The “Southern European Housing” series of books examines housing with a comparative and interdisciplinary approach. The special focus on Southern Europe is due to the distinctive development paths of this geographical area, as well as to the limited scientific debate and scarcity of international publications on this topic. The overall aim is to promote the studies on housing provision, policies and governance in Southern Europe as compared with the rest of Europe and non-European countries, to monitor their constant changes, and to explore the scope and outcome of these changes.

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HOUSING POLICY AND TENURE TYPES IN THE 21ST CENTURY: A SOUTHERN EUROPEAN PERSPECTIVE

Edited by Elena Bargelli, Thorsten Heitkamp, Héctor Simón-Moreno, Carmen Vázquez Varela
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CHANGES IN THE RELATIONSHIP BETWEEN FIRST CHILDBIRTH AND HOMEOWNERSHIP: NEW EVIDENCE FROM SPAIN, 2000-2008

ALDA BOTELHO AZEVEDO*, JUAN ANTONIO MÓDENES**, JULIÁN LÓPEZ-COLÁS***

Summary
1. Introduction. 2. Housing and Fertility. 2.1. Revisiting the Apparent Paradox between High Homeownership Rates and Low Fertility Levels. 2.2. Homeownership and Fertility in Spain. 3. Assessing the Relationship between Homeownership and First Childbirth. 3.1. Data Source and Sample. 3.2. Methods. 4. Housing Tenure Status and First Childbirth. 5. Conclusion. 6. Appendix.

Abstract
When ageing became a demographic challenge in the 21st century, a consensus emerged that reversing the trend of fertility levels would benefit from fertility-oriented policies. Meanwhile, in southern Europe where the housing market is concentrated on homeownership, the housing sphere has been contributing modestly to this debate. This study analyses the relationship between homeownership and fertility in Spain during the period 2000-2008. Using the microdata of the 2008 Spanish Survey of Household Finances, we estimate a multivariate probit model to measure the effect

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of homeownership on the likelihood of having the first childbirth and to examine whether this relationship has changed over time.

The results provide evidence that living in homeownership in the southern European housing system at the beginning of the 21st century increases the likelihood of having a first child, and in addition, social and economic developments are shaping this relationship. The key message of this study is that direct encouragement of childbearing will not suffice in promoting a change in the southern European fertility trends. The inclusion of housing policies could bring a shift at the upstream of the fertility question.

1. Introduction

In the 1980s the fertility rates in most southern European countries (SEC) were already below the replacement fertility level (2.1 children per woman)\(^1\). Since then, fertility levels reached a minimum in 2013, recovering slightly by the end of the Global Financial Crisis in the period 2014-2016\(^2\). Nevertheless, fertility in southern Europe remains very close to the ‘lowest-low’ benchmark of an average 1.3 children born per woman during her lifetime\(^3\), which contrasts with fertility levels in central Europe (1.5 children per women) and northern Europe (1.7 children per women).

When ageing became a challenge to policy-makers in the 21st century, a consensus emerged that reversing the trend of very low fertility levels would be difficult and that fertility-oriented policies would play an important role in this process\(^4\). In order to encourage fertility, public expenditure currently fo-

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1 The total period fertility rate “measures the average number of children who would be born to a hypothetical cohort of women who survive to the end of their reproductive period and who bear children at each age at the rate observed during a particular period”, S.H. Preston, P. Heuveline, M. Guillot, Demography: measuring and Modelling Population Processes, Wiley-Blackwell, 2000, p. 95.


cuses upon measures such as family allowances\(^5\), maternity and parental leave benefits, and childcare subsidies\(^6\).

Meanwhile, in southern Europe where the housing market is concentrated on homeownership\(^7\), the housing sphere has been almost completely silent on this debate\(^8\). At the micro level, on the one hand it seems plausible that there may be a positive relationship between living in an independent home, particularly as regards owner-occupation in southern Europe, and having a first child. On the other, the cost of housing can compete with the cost of having a child, particularly with the first\(^9\). At the macro level, Italy, Spain, and Greece have simultaneously high homeownership rates and low fertility levels\(^10\), which appears to be a paradox when compared with micro level reasoning.

Against this background, this study aims to analyse the relationship between homeownership and fertility in southern Europe through the Spanish case during the period 2000-2008. The focus upon the Spanish housing system is justified by ongoing changes, namely a decreasing demand for housing due to important demographic alterations (low fertility and household formation levels and decreasing immigration flow), and a higher demand for rental housing, especially among the youngest cohorts\(^11\). Emphasis on the pe-

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\(^5\) In southern Europe family allowances that relate to fertility are mainly non-contributory child benefits and contributory allowances.


\(^7\) According to Eurostat, in 2015 homeownership rates in southern Europe ranged from 73% in Italy to 78% in Spain. Eurostat, Housing statistics [ilc_lvho02], [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lvho02&lang=en], 28 May 2018.


riod 2000-2008 is driven by the relevance of studying the relationship between homeownership and fertility during the housing boom that preceded the first Global Financial Crisis of the 21st century. Bearing this in mind, this study is guided by two linked hypotheses: 1) to live in an owner-occupied dwelling increases the likelihood of the first childbirth occurring in a southern European housing system, and 2) the positive relationship between living in an owner-occupied dwelling and the first childbirth decreased over the first decade of the 21st century. The first hypothesis assumes that when Southern European families decide to have their first child they prefer owner-occupation, while the second hypothesis assumes that this relationship is dynamic over time and sensitive to extrinsic factors.

The chapter is structured as follows. First, based on a review of literature on the topic, we argue that there are reasons why homeownership plays an important role in fertility in the southern European housing system. In addition, we suggest an explanation for the apparent paradox between high homeownership rates and low fertility levels. We then specify the data and methods we use to assess the relationship between homeownership and first childbirth in Spain at the beginning of the 21st century. Next we present the results of the hypothesis testing. Finally, we discuss the main findings of this study and their implications for the design of fertility-oriented policies in southern Europe.

2. Housing and Fertility

Housing needs change according to family characteristics in terms of housing size, type, tenure status, and location12. Studies of the interrelationship between housing and household patterns initially focused upon the link between family and housing changes and, more recently, have added the link between housing

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access and family changes\textsuperscript{13}. Previous studies in northern and central Europe found a relationship between housing changes and fertility. In the Netherlands housing changes frequently occur before the first childbirth\textsuperscript{14}. Kulu and Vikat (2007) found higher fertility rates in Finland after residential moves, which were seen as a household’s adjustment of housing resources (type and size) to family enlargement\textsuperscript{15}. Öst (2012) analyses three different birth cohorts, showing that homeownership and childbearing are often simultaneous events in Sweden\textsuperscript{16}. In the US the minimal set of conditions for motherhood includes homeownership in a detached dwelling with an ample number of rooms\textsuperscript{17}.

At least part of the explanation for this relationship between housing and fertility relies upon the effect of anticipatory behaviour. Important household events such as family formation, childbirth, residential mobility, and housing acquisition are usually strategically planned, making it particularly difficult to unravel the causality between households and housing events\textsuperscript{18}.

In southern Europe Mulder (2006) observes that, at the macro level, the effects of housing and family events might change due to housing market features. The author classifies 18 countries according to four homeownership regimes and gathers Italy, Spain, and Greece in the ‘difficult homeownership regime’, given their combinations of high homeownership levels heavily dependent on savings.

\begin{thebibliography}{99}
\bibitem{13} Recent evidence highlights advantages in analysing simultaneously both directions of the interrelation between housing and fertility to control for unmeasured potential confounding factors. H. Kulu and F. Steele, “Interrelationships between childbearing and housing transitions in the family life course”, \textit{Demography}, L (2013), pp. 1687-1714.
\end{thebibliography}
and family support and constraints in access to credit. These countries also have in common lowest-low fertility levels and a high age of parental home leave.

Whilst this debate is far from resolved, there is a reasonable consensus that, in countries with difficult access to housing, the characteristics of the dwelling determine the reproductive behaviour of the household.

Hence this study is motivated by the proposition that homeownership is an important prerequisite for a first childbirth in the southern European housing system. Several factors justify the importance accorded homeownership when it comes to its relationship to fertility in this system. First, the high prevalence of owner-occupied dwellings is a defining feature of European housing markets, especially in the SEC. Due mainly to family support in housing provision, among households where the head of the household is under the age of 29, rent-free occupation is relatively significant in the very early stages of the couple’s lives. According to the European Quality of Life Survey, 2016 wave, in Spain around 5% of young households live in rent-free dwellings. However, when young households have children very often they live in owner-occupied dwellings, a pattern difficult to follow by young households with a low or medium-low income.

Second, housing policies promoting access to housing for young adults, whether through homeownership or renting and coordinated with other

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20 In 2017 the estimated average age of young people leaving the parental household in southern Europe was above 29 years old, while in the European Union (28 countries) it was 26 years old (Eurostat, Estimated average age of young people leaving the parental household by sex [yth_demo_030], http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do, 28 May 2018).
public policies, might be more effective than explicit fertility policies in increasing fertility levels\textsuperscript{24}. Better access to housing, especially homeownership in the case of the SEC, might mitigate the postponement of life-course events that has been observed in recent decades (leaving the parental home, first partnership, first homeownership, and first childbirth). Third, homeownership is a long-term decision because it takes time to accumulate the wealth or access to mortgage financing needed to purchase a house. Once accomplished, the purchase is associated with long-term housing tenure status due to the costs associated with the transactions\textsuperscript{25}, and mortgages often have long durations\textsuperscript{26}. This is especially valid in profit-oriented housing markets, such as the Spanish. In countries where there is relatively little mortgage regulation and transactions depend overwhelmingly upon the market situation\textsuperscript{27}, residential mobility tends to be low\textsuperscript{28}. Therefore, homeownership is closely related to family and income stability and, consequently, to family formation and fertility\textsuperscript{29}. Fourth, homeownership is associated with better and larger housing\textsuperscript{30}, an important consideration for those who intend to have children.


Residential features other than homeownership also play an important role in fertility events and intentions. Focusing upon Swedish first childbirths between 1975 and 2005, Ström (2010) considers three important residential features – homeownership, type of housing, and dwelling size – finding that the size of the dwelling had the strongest association with the propensity to produce the first child\textsuperscript{31}. In Italy Vignoli et al. (2013) studied the effect of housing security on short-term plans to have a first child and found no significant difference between owners and tenants in short-term fertility intentions (within three years). Ownership, on the other hand, played a significant role in feelings of security about housing conditions, which in turn can play a role in planning the first childbirth\textsuperscript{32}.

2.1. Revisiting the apparent paradox between high homeownership rates and low fertility levels

Mulder (2006) originally addressed the apparent paradox between high homeownership and low fertility levels at the macro level. Her findings on the relationship between family formation and homeownership in Greece, Italy, and Spain suggest that high homeownership rates, low ratios of mortgage loans to gross domestic product, and high proportions of young adults living in the parental home may explain low fertility levels\textsuperscript{33}. In further research, Mulder and Billari identify four homeownership regimes based on homeownership rates and mortgage access. One regime, comprising Greece, Italy, and Spain, was described as: “particularly unfriendly to household formation (including leaving the parental home) and family formation: the ‘difficult homeownership regime’”\textsuperscript{34}. In southern Europe high homeownership levels are the result of small rental markets and long-date homeownership-oriented policies\textsuperscript{35}, meaning that obstacles to homeownership have an impact on family formation, therefore on fertility.

\textsuperscript{31} S. Ström, 2010, pp. 509-526.
\textsuperscript{32} D. Vignoli, F. Rinesi, and E. Mussino, 2013, pp. 60-71.
\textsuperscript{33} C. Mulder, 2006, pp. 281-298.
\textsuperscript{34} C. Mulder and F. Billari, 2010, p. 537.
Figure 1 presents the total fertility rates, the tenure rates suggested by Yu and Myers (2010), and conventional homeownership rates for 15 European countries. The total fertility levels range from an average of 1.3 children per woman in Slovakia, assuming that current age-specific birth rates remain constant throughout her childbearing years, and two in France.

Note: Owner headship rate = Owners/Total population*100. Renter headship rate = Renters/Total population*100. Headship rate = (Owners + Renters)/Total population*100. Homeownership rate = Owners/(Owners + Renters)*100.

**Figure 1.** Total fertility rates and housing tenure rates in selected European countries, 2009. Source: Eurostat indicators (2008) and EU-SILC microdata (2009). Own calculations.

Differences between the ownership headship rates and conventional homeownership rates are perceptible on the x-axis scale of the graphs on the left side.

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In this chapter we use three of the tenure rates suggested by Yu and Myers (2010): the owner headship rate; the renter headship rate, and the headship rate. By referring to the population universe, rather than the household universe, these indicators provide an insight into household formation levels and its implications for different tenure options. Z. Yu and D. Myers, “Misleading Comparisons of Homeownership Rates when the Variable Effect of Household Formation Is Ignored: Explaining Rising Homeownership and the Homeownership Gap between Blacks and Asians in the US,” *Urban Studies*, XLVII (2010), pp. 2615-2640.
of Figure 1. By examining the position of each country in relation to the other, it is possible to identify countries where homeownership has been undervalued due to high household formation rates and dynamic rental markets or overvalued due to: “late and low household formation”\textsuperscript{37}. The latter is the case in the SEC, especially Spain, where a shortage of rental opportunities results in small household stock and consequently a high homeownership rate.

When looking at the headship rates, the paradox of high homeownership rates and low fertility levels fades. In fact, the significant relationship is between low fertility and low headship rates. The countries with the highest fertility levels all have high headship rates (France, Belgium, Finland, and the Netherlands). Within the countries with the lowest fertility levels, two distinct realities intercept. On the one hand are Germany and Austria, countries with high family formation and high renter headship rates, and where low fertility levels suggests a weak relationship between fertility and the housing system. On the other hand, there are the SEC, Slovakia, and Slovenia, countries where homeownership levels are overvalued due to low and late household formation and where renter headship rates are very low. In these countries there seems to be a stronger connection between fertility and housing systems, thus low fertility levels are associated with low levels of household formation and access to homeownership.

For fertility-oriented policies, these results have two main implications. First, if when analysing the apparent paradox from the household formation perspective the policy keynote is to enable access to housing and increase the number of households, alternatives to homeownership such as a more dynamic private rental market and an increase of social housing stock appear to be required. Second, if the relationship between high homeownership and low fertility rates changes when assessed with complementary measures, this is because it is not such an unequivocal relationship. For this reason, it is important to complement the analysis at the macro level with the micro perspective to better understand the relationship between high homeownership rates and low fertility levels.

2.2. Homeownership and fertility in Spain

Despite the contributions of Dalla Zuanna (2001), Baizán, Aassve, and Billari (2003), González and Jurado-Guerrero (2006), and Vignoli et al. (2013), among others, there remains little evidence of the relationship between housing and fertility in southern Europe, especially at the micro level. Therefore, this study takes the Spanish case as an illustration of the southern European housing system to examine the effect of homeownership on having a first child.

Spain shares a set of distinctive features with the other SEC that justifies the Spanish case as being representative of a homogeneous group with regard to housing patterns: widespread homeownership through all social strata; high rates of secondary residences; inefficient rental markets and poor social housing stock, and the importance of the family in housing provision and self-provision of housing. Finally, Spanish homeowners are fairly representative of southern European homeowners. According to Azevedo, López-Colás, and Módones (2016), the predictors that best explain homeownership in Spain are the same as in the SEC as a whole, that is, citizenship, age group, income, dwelling type, and quality.


39 The lack of longitudinal data has discouraged researchers from tackling this topic.


The most recent data show that in Spain in 2015, 78% of the housing stock was owner-occupied and that, among homeowners, the housing cost overburden rate was below 10%. In contrast, among tenants with a rent at market price, 43% lived in households in which the total housing costs represented more than 40% of disposable income. This is the result of consecutive housing policies since the 1950s that have privileged owner-occupation over other housing tenures. If, on the one hand, these policies created significant inequities in terms of housing tenure distribution, on the other they may have contributed to the perception that homeownership is the tenure status best suited to forming a family, a feeling known to be stronger in countries where homeownership is widespread and the rental market is not an effective alternative.

Nevertheless: “homeownership was not a tradition in Spain: renting was. It was a combination of social and economic factors that led to a homeownership culture.” In the expansion of homeownership, several triggers changed Spaniards’ housing patterns. The first and most important factor that led to the spread of homeownership in Spain derived from the Law of Protected Rental Housing, 1954 (Ley de Vivienda de Renta Limitada). At the end of the 1950s, the Spanish government encouraged the sale of dwellings to their tenants at very low prices. In 1960 the Law of Horizontal Property (Ley de

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43 The State Plan for Housing 2018-2021 (Plan Estatal de Vivienda 2018-2021) is designed to encourage renting and urban rehabilitation but continues to include measures to encourage homeownership among young adults (aged under 35) living in municipalities with less than 5,000 inhabitants.
Propiedad Horizontal) regulated the sale of separate dwellings (apartments) in new buildings\(^{49}\). From the 1960s onwards, the almost even distribution between homeownership and renting in the 1950 Census disappeared and owner-occupied households became predominant (Figure 2)\(^{50}\). In 1964 an amendment to the Law of Urban Renting (Ley de Arrendamientos Urbanos) of 1956 that allowed for rent increases in new leases had a limited effect. In 1985, when homeownership was already the final goal of Spaniards’ household careers, the Decree Boyer maintained tax incentives for the purchase of a household’s main residence and introduced new incentives for the purchase of new construction, whether as a primary residence or not, while liberalizing rental prices. As rental prices rose and mortgages became widespread and tax-deductible, homeownership developed into the ‘best’ tenure option. This preference for owner-occupation has become so popular that in 1994, when housing policies favouring renter-occupation were introduced, it was already too late to change the understanding of renter-occupation as a form of marginal housing tenure status\(^{51}\).

The preference for homeownership in Spain remained very clear in 2011. However, the distribution of household tenure status (Figure 2) suggests an evolving trend due to changes in the housing market during the 2000s, of which the real estate boom between 1998 and 2007\(^{52}\) is the most relevant. Unsurprisingly, the Global Financial Crisis that began in 2007-2008 has had a significant impact on the Spanish housing market. The weakening dynamic between housing demand for owner-occupation and mortgage availability compelled young Spaniards towards the ‘Generation Rent’ narrative\(^{53}\).


\(^{50}\) Although we do not distinguish private from social rental in this chapter, it is worth noting that the social rental housing market in Spain has not undergone profound changes over time (M. Pareja-Eastaway, 2010, pp. 101-128), representing less than 2% of the housing market (A. Inurrieta-Beruete, Mercado de vivienda en alquiler en España: más vivienda social y más mercado profesional, Documento de trabajo CXIII, Fundación Alternativas, 2007).


More precisely, as unemployment rose, the capital availability of households decreased. Access to credit was restricted, which in turn had an impact on housing sales and construction\(^{54}\). Due to demographic changes and the construction boom, a new cycle of (very low) housing demand is emerging in Spain. At the same time, the recent housing market regulation with respect to access to mortgages is redirecting young Spaniards towards renting, calling into question whether homeownership is: “the prevailing feature of the Spanish housing system in the future”\(^{55}\).

Concerning the evolution of Spanish fertility levels, in the 1990s Spain, alongside Italy, were pioneers in sustained ‘lowest-low’ fertility levels\(^{56}\), a trend that is now shared by other SEC. Unsurprisingly, Spain also has one of the highest mean age rates of women at birth of first child within the European context (31.9 years in 2015)\(^{57}\). While the two 21\(^{st}\) century fertility transitions

\(^{54}\) J. Rodríguez-López, 2008, pp. 11-24.

\(^{55}\) J.A. Módenes and J. López-Colás, 2014, p. 103.


in European countries\textsuperscript{58} had a delayed start in Spain, the second transition was extremely rapid and fertility rates reached lower levels than in countries in which the transition began earlier\textsuperscript{59}. Whilst the trend declined between 1950 and 1975, fertility was still above the replacement rate, never dropping below 2.7 children per woman\textsuperscript{60}. The steep decline began just after that, the total fertility rate dropping from 2.8 in 1976 to 1.3 in 2015\textsuperscript{61}. Several clusters of macro and micro factors contributed to the progressive decline of fertility in Spain. Freika and Sardon (2004) summarize them in terms of: economic, political and social development, a trend which accelerated at the end of the Franco regime; changes in the transition to adulthood, such as more years of education and changes in the patterns and timing of family formation and parenthood, and the democratization and popularization of contraceptive use\textsuperscript{62}. Over time, the set of prerequisites for having the first child expanded: completing education; job security; partnership stability, and housing. Consequently, the gap between the ideal and effective age at first childbirth also increased\textsuperscript{63}.

Observed between 1994 and 2000, González and Jurado-Guerrero (2006) tested a “minimal set of conditions for motherhood” and found that completing education and being in a stable relationship were two important conditions in France, Germany, Italy, and Spain. In addition, in both Italy and Spain motherhood was linked with economic conditions and was a more frequent factor in male-breadwinner couples or, alternatively, among women with high income.


\textsuperscript{59} M. Delgado, 2003, pp. 21-34.

\textsuperscript{60} T. Frejka and J.P. Sardon, 2004.


\textsuperscript{62} T. Frejka and J.P. Sardon, 2004.

\textsuperscript{63} G. Esping-Andersen (coord.), \textit{El déficit de natalidad a Europa. La singularidad del cas espanyol}, Colección Estudios Sociales, XXXVI, Barcelona, Obra Social “la Caixa”, 213.
and job security preparing to face the economic and time-consuming challenges of motherhood. González and Jurado-Guerrero revealed the relationship between homeownership and first childbirth, finding that the housing status of ‘tenant-subtenant, paying rent’ had a negative effect on the probability of Spanish women aged 18–39 having a first child. This negative effect was higher in Germany and not statistically significant for French or Italian women.64

Existing evidence linking housing, family formation, and fertility in Spain suggests that the sequence of public policies that favoured homeownership are particularly unfriendly to cohabiting couples and young adults, which in turn contributes to the postponement of family formation.65 Housing seems to be strongly linked to fertility in Spain, with the first union and the first childbirth considered: “part of the same process of family formation.”66

3. Assessing the relationship between homeownership and first childbirth

3.1. Data source and sample
This study uses the information of the responsible for the accommodation offered by the cross-sectional microdata from the 2008 Spanish Survey of Household Finances (EFF). Conducted by the Bank of Spain every three years, this survey began in 2002.67 Whilst the main focus of the EFF is to collect data on household finance and consumption, the survey covers a number of domains that enlarge the spectrum of interest, particularly for housing studies.68

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68 At the household level, the EFF collects information on real assets, liabilities and credit, private businesses, investments, intergenerational transfers, gifts, consumption and savings. At
The EFF data has three major advantages for the purposes of this study: it collects retrospective information; demographic data is collected for all household members, regardless of age and, most importantly, it collects information on economically dependent children whether they live in the dwelling or not. This is a unique feature of this data source and its European counterpart, the Household Finance and Consumption Survey. However, for the purposes of this study, the data source also presents limitations. First, the EFF enquires only about dependent children. Second, important predictors of the first childbirth such as labour market status, intention to move house, or refurbishment carried out in the dwelling cannot be used, since they refer to the time of the survey and not when the event of interest occurred. Third, since the data was collected in 2008, it will not be possible either to analyse the full effects of the Global Financial Crisis or to capture the increase in the rate of renter occupation observed in the 2011 Census. Despite these limitations, the EFF provides a range of useful demographic, socioeconomic, and residential variables to test the hypothesis of this study.

Therefore, to test the hypotheses that living in an owner-occupied dwelling increases the likelihood of the first child being born in a southern European housing system (Hypothesis 1), and this positive relationship has been substantially shaped by recent social and economic developments (Hypothesis 2), our sample consists of 444 women aged 18-49 years old in 2008, who experienced at least one housing change after reaching adulthood (18 years old). To capture the ongoing changes in the relationship between homeownership and fertility, we analyse the period 2000-2008 in three sub-periods/sub-samples. Model 1 refers to the period 2000-2002 and the sub-sample comprises 259 women. Model 2 focuses upon the period 2003-2005 and a sub-sample of 283 women. Finally, Model 3 will analyse the period 2006-2008 using a sub-sample of 268 women.

69 Unlike other European countries, there are no longitudinal data to assess the relation between homeownership and first childbirth.
3.2. Methods

Using the EFF microdata, to better understand the patterns of homeowners and tenants in the first-childbirth we initially plot the Kaplan-Meier survival curves by tenure status and compute the mean age of women at the birth of the first child. Then we test the study hypotheses according to the three sub-samples. Since our interest relies upon a binomial response (first childbirth or not), probit regression models were estimated\(^{70}\). In order to measure the effect of each explanatory variable, especially homeownership, in the likelihood of having the first childbirth, and to compare the results between the three models since coefficients should not be directly compared between groups\(^{71}\), the exponentiated average marginal effects (AMEs) of the coefficients are presented. When presenting the exponentiated AMEs, we measure the expected change in the first childbirth as a function of a change from tenant to owner, while holding the remaining predictors constant\(^{72}\). Based on the literature, the analytical model controls for the effect of predictors, that is, the woman’s age and educational attainment, the latter recoded into low, lower secondary, upper secondary, or tertiary.

Finally, it is worth mentioning the limitations of this study. Analysing the effect of homeownership on the first childbirth would benefit from longitudinal, life retrospective, or administrative data that allow for crossing individuals’, households’, and housing careers. However, for the time being this is not possible due to the lack of data with these characteristics. Given the relevance of the topic, we hope that more detailed information will be available in the near future.

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\(^{70}\) For all three models, the absence of endogeneity was tested by fitting a single-equation instrumental-variables regression. Estimation was carried out via a two-step generalized method of moments with a weighting matrix that is optimal when the error term is heteroscedastic and with robust standard errors.


\(^{72}\) The data analysis was performed using Stata 13 software.
4. Housing tenure status and first childbirth

Given the lack of empirical evidence on the relationship between housing and fertility in the SEC, this analysis begins with an overview on the respondents in the sample who had their first child between 2000 and 2008 by housing tenure status (261 women). The mean age at the birth of the first child is lower for tenants (30.6 years old) than for homeowners (32 years old). Nevertheless, the comparison between Kaplan-Meier survival curves in Figure 3 add that, consistent with a lower mean age at first childbirth, tenants are more likely to have their first child before age 28 than homeowners. The pattern alters at higher ages, and homeowners aged 28-49 years old are more likely to have their first child younger than tenants. In addition, the survival curves show that the probability of remaining childless at the age of 49 is higher for tenants than for homeowners.

The distribution of the dependent variable of this study by model is presented in Figure 4. In the three models having no children is more frequent than having had the first child: 73.3% in Model 1; 63.2% in Model 2, and 65.6% in Model 3. The 13.8% decrease in the percentage of women who had no children between Model 1 and Model 2 is worth noting. Between Model 2 and Model 3, the trend is the inverse, of growth, although much more tenuous at 3.8%. Considering that homeownership rates in the three models are quite similar (between 77.5% and 78.7%), it is possible to anticipate that there were changes in the relationship between homeownership and first childbirth over the study period.

The exponentiated AMEs of the three probit regression models of the first births of women aged 18-49 years and living with a partner occurring between 2000 and 2008 by sub-periods are presented in Figure 5. The results confirm the hypotheses of this study: 1) to be a homeowner increases the likelihood of first childbirth in a southern European housing system at the beginning of the 21st century, and 2) this relationship has substantially evolved towards a devalu-
Notes: Differences between tenure statuses statistically significant at $p<0.001$.

**Figure 3.** Kaplan-Meier age-based survival curves at first childbearing by housing tenure status. Source: EFF, 2008. Own calculations.

Note: Weighted sample.

**Figure 4.** Frequencies of the dependent variable by model. Source: EFF, 2008. Own calculations.
Thus, in Model 1 (2000-2002) being an homeowner rather than a tenant increases the chances of having the first child by almost three times (2.992). In Model 2 (2003-2005), the effect is substantially lower at 2.289. Finally, for the most recent years in the sample, Model 3 (2006-2008), the effect of a change from tenant to homeowner had a positive effect on the chances of a women aged 18-49 years old having her first child, standing at 2.476, slightly higher than the AMEs for the period 2003-2005 but still below the AMEs for the period 2000-2002, as expected in the descriptive analysis.

Thus it seems plausible to say that our results broadly align with literature that argues that the more difficult the access to housing, the more the characteristics of the dwelling matter. Furthermore, this study adds to the perception that, in the southern European housing system, fertility behaviour is

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Notes: Multiple-imputation estimates. Results statistically significant at p<0.001. Models controlled by age and educational attainment of the female.

**Figure 5.** Exponentiated average marginal effects (AMEs) of a first childbirth revised from probit regression models, Spain, 2008. Source: EFF, 2008. Own calculations.

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sensitive to housing tenure status and that extrinsic factors play an important role in shaping the positive effect of homeownership for people having their first child.

5. Conclusion
This study provides evidence that, in the southern European housing system at the beginning of the 21st century, to own one’s own home increases the likelihood of having a first child, and that social and economic developments are changing the relationship between homeownership and first childbirth. The results suggest that restrictions on access to housing and the anticipation of this obstacle by young households is weakening this link. Given substantial uncertainty about the future housing preferences of young households, the future of the relationship between housing and fertility is also uncertain.

For this reason, the relationship between housing tenure status and fertility should be monitored in the future. In addition, the causality and endogeneity matters that underlie housing change and childbearing decisions should also be addressed as more appropriate data become available to make the study of the relationship between housing and fertility as tempting for research on southern Europe as it is for northern and central Europe.

The key message we draw from this study is that, to promote a change in the southern European fertility trends direct encouragement of childbearing will not suffice. The inclusion of housing policies in the traditional sphere, which usually focus upon financial support, parental-leave rights, childcare services, and work-family articulation, could bring a change at the upstream of the fertility question.

Priority policy strategies ought to be adopted in two strands, quantitative and qualitative. Quantitatively, two lines of action are needed. First, household formation should be encouraged. It is important to work towards reducing the proportion of young adults postponing leaving the parental home. This is achievable by easing access to housing and reducing both unemployment rates and job insecurity among young adults. Second, measures to develop the housing system are needed. The southern European housing system, strongly based on homeownership, needs to evolve towards a more diverse and dy-
namic housing system in which private rental and social housing are viable alternatives to homeownership. This is achievable through housing reforms that create incentives to public and private investment in the rental and social housing market in territories with a lack of those options (e.g. allowances or loans at low-interest rates, and implementation of a system of quotas applicable to housing construction and rehabilitation).

Regarding the qualitative strand, a change in statutory meanings of security associated with renting is needed. Renting is currently the housing tenure status with the highest growth rate among young adults. For this reason, it is important to improve the quality and security of rental housing tenure so as to dilute the effect of housing tenure status on fertility behaviour.

Once these quantitative and qualitative changes are assured, higher fertility levels in southern Europe may well occur as a result.

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## Appendix

<table>
<thead>
<tr>
<th>Table A1. Frequencies and averages by model, dependent variable and predictors used in the analytical model, Spain, 2008.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td><strong>First childbirth (%)</strong></td>
</tr>
<tr>
<td>Women who had no children during the study period</td>
</tr>
<tr>
<td>Women who gave birth to their first child during the study period</td>
</tr>
<tr>
<td><strong>Age (average)</strong></td>
</tr>
<tr>
<td><strong>Educational attainment female (%)</strong></td>
</tr>
<tr>
<td>Lower than secondary</td>
</tr>
<tr>
<td>Secondary</td>
</tr>
<tr>
<td>Tertiary</td>
</tr>
<tr>
<td><strong>Housing tenure status (%)</strong></td>
</tr>
<tr>
<td>Tenant</td>
</tr>
<tr>
<td>Owner</td>
</tr>
<tr>
<td>Number of respondents</td>
</tr>
</tbody>
</table>

### Table A2. Exponentiated average marginal effects of a first childbirth in Spain by predictors revised from probit regression models, Spain, 2008.

<table>
<thead>
<tr>
<th></th>
<th>2000-2008 (Model 0)</th>
<th>2000-2002 (Model 1)</th>
<th>2003-2005 (Model 2)</th>
<th>2006-2008 (Model 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age of the woman</strong></td>
<td>0.999</td>
<td>1.036*</td>
<td>1.000</td>
<td>0.967*</td>
</tr>
<tr>
<td><strong>Educational attainment female (ref. low)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower secondary</td>
<td>1.268</td>
<td>1.676</td>
<td>0.729</td>
<td>1.746</td>
</tr>
<tr>
<td>Upper secondary</td>
<td>1.376</td>
<td>1.751</td>
<td>1.238</td>
<td>1.494</td>
</tr>
<tr>
<td>Tertiary</td>
<td>1.157</td>
<td>1.275</td>
<td>1.049</td>
<td>1.405</td>
</tr>
<tr>
<td><strong>Housing tenure status (ref. tenant)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owner</td>
<td>2.613***</td>
<td>2.992***</td>
<td>2.289***</td>
<td>2.476***</td>
</tr>
<tr>
<td>Number of respondents</td>
<td>444</td>
<td>259</td>
<td>283</td>
<td>268</td>
</tr>
</tbody>
</table>

Note: Significance level: p<0.05*; p<0.01**; p<0.001***. Source: EFF, 2008. Own calculations.