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# Characteristics of First-time Parents in Spain along the 21st Century

*Características de las madres primerizas y de los padres primerizos en la España del siglo XXI*

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## Key words

Spain
- Gender
- Places of Birth
- Educational Attainment
- First-Parity Births
- Employment Status



## Abstract

This study examines female and male first-time parents in Spain between 1999 and 2015. Based on the Labor Force Survey in its panel version, the probability of having a first child is controlled by age and observation period, using the independent variables of place of birth, educational attainment and employment status. Results confirm a delay in first parity births for men and women having a higher education level. The continuance of a gender pattern explains the higher probability of first-time maternity in inactive women, whereas work is indispensable for being a first-time father. However, unemployment and temporary employment negatively affect both genders. The contribution of the immigrant population is confirmed, especially due to its early timetable.



## Palabras clave

España
- Género
- Lugares de origen
- Nivel de estudios
- Primofecundidad
- Situación laboral



## Resumen

Este trabajo analiza la primofecundidad femenina y masculina en España entre 1999 y 2015. A través de la Encuesta de Población Activa en su versión panel, la probabilidad de tener un primer hijo se controla por edad y periodo de observación, y las variables independientes son el lugar de nacimiento, el nivel de instrucción y la relación con la actividad. Los resultados confirman el aplazamiento de la primera fecundidad entre los hombres y mujeres con mayor nivel educativo. La pervivencia de un patrón de género explicaría la mayor probabilidad de primera maternidad de las inactivas, mientras que el trabajo es indispensable para ser padre primerizo. No obstante, el desempleo y la temporalidad afectan negativamente a ambos sexos. La aportación de la población inmigrada queda confirmada especialmente por su calendario temprano.



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## Introduction

The explosion in fertility occurring in Spain between the late-1950s and mid-1970s is well known (Fernández Cordón, 1986), as is the reverse trend that began subsequently. In fact, mainly in the south of Europe and in Spain, it has been possible to see a clear example of what demographers call the lowest-low fertility, characterized by a Total Fertitily Rate (TFR) that is lower than 1.3 (Kohler *et al.,* 2002). These authors, including Cabré (2003) and Miret (2006) have interpreted this sharp decrease in fertility levels in European countries and their stabilization at exceptionally low levels during the last two decades of the 20st century as the effect of major changes in the transition-to-maternity timing. Thus, the increased age of parenthood, especially for first children, has created a temporary effect, distorting the low TFR (Bongaarts, 2002; Sobotka, 2004; Goldstein *et al.,* 2009). This phenomenon is known as *postponement transition* (Bongaarts and Sobotka, 2012), moving from a pattern of early to late maternity. Spain has been no exception in this process, serving as a clear example of *latest-late fertility* (Billari, 2005) ages.

The decrease in TFR that took place between 1977 and 1986, with the lowest level being reached in 1998, when once again the trend began to rise, has very slowly increased until reaching a maximum of 1.45 in 2008, in parallel with the onset of the economic crisis. The delayed fertility of the oldest cohorts (those born in the 1970s and 1980s) was recovered (Bongaarts and Sobotka, 2012), coinciding with the relative advance in the first fertility calendar of the cohorts born after the 1980s. Finally, it is necessary to consider the contribution of those births taking place in the foreign population. While the *quantum* effect of immigration on the fertility rate has been unremarkable as a whole (Roig and Castro-Martín, 2007; Castro-Martín and Rosero-Bixby, 2011), the time effect has been notable in the delayed maternity age (Castro-Martín and Martín-García, 2013; Devolder, 2010). From a socio-economic perspective, a favorable socio-economic cycle has positively affected fertility rates. The worsening economic situation caused by the 2008 economic crisis and the increase in unemployment as of this time, has resulted in a decrease in the Spanish total fertility rate (Castro-Martín and Martín-García, 2013). The decrease in fertility during economic crisis periods has been mainly interpreted as a result of the delay in family creation until the conditions improve (Adsera, 2011; Sobotka *et al.,* 2011; Örsal and Goldstein, 2010).

This work focuses on the analysis of first time parenting in Spain, its calendar, as well as its main individual explanatory factors. The specific objective is to reveal the diverse factors of education, work and origin (native or foreigner) of men and women having their first child between 1999 and 2015, according to the age of initiation of family formation. The underlying goal is to highlight the importance of the distinct maternity/paternity calendars in the diverse sociodemographic profiles of those becoming first time parents.

Confluence during the analyzed period of the transition to maternity for the diverse cohorts would suggest that the hypothesis of opportunity cost (Becker, 1981) over the negative correlation between, on the one hand, education and occupation level, and on the other, first time parenting, does not always apply, given that it depends on the calendar of having a first child. It is expected that for women who have delayed their transition to maternity, the relationship shall be inverse. Women with a higher education level and those who are employed tend to delay maternity, as compared to women who are less qualified and those who are not a part of the labor market (Blossfeld and Huinink, 1991; Brewster and Rindfuss, 2000; Esping-Andersen, 2013). The hypothesis for men is that both education level and participation in the workforce shall act positively on the transi-

tion to paternity. Finally, the contribution of immigrants to first time parenting in Spain, both feminine and masculine, shall only be significant for the population under the age of thirty, given the earlier maternity and paternity of immigrant populations.

Taking advantage of the fact that, since 1999, the Labor Force Survey permits the identification of children of a specific individual in a given household, a variable was constructed to indicate whether, between one cycle and the following, a newborn entered a household in which the mother or father had yet to record the residence of any child. The analysis technique of logistic regression with panel data shall be used, in which the ratio between the first time parenthood and infertility shall be controlled for by the age of the man or the woman and the observation period, and in which the independent variables of place of birth, educational attaintment and employment status were used. As an approximation of immigration, place of birth shall be used, considering immigrants to be those who were not born in Spain. The studied period shall range from the first quarter of 1999 to the first quarter of 2015. The transition to first time parenting shall be analyzed for women born between 1957 and 1994, between 20 and 41 years of age, and men born between 1953 and 1992, between 22 and 45 years of age.

Most studies on fertility have focused exclusively on women, ignoring men, as if their opinions, expectations and desires have no influence on the decision to have children (Kravdal and Rindfuss, 2008). However, the importance of including the analysis of men makes sense within the context of Western societies, in which the traditional male provider model is disappearing in favor of a new type of paternity, more committed to child care (Hobson and Morgan, 2002). Therefore, this work also analyzes first time parenting from a male perspective. The separated analysis for men and women attempts to reveal the profiles of mothers and fathers at the time of their initial maternity/paternity experience.

## Theoretical framework and working hypothesis

The theoretical framework of the "New Home Economics", whose most well-known representative is Gary S. Becker (1960, 1981) has driven some major studies on low fertility rates (Brewster and Rindfuss, 2000; Ahn and Mira, 2002; del Boca, 2002). The central argument of this economic perspective is that the greater dedication of women to education and the labor market increases the opportunity cost of maternity in terms of lost wages and a diminished human capital. Postponing maternity is a strategy used by these women to decrease the opportunity cost resulting from abandoning their professional careers, when these careers have yet to be consolidated. At an older age, it may be expected that they shall have reached a higher position and greater job stability (Mincer, 1963; Esping-Andersen, 2013; Lappegard and Rønsen, 2005), and therefore, fewer risks are associated with the interruption of their career after the birth of a first child. This delay effect for women with a higher education level is especially evident in Spain and in other countries of southern Europe, in which difficulties in reconciling family and work are greater (Castro-Martín and Martín-García, 2013). In these countries, an institutional conflict also exists (McDonald, 2000), given that children are mainly considered to be private goods, as compared to the concept of social goods, thus strengthening gender equality in social institutions such as schools, the labor force or couple relationships results in benefits to society as a whole. However, if the delay in maternity was a phenomenon that was initially led by women having a higher education level (Mills *et al.,* 2011), it has now extended to all social groups, as argued for the Spanish case by De la Rica and Iza (2005), even though differences in the calendar continue to exist based on education level (Ren-

dall *et al.,* 2010). Similarly, many studies have examined the effects of female employment on the delay in maternity (Blossfeld and Huinink, 1991; Brewster and Rindfuss, 2000; Esping-Andersen, 2013). Currently, however, the traditionally negative relationship between female work participation and fertility reveals some major variations between countries and cohorts. Whereas the ongoing negative correlation in the south of Europe continues, this relationship has become positive in northern Europe (Ahn and Mira, 2002; Myrskylä *et al.,* 2011).

Along with the assumption of a clear gender division of labor and the male breadwinner model, the neoclassical theoretical framework of the "New Home Economics" expects the effect of human capital and work participation to be inverse in men. The higher income and job stability associated with a higher educational and professional investment, results in increased probabilities of the transition to paternity. However, more recent studies suggest that educational level may also have a negative influence on men with regards to their fertility (Preston and Sten, 2008), given the decreased professional interruption for men who delay fatherhood (Henwood *et al.,* 2011) or the irrelevance of economic status (Heckman and Walker, 1990).

On the other hand, beyond participation in the labor market, some other studies have focused their attention on the effects of job instability and insecurity on the delay in maternity, due to either temporary work or unemployment. Their conclusions suggest a clear relationship between the characteristics of the labor market of southern European countries, with high unemployment rates, insecure and unstable employment for youth, and a delay in family formation (de la Rica and Iza, 2005; Adsera, 2011). In Spain, the fact that one or two members of the couple are unemployed may affect their reproductive behavior, gives rise to a decrease in fertility (Baizán, 2006; Adsera, 2011). The results of these studies explain the recent evolution of the transition to parenthood in Spain: a slight recovery of the same over the boom years, which halted in 2008 with the economic-labor deterioration, as suggested by Castro-Martín and Martín-García (2013). As for the effect of the macroeconomic context, Kravdal (2002) demonstrated that this continues after controlling for work situation on an individual level, suggesting that the perception of job insecurity plays a very important role in reproductive decisions. Other studies suggest that the effect of the economic situation varies according to age. Older women postpone their transition to maternity to a lesser degree during the more negative scenarios, either for biological reasons or due to more stable work situations, whereas younger individuals are the most likely to postpone childbearing during periods of economic crisis (Sobotka *et al.,* 2011).

Finally, the delay in the transition to maternity or paternity may be explained from theoretical perspectives that accentuate the evolution of postmodern values, as is the case with the theory of the "Second Demographic Transition" (Van de Kaa, 1987; Lesthaeghe, 1995). The new timing of first time parenting suggests a trend to delay any irreversible decisions that may limit individual aspirations. Within the new system of social rules, the main objective of men and women in their passage to the adult world is not to get married and have children, but rather, to achieve personal fulfillment, especially through success in their professional careers, but also through their relationships with others. According to this theory, this new form of individualism brings with it a large degree of heterogeneity in the maternity/paternity calendar, according to the characteristics and interests of the individuals. This may explain, for example, the diversity in the first time childbearing calendar in those populations made up of individuals with different cultural situations, such as immigrants (Billari, 2005). Other authors (Roig and Castro-Martín, 2007; Castro-Martín and Rosero-Bixby, 2011) highlight the

importance of social rules, suggesting that first generation immigrants are used to maintain the reproductive patterns of their home countries. According to these authors, this may explain why the fertility calendars of female immigrants are much earlier than those of Spanish women. Of the diversity of the hypotheses regarding reproductive behavior of immigrants (Kulu, 2005), others suggest reproductive patterns that are adapted to the new society, or the effects of the interruption caused by the migration in the reproductive project, either repressing or advancing it following their arrival.

We believe that it is precisely this convergence during the analyzed period of the distinct maternity and paternity calendars which prevents us from establishing a unique relationship pattern between place of origin, education level and labor force participation of individuals, on the one hand, and their probability to transition to first time childbearing, on the other hand. Similarly, the impact of the economic situation on the decision to delay family formation may depend on the individual decision maker's age and work situation, based on biological criteria or professional stability.

The first hypothesis points to the negative effect of education on first time childbearing. However, it is expected that for those women who have delayed maternity beyond their 30's, the relationship between education and first time maternity will be inverse. The hypothesis for men of any age is that the higher the education level, the greater the probability of becoming fathers. The possibility of having greater income for the more educated represents a greater household stability, and therefore makes it more likely that they shall be able to take on new family responsibilities.

The second hypothesis relates first time parenthood to labor market participation. Given the persistence of the traditional gender roles, we expect that the probabilities of abandoning a childless state will be greater for inactive (non-working) women. On the other hand, greater labor implication is expected for those women who have delayed maternity. Therefore, high probabilities of first time parenthood are expected for employees over the age of thirty. For men, once again we anticipate lower probabilities for those who do not work, given our society's broadly established model of "the male provider", in which male income is seen as being necessary to maintain the family unit.

The third hypothesis suggests work stability. For those forming a part of the labor market and regardless of age, the probabilities of forming a family are expected to be greater for those workers having permanent contracts. Similarly, it is anticipated that the effect of unemployment shall be negative on first time parenthood. Despite the availability of time that may result in situations favoring maternity/paternity, unemployment leads to precarious labor and economic situations that are not desirable for those who are going to enter into a new phase as parents.

The fourth and final hypothesis goes along with the cultural explanation in order to understand the heterogeneity, both in levels as well as in the first time parenthood calendar in Spain, based on place of birth. Some of the immigrant population comes from societies that have yet to complete the second demographic transition. Furthermore, immigrants who are used to reproducing the parenthood age patterns of their home country or those who migrate for reasons of family formation or family reunification may see an accelerated reproduction rate shortly after their arrival to the country. Therefore, it is expected that their probabilities of having a first child shall be greater than those of the native population. However, due to their earlier calendar, the difference in probabilities of first time parenthood for the immigrant population as compared to natives shall be especially significant for those under the age of thirty.

## Data sources and methodology

The Labor Force Survey (EPA, based on its initials in Spanish) is a rotating panel data source. The EPA rhythm is quarterly and the maximum observation period of the households takes place in six month quarters, such that in each cycle, one sixth of the sample is substituted by households of similar characteristics, assuring the representativeness of the same at all times. To ensure this, the EPA demands a specific methodology that takes into account its panel data nature. However, this distinctive feature has been used very infrequently in analyses of labor market transitions (or those from school to labor market) and never for demographic analysis or that of family formation (which are always of a transversal nature or, at maximum, of reconstruction of the cohorts based on data at a given point in time, usually the second quarter). In this study, the EPA shall be used in a longitudinal manner for the analysis of first time parenthood, relating it with the labor market dynamic[1].

Other advantages of the EPA are its sample size and periodicity. In fact, the EPA interviews approximately 65,000 homes, from which it obtains information on some 200,000 individuals, permitting results that are quite representative of Spanish society as a whole. And given its quarterly nature, it allows us to track the relationship between labor market dynamics and family formation in an ongoing and updated manner. This last characteristic is of special interest to us, given that our analysis attempts to discern, amongst other things, up to what point the outbreak and subsequent evolution of the economic and labor crisis will affect first time parenthood patterns in Spain. One of the greatest limitations of EPA data is that it is only possible to identify children that are residents of a household. And although this may affect the calculations of first time births in diverse scenarios such as reconstituted families, above all, it does so in cases of immigrants having a child in Spain but also having other children residing in their country of origin. So, Castro-Martín and Rosero-Bixby (2011) and del Rey-Poveda *et al.* (2015) used the National Immigrant Survey of 2007 to identify that nearly half of all female immigrants had children when entering Spain. However, the percentage of these, especially of recent arrivals, who left their children (under the age of 18) in their home countries, is lower, at only 19%. It is precisely these cases, in which there are children prior to the migration that do not live in the household, which tend to distort out calculations of first time parenthood and the age of the same for the immigrant population. Both works recognize that maternity taking place prior to the arrival in Spain is more common amongst those women whose immigration is explained by employment causes, such as Latin Americans or Eastern Europeans, both of which are characterized by having earlier reproductive calendars than those of Spaniards.

So, taking advantage of the fact that, from the first quarter of 1999, the Labor Force Survey permits the identification of children of a specific individual in a household, a variable was constructed that indicates whether, between one cycle and the next, a newborn has been included in a household, whose mother and father, (respectively the woman and man who are being observed) have no children residing in the household. Upon considering the transition to first time parenthood between one quarter (*t*) and the following quarter (*t+1*), it is necessary for each woman and man to be interviewed over at least two consecutive quarters. Given that in the EPA, each individual is observed on up

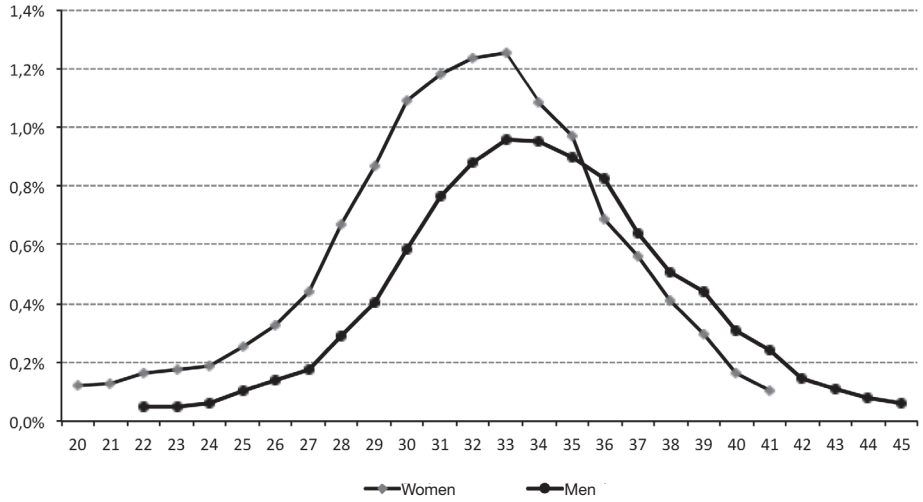
[1] Given the probability of first time parenting and the fact that there is no attempt to estimate the number of first children, according to INE (Spanish National Statistical Institute) indications (INE, 1989), weightings have not been used. If they were to be used, it would be necessary to have a longitudinal weight for the same individual throughout the observation period, which is not offered by the INE.

to six occasions, this means that there are five possible transition episodes for each individual. The dependent variable is the transition to first time parenthood and the adopting of the *1* value when, between the time of observation and the following quarter, a new member having 0 years of age appears in the household, and *0* when the household continues to be childless. The analysis technique shall be logistic regression with panel data, in which the ratio between having a first child or in which the household continues to be childless, is controlled by the individual's age, the observation period and in which place of birth, level of education and employment status are used as explanatory variables. This methodology permits us to obtain net effects regarding the probability of transition to first time parenthood, from the individual's characteristics regarding education level, place of birth and relationship with the economic activity and employment situation, upon annulling the effects of the other co-variables introduced in the model. In addition, the multivariable model is repeated for each of the categories of our explanatory variables so as to reveal the distinct specific calendars for first time parenthood according to educational profile, from place of birth and with relation to employment. Upon focusing on the analysis of the transition to first time parenthood, the sample only considers those women and men who were previously childless, or who, in their first observation had no children in the household. Similarly, given that it is a transition to a unique event (only one individual may become a first time mother or father), the observations of the individuals are truncated at the time in which this transition takes place, that is, in the observation in which a newborn appears.

The working hypothesis suggests that the age, education, work and place of origin profiles shall vary according to the transition to either first time maternity or paternity. Unlike other data sources such as the Survey of Fertility and Values from 2006 or the population census from 2011, in which parenthood is considered to be a strictly female topic, the EPA allows us to consider the main sociodemographic and labor characteristics of men at the time of becoming first time fathers. Thus, the analysis is carried out separately for men and women, thereby including the gender perspective in this analysis. We have selected women between the age of 20 and 41 given that it has been verified that female first time parenthood is significant during this age range (Graph 1). Thus, we have selected a sample of 274,351 women without children in the household who were observed on 945,484 occasions, those having 10,892 first children (4%) during the observed period, from 1999 and 2015. In the masculine case, although first time fatherhood by age is similar to the female case, the pattern reveals a later transition to paternity calendar. So, for men, the minimum age for having a first child is 22 and first time paternity is no longer significant after 45 years of age (Graph 1). Thus, we have observed 351,602 men between these ages on 1,119,496 occasions, with 10,244 first children (3%). During the observed period, women and men having their first child who were included in the sample have experienced variations with respect to the explanatory variables. In order to understand the changes in first time parenthood patterns, it is necessary to describe the evolution of the structure based on age, educational attainment, place of birth or employment situation of the considered population. So, for example, Graph 2 shows how, during the analyzed period between 1999 and 2015, the average age for first time maternity changed from 29.6 to 32.9 years of age, and first time paternity went from 31.9 to 35.5 years of age[2].

[2] In the same graph, it is possible to verify that the mean ages of first time maternity and paternity calculated with the EPA coincide in great part with those created according to the birth registries, that is, from the Vital Statistics, MNP based on its initials in Spanish.

**GRAPH 1.** *First time parenthood rates according to age and sex, 1999-2015*

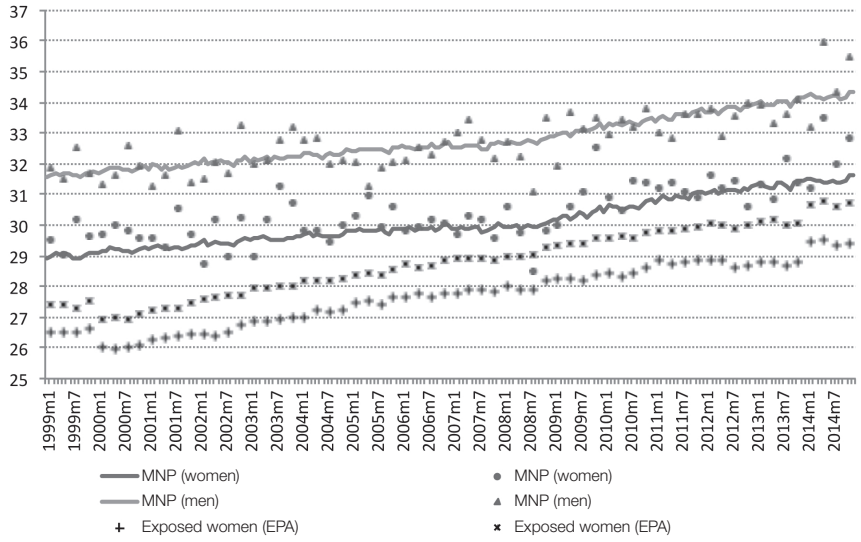



*Source:* Authors' creation based on primary data of the EPA, 1999-2015.

Similarly, it has been observed that, although lower, the mean ages of the women and men that have yet to have children at the time of observation (exposed to first time parenthood) are following the same rising trend.

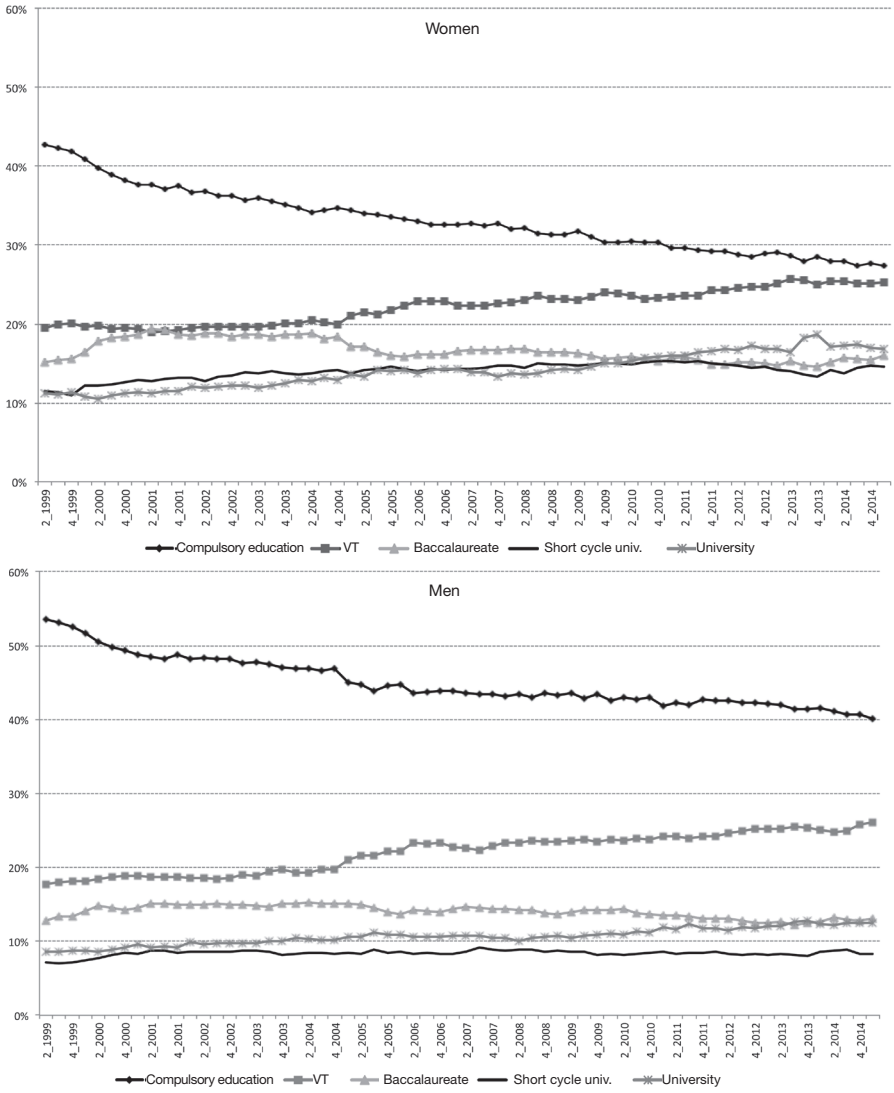
As for education level (Graph 3), this has increased progressively since the start of the 21st century, especially in women. In fact, the percentage of women having a maximum of compulsory education has decreased from 43% to 27%, whereas the percentage of women with VT (vocational training) and university studies (either short or long cycle) has increased. Finally, the percentage of women

**GRAPH 2.** *Evolution of the mean age of first time parenthood and mean age of the exposed population*




*Source:* Authors' creation based on primary data of the EPA, 1999-2015 and from the Vital Statistics (MNP), 1999-2014.

**GRAPH 3.** *Evolution of educational attainment of the observed women and men*

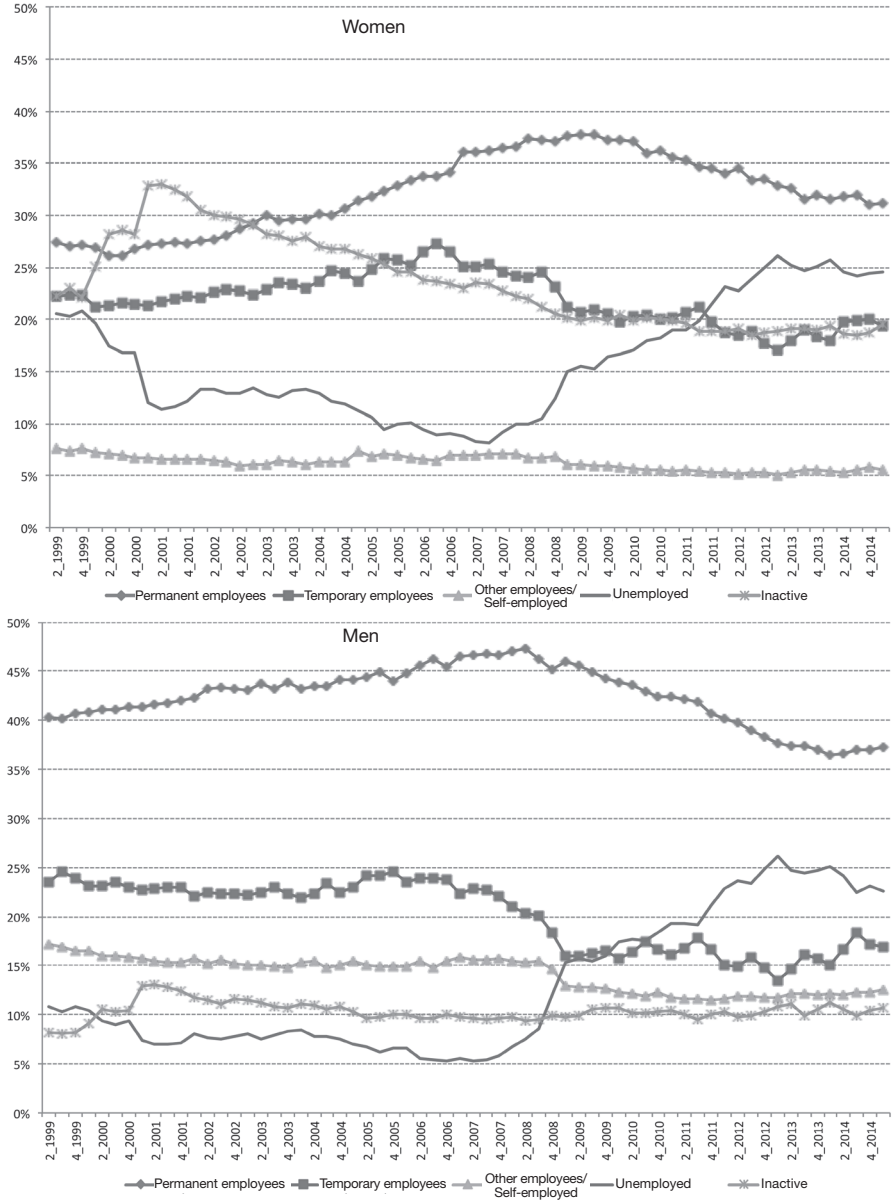



*Source*: Authors' creation based on primary data of the EPA, 1999-2015.

who have completed their baccalaureate studies has remained stable, at approximately 15-17%. Men have also experienced an improvement with regards to educational structure, although the proportion of those with compulsory studies is higher in this case, in detriment of the others.

Regarding the employment structure of women, Graph 4 reveals how a decrease has taken place in inactive women in favor of working females, since the start of the economic crisis in 2008. As of this time, the most noteworthy information is the spectacular increase in unemployment amongst females. While the number of unemployed women had decreased during the years of economic expansion, it went from 8 to 25%, between the third quarter of 2007 until the last obser-

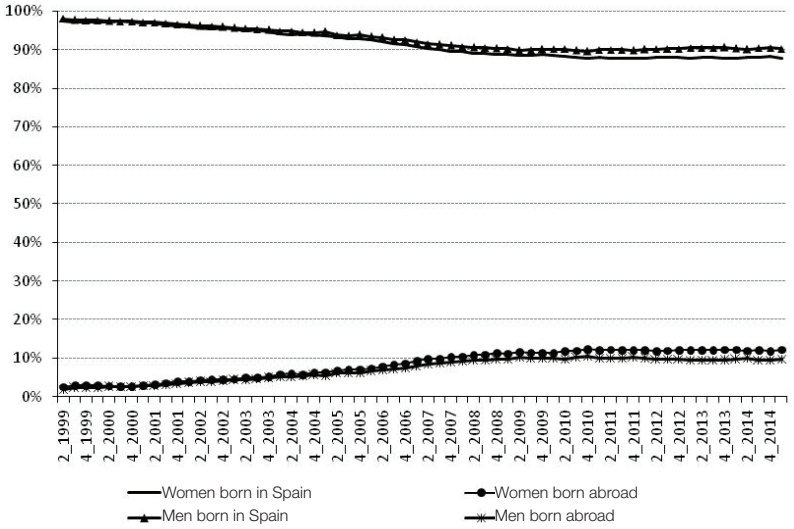
**GRAPH 4.** *Evolution of the employment status of the observed women and men*




*Source*: Authors' creation based on primary data of the EPA, 1999-2015.

ved quarter, the first quarter of 2015. Thus, it may be concluded that the female population is ever more present in the labor market, as indicated by the decreased weight of inactive females. However, the employment opportunities of these women have been seriously jeopardized with the arrival of the economic crisis, although this does not necessarily mean a return to inactivity. In the case of men, the deterioration of the economic context has led to a relative decrease in employed males and an increase in the unemployed.

**GRAPH 5.** *Evolution of place of birth of observed women and men*




*Source:* Authors' creation based on primary data of the EPA, 1999-2015.

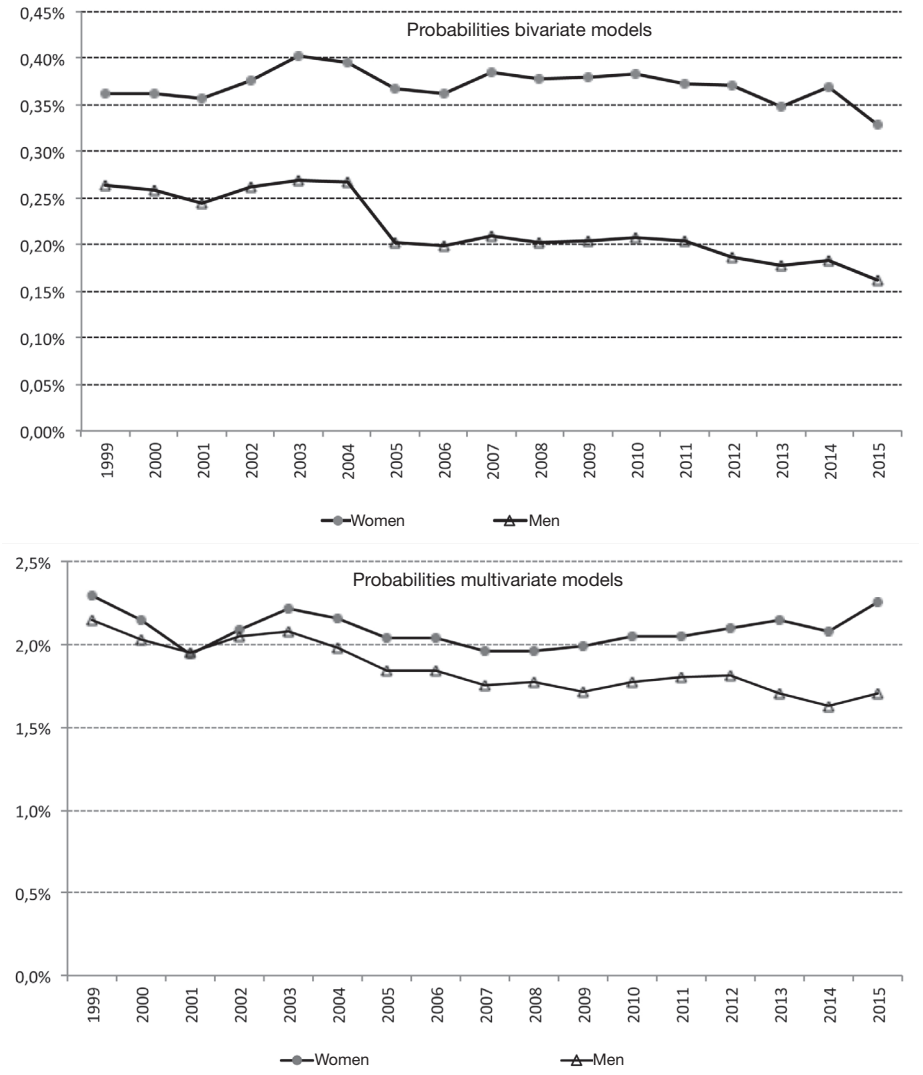
Finally, the importance of immigration in Spain has led to the progressive increase in the percentages of women and men from our sample who are experiencing first time parenthood who were born abroad, as seen in Graph 5.

## Evolution of first time parenthood in Spain

Before undertaking an analysis regarding the explanatory factors, we shall analyze the evolution throughout the period of first time parenthood in Spain. Graph 6 reveals that the probabilities of first time parenthood in women and men for each observation year, before and after controlling for all explanatory factors. Upon obtaining the annual probabilities, without introducing any control, it has been observed that there are no significant changes with regards to first time parenthood across the period, for either men or women. In the multivariable results, the net effect was calculated from the time of observation, once having annulled the effects of the changes on the structure of age, place of birth and employment status. The reference populations are individuals who are 33 years of age[3], having primary school studies or less, with permanent employment and born in Spain. For females having these characteristics, it has been observed that the transition to maternity decreases slightly until the year 2007, and with the economic crisis, in 2008, their probabilities of first time parenthood slightly increased. For men, the evolution has been parallel to that of the women, although in their case, the effect of the crisis on the decrease in first time paternity was not noted until 2013. A priori, these results for women contradict the thesis presented by Kravdal (2002) stating that the context of labor insecurity during the economic crisis persisted even after controlling for labor status of the individuals, although this is not the case for

[3] The greatest probability of first time parenthood was found for men and women who are 33 years of age (Graph 1). This explains, in large part, that the probabilities obtained in the multivariable models are higher than the bivariate ones, which are observed for the female and male total population.

**GRAPH 6.** *Evolution of first time female and male parenthood (expected probabilities based on bivariate and multivariate logistic regression models with panel data), 1999-2015*

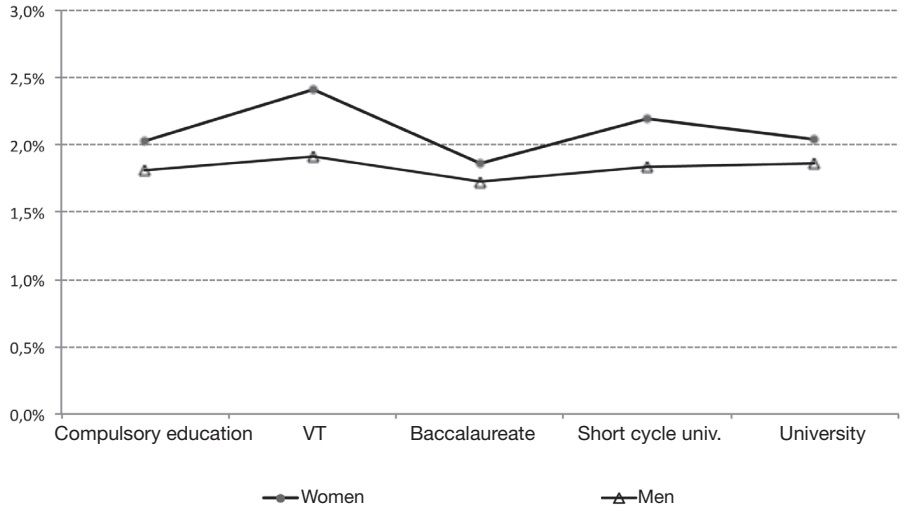



Note: Reference population: Individuals who are 33 years of age, with compulsory education and permanent employment, born in Spain.

*Source:* Authors' creation based on primary data of the EPA, 1999-2015.

men. However, it is not possible to draw robust conclusions on the differences observed from year to year, given that they are not statistically significant. In the multivariable models, the time variable is introduced (Table I, Model II), grouping together the years prior to the economic crisis (1999-2007) and the years as of the start of the same (2008-2015). This permits us to confirm that the transition to first time maternity was slightly more likely during the economic crisis period. These results are not unusual if we consider that in the multivariable model, the effect of unemployment is annulled and 33 year olds are

**GRAPH 7.** *First time parenthood according to education level of women and men (expected probabilities based on multivariate logistic regression models with panel data), 1999-2015*




Note: Reference population: Individuals who are 33 years of age, with permanent employment, born in Spain.
*Source:* Authors' creation based on primary data of the EPA, 1999-2015.

used as the reference population, while the maternity of the youngest women is the most strongly affected during the economic crisis period (Sobotka *et al.,* 2011). For men, the difference between one period and another, although statistically significant, is quite small.

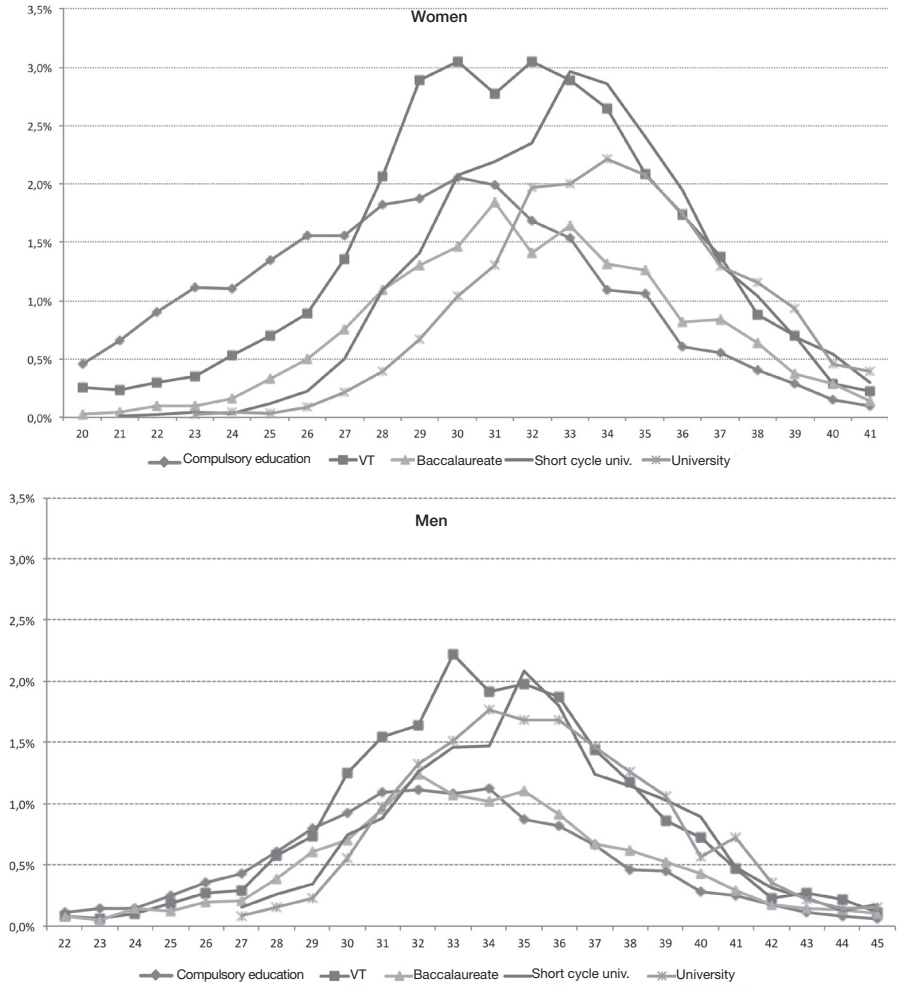
## Explanatory factors of the first time parenthood patterns in Spain between 1999 and 2015

### Education level

In Graph 7, we see that it is not possible to find a clear relationship between higher education level and lower first time motherhood. The results of the multivariable models by sex (Graph 7 and Table I) reveal that education level is a factor with little significance with regards to female first-time maternity. In fact, it is possible to observe a greater probability for women with VT or short cycle university degrees, whereas the differences between the less educated and upper cycle university degree holders are not significant. For men, no differences were observed in the probability of having a first child based on education level.

The diverse age-patterns of first time parenthood according to education level (Graph 8) reveal that the relationship between education level and the transition to maternity is not unequivocal, but rather, depends on the age of the studied phenomenon, as suggested by our initial hypotheses. In fact, women having a higher education level tended to delay maternity, whereas those who were less educated tended to become mothers at an earlier age. However, as we have just seen, this distinct calendar does not always contribute to final first time parenthood: having a first child much later, the probability of transition to maternity for university women is not statistically different for women with only primary school studies. On the other hand, women with VT are found to have a greater probability of being first time mothers as compared to women with other education levels. These increased probabili-

**GRAPH 8.** *First time parenthood by age and educational attaintment of women and men (expected probabilities based on multivariate logistic regression models with panel data), 1999-2015*




Note: Reference population: Individuals with permanent employment, born in Spain.
*Source:* Authors' creation based on primary data of the EPA, 1999-2015.

ties began in the late 20s and also revealed a highly delayed transition, as was the case with their colleagues having a higher education level. However, for the delayed calendar of the women with VT, the hypotesis of the accumulation of human capital strategy is not valid. In fact, both the academic training of the women with VT as well as their subsequent work positioning occurs at earlier ages than those of the university degree holders. Our results agree with the argument of De la Rica and Iza (2005), which states that the delay in maternity, although a phenomenon that was initiated by the university educated, has extended across the less educated social groups.

In the case of men, education does not result in differences in the incidence of first time fatherhood. Ultimately, it is observed that the effect of education is lower in men

**TABLE 1.** *Characteristics associated with first time parenthood in women and men (Logistic regression coefficients with panel data), 1999-2015*

| Variables | Women | | | | | | | | Men | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model I | | | | Model II | | | | Model I | | | | Model II | | | |
| | Odd ratio | | S.S. | Prob. | Odd ratio | | S.S. | Prob. | Odd ratio | | S.S. | Prob. | Odd ratio | | S.S. | Prob. |
| **Age** | | | | | | | | | | | | | | | | |
| 23 | 0.15 | *** | 0.01 | 0.3% | 0.15 | *** | 0.01 | 0.3% | | | | | | | | |
| 24 | 0.17 | *** | 0.01 | 0.4% | 0.17 | *** | 0.01 | 0.3% | | | | | | | | |
| 25 | 0.24 | *** | 0.02 | 0.5% | 0.24 | *** | 0.02 | 0.5% | | | | | | | | |
| 26 | 0.32 | *** | 0.02 | 0.7% | 0.32 | *** | 0.02 | 0.6% | | | | | | | | |
| 27 | 0.42 | *** | 0.03 | 0.9% | 0.43 | *** | 0.03 | 0.8% | 0.23 | *** | 0.02 | 0.4% | 0.22 | *** | 0.02 | 0.3% |
| 28 | 0.62 | *** | 0.03 | 1.3% | 0.63 | *** | 0.03 | 1.2% | 0.35 | *** | 0.02 | 0.7% | 0.34 | *** | 0.02 | 0.5% |
| 29 | 0.79 | *** | 0.04 | 1.6% | 0.80 | *** | 0.04 | 1.5% | 0.47 | *** | 0.03 | 0.9% | 0.46 | *** | 0.03 | 0.7% |
| 30 | 0.95 | ns. | 0.05 | 1.9% | 0.96 | ns. | 0.05 | 1.8% | 0.65 | *** | 0.04 | 1.2% | 0.64 | *** | 0.04 | 0.9% |
| 31 | 0.99 | ns. | 0.05 | 2.0% | 0.99 | ns. | 0.05 | 1.9% | 0.82 | *** | 0.04 | 1.5% | 0.81 | *** | 0.04 | 1.2% |
| 32 | 1.00 | ns. | 0.05 | 2.0% | 1.00 | ns. | 0.05 | 1.9% | 0.93 | ns. | 0.05 | 1.7% | 0.92 | ns. | 0.05 | 1.3% |
| 33 | 1 | | | 2.0% | 1 | | | 1.9% | 1 | | | 1.8% | 1 | | | 1.4% |
| 34 | 0.86 | *** | 0.04 | 1.7% | 0.86 | *** | 0.04 | 1.6% | 0.99 | ns. | 0.05 | 1.8% | 0.99 | ns. | 0.05 | 1.4% |
| 35 | 0.75 | *** | 0.04 | 1.5% | 0.75 | *** | 0.04 | 1.4% | 0.93 | ns. | 0.05 | 1.7% | 0.93 | ns. | 0.05 | 1.3% |
| 36 | 0.53 | *** | 0.03 | 1.1% | 0.53 | *** | 0.03 | 1.0% | 0.86 | *** | 0.05 | 1.6% | 0.85 | *** | 0.05 | 1.2% |
| 37 | 0.43 | *** | 0.02 | 0.9% | 0.43 | *** | 0.02 | 0.8% | 0.67 | *** | 0.04 | 1.2% | 0.66 | *** | 0.04 | 0.9% |
| 38 | 0.32 | *** | 0.02 | 0.7% | 0.32 | *** | 0.02 | 0.6% | 0.54 | *** | 0.03 | 1.0% | 0.53 | *** | 0.03 | 0.8% |
| 39 | 0.23 | *** | 0.02 | 0.5% | 0.23 | *** | 0.01 | 0.4% | 0.47 | *** | 0.03 | 0.9% | 0.46 | *** | 0.03 | 0.7% |
| 40 | 0.13 | *** | 0.01 | 0.3% | 0.13 | *** | 0.01 | 0.2% | 0.33 | *** | 0.02 | 0.6% | 0.32 | *** | 0.02 | 0.5% |
| 41 | | | | | | | | | 0.27 | *** | 0.02 | 0.5% | 0.26 | *** | 0.02 | 0.4% |
| 42 | | | | | | | | | 0.17 | *** | 0.01 | 0.3% | 0.16 | *** | 0.01 | 0.2% |
| 43 | | | | | | | | | 0.12 | *** | 0.01 | 0.2% | 0.12 | *** | 0.01 | 0.2% |
| 44 | | | | | | | | | 0.09 | *** | 0.01 | 0.2% | 0.09 | *** | 0.01 | 0.1% |
| 45 | | | | | | | | | 0.07 | *** | 0.01 | 0.1% | 0.07 | *** | 0.01 | 0.1% |
| **Place of birth** | | | | | | | | | | | | | | | | |
| Born in Spain | 1 | | | 2.0% | 1 | | | 1.9% | 1 | | | 1.8% | 1 | | | 1.4% |
| Immigrants | 1.47 | *** | 0.05 | 2.9% | 1.41 | *** | 0.05 | 2.6% | 1.53 | *** | 0.06 | 2.7% | 1.54 | *** | 0.06 | 2.2% |
| **Education level** | | | | | | | | | | | | | | | | |
| Compulsory education | 1.00 | | | 2.0% | 1 | | | 1.9% | 1 | | | 1.8% | 1 | | | 1.4% |
| VT | 1.20 | *** | 0.03 | 2.4% | 1.17 | *** | 0.03 | 2.2% | 1.06 | ** | 0.03 | 1.9% | 1.05 | * | 0.03 | 1.5% |
| Baccalaureate | 0.92 | ** | 0.03 | 1.9% | 0.91 | *** | 0.03 | 1.7% | 0.95 | ns. | 0.03 | 1.7% | 0.95 | ns. | 0.03 | 1.3% |
| Short univ. cycle | 1.08 | ** | 0.04 | 2.2% | 1.06 | * | 0.04 | 2.0% | 1.01 | ns. | 0.04 | 1.8% | 1.01 | ns. | 0.04 | 1.4% |
| University | 1.01 | ns. | 0.03 | 2.0% | 0.98 | ns. | 0.03 | 1.8% | 1.03 | ns. | 0.04 | 1.9% | 1.02 | ns. | 0.04 | 1.5% |
| **Employment Status** | | | | | | | | | | | | | | | | |
| Permanent | 1 | | | 2.0% | 1 | | | 1.9% | 1 | | | 1.8% | 1 | | | 1.4% |
| Temporary | 0.40 | *** | 0.01 | 0.8% | 0.40 | *** | 0.01 | 0.8% | 0.69 | *** | 0.02 | 1.3% | 0.68 | *** | 0.02 | 1.0% |
| Other employment sit. | 0.87 | *** | 0.04 | 1.8% | 0.88 | *** | 0.04 | 1.6% | 0.97 | ns. | 0.03 | 1.8% | 0.97 | ns. | 0.03 | 1.4% |
| Unemployed | 0.22 | *** | 0.01 | 0.5% | 0.22 | *** | 0.01 | 0.4% | 0.51 | *** | 0.02 | 0.9% | 0.49 | *** | 0.02 | 0.7% |
| Inactive | 2.12 | *** | 0.05 | 4.2% | 2.17 | *** | 0.06 | 4.0% | 0.27 | *** | 0.02 | 0.5% | 0.26 | *** | 0.02 | 0.4% |
| **Period** | | | | | | | | | | | | | | | | |
| 1999-2007 | | | | | 1 | | | 1.9% | | | | | 1 | | | 1.4% |
| 2008-2015 | | | | | 1.21 | *** | 0.03 | 2.3% | | | | | 1.07 | *** | 0.02 | 1.5% |
| Constant | 0.02 | *** | 0.00 | | 0.02 | *** | 0.00 | | 0.02 | *** | 0.00 | | 0.01 | *** | 0.00 | |
| Log likelihood | -50,614 | | | | -50,573 | | | | -50,344 | | | | -50,337 | | | |
| Wald Chi² | 4,263 | *** | | | 4,280 | *** | | | 3,731 | | | | 2,633 | *** | | |

Statistical significance = "ns" not significant; " * " error < 0.10; " ** " error < 0.05; " *** " error < 0.01.

*Source:* Authors' creation based on primary data of the EPA, 1999-2015.

**GRAPH 9.** *First time parenthood by employment status of women and men (expected probabilities based on multivariate logistic regression models with panel data), 1999-2015*


Note: Reference population: Individuals who are 33 years old, with compulsory education, born in Spain.
*Source:* Authors' creation based on primary data of the EPA, 1999-2015.

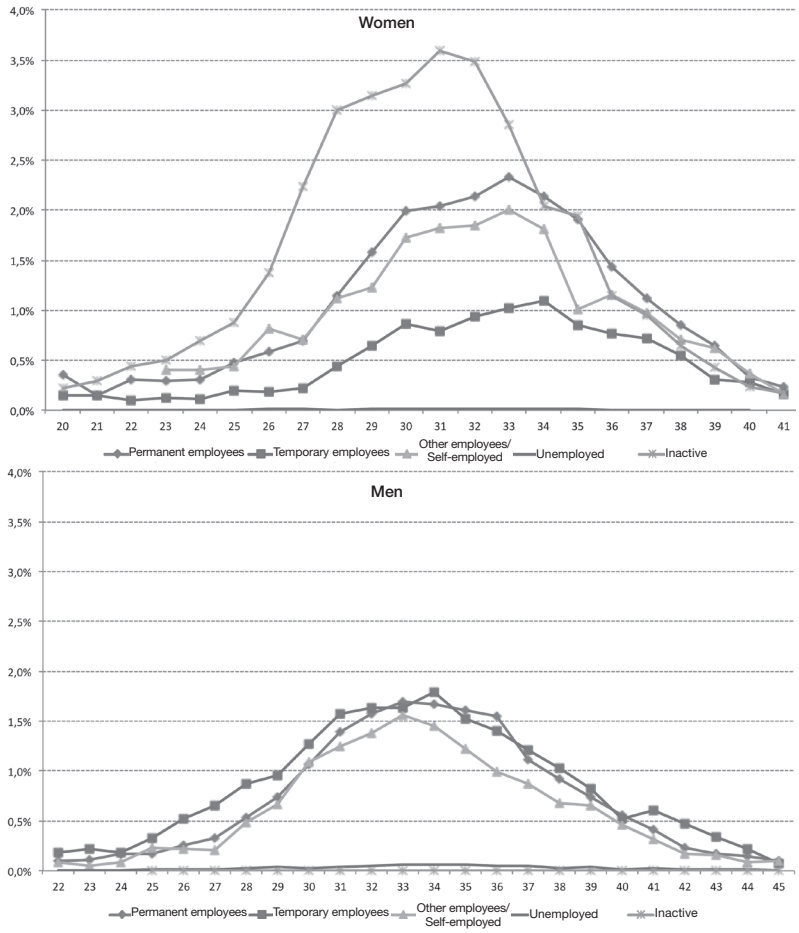
than in women. However, in men there is also a first time paternity calendar observed based on education level. As occurs in the female case, men with a higher education level tend to delay paternity more than their less educated counterparts.

### The employment status

The expected probabilities revealed in Graph 9 and Table I corroborate the hypothesis of the existence of a gender pattern in the relationship between participation in the labor market and first time parenthood. In fact, the greatest probabilities of first time parenthood are seen for inactive women[4], whereas working is a *sine qua non* condition for men in their transition to first time paternity. However, the results support the third hypothesis, which suggests that job stability is a condition for family formation. For those forming part of the labor market, regardless of age, greater family formation probabilities are expected for workers having permanent contracts, as compared to those with temporary contracts, according to Adsera (2011) and González and Jurado-Guerrero (2006). Finally, according to Baizán (2006), we understand that the effect of unemployment is negative on first time parenthood, and that job stability is more favorable in women than in men. In fact, it is the unemployed, followed by the temporary and self-employed workers, who have the lowest rates of first time parenthood. This may lead us to infer that, as we stated at the beginning, the transition to first time maternity has a dual pattern with regards to the labor market, given that it is more likely in both inactive women as well as for those with stable employment. This condition of work stability is also relevant for men in their transition to paternity, although for them, the differences between the diverse work states are less significant with regards

[4] We interpret the high levels of first time parenthood amongst inactive women, not only as a result of certain traditional gender roles, but also as an effect of the way in which the EPA classifies inactivity, as a lack of the active search for employment or of the potential immediate incorporation in the same. Therefore, we may ask if, for those classified as inactive in the quarter prior to the birth of their child, many may be unemployed and, due to the imminent birth of the child, do not declare themselves to be actively seeking employment.

**GRAPH 10.** *First time parenthood by age and employment status of women and men (expected probabilities based onmultivariate logistic regression models with panel data), 1999-2015*

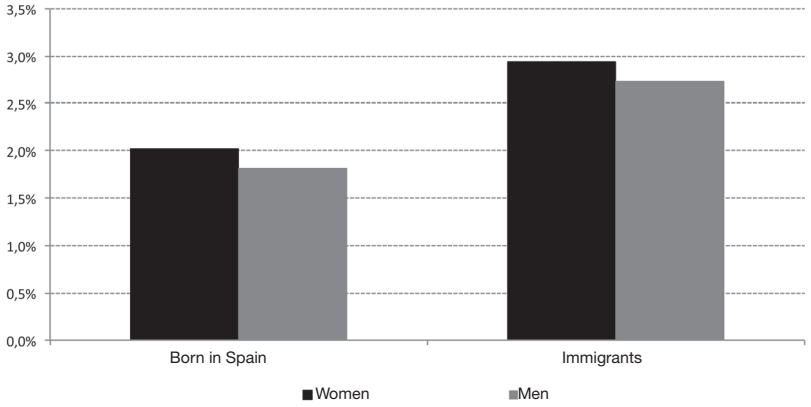



Note: Reference population: Individuals with compulsory education, born in Spain.
*Source:* Authors' creation based on primary data of the EPA, 1999-2015.

to the probability of being first time fathers, than it is for women.

The probabilities by age and employment status (Graph 10 and Table I) corroborate with the interaction between age and relationship with labor activity. The results reveal that inactive women have a much earlier rate of first time parenthood than working women (as well as being more intense), given that the probability of having a first child is much greater from 20 to 33 years of age. For women aged 34 and older who have not had a first child, the differences resulting from being employed or not are minimized, and there is even an increased probability for first time maternity in the former case. Of the employed, no differences are seen in the age pattern on the transition to maternity for permanent or temporay employees, or the self-employed; although the probabilities are lower at all ages for temporary workers according to the previously described results. Finally, there is almost no probability of being a first time mother for the unemployed, regardless of age.

**GRAPH 11.** *First time parenthood by place of birth of women and men (expected probabilities based on multivariate logistic regression models with panel data), 1999-2015*




Note: Reference population: Individuals who are 33 years old, with compulsory education and permanent employment.
*Source:* Authors' creation based on primary data of the EPA, 1999-2015.

In the case of men, age patterns indicate that the masculine calendar does not depend on the employment modality.

### Place of birth

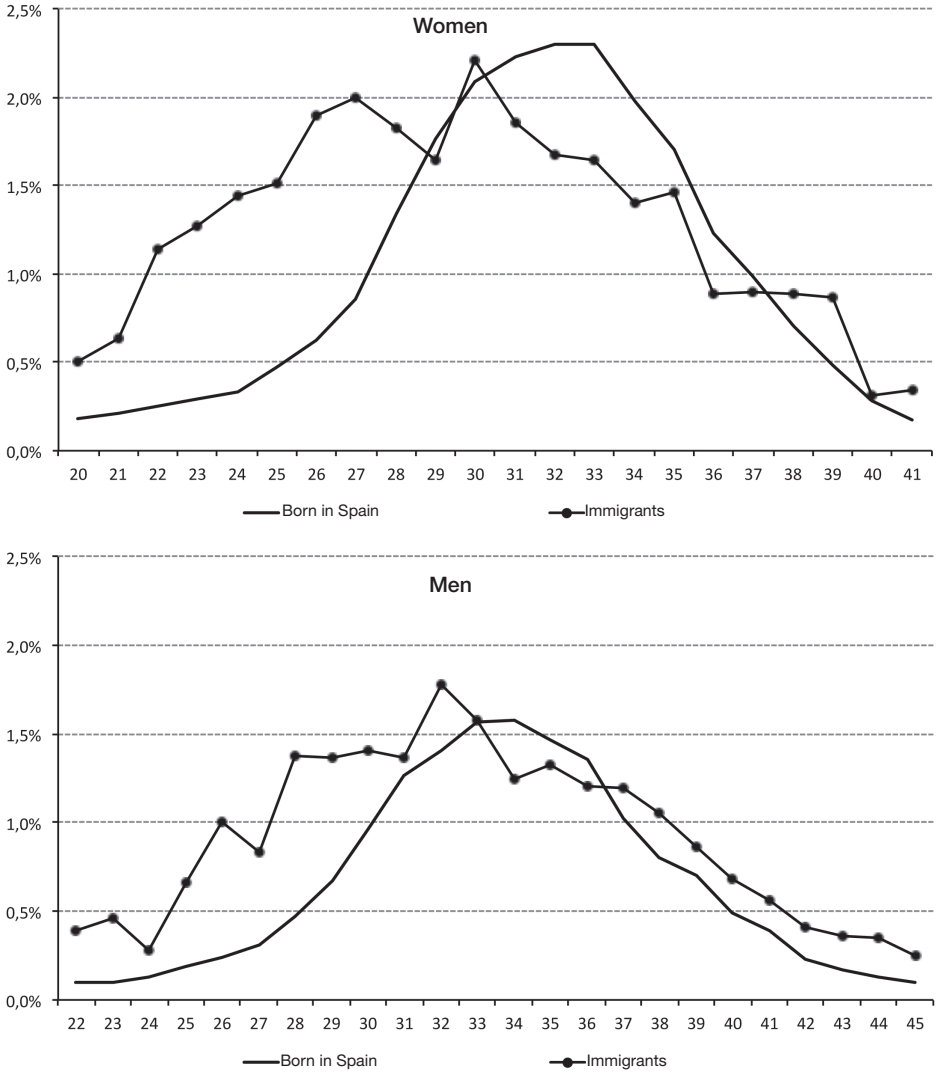
Graph 11 and Table I clearly reveal that place of birth marks a significant difference, with a higher rate of first time parenthood in immigrants, be they men or women. Furthermore, the distinct patterns based on age and place of birth for first time parenthood (Graph 12) reveal that the calendar is considerably earlier for immigrants, after annulling the differences of education level and the activity relationship. Female immigrants have much higher probabilities than natives between the ages of 20 and 28; on the other hand, after 30 years of age, the transition to maternity is greater for those born in Spain. Therefore, while the delay in the timing is almost exclusively related to the natives, the increase in the probability of having first time children for the younger women is explained in part by the greater probability of the immigrants. For men, however, this duality is not seen in the timing, given that immigrant males reveal higher probabilities at all ages, except between 34 and 36 years, when males born in Spain have higher probabilities.

## Conclusions

The conclusions reached from our results suggest that there is no unique origin, education and labor profile for those women and men who have entered the maternity or paternity life stage, but rather, that this profile depends enormously on the age in which the reproductive adventure is embarked on: ultimately, it is necessary to distinguish between the effect of the explanatory variables considered over the probability and over the first time parenthood calendar. Our analysis has revealed the socioeconomic profiles of the new parents, based on age of this reproductive transition. It has been found that there is a strong interaction between age and the explanatory factors regarding the probability of being first time parents, especially for women.

As for the explanatory factors, we have verified that there is no correlation between a higher education level and a lower incidence of first time parenthood, given that the highest probabilities are observed for women

**GRAPH 12.** *First time parenthood by age and place of birth of women and men (expected probabilities based on multivariate logistic regression models with panel data), 1999-2015*




Note: Reference population: individuals with compulsory education and permanent employment.
*Source:* Authors' creation based on primary data of the EPA, 1999-2015.

with professional training or with intermediate university education, with the lowest rates being found for the least educated and those with upper university educations. When introducing patterns for age, we see that the highest rates of first time parenthood for the most educated follows the postulates of the theory of opportunity cost, of institutional conflict and of second demographic transition. Thus, university educated women do not decide to have their first child until having entered their thirties. As for the effect of labor status, the results have revealed a clear gender pattern, in which inactive women are as-

sociated with having a greater and earlier transition to first time maternity and, in accordance with our initial hypothesis, we have also observed a delayed calendar for the transition to maternity for employed women. Furthermore, in men, working is a *sine qua non* condition for their transition to first time paternity. However, precarious labor situations such as unemployment or temporary jobs represent undesirable situations for family formation, especially for women. Therefore, we can affirm that for women who enter the labor market (the large majority), their transition to first time motherhood is more likely the greater the stability of their employment situation. Finally, the explanation of the higher rates and the earlier calendar of first time parenthood for immigrants are based on the fact that the majority of immigrants come from societies having different cultural norms regarding family formation. Therefore, this population has not embraced the profound changes in reproductive behavior resulting from the second demographic transition like the Spanish population.

In response to the change in the paternity model which is emerging in western countries, this work has attempted to add to other academic contributions that examine the role of men in the collective decisions of the couple regarding having children (for example, González and Jurado Guerrero, 2015). Unlike the neoclassical hypothesis, our results reveal that the most educated men also tend to delay paternity, like women, suggesting that the opportunity cost of children also exists for fathers. On the other hand, the results according to the employment status, confirm that the provider role continues to be much more determinant in the male case, given that there is virtually no incidence of first time parenthood for non-employed men. However, the analysis ends right after the children are born, therefore future studies will have to reveal how the men and women adapt their participation in the labor market once they become first time parents.

Our study focuses its attention on the end of infertility in Spanish men and women during the country's changing economic-labor context. In this work, we have verified that the probabilities calculated for first time parenthood for the population with stable employment were not reduced with the economic crisis. However, the negative effects of unemployment and job instability have been confirmed. Specifically, we have seen how the transition to maternity has been virtually inexistent amongst the unemployed. Finally, our results have shown the existence of the specialization of productive and reproductive work between the sexes, and the "male breadwinner" model for the family's economic needs. Despite this, it has also been shown that these traditional patterns are not valid for all population sectors, especially for more educated women and those with more labor involvement who tend to delay reproduction until it suits their professional and gender equality expectations. Many authors warn of the increase in infertility amongst women born in the 1970s (Castro-Martín and Seiz-Puyuelo, 2014; Esteve *et al.,* 2016), associating it with the delay in age of first maternity and predicting low final levels of parenthood for these generations. The authors claim an increase in infertility due to undesired causes. In these cases, they have reached the age that is socially appropriate to have children but decide to postpone this decision given that their family or material conditions are not ideal. In fact, what should be of concern is the fact that women and men who decide to wait for better times to form a family may wind up ultimately being infertile due to their advanced age. According to our results, those having the greatest risk of not completing their family projects due to biological causes are those who tend to delay parenthood the most-- that is, the most educated men and women and those who are a part of the work force. And we should not forget that they represent a greater proportion when the generation is younger, especially in women. Therefore, although the decision to have children is an individual one, society

should implement adequate institutional conditions to prevent the frustration of their reproductive, professional and gender equality projects, which over the long term, may constitute the future projects of this very society.

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