

# Chapter 6

## A Longitudinal Analysis of Reproductive Behavior

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### Introduction

This study aims to analyze the reproductive behavior of Latin American and Caribbean women in Spain, focusing on the birth of the first child after emigrating. The study considers the main determinants influencing women's decision to have a child, such as their culture of origin, family and personal circumstances, and the timing of their migration.

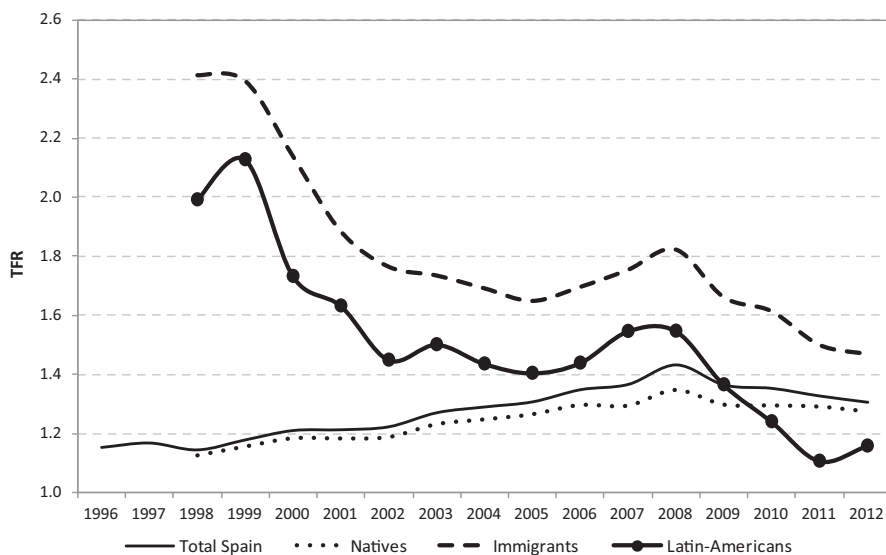
In countries with a very low birth rate, such as Spain, immigration is a key factor in the population's process of rejuvenation or aging. In Spain, the fertility rate among the immigrant population in general, and among Latin Americans in particular, has been slightly higher than among the native population (Roig-Vila and Castro-Martín 2007; Devolder and Treviño 2007; Bueno 2010) and has meant that the country's overall total fertility rate (TFR) has risen from 1.16 children per woman in 1996 to 1.46 in 2008. However, the TFR has decreased due to the impact of the economic crisis (Fig. 6.1). Increased fertility combined with the size of the migrant population, which has increased from half a million in the mid-1990s to over 6.6 million people born outside Spain in 2010 according to data from the Spanish National Institute of Statistics (INE), has meant that the number of births among foreign-born women as a percentage of overall births in the country has grown from 3.3% in 1996 to 20.6% in 2010. This situation has slowed the aging process in the Spanish population (Del Rey and Cebrián 2010), emphasizing the importance of understanding the reproductive behavior of the immigrant population, particularly among Latin Americans.

The Latin American community in Spain is diverse in origin, family circumstances upon arrival and personal characteristics. This means that Latin American

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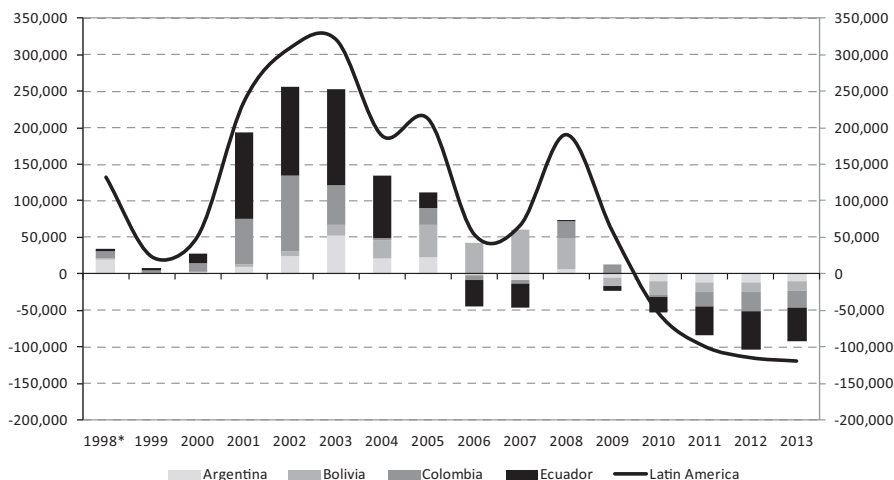


**Fig. 6.1** Total fertility rate (TFR) in Spain by nationality, 1996–2012. (Source: Vital Statistics and Municipal Register (*Padrón Municipal*, INE))

women constitute a highly diversified collective from the perspective of fertility and childbearing. They migrate from countries that are at different stages in their demographic transition, and these women therefore have highly diverse family patterns (Bueno and Vono 2009). They arrive with different family circumstances regarding children and partners, and they have different socio-demographic backgrounds in terms of age, education, legal status and reasons for migrating (Grande and Del Rey 2012; Del Rey and Vono 2014). All of these aspects should be considered in the study of their fertility and childbearing behavior in Spain.

When analyzing the fertility of the migrant population in Spain (Fig. 6.1), the first notable detail is the high variability of the TFR since the mid-1990s, despite its relative stability among the native population. In the first years of the migration boom, fertility among the migrant population far outpaced the Spanish nationals' fertility rate, exceeding two children per woman. However, as the number of migrants has steadily increased, the TFR has recorded both a sharp drop and an erratic performance that was particularly pronounced among the Latin American population. In the native population, the increase in the TFR until 2008 and the subsequent decrease are linked to the economic context, but in the migrant population, the economic situation would only explain the decrease in the TFR in recent years. Therefore, a study of the reproductive behavior of the Latin American population in Spain must consider the community's overall evolution, both in volume and composition.

The influx of Latin American migrants to Spain since the mid-1990s has recorded significant variations in both volume and countries of origin (Fig. 6.2). The largest migrant flows were recorded from 2001 to 2004, with the majority of migrants

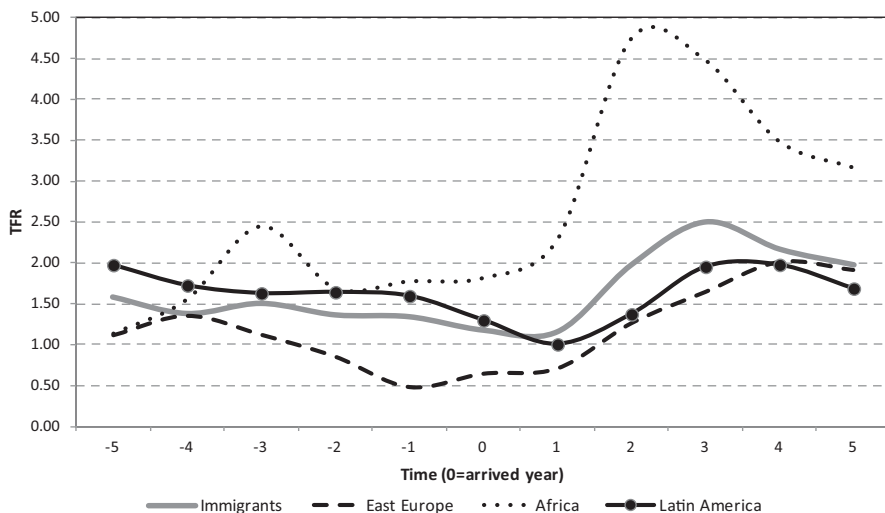


**Fig. 6.2** Annual increase in the number of Latin American migrants in Spain and selected countries. (Source: Municipal register (INE) <sup>a</sup>Total numbers of residents in 2008)

originating in Colombia and Ecuador, followed by the 2007–2008 period, in which the main arrivals were Bolivian nationals. The immigration policy followed in Spain, within the framework of the European Union, and the visa requirements for Colombian nationals in 2002, Ecuadoreans in 2003 and Bolivians in 2007 explain these variations in migrant numbers and countries of origin (Arango and Martin 2005; Cebrián 2009). The recent economic downturn explains today's negative immigrant balance and the loss of many Latin American migrants.

It is important to emphasize the diversity of scenarios for demographic transition in Latin America, which involve various family paradigms and a different reproductive culture than Spain. Accordingly, changes in the composition of the migrant population entail major transformations in the reproductive profile of migrant women that should be considered when analyzing the variations in fertility.

Furthermore, it may be deduced that a transformation in the personal and family characteristics of the migrant community has occurred based on shifts in the most common places of origin for migrants. Given the recentness of the migratory phenomenon in Spain, the reproductive trends among migrant women are significantly influenced by the profile of migrant "pioneers" (Bueno and Vono 2009), who typically are women without dependents (Toulemon 2004). Nevertheless, as the migratory process gradually becomes regularized, new profiles of migrant women tend to appear, with some being attracted by the social networks that have been established (Massey et al. 1987; Massey 1990; Curran and Sguy 2001; Curran and Rivero-Fuentes 2003; Cerruti and Massey 2001) or by the family reunification process (DeJong et al. 1986; Kofman 1999). In general, both aspects modify the composition of migrant women populations from a reproductive perspective, given that an opening is provided for the "importation" of dependents of both younger and older women and of women who emigrate for strictly family-related reasons. These "new



**Fig. 6.3** Total fertility rate (TFR) by region of origin according to the year of arrival in Spain. (Source: National Immigration Survey 2007 (INE))

women” generally respond to a different family and reproductive background than the “pioneers”, which may condition their fertility in the host country. Therefore, an analysis of the reproductive pattern of the migrant community should consider the different family profiles together with individual characteristics.

A final aspect to be considered regarding childbearing among migrant women is the experience of migrating. Moving from one country to another has numerous implications from a reproductive perspective, potentially including separation from a partner, the absence of a family support network, and the need many women have to find work. These aspects affect the possibility of having a child in the host country, with this situation tending to change for migrants as their length of residence increases.

When we observe the fertility of migrant women in terms of the year of arrival, we find a general pattern with three differentiated phases (Fig. 6.3): a first phase recording a drop in the TFR that precedes the arrival in Spain, a second phase of recovery that begins after the first year of residence, and a third phase involving a drop after the third or fourth years, when the TFR peaks and a return to nearly the fertility rate in the first phase occurs. This pattern, which is similar to that reported by Bueno (2010) for Spain and Devolder and Bueno (2011) for Catalonia, but with major differences in terms of both calendar and intensity, emerges in the three largest migrant groups: Latin Americans, Eastern Europeans and Africans.

This trend observed in the TFR based on the moment of migration suggests the need to adopt a longitudinal perspective to analyze the reproductive pattern. This study therefore considers a person’s particular circumstances upon arrival, depending on their region of origin and their personal and family characteristics, to explain their behavior in the host country, using information provided by the 2007 National

Immigration Survey (NIS). Many studies that analyze the fertility or childbearing behavior of the migrant population emphasize socio-demographic characteristics together with the region of origin. By contrast, few studies consider family circumstances, which are vital for the study of general fertility. In the case of fertility among the migrant population, such circumstances have received scant attention due to the lack of data on the situation prior to migration.

The remainder of this study is organized into the following sections. The next section includes a presentation of the theoretical framework and the hypothesis. The following section describes the data and methodology. This is followed by an analysis of reproductive patterns among the migrant population, and the final section presents the study's main conclusions.

## Theoretical Framework

For several decades, the fertility and reproductive behavior of migrant populations has been a major topic in demographic studies, particularly in countries with very low fertility rates where the number of migrants and their fertility are key factors in demographic dynamics.

Numerous studies initially address the differences in the fertility rate between migrants and the native population, particularly in Spain (Bledsoe et al. 2007; Roig-Vila and Castro-Martin 2007; Devolder and Treviño 2007). Other papers analyze the variations in reproductive behavior during the time migrants spend in a host country, highlighting different approaches. Some studies refer to a process of assimilation—adaptation whereby migrants gradually adopt the reproductive behavior of the host country (Kahn 1988, 1994; Andersson 2004; Parrado and Morgan 2008). By contrast, other studies report that certain migrant groups tend to maintain their home country's reproductive patterns (Abbasi-Shavazi and McDonald 2002). Additional authors contend that the failure of the migrants' reproductive pattern to adapt to the host country is due to the existence of a selection process among migrants (Goldstein 1973; Abbasi-Shavazi and McDonald 2000; Feliciano 2005; Bledsoe et al. 2007). Some recent studies have suggested the existence of a process of interruption—rupture in the fertility of the migrant population caused by the moment of migration and the separation of spouses (Ford 1990; Stephen and Bean 1992; Carter 2000; Toulemon 2004; Kulu 2005; Lindstrom and Giorguli 2007; Milewski 2007). In other words, migration imposes its own particular form of reproductive behavior, which means that as of the moment of migration, fertility and the reproductive patterns of migrants will be affected by the length of time they spend in the host country.

In addition to these two general conclusions about the fertility of migrant populations, researchers must consider the diversity of the migrant community, which tends to imply a particular type of reproductive behavior due to the different geographical and cultural influences involved, migrants' specific socio-economic and demographic characteristics, and the migrants' previous reproductive behavior.

This last element has received a considerable attention in studies of fertility in general but scant consideration in the case of migrant fertility due to the absence of data prior to migration.

First, different reproductive behaviors of migrant women have traditionally been identified according to their region of origin. Each region or country tends to respond to a specific process of demographic transition and different family-related cultural patterns that entail different levels of fertility (Bongaarts 2003; Anderson 2004; Roig-Vila and Castro-Martín 2007; Sobotka 2008).

Second, the socio-demographic and socio-economic characteristics of migrant women have played a decisive role in their reproductive behavior (Coleman 1994; Kahn 1994; Milewski 2007) in terms of age, level of education and occupation. Age refers to different stages in the life cycle of an individual and their family that are closely linked to a particular reproductive behavior. Level of education is one of the more consistent findings in the literature because of its impact on family backgrounds, particularly childbearing (Hoem 1986; Blossfeld and Jaenichen 1992; Bongaarts 2003). In general, developed societies record an inverse relationship between level of education and level of fertility. However, today certain post-transitional societies are suggesting a direct relationship exists between education, wellbeing and fertility (Myrskylä et al. 2009).

Concerning the effect that socio-economic conditions have on fertility, Milewski (2007) uses the case of migrants in Germany to highlight the importance work has on reproductive behavior. Other recent studies associate the motives or objectives behind migration with fertility, making specific mention of the greater fertility among women who emigrate for family reasons than those who emigrate for employment reasons (Castro-Martín and Rosero-Bixbi 2011; Mussino and Strozza 2012).

The third issue that is essential to understanding the reproductive behavior of migrant women in host countries is the family and reproductive situation at the moment of arrival. Previous studies that provide an overview of the factors affecting the likelihood of having a child highlight both marital status (Rindfuss et al. 1988; Kieran 1999; Baizán et al. 2003) and the prior number of children (Frejka and Sardon 2007). The likelihood of having a child is greater among women without children, but that probability falls sharply in step with a greater number of offspring. Moreover, although in recent years the relationship between marital status and the risk of having a child has weakened due to the contraceptive revolution and the spread of cohabitation, marital status continues to play a significant role. In the Spanish case, despite the sharp rise in cohabitation and decrease in marriage (Baizán et al. 2003; Castro-Martín et al. 2008; Domínguez-Folgueras and Castro-Martín 2008), both transitions significantly increase the likelihood of having a child.

Conversely, numerous studies on the reproductive behavior of the migrant population highlight the close relationship between the latter's fertility and the very fact of migrating and their prior marital and family circumstances (Mulder and Wagner 1993; Alders 2000; Cerruti and Massey 2001; Toulemon 2004; Parrado and Flípen 2005; Kulu 2005; Milewsky 2007). Nevertheless, a serious problem facing the analysis of the effect of these issues on the reproductive pattern of the migrant

population in host countries is the lack of longitudinal data on the women's child-bearing backgrounds (Alders 2000; Toulemon 2004; Kulu 2005; Roig-Vila and Castro-Martín 2007; Parrado 2011), which explains the lack of studies. This study uses a database that provides information on the marital and reproductive circumstances in the country of origin, allowing us to consider those circumstances in analyzing the reproductive behavior in the host country.

In short, we hypothesize that the reproductive behavior observed among Latin American women in Spain will be conditioned by the migrants' region or culture of origin, their socio-economic characteristics and their childbearing background as well as by the moment of the migration.

## Data, Variables and Method

### *Data and Variables*

The database used to analyze the transition to the first child born after the migration is the aforementioned 2007 NIS survey conducted by Spanish National Institute of Statistics. It is the first survey in Spain to provide retrospective information on the social and demographic characteristics of the migrant population (Reher and Requena 2009). The NIS survey provides complete histories of migration and births, thereby enabling us to study the complex interactions between migration and fertility.

This study is a statistically representative survey of the 4.5 million migrants living in Spain in early 2007. It consists of 15,465 records on migrants aged 16 and over who had been living in Spain for at least a year, with 55% women. This study considers only those Latin American women who had arrived in Spain as of 1990 to establish some homogeneity in the profile of the migrant women, which reduces the sample used to 3108 records (Table 6.1). Given that discrete-time longitudinal models are used, each woman's length of residence in Spain has been divided into annual periods until their first child is born or until they have been living in the country for 5 years without having a child (censored cases). The outcome of this transformation is that the database has 12,915 records corresponding to years-woman.

The survey is representative of the overall migrant population and the major feeder regions, which include Latin America and the Caribbean. The community of Latin American migrants has been divided according to their maternal status at the moment of arrival, but we do not have sufficient records to analyze other profiles.

Table 6.1 presents descriptive data on the sample according to the migrants' region of origin within Latin America. Women from Central America and the Caribbean, including Mexico, have been in Spain longer, whereas those from South America are the most recent arrivals. A large concentration of women from Andean countries, who comprise the majority of Latin American women in Spain, arrived from 1996 to 2003.

No great differences were found between the three regions in age on arrival. More than 40% are between 20 and 30 years old, and almost half are over 30. No major differences in level of education according to origin exist either, with two out of three women having secondary schooling or higher and approximately 5% being illiterate.

Work is the main reason for emigrating (49.5%), although women from the three regions reported differences reasons. Work was recorded as the reason for emigrating for 55.9% of women from Andean countries, but this figure is only 32.7% for women from Central America and the Caribbean, where the family is the main reason for emigrating (40.7%). Women from other parts of South America are in an intermediate situation, with work being the main reason for emigration (44%). Twenty percent of the migrants provide other reasons beside work and family, largely involving politics and education.

Most migrants arrive in Spain without Spanish citizenship, although 7.5% of South American women and 5% of Central American and Caribbean women have a Spanish passport, which initially helps them to settle.

Finally, regarding their family circumstances upon arrival, it is worth noting that almost half of Latin American women migrating to Spain had not yet had a child. Although a slight majority of migrant women had already had a child, particularly among Andean women, they are a minority among South American women overall. Regarding marital status upon arrival, more than half are unmarried, and the rest are evenly divided between those who are married and those who migrate after losing their partner through separation or after being widowed.

The dependent variable is the time taken to have the first child after emigrating or until the women have been living in Spain for 5 years without having a child. The observation period has been restricted to the first 5 years of residence so as not to overweight the risk of having a first child among the migrant women arriving at the beginning of the observation period or underweighting women who have arrived more recently.

The following are the explanatory variables considered in the probability of having the first child (Table 6.1):

*Region of origin.* According to the number of observations and seeking some degree of uniformity, we have grouped the countries in Latin America by geographical area into the following categories: Central America and the Caribbean, plus Mexico; Andean countries (Colombia, Ecuador, Peru and Bolivia) and the rest of South America.

*Age upon arrival.* The following age groups have been defined to capture the effect of the life cycle and the socialization process: age 15 or younger, age 16–19; age 20–29; age 30–39; age 40–49; and age 50 and over.

*Level of education.* The following three categories have been established in response to the composition of the migrant community: less than primary education, primary education completed, and secondary education or more.

*The motives or reasons for migrating.* The following three categories have been established: work, family and others (studies, politics, etc.).



**Table 6.1** Descriptive data on migrant women in Spain, 2007. (Source: National Immigration Survey 2007. INE)

	Central America & Caribbean	Andean America	South America	Total
N	437	1822	849	3108
<i>Period of arrival</i>				
1990–1995	18.8%	4.5%	7.1%	7.2%
1996–2000	27.7%	33.2%	15.8%	27.7%
2001–2003	24.9%	41.9%	42.9%	39.8%
2004–2007	28.6%	20.4%	34.3%	25.4%
Total	100%	100%	100%	100%
<i>Age at arrival</i>				
15 and younger	5.1%	3.4%	2.9%	3.5%
16–19	9.2%	9.6%	6.8%	8.8%
20–29	36.4%	43.0%	41.4%	41.6%
30–39	30.0%	27.6%	26.8%	27.7%
40–49	11.5%	11.9%	12.9%	12.1%
50 and older	7.8%	4.5%	9.2%	6.3%
Total	100%	100%	100%	100%
<i>Education level</i>				
Illiterate	7.3%	4.7%	5.2%	5.2%
Primary	14.4%	19.6%	12.4%	16.9%
Secondary and more	78.3%	75.7%	82.4%	77.9%
Total	100%	100%	100%	100%
<i>Migration reasons</i>				
Family	40.7%	28.3%	29.0%	30.2%
Labor	32.7%	55.9%	44.2%	49.5%
Other	26.5%	15.8%	26.9%	20.3%
Total	100%	100%	100%	100%
<i>Spanish citizenship</i>				
No	66.1%	86.7%	81.7%	82.4%
Yes: Before	5.0%	0.5%	7.5%	3.1%
Yes: After	28.8%	12.8%	10.7%	14.5%
Total	100%	100%	100%	100%
<i>Children before migrating</i>				
No	50.1%	41.9%	54.8%	46.6%
Yes:	49.9%	58.1%	45.2%	53.4%
Yes: 1 child	23.6%	26.6%	20.3%	24.5%
Yes: 2 or more children	26.3%	31.4%	25.0%	29.0%
Total	100%	100%	100%	100%

**Table 6.1** (continued)

	Central America & Caribbean	Andean America	South America	Total
<i>Marital status at arrival</i>				
Single	47.8%	55.4%	51.1%	53.2%
Married	21.7%	23.0%	28.2%	24.2%
Widow/separated	30.4%	21.6%	20.7%	22.6%
Total	100%	100%	100%	100%

*Holding Spanish citizenship or not upon arrival.* This condition may be an important factor in the settlement process and, therefore, in starting a family.

*Reproductive situation or number of children upon arrival.* A distinction is made between those migrating before having children and those who have children and, within this latter category, between women with one child and those with two or more.

*Marital status upon arrival.* A distinction is made between those who migrated while single, with a partner, and following the loss of a partner (separated-divorced or widowed).

## **Methodology**

Longitudinal models have been used to analyze the birth of the first child following migration. The advantage of these models instead of mainstream or cross-sectional models is that they allow assuming the existence of different reproductive patterns due to the different personal and family circumstances in which migrants arrive in the host country as well as the existence of a time effect in the reproductive pattern due the fact of migration itself. In other words, whereas cross-sectional models are used to measure the probability of an event occurring, longitudinal models are used to analyze the duration of the event.

The duration of the transition was calculated by considering the year of arrival and the year the first child was born. Given that this information is available solely in years, discrete-time models have been used, discarding other types of models that required shorter time intervals (the month of arrival is recorded only for those people who arrived after 2004).

The discrete-time logistic regression model is defined as (Eq. 6.1):

$$h(t|x) = 1 - \exp\{-\exp(\beta_{ot} + x' \beta)\}, \quad \text{being } x' \beta = (x_1 \beta_1 + x_2 \beta_2 + \dots + x_n \beta_n) \quad (6.1)$$

where  $h(t|x)$  is the conditional probability or risk that the first child born following migration will occur as a function of time ( $t$ ) and of a series of explanatory variables ( $x$ ), with  $\beta$  being its parameters.

## **Result: Reproductive Behavior Based on an Analysis of the Birth of the First Child**

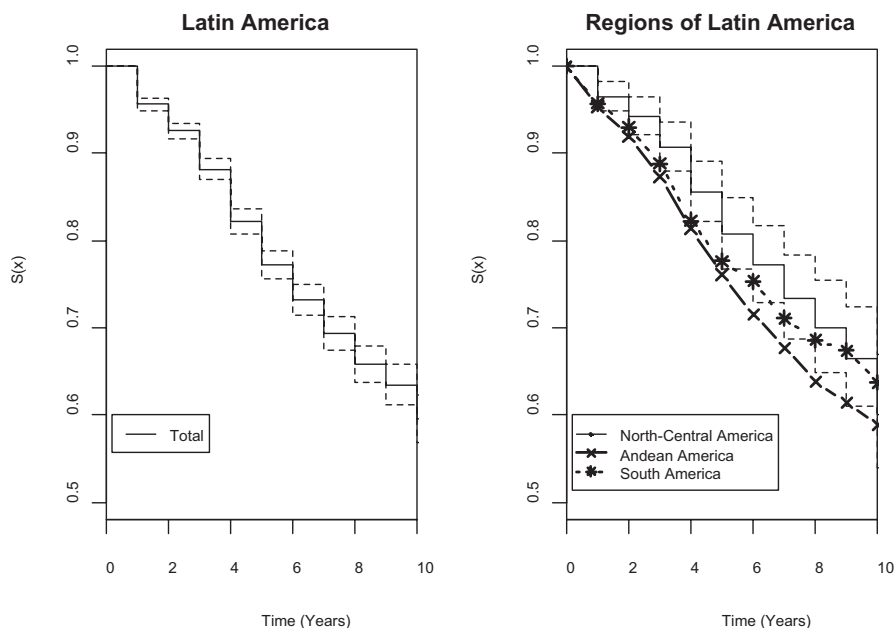
Two types of results are presented. First, the survival curves for the birth of the first child reveal information about the reproductive calendar of Latin American women, starting from the moment of their arrival in Spain. Although the focus here is on the first 5 years, in the graphs we have extended this period to 10 years of residence to clarify the succession of events over the time of residence. Second, the results of the discrete-time regression models are presented to measure the effect the explanatory variables have on the probability of having the first child in the first 5 years.

### ***The Timing of the First Birth***

The survival curves that trace the birth of the first child for the migrant population as a whole reveal a steep downward trend during the first years of residence (Fig. 6.4). After 10 years, nearly 40% of Latin American women have had at least one child in Spain. Nevertheless, the situation presents several particularities depending on the new arrival's region of origin and family circumstances.

The survival curves according to the geographical region of origin reveal differences, although they are not statistically significant because the curves are contained within a 95% confidence interval. Women from the Andean region are the ones who seem to present a greater probability because their curve drops most sharply, whereas the women from Central America and the Caribbean have a very similar curve to the one for the women from the rest of South America. It may therefore be affirmed that no different reproductive behavior is observed based on region of origin.

The survival curves for marital status upon arrival are also very similar for women who were single, married or without a partner (Fig. 6.5). Nevertheless, an observation of the likelihood of a first child according to motherhood status upon arrival reveals significant differences. Women who arrive before they have had any children have a much higher probability of having a child in Spain during the 10 years analyzed than the women who have already become mothers before emigrating. Almost 50% of the women who arrive before they have a child have their first child in Spain during that time, whereas only 25% of those who already have children have a child in Spain. Because the survival curves are significantly different depending on motherhood status upon arrival, each of these profiles must be analyzed separately in the explanatory models. In other words, the probability of having the first child in Spain is different in each profile for the women depending on their motherhood status, regardless of all other explanatory variables.



**Fig. 6.4.** Survival curve for the birth of the first child for all Latin American women and according to the region (women arriving between 1990 and 2007). (Source: National Immigration Survey 2007 (INE))

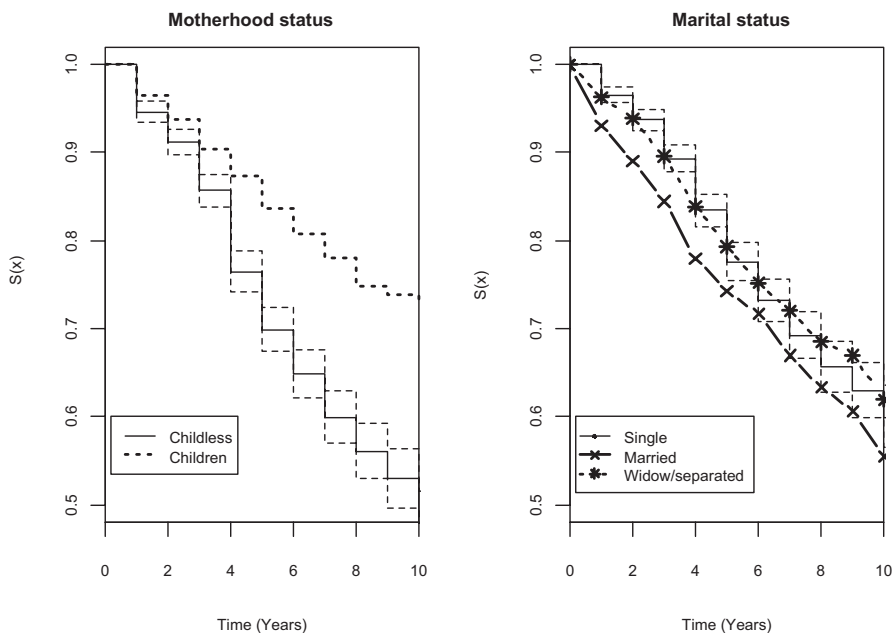
## Determinants of the First Birth in the Host Country

An analysis of the determinants in the probability of having the first child after migrating reveals major differences between the general model that groups the cohort of Latin American women arriving in Spain between 1990 and 2007 and the differentiating models based on the presence of children upon arrival.

In terms of explanatory variables, the first model includes the women's socio-economic and socio-demographic characteristics (Table 6.2). They are all statistically significant, except for nationality.

Age upon arrival is highly significant. Compared to women who arrive before age 15, the probability of having the first child in Spain increases significantly for those arriving aged between 15 and 29, and to a lesser extent for those aged between 30 and 39. As of the age of 40, this probability drops significantly. In other words, and as is to be expected, the higher probability is concentrated in the middle years of the women's reproductive life and decreases at older ages.

Level of education also has a significant impact on the probability of having the first child during the first 5 years in Spain the direction expected and consistent with other studies in Spain (Acevedo 2008). With the reference category being migrant women with no schooling, the probability diminishes by 22% for those who arrive



**Fig. 6.5** Survival curve for the birth of the first child according to motherhood status and marital status upon arrival (women arriving between 1990 and 2007). (Source: National Immigration Survey 2007 (INE))

with primary studies and by 37% for women with secondary studies or higher. In other words, the higher the level of education, the lower the probability of having the first child during the first 5 years of residence.

The motives for migrating similarly constitute a highly significant statistical factor for having the first child, in the same direction as reported in other studies (Castro-Martín and Rosero-Bixbi 2011). With the reference category being work-related reasons, the probability increases considerably among those women who emigrated for family reasons (34%), with no difference recorded between work-related reasons and other motives apart from family-related ones. In other words, it may be argued that having the first child was less of a priority for women who emigrated with a clear economic purpose than for those whose main reason for migrating was family-related.

Finally, holding Spanish citizenship upon arrival may help the women to settle in Spain (Del Rey and Vono 2014) but is devoid of statistical significance regarding the probability of having the first child, at least during the first 5 years of residence. Legally, one might expect that the easier it is to settle, the better the conditions will be for starting a family. However, some studies have indicated that having a child may constitute a strategy for earning the right to stay in the host country for migrants whose immigration papers are not in order (Bledsoe et al. 2007; Bueno and

**Table 6.2** Relative risk of having the first child after emigrating (women arriving between 1990 and 2007). (Source: National Immigration Survey 2007. INE)

	Model 1			Model 2			Model 3		
	Var. socio-demographics			+ Origen—Culture			+ Family situation		
	Exp(B)	S.E.	Sig.	Exp(B)	S.E.	Sig.	Exp(B)	S.E.	Sig.
Const.	10.54	0.532	***	12.41	0.537	***	0.02	0.499	***
<i>Age</i>									
Younger than 15	1			1			1		
15–19	2.67	0.147	***	2.63	0.148	***	2.43	0.149	***
20–29	2.97	0.139	***	3.00	0.139	***	3.13	0.143	***
30–39	1.29	0.142	\$	1.29	0.143	\$	1.68	0.150	***
40–49	0.03	0.335	***	0.03	0.336	***	0.04	0.343	***
50 and older	0.01	0.721	***	0.01	0.721	***	0.02	0.724	***
<i>Education level</i>									
Less than primary	1			1			1		
Primary	0.78	0.138	\$	1.24	0.139		1.20	0.142	
Secondary and more	0.63	0.126	***	0.62	0.127	***	0.79	0.130	\$
<i>Reasons</i>									
Labor reasons	1			1			1		
Family reasons	1.34	0.058	***	1.39	0.059	***	1.21	0.061	**
Other reasons	1.02	0.056		1.01	0.057		0.87	0.060	*
<i>Citizenship</i>									
Without citizenship	1			1			1		
With citizenship	0.83	0.140		1.01	0.144		0.92	0.147	
<i>Region of origin</i>									
Central-Caribbean				1			1		
Andean				0.97	0.067		1.13	0.070	\$
South				0.62	0.077	***	0.64	0.079	***
<i>Motherhood status</i>									
Without children							1		
1 Child							0.61	0.061	***
2 or more children							0.26	0.078	***

**Table 6.2** (continued)

	Model 1			Model 2			Model 3		
	Var. socio-demographics			+ Origen—Culture			+ Family situation		
	Exp(B)	S.E.	Sig.	Exp(B)	S.E.	Sig.	Exp(B)	S.E.	Sig.
<i>Marital status</i>									
Single							1		
Married							1.58	0.065	***
Separated/ widow							2.03	0.064	***

Sig. codes: \*\*\*0.001; \*\*0.01; \*0.05; \$0.1

*SE* standard error

Vono 2009). Therefore, the potentially opposing effects of “legal status” on the risk of having a child may lack statistical significance.

The second model includes region of origin as an explanatory variable because it is another factor deemed crucial in reproductive behavior due to its close relationship with the different stages of demographic transition. This variable is significant and does not modify the significance of any other variable (Table 6.2). With the category of reference being women from Central America and the Caribbean and regarding the probability of having the first child in Spain, no significant differences are observed for women from the Andean region, but the probability decreases very significantly among women from the rest of South America. In other words, whereas the probability is statistically similar among women from Central America, the Caribbean and the Andean region, it is 38% lower among women from the rest of South America.

The third model includes family circumstances prior to arrival, such as marital status and number of children. Both variables are statistically highly significant and barely modify the significance of all the other variables in the previous model (Table 6.2). Nevertheless, the inclusion of family circumstances leads to a loss of statistical significance for level of education, thereby indicating the existence of a close relationship between level of education and family circumstances. As noted earlier, education is generally closely linked to the number of children, so the inclusion of both variables means that one of them ceases to be significant.

The variables for family circumstances upon arrival have differing effects. Women who have had a child before emigrating are 39% less likely to have a child in Spain than those women who arrive without having had children, and women who have had two or more children are 74% less likely to have a child. However, regarding marital status, with “single” being the category of reference, the probability of having a child increases by 58% for women who are married when they migrate and is doubled for those who emigrate after separating from or losing their partner (possibly through a desire to start a new family). This third model reveals the importance of the marital and reproductive status of women upon arrival as a factor that conditions their reproductive behavior during their first years in the host country.

The next two models analyze women who have had children before emigrating and women who arrived without having had children, according to the results obtained in the baseline survival curves. The models' results have certain similarities and major differences in the significance of the explanatory variables (Table 6.3).

Model 5 presents the results for the women who arrived before they had had children. The parameters for age are similar to the general models, in the sense that the probability of having the first child increases considerably in the middle groups and decreases at age 40. However, that same variable for women who have already had children before emigrating, Model 6, has a different effect. With the reference category being women under age 20, the probability diminishes steadily in all older age groups. In other words, the middle age groups record the opposite effect from the general model and the model of migrant women without children. It seems reasonable to contend that women who have not become mothers in their own country and who want to have children will want to have them sooner the older they are. It is also highly likely that many of them have been delaying starting a family due to their migration, which explains the higher probability of childbirth after emigrating. Nevertheless, age has the opposite effect on women who are already mothers when they emigrate. In general, this profile reveals that the older the women are, the lower their probability of having a child after emigrating. Because they were already mothers before emigrating, the likelihood of having more children diminishes after migrating.

Level of education has a similar effect in the general model for both profiles: the higher the level of education, the lower the probability of having the first child in the first 5 years. Differences exist in the reasons for emigrating. For women without children, the probability of becoming a mother is the same for all those who emigrated for work- or family-related reasons, being significant and lower only for those women who specify other reasons. Emphasis should be placed on the considerable weighting of those women who attribute the reason to studies. For women who have already become mothers, a very different effect is observed in their reasons: the probability of having a child in Spain is doubled if the migration is due to family reasons compared to women who emigrated for work-related reasons.

Another influential variable is legal status or citizenship upon arrival. It is not a significant variable for women without children, but it is of great significance for women with children. Holding Spanish citizenship increases the chances of having another child after migrating. We may therefore contend that insofar as the legal status of these women favors their settlement in the country, it also increases their probability of having more children.

Regarding the region of origin, different results also emerge for women with or without children compared to the general model. In the model for women without children, the effect is similar to the general model—a similar probability exists for women from Central America, the Caribbean and Andean region and a lower probability for women from the rest of South America. In the case of women who arrive with children, the probability of having another child in Spain during the first 5 years is much higher for Andean women and similar for all others.

Finally, marital status also has a different effect for women with and without children. For women without children, having a partner upon arrival or having previously had a partner implies a probability of having a child in the first 5 years



**Table 6.3** Relative risk of having the first child after migrating based on the number of previous children (women arriving between 1990 and 2007). (Source: National Immigration Survey 2007. INE.)

	Model 5			Model 6		
	Without children			With children		
	Exp(B)	S.E.	Sig.	Exp(B)	S.E.	Sig.
Const.	23.49	0.772	***	34.42	0.766	***
<i>Age</i>						
Younger than 15	1			a		
15–19	2.25	0.152	***	1		
20–29	2.62	0.151	***	0.54	0.254	*
30–39	1.97	0.162	***	0.20	0.257	***
40–49	0.07	0.407	***	0.00	0.632	***
50 and older	b			b		
<i>Education level</i>						
Less than primary	1			1		
Primary	0.69	0.217	\$	0.61	0.201	*
Secondary and more	0.67	0.195	*	0.46	0.187	***
<i>Reasons</i>						
Labor reasons	1			1		
Family reasons	0.95	0.077		2.07	0.103	***
Other reasons	0.82	0.078	**	0.94	0.101	
<i>Citizenship</i>						
Without citizenship	1			1		
With citizenship	0.75	0.164	\$	2.74	0.376	**
<i>Region of origin</i>						
North-Central	1			1		
Andean	0.94	0.089		1.99	0.133	***
South	0.58	0.096	***	0.83	0.160	
<i>Marital status</i>						
Single	1			1		
Married	2.33	0.096	***	0.80	0.089	*
Separated/widow	3.68	0.088	***	0.83	0.099	\$

Sig. codes: \*\*\*0.001; \*\*0.01; \*0.05; \$0.1;

SE standard error

<sup>a</sup> Data are insufficient to analyze women under the age of 15 who emigrate having had children. In these cases, the reference category is those under age 20

<sup>b</sup> Data for estimating the coefficient of this category are insufficient, and they have been regrouped into the preceding category: those age 40 and older

that is 2.3 and 3.7 times higher, respectively. However, for those women who have already had children prior to arrival, marital status has the opposite effect. For both married women and those separated or widowed, the probability of having another child diminishes by approximately 20% compared to those who are single. In other words, among the women without children, those who are single have a lower

probability of having children, and among those who arrive having had children, single women are the ones with the highest probability of having their first child after migrating. In the first case, married women without children may be better positioned to have children sooner, given that they already have a partner, whereas those who are separated or widowed may have a greater “urgency or desire” to start and consolidate a new family and they also have experience. The higher probability that single migrant mothers will have children may be due to the greater “urgency or need” to form a family to address the family responsibilities they have brought with them from their country of origin.

In sum, the models that separately analyze the reproductive situation of women before they emigrate highlights the unequal effect of certain variables, such as age, motives for migrating, nationality, region and marital status, and the consistency of other variables, such as level of education.

## Conclusions

First, analysis of the birth of the first child after emigrating presents a highly complex and heterogeneous view of the reproductive patterns of Latin American women in Spain. The differences in their socio-demographic and economic characteristics, the reproductive culture in their places of origin, and their prior family-related circumstances result in different risks regarding having their first child in Spain.

The first model reveals the importance of age upon arrival, which refers to the moment in the life cycle that signals the start of the migratory experience, the level of education and the family-related reasons for the migration. The effect of these variables is as expected following the theoretical framework described here and in previous studies.

The region of origin model reveals that women from South America outside the Andean countries are less likely to have children compared to all other groups. This finding confirms the importance of the culture in the place of origin and most likely also suggests differences in the nature of the migratory project across the various groups in terms of reproductive behavior (Grande and del Rey 2012).

The inclusion of the variables on family circumstances upon arrival confirms that already having had children and marital status upon arrival are both determinants of the probability of having the first child in Spain. Having had children removes the incentive to have children after migrating, and having or having had a partner increases the probability of having a child soon after arriving in Spain.

The two profiles of migrant women based on family circumstances upon arrival confirm the importance that having had children before emigrating has for reproductive behavior in the host country. Each profile entails different relationships with the explanatory variables. Thus, the effect of age, the reasons for emigrating, legal status, the region of origin and marital status all influence the probability of having the first child differently, depending on whether the women have already had a child. For those women who arrive without having had children, the probability

increases with age and depending on whether they are married or do not have a partner, whereas the opposite is true for women who have already had children. For women who arrive without having had children, the probability is similar between those who emigrated for work- and family-related reasons. Conversely, for women who have already had children, the probability is greater for those who emigrated for family reasons. As for the region of origin, it is noteworthy that among women without children, those from other parts of South America are less likely to have their first child, and among women with children, those from Andean countries are most likely to have an additional child. Citizenship is significant only for women who are already mothers. Finally, level of education has a similar effect for all the women, regardless of whether they had children before migrating.

These results only analyze factors with that influence the probability migrant women will have their first child during the initial 5 years of residence. Incorporating a longer observation time in future studies may alter some results presented here. Moreover, we have analyzed regions rather than countries due to a lack of data, which partially restricts the ability to assess the effect that culture of origin has on reproductive behavior because these regions are not uniform entities.

Finally, and consistent with the appearance of new data, the way the migrant community consolidates and stabilizes its reproductive behavior will require attention. The impact of the major economic crisis that has affected Spain since 2008 on the fertility of migrant women will also be an important topic for future research. The decrease in new arrivals, the incipient return flows, the change in the profile of migrants and the disappearance of the arrival effect will have major ramifications for the demographic dynamics in host countries, particularly with regard to the aging process and the shrinking population.

**Acknowledgements** This study was supported by Project CSO2010-16413 of the Spanish Ministry of Science and Innovation.

## References

- Abbasi-Shavazi, M., & McDonald, P. (2000). Fertility and multiculturalism: Immigrant fertility in Australia, 1977–1991. *International Migration Review*, 34(1), 215–242.
- Abbasi-Shavazi, M., & McDonald, P. (2002). A comparison of fertility patterns of European immigrants in Australia with those in the countries of origin. *Genus*, 58(1), 53–76.
- Acevedo, P. (2008). Reproductive behavior of immigrant Latin American women in Spain. *Social Medicine*, 3(2), 64–70.
- Alders, M. (2000). *Cohort fertility of migrant women in the Netherlands: Developments in fertility of women born in Turkey, Morocco, Suriname, and the Netherlands Antilles and Aruba*. Paper presented at the BSPS-NVD-URU Conference on New Paths in Exploring and Analysing Demographic Data, Utrecht, 31 August–1 September 2000.
- Andersson, G. (2004). Childbearing after migration: Fertility patterns of foreign-born women in Sweden. *International Migration Review*, 38(3), 747–774.
- Arango, J., & Martin, P. (2005). Best practices to manage migration: Morocco-Spain. *International Migration Review*, 39(1), 258–269.

- Baizán, P., Aassve, A., & Billari, F. (2003). Cohabitation, marriage, and first birth: The interrelationship of family formation events in Spain. *European Journal of Population*, 19(2), 147–169.
- Bledsoe, C. H., Houle, R., & Sow, P. (2007). High fertility Gambians in low fertility Spain: The dynamics of child accumulation cross transnational space. *Demographic Research*, 16(12), 375–411.
- Blossfeld, H. P., & Jaeninchen, U. (1992). Educational expansion and changes in women's entry into marriage and motherhood in the Federal Republic of Germany. *Journal of Marriage and the Family*, 54(2), 302–315.
- Bongaarts, J. (2003). Completing the fertility transition in the developing world: The role of educational differences and fertility preferences. *Population Studies*, 57(3), 321–335.
- Bueno, X. (2010). *Los comportamientos demográficos diferenciales en la formación de la familia de la población inmigrada en España*. PhD Thesis, Centre d'Estudis Demogràfics and Universitat Autònoma de Barcelona.
- Bueno, X., & Vono, D. (2009). Pautas reproductivas e inserción laboral de las madres latinoamericanas en Estados Unidos y España a inicios del siglo XXI. *Diálogos Latinoamericanos*, 15, 94–113.
- Carter, M. (2000). Fertility of Mexican immigrant women in the U.S.: A closer look. *Social Science Quarterly*, 81(4), 1073–1086.
- Castro-Martín, T., & Rosero-Bixbi, L. (2011). Maternidad y fronteras. La fecundidad de las mujeres inmigrantes en España. *Revista Internacional de Sociología Monográfica*, 69(1), 105–137.
- Castro-Martín, T., Domínguez-Folgueras, M., & Martín-García, T. (2008). Not truly partnerless: Non-residential partnerships and retreat from marriage in Spain. *Demographic Research*, 18(16), 443–468.
- Cebrián, M. (2009). Los determinantes de los flujos migratorios internacionales: El caso español, 1995–2007. *Principios. Estudios de Economía Política*, 14, 49–70.
- Cerrutti, M., & Massey, D.S. (2001). On the auspices of female migration from Mexico to the United States. *Demography*, 38(2), 187–200.
- Coleman, D. A. (1994). Trends in fertility and intermarriage among immigrant populations in Western Europe as measure of integration. *Journal of Biosocial Science*, 26, 107–136.
- Curran, S. R., & Saguy, A. C. (2001). Migration and cultural change: A role for gender and social networks. *Journal of International Women's Studies*, 2(3), 54–77.
- Curran, S. R., & Rivero-Fuentes, E. (2003). Engendering migrant networks: The case of Mexican migration. *Demography*, 40(2), 289–307.
- DeJong, F. D., Root, B. D., & Abad, R. G. (1986). Family reunification and Philippine migration to the United States: The immigrants' perspective. *International Migration Review*, 20(3), 598–611.
- Del Rey, A., & Cebrián, M. (2010). Population replacement and migration in two Spanish regions during the twentieth century. *Population-E*, 65(3), 481–498.
- Del Rey, A., & Vono, D. (2014). Marrying after arriving: The role of individuals' networks for immigrant choice of partner's origin. *Advances in Life Course Research*, 19(1), 28–39.
- Devolder, D., & Bueno, X. (2011). Interacciones entre fecundidad y migración. Un estudio de las personas nacidas en el extranjero y residentes en Cataluña en 2007. *Documents d'Anàlisi Geogràfica*, 57(3), 441–467.
- Devolder, D., & Treviño, R. (2007). *Efectos de la inmigración extranjera sobre la evolución de la natalidad y de la fecundidad en España*. Papers de Demografia (Centre d'Estudis Demogràfics), 321, 1–14.
- Domínguez-Folgueras, M., & Castro-Martín, T. (2008). Women's changing socioeconomic position and union formation in Spain and Portugal. *Demographic Research*, 19(41), 1513–1550.
- Feliciano, C. (2005). Educational selectivity in U.S. immigration. *Demography*, 42(1), 131–152.
- Ford, K. (1990). Duration of residence in the United States and the fertility of U.S. immigrants. *International Migration Review*, 24(1), 34–68.
- Frejka, T., & Sardon, J. P. (2007). Cohort birth order, parity progression ratio and parity distribution trends in developed countries. *Demographic Research*, 16(11), 315–374.

- Goldstein, S. (1973). Interrelations between migration and fertility in Thailand. *Demography*, 10(2), 225–241.
- Grande, R., & Del Rey Poveda, A. (2012). Remesas, proyectos migratorios y relaciones familiares. El caso de los latinoamericanos y los caribeños en España. *Papeles de Población*, 18(74), 237–272.
- Hoem, J. M. (1986). The impact of education on modern family-union initiation. *European Journal of Population*, 2(2), 113–133.
- Kahn, J. R. (1988). Immigrant selectivity and fertility adaptation in the United States. *Social Forces*, 67(1), 108–128.
- Kahn, J. R. (1994). Immigrant and native fertility during the 1980s: Adaptation and expectations for the future. *International Migration Review*, 28(3), 501–519.
- Kiernan, K. (1999). Childbearing outside marriage in western Europe. *Population Trends*, 98, 11–20.
- Kofman, E. (1999). Female ‘birds of passage’ a decade later: Gender and immigration in the European Union. *International Migration Review*, 33(2), 269–299.
- Kulu, H. (2005). Migration and fertility: Competing hypotheses re-examined. *European Journal of Population*, 21(1), 51–87.
- Lindstrom, D. P., & Giorguli, S. (2007). The interrelationship between fertility, family maintenance, and Mexico-U.S. migration. *Demographic Research*, 17(28), 821–858.
- Massey, D. S. (1990). Social structure, household strategies, and the cumulative causation of migration. *Population Index*, 56(1), 3–26.
- Massey, D. S., Alarcon, R., Durand, J., & Gonzalez, H. (1987). *Return to Aztlán: The social process of international migration from western Mexico*. Berkeley: University of California.
- Milewski, N. (2007). First child of immigrant workers and their descendants in West Germany: Interrelation of events, disruption, or adaptation? *Demographic Research*, 17(29), 859–896.
- Mulder, C. H., & Wagner, M. (1993). Migration and marriage in the life course: A method for studying synchronized events. *European Journal of Population*, 9(1), 55–76.
- Mussino, E., & Strozza, S. (2012). The fertility of immigrants after arrival: The Italian case. *Demographic Research*, 26(4), 99–130.
- Myrskylä, M., Kohler, H. P., & Billari, F. C. (2009). Advances in development reverse fertility declines. *Nature*, 460(6), 441–443.
- Parrado, E. A. (2011). How high is Hispanic/Mexican fertility in the United States? Immigration and tempo considerations. *Demography*, 48(3), 1059–1080.
- Parrado, E. A., & Flippen, C. A. (2005). Migration and gender among Mexican women. *American Sociological Review*, 70(4), 606–632.
- Parrado, E. A., & Morgan, S. P. (2008). Intergenerational fertility among Hispanic women: New evidence of immigrant assimilation. *Demography*, 45(3), 651–671.
- Reher, D., & Requena, M. (2009). The National Immigrant Survey of Spain. A new data source for migration studies in Europe. *Demographic Research*, 20(12), 253–278.
- Rindfuss, R. R., Morgan, S. P., & Swicegood, G. (1988). *First birth in America: Change in the timing of parenthood*. Berkeley: University of California Press.
- Roig-Vila, M., & Castro-Martín, T. (2007). Childbearing patterns of foreign women in a new immigration country: The case of Spain. *Population-E*, 62(3), 351–380.
- Sobotka, T. (2008). The rising importance of migrants for childbearing in Europe. *Demographic Research*, 19(9), 225–248.
- Stephen, E. H., & Bean, E. D. (1992). Assimilation, disruption and the fertility of Mexican-origin women in the United States. *International Migration Review*, 26(1), 67–88.
- Toulemon, L. (2004). Fertility among immigrant women: New data, a new approach. *Population and Societies*, 400, 1–4.