Labour uncertainty: becoming a father in Spain.
Evidences from the 2018 Spanish National Fertility Survey

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Abstract

The association between women's participation in labour market and fertility has been studied in the last years in Southern Europe. In Spain, for example, women who worked in public sector jobs, became mothers earlier than self-employed and private sector employees (Martín-García, Castro-Martín 2013). The role of men in these dynamics, in contrast, has received less attention from demographers and social science scholars. We use data from the 2018 Spanish National Fertility Survey recently provided by INE (Spanish National Institute of Statistics), focusing our attention on the relationship between men's participation in labour market and transition to first birth. We create an episode-structured data-set in order to estimate event-history models. Our outcomes highlight how labour uncertainty delayed the men's transition to first birth in Spain in the last recent years.

Long abstract

Introduction

Over the last few decades the Spanish labour marked has profoundly changed with a high increase in the number of fixed-term contracts. According to data from OECD, in 2018 Spain leads the European ranks with 26.81% of temporary employment. The effects of unemployment and uncertainty of the labour market on fertility and family formation are known (Kohler & Kohler 2002; Goldstein, Sobotka & Jasilioniene 2009) especially with regard to women. On the contrary, In the Spanish context, women who worked in the public sector, became mothers earlier than self-employed and private sector employees (Martín-García, Castro-Martín 2013). Delgado et al. (2009), analysing with Cox regression data coming from the survey "Encuesta de fecundidad familia y valores" of 2006, also find that a job in the public sector decreases the postponement of the first child. As far as men are concerned, however, it is known that unemployment reduces man's propensity to be in a couple and thus his fertility (Ahn and Mira 2002). A recent paper by Vignoli (2019) shows how in Italy, another Country characterized by high levels of fixed-term contracts, jobs with uncertain conditions are among the causes of men's postponement. Using very recent data, we investigate the relationship between men's labour uncertainty and fertility (transition to first birth) in Spain.

Data and methods

We use data from the 2018 Spanish National Fertility Survey recently provided by INE (Spanish National Institute of Statistics). The retrospective sample includes individual reproductive biographies for 2,619 men (and 14,556 women) aged 18-55. The number of interviews of men is much lower than that of women and this characteristic has led to some limitations in the study, especially in terms of stratification of the sample into categories. However, the added value is considerable, considering the limited number of studies dedicated to male fertility. Another remarkable feature of the recent Spanish fertility survey is the high degree of detail used in the reconstruction of the past reproductive life.

Using the survey, we create an episode-structured data-set in order to estimate event-history models. In particular we split episodes when an event occurred or changed. It is important to highlight that we consider the reproductive history of migrants only after the date of arrival in Spain, moreover we have excluded those individuals (as well as their children) who had a child before arriving in Spain. For this reason, in our analyses we consider 2,563 men and 1,163 children. Cox proportional hazard models were estimated to investigate the effect of employment status on the risk of having the first biological child.

In the first analysis (Model 1) time is measured from age 18 until the date of the first conception or, in the case of right censored cases, until the date of the interview.[1] We consider the conception – and not the birth – because we intend to approximate, as closely as possible, the decision of having the first biological child.[2] In the second analysis (Model 2), in contrast, the clock is starting at the time of the first cohabitation. The man's employment status (as time varying covariate) is the main independent variable in this study. Cox models are also controlled for a list of time varying covariates such as man's partnership status, educational level, but also for fixed characteristics: place of birth, birth cohort and other confounding variables. The resulting model is therefore:

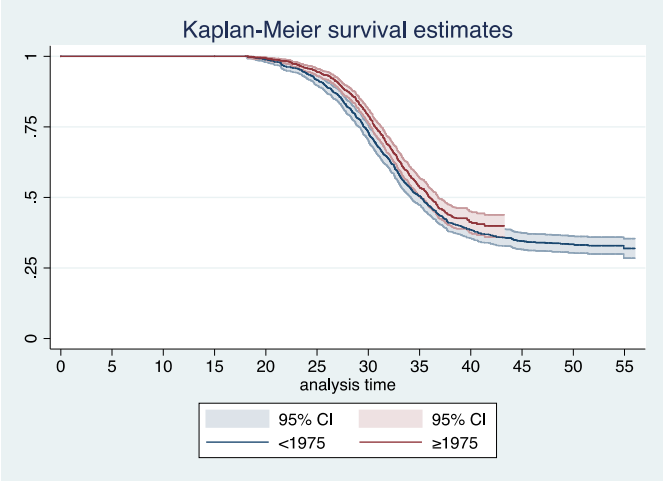
$$h(t, X) = h_0(t)\exp(\beta_i X_i)$$

where h is the hazard at time t and Xi the vector of explanatory variables.
We tested the assumption of proportional hazards of Cox models, using a test based on the scaled Schoenfeldt residuals (*estat phtest* command in STATA).

Preliminary results

At this stage of research, individual biographies need to be reviewed for consistency. In addition, some aspects, related to the incomplete coverage of the working career, will be carefully evaluated.[3] Therefore, we are presenting preliminary results which are conform to our expectations, starting with a univariate approach. In figure 1, the Kaplan Meier curves are plotted distinguishing the cohorts born before 1975 from those born after that year. We can appreciate how the age of the first conception increases in the second cohort as consequence of first birth postponement

Fig. 1 Kaplan-Meier survival estimate. Males, Spain



The survey provides detailed information useful to reconstruct the working life of the respondents. Thanks to this information, in table 1 we present a model based on event history analysis and Cox regression. Model 1 includes the following covariates: birth cohort (<1975 *reference category*, 1975 +), place of birth (Spain *reference category*, not Spain). In order to control men's different phases of life we include variables for educational enrolment (not student *reference category*, student) and

[1] As date of the interview we imposed the month of April of 2018 which corresponds to the date of birth of the last born plus one month.
[2] The survey also contains information on adopted and partner's children.
[3] The man's Laboral history, for example, refers to the current job and to the five previous jobs. The 80% of the respondents declared less than six previous jobs, but, at this stage of research, there is still some uncertainty about the remaining 20%.

educational level (primary *reference category,* lower secondary, upper secondary and University). We also include men's partnership status (not in union *reference category*, in union). Male employment status is stratified as follow: not working *reference category*, self-employed, permanent contract, fixed-term contract, employed in the public sector.[4]

Application of the Cox regression model violates the assumption of hazards proportionality for some variables, as proved by application of the Schoenfeld test on residuals (S.test column in table 1). The estimation of the *extended* Cox regression models (*tvc* option in STATA), could represent one of the possible choices when the assumption of hazards proportionality is not respected and some covariates interact with time. Nevertheless, the variables of interest of this study (above all male employment status) respect this constraint. For those variables that do not respect it, we can consider – at least as a first approximation – the coefficients as an average of their effect over time (Allison 2014).

Tab 1. Cox regression: hazard ratios of first births. Males, Spain

Covariates	Model 1		S.test	Mean time
	Haz. Ratio	P>z	Prob >chi2	
Birth cohort, <1975 ref.	1.000			52.5
1975+	0.933	0.257	0.105	47.5
Not Spanish	1.114	0.386	0.434	8.0
Student	0.724	0.001	0.002	28.0
Education level, primary ref.	1.000			31.3
Lower Secondary	0.809	0.006	0.005	40.5
Upper Secondary	0.827	0.038	0.003	13.7
University	0.838	0.038	0.000	4.7
In union	15.210	0.000	0.243	24.6
Not working ref.	1.000			46.3
self-employed	1.294	0.008	0.155	10.0
permanent contract	1.278	0.001	0.282	10.0
fixed-term contract	1.074	0.495	0.975	12.8
employed in the public sector	1.306	0.027	0.075	4.7
Log likelihood	-7546.7			
Subject	2,563			
Events	1,163			
Time at risk	38473.9			

Model 1 shows the expected direction for the control variables: lower HR for the younger cohort (even if not statistically significant), higher HR for foreigners and a reduction in HR as the level of education increases. Male employment status shows how a working man, regardless of the type of contract, experiments a significantly higher HR in comparison with a man who do not works. In particular, the highest HR is found in the public sector work (31% statistically significant higher HR in comparison with the reference category). The fixed-term jobs category, in contrast, shows only a 7% higher HR and the result is not statistically significant. This outcome highlights how any type of contract accelerate the transition to first conception with the exception of fixed-term contracts.

As anticipated, in Model 2 time is measured from the first cohabitation, assuming this life event as crucial in the reproductive life and a clear watershed with a life linked with parents. This is particularly true in Spain, and more in general in Southern Europe, where "family ties" are stronger (Reher 1998). In this second analysis the number of men under observation is obviously reduced because we are considering only individuals who have had at least one cohabitation. At the same time, we are selecting the oldest men in the sample.

[4] The type of contract is only present for actual employment. We therefore assume that the previous jobs are not in the public sector. This assumption, however, will require further verification.

Tab 2. Cox regression: hazard ratios of first births. Males, Spain

Covariates	Model 2 Haz. Ratio	P>z	S.test Model 3
Not Spanish	1.121	0.302	0.192
Student	0.819	0.050	0.386
Education level, primary ref.	1.000		
Lower Secondary	0.853	0.053	0.063
Upper Secondary	0.852	0.094	0.150
University	0.845	0.058	0.000
In union	8.973	0.000	0.011
Not working ref.	1.000		
self-employed	1.267	0.020	0.894
permanent contract	1.240	0.008	0.343
fixed-term contract	0.976	0.831	0.087
employed in the public sector	1.216	0.125	0.948
Age group 30-34 ref.	1.000		
18-24	0.616	0.000	0.937
25-29	0.780	0.001	0.775
35-39	0.883	0.182	0.038
40-44	0.449	0.000	0.359
45+	0.257	0.000	0.020
Log likelihood		-6882.9	
Subject		1,586	
Events		1,034	
Time at risk		11038.0	

Since in this analysis men enter under observation at different ages, we control this characteristic through the variable age group (30-34 *reference category*). The results in table 2 show, once again, how a work accelerates the transition to first conception, while a fixed-term contract does not show any statistically significant differences in comparison with the reference category.
Waiting for more robust results and further extensive analyses, these first outcomes highlight how labour uncertainty delayed the men's transition to first birth in Spain in the last recent years. A negative contribution caused also by the strong precariousness of the labour market and the high impact of fixed-term contracts on male reproductive decisions.

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