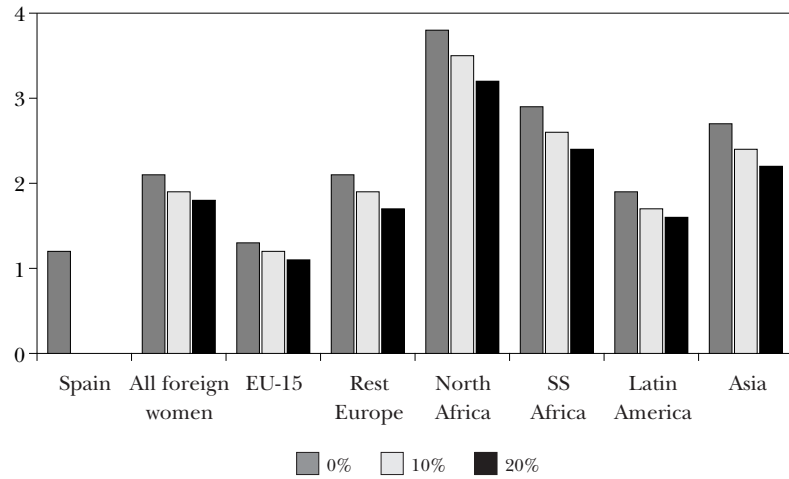
and Latin American women (1.9). We should bear in mind that the accuracy of these rates is highly dependent on the reliability of population denominators. Figure 4.3 illustrates how the fertility gap changes if we assume different hypothetical levels of underregistration in the population register.

FIGURE 4.2: Total fertility rates by region of nationality, 1998-2002



Sources: Birth Statistics and Population Register.

FIGURE 4.3: Total fertility rates by region of nationality assuming different levels of underregistration in population register, 2002



Sources: Birth Statistics and Population Register.

With regard to recent trends, the comparison of the fertility rates for 1998 and 2002 in Figure 4.2 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 Spanish 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.

5. 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 5.1 compares the total fertility rate of migrant women in Spain and women in the country of origin, as well as their educational composition.

TABLE 5.1: Total fertility rates and educational composition of immigrant women aged 15-49 in Spain and women in the 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 migrant women residing in Spain is lower than the fertility of women in their 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 on average more educated and more likely to have lived in urban areas than non-migrant women 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 5.1, 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 for 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 without their spouses and some had children before migrating⁵ 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, 2005)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.

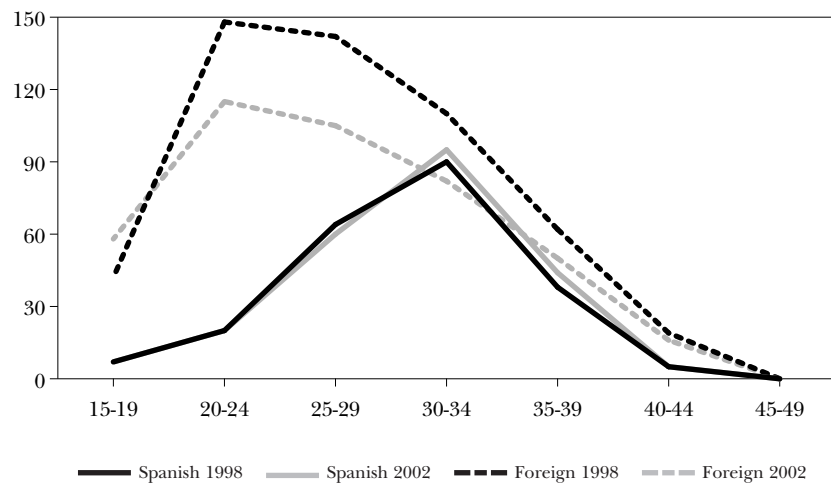
5. The mean age at arrival to Spain for recent female immigration cohorts (1995-2001) from Latin America is 28.8 while the average age at first birth in most Latin American countries ranges from 21 to 24 (United Nations, 2004).

6. The Latin American and Caribbean region is foreseen to reach replacement level fertility in 2020-2025 (United Nations, 2005).

6. 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 6.1 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 the age schedule of fertility remains virtually unchanged.

FIGURE 6.1: Age pattern of fertility for Spanish and foreign women, 1998-2002



Sources: Birth Statistics and Population Register.

Table 6.1 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 women⁷. These indicators point towards a maintenance of family formation patterns from the region of origin.

TABLE 6.1: Reproductive Indicators by Region of Nationality, 1998-2002

	Spanish women		All foreign women		Region of origin											
	1998	2002	1998	2002	EU-15		Rest Europe		N Africa		SS Africa		Latin America		Asia	
					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).

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 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).

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 6.1 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 status and predict child morbidity as well as long-term health and psychosocial development (Conley and Bennet, 2000). The data in Table 6.1 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 6.2 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 6.2: 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

Nationality (Region)	Pre-term birth		Low birth weight (≤ 2500 gr)	
	Unadjusted	Adjusted ^a	Unadjusted	Adjusted ^a
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.

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

7. New Insights 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 7.1 describes the main characteristics of the women in our sample. From a socioeconomic perspective, women of reproductive age from developing countries constitute a heterogeneous group. For instance, over 60% of Northern African women and close to 45% of Sub-Saharan African women have completed less than secondary education, as compared to 20% of Spaniards. In contrast, Latin American women and those from non-EU countries are almost as educated as Spanish women. 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 the domestic service sector, often part of the informal economy.

Information on household composition indicates that foreigners are more likely to live in non-traditional households. 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 region of 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.

**TABLE 7.1: Sociodemographic background and household composition by region of nationality.
Women aged 15-49**

	Region							
	Spanish women	All foreign women	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.

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 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 of reproductive age with no children present in the household is considerably 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 immigrants in these groups have arrived to Spain in recent years and might have not initiated the process of family reunification.

7.1. The influence of region of origin

The results of the logistic regression modelling recent 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 effect of region of origin 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

TABLE 7.2: Results of logistic regression models of recent fertility by nationality (odds ratios)

Nationality (region)	Birth in last year		
	Unadjusted	Adjusted ^a	Adjusted ^b
(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.

(as a proxy for parity) and educational level. Other variables available, such as employment status and household composition, were not included in the analysis because the lack of retrospective information makes it difficult to discard reverse causality.

The unadjusted odds ratios (column 1) show that foreign women, except those from other European countries, present significantly higher levels of recent fertility than Spanish women. Northern African women, in particular, are 2.4 times more likely than Spanish women to have had a birth in the preceding year. Also, the odds of having a recent birth are 68% higher among Sub-Saharan African women and 32% higher among Latin American women than among Spanish women. The age-adjusted odds ratios (column 2) present smaller disparities, suggesting 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 taken into account (column 3), only Northern African women present significantly higher risks of having had a birth in the preceding year. 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 sociodemographic composition. These results also suggest that current fertility differentials are likely to diminish as immigrants' demographic and socioeconomic characteristics converge to those of the Spanish population.

7.2. 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 7.3 shows that, although most immigrants have arrived in recent periods—nearly two-thirds of all foreign women arrived during the seven years preceding to the census (1995-2001)—there are significant differences by region of origin: 40% of Latin American women arrived in 2000-2001, as compared to 20% of Northern Africans.

TABLE 7.3: 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 (Anderson, 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 often been used to test the adaptation and the disruption hypotheses.

TABLE 7.4: Results of logistic regression models of recent 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 over 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 7.4 compares recent fertility for successive immigrant cohorts from various regions of origin. The results reveal that the period of arrival has a relevant influence on the odds of having a recent birth. The unadjusted risk of recent fertility falls with duration of stay in Spain across all major immigrant groups. For instance, Latin American women who arrived before 1989 have a 52% lower risk of having a recent birth than their counterparts who arrived in 1995-1999. After controlling for age, marital status, number of co-resident children and educational level, the basic pattern of declining odds of having a recent birth with increasing duration of stay in Spain remains, although in those groups whose average time since arrival is shorter, such as Sub-Saharan African women, differentials lose statistical significance. Recently arrived women (2000-2001) constitute an exception to this pattern, since their recent fertility is lower than that of women who arrived during 1995-1999. This could reflect a temporary disruption of their reproductive trajectories due to the economic costs and uncertainty associated with the international move. It is also consistent with a pattern of labour-oriented “chain migration” involving temporal marital separation.

When we combine in a single model the effect of region of origin and arrival cohort (Table 7.5), the results are equivalent. Net of compositional differences, the odds of having 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.

TABLE 7.5: Results of logistic regression models of recent fertility among Spanish women and foreign women by immigration cohort (odds ratios)

Nationality (Region)	Birth in last year		
	Unadjusted	Adjusted ^a	Adjusted ^b
(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.

8. Summary and Discussion

ALTHOUGH immigration is often portrayed as a potential solution to the ageing 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 demographic impact of sustained entries of new immigrants, but have paid less attention to immigrants' fertility patterns. However, we cannot discard *a priori* the potential rejuvenating impact that the joint effect of increasing immigration flows and higher immigrant fertility could have in a lowest-low fertility society 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, despite considerable variability, immigrants have higher fertility rates than Spanish women. Nevertheless, although the relative weight of immigrants among women of reproductive age has increased remarkably in recent years (from 1.8% in 1998 to 10.6% in 2005), their contribution to overall fertility rates is 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 by 0.08 children. If the number of immigrants continues growing in the future, their contribution to overall fertility will also increase, but we should bear in mind that fertility is expected to continue declining in the countries of origin of future immigrant cohorts. Our results also suggest that the fertility gap between foreign and Spanish women, as measured by fertility rates, has narrowed in recent years, but these trends should be interpreted with caution. It is unclear whether such decline can be attributed to behavioural changes occurring over the short period

examined, to improved coverage by the population register or to changes in the composition of the immigrant population.

In order to take into account various sociodemographic factors that shape fertility decisions, we performed an individual-based analysis of a 5% sample of the 2001 Census. Our findings reveal that, after controlling for age, marital status, number of co-resident children and educational composition, the fertility gap between foreign and Spanish women narrows considerably. In fact, only Northern African women have significantly higher odds of having had a birth in the year preceding the census than Spaniards. This may reflect the fact that women from this region are more likely to migrate to Spain 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 a relatively recent phenomenon in Spain, it might be too early to appropriately test 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 (Bledsoe, Houle and Sow, 2005). 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 recent 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 recent fertility than the preceding cohort (1995-1999). This finding would be consistent with the disruption hypothesis, but it also suggests that the disruption effect is temporary.

Due to the cross-sectional nature of the comparison, all inferences about changes over time based on cohort differentials must be taken cautiously. In order to confirm whether divergences 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 preferences⁸, longitudinal analyses would

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 6.1).

be 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 discrimination 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 child-bearing 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 overall fertility is relatively modest, their indirect contribution is probably important. 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 and 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' children⁹. Since the sources available only take into consideration children born or residing in Spain, the relatively low fertility levels found among certain immigrant groups—namely, Latin American—is probably linked to women's reproductive histories prior to migration. 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 resi-

9. A recent survey conducted among immigrants in Madrid (*Immigration, Training and Employment in Madrid*) revealed that approximately 1 out of 5 women from Colombia and Ecuador had small children in their home countries.

dence 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' child-bearing behaviour emerged as an interesting research topic in itself—it provides the opportunity to examine how a rapid change of socio-economic and cultural context affects fertility dynamics—but it can also contribute to enhance our understanding of recent fertility trends and to envision the demographic and social future 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. The *National Survey of Immigrants*, which is to be conducted at the end of 2006 by the National Institute of Statistics, could potentially fill these gaps.

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* An earlier version of this paper was presented at the XXV IUSSP International Population Conference, Tours, France, 18-23 July 2005. This research has been funded by the BBVA Foundation, as part of the project *Private lives, public co-responsibility*. We thank Joaquín Recaño-Valverde for his valuable suggestions and assistance in processing the data. The views expressed in this paper are the authors' and do not represent those of the United Nations.

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