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Maternity Gap in Spain: Comparative Lessons from two Fertility Surveys (1985-2018)

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1. Introduction

A significant decline has been recorded in maternity levels in advanced economies in recent decades, contributing to the aging-population issue currently present worldwide. The persistence of this phenomenon has crucial demographic consequences, also posing a threat to the way societies are organized. In the absence of migration, this would lead to a progressive reduction in the total population and would progressively affect the age structure of the population, resulting in a higher rate of aging.

One of the most notable cases of this phenomenon has been observed in Spain, which has rapidly transitioned from a context of medium-high maternity to rank among those countries with the lowest rates. At the end of the 20th century, Spain's fertility rate was equivalent to the generational replacement threshold. However, the current fertility rate is equivalent to 1.12 children per woman. In 2023, Spain registered the lowest number of births since record-keeping began (320,656, compared to 519,779 in 2008), which represents a 2.61% decrease compared to the previous year. Some of the characteristics leading to this decline in the number of children include the absence of a stable partner, educational levels, and economic situations of women (National Institute of Statistics, 2019). Notably, the distribution of mothers' age at birth in Spain shows a shift to the right compared to 2005, confirming that childbearing is being postponed to later ages. In short, the available evidence highlights two effects that must be considered to understand the evolution of maternity: the tempo effect (delays in having children) and the quantum effect (reductions in the number of descendants).

Very low fertility tends to emerge in contexts where women have attained high levels of education and labor market participation, while institutional frameworks and social norms have not fully adapted to facilitate the possibility of reconciling quality employment with motherhood. In such contexts, persistent gender inequalities in domestic responsibilities, labor market structures, and social welfare institutions may limit women's ability to realize their reproductive intentions (Rindfuss et al., 2003; McDonald, 2006; Kohler et al., 2002; Dominguez-Folgueras, 2022).

From this perspective, analyzing the gap between desired and realized fertility becomes particularly relevant. The existence of a fertility gap may indicate that observed fertility levels do not simply reflect voluntary changes in reproductive preferences, but also the presence of social, economic, or institutional constraints that limit individuals' capacity to achieve their desired number of children. In this sense, studying the determinants of the maternity gap provides valuable empirical evidence to assess whether

the observed decline in fertility primarily reflects changing preferences or the persistence of structural barriers affecting reproductive decisions. Nevertheless, Spain is not £an isolated case. On the contrary, the Spanish case is in line with many other countries, where a gap is observed between intentions and actual behaviors in terms of maternity, according to the cognitive-social model of fertility intentions (Bachrach and Morgan, 2013), building on earlier work on the gap between intentions and outcomes (Bongaarts, 2001), which assumes that intentions do not necessarily align with actual behavior in terms of maternity. This study aims to discern the existence of barriers that may prevent women motivated to have children from having them or, at least, may cause delays in the age of motherhood. A clear understanding of this phenomenon will be essential to establishing social and public policies that allow individuals to have as many children as they desire, to address the major demographic challenge our society will face in the coming decades. To deepen our knowledge of the factors that influence actual behavior, it is necessary to understand the impacts of both external factors (such as institutional frameworks, labor market conditions and public policies) and internal factors (such as individual preferences, values and reproductive intentions) on maternity, identifying trends and internal mechanisms that create realistic conditions for increasing maternity as well as capturing the fundamental determinants of indicators on maternity preferences (e.g., the number of children desired). To that end, we built our empirical exercise upon the theoretical framework called the cognitive-social model, which establishes that intentions do not necessarily agree with actual behavior.

Several aspects are worth examining as potential explanatory factors. From an economic perspective, maternity costs and opportunity costs can limit the transformation of maternity intentions into actual maternity behaviors (Chuan, 2010; Martin, 2021). Social factors (Mauldin and Segal, 1988; Bongaarts, 2001; Leridon, 2004) and individual characteristics (Wu and Macneill, 2002; Marchetta and Sahn, 2016; Kariman et al., 2020) likewise constitute determinants that can influence the intention to have children.

In this research, we draw on two available editions of the Fertility Surveys (1985 and 2018) conducted by Spain's National Institute of Statistics (INE). As explanatory variables, we consider a range of personal characteristics (level of education, stable partner, age), a demographic factor (possible use of contraceptives or physical impediment), a socioeconomic indicator (employment status), and variables created from the synergy of these characteristics (combinations of age and educational level).

After introducing the main elements of our model, we now summarize the main objectives of this study. First, we analyze the evolution of both the actual and desired number of children over time, combining data from two available surveys: 1985 and 2018. The objective is to investigate whether the actual number of children has changed according to individual preferences. Specifically, we aim to study whether the decline in the actual number of children has been shaped by changes in individual preferences or whether other barriers have played a greater role in this decline. To this end, three dependent variables are analyzed in separate models: (1) the desired number of children, (2) the actual number of children, and (3) the maternity gap (defined as the difference between desired and actual fertility). Second, the study aims to determine how the maternity gap has evolved over time, considering individuals' personal, demographic, and economic circumstances.

Our findings confirm firstly that the presence of a stable partner continues to play a central role in shaping both fertility outcomes and reproductive intentions. Women who do not have a stable partner consistently exhibit a negative effect on actual fertility and a positive effect on the maternity gap, relative to those who have a stable partner. This underscores the enduring association between stable partnerships and higher fertility levels. Second, age is inversely associated with the maternity gap, primarily due to the stronger influence of the actual number of children, indicating that women tend to achieve their reproductive goals over their fertility period. Third, contraceptive use reveals a shifting dynamic. In 1985, non-use of contraception was linked to higher fertility and a negative maternity gap, likely to reflect a higher incidence of unintended births. By contrast, in 2018, non-use was associated with lower fertility and a wider maternity gap, suggesting that the absence of contraception may increasingly reflect involuntary difficulties in childbearing rather than a deliberate desire to conceive. This shift points to a more complex set of structural constraints -biological, social, and economic- that increasingly shape reproductive behavior. Fourth, educational attainment is negatively correlated with actual fertility. It is also associated with slightly lower fertility preferences and a larger maternity gap. However, this gap has diminished somewhat over time for highly educated women, possibly due to improvements in work-life balance and the postponement, but eventual realization of fertility. Fifth, labor market participation shows a strong and consistent relationship with the maternity gap. Women who are economically inactive tend to have more children and a smaller gap, a pattern that has remained stable across both surveys. This suggests that employment conditions -operating within an

institutional context marked by the absence of public policies that facilitate the reconciliation of quality employment with motherhood (such as parental leave, publicly funded childcare for ages 0-3, long-term care provision, and more family-friendly working hours)- limit the realization of reproductive intentions more than they reduce the desire to have children. Finally, by 2018, the maternity gap appears to have become a more generalized phenomenon, cutting across traditional socioeconomic boundaries. Whereas in 1985 the gap was more clearly associated with women's educational attainment and labor market status, more recent data indicate that broader structural, temporal, and biological constraints now play a defining role. Overall, the decline in effective fertility is not primarily driven by reduced reproductive aspirations, but rather by increasing barriers to achieving them.

Beyond this Introduction, the paper is structured as follows. Section 2 presents a review of the literature including the main results of related articles. Section 3 includes a theoretical framework. Section 4 outlines our empirical analysis which is organized in three steps. Firstly, we carry out an exploratory analysis of the data in Section 4.1. Secondly, we present the results of our baseline econometric analysis and, finally, Section 4.3 considers an extended model in which values and beliefs' roles are analyzed, taking advantage of novel indicators included in the 2018 survey. Lastly, Section 5 provides a series of conclusions and policy implications drawn from our analysis.

2. Literature review

Global trends point to a context of low maternity, particularly in developed countries. For this reason, it is not surprising that the gap between declared intentions to have children and actual maternity has received considerable interest in recent decades (Westoff and Ryder, 1977; Baizán et al., 2003; Quesnel-Vallee and Morgan, 2003; Rossier and Bernardi, 2009; Castro-Martín and Martín-García, 2016; Cleland et al., 2020; Gauthier and de Jong, 2021).

To analyze the effects on childbearing, the literature has addressed three dimensions. First, some studies (Hagewen and Morgan, 2005; Heiland et al., 2008; Iacovou and Tavares, 2011) examine whether preferences regarding the 'ideal family' model have changed within a population. Second, a number of studies seek to identify the factors that either facilitate or hinder the final decision to have children (Bernardi et al., 2003; Hayford, 2009; Brauner-Otto and Geist, 2018). Third, some studies analyze the maternity

gap to identify patterns that explain its evolution (Berrington, 2004; Adsera, 2006; Morgan and Rackin, 2010; Beaujouan and Berghammer, 2019; Nishikido et al., 2022).

In relation to changing preferences about 'the ideal family' (first dimension), there is evidence of a transformation in the normative model of the family. Thus, one of the obstacles to childbearing is the changes that may occur in social norms about what defines an ideal family (in social terms). In this case, demographic declines are seen to be due to a decline in childbearing brought about by changing norms and attitudes. In this line of work, individuals gradually learn through social interactions about the new reproductive balance that must emerge in their community (Munshi and Myaux, 2006). Within the most advanced societies, some evolving attitudes and norms that can lead to a decrease and/or delay in maternity include changes in norms, values, and attitudes with respect to many factors shaping the final decision to have children. These include, among other things, norms regarding marriage and cohabitation, separation and divorce, having children outside of marriage, the development of modern -more effective- contraceptive systems, more universal use of contraception, instability between partners or spouses; or traditional/modern perceptions of gender roles in the family. Moreover, related literature has also explored the relevance of issues related to professional career development, such as temporary or permanent emigration for work or study -to generate income and remittances-, the massive expansion of higher-level education and increases in opportunities for learning, leisure activities, and international travel (Wissen and Dykstra, 1999; Frejka, 2008; Schleutker, 2014; Sirniö et al., 2017).

The second dimension of the literature focuses on the factors that either facilitate or hinder the final decision to have children. In this regard, these changes in norms and attitudes towards childbearing in society are largely influenced by socio-economic factors (Chuan, 2010; Martin, 2021), which either facilitate or hinder childbearing, such as advances in family planning systems, increases in the educational level of the population and growing labor market participation, especially of women.

Since the advent of birth-control, contraceptive methods have become the main instrument for controlling the number of children. Moreover, there is now greater access to systems for clinical abortion, offering greater safety and convenience (Mauldin and Segal, 1988; Bongaarts, 2001). In contrast, assisted reproductive technologies have had a positive impact on maternity in some territories (Leridon, 2004).

The educational level is also a factor influencing childbearing. Numerous studies (Wu and Macneill, 2002; Marchetta and Sahn, 2016; Kariman et al., 2020; Beaujouan and

Toulemon, 2021, among others) have established a negative relationship between education and maternity. Furthermore, this inverse effect on maternity implies a delay in the age of bearing one's first child, given that recent developments in medicine and technology can safely ensure such a delay. However, the increase in age of initial childbearing can also pose a risk of involuntary infertility, as well as a limitation in the number of children per family (Kariman et al., 2020). Multiple factors can explain this inverse relationship between educational level and maternity: a high educational level increases the opportunity cost of maternity (Mason, 1986; Wu and Macneill, 2002), as does the strong development of contraceptive methods (Rosenzweig and Wolpin, 1980).

The relationship between fertility and female labor market participation has evolved across the different stages of the demographic transition. While early stages of economic development were characterized by a negative association between women's employment and fertility, consistent with economic theory, this effect has become even more pronounced due to the increased opportunity costs associated with a high educational level, which means a greater connection to the labor market, and subsequently, improves women's salary prospects (Mishra et al., 2010; Bakar et al., 2014; García-Román, 2021; Lozano et al., 2024). However, the correlation between female labor force participation and maternity has become increasingly positive, thanks partially to the development of the Welfare State, which may help reconcile motherhood and a professional career through the implementation of policies providing employment flexibility and reductions of the opportunity costs of having children, such as child benefits, maternity leave, subsidized daycare, etc. (Del Boca and Locatelli, 2006; Esping-Andersen and Billari, 2015; García-Román and Cortina, 2016; Obiyan et al., 2017; Molina, 2021; Zangger et al., 2021). In comparative terms, Spain has frequently been identified as a case where institutional arrangements have not fully adapted to the rapid increase in women's educational attainment and labor market participation. In this context, the difficulty of reconciling quality employment with motherhood has been highlighted as a key factor explaining the persistence of very low fertility levels (Pazos Morán, 2011; Castro et al., 2020).

The provision of stable employment including work-family reconciliation policies oriented towards gender equality may positively influence short-term fertility intentions although, ultimately, fertility preferences regarding the desired number of children have remained relatively stable over time (Adsera, 2006; Pailhé and Solaz, 2012; Martin, 2021). In this regard, evidence from Nordic countries such as Denmark and Sweden

suggests that supportive institutional frameworks can facilitate the compatibility between professional careers and motherhood (Lundström and Andersson, 2012; Fahlen, 2013; Billingsley and Ferrarini, 2014). On the other hand, in countries such as Spain, Germany, the United Kingdom, and the Netherlands, childless women with lower levels of education appear more likely to report unfulfilled intentions to have children in the near future.

From this perspective, it can be inferred that the gap between maternity intentions and results can be better explained when institutions and policies are included in the analysis. In several countries with low fertility rates, labor participation among women remains relatively limited, while in other contexts higher female employment coexists with comparatively higher fertility levels. This pattern suggests that institutional structures facilitating work-family reconciliation play a key role in enabling individuals to realize their fertility intentions (Kohler et al., 2002; Rindfuss et al., 2003; Dominguez-Folgueras, 2022).

It is also important to distinguish between different welfare regimes and family policy models. Nordic countries are typically characterized by extensive welfare systems, high female participation and policies designed to promote gender equality and work-family reconciliation. These institutional features have contributed to maintaining fertility rates relatively close to the generational replacement rate. By contrast, countries such as the United States are more commonly classified within liberal welfare regimes, characterized by highly flexible labor markets, more limited social protection, and the absence of comprehensive national paid parental leave policies. In other cases, such as Hungary, family policies may be generous but primarily oriented towards pronatalist objectives and traditional family roles rather than towards promoting gender equality in employment (Del Boca and Locatelli, 2006; Ewald et al., 2020; Goldberg and Solheim, 2021). Meanwhile, in the economies of southern Europe (including Spain), the decrease in maternity levels may be associated with high unemployment, lower rates of female labor participation (Adsera, 2006; Goldin, 2014; Sevilla, 2020), the moderate weight of the public sector, and the instability of contracts for young workers, among other factors. In accordance with this perspective, such regions would be well-advised to seek a change in policies, providing greater support for maternity, family life, and the raising of children (McDonald, 2006).

Along these same lines, Ilciukas (2022) undertakes a causal inference analysis for the Netherlands, finding evidence for the role played by a family support network in child

raising. This author demonstrates that a delay in the retirement age of mothers (future grandmothers) negatively affects the maternity decisions of their daughters.

In short, according to rational choice theory, education and employment fundamentally influence decisions around potential motherhood. From this perspective, it might be expected that, as the duration of education and employment increases, the opportunities for motherhood decrease due to the high opportunity costs.

Despite the limited availability of data showing intentions around maternity (Hoem and Kreyenfeld, 2006), it can be established that the desire to have children increases with higher levels of education, but not if a woman is employed full-time or opts to continue her studies (Wu and Macneill, 2002; Marchetta and Sahn, 2016). Therefore, a permanently negative relationship between employment and maternity can be observed. At relatively advanced ages, the direct relationship between educational level and desire for motherhood is true only in the absence of paid work. At an aggregate level, there might be no relationship between the factors that reduce maternity at early ages and those that stimulate it at older ages (or the decrease in total maternity). Childbirth after the age of 30 is relatively independent of the observed decline at younger ages. At the same time, an inverse relationship has been found at the individual level between the age of having one's first child and the total number of children (Beaujouan and Toulemon, 2021).

The third strand of the literature examines the maternity gap, defined as the difference between women's desired number of children and their realized fertility. A growing body of literature has analyzed this discrepancy in order to understand why fertility outcomes often fall below reproductive intentions (Morgan and Rackin, 2010; Beaujouan and Berghammer, 2019). From this perspective, the existence of a maternity gap suggests that observed fertility levels may not only reflect changing preferences but also the presence of constraints that prevent women from achieving their desired family size.

Several mechanisms have been proposed to explain the emergence of this gap. In particular, two significant components that affect fertility trends must be distinguished: the *quantum* effect and the *tempo* effect. *Quantum* refers to the underlying level of maternity, while *tempo* measures the effects of change in the relative timing of having a child. In recent decades, a large proportion of countries have experienced a decrease in maternity levels associated with a decrease in childbearing by younger individuals, with a recovery effect at older ages. The combination of these two trends explains why maternity levels have been declining at a slower rate (Grindstaff, 1984; Virtala et al., 2006; Chuan, 2010; Beaujouan and Toulemon, 2021; Chen and Gok, 2021). In this sense,

age –while not necessarily a barrier to motherhood in itself– can be classified as a significant precursor to decreased maternity or to having children at older ages.

Recent studies have highlighted the growing importance of analyzing the gap between reproductive desires and actual fertility from a comparative and temporal perspective (Harknett and Hartnett, 2014; Buber-Ennser and Berghammer, 2021; Spéder and Bálint, 2024). Unfortunately, a fundamental limitation of studies of the maternity gap in Spain has been the lack of sufficient, regularly collected data on the maternity intentions of the Spanish population. Prior studies have sought to remedy this shortcoming through dedicated fieldwork. González-Hincapié and López-López (2021), among others, have conducted in-depth interviews to analyze the most relevant perceptions and assessments that might be influencing the delay in initial childbirth among women aged 25 to 45 in the Community of Madrid.

All in all, it is worth noting that this work combines all these pieces of related literature and brings a novel approach with respect to studies using the same data source (Adsera, 2006; Llorente-Marrón et al., 2022, among others) by combining figures from two editions of the Spanish Fertility Survey (FS) (dated at 1985 and 2018), both prepared and published by the INE, allowing us to examine how the relevance of the determinants of the maternity gap has evolved over time.

3. Theoretical framework

We propose two complementary theoretical approaches that seek to formalize an explanation of the complex process underlying the equally complex decision to have children (or not) and its numerous implications.

On the one hand, Ajzen (1991) developed the so-called theory of planned behavior (TPB), based on planned action, and characterized by the establishment of a unidirectional link between individual beliefs and actual behavior. Here both the intention to have children and the actual bearing of children are determined by three types of considerations. First are behavioral or attitudinal beliefs, defined as the perceived consequences (both positive and negative) of having children. Second are considerations related to perceived expectations and/or behaviors of individuals or referent groups that provide social support to a person, along with a person's motivation to please or follow the referents in question (subjective norms). Third is perceived behavioral control, which relates to the presence of perceived factors that can influence a person's ability to decide to have a child.

The TPB framework is valuable for understanding how individual attitudes and perceived social norms shape fertility intentions, but it assumes a relatively direct and stable pathway from intention to behavior. Crucially, however, empirical evidence consistently shows that a substantial share of reproductive intentions is not realized, particularly in low-fertility contexts such as Spain (Adsera, 2006; Beaujouan and Berghammer, 2019). It is in this gap between intention and outcome that the contribution of Bongaarts (2001) becomes central. Bongaarts (2001) systematically documented that, in post-transitional societies, desired fertility consistently exceeds realized fertility, and identified a range of proximate determinants -including contraceptive use, marriage patterns, and infecundity- that mediate the translation of preferences into outcomes. While Bongaarts' model is not itself cognitive-social in character, it provides the foundational empirical observation -that intentions do not mechanically predict outcomes- that later theoretical work sought to explain. Building on this, Bachrach and Morgan (2013) proposed the cognitive-social model of fertility intentions, which provides a more fully elaborated theoretical account of how reproductive intentions are formed, revised, and realized. In their model, intentions are not stable mental states but cognitive-social constructs shaped by schemas (culturally embedded scripts about reproduction and family life), social interactions, and contextual constraints. Crucially, the model predicts that even strong intentions may fail to produce births when structural conditions -economic, institutional, or relational- are unfavorable. This is the theoretical logic that underpins our empirical analysis: by separately estimating models for desired fertility, actual fertility, and the gap between them, we are able to identify which factors operate primarily through preferences, which act mainly through the realization of those preferences, and which affect both simultaneously.

On the other hand, theories and/or models have been developed that complement the TPB approach. Figure 1 shows the social cognitive model. We would highlight the cognitive-social model of fertility intentions proposed by Bachrach and Morgan (2013), which builds on Bongaarts' (2001) seminal work on the gap between desired and realized fertility, and assumes that intentions do not necessarily coincide with actual behavior in terms of maternity (Lieberman, 2007; Hayford and Morgan, 2008; Bachrach and Morgan, 2013), thus breaking the unidirectionality of the relationship between intention and observed behavior and prompting the need to identify explanatory factors for this divergence.

[INSERT FIGURE 1 HERE]

Although the theoretical framework of this study is inspired by planned behavior theories applied to reproductive decision-making, the analysis does not aim to provide a full empirical validation of this approach. This is because the dataset used does not include specific variables that capture key dimensions such as individual attitudes, perceived behavioral control, or social norms. The absence of these indicators limits the ability to robustly assess the psychological and motivational mechanisms underlying fertility decisions. A rigorous complete empirical validation would require datasets specifically designed to include reliable information on instruments measuring intentions, beliefs, and constraints, which goes beyond the scope of the present study. Nevertheless, the theoretical framework offers a valuable interpretative lens for understanding the patterns observed in the data. Specifically, the cognitive-social model informs the structure of the empirical analysis in two ways. First, it motivates the estimation of three separate OLS models -one for desired fertility, one for actual fertility, and one for the maternity gap- rather than a single reduced-form equation. This design allows us to distinguish factors that primarily shape preferences from those that constrain their realization. Second, the model's emphasis on contextual and structural conditions (rather than solely individual attitudes) justifies the inclusion of labor market status, educational attainment, partnership status, and contraceptive behavior as key explanatory variables, alongside the values and beliefs indices available for the 2018 survey.

4. Empirical strategy and results

In this section we first describe our approach to our database. After that, we carry out a multivariate empirical analysis that allows us to contribute to a better understanding of this phenomenon in Spain. Finally, we introduce an econometric model for identifying determinant factors shaping the recent evolution of the maternity gap indicator considered. Likewise, for the present research we developed a database to establish the subsequent levels of the maternity gap, measured as the difference between the intention to have children and actual motherhood. Together with our objective variable, we consider various individual characteristics (age, educational level, employment status, among others).

Recent studies emphasize the rising importance of analyzing the gap between reproductive desires and actual fertility within both comparative and temporal frameworks (Harknett and Hartnett, 2014; Buber-Ennser and Berghammer, 2021; Spéder and Bálint, 2024). However, most of these studies have been based on longitudinal or panel data, which are generally scarce (and non-existent in the case of Spain). In this context, our study takes an alternative approach: the construction of an integrated analysis based on two harmonized cross-sectional surveys (Fertility Surveys of 1985 and 2018), which allows us to empirically approximate the structural changes and persistence in the motherhood gap over more than three decades.

All in all, we address here the following study objectives. Firstly, we analyze the evolution of both the actual and desired number of children over time, utilizing data from two surveys -1985 and 2018-. The objective is to investigate whether the actual number of children has changed according to individual preferences. Specifically, we examine whether the decline in the actual number of children is attributable to changes in individual preferences or whether other barriers have contributed to this decrease.

Secondly, the study aims to determine whether the maternity gap[1] –defined as the disparity between the desired and actual number of children– has increased or decreased over time, considering individuals' personal, demographic, and economic circumstances.

4.1. Descriptive analysis

Regarding our database, we extracted information from two fertility surveys (FS) (1985 and 2018) on the average number of children as well as the desired number of children in the case of Spain. The 1985 survey includes 8,782 women, and the 2018 survey 14,556 women.

The construction of a unified variable for the desired number of children across the years 1985 and 2018 may be challenging due to the differences in the formulation of variables across the two surveys analyzed. However, we restrict ourselves to considering surveys with more similar features, ensuring the reliability of the resulting indicators.[2]

[1] While some studies use the term *fertility gap* to refer to the difference between the desired number of children and the number actually born, this analysis adopts the concept of *maternity gap*. This choice reflects the need to incorporate not only the biological dimension of fertility, but also the social, moral, and caregiving implications associated with motherhood. The *maternity gap* more effectively captures the tensions between reproductive desire and the structural conditions that shape its realization, such as caregiving responsibilities, gendered social norms, and cultural expectations linked to the maternal role (López et al., 2018).

[2] There is also a third survey of the same source (published in 1999). However, that edition changed in design, reducing its comparability with the others. In addition, two further surveys containing information on fertility intentions -the Family and Fertility Survey (FFS) of 1995 and the CIS survey of 2007- were not included in the main analysis. The FFS 1995 surveyed 8,008 women aged 18-55, of whom only 4,812 fell within the 18-49 age range. The CIS 2007 surveyed 9,664 women aged 18-55, of whom only 5,911 were aged 18-49; its broader sampling frame and distinct age structure make direct comparison with the INE Fertility Survey 2018 methodologically problematic. By contrast, the INE Fertility Survey 2018 specifically targets the full 18-55 age range (14,556

For the sake of clarity and readability of our analysis, the definitions used for the indicator of desired number of children are detailed below (see Table 1). We are fully aware of the methodological limitations this entails, particularly in terms of comparability between surveys, especially regarding differences in conceptual approach, filtering logic, and data availability.

[INSERT TABLE 1 HERE]

In the 1985 survey, the desired number of children is derived from the interaction of three variables that capture different moments of reproductive desire: the number of children desired at the time of forming a couple, the current desire, and the future intention to have children. The construction of this variable depends on multiple conditions (variables P427 and P432), and one of three possible questions is selected (P428, P434, and P435), depending on each respondent's situation.

In the 2018 survey, a more direct formulation of desired children is adopted, although based on two possible sources depending on data availability. Priority is given to the variable NTOTALHIJOS/AS, which records the total number of children each woman would like to have. In cases where this information is not available, the variable NDESEOHIJO is used as a backup, significantly improving coverage across the full sample.

In Figure 2, we present the main reasons reported by the women surveyed for choosing not to become mothers or not to have additional children, analyzed according to age and level of education across two distinct time points: 1985 and 2018, where the variable "Age" denotes advanced age, "Economic" is economic concerns, "Partner" is the lack of a suitable partner, "Work" is unstable employment situations, and "Health" is health-related concerns regarding the mother or child.

[INSERT FIGURE 2 HERE]

For younger women (between 18 and 32 years old), the most frequently cited reason across surveys varies by year. In the 1985 survey, the most frequently cited reason is the lack of a suitable partner ("Partner"). In the 2018 survey, however, work-related reasons

women), which aligns with the study's analytical design. Both exclusions are therefore driven by differences in the effective age coverage of the target population rather than data availability.

("Work") emerge as the most frequently cited barrier, reflecting the growing incompatibility between employment and motherhood among younger women. Economic concerns ("Economic") are also prominent, particularly in 2018.

In contrast, older women most commonly cite advanced age ("Age") and health-related concerns regarding the mother or child ("Health") as their main reasons. It is worth noting that in the most recent survey (2018), the lack of a suitable partner has become one of the leading reasons for not having children across all age groups.

In the analysis by educational level, women with primary education ("prim") consistently identify economic hardship as a barrier to motherhood in both surveys. Meanwhile, women with secondary ("sec") and higher education ("sup") tend to cite the lack of a suitable partner as the main reason. In 2018, this latter reason also gains relevance among women with basic education, suggesting a convergence in the motivations for not having children regardless of educational level.

A particularly noteworthy result emerges from the reasons reported by women for not having children or not having additional children. As illustrated in Figure 2, the category related to work, which includes responses indicating that motherhood would conflict with professional careers, appears among the most frequently mentioned reasons in the 2018 survey. This pattern is especially pronounced among women with secondary and higher levels of education.

This finding suggests that, for a significant proportion of women, the perceived incompatibility between professional careers and motherhood represents an important constraint in the realization of fertility intentions. In this sense, employment-related factors do not necessarily reduce fertility aspirations but rather limit the ability to achieve them.

This result also highlights a structural change between the two surveys analyzed. While in 1985 fertility decisions were more closely associated with traditional gender roles and a greater specialization of women in domestic activities, the 2018 survey reflects an increasing conflict between professional careers and motherhood. In this context, many women appear to resolve this incompatibility by postponing or ultimately reducing childbearing. This shift suggests that the growing difficulty of reconciling quality employment with family formation has become a central factor underlying the maternity gap.

Table 2 presents exploratory data on the distribution of the Spanish female population by age according to the number of actual and desired children over the period 1985-2018.

In both surveys, the number of women under 29 with no children is quite high, at over 60% in 1985 and approaching 90% in 2018; the proportion of women with children increases at later ages (tempo effect). For those over 45 years of age, the share of women without children increases significantly between 1985 and 2018 (from 12.06% to 18.74%). Furthermore, women with more than one child in 2018 represented around 60%, which is 20% below the 1985 figure (quantum effect).

[INSERT TABLE 2 HERE]

Figure 3 illustrates the actual children, the desired children and the maternity gap by age group (in five-year intervals except for the final group, which includes only women aged 48-49) for the two FS surveys considered. The top-left panel shows the actual number of children, the desired children and the maternity gap for the year 2018. As expected, it reveals a decline in the maternity gap as women's age increases. However, for the oldest age group (women aged 48-49), the gap remains positive at 0.4 points, confirming that although the number of children increases with age it still remains below the desired number of children (which has evolved in a more stable way over the period). The top-right panel presents the maternity gap over the period 1985-2018. While the gap narrowed to 0 in the 1985 survey, it remained positive in 2018. The bottom-left panel displays the desired number of children from 1985 to 2018. In 1985, fertility intentions rose to three children among the oldest women, whereas in 2018, they fluctuated between 1.5 and 2 children for the same age group (48-49 years). Finally, the bottom-right panel shows the actual number of children for both surveys (1985 and 2018), revealing a decline from 3 to 1.5 children over the period. Moreover, women in 1985 managed to reduce their maternity gap, while in 2018 it remained positive. Overall, the maternity gap has increased across both surveys, particularly among women aged 23 to 28. A significant gap is also observed between ages 23 and 37 in 2018.

[INSERT FIGURE 3 HERE]

This descriptive evidence reinforces the hypothesis already raised in prior studies (see Grindstaff, 1984; Virtala et al., 2006; Chuan, 2010; Beaujouan and Toulemon, 2021; Chen and Gok, 2021; and Martin, 2021) that confirm both a delay in childbearing age

(tempo effect) and a reduction in actual maternity levels at the end of women's fertile period (quantum effect).

The four panels offer separate information on the two components. They show that while maternity dropped significantly across the period, from 3 to 1.5 children per woman at age 49, the desire to have children remained very stable throughout the period.

Turning to the main socioeconomic characteristics that may affect maternity rates, we present the results obtained according to the educational level and employment situation of the interviewee; also given are the main reasons behind those decisions for individuals who do not want children or who have had enough children.

[INSERT FIGURE 4 HERE]

Figure 4 displays the maternity gap according to educational level and employment status. Here a larger gap is observed both for higher educational levels and for the 2018 survey. The same is true of the employment situation, with a greater maternity gap observed when a woman is employed.

There is a direct relationship between higher educational levels and the maternity gap. Interesting findings emerge from these results. In line with previous studies (Kohler et al., 2002; Adsera, 2006; Del Boca and Locatelli, 2006; Lundström and Andersson, 2012; Fahlen, 2013), in Spain, individuals with higher incomes and a stable employment situation tend to postpone the age of initial maternity and, ultimately, to have fewer children than they desire. This can be attributed to the characteristics of Spain's labor market (with little flexibility) and to the moderate weight of the public sector, with a perceived lack of institutions regulating the reconciliation of domestic and extra-domestic work. On the other hand, women who choose to continue professional training prefer to delay the age of maternity, with the aim of finishing their studies and having more time for motherhood, due to associated costs (Virtala et al., 2006).

All in all, this section shows that there is a part of desired motherhood that is not currently satisfied. The descriptive evidence reported here relies on variables available in both surveys; the indicators of values and beliefs, which are only observed in 2018, are described separately in Section 4.3.1. Consequently, as we will discuss in Section 5, adopting policies that target these explanatory factors may help minimize this gap, which would likely have a positive effect on demographic development in Spain.

4.2. Explanatory factors of the maternity gap in Spain (1985 and 2018)

For a joint analysis of the roles of potential determinants using data from both surveys (1985 and 2018) from the Fertility Survey published by the INE, we employ the econometric model of Ordinary Least Squares (OLS), estimating the effect of certain social, demographic, and economic factors on the number of desired children, actual maternity figures, and the maternity gap. The goal of this analysis is to identify which characteristics lead women not to have children.[3]

In multiple linear regression analysis, the main goal is to find the most appropriate linear combination of the explanatory variables to predict the dependent variable. The use of the OLS method aims to minimize the sum of the squares of the differences between the predicted values and the actual values of the dependent variable.

The multiple linear regression model relates the variables *x* and *y*. The equation that relates these variables is as follows:

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_p x_p + u$$

The variable y is the dependent variable, while x denotes the total set of explanatory variables. β_0, β_1, β_2, …, β_p are the regression coefficients associated with each independent variable, while u is the error or disturbance term in the relationship.

The parameters β_0, β_1, β_2, …, β_p are estimated with the OLS method from a sample of the population, and the following equation is obtained:

$$\hat{y}_i = \hat{\beta}_0 + \hat{\beta}_1 x_{1i} + \hat{\beta}_2 x_{2i} + \cdots + \hat{\beta}_p x_{pi}$$

In this case, we propose the use of three dependent variables based on the estimates established below: the number of desired children, actual maternity figures, and the maternity gap. In this way, we can identify not only the impact of the factors on the gap but also which channel is more affected (the actual or the desired number of children).

The explanatory variables used are as follows:

[3] Although we use linear regression models (OLS) as a basic strategy due to their interpretative simplicity and widespread use in the literature, we have also estimated models that are a priori more appropriate to the type of dependent variable in each case, such as Poisson and negative binomial regressions (to count the number of children born) and discrete choice models -logit, probit, multinomial logit (mlogit) and multinomial probit (mprobit)- when the dependent variable takes on mutually exclusive categories. In all cases, the results obtained are similar in terms of direction, relative magnitude and statistical significance, which reinforces the robustness of the findings. We therefore chose to present the results of the linear models, referring the technical details of the alternative estimates to the Appendix A Tables, A.3, A.4 and A.5 for detailed results for every methodology.

- Stable partner: a binary variable indicating whether the respondent has a stable partner (yes/no). The omitted category is "stable partner".[4]
- Age: variable covering the age range between 18 and 50 years.
- Age^2: variable calculated by squaring the age.
- Use of contraceptives: a binary variable that takes the value of 1 if use is affirmative, and 0 otherwise. The omitted category is "use of contraceptives".
- Educational level: an ordinal qualitative variable whose categories are primary education, secondary education, and higher education. The omitted variable is "primary education level."
- Employment status: variable that takes the following values: employed, unemployed, and inactive. The omitted category is "employed."

In turn, other variables created from the interaction of some of the above-mentioned explanatory variables have been added to the model.

- E30_sup: a binary variable that takes the value of 1 if the individual is aged younger than 30 and has completed higher education, and 0 otherwise.
- E40_sup: a binary variable that takes the value of 1 if the individual is aged 40 or older and has completed higher education, and 0 otherwise.
- ln income: for the 2018 survey, income level is available and expressed in logarithmic form (see Appendix A, Tables A.3, A.4 and A.5).
- ln income^2: variable calculated by squaring the logarithm of the income. Only available for the 2018 survey (see Appendix A, Tables A.3, A.4 and A.5).
- Physical impediment: a binary variable that takes the value of 1 if the individual has a physical disability, and 0 otherwise. The omitted category is "physical impediment."

Therefore, we consider the following expression, which illustrates the relationship between the dependent variables and the explanatory variables. Three separate estimations have been conducted, each using a different dependent variable ($\hat{y}_i$): actual number of children, desired number of children, and the motherhood gap.

$$\hat{y}_i = \hat{\beta}_0 + \hat{\beta}_1 stable\ partner + \hat{\beta}_2 age + \hat{\beta}_3 age^2 + \hat{\beta}_4 contraceptives + \hat{\beta}_5 edu + \hat{\beta}_6 jobs. + \hat{\beta}_7 e30_sup + \hat{\beta}_8 e40_{sup} + \hat{\beta}_9 phy.impediment$$

[4] In the 1985 survey, this variable was constructed from the question on current marital status, grouping women who reported being married or in a stable union as having a stable partner. In the 2018 survey, the variable was constructed from the question on whether the respondent currently has a stable partner, regardless of formal marital status. This change in operationalization reflects the broader social shift towards cohabitation and informal partnerships in Spain between the two survey years (Domínguez-Folgueras and Castro-Martín, 2013).

As indicated, for the 2018 survey, we include two additional items:

$$\hat{\beta}_9 income + \hat{\beta}_{10} income^2$$

Several conclusions can be drawn from these estimations (see Figure 5). Panel A shows the relationship between the number of actual children, desired children and the maternity gap according to partnership status in 1985 and 2018. Regarding the actual number of children, there is a clear negative relationship between having children and the absence of a stable partner. The coefficients tend to increase over time, rising from 0.27 in 1985 to 0.5 in 2018, which may reflect a strengthening connection between having a stable partner and motherhood. In 2018, the desired number of children is lower among those women who do not have a stable partner, with a coefficient of -0.28, indicating that the presence of a stable partner continues to influence fertility preferences. Finally, when examining the maternity gap, a positive relationship is observed between the gap and the absence of a stable partner. The magnitude of these coefficients remains stable over time for all categories, suggesting that the link between the absence of a stable partner and motherhood has remained steady despite the passage of time. It is also observed that for married and divorced women, the positive coefficient of the maternity gap is due to a combined effect of the number of desired children and the actual number of children, with the latter having a greater influence.

Panel B of Figure 5 shows the relationship between the number of actual children, desired children and the maternity gap according to age and age^2 in 1985 and 2018. The age variable is also directly associated with the actual number of children over time, which can translate into a delay in the age of the first child (*tempo* effect). Age is negatively related to the maternity gap in both surveys considered, mainly attributable to the rise in the actual number of children. This suggests that, over time, women tend to reach their reproductive goals (Harknett and Hartnett, 2014).

Panel C of Figure 5 presents the relationship between the actual number of children, the desired number of children, and the motherhood gap according to contraceptive use in 1985 and 2018. In 1985, we observe a positive association between non-use of contraception and both actual fertility (0.42) and desired fertility (0.27), along with a negative coefficient for the maternity gap (-0.15). This suggests that women who did not use contraception at the time tended to have more children and a smaller gap between actual and desired fertility, possibly due to a higher incidence of unwanted births. In

contrast, the 2018 data reveal a reversed pattern: non-use of contraception is associated with a lower number of actual children (-0.1), a higher number of desired children (0.09) and a larger maternity gap (0.19). This shift may be partially explained by the *tempo* effect, as women increasingly postpone childbearing due to educational, professional, or economic factors. In this context, the absence of contraceptive use may reflect involuntary difficulties in motherhood rather than a proactive desire to conceive. Moreover, the larger gap observed in 2018 could be linked to health-related issues or physical impediments that prevent women from achieving their desired number of children, despite not using contraceptive methods. This interpretation suggests that non-use of contraception today does not necessarily indicate a stronger intention to have children, but rather reflects a complex interplay of biological, social, and structural constraints that shape reproductive outcomes. Regarding contraceptive use, the impact on the maternity gap in 1985 is negative due to a combined effect, that is, an increase in the number of children and in the number of desired children. However, in 2018, the effect is positive, explained primarily by the increase in the actual number of children. These results are consistent with those reported in Panel D, which incorporates the physical impediment variable, particularly for women without physical limitations.

Panel E of Figure 5 presents the relationship between the actual number of children, the desired number of children, and the motherhood gap across different educational levels in 1985 and 2018. Higher educational attainment among women is consistently associated with a negative relationship with the actual number of children in all surveys. This pattern suggests a growing trade-off between education and motherhood, particularly for women with higher education. The effect intensifies over time, for example, the coefficient of the number of children for women with higher education varies from 0.29 in 1985 to 0.30 in 2018, likely reflecting persistent challenges in achieving a work-life balance. A similar negative relationship is observed between educational level and the desired number of children, although the magnitude of the coefficients is generally smaller and less consistent. In contrast, there is a positive association between higher education and the maternity gap across all surveys. However, this relationship has slightly weakened over time for women with higher education, decreasing from 0.42 in 1985 to 0.25 in 2018. Given that the coefficients for actual fertility are larger in absolute value than those for desired fertility, we can conclude that the maternity gap is primarily driven by a reduction in the number of actual children, rather than by a significant decline in fertility preferences (Spéder and Bálint, 2024).

Panel F of Figure 5 shows the relationship between the number of actual children, the desired number of children and the maternity gap according to employment status in 1985 and 2018. When a woman is economically inactive, the actual number of children increases in both surveys considered. This effect increases over time (0.2 in 1985 vs. 0.22 in 2018). Once again, it is observed that labor inactivity among women reduces the maternity gap. It is also observed that the maternity gap is primarily explained by the actual number of children, suggesting that labor conditions affect the ability to have children more than the desire to have them (Adsera, 2006). The negative relationship observed between employment and the realization of fertility intentions may reflect the persistence of institutional constraints affecting work-family reconciliation. In contexts where employment conditions remain demanding and support policies for childcare and parental leave are limited, women may face significant opportunity costs when deciding to have children (Esping-Andersen and Billari, 2015; Zangger et al., 2021). This result is consistent with the descriptive evidence presented in Section 4.1, where work-related reasons emerged as one of the main explanations for postponing or avoiding motherhood. Together, these findings suggest that employment conditions may play a key role in shaping the gap between desired and realized fertility.

Finally, in Panel G of Figure 5 we obtain the relationship between the number of actual children, desired children and the maternity gap according to age and level of education in 1985 and 2018. When combining the variables of higher education and women over 40, we obtain a higher number of children and desired children, with coefficients of 0.18 and 0.1 in 2018, respectively (*tempo* effect). In 2018 the maternity gap narrows for women with higher levels of education and those over 40 years of age (-0.08). We obtain a negative relationship between the number of children and higher education (-0.33) when we combine the variables women between 30 and 40 and higher education.

Numerous conclusions emerge from these results. Women who have a stable partner tend to have a higher effective number of children and a smaller maternity gap. Similarly, women with higher levels of education show a greater maternity gap, although this differential has narrowed in recent years due to the widening of the gap among women with primary education. However, when women are economically inactive, these results remain consistent over time, reflecting a smaller maternity gap. In conclusion, in 1985, the maternity gap was more closely linked to women's position in the labor market and their level of education. In contrast, by 2018, the gap had taken on a more universal character, reflecting broader barriers to motherhood that go beyond professional or

economic factors. The decline in effective fertility is not so much explained by a decrease in reproductive intentions, but rather by an increase in the difficulty of achieving those desires, that is, by an increase in the maternity gap. Therefore, the gap between the desired number and effective number of children remains a determining factor in the downward trend in effective fertility. In addition, economic and social conditions can influence the relationship between reproductive intentions and behavior. For example, improvements in work-life balance have contributed to reducing the gap among women with higher education, making this temporal dimension key to identifying patterns of change.

[INSERT FIGURE 5 HERE]

4.3. Extended estimations for the 2018 survey including values and beliefs of having children

In this section, we incorporate variables from the 2018 survey that allow us to analyze fertility outcomes in relation to women's values and beliefs, information that is not available in the 1985 survey. For this reason, in addition to the variables included in the estimations presented in Section 4.2, we consider the following additional variables.

4.3.1. Values and beliefs: measurement and descriptive evidence

First, we include the variable "gapcare", which captures the difference in the share of domestic work performed by the respondent and her partner. This variable takes the values 0, 25, 50, and 75, where 0 indicates no difference, while 25, 50, and 75 represent gaps of 25, 50, and 75 percentage points, respectively, in the time devoted to domestic work between the woman and her partner. The omitted category is 0.

Second, we include the variable "non-stopworking" (stops working after the birth of the first child), a binary indicator (yes/no), where "yes" is used as the reference category.

Third, using microdata from the Labor Force Survey (LFS) for 2018 from the Spanish National Statistics Institute, we construct gender gaps in labor force participation ("Activity gap") and employment ("Employment gap"), defined as the difference between male and female rates. These variables are computed at the provincial level and merged with the individual-level Fertility Survey data by province of residence. Their inclusion serves a specific analytical purpose: while the Fertility Survey provides rich individual-level information on reproductive preferences and outcomes, it does not directly capture the structural labor market conditions -particularly the degree of gender inequality in employment- that the cognitive-social model identifies as key contextual constraints on fertility realization. The LFS-derived gender gaps therefore function as contextual covariates, not as a separate sample or an alternative data source.

We also construct the variable "global_index", which captures a set of perceived conditions. Its aim is to account for dimensions not directly observable in socioeconomic variables, particularly perceptions of constraints and opportunities related to gender equality, which the literature identifies as relevant for explaining the gap between desired and realized fertility. The index is based on ten items that record how the respondent perceives the effect of having a child on, respectively, the availability of time ("vhtiempo"), employment opportunities ("vhempleo"), professional fulfillment ("vhprof"), the economic situation ("vhecono"), sexual life ("vhsexo"), housing conditions ("vhviv"), personal fulfillment

("vhperso"), the couple relationship ("vhpareja"), security in old age ("vhvejez") and strengthen family ties ("vhpadres"). Each item is recorded on a three-point scale, in which 3 corresponds to the most favourable perception and 1 to the least favourable one. To ensure consistency in direction, six of these items ("vhtiempo", "vhempleo", "vhprof", "vhecono", "vhsexo", and "vhviv") are reversed so that higher values systematically reflect the same conceptual intuition. We then count the number of responses at the positive extreme (value 3) and the negative extreme (value 1), defining the index as:

$$\text{global_index} = \#\{x_j = 3\} - \#\{x_j = 1\}, \quad j = 1, \ldots, 10$$

Higher values therefore indicate a net balance of responses in a direction favorable to fertility realization.

In addition, we construct the "equality_index"[5] based on ten items that record the respondent's level of agreement with the following statements: same-sex couples should have the same rights as heterosexual couples ("v_homosexual"); men should share domestic tasks to the same extent as women ("v_tardom"); a working father can be as close to his child as a non-working father ("v_relcercapad"); a working mother can be as close to her child as a non-working mother ("v_relcercamad"); a woman needs children in order to feel fulfilled ("v_hijosm"); a man needs children in order to feel fulfilled ("v_hijosh"); for a woman, family should take priority over her professional career ("v_prioridadm"); for a man, family should take priority over his professional career ("v_prioridadh"); the father or the mother should be the main caregiver during the child's first three years ("v_princuidador"); and taking care of the home and the family is as fulfilling as paid work ("v_casafam"). These ten items are the ones in the survey's opinion module that refer to gender roles within the couple and the household and to the compatibility between employment and family life; the remaining opinion items, which concern union formation, divorce and child custody, are therefore not included in the index. Eight of the ten are formulated as matched pairs for women and men - the closeness of a working mother and of a working father, fulfilment through children for a woman and for a man, and the priority of family over career for a woman and for a man- which allows the index to capture asymmetries in the expectations placed on each partner. . Each item is recorded on a three-point scale, in which 3 corresponds to the most egalitarian response and 1 to the least egalitarian one. To ensure consistency in direction, four of these items ("v_homosexual", "v_tardom", "v_relcercapad" and "v_relcercamad") are reversed so

[5] Although the survey includes a broader set of 19 indicators capturing values, beliefs, and attitudes, we restrict our analysis to those specifically related to gender equality, to focus the index on norms and perceptions directly linked to gender roles.

that higher values systematically reflect a more egalitarian position. We then count the number of responses at the egalitarian extreme (value 3) and at the non-egalitarian extreme (value 1), defining the index as:

$$\text{equality_index} = \#\{z_k = 3\} - \#\{z_k = 1\}, \quad k = 1, \ldots, 10,$$

This index reflects a net balance toward more egalitarian attitudes and greater compatibility with shared responsibility in caregiving and household tasks.

Finally, we include two additional variables ("sup_glo" and "sup_igu"), constructed as interactions between higher education and the global and equality indices, respectively. The inclusion of these indices reduces the statistical significance of the education variable, suggesting that they capture part of its effect.

Before turning to the estimation results, it is useful to describe how these two indices are distributed in the 2018 wave. Table 3 reports their average values according to age group and education level, within the estimation sample, offering a picture of the perceptions and attitudes that prevailed among women of childbearing age in Spain in 2018 and of how they vary across the groups whose fertility behavior is analyzed below.

Two patterns stand out. First, for the "equality_index" (right panel), positive average values predominate across all groups, indicating that egalitarian responses (value 3) outweigh non-egalitarian ones (value 1). Second, for the "global_index" (left panel), average values are negative throughout, suggesting that respondents tend to perceive having a child as negatively affecting the dimensions captured by the index.

It is also worthy highlighting that the two indices also move in opposite directions across groups. Thus, whereas the equality_index increases with educational attainment and is higher among younger women, the global_index decreases (becomes more negative) with education and youth. Taken together, these patterns suggest that the groups holding the most egalitarian attitudes are also those that perceive motherhood as more costly.

[INSERT TABLE 3 HERE]

4.3.2. Estimation results

Regarding the results, in Tables 4, 5 and 6[6] we obtain the relationship of the explanatory variables and the number of children, desired children and the maternity gap, respectively. They remain consistent with those obtained in Section 4.2, while also providing new insights into the role of beliefs and values. In particular, a larger gap in the distribution of domestic work ("gapcare") is associated with a lower number of both actual and desired children, while a greater gap in domestic work is associated with lower actual fertility more strongly than with lower desired fertility. Similarly, a higher employment gap is linked to a lower number of actual children. The "global_index" is positively associated with both actual and desired fertility, implying a smaller gap between desired and realized fertility, reflecting the fact that a more favorable perceived environment raises actual fertility (0.241) more strongly than desired fertility (0.130), thereby compressing the gap. In contrast, a higher "equality_index" is associated with a lower number of both actual and desired children. This pattern holds once the interaction terms with education are included. Overall, these results are consistent with the idea that beliefs and values shape both fertility preferences and their realization, while the equality component is more closely related to the level of fertility (both desired and actual) than to the gap between the two.

[INSERT TABLE 4 HERE]

[INSERT TABLE 5 HERE]

[INSERT TABLE 6 HERE]

5. Conclusions

We analyze the maternity gap in Spain, a phenomenon of major social and economic significance, as in recent decades there has been a significant decline in maternity rates in advanced economies, which has contributed to the relative aging of populations. The persistence of this phenomenon, in the absence of migration, would lead to a progressive reduction in total population.

In Spain, an unprecedented decline in maternity levels has been observed, characterized by a delay in the age of having the first child and a decrease in the total number of children, reflecting the *tempo* and *quantum* effects, respectively. Therefore, the main objective of this study is to analyze the barriers that may prevent people, despite being motivated to have

[6] The full model specifications (including the explanatory variables described in Section 4.2) are available from the authors upon request.

children, from doing so. As possible explanatory factors, from an economic perspective, the costs associated with maternity and opportunity costs may limit the transformation of intentions into actual behaviors. Furthermore, social factors and individual characteristics also constitute key determinants that can influence the intention to have children.

Specifically, we have drawn on data from two fertility surveys from Spain's National Institute of Statistics (1985 and 2018), finding that, although the desire for children among Spaniards remains relatively high, the actual number of children is significantly lower over the period, according to the cognitive-social model, which assumes that intentions do not necessarily coincide with actual behavior in terms of maternity. We have also estimated the barriers to having children in Spain (the maternity gap) and identified the factors that influence it, distinguishing between the desire of Spaniards to have children and actual childbearing statistics. This novel empirical evidence confirms that part of women's desired fertility currently remains unfulfilled. Consequently, adopting policies that improve the explanatory factors identified may help minimize this gap, which would likely have a positive effect on demographic development in Spain.

While the decline in reproductive intentions (i.e., the desired number of children) evolves steadily over our sample period, the important reduction in effective fertility has contributed to widening the maternity gap, which still plays a major role. This persistent gap between the number of children women would like to have and the number they actually have remains a key factor driving the downward trend in fertility rates. Additionally, economic and social conditions can shape how reproductive intentions translate into actual behavior.

First, our findings show that the absence of a stable partner remains a critical factor in shaping both fertility outcomes and intentions. Women who do not have a stable partner show a negative impact on actual fertility (-0.27 and -0.5, for 1985 and 2018, respectively) and a positive impact on the maternity gap compared to women who have a stable partner, underscoring the strong link between partnership and childbearing. Second, age is inversely related to the maternity gap, due to a greater impact of the number of effective children. Third, contraceptive use shows a changing pattern. In 1985, the non-use of contraception was associated with higher fertility (0.424) and a negative maternity gap (-0.15), possibly due to unwanted births. By 2018, however, non-use correlated with lower fertility (-0.1) and a larger maternity gap (0.09), suggesting that it may increasingly reflect involuntary childbearing delays rather than stronger reproductive intent. This points to a more complex, structural set of constraints -biological, social, and economic- that now mediate reproductive behavior. Fourth, educational attainment is negatively associated with the actual number of children, the

coefficient drops from 0.29 in 1985 to 0.30 in 2018, slightly lower desired fertility, and with a larger maternity gap. This gap, however, has decreased slightly over time for highly educated women from 0.42 in 1985 to 0.25 in 2018, likely due to improved work-life balance and delayed but eventually realized childbearing. Fifth, labor market participation is closely linked to the maternity gap. Economically inactive women tend to have more children and a smaller gap, a pattern that remains stable over time. This suggests that employment constrains the realization of reproductive intentions more than it suppresses those intentions themselves. Finally, by 2018, the maternity gap appears to have taken on a more universal character, transcending traditional socioeconomic divides. While in 1985 the gap was more tightly linked to women's labor market position and education level, more recent data suggest that broader structural, temporal, and biological barriers to motherhood now play a defining role. The overall decline in effective fertility is not primarily the result of waning reproductive intentions, but rather of growing obstacles to fulfilling them.

Additionally, the incorporation of variables capturing beliefs, values, and perceived constraints in the 2018 survey provides further insight into the mechanisms underlying the maternity gap. The results show that a more unequal distribution of domestic work and wider gender gaps in employment are associated with lower actual fertility, reinforcing the role of structural and intra-household inequalities. At the same time, more favorable perceived conditions (captured by the global index) are positively associated with both desired and actual fertility, contributing to a smaller gap between them. In contrast, more egalitarian attitudes (equality index) are linked to lower fertility levels, both desired and realized, suggesting that while equality shapes fertility preferences, it does not necessarily reduce the gap between intentions and outcomes. Overall, these findings highlight that perceptions, norms, and the distribution of responsibilities within households play a crucial role not only in shaping fertility intentions but also in determining their realization.

The results obtained in this study also contribute to the broader debate on the determinants of persistently low fertility in developed countries. In particular, the existence of a significant gap between desired and realized fertility suggests that low fertility levels cannot be explained solely by changes in individual preferences regarding family size. Instead, the maternity gap may reflect the presence of structural constraints that limit women's ability to reconcile professional careers and family formation. Specifically, these tensions between career development and motherhood may emerge for women attaining high levels of education and full-time labor market participation as they continue to face institutional barriers, limited work-family reconciliation policies, or unequal distribution of caregiving responsibilities

within households. These constraints can lead to the postponement or reduction of childbearing, thereby contributing to the persistence of a fertility gap. In line with the descriptive evidence, work-related constraints emerge as one of the most relevant barriers to fertility in the 2018 survey, particularly among women with medium and high levels of education. This reflects a shift from a context of greater role specialization in 1985 to one characterized by increasing tensions between professional careers and motherhood, where many women resolve this conflict by postponing or reducing childbearing.

Based on the new evidence obtained, we can draw several key implications for the design and implementation of public policies. First, our results reveal a stated preference for having children that is greater than the actual number; thus, the implementation of policies that reduce the barriers to motherhood identified in this research warrants consideration. From a policy perspective, these findings highlight the importance of institutional arrangements that facilitate the compatibility between employment and family formation. International evidence suggests that countries with more developed work-family reconciliation policies, such as accessible childcare services, flexible working arrangements, and balanced parental leave schemes, tend to exhibit a smaller gap between fertility intentions and realized fertility. Strengthening such policies could therefore play a crucial role in reducing the maternity gap observed in Spain. Second, in terms of equality, society now faces a significant challenge, in that our results indicate the existence of a trade-off for women between achieving higher educational levels and seeing their intentions for maternity realized. Higher education is undoubtedly positive, enabling women to access better employment and pursue fulfilling professional careers. However, in the absence of adequate institutional support -such as universal quality childcare for ages 0-3, equal parental leave, long-term care provision, and more reasonable working hours- the structural conditions to combine quality employment with motherhood are often lacking. This tension does not arise from an inherent incompatibility between education and motherhood, but rather from the persistence of institutional gaps that make reconciliation difficult. Addressing these structural barriers would allow women to realize both their professional and reproductive aspirations, with positive implications for society in both the demographic and socioeconomic spheres. Importantly, this challenge is not unique to women: shared caregiving responsibilities and gender-equal policies are key conditions for reducing the maternity gap and, ultimately, enhancing the welfare of society as a whole.

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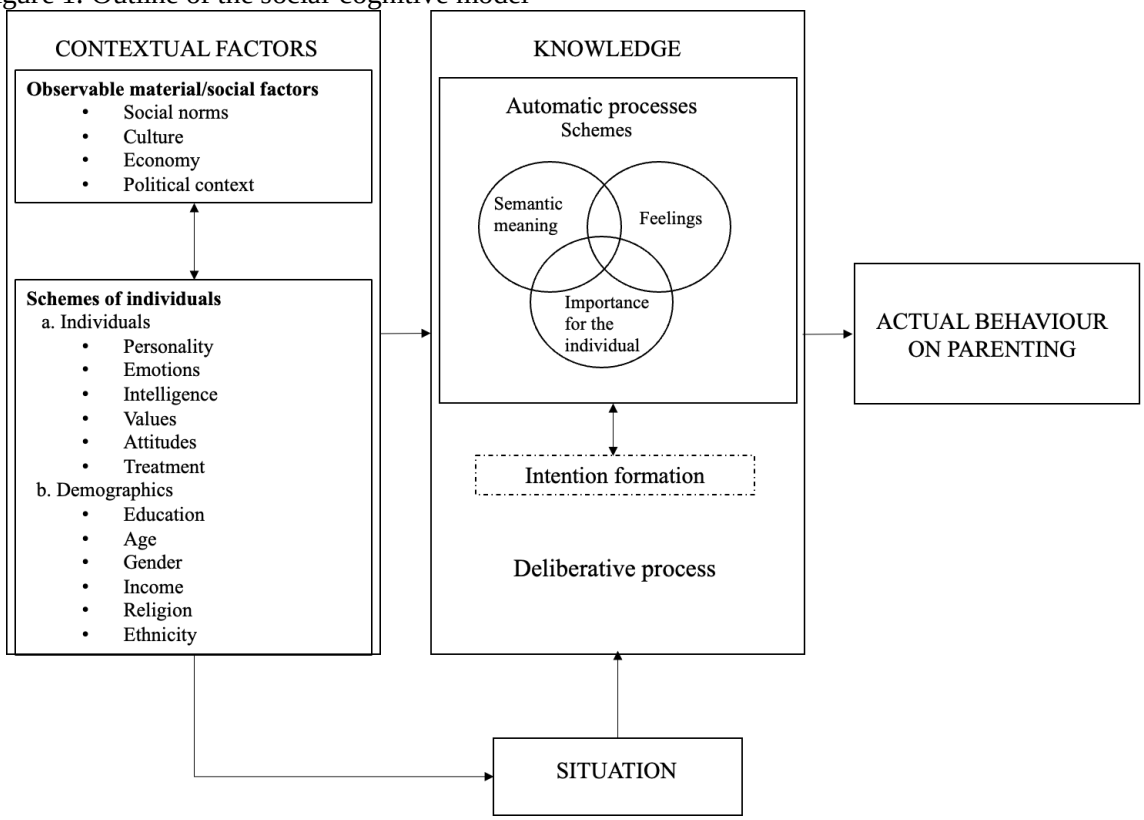
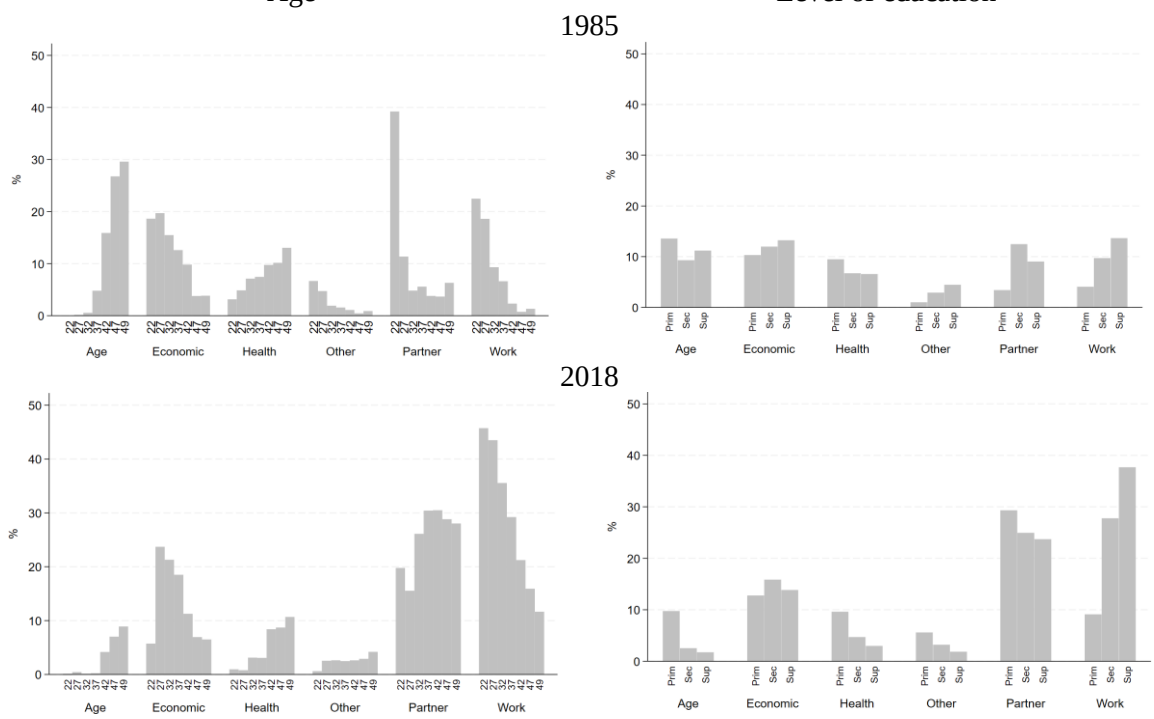
Figures

Figure 1. Outline of the social-cognitive model



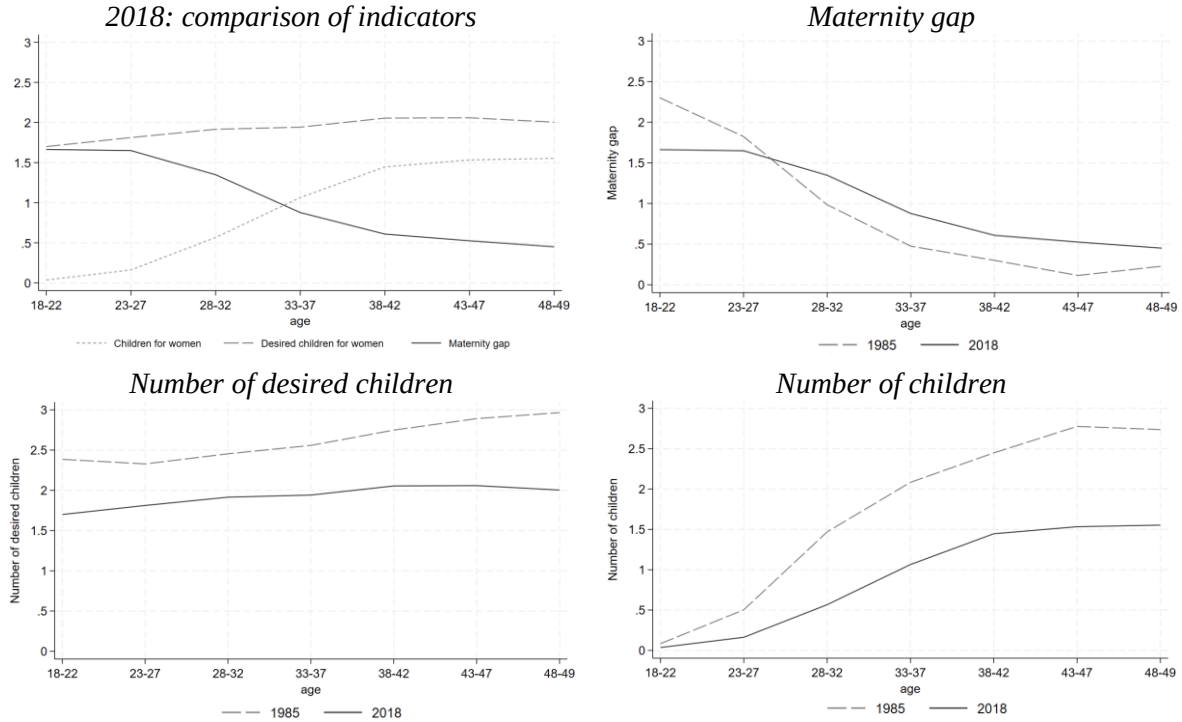
Source: Own elaboration based on Bachrach and Morgan (2013)

Figure 2. Reasons why women decide not to have children according to age and level of education



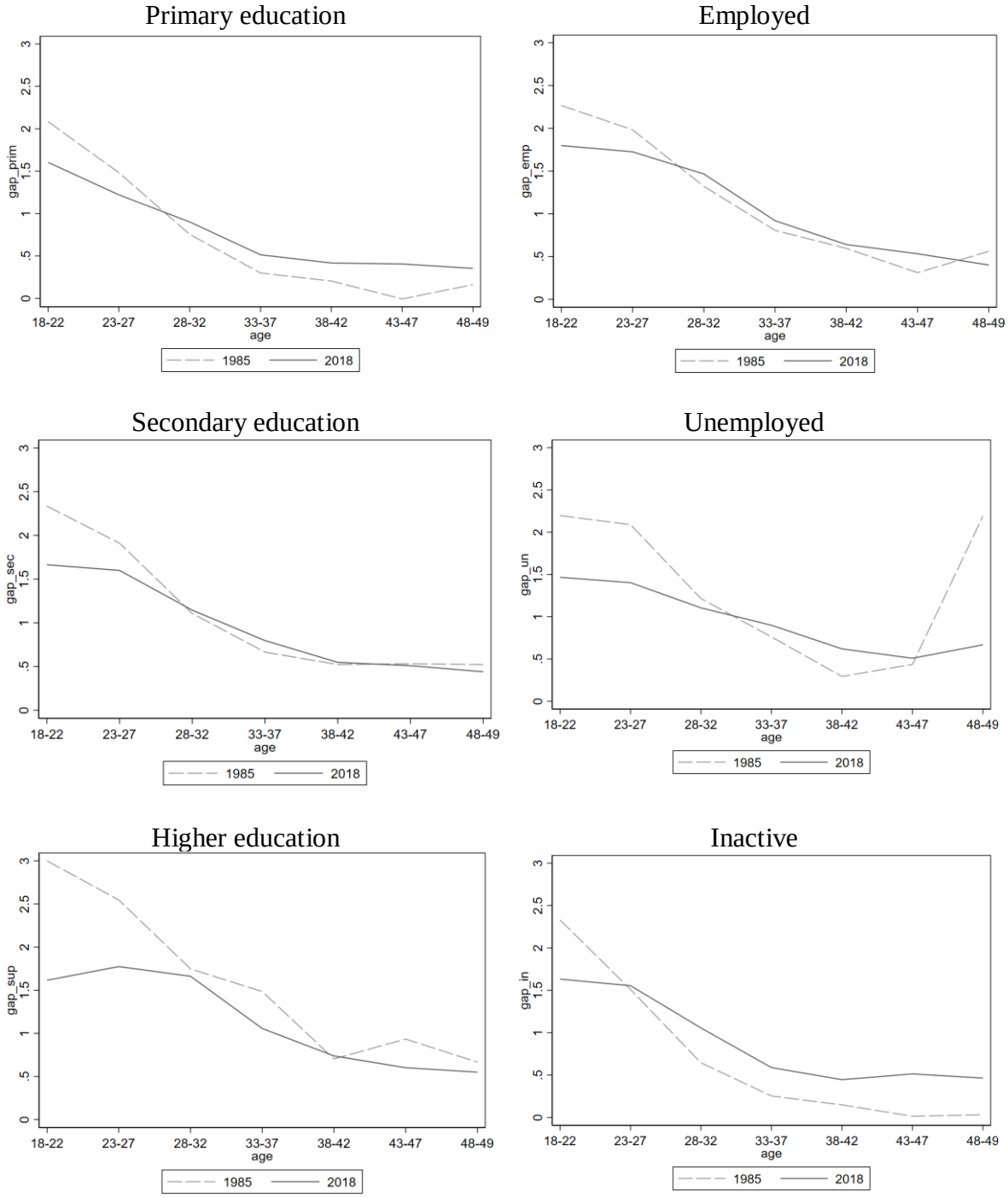
Source: Own elaboration based on the Fertility Survey (1985 and 2018), INE.

Figure 3. Indicators of children, desired children and maternity gap in Spain, 2018 vs 1985



Source: Own elaboration based on the Fertility Survey (1985 and 2018), INE. See Appendix A Table A.1 and A.2 for the data supporting the information presented in Figure 3.

Figure 4. Maternity gap of childbearing age (aged 18 to 49 years) according to age, educational level, and professional situation, 1985-2018

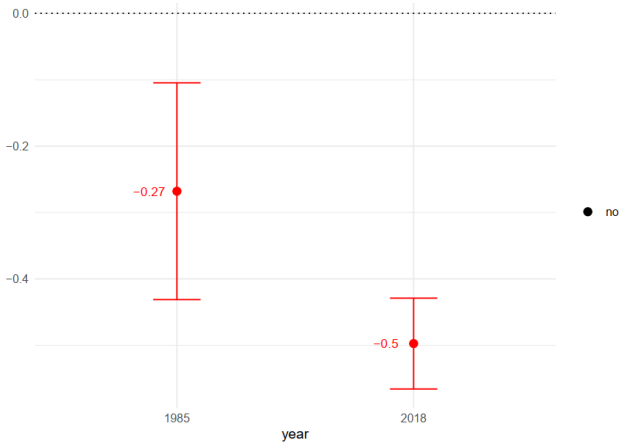


Source: Own elaboration based on the Fertility Survey (1985 and 2018), INE.

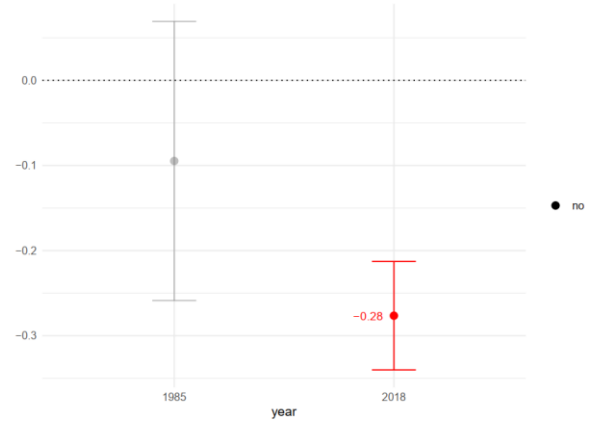
Figure 5. Relationship between the number of actual children, children desired and the maternity gap and the explanatory variables, 1985-2018.

Panel A: Stable partner

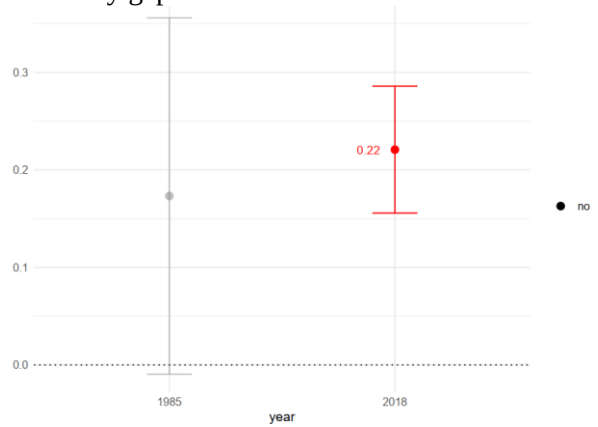
Number of actual children



Number of desired children

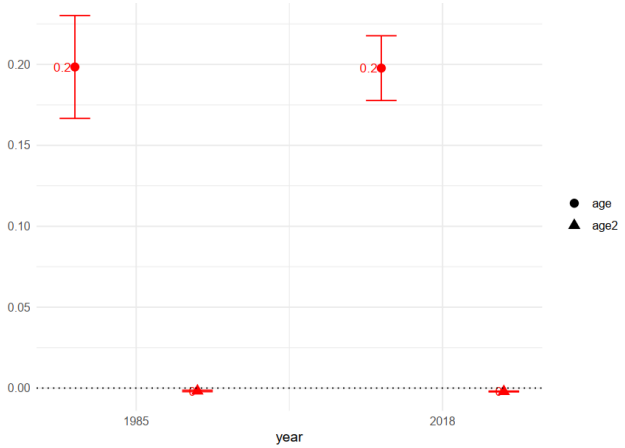


Maternity gap

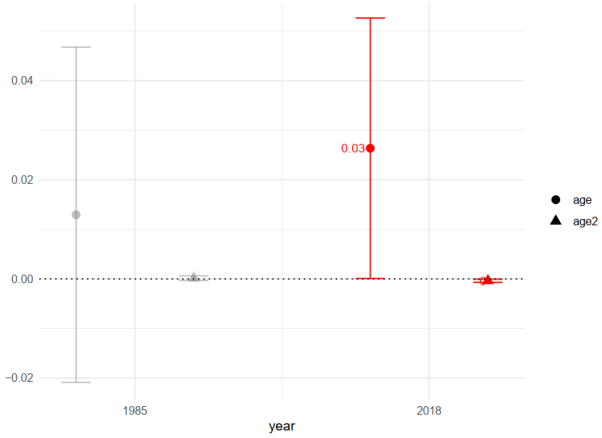


Panel B: Age and age^2

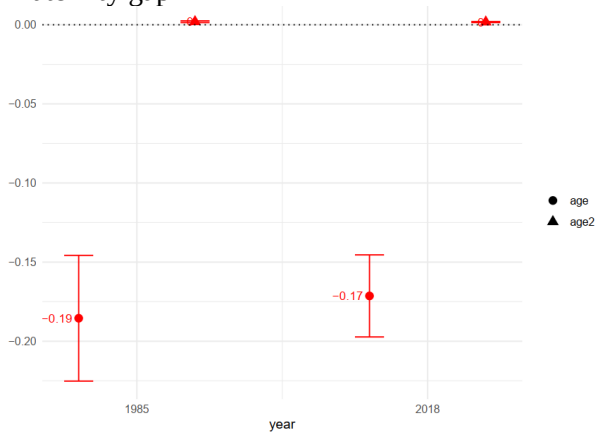
Number of actual children



Number of desired children

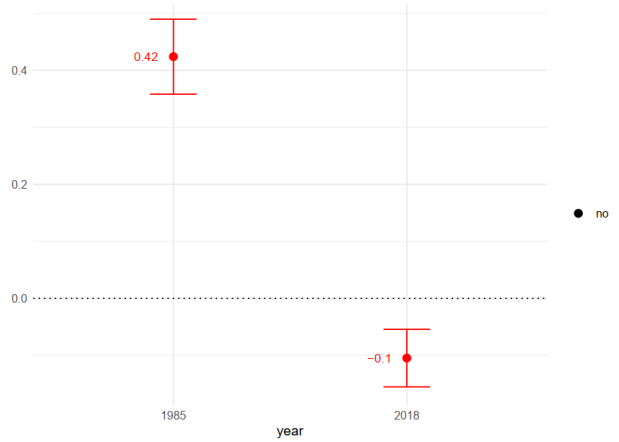


Maternity gap

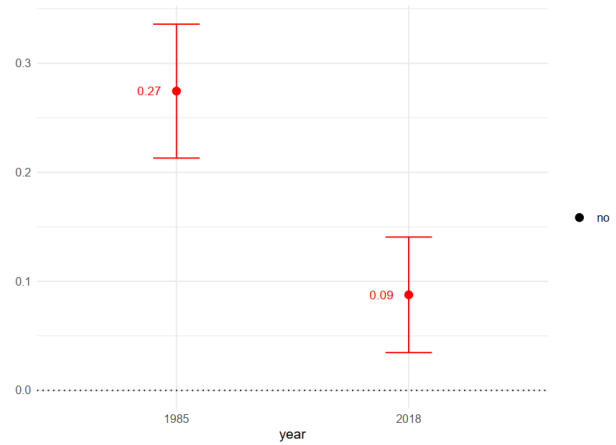


Panel C: Use of contraception

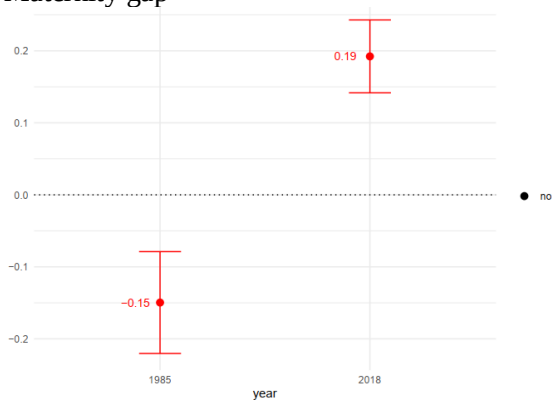
Number of actual children



Number of desired children

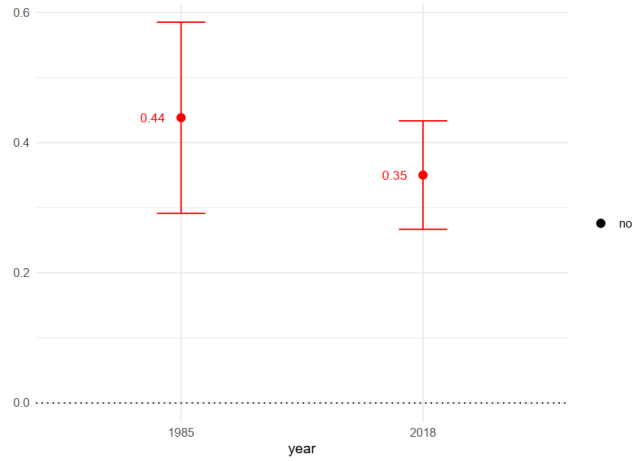


Maternity gap

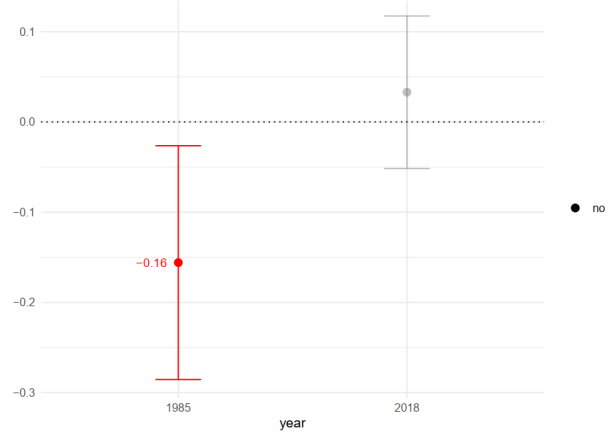


Panel D: Physical impediment

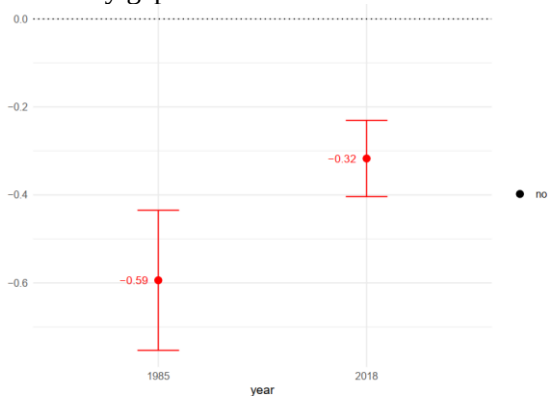
Number of actual children



Number of desired children

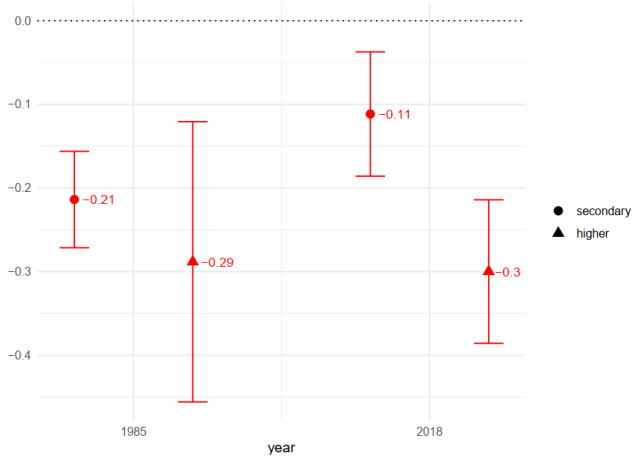


Maternity gap

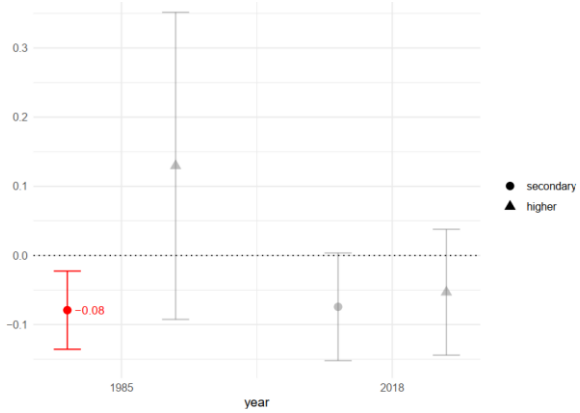


Panel E: Education

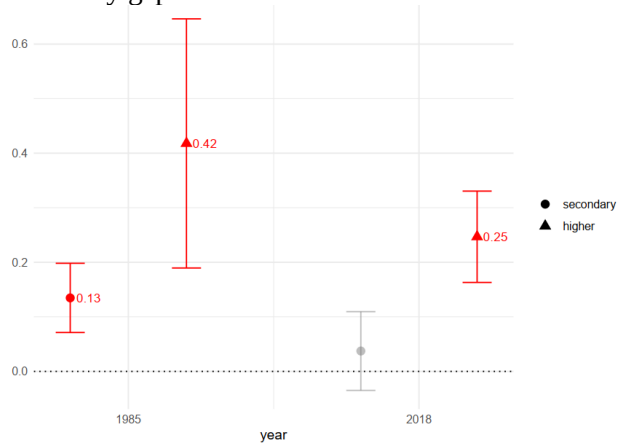
Number of actual children



Number of desired children

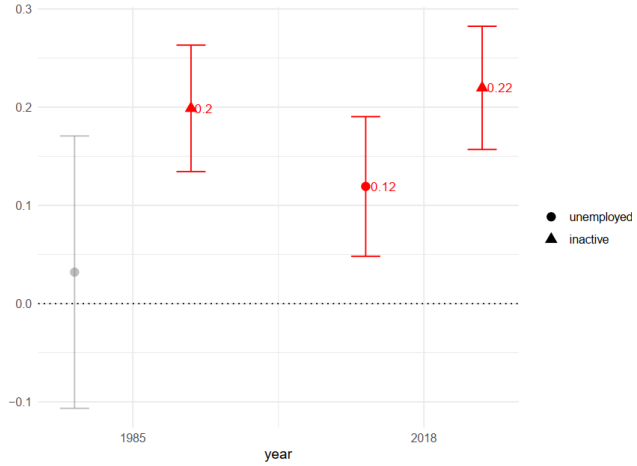


Maternity gap

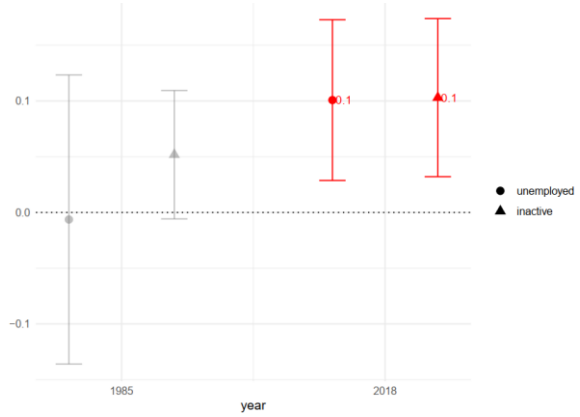


Panel F: Labour situation

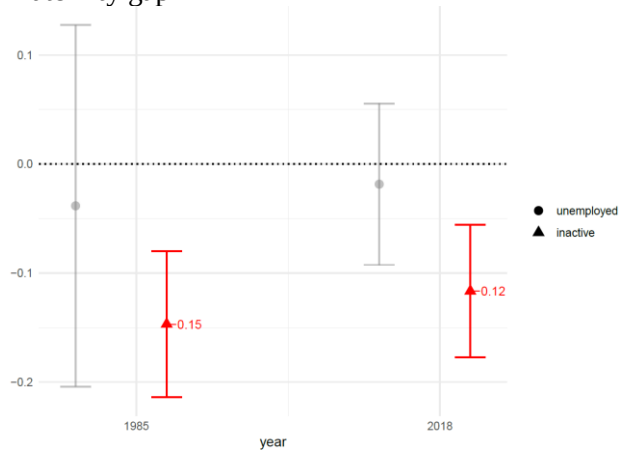
Number of actual children



Number of desired children

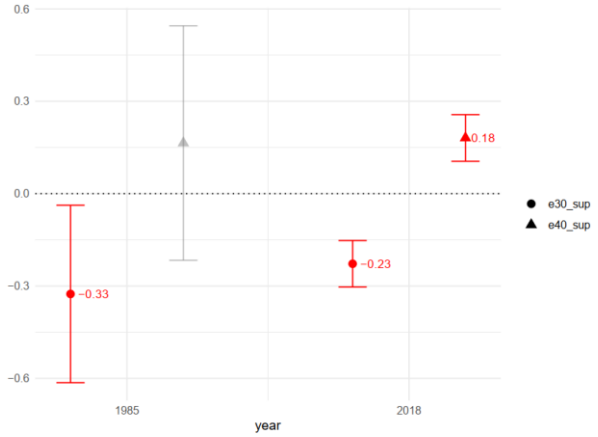


Maternity gap

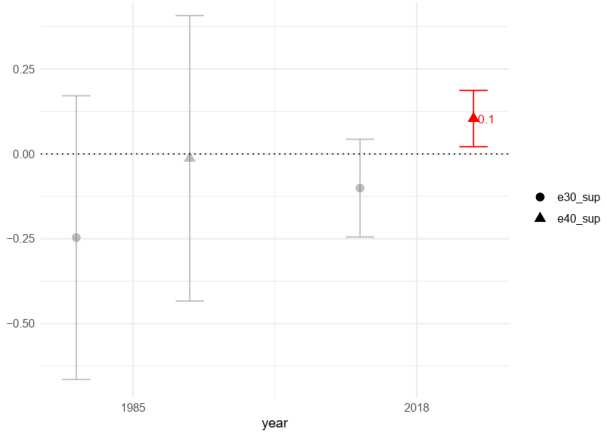


Panel G: Age and education

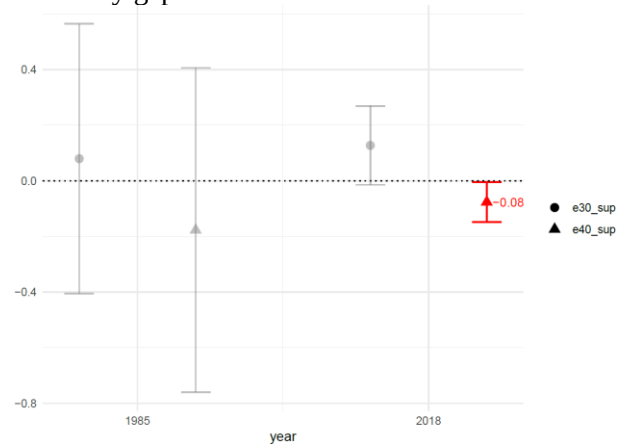
Number of actual children



Number of desired children



Maternity gap



Notes: 1) Omitted categories: stable partner, use of contraception, physical impediment, primary education and employed 2) Significant categories are marked in red, while non-significant ones are shown in grey 3) For detailed regression results, see Appendix A, Tables A.3, A.4 and A.5. 4) For the 2018 survey, we include in the estimations the level of income (in logarithms) and the square of the income (in logarithms), see Appendix A, Tables A.3, A.4 and A.5.

Tables

Table 1. Definition of the variable "number of desired children"

Survey year	Variables included	Calculation formula
1985	**P427**[a]: "You had some idea of the number of children you wanted at the time you formed your partnership" **P428**: "Number of children you wanted to have at the time you formed your partnership" **P432**[a]: "You intend to have more children in the future" **P434**: "Number of children you intend to have in the future" **P435**: "Number of children you would like to have at this moment"	= **P428**, if **P427** = 1 = **P434**, if **P432** = 1 = **P435**, if **P427** = 6 and **P432** = 6
2018	**NTOTALHIJOS/AS**: "Total number of children you would have liked to have" **NDESEOHIJO**: "Number of children desired (for those who have children and for those who do not)"	= **NTOTALHIJOS/AS**, if **NTOTALHIJOS/AS** ≠ not available = **NDESEOHIJO**, if **NTOTALHIJOS/AS** = not available
Notes: a) own elaboration; b) Dichotomous variables take values 1 and 6 to indicate YES and NO, respectively.		

Table 2 Distribution of women of childbearing age (between 18 and 49 years) according to number of children and age, 1985-2018

Age	Children	Actual number of children		Desired number of children	
		1985	2018	1985	2018
18 to 29	0	63.86	88.13	0.06	22.35
	1	21.45	7.36	7.10	8.28
	2	11.40	3.43	63.22	45.04
	3	2.29	0.99	22.35	20.39
	4	0.76	0.09	5.88	2.74
	5	0.16	0.01	0.66	0.64
30 to 34	0	16.95	51.99	0.00	10.98
	1	19.70	25.21	5.67	16.00
	2	40.46	17.55	53.46	48.42
	3	16.23	3.56	31.07	20.81
	4	4.75	1.31	7.38	2.76
	5	1.01	0.31	0.77	0.85
35 to 39	0	13.35	27.78	0.00	7.25
	1	10.54	30.22	4.63	17.42
	2	39.18	32.31	46.47	47.40
	3	25.02	7.51	33.84	23.43
	4	7.79	1.55	11.07	3.26
	5	2.99	0.45	1.88	0.87
40 to 44	0	11.66	18.99	0.00	7.90
	1	7.46	24.96	4.26	15.20
	2	32.62	43.79	41.45	49.75
	3	26.71	9.40	35.31	21.29
	4	12.60	2.00	14.23	4.62
	5	5.61	0.51	2.78	0.91
45 and older	0	12.06	18.74	0.00	9.15
	1	8.69	23.85	3.97	14.48
	2	30.16	44.69	40.48	49.05
	3	22.61	9.98	31.82	21.15
	4	12.35	1.83	14.81	4.26
	5	6.51	0.51	4.07	0.97

Source: Own elaboration based on the Fertility Survey (1985 and 2018), INE.

Table 3. Views and beliefs: average values, according to age and education level

Global index					Equality index				
	Education attainment					*Education attainment*			
Age	**Primary**	**Secondary**	**Higher**	**Total**	**Age**	**Primary**	**Secondary**	**Higher**	**Total**
20	-0.77	-2.58	-2.81	-2.58	20	2.02	4.74	5.58	4.86
25	-0.46	-1.86	-3.27	-2.40	25	1.30	3.41	5.17	4.07
30	-0.29	-1.08	-2.17	-1.47	30	0.46	3.06	4.34	3.39
35	-0.28	-0.55	-0.88	-0.65	35	1.19	2.90	4.36	3.31
40	-0.19	-0.36	-0.57	-0.42	40	1.64	3.03	4.06	3.25
45	-0.13	-0.26	-0.47	-0.30	45	2.14	3.23	4.39	3.39
50	-0.15	-0.24	-0.34	-0.24	50	1.94	3.32	4.36	3.24
Total	**-0.20**	**-0.84**	**-1.27**	**-0.90**	**Total**	**1.74**	**3.37**	**4.49**	**3.53**

Notes: (1) Source: Own elaboration based on the Fertility Survey (2018), INE. (2)Cell color reflects the mean value (education level x age) within each table: red indicates the lowest values and green the highest, with a continuous red-yellow-green colour scale proportional to each value's position between the table's minimum and maximum.

Table 4. Relationship between the number of children and explanatory variables, 2018.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
25. gapcare	-0.137	-0.262*	-0.268*	-0.267*	-0.211	-0.215	-0.233	-0.233
	(0.114)	(0.153)	(0.154)	(0.150)	(0.142)	(0.143)	(0.169)	(0.169)
50.gapcare	-0.159	-0.248*	-0.248*	-0.248*	-0.189	-0.193	-0.150	-0.150
	(0.108)	(0.146)	(0.146)	(0.144)	(0.140)	(0.140)	(0.175)	(0.175)
75.gapcare	-0.256**	-0.287**	-0.287**	-0.291**	-0.277**	-0.281**	-0.282*	-0.282*
	(0.102)	(0.135)	(0.135)	(0.133)	(0.132)	(0.132)	(0.164)	(0.164)
Non-stopworking		-0.102	-0.0978	-0.101	-0.0755	-0.0900	-0.0779	-0.0779
		(0.0780)	(0.0779)	(0.0779)	(0.0730)	(0.0728)	(0.108)	(0.108)
Activiy gap			-0.0157	0.0321	0.0207	0.0274	0.0343	0.0343
			(0.0166)	(0.0244)	(0.0234)	(0.0235)	(0.0758)	(0.0758)
Employment gap				-0.0663**	-0.0528*	-0.0623**	-0.122	-0.122
				(0.0320)	(0.0305)	(0.0305)	(0.108)	(0.108)
Global index					0.241***	0.239***		0.183***
					(0.0255)	(0.0262)		(0.0319)
Equality index						-0.0302***	-0.0362**	
						(0.00926)	(0.0171)	
sup_glo							0.0610***	
							(0.0106)	
sup_igu								-0.0121**
								(0.00571)
Constant	-2.695***	-2.018**	-1.972**	-4.286***	-3.466***	-3.915***	-3.875*	-3.875*
	(0.581)	(0.825)	(0.931)	(1.328)	(1.301)	(1.309)	(2.322)	(2.322)
Observations	2,578	1,190	1,189	1,189	1,189	1,189	419	419
R-squared	0.130	0.171	0.172	0.175	0.261	0.271	0.404	0.404

Notes: 1) Statistical significance is indicated as follows: *** (1%), ** (5%), * (10%) 2) Omitted categories: stable par tner, use of contraception, physical impediment, primary education, employed, *non*-difference in the domestic work and stop working after the birth of the first child.

Table 5. Relationship between the desired number of children and explanatory variables, 2018.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
25. gapcare	-0.0819	-0.0794	-0.0802	-0.0799	-0.0498	-0.0534	-0.0808	-0.0808
	(0.122)	(0.140)	(0.140)	(0.139)	(0.141)	(0.141)	(0.156)	(0.156)
50.gapcare	-0.107	-0.129	-0.129	-0.129	-0.0970	-0.100	0.0782	0.0782
	(0.115)	(0.132)	(0.132)	(0.132)	(0.133)	(0.133)	(0.159)	(0.159)
75.gapcare	-0.184*	-0.118	-0.118	-0.118	-0.111	-0.114	-0.0862	-0.0862
	(0.110)	(0.126)	(0.127)	(0.126)	(0.128)	(0.128)	(0.152)	(0.152)
Non-stopworking		-0.0104	-0.0105	-0.0111	0.00255	-0.0100	0.145	0.145
		(0.0804)	(0.0806)	(0.0807)	(0.0791)	(0.0780)	(0.128)	(0.128)
Activiy gap			0.00793	0.0186	0.0124	0.0182	-0.0371	-0.0371
			(0.0163)	(0.0337)	(0.0330)	(0.0328)	(0.0936)	(0.0936)
Employment gap				-0.0148	-0.00743	-0.0156	0.0367	0.0367
				(0.0422)	(0.0414)	(0.0415)	(0.137)	(0.137)
Global index					0.130***	0.128***		0.0965***
					(0.0264)	(0.0258)		(0.0297)
Equality index						-0.0260**	-0.0496*	
						(0.0122)	(0.0286)	
sup_glo							0.0322***	

							(0.00989)	
sup_igu								-0.0165*
								(0.00953)
Constant	0.995	1.782*	1.638	1.123	1.567	1.180	-2.020	-2.020
	(0.784)	(1.058)	(1.172)	(1.667)	(1.665)	(1.671)	(3.171)	(3.171)
Observations	2,578	1,190	1,189	1,189	1,189	1,189	419	419
R-squared	0.027	0.048	0.048	0.049	0.072	0.079	0.128	0.128

Notes: 1) Statistical significance is indicated as follows: *** (1%), ** (5%), * (10%) 2) Omitted categories: stable partner, use of contraception, physical impediment, primary education, employed, *non*-difference in the domestic work and stop working after the birth of the first child.

Table 6. Relationship between the maternity gap and explanatory variables, 2018.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
25. gapcare	0.0547	0.183	0.188	0.187	0.162	0.162	0.152	0.152
	(0.102)	(0.141)	(0.141)	(0.139)	(0.135)	(0.135)	(0.137)	(0.137)
50.gapcare	0.0518	0.120	0.119	0.119	0.0918	0.0923	0.228*	0.228*
	(0.0905)	(0.123)	(0.124)	(0.123)	(0.120)	(0.120)	(0.131)	(0.131)
75.gapcare	0.0723	0.169	0.169	0.173	0.166	0.167	0.196	0.196
	(0.0864)	(0.120)	(0.121)	(0.120)	(0.118)	(0.118)	(0.127)	(0.127)
Non-stopworking		0.0911	0.0874	0.0896	0.0780	0.0800	0.223*	0.223*
		(0.0756)	(0.0749)	(0.0744)	(0.0738)	(0.0743)	(0.121)	(0.121)
Activiy gap			0.0236	-0.0135	-0.00830	-0.00923	-0.0714	-0.0714
			(0.0162)	(0.0319)	(0.0322)	(0.0322)	(0.0853)	(0.0853)
Employment gap				0.0516	0.0454	0.0467	0.159	0.159
				(0.0428)	(0.0430)	(0.0431)	(0.129)	(0.129)
Global index					-0.111***	-0.110***		-0.087**
					(0.0320)	(0.0322)		(0.0389)
Equality index						0.00421	-0.0135	
						(0.00973)	(0.0198)	
sup_glo							-0.029**	
							(0.0130)	
sup_igu								-0.00449
								(0.00659)
Constant	3.690***	3.800***	3.610***	5.408***	5.032***	5.095***	1.855	1.855
	(0.853)	(1.103)	(1.241)	(1.624)	(1.621)	(1.627)	(2.852)	(2.852)
Observations	2,578	1,190	1,189	1,189	1,189	1,189	419	419
R-squared	0.078	0.103	0.105	0.108	0.128	0.129	0.249	0.249

Notes: 1) Statistical significance is indicated as follows: *** (1%), ** (5%), * (10%) 2) Omitted categories: stable partner, use of contraception, physical impediment, primary education, employed, *non*-difference in the domestic work and stop working after the birth of the first child.

Appendix

Appendix A. Detailed results for 1985 and 2018 surveys

Table A.1. Distribution of the average numbers of actual and desired children and the maternity gap according to fertile age (between 18 and 49 years) and educational level of women

Age	Education	Actual children		Desired children		Maternity gap	
		1985	2018	1985	2018	1985	2018
18-29	Primary	1.05	0.96	2.37	2.04	1.32	1.08
	Secondary	0.38	0.17	2.3	1.75	1.92	1.58
	Higher	0.18	0.06	2.42	1.8	2.24	1.74
30-34	Primary	2.08	1.57	2.58	2.30	0.5	0.74
	Secondary	1.53	0.91	2.42	1.88	0.89	0.97
	Higher	0.97	0.45	2.32	1.91	1.35	1.46
35-39	Primary	2.34	1.64	2.68	2.19	0.34	0.55
	Secondary	1.91	1.32	2.62	2.01	0.72	0.69
	Higher	1.46	1.11	2.88	1.99	1.42	0.88
40-44	Primary	2.67	1.77	2.79	2.07	0.12	0.3
	Secondary	2.20	1.53	2.74	2.01	0.54	0.48
	Higher	2.07	1.47	2.58	2.08	0.51	0.61
45 and older	Primary	2.86	1.63	2.93	2.05	0.07	0.42
	Secondary	2.16	1.58	2.83	2.08	0.67	0.51
	Higher	1.98	1.48	3.17	2.08	1.19	0.6

Source: Own elaboration based on the Fertility Survey (1985 and 2018), INE.

Table A.2. Distribution of the average numbers of actual and desired children and the maternity gap according to fertile age (between 18 and 49 years), and professional status of women

Age	Work situation	Actual children		Desired children		Maternity gap	
		1985	2018	1985	2018	1985	2018
18-29	Employed	0.42	0.17	2.28	1.84	1.86	1.67
	Unemployed	0.20	0.37	2.26	1.76	2.06	1.39
	Inactive	0.78	0.13	2.38	1.73	1.61	1.6
30-34	Employed	1.41	0.64	2.43	1.88	1.02	1.24
	Unemployed	1.08	0.98	2.34	2.04	1.26	1.05
	Inactive	2.12	1.28	2.57	2.06	0.44	0.78
35-39	Employed	1.74	1.17	2.62	1.97	0.88	0.8
	Unemployed	1.84	1.42	2.43	2.14	0.59	0.72
	Inactive	2.43	1.67	2.71	2.19	0.28	0.52
40-44	Employed	2.19	1.49	2.63	2.02	0.44	0.53
	Unemployed	3.21	1.46	2.61	2.04	-0.6	0.58
	Inactive	2.72	1.82	2.85	2.15	0.13	0.33
45 and older	Employed	2.26	1.53	2.85	2.03	0.58	0.5
	Unemployed	1.87	1.51	3.05	2.07	1.18	0.56
	Inactive	2.94	1.68	2.94	2.26	0.	0.58

Source: Own elaboration based on the Fertility Survey (1985 and 2018), INE.

Table A.3. Relationship between the number of actual children and the explanatory variables for different methodologies, 1985-2018

	OLS		NB		LOGIT		PROBIT		MLOGIT				MPROBIT			
	1985	2018	1985	2018	1985	2018	1985	2018	1985		2018		1985		2018	
									Between 1 and 3	More than 3	Between 1 and 3	More than 3	Between 1 and 3	More than 3	Between 1 and 3	More than 3
Non-partner	-0.268***	-0.497***	-0.122***	-0.424***	-0.264	-1.715***	-0.194	-0.989***	-0.265	-0.361	-1.747***	-0.771***	-0.279	-0.363	-1.416***	-0.610***
	(0.0991)	(0.0416)	(0.0459)	(0.0414)	(0.402)	(0.0926)	(0.192)	(0.0527)	(0.401)	(0.473)	(0.0930)	(0.259)	(0.291)	(0.344)	(0.0740)	(0.146)
Age	0.198***	0.198***	0.143***	0.271***	0.595***	0.595***	0.327***	0.343***	0.612***	1.079***	0.583***	1.123***	0.486***	0.822***	0.469***	0.700***
	(0.0193)	(0.0122)	(0.00999)	(0.0165)	(0.116)	(0.0504)	(0.0515)	(0.0269)	(0.115)	(0.136)	(0.0503)	(0.189)	(0.0777)	(0.0970)	(0.0375)	(0.103)
Age^2	-0.00178***	-0.00210***	-0.00152***	-0.00297***	-0.00660***	-0.00649***	-0.00381***	-0.00376***	-0.00703***	-0.0117***	-0.00636***	-0.0123***	-0.00571***	-0.00902***	-0.00514***	-0.00769***
	(0.000281)	(0.000153)	(0.000135)	(0.000190)	(0.00174)	(0.000620)	(0.000744)	(0.000330)	(0.00172)	(0.00193)	(0.000619)	(0.00217)	(0.00116)	(0.00136)	(0.000461)	(0.00119)
Non.-contraceptives	0.424***	-0.105***	0.231***	-0.0563***	1.020***	-0.395***	0.484***	-0.219***	0.992***	1.740***	-0.405***	-0.108	0.678***	1.219***	-0.316***	-0.0924
	(0.0400)	(0.0307)	(0.0232)	(0.0217)	(0.219)	(0.101)	(0.104)	(0.0548)	(0.219)	(0.290)	(0.101)	(0.229)	(0.147)	(0.204)	(0.0768)	(0.127)
Secondary education	-0.214***	-0.112**	-0.0990***	-0.0692**	0.0374	-0.199	0.0259	-0.108	0.0555	-0.462*	-0.177	-0.609**	0.193	-0.204	-0.120	-0.376**
	(0.0351)	(0.0452)	(0.0164)	(0.0276)	(0.231)	(0.161)	(0.104)	(0.0820)	(0.229)	(0.255)	(0.161)	(0.288)	(0.145)	(0.163)	(0.114)	(0.169)
Higher education	-0.288***	-0.300***	-0.134**	-0.152***	-0.637	-0.756***	-0.357	-0.404***	-0.681	-2.854**	-0.732***	-1.159**	-0.332	-1.751***	-0.532***	-0.709***
	(0.102)	(0.0521)	(0.0580)	(0.0361)	(0.528)	(0.173)	(0.268)	(0.0907)	(0.541)	(1.118)	(0.174)	(0.467)	(0.380)	(0.606)	(0.127)	(0.244)
Unemployment	0.0320	0.119***	1.52e-05	0.0861***	-0.267	0.556***	-0.143	0.284***	-0.279	0.160	0.549***	0.699**	-0.128	0.297	0.387***	0.461**
	(0.0850)	(0.0432)	(0.0481)	(0.0311)	(0.386)	(0.153)	(0.193)	(0.0801)	(0.386)	(0.483)	(0.153)	(0.354)	(0.276)	(0.334)	(0.112)	(0.196)
Inactive	0.199***	0.220***	0.0865***	0.129***	0.807***	0.391***	0.368***	0.191**	0.791***	1.038***	0.366***	0.983***	0.567***	0.758***	0.237**	0.603***
	(0.0392)	(0.0382)	(0.0178)	(0.0262)	(0.236)	(0.141)	(0.106)	(0.0753)	(0.236)	(0.255)	(0.142)	(0.276)	(0.152)	(0.167)	(0.105)	(0.157)
e30_sup	-0.326*	-0.228***	-0.379**	-1.316***	-0.505	-1.193***	-0.240	-0.744***	-0.433	-573.5	-1.197***	-18.37***	-0.341	-18.98	-1.062***	-9.746***
	(0.175)	(0.0459)	(0.180)	(0.252)	(0.849)	(0.284)	(0.479)	(0.150)	(0.851)	(0)	(0.284)	(0.610)	(0.678)	(0)	(0.212)	(0.317)
e40_sup	0.164	0.181***	0.0801	0.0294		0.0844		0.0532	20.27***	21.54	0.0824	0.173	10.24	10.92***	0.0696	0.110
	(0.233)	(0.0460)	(0.0957)	(0.0334)		(0.144)		(0.0796)	(1.141)	(0)	(0.145)	(0.465)	(0)	(0.667)	(0.112)	(0.241)
Income (log)		-0.129***		-0.0734***		-0.0819		-0.0621			-0.0664	0.568			-0.0739	0.170
		(0.0465)		(0.0229)		(0.174)		(0.0988)			(0.174)	(0.348)			(0.141)	(0.186)
$Income^2$(log)		0.00801***		0.00426***		0.00929		0.00617			0.00917	-0.0808**			0.00883	-0.0314*
		(0.00285)		(0.00146)		(0.0116)		(0.00637)			(0.0116)	(0.0382)			(0.00908)	(0.0184)
Physical impediment	0.438***	0.350***	0.193***	0.258***	1.944***	0.974***	1.045***	0.545***	1.914***	2.468***	0.974***	0.978***	1.649***	2.093***	0.760***	0.682***
	(0.0893)	(0.0507)	(0.0425)	(0.0398)	(0.318)	(0.143)	(0.147)	(0.0778)	(0.316)	(0.389)	(0.143)	(0.372)	(0.216)	(0.287)	(0.109)	(0.207)
Constant	-3.216***	-2.537***	-2.698***	-5.366***	-11.32***	-11.38***	-5.964***	-6.457***	-11.45***	-25.26***	-11.25***	-26.68***	-9.209***	-19.46***	-8.936***	-16.28***
	(0.342)	(0.320)	(0.189)	(0.376)	(1.951)	(1.275)	(0.891)	(0.701)	(1.934)	(2.442)	(1.272)	(4.159)	(1.317)	(1.833)	(0.984)	(2.261)
Observations	5,640	6,993	5,640	6,993	5,640	6,993	5,613	6,993	5,640	5,640	6,993	6,993	5,640	5,640	6,993	6,993
lnalpha/R-squared	0.269	0.280	-26.72	-21.12												

Notes: 1) Statistical significance is indicated as follows: *** (1%), ** (5%), * (10%) 2) Omitted categories: stable partner, use of contraception, physical impediment, primary education and employed 3) OLS stands for Ordinary Least Squares. NB refers to the Negative Binomial model. MLOGIT denotes the Multinomial Logit model, and MPROBIT the Multinomial Probit model 4) In MLOGIT and MPROBIT, the base outcome is defined as having zero actual children 5) The Negative Binomial model was chosen over the Poisson regression because the null hypothesis of equality between the mean and the variance is rejected; therefore, the Negative Binomial provides a better fit 6) For the dependent variable in the LOGIT and PROBIT models, a value of 1 is assigned if the individual has children, and 0 otherwise.

Table A.4. Relationship between the number of desired children and the explanatory variables for different methodologies, 1985-2018

	OLS		NB		LOGIT		PROBIT		MLOGIT				MPROBIT			
	1985	2018	1985	2018	1985	2018	1985	2018	1985		2018		1985		2018	
									Between 2 and 3	More than 3	Between 2 and 3	More than 3	Between 2 and 3	More than 3	Between 2 and 3	More than 3
Non-partner	-0.0947	-0.277***	-0.0360	-0.136***	-1.160***	-0.693***	-0.575***	-0.400***	-1.189***	-1.009***	-0.710***	-0.462**	-0.803***	-0.619***	-0.572***	-0.358***
	(0.0996)	(0.0387)	(0.0384)	(0.0197)	(0.282)	(0.0929)	(0.149)	(0.0534)	(0.284)	(0.344)	(0.0937)	(0.189)	(0.203)	(0.232)	(0.0747)	(0.113)
Age	0.0129	0.0264*	0.00891	0.0128	0.198**	0.0575*	0.0930**	0.0332*	0.220***	0.146	0.0579*	0.0657	0.149***	0.0703	0.0464*	0.0391
	(0.0204)	(0.0160)	(0.00805)	(0.00810)	(0.0800)	(0.0324)	(0.0384)	(0.0190)	(0.0798)	(0.110)	(0.0326)	(0.0746)	(0.0514)	(0.0680)	(0.0267)	(0.0446)
Age^2	0.000156	-0.000370*	3.78e-06	-0.000179*	-0.00240**	-0.00100**	-0.00113**	-0.000578**	-0.00282**	-0.00115	-0.00104**	-0.000718	-0.00198***	-0.000401	-0.000837**	-0.000453
	(0.000283)	(0.000195)	(0.000110)	(9.80e-05)	(0.00112)	(0.000405)	(0.000530)	(0.000237)	(0.00112)	(0.00148)	(0.000408)	(0.000903)	(0.000710)	(0.000917)	(0.000332)	(0.000543)
Non.-contraceptives	0.275***	0.0876***	0.113***	0.0417***	0.388**	0.179**	0.192**	0.101**	0.321*	1.055***	0.166**	0.343**	0.173	0.686***	0.126**	0.219**
	(0.0374)	(0.0322)	(0.0156)	(0.0152)	(0.191)	(0.0784)	(0.0904)	(0.0449)	(0.190)	(0.246)	(0.0789)	(0.153)	(0.122)	(0.148)	(0.0627)	(0.0948)
Secondary education	-0.0791**	-0.0742	-0.0309**	-0.0346	-0.243	-0.0952	-0.113	-0.0580	-0.211	-0.460**	-0.0711	-0.311	-0.111	-0.298**	-0.0533	-0.199
	(0.0344)	(0.0474)	(0.0134)	(0.0219)	(0.170)	(0.109)	(0.0780)	(0.0620)	(0.170)	(0.194)	(0.109)	(0.198)	(0.105)	(0.117)	(0.0865)	(0.126)
Higher education	0.130	-0.0531	0.0537	-0.0244	-0.315	-0.141	-0.126	-0.0909	-0.360	0.00369	-0.119	-0.374	-0.208	0.0947	-0.0985	-0.250
	(0.135)	(0.0554)	(0.0526)	(0.0259)	(0.491)	(0.133)	(0.231)	(0.0761)	(0.497)	(0.541)	(0.134)	(0.259)	(0.317)	(0.334)	(0.107)	(0.160)
Unemployment	-0.00630	0.101**	-0.00387	0.0480**	-0.0298	0.0341	-0.0420	0.0241	-0.0204	-0.134	-0.0126	0.574***	-0.0542	-0.178	-0.0180	0.350***
	(0.0747)	(0.0437)	(0.0306)	(0.0205)	(0.358)	(0.109)	(0.175)	(0.0625)	(0.358)	(0.433)	(0.110)	(0.195)	(0.237)	(0.273)	(0.0874)	(0.124)
Inactive	0.0518	0.103**	0.0200	0.0487**	0.0553	0.0509	0.0263	0.0300	0.0305	0.221	0.0197	0.451**	0.00338	0.146	0.00751	0.274**
	(0.0350)	(0.0430)	(0.0135)	(0.0202)	(0.167)	(0.0989)	(0.0763)	(0.0569)	(0.168)	(0.190)	(0.0999)	(0.180)	(0.103)	(0.115)	(0.0796)	(0.114)
e30_sup	-0.246	-0.101	-0.108	-0.0548	-1.110	-0.165	-0.631	-0.0977	-1.073	-1.362	-0.153	-0.643	-0.836	-0.947	-0.126	-0.344
	(0.253)	(0.0878)	(0.113)	(0.0472)	(0.825)	(0.200)	(0.438)	(0.119)	(0.835)	(1.287)	(0.201)	(0.533)	(0.613)	(0.787)	(0.168)	(0.290)
e40_sup	-0.0128	0.104**	-0.0132	0.0486**		0.298**		0.181**			0.275**	0.637**			0.222**	0.433***
	(0.243)	(0.0503)	(0.0860)	(0.0236)		(0.132)		(0.0748)			(0.133)	(0.259)			(0.105)	(0.157)
Income (log)		-0.0134		-0.00589		0.0971		0.0632			0.133	-0.0721			0.113	-0.0668
		(0.0576)		(0.0258)		(0.151)		(0.0933)			(0.166)	(0.179)			(0.139)	(0.135)
$Income^2$(log)		0.000267		9.47e-05		-0.00297		-0.00207			-0.00460	0.000304			-0.00385	0.00214
		(0.00361)		(0.00163)		(0.00983)		(0.00592)			(0.0106)	(0.0141)			(0.00871)	(0.00944)
Physical impediment	-0.156**	0.0329	-0.0571**	0.0157	-0.132	0.141	-0.0569	0.0832	-0.0756	-0.431	0.145	0.0918	-0.0102	-0.293	0.118	0.0709
	(0.0787)	(0.0514)	(0.0279)	(0.0243)	(0.370)	(0.121)	(0.164)	(0.0697)	(0.372)	(0.396)	(0.122)	(0.224)	(0.221)	(0.233)	(0.0975)	(0.141)
Constant	1.869***	1.774***	0.595***	0.577***	-0.884	0.257	-0.176	0.152	-1.286	-3.016	0.0515	-2.307	-0.594	-1.560	0.0598	-1.312
	(0.368)	(0.418)	(0.147)	(0.203)	(1.456)	(0.939)	(0.705)	(0.564)	(1.452)	(2.014)	(0.987)	(1.687)	(0.947)	(1.252)	(0.814)	(1.064)
Observations	5,640	6,993	5,640	6,993	5,640	6,993	5,640	6,993	5,640	5,640	6,993	6,993	5,640	5,640	6,993	6,993
lnalpha/R-squared	0.068	0.025	-35.02	-58.25												

Notes: 1) Statistical significance is indicated as follows: *** (1%), ** (5%), * (10%) 2) Omitted categories: stable partner, use of contraception, physical impediment, primary education and employed 3) OLS stands for Ordinary Least Squares. NB refers to the Negative Binomial model. MLOGIT denotes the Multinomial Logit model, and MPROBIT the Multinomial Probit model 4) In MLOGIT and MPROBIT, the base outcome is defined as having zero actual children 5) The Negative Binomial model was chosen over the Poisson regression because the null hypothesis of equality between the mean and the variance is rejected; therefore, the Negative Binomial provides a better fit 6) For the dependent variable in the LOGIT and PROBIT models, a value of 1 is assigned if the individual has children, and 0 otherwise.

Table A.5. Relationship between the maternity gap and the explanatory variables for different methodologies, 1985-2018

	OLS		LOGIT		PROBIT		LOGIT (+)		PROBIT (+)		MLOGIT				MPROBIT			
	1985	2018	1985	2018	1985	2018	1985	2018	1985	2018	1985		2018		1985		2018	
											Negative gap	Positive gap	Negative gap	Positive gap	Negative gap	Positive gap	Negative gap	Positive gap
Non-partner	0.173	0.221***	0.244	0.325***	0.139	0.202***	0.304	0.313***	0.168	0.202***	0.116	0.305	0.491	0.317***	0.0986	0.229	0.317**	0.274***
	(0.111)	(0.0396)	(0.181)	(0.0762)	(0.109)	(0.0472)	(0.192)	(0.0767)	(0.116)	(0.0472)	(0.287)	(0.192)	(0.303)	(0.0766)	(0.210)	(0.155)	(0.158)	(0.0660)
Age	-0.185***	-0.171***	-0.396***	-0.154***	-0.241***	-0.0919***	-0.462***	-0.174***	-0.278***	-0.0919***	0.305***	-0.467***	0.498**	-0.174***	0.144***	-0.390***	0.226**	-0.144***
	(0.0242)	(0.0158)	(0.0419)	(0.0319)	(0.0250)	(0.0188)	(0.0468)	(0.0325)	(0.0275)	(0.0188)	(0.0751)	(0.0468)	(0.204)	(0.0325)	(0.0500)	(0.0371)	(0.0960)	(0.0258)
Age^2	0.00193***	0.00173***	0.00501***	0.00111***	0.00305***	0.000652***	0.00552***	0.00132***	0.00332***	0.000652***	-0.00309***	0.00559***	-0.00603**	0.00132***	-0.00132**	0.00469***	-0.00286**	0.00108***
	(0.000337)	(0.000188)	(0.000563)	(0.000391)	(0.000338)	(0.000231)	(0.000636)	(0.000398)	(0.000376)	(0.000231)	(0.000962)	(0.000635)	(0.00236)	(0.000398)	(0.000652)	(0.000504)	(0.00112)	(0.000320)
Non.-contraceptives	-0.150***	0.192***	-0.246***	0.419***	-0.155***	0.255***	-0.359***	0.424***	-0.222***	0.255***	0.268	-0.363***	0.345	0.424***	0.164	-0.301***	0.259*	0.361***
	(0.0430)	(0.0308)	(0.0919)	(0.0666)	(0.0569)	(0.0407)	(0.0974)	(0.0676)	(0.0605)	(0.0407)	(0.164)	(0.0969)	(0.251)	(0.0675)	(0.110)	(0.0820)	(0.132)	(0.0576)
Secondary education	0.135***	0.0373	-0.0406	0.256***	-0.0250	0.153***	0.0422	0.290***	0.0252	0.153***	-0.289**	0.0476	-0.109	0.293***	-0.202**	0.0317	-0.0150	0.242***
	(0.0385)	(0.0438)	(0.0730)	(0.0982)	(0.0453)	(0.0590)	(0.0797)	(0.101)	(0.0491)	(0.0590)	(0.116)	(0.0792)	(0.290)	(0.101)	(0.0819)	(0.0659)	(0.160)	(0.0841)
Higher education	0.418***	0.247***	0.125	0.569***	0.0763	0.348***	0.340	0.641***	0.209	0.348***	-0.881	0.316	-1.464***	0.646***	-0.460	0.266	-0.596**	0.545***
	(0.139)	(0.0509)	(0.286)	(0.117)	(0.178)	(0.0706)	(0.297)	(0.119)	(0.184)	(0.0706)	(0.644)	(0.298)	(0.562)	(0.120)	(0.393)	(0.255)	(0.261)	(0.0989)
Unemployment	-0.0383	-0.0185	0.196	0.0576	0.124	0.0317	0.104	0.0291	0.0713	0.0317	0.415	0.118	0.543*	0.0334	0.277	0.107	0.293*	0.0249
	(0.100)	(0.0454)	(0.193)	(0.0976)	(0.117)	(0.0595)	(0.198)	(0.0992)	(0.122)	(0.0595)	(0.310)	(0.199)	(0.322)	(0.0990)	(0.216)	(0.165)	(0.176)	(0.0838)
Inactive	-0.147***	-0.117***	-0.217***	-0.264***	-0.137***	-0.159***	-0.317***	-0.303***	-0.196***	-0.159***	0.0442	-0.327***	0.370	-0.305***	0.0111	-0.266***	0.160	-0.254***
	(0.0407)	(0.0370)	(0.0702)	(0.0861)	(0.0436)	(0.0517)	(0.0775)	(0.0877)	(0.0478)	(0.0517)	(0.105)	(0.0771)	(0.285)	(0.0880)	(0.0766)	(0.0638)	(0.154)	(0.0734)
e30_sup	0.0795	0.127	0.555	-0.00262	0.340	-0.00750	0.364	-0.0372	0.232	-0.00750	1.786	0.375	-17.60***	-0.0422	1.076	0.323		
	(0.293)	(0.0858)	(0.735)	(0.192)	(0.425)	(0.113)	(0.744)	(0.193)	(0.435)	(0.113)	(1.329)	(0.745)	(0.693)	(0.193)	(0.812)	(0.598)		
e40_sup	-0.177	-0.0765*	1.223**	-0.155	0.737**	-0.101	1.029*	-0.187*	0.643*	-0.101	2.072**	1.077*	1.216**	-0.185*	1.396**	0.828*	0.534**	-0.164*
	(0.353)	(0.0437)	(0.576)	(0.105)	(0.337)	(0.0645)	(0.621)	(0.106)	(0.379)	(0.0645)	(0.867)	(0.627)	(0.572)	(0.106)	(0.583)	(0.494)	(0.263)	(0.0901)
Income (log)		0.116*		0.357*		0.216**		0.461**		0.216**			-0.161	0.483**			-0.0908	0.374**
		(0.0612)		(0.183)		(0.101)		(0.220)		(0.101)			(0.261)	(0.230)			(0.174)	(0.163)
$Income^2$(log)		-0.00774**		-0.0235**		-0.0142**		-0.0291**		-0.0142**			-0.000795	-0.0304**			0.000340	-0.0238**
		(0.00363)		(0.0110)		(0.00617)		(0.0131)		(0.00617)			(0.0229)	(0.0136)			(0.0126)	(0.00981)
Physical impediment	-0.594***	-0.317***	-0.585***	-0.567***	-0.352***	-0.346***	-0.843***	-0.620***	-0.503***	-0.346***	0.109	-0.838***	0.541	-0.617***	0.0201	-0.679***	0.187	-0.525***
	(0.0968)	(0.0527)	(0.153)	(0.105)	(0.0936)	(0.0646)	(0.168)	(0.107)	(0.103)	(0.0646)	(0.226)	(0.168)	(0.435)	(0.107)	(0.160)	(0.137)	(0.219)	(0.0917)
Constant	5.085***	4.312***	8.573***	2.846***	5.227***	1.708***	10.23***	2.785**	6.173***	1.708***	-8.479***	10.32***	-12.77***	2.697**	-4.516***	8.606***	-6.203***	2.383***
	(0.435)	(0.430)	(0.793)	(1.023)	(0.472)	(0.580)	(0.881)	(1.147)	(0.516)	(0.580)	(1.460)	(0.883)	(4.442)	(1.178)	(0.956)	(0.699)	(2.138)	(0.868)
Observations	5,640	6,993	5,640	6,993	5,640	6,993	4,771	6,877	4,771	6,993	5,640	5,640	6,993	6,993	5,640	5,640	6,993	6,993
lnalpha/R-squared	0.133	0.190																

Notes: 1) Statistical significance is indicated as follows: *** (1%), ** (5%), * (10%) 2) Omitted categories: stable partner, use of contraception, physical impediment, primary education and employed 3) OLS stands for Ordinary Least Squares. MLOGIT denotes the Multinomial Logit model, and MPROBIT the Multinomial Probit model 4) In MLOGIT and MPROBIT, the base outcome is defined as having zero in the value of the maternity gap 5) For the dependent variable in the LOGIT and PROBIT models, a value of 1 is assigned if the gap is different to 0, and 0 if the maternity gap is equal to zero 6) For the dependent variable in the LOGIT (+) and PROBIT (+) models, a value of 1 is assigned if the maternity gap is positive and higher than 0, and 0 if the maternity gap is equal to zero.