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Abstract

This article combines two apparently distinct strands of contemporary research on fertility: the literature on economic uncertainty and fertility and the literature on subjective well-being and fertility. We advance the hypothesis that the impact of term-limited work contracts and precarious jobs on fertility intentions is channeled by an individual's level of subjective well-being. To test this hypothesis, we adopt a formal framework for causal inference and apply techniques of mediation analysis to data from two rounds of the European Social Survey (ESS 2004 and 2010). Our analysis clearly suggested that the impact of employment uncertainty on fertility intentions depended on the level of subjective well-being: the negative effect was found *only* when subjective well-being was relatively low (i.e. life satisfaction levels equal or below 6). Detailed results show that parents and younger individuals reduced their fertility intentions more than the childless and older individuals when experiencing economic uncertainty and facing low subjective well-being. We also found that in 2010 – while the economic crisis was underway – it was especially the deterioration in men's position in the labor market that inhibited fertility planning.

Keywords: Economic Uncertainty; Subjective Well-being; Fertility Intentions; Europe; Mediation Analysis; Causal Inference; Great Recession

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1. Introduction

New forms of employment, in most cases limited-duration jobs, have been growing everywhere in Europe in the last decades, contributing to generate a lack of clarity about future economic activities. In the New Millennium, a generalized sense of uncertainty, diffused from the employment to the private sphere, has emerged as a powerful force in driving fertility intentions (Vignoli et al., 2013; Modena et al., 2013; Hanappi et al., 2017) and outcomes (Adsera, 2011; Sobotka et al., 2011; Kreyenfeld et al., 2012; Pailhé and Solaz, 2012; Vignoli et al., 2012; Barbieri et al., 2015; de la Rica and Iza, 2005; Caltabiano et al., 2017). Evidence of a clear link between employment uncertainty and fertility (and fertility intentions) is still, however, shaky. We contribute to the literature on how fertility reacts to employment uncertainty by adding a further element to theoretical and empirical discussions on the topic, namely the level of individuals' subjective well-being (SWB).

Previous research has failed to acknowledge that individuals might differ with respect to how they react and take decisions in uncertain economic situations (Bernardi et al., 2009; Kreyenfeld, 2010). Furthermore, for some occupations – depending, in part, on the prestige of the position – short-term contracts, or dispatch work, are the norm and are not perceived as heightening uncertainty. Temporary jobs might be attractive when they refer to top-level “flexible” professions – e.g. independent consultants – that also facilitate a good work-family balance, especially for mothers (Blossfeld, 1997; Hakim, 1997; European Foundation, 2008). When flexible jobs are a voluntary choice – e.g., professional consultants or self-employed people – flexible, contingent and non-standardized conditions can enhance job satisfaction and life quality, particularly for highly-skilled workers (Guest and Clinton, 2006). For others, however, exposure to precarious work conditions may, over time, create rising economic uncertainty among workers, affecting well-being (Kalleberg, 2009). Forms of uncertain employment characterize an increasing number of people – the emerging “precarariat” – who are moving in and out of low-paid “stopgap” jobs, with limited access to welfare benefits, and, all too often, these jobs give little meaning to their lives (Standing, 2011). In this article, we posit that different levels of employment uncertainty (objectively different or perceived as such) may lead to different SWB levels, which may subsequently affect fertility intentions and behavior. In other terms, the impact of insecure jobs on the intention to have a child may be channeled by individuals' SWB levels. The mechanism might be imagined to operate in two successive steps. First, feelings of uncertainty ripple out from an individual's work life to his or her private life, as precarious jobs might affect levels of overall SWB, for instance by shifting job satisfaction and life meaning. Second, in countries where having children is typically the result of a choice, individuals' SWB has

been proved to be positively linked to reproductive behavior (Le Moglie et al., 2015; Mencarini, Vignoli and Zeydanly, 2017).

Hence, this paper aims to test whether the impact of employment uncertainty on fertility intentions might not be a *direct* one, and might, instead, operate *indirectly*, modifying first the SWB level and, only subsequently, fertility intentions. In addition, considering SWB as a key factor channeling the impact of economic uncertainty on fertility (intentions), will help in discerning different types of temporary and precarious jobs, which might also be characterized by very diverse levels of job prestige (Hanappi et al., 2012) and even – within a similar group of workers – a heterogeneous perception of uncertainty. Importantly, the role of SWB may operate differently in different life course stages. We thus pay special attention at critical junctures over an individual’s life course by distinguishing between childless and parents (Neyer et al., 2013) and younger and older adults (Bernardi et al., 2009; Kreyenfeld, 2010).

From the statistical point of view, we have adopted a formal framework for causal inference by applying techniques of mediation analysis to European Social Survey data (ESS 2004 and 2010) on heterosexual couples. We use ESS data because of the richness of the measures of employment uncertainty and the presence of fertility intention questions, as well as for the extensive coverage of European countries, and the methodological rigor, which ensures a high degree of cross-country comparability. The fact that the two surveys were carried out in 2004 and 2010 allows us to compare data collected both before and during the Great Recession. Our empirical knowledge on the effects of employment uncertainty on birth dynamics reflects, generally, the pre-crisis era: hence, the pre- and post-recession comparison represents a definite “plus”.

2. Research background

2.1 Economic uncertainty and fertility

The relationship between economic uncertainty and fertility is not straightforward. It depends, in fact, on different theoretical bases. A classical perspective comes from New Home Economics (NHE – Becker, 1993), which translated the theory of consumer choice over to reproductive choice. According to this framework, women’s employment, together with higher educational levels, raises the *opportunity cost* of childrearing, thus reducing fertility. Another influential theory on low fertility is the Second Demographic Transition (SDT – van de Kaa, 1987; Lesthaeghe, 1995). Here there is the idea that – in post-modern societies – individuals, in particular women, reprioritize their careers and self-actualization over family and childbearing. Neither the NHE nor the SDT explicitly consider the role of economic uncertainty, however. The demand for fertility is conceived as being determined

by permanent (household) income, the opportunity cost of children, individual tastes, and self-realization needs: all factors assumed as being subject to only slow change. In recent years, however, the role of economic uncertainty – that embodies fluctuations in income, wealth, and preferences – cannot be so easily disregarded in fertility decision-making.

In 1999, Ranjan developed a theoretical model, following Dixit and Pindyck (1994) and the financial option literature, in which uncertainty about future income leads people to postpone childbearing to less uncertain times. He theorized that decision makers tend to avoid irreversible and long-term decisions when people do not know what the future holds. Then, the work by Kohler and colleagues (2002) pioneered a new literature on economic uncertainty and low fertility in Europe. They argued that couples in low fertility countries limited their childbearing due to economic uncertainty caused by economic crises or depression. According to these arguments, macro-level economic instability leads to individual-level financial uncertainty, delaying union formation and childbearing in early adulthood in favor of a prolonged residence in the parental home, in the pursuit of higher education and job stability. A deeper focus on the concept of economic uncertainty for fertility research was made within the multi-country project of Blossfeld and colleagues (see, for a summary of the arguments, Mills and Blossfeld, 2013). They argued that contemporary globalized societies are intrinsically permeated by economic uncertainty, as they are characterized by new phenomena such as delocalization, internationalization and the deregulation of the labor market. It would be expected that such conditions affect family formation (de la Rica and Iza, 2005; Mills and Blossfeld, 2013; Gutierrez-Domenech, 2008). They should now be viewed as primary forces behind low fertility in contemporary Europe (Morgan et al., 2011; Kreyenfeld et al., 2012; Goldstein et al., 2013; Schneider, 2015).

2.2 A new actor in the story: the role of SWB

In this paper we argue that there is a missing dimension in the discussion about the links between economic uncertainty and fertility; namely, the role of SWB, which may constitute a strong mediator in the impact of economic uncertainty on fertility. Feelings of uncertainty, resulting from forms of insecure employment, pass over from the work sphere to the private sphere. Individuals' reaction to precarious jobs and subjective perceptions of subsequent uncertainty, entail heterogeneous levels of job satisfaction and life meaning, leading to often decreasing – but uneven – levels of overall SWB. In the following, we review theoretical arguments and empirical evidence sustaining: 1) that economic uncertainties affect individuals' levels of SWB; and 2) that higher levels of SWB are linked to higher fertility at the individual level.

First, employment uncertainty seems to affect individuals' levels of SWB. The expansion of temporary job contracts, dispatch work and self-employment has meant more insecurity and precariousness, especially for young workers and their families. According to the Stiglitz Commission (2009, p. 198), it is argued that "economic insecurity may be defined as uncertainty about the material conditions that may prevail in the future. This insecurity may generate stress and anxiety in the people concerned." In this vein, while some scholars have suggested that flexible forms of employment lead to general benefits for workers (e.g., Natti, 1993; Blossfeld, 1997; Hakim, 1997; Kalleberg et al., 2000; La Valle et al., 2002; Benach and Muntaner, 2007; Guest and Clinton, 2006), most argue that flexible work arrangements imply negative consequences for both occupational prospects and private life, including health status (e.g., Benavides et al., 2000; Ferrie 2001; Ferrie et al., 2005; Benach and Muntaner, 2007; Kalleberg, 2009). This is mainly due to lower continuity, stability, and the poorer work conditions associated with uncertain forms of employment. Fears and anxiety created by economic uncertainty have negative consequences for life quality and, therefore, for individuals' levels of SWB (D'Ambrosio, 2012). Past, present and future all determine economic uncertainty. The anxiety generated by uncertainty about the future, or anticipation of difficulties, is linked to today's resources, with wealthier people being better able to buffer future problems (D'Ambrosio, 2012; Bossert and D'Ambrosio, 2009). Even physical and mental health can be compromised by atypical work arrangements (Pirani, 2017), as has been proved by analyses on a panel of Italian workers (Pirani and Salvini, 2015).

Second, in low fertility societies, where childbearing has become part of a series of choices aimed at self-realization (and, therefore, the well-being) of individuals (Van de Kaa, 1987), subjective well-being seems undeniably to play a role. It does so not only as an outcome following demographic events (see Kohler and Mencarini, 2016 for a review), but also in *driving* childbearing outcomes. Medical studies in psychosomatics find that a low level of SWB, measured in terms of depression and stress, reduces fecundity, and increases the frequency of miscarriages and stillbirths, thereby lowering fertility (Zemishlany and Weizman, 2008). A series of recent demographic studies have, meanwhile, proved how higher subjective well-being means more offspring. Cetre, Clark and Senick (2016) confirm a general positive link between childbearing and SWB in developed countries (as already in Aassve, Goisis and Sironi, 2012; Aassve, Mencarini and Sironi, 2015). Examining the decision-making process of parenthood, they provide evidence of positive selection, whereby happier (or more satisfied) people are more likely to have children. Likewise, using the European Social Survey, Billari (2009) finds that happier people want to have children more. Perelli-Harris (2006) shows that in Russia, SWB is positively linked to wanting and having additional children. Parr (2010) finds that life satisfaction is a determinant of fertility in Australia and that, for both sexes, there is a

strong positive relationship between prior satisfaction with life and fertility two years later. Recently, Le Moglie, Mencarini, and Rapallini (2015) suggest that an increase in SWB might result in an increase in the likelihood of having a second child, at least in Germany. Mencarini, Vignoli and Zeydanly (2017) have shown that higher levels of SWB are associated with a higher probability of having children in Australia, Germany, Great Britain, Russia, Switzerland, and the USA – with only small differences between countries. Happiness favours reproduction in low fertility Western societies and perhaps even universally.

There is an additional, pivotal reason that poses SWB as a central concept in the study of the impact of economic uncertainty on fertility. The movement towards more flexible labor markets was intended to increase employment, reduce unemployment and help women to reconcile paid work and family life (e.g., Benach and Muntaner, 2007; Guest and Clinton, 2006). SWB levels may help disentangle “flexibility” from “insecurity”. The effect of flexibility and insecurity on fertility planning can pull in opposite directions. Flexible jobs might facilitate a good parental balance between paid work and family life: with flexible work hours and higher autonomy in the organization of work hours (e.g., OECD, 2002, p. 129; Cousins and Tang, 2004; Lewis and den Dulk, 2010; Hill et al., 2014). Furthermore, flexible employment in top-level jobs could be seen as being increasingly attractive in light of more complex and less standard family life courses, such as those experienced by young adults in contemporary Europe (European Foundation, 2008). Research from the U.S., European Nordic countries and the UK have shown that flexible work may entail higher wages (Kalleberg et al., 2000), and may represent a way to sample a variety of occupational experiences or a necessary phase while moving towards a more integrated position in the labor market (Booth et al., 2002; Virtanen et al., 2005). Taken together, these situations could lead to high levels of SWB, potentially leading to higher fertility intentions. But “flexibility” may, instead, easily turn into “insecurity”. The negative consequences of insecure jobs for future individuals’ career prospects are well documented: temporary employees, dispatch workers and the self-employed face greater career instability, higher unemployment risks, lower chances of upward mobility and there is a considerable risk of getting trapped in insecure employment (Auer and Danzer, 2015; Barbieri et al., 2015; Raymo and Shibata, 2017). On average, lower remuneration (net of work hours and occupation) accompanies non-permanent and dispatch employment (OECD, 2002). Temporary employment and precarious work might, therefore, imply a general feeling of future economic uncertainty that, in turn, may negatively affect family life and fertility plans.

2.3 Outline of analysis

The paper will address a new research question, derived from the considerations elaborated so far: *does the level of SWB channel the impact of employment uncertainty (i.e. term-limited work contracts and precarious jobs) on fertility intentions?* We also aim to verify whether SWB mediates the impact of fixed-term work contracts and precarious jobs on fertility differently among various group of potential parents, distinguished by personal characteristics such as gender, number of children ever born and also the date of the survey. We look at women's and men's childbearing intentions separately, because employment has different consequences on parenthood by gender, depending, too, on gender equality settings (Raymo and Shibata, 2017; Sanchez and Thomson, 1997; Mencarini and Tanturri, 2004; Misra et al., 2007). Second, we explore parity-progression intentions, i.e. differences by current parenthood status, because the intention to have children is different for childless adults or for those who are already parents (Billari et al., 2009). Third, we inspect different life course stages by juxtaposing younger and older adults (Kreyenfeld et al., 2012). Finally, we distinguish between the data collected in 2004, before the onset of the Great Recession, and those collected in 2010, when the crisis was underway. The global "Great Recession", which started by the financial crisis in the US in 2007, brought about downturns also in the labor markets, and hit almost all European countries, with many experiencing plummeting Gross Domestic Product and rising unemployment from 2008 to 2016. The recession destroyed many jobs, put downward pressure on wages and a huge strain on government budgets, often resulting in spending cuts for social policies and families. Hence, our focus on periods before and during the recession adds important insights into our understanding of the nexus between employment uncertainty and fertility (intentions).

3. Data and method

3.1 Mediation analysis framework

Mediation analysis allows an understanding of *if* and *to what extent* a variable M mediates the effect of a treatment variable A on the outcome variable Y . Hence, the mediator is supposed to uncover the channels through which the exposure variable affects the outcome variable (MacKinnon, 2008). In our analysis, fertility intentions are the outcome variable (Y), while the "treatment" is represented by the condition of employment uncertainty (A), and the level of SWB identifies the mediation variable (M) – see Figure 1. We argue that the impact of employment uncertainty on fertility (intentions) might not translate into a direct effect, but might, instead, operate indirectly, modifying, first, the level of SWB and subsequently fertility. With the aim of formalizing these direct and indirect effects, we conceptualize, for each person, the existence of a counterfactual outcome $Y(a)$, which denotes the

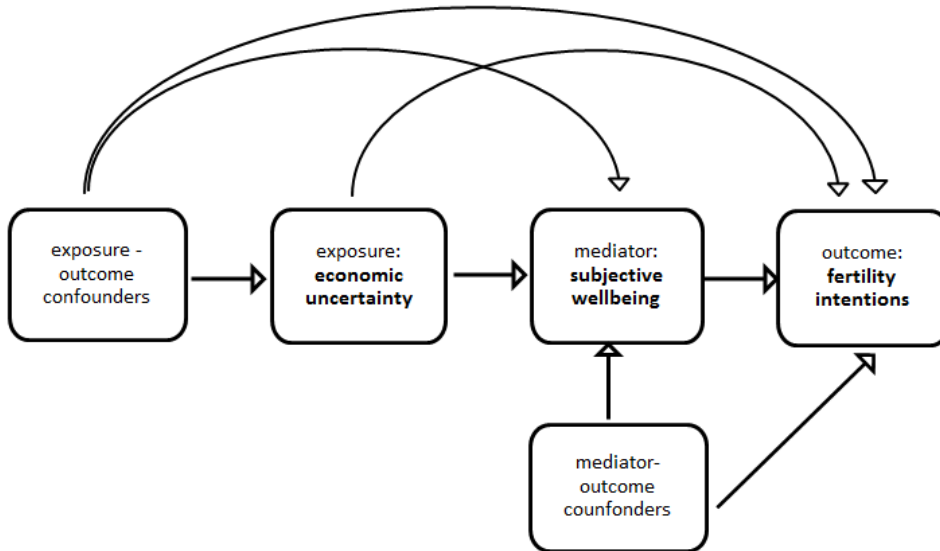
outcome that we would (possibly contrary to fact) have observed for that person had the exposure A been set to the value a through intervention or manipulation (Hernan, 2004; Rubin, 1978). We refer to variables such as $Y(a)$ as “counterfactual outcomes.” If the exposure A is dichotomous (e.g., taking value zero for individuals with permanent employment and one for those with an insecure job), then we think of each observation as having two counterfactual outcomes, $Y(0)$ and $Y(1)$. Thus, we define the average causal effect of the exposure on the outcome as the expected difference $E[Y(1) - Y(0)]$ between two counterfactual outcomes for the same study population.

The previous concepts can be extended in order to define direct and indirect effects. In this paper, we followed Valeri and VanderWeele’s (2013) extensions of Baron and Kenny’s initial parametric approach to mediation analysis (1986), using the *counterfactual approach* in order to account for cases in which the exposure and the mediator interact in their effects on the outcome. This approach fits our application: employment condition (*treatment*) and life satisfaction (*mediator*) are supposed to be correlated, as they could influence one another, and their interaction may affect fertility intentions. Indeed, it would be particularly unrealistic to assume that the exposure and the mediator’s effects have no interaction in their effects on the outcome, as it would mean that economic uncertainty and SWB do not influence each other at all. Building on VanderWeele and Vansteelandt (2009, 2010), the effect of economic uncertainty on fertility intentions is allowed to vary by individuals’ SWB levels.

The exposure-mediator interaction allow us to isolate the *controlled direct effect* (CDE). Let us consider the counterfactual variable $M(a)$, which denotes the value of the mediator if – possibly contrary to fact – the exposure A were set to a . We are interested in understanding whether part of the impact of A on Y is mediated by M . To this end, we need to define, for each individual, $Y(a, m)$ as the outcome that – possibly contrary to fact – we would have observed for that person if the exposure A had been set to the value a , and, likewise, M to the value m , through some intervention or manipulation. For a dichotomous exposure, the controlled direct effect of the exposure on the outcome, controlling for M , can be defined as the expected contrast $E[Y(1, m) - Y(0, m)]$ (Pearl, 2001; Robins and Greenland, 1992). In our case, the *controlled direct effect* (CDE) expresses the average change in fertility intentions that would have occurred if individuals had changed their job status (from permanent to temporary or precarious employment), but their level of subjective well-being were kept the same. Note that if the interaction between exposure (i.e., employment uncertainty) and mediator (i.e., subjective well-being) is not present, the CDE would correspond to a *natural direct effect* NDE, which is defined as the expected contrast $E[Y(1, M(0)) - Y(0, M(0))]$ (Pearl 2001). Without exposure-mediator interaction NDE and CDE are equal and indistinguishable

– in other terms, the controlled direct effect would have the same identical value for any level of the mediator (VanderWeele and Vansteelandt 2009, 2010).

Figure 1 – Example of the effect of employment uncertainty on fertility intentions mediated by the level of SWB, with both exposure-outcome confounders and mediator-outcome confounders



3.2 Data and operationalization

In order to disentangle whether the impact of employment uncertainty on fertility intentions is channeled by the level of SWB, we use data from the ESS, a series of comparative surveys, which have been conducted every two years since 2002. For this study, we selected the waves containing questions on fertility intentions; namely, Round 2 (2004) and Round 5 (2010). Different waves of the ESS also include different countries and, therefore, in order to compare the 2004 wave with the 2010 wave, we only use the twenty-two countries included in both waves: Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, the Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, and the United Kingdom.

For this analysis, we use a dichotomous treatment that accounts for employment uncertainty. It takes value 0 if the respondent has a permanent job, while it takes value 1 if the respondent has a term-limited work contract or dispatch work or if he or she is self-employed. Hence, the meaning of a treatment change from **0** to **1** represents the passage from a permanent working condition to fixed-term or uncertain working conditions. Given the diversity of employment regulation in Europe, the distinction between fixed-term/insecure and permanent workers may assume different meanings in different countries: where the employment protection legislation of standard employment is quite limited, the distinction between temporary and permanent contracts is less relevant (e.g., the UK or

Ireland). At the onset of the analysis, we excluded self-employed workers from the analysis. Then, we included these workers both in the categories of workers holding a permanent or a temporary contract, and the results remained virtually unchanged. At the level of occupational status, self-employed and freelance people have no contractual employment guarantee *per se*. Especially when they are starting a business of their own, they are fully exposed to the harsh reality of changing market forces. Setting up and running a business requires a great deal of investment in terms of time, energy, and money. Accordingly, from previous analyses we learnt that self-employment inhibits fertility especially among men (Tölke and Diewald, 2003; Noseleit, 2014). We finally opted to include the self-employed together with temporary workers to gain statistical precision. Note that self-employed persons represent a minority within our group of non-permanent workers (about 10%).

As for the mediation variable, we utilize, as a proxy of SWB, the level of individuals' life satisfaction. We rely on the question "all things considered, how satisfied are you with your life as a whole nowadays?" The answers were given on a scale from 0 to 10, where 0 means that the respondent is extremely unsatisfied with life, while 10 means that he or she is extremely satisfied. The average life satisfaction is systematically higher for permanent contract workers (around 7.4 for men and women in both years of survey) compared to uncertain workers (around 7.1 for men and 7.3 for women); the difference between groups is significant at 95%.

The outcome – individuals' fertility intentions – is operationalized based on how the respondents' answers the question "do you plan to have a child within the next three years?". The answers were: "Definitely not", "probably not", "probably yes", "definitely yes". By limiting the question about childbearing intentions to a foreseeable period, we overcome some of the problems normally associated with surveying intentions. Answers to questions about an individual's fertility intention in general, such as "how many children do you intend to (ever) have", are likely to capture a social norm. Respondents are more likely to say the number of children individuals *think* that they should have, rather than what they *believe* they will have. Such general questions, therefore, tend to lead to answers that confound intentions and social norms. Questions on intentions that cover a foreseeable time-period, and that are, therefore, "in close temporal proximity to the prospective behavior" (Ajzen and Fishbein, 1973, p. 49), are generally considered to be better predictors of behavior (Philipov, 2009b). Because the mediation framework does not allow ordinal logit models, we dichotomize fertility intention answers into two groups: those who *definitely do* want a child against all others (see Table A1 in the Appendix for descriptive statistics of the two groups of individuals). The choice for this dichotomization is that the model converges better with rare outcomes (Valeri & VanderWeele, 2013). In addition, it has been shown that "definitely yes" answers to the question on short-term fertility intentions represent the best predictors for actual fertility, while

individuals replying “*probably yes*” tend to systematically overestimate fertility outcomes (Régnier-Loilier and Vignoli, 2011; Mencarini et al., 2015).

By definition, the sample is restricted to employed individuals. Altogether, we selected 13,946 partnered individuals aged 20-45. Including non-partnered women and men would have distorted the interpretation of the results, because the answer to the question on childbearing intentions would likely have been influenced by the fact that these women/men had no partner at the time of the interview. Following the recommendation of ESS, design-weights are applied to adjust for the partially different sample strategies.

3.3 Model specification and identification

We estimated the likelihood of being definitely intentioned to have a child through a logistic regression. The causal interpretation of the direct and indirect effects requires two major assumptions, which ensure the identifiability of the model: 1) there must be no unmeasured confounding of the treatment-outcome relationship; 2) there must be no unmeasured confounding of the mediator-outcome relationship. In order to meet these assumptions, models include: respondent’s age (included as a continuous variable¹) and gender, respondent’s educational level (1 = “primary and vocational education”; 2 = “secondary education”; 3 = “tertiary education”), partner’s working condition (1 = “employed”; 2 = “self-employed”; 3 = “unemployed”; 4 = “inactive”), parity (0 = “childless”; 1 = “parents”), and the ESS wave (0 = “2004 wave”; 1 = “2010 wave”), and the country groups that differentiate different labor-market regimes in Europe (1 = “northern countries”, Denmark, Finland, Norway, Sweden; 2 = “Western European countries”, France, Belgium, Ireland, the Netherlands, United Kingdom; 3 = “southern countries”, Greece, Spain, Portugal; 4 = “German-speaking countries”, Austria, Germany, Switzerland; 5 = “Central and Eastern European countries”, Estonia, the Czech Republic, Hungary, Poland, Slovenia, Slovakia, Ukraine). The identification of natural direct and indirect effect requires two more assumptions, namely: (i) no unmeasured confounding of the treatment-mediator relationship; and (ii) that there is no mediator-outcome confounder that is affected by the exposure.

Given the data structure (individuals nested in countries), it would seem obvious to opt for a multi-level extension of the adopted mediation framework. Recent simulations suggest that, with reasonable sizes of individuals within each country, but with only a small number of countries, analysts can reliably estimate individual-level effects. However, estimates of parameters summarizing country effects are likely to be unreliable (Bryan and Jenkins, 2015). We would need, then, a larger number of countries to implement properly a multilevel approach in our study. The

¹ Age did not present a meaningful quadratic shape.

specific sample sizes are too low to run country-specific analyses, and also the analyses separated by country groups offered very limited statistical precision. We, thus, opted for including country groups (in a fixed effect approach) in order to account for different labor-market regimes. Note that the social consequences of uncertain employment are very much micro-level driven, as previous research clearly showed (Scherer, 2009). Nonetheless, we improved the model specification by including a set of country-specific labor-market macro-covariates that were deemed to control for country-specific fixed effects as well as for country-specific labor-market aspects. They are: (1) the extent of unemployment protection measured by unemployment replacement rates (OECD 2007); (2) the unemployment rate in 2004 and 2010 (Eurostat data retrieved on 16/10/2017); and (3) the overall Employment Protection Legislations (EPL scores for all employees, OECD 2004 and 2010).

4. Results

4.1 Overall effects

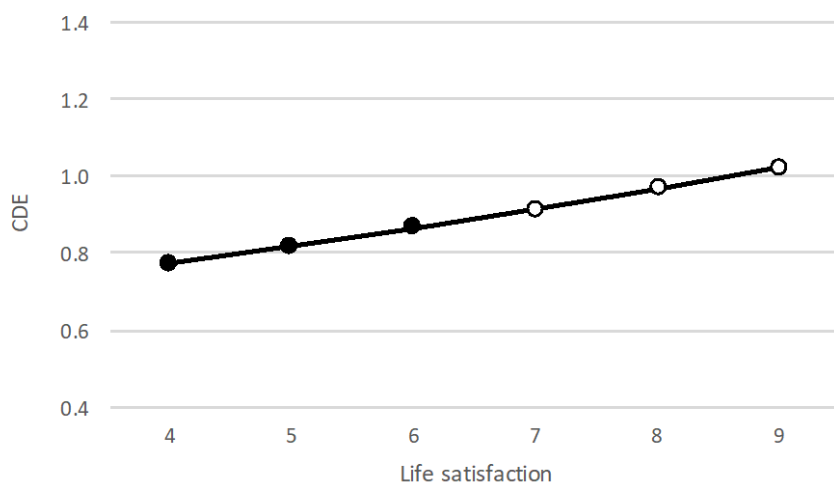
Estimating a logit model predicting the likelihood of being definitely intentioned to have a child net of all confounders included in the equation, we find that uncertain employment is negatively linked with positive fertility intentions (Table A2, Appendix). Put simply, individuals who are temporarily employed or who are insecure workers are less likely to express positive fertility intentions than their permanently employed counterparts (odds ratio = 0.89). Furthermore, after estimating a model with an interaction effect between temporary and insecure employment and SWB, the picture becomes clearer. The interaction term, being positive and significant, suggests that the odds of positive fertility intentions are higher when an individual has higher life satisfaction, even if they have uncertain employment.

Going to the core of our investigation, we move towards the results of the mediation analysis. Because our mediation framework acknowledges the possibility of an exposure–mediator interaction, it should be noted how the controlled direct effect varies according to various *a priori* fixed levels of SWB. Hence, we can explore the average change in positive fertility intentions if an individual were to have changed his/her employment status (from permanent to temporary contract or to an uncertain job) with SWB fixed at different levels (Figure 2). We find that the effect of temporary employment on fertility intentions is clearly moderated by different SWB levels. The lower the level of SWB, the stronger the negative effect of an economically uncertain condition on fertility. For example, among individuals with a life satisfaction level of 5 (see Table A3 in the Appendix for the results in all the subgroups considered), changing their occupational status from permanent to temporary/uncertain decreases the probability of being definitely intentioned to have a child by about 18%. Interestingly,

for higher levels of SWB being temporarily employed or being self-employed does not significantly affect the likelihood of positive fertility intentions.

Concisely, our pooled analysis suggests that the impact of employment uncertainty on fertility intentions is shaped by the level of SWB: the negative effect is found *only* when SWB is relatively low. Beside this general pattern, we now illustrate outcomes stratified by gender, parity and, whether the findings are from before or during the Great Recession.

Figure 2 – The impact of a change in people’s employment uncertainty (from permanent to temporary or self-employment) on the odds ratio of being highly-intentioned to have a child according to various levels of individuals’ life satisfaction (CDE - controlled direct effect). Odds Ratios.



Source: our elaboration on ESS data (rounds 2 and 5). Full dot: significant (10%)

Note: results are controlled for respondent’s age and educational level, gender, parity, partner’s work, welfare and year of survey.

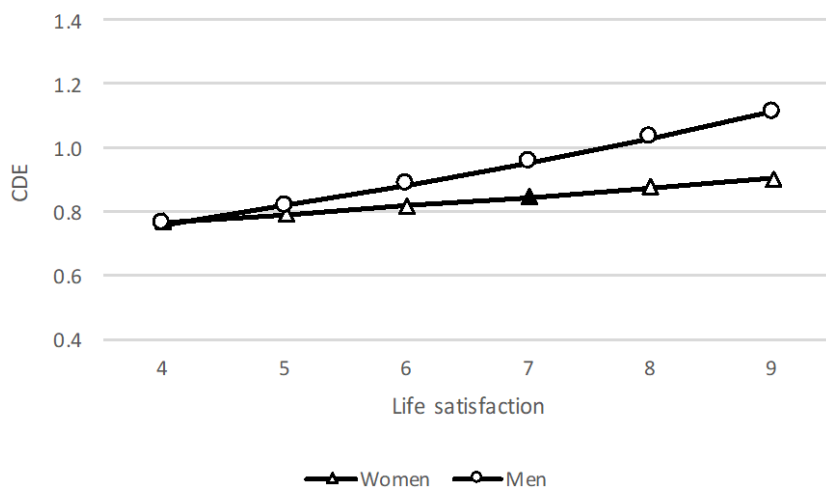
4.2 Gender- and life course stages

Figure 3 displays the controlled direct effects of temporary employment on positive fertility intentions by gender, fixing the level of SWB at different values. Overall, the relationship between an uncertain economic situation – identified by a term-limited work contract or by being self-employed – and fertility intentions seems to be similarly mediated by SWB for both men and women.

The effect of employment uncertainty on fertility intentions, and how it is shaped by levels of SWB, can assume different connotations across the life course. Hence, as a next step, we stratified the analysis by parenthood status. Again, the core of our investigation is the comparison between the *controlled direct effects*, calculated by the different levels of life satisfaction. Looking at Figure 4, we find an almost flat trend for childless individuals, while those who have already at least one child are affected by employment uncertainty in a way that depends strongly on their SWB. Parents facing lower levels of life satisfaction are less likely to be intentioned to have another child if they are

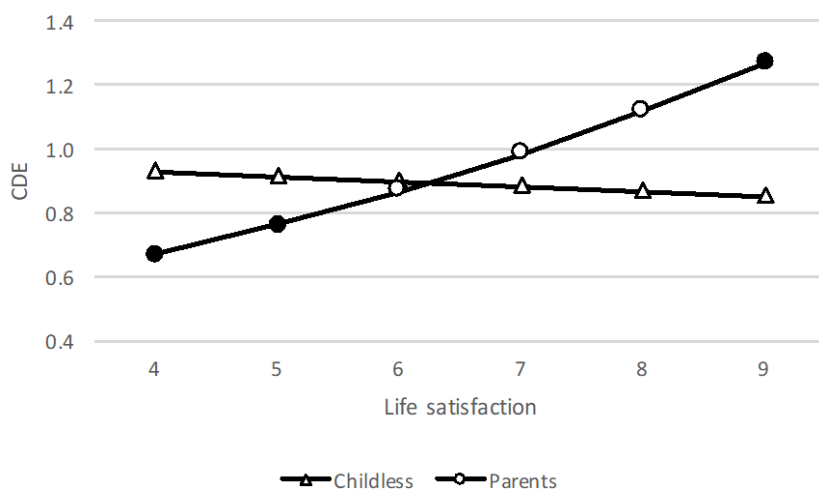
experiencing employment uncertainty. But such effects fade away as the level of SWB increases. For example, the *controlled direct effect* for parents with level 4 of life satisfaction is 0.67, meaning that, in this subgroup, a change in the employment situation, from permanent to temporary or unstable, reduces the odds of being highly-intentioned to have a child by 33%. On the contrary, for levels of life satisfaction higher than 5 the relationship is no longer significant.

Figure 3 – The impact of a change in men and women’s employment uncertainty (from permanent to temporary or self-employment) on the odds ratio of being highly-intentioned to have a child according to various levels of individuals’ life satisfaction (CDE - controlled direct effect). Odds Ratios.



Source: our elaboration on ESS data (rounds 2 and 5). Full dot: significant (10%)
 Note: results are controlled for respondent’s age and educational level, parity, partner’s work, welfare, and year of survey

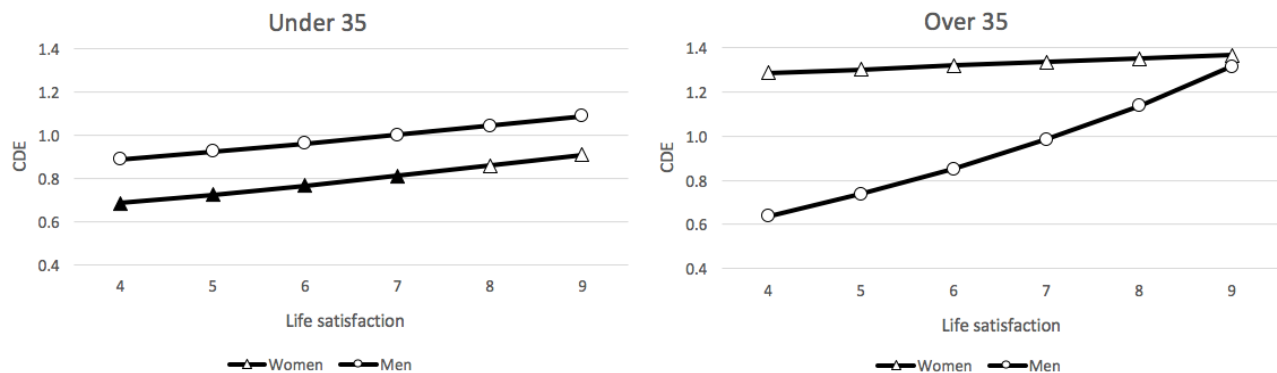
Figure 4 – The impact of a change in people’s employment uncertainty (from permanent to temporary or self-employment) on the odds ratio of being highly-intentioned to have a child, according to various levels of individuals’ life satisfaction (controlled direct effect), separately for parents and childless individuals. Odds Ratios.



Source: our elaboration on ESS data (rounds 2 and 5). Full dot: significant (10%)
 Note: results are controlled for respondent’s age and educational level, gender, partner’s work, welfare, and year of survey.

We continue by exploring the heterogeneity of the effect before and after the age of 35 by gender. Note that we also used other age-specific cut-off points (i.e. age 30) but we selected 35 years of age because it allows a more balanced stratification of the analysis. As shown in Figure 5, there are considerable differences between the two groups. Among younger individuals, employment uncertainty significantly decreases the positive fertility intentions of women with medium and low levels of life satisfaction, while for young men the effects are not significant. For example, when life satisfaction is held at 7, changing from a stable to an unstable job (i.e., temporary or self-employment) leads to a reduction in the odds of being highly intentioned to have a child by 19% among women, while there is almost no effect on men (+0.1%). Looking at individuals over 35, the situation is reversed. Men’s fertility intentions are negatively affected by employment uncertainty when the level of subjective well-being is lower than 7, while the trend for women does not show any particular shape. Nevertheless, none of the results from the older subgroup is significant.

Figure 5 – The impact of a change in men and women’s employment uncertainty (from permanent to temporary or self-employment) on the odds ratio of being highly-intentioned to have a child according to various levels of individuals’ life satisfaction (controlled direct effect) for under 35 and over 35. Odds Ratios.



Source: our elaboration on data

Full dot: significant (10%)

Note: results are controlled for respondent’s age and educational level, partner’s work, welfare and year of survey.

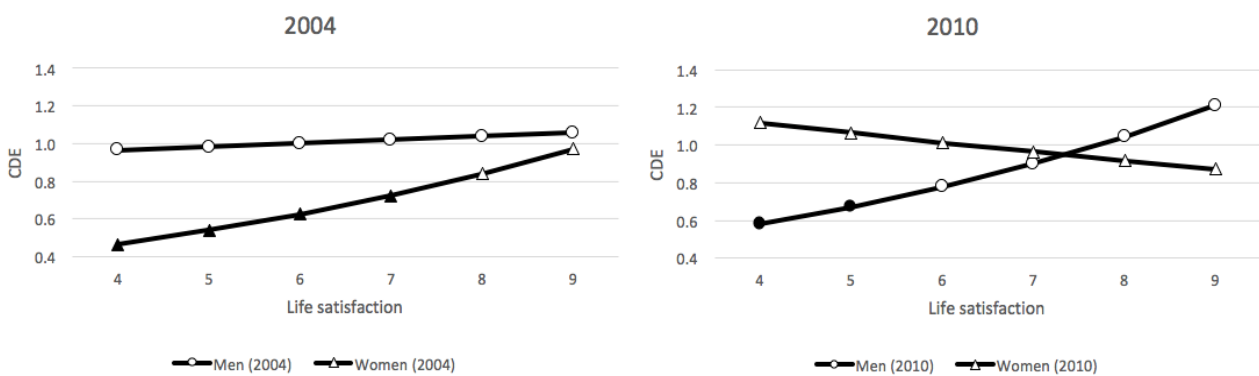
4.3 The effect of the “Great Recession”

Our analytic sample consists of data from two different ESS waves, 2004 and 2010. This fact allows us to compare data collected from before and during the Great Recession. To explore whether men and women react differently to important economic shocks in terms of fertility intentions, we stratified the analysis by gender and wave. It is worth noting that the results of this additional analysis do not seem to be very precise because we are focusing on relatively small cells.

There are considerable gender differences between the two periods (Figure 6). By focusing once again on the controlled direct effect, and fixing the level of SWB at 5 (namely a value that underlines a significant effect for women in 2004), we note that a change from permanent to

temporary and unstable employment would decrease positive fertility intentions by 46%; while, for men, the estimate of the controlled direct effect is insignificant. Keeping the value of SWB still set at 5 for the sake of comparison, the effect for women seems to be no longer significant in 2010, while for men a change from permanent to temporary or unstable employment leads to a decrease in positive fertility intentions of some 33%.

Figure 6 – The impact of a change in men and women’s employment uncertainty (from permanent to temporary or self-employment) on the odds ratio of being highly-intentioned to have a child according to various levels of individuals’ life satisfaction (controlled direct effect) in 2004 and 2010. Odds Ratios.



Source: our elaboration on data

Full dot: significant (10%)

Note: results are controlled for respondent’s age and educational level, partner’s work, and welfare

For men in 2004, then, controlled direct effects illustrate no obvious pattern. Women, meanwhile, have significant effects for relatively low levels of SWB: when life satisfaction is set at 4, 5, 6, or 7 the impact of a change from permanent to temporary or unstable employment negatively affects fertility intentions. In 2010, the picture changes, and men seem to be the most affected by changes in their economic and work situation as “the Great Recession” started to permeate European countries. Especially when the level of SWB is fixed at low levels, i.e. 4 and 5, temporary and self-employment appears to be particularly negatively related to positive fertility intentions. These decrease by respectively 42% and 33%.

5. Concluding discussion

In this article, we advance the hypothesis that the impact of term-limited work contracts and unstable jobs on fertility intentions is channeled by individuals’ levels of subjective well-being, and test this hypothesis by applying mediation analysis techniques to ESS data. Overall, our analysis clearly

suggests that the impact of employment uncertainty on fertility intentions depends on the level of SWB: the negative effect is found *only* when SWB is relatively low (that is life satisfaction equal or below six). A person's social-psychological well-being mediates the effect of employment uncertainty on her/his (short-term) fertility intentions.

These novel results combine two apparently distinct strands of contemporary fertility research: the literature on employment uncertainty and fertility and the literature on subjective well-being and fertility. Previous results on the impact of temporary or freelance employment – used as a key marker of employment uncertainty – offered conflicting findings. Here we suggest that such findings did not properly account for the nature of temporary or unstable employment, which can embody very different work positions. With our analysis, we have been able to highlight the existence of a group of individuals who work with a temporary job, but who manage well the consequent sense of economic uncertainty. As a result, they enjoy relatively high levels of SWB and do not significantly differ in terms of fertility planning from their permanently employed counterparts. They are a minority, though, and are likely to perform temporary, dispatch or freelance jobs with high social prestige, or top-level “flexible” professions. There are, instead, precarious workers who suffer the nature of their job and experience, as a consequence, low levels of SWB. They represent most non-permanent workers, who are likely to face uncertain lives characterized by intermittent, low-paid “stopgap” jobs. These temporary or self-employed workers are less likely to intend to have children in the future. For them, unstable employment, over and above its association with inferior work conditions and intrinsic insecurity, contributes to the creation of problematic situations in family life.

Interesting specific findings emerge when we analyze how SWB mediates the impact of non-permanent employment on fertility in different groups of potential parents. Critical junctures over the life course do play a decisive role. The negative effects of employment uncertainty on fertility intentions are elevated among younger individuals, especially women, who are facing lower levels of SWB in their transition to adulthood. In addition, childbearing intentions are certainly different for childless people compared to those who are already parents. Childless individuals do not necessarily consider permanent employment as a prerequisite for planning children. By contrast, for parents who already have at least one child, employment uncertainty plays essentially a negative role with subsequent fertility intentions, in particular for those with lower SWB levels. For individuals enjoying higher SWB standards, however, the intention to have a further child does not seem to be linked to the uncertainty of their labor-market position. This result is consistent with other studies which have found a particular significant and positive effect of SWB for the transition to the second (and higher parity) child (i.e., Le Moglie, Mencarini and Rapallini, 2015; Luppi, 2016). The SWB of those who have already had a child is influenced by the first childbirth itself, usually in a negative way,

moderated by the context of where parents live (Aassve, Mencarini and Sironi, 2015) and the objective and perceived balance between paid work and family life (Matysiak, Mencarini and Vignoli, 2016). Put simply, SWB levels represent a continuum proxy between the favorable (and therefore happy) flexibility of less stable jobs, and the negative uncertainty of unstable jobs, facilitating/inhibiting the intentions to have further offspring.

We also found gendered patterns comparing the period before and during the recession. In 2004, prior to the recession, women were the most negatively affected by economic uncertainty: women facing low levels of life satisfaction are significantly less likely to intend to have a child. However, in 2010 the performance of men in the labor market proves crucial. In times of economic turbulence, it seems that labor-market uncertainty for men, when coinciding with low levels of SWB, represents a particularly unfavorable environment for family planning. This finding seems to provide support for the writings of Oppenheimer (1988, 2003), who argued that the deterioration of men's position in the labor market and the declining ability of men to serve as the family's single breadwinner are key factors for understanding, among other family events, fertility decline. This has been recently confirmed for Japan by Raymo and Shibata (2017). We deliberately abstain from giving a more articulated and definite interpretation of this finding because of the small-scale sample used in this analysis, but we believe it deserves attention in future research.

Our study, however, does present several caveats. The focus on differences between non-permanent and permanent workers tells only a relatively narrow part of the story. The role of "inactivity/unemployment" cannot be excluded in the overall framing of the links between employment uncertainty and fertility. The adopted causal inference framework allowed only binary treatment, which is standard practice in mediation analysis. In addition, the focus on working persons leads to sample selection issues. For instance, the experience of a strong level of employment uncertainty might encourage an individual to terminate employment and hence to leave the sample. A failure to control for this selection may thus lead to an underestimation of the direct and indirect effects of employment uncertainty on fertility intentions. Incidentally, this implies that the effects we found may be even stronger than indicated in the data presented above. Finally, despite controlling for country clusters and country-specific labor market variables, we are certainly aware that our aggregate results might mask country (clusters) differentials.

In this study we concentrate on the link between employment instability and fertility intentions because of the cross sectional nature of the survey data used. Nonetheless, fertility intentions have been generally regarded as a suitable predictor of behavior at the individual level (Westoff and Ryder, 1977; Rindfuss et al., 1988; Schoen et al., 1999). Hence, conditional on the availability of panel data, our approach is easily applicable to fertility behavior; and might be fruitfully used there.

Appendix

Table A1 - Descriptive statistics for individuals who definitely intend to have a child and those who do not. Means for continuous variables and percentages for categorical variables.

	Definitely intended to have a child	Other
Life satisfaction	7.5	7.12
Age	31.08	36.06
Education		
Lower secondary	12.69%	17.70%
Upper secondary	49.58%	53.79%
Tertiary	37.73%	28.52%
Respondent's employment		
Precarious	27.74%	27.13%
Unlimited-time	72.26%	72.87%
Partner's employment		
Employed	62.07%	58.87%
Self-employed	9.62%	10.15%
Unemployed	4.52%	4.83%
Inactive	23.79%	26.15%
Parity		
Childless	49.74%	19.85%
Parents	50.26%	80.15%
Welfare		
Nordic	19.43%	18.13%
Continental	26.17%	22.68%
Southern	13.89%	14.33%
German-speaking	13.93%	15.84%
CEE	26.58%	29.02%
Gender		
Men	44.24%	43.05%
Women	55.76%	56.95%
ESS wave		
2004	52.09%	53.47%
2010	47.91%	46.53%

Source: our elaboration on data

Table A2 – Logit models predicting the probability of being definitely intentioned to have a child. Coefficients.

Variable	Model 1	Model 2
Intercept	2.11 ***	2.94 ***
Precarious employment	-0.11 ***	-0.09
Life satisfaction		0.06 ***
Precarious * Life satisfaction		0.05 *
Age	-0.02 ***	-0.11 ***
Gender	0.02	-0.22 ***
2010 (ref. 2004)	0.12 ***	0.08
Parents (ref. Childless)	0.03	-0.87 ***
Educational level (ref. Tertiary)		
<i>Primary</i>	-0.45 ***	-0.68 ***
<i>Secondary</i>	-0.21 ***	-0.34 ***
Welfare (ref. CEE countries)		
<i>Nordic countries</i>	0.37 ***	-0.11
<i>Continental countries</i>	-0.06	0.08
<i>Southern countries</i>	0.15 **	0.25 **
<i>German-speaking countries</i>	0.47 ***	-0.18
Partner's working status (ref. Inactive)		
<i>Employed</i>	0.04	0.09
<i>Self-employed</i>	0.17 ***	0.24 **
<i>Unemployed</i>	-0.65 ***	-0.16
Employment protection legislation	-0.74 ***	-0.06
Unemployment rate	0.01	0.01
Unemployment replacement rate	0.03 ***	0.00

Source: our elaboration on data

Table A3 – Results of mediation analyses performed on the subgroups considered in the article (causal effects are estimated holding life satisfaction at level 5). Odds Ratios.

	CDE
Pooled	0.82 *
Women	0.79
Men	0.82
Childless	0.91
Parents	0.76 *
Women under 35	0.72 *
Men under 35	0.92
Women over 35	1.30
Men over 35	0.74
Women 2004	0.54 **
Men 2004	0.98
Women 2010	1.06
Men 2010	0.67 **

Source: our elaboration on ESS data (rounds 2 and 5)

* significant at 10%; ** significant at 5%; *** significant at 1%.

Note: results are controlled for respondent's age and educational level, gender, parity, partner's work, welfare, year of survey.

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