



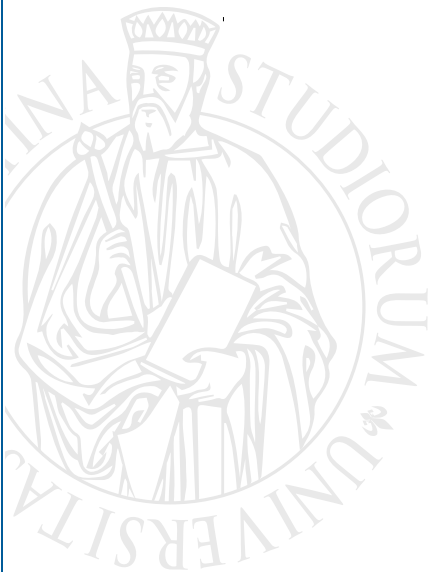
UNIVERSITÀ  
DEGLI STUDI  
FIRENZE

**DISIA**

DIPARTIMENTO DI STATISTICA,  
INFORMATICA, APPLICAZIONI  
"GIUSEPPE PARENTI"

**Economic Uncertainty and  
Fertility Intentions:  
The Causal Effect of  
Narratives of the Future**

Daniele Vignoli, Alessandra Minello,  
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**DISIA WORKING PAPER  
2021/05**

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# Economic Uncertainty and Fertility Intentions: The Causal Effect of Narratives of the Future

Daniele Vignoli <sup>a</sup>, Alessandra Minello <sup>b</sup>, Giacomo Bazzani <sup>c</sup>, Camilla Matera <sup>d</sup>, Chiara Rapallini <sup>e</sup>

<sup>a</sup> *Department of Statistics, Computer Science, Applications "G. Parenti", University of Florence*

<sup>b</sup> *Department of Statistical Sciences, University of Padova*

<sup>c</sup> *Department of Political and Social Sciences, University of Florence*

<sup>d</sup> *Department of Education, Languages, Intercultures, Literatures and Psychology, University of Florence*

<sup>e</sup> *Department of Economics and Management, University of Florence*

## Abstract

In recent years, fertility rates have declined in most middle-high income countries, and explanations have tended to focus on the rise of economic uncertainty. We contribute to this debate by arguing that, under uncertain conditions, *narratives of the future*—i.e. socially conveyed imagined futures—play a potent role in directing individuals' decision-making about childbearing. To assess this role, we conducted—for the first time in fertility intention research—a controlled laboratory experiment in two contrasting settings: Florence (Italy, N = 814) and Oslo (Norway, N = 876). Individuals were randomly exposed to a specific positive or negative future economic scenario (treatments) and compared with individuals who were not exposed to any scenario (control group). Then, each respondent was asked whether he/she intended to have a child in the next three years. Results showed a clear *causal* impact of narratives of the future on fertility intentions. Moreover, when the actual condition at the macro (country context) or micro (labor-market status and characteristics) level was better-off, negative narratives of the future were most crucial; conversely, when the actual conditions were less favorable, positive narratives of the future proved especially important. We conclude that, in the era of uncertainty, individuals respond to more than their actual economic situation and constraints: narratives of the future create a *distance experience* from the daily routine that plays a potent role by inhibiting or facilitating fertility decision-making.

## Keywords

Fertility; Narratives of the future; Uncertainty; Laboratory experimentation.

## Abstract

The authors acknowledge the financial support provided by the European Union's Horizon 2020 research and innovation programme / ERC Grant Agreement No 725961 (EU-FER project "Economic Uncertainty and Fertility in Europe," PI: Daniele Vignoli). The paper is based on a scientific collaboration with Lars Dommermuth (Statistics Norway) and Trude Lappegård (University of Oslo), who supported data collection for Norway through the project number 287634 financed by The Research Council of Norway.

## Introduction

Since the late 1980s, a series of global transformations and structural shifts (i.e., the declining importance of national borders for economic transactions; the intensification of worldwide social relations through the information and technology revolution; the deregulation, privatization, and liberalization of national industries and markets; and the rising exposure to a volatile job market) re-shaped domestic institutions (welfare regimes, employment, education, and translational production systems) as they were known before (Harvey 2007). These globalization trends have expanded the sources of uncertainty (Zinn 2008) and have been accompanied by negative adjustments such as salary cuts, job losses, layoffs, bankruptcies, and business failures (Sennet 1998; Bandelj et al. 2011; Mills and Blossfeld 2013). What is more, the COVID-19 pandemic may have radically changed the European economic scenario of the next years, operating as a multiplier of uncertainty (Gieseck and Rujin 2020). Embedded in this contemporary scenario, fertility decisions are thus taken in a condition of rising uncertainty: the future becomes less predictable and decisions are less based on individuals' forecasting capacity.

Data trends have illustrated the decline or leveling out of total fertility in most European countries during the Great Recession and in its aftermath (Comolli et al. 2021; Matysiak et al. 2021), and economic uncertainty has been proposed as a central explanation for these contemporary fertility developments in Europe (Kreyenfeld et al. 2012; Vignoli et al. 2020a). Family demographers have so far operationalized the forces of economic uncertainty mostly through objective indicators of individuals' labor-market situation, such as temporary contracts or unemployment (Kreyenfeld 2010; Kreyenfeld et al. 2012; Vignoli et al. 2012; Mills and Blossfeld 2013; Kreyenfeld 2015; Raymo and Shibata 2017; Busetta et al. 2019). Nonetheless, although not negligible, their (negative) impact on fertility has been proved not to be of overwhelming importance (Alderotti et al. 2019). A common feature of all these studies is that they see fertility decisions as an outcome of the "*shadow of the past*" (Davidson 2010: 17; Beckert and Bronk 2018), namely the result of what has already happened in a person's life course (Johnson-Hanks et al. 2011). However, a fertility decision is, by its very nature, a forward-looking choice; consequently, the role of the "*shadow of the future*" (Bernardi et al. 2019: 4) cannot be ignored or downplayed. In a review of the effects of recessions on fertility, Sobotka, Skirbekk, and Philipov (2011) emphasized the role of apprehension regarding future negative economic events in shaping fertility. They suggested that individuals' observations of the broader economic climate—including, crucially, media coverage—may increase uncertainty and negatively affect fertility. Hence, individuals may be responding to more than their actual objective economic situation and economic constraints: *narratives of the future*—i.e., socially conveyed imagined futures—may play a larger role in people's decision-making about childbearing (Vignoli et al. 2020a).

Based on socially conveyed narratives, individuals project themselves in an actionable imagined future (Mische 2009; Beckert 2016) and take decisions that may be more or less independent from their actual economic situation and structural constraints such as labor or income.

This paper aims to promote the role of narratives of the future as a crucial lens to understand the linkages between economic uncertainty and fertility intentions. Because we are interested in how narratives of the future affect fertility decision-making, fertility intentions rather than realized fertility are considered as the outcome of interest (Trinitapoli and Yeatman 2011). Fertility intentions follow the desire for childbearing and anticipate concrete behavior by reflecting the combined effect of desired fertility and situational constraints (Thomson and Brandreth 1995; Billari et al. 2009). To test the impact of narratives of the future on fertility intentions, we conducted a controlled laboratory experiment in two “contrasting” settings: Italy and Norway. These two countries are archetype extreme examples of social and family policies in the European arena (Esping-Andersen 1990, 1999; Thévenon 2011; Javornik 2014; United Nations 2015). In addition, they have been characterized by similar fertility declines since 2010 coupled with very different economic trends. The Italian economy has been quite turbulent over the years following the economic recession. In parallel, Italy has been experiencing a constant fertility decline since 2010. The country re-entered the so-called lowest-low fertility regime in 2019, with a fertility rate of 1.29. On the other side, Norway did not experience an economic recession or to the same extent as the rest of Europe: its Gross Domestic Product (GDP) has increased year in year out. However, the fertility rate fell from a peak of almost two children per woman in 2009 to 1.53 in 2019, the lowest in its history.

In two laboratories in Florence and Oslo, both members of 407 heterosexual couples (814 participants) and 438 heterosexual couples (876 participants) respectively took part in an experiment. Two-thirds were randomly exposed to a narrative of the future in the form of a mock newspaper story describing a positive or negative economic scenario. A control group of couples (one-third of the sample) was not exposed to any scenario. After reading the mock newspaper story, each respondent was asked to envisage him/herself in the scenario described and state whether he/she intended to have a child in the next three years. These fertility intentions were compared to those registered in the control group. Results suggest a clear causal impact of economic narratives of the future on fertility intentions in both countries. Results are diverse for the respondents’ different labor-market situations. We find that when the actual economic condition at the macro level (country context) or micro level (labor-market status and characteristics) is better-off, the negative narrative of the future is most crucial. When the actual economic conditions are less favorable, the positive narrative of the future proves especially important. In addition to the counterfactual approach of our experimental strategy, the external validity of the findings is reinforced by controlling the estimates for several markers of

individual traits and structural constraints usually employed in the literature (i.e., risk aversion and labor and income conditions). In other terms, we verify that results hold net of the “shadow of the past”.

The remainder of the paper is organized as follows. Section 2 introduces the background literature and the research questions. Section 3 presents the laboratory experiment and our analytical strategy. Section 4 illustrates our results, which are then discussed in Section 5. Details about the experimental protocol are provided in the Appendix.

## **Background and Research Questions**

### **Narratives of the Future**

Empirical evidence suggests that individual background—e.g., parity, relationship status, level of education (Mencarini et al. 2014; Régnier-Loilier and Vignoli 2011)—and personality traits—e.g., risk aversion (Gatta et al. 2019; Bellani and Arpino 2021)—affect fertility intentions and behavior. In addition to these forces, the effects of economic uncertainty on fertility have been assessed through the lens of cumulative life course experiences (Busetta et al. 2019), actual labor and economic conditions (Kreyenfeld et al. 2012) and their perceptions (e.g., Fahlén and Oláh 2018; Vignoli et al. 2020c). These elements are subsumed under the shadow of the past. Nonetheless, it is often impossible to assign precise probabilities to potential outcomes. The salience of economic uncertainty, indeed, depends not only on the objective characteristics of the economic situation, but also on future expectations that are socially constructed. Economic uncertainty is thus a forward-looking notion, which necessitates a framework that acknowledges its prospective nature.

Uncertainty is a crucial element of long-term decisions like childbearing because it is both an intrinsic characteristic of the future and a contingent condition of our time, which has become more salient in the past decades of globalization (Harvey 2007; Zinn 2008). Uncertainty is thus the precondition for the decision process: when people perceive uncertainty over the future, what was expected as the outcome of the ordinary routine does not seem to apply any longer and a new deliberation is necessary. The influence of uncertainty on fertility is far from deterministic, however. Given a specific set of opportunities and constraints, fertility choices may be affected by socially conveyed *narratives of the future* that may encourage or discourage the intention to have a child (Vignoli et al 2020b). These narratives of the future may produce real effects on individuals’ decision-making processes, irrespective of their level of truthfulness, rationality, or plausibility (Beckert 2016; Beckert and Bronk 2018). On the one side, narrative of the future can be seen as a powerful anti-

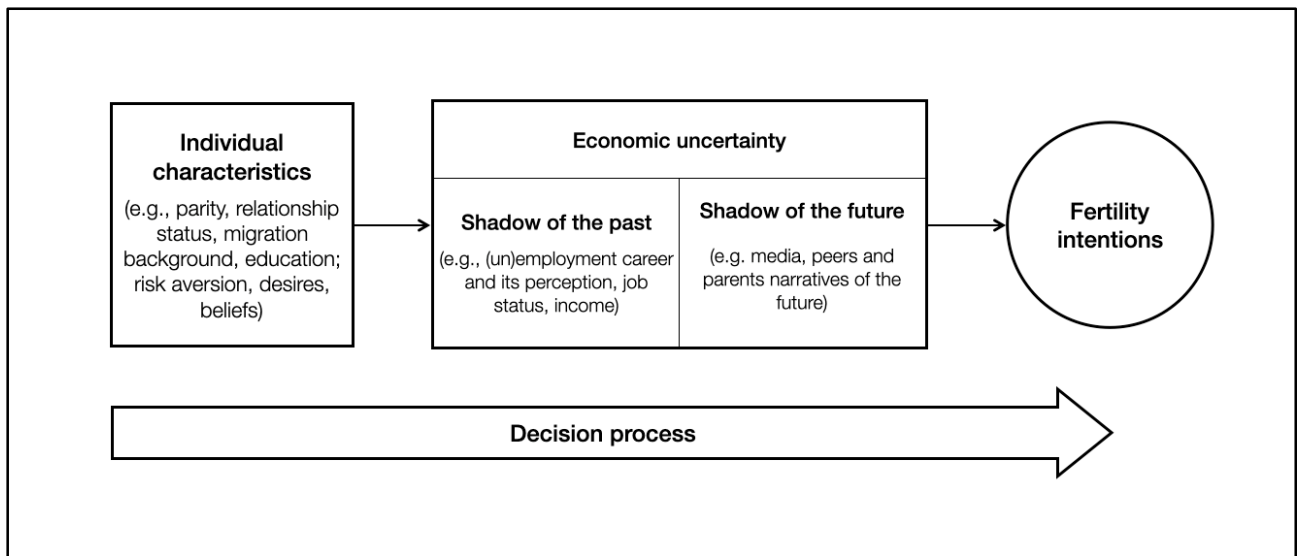
uncertainty device (Boyer 2018), favoring childbearing even in adverse conditions. For instance, according to Friedman and colleagues, “having a child changes life from uncertain to relatively certain” (1994: 383). On the other, narratives can have negative effects on fertility decisions as young adults were found to be more likely to postpone partnership and parenthood commitments when facing growing economic and temporal uncertainty (Mills and Blossfeld 2013).

Narratives of the future are popularized by relevant others (such as parents or peers). In addition, the diffusion of (social) media allows narratives to circulate socially (Johnson et al. 2020), providing unprecedented access to relevant others’ opinions and experiences. Different narratives conveyed by the media may play a central role in orienting the decision process through a *framing* effect of the expected situation (Goffman 1974; Entman 1991, 1993). For the majority of citizens, in fact, the media are the major source of information regarding the economic sphere (Joris et al. 2018), and affect individuals’ opinions and attitudes (Robins and Mayer 2000; Thibodeau and Boroditsky 2011; Joris et al. 2018). Results in communication research suggest that negative news has a stronger impact on perceptions than positive reports. For instance, asymmetric effects have been demonstrated on consumer confidence (Alsem et al. 2008) and inflation (Dräger 2015). This asymmetry can be explained by prospect theory (Kahneman and Tversky 1979), which asserts that loss aversion causes bad news to have a stronger impact than good news.

In the realm of fertility research, Schneider (2015) suggested that press coverage comes closer to measuring the sentiments that shape economic uncertainty and affect fertility behaviors than do objective indicators of unemployment and foreclosure. In a recent article, Comolli and Vignoli (2021) showed that the general public does respond to how the media frames uncertainty, with implications for childbearing. They detected uncertainty by analyzing Google search trends for the term *spread*, which became a buzzword to discuss the Great Recession in Italy and a barometer of the crisis. The authors identified the effect of perceived uncertainty on birth rates in Italy as a drop between 1.5% and 5%. In size, this decline is substantial: it is similar to the association between unemployment rates and total fertility rates – i.e. -3% (Comolli, 2017).

Figure 1 displays a stylized representation of the influence of economic uncertainty in the fertility-decision process. The past and current economic constraints, defined by objective indicators of the individual’s labor-market situation and perception (the shadow of the past), are coupled with the shadow of the future conveyed by the narratives. In what follows, we address a specific research question (RQ#1): *What is the causal effect of economic narratives of the future on individuals’ fertility intentions, net of factors that constitute the “shadow of the past” (e.g., person-specific traits and socio-economic circumstances)?*

**Figure 1** Stylized representation of the influence of economic uncertainty in the fertility decision-making process.



While the role of the narratives of the future is partly “context independent” (i.e., due to personality traits), it is also subject to “contextual influences” (Schwarz and Bless 1992: 218). The macro-social context and micro-level condition of individuals may have a role in framing the new situation (Tversky and Kahneman 1973). Individuals’ judgment relies on available, potentially relevant information that is most accessible rather than by using more correct absolute values. This relevant information belongs primarily to familiar events and situations to which individuals are exposed and are used as “contrast” to evaluate the salience and the expected effect of the novelty (Schwarz and Bless 1992). In the decision process, different narratives of the future may come into play in an imaginative “dialogue” evaluating “competing possible lines of action,” because a decision “is an experiment in finding out what the various lines of possible action are really like” (Dewey 1930 [1922]: 190). These competing possible lines of action are different sources of “distance experience” from ordinary life (Dewey 1930: 58; Mische 2009: 697). Notwithstanding the narratives of the future may have a prominent role in shaping the expected future (Beckert 2016), hence, the degree of the expected novelty conveyed by the narrative might exacerbate or mitigate its impact on the individual fertility decision-making process. Such a moderation effect may be observed both at the macro and micro levels (Tversky and Kahneman 1973).

## Moderators: The Macro-Level Economic Context

The Great Recession, apart from a sharp increase in material deprivation and its subsequent downturn in both economic and labor-market trends, brought a new narrative of the future characterized by rising uncertainty (Schneider and Hastings 2015). A new narrative of economic uncertainty may be perceived differently by individuals according to economic performance of their country and its level of economic resilience. We thus ask whether economic narratives of the future influence men's and women's fertility planning differently depending on the macroeconomic context of the country they live in. After all, the economic situation of the country may contribute to framing the salience of the news and its expected real effects.

There are two possible directions for such moderation effect. First, the positive/negative economic narratives of future might *amplify* the positive/negative role of the resilient macroeconomic context of the country on fertility intentions. Second, positive/negative economic narratives might *counterbalance* the positive/negative role of a more resilient economic context on fertility intentions (Cialdini and Cialdini 2007). Because this is the first paper to explore the effects of narratives of the future in a cross-country comparative perspective, we have no prior evidence on which to base a specific research hypothesis and thus prefer to advance a question.

Our second research question is thus (RQ#2): *Does the macroeconomic context moderate the impact of (positive/negative) narratives of the future on fertility intentions?*

To verify the moderating role of the macroeconomic context, we have focused on two contrasting contexts: Florence (Italy) and Oslo (Norway). The two countries are well-known in the literature to be characterized by different welfare systems. Norway, classified by Esping-Andersen (1990, 1999) as a socialdemocratic welfare regime, has developed comprehensive set of social services for working parents, supporting their full-time integration in the labour market (Thévenon 2011). On the other side, low institutional support for working parents is also characteristic of the familialistic welfare regime (such as Italy) where provision of care from within the extended family has been the norm (Esping-Andersen 1990, 1999; Javornik 2014). While in Norway family policies are specifically designed to improve reconciliation of work and family and childcare choices for parents (Lappegård 2010), Italy lacks a coherent system of policies to support childbearing or to facilitate work-family reconciliation (United Nations 2015).

Apart from these ample welfare differences, the two countries have also shown to be resilient to economic downturns to very different extents. Italy is one of the European countries that suffered the most from the consequences of the Great Recession. The unemployment rate started to rise (from 6.7%) in 2008 and reached its highest level (12.7%) in 2014, never returning to the 2008 threshold (Bank of Italy 2020). Youth unemployment (individuals aged 15–24 years) increased by over 15



percentage points between 2008 and 2014, when it peaked at 42.7%. Meanwhile, the GDP decreased by five percentage points between 2008 and 2010, a first since 1971 (Coletto 2010). Located at the other extreme of Europe, Norway suffered a very mild recession. Whereas the mean change in GDP in the OECD area during the Great Recession (2008–2009) was -4.9, Norway experienced only a reduced drop (-1.2), and its GDP returned to its previous level in just two years (Bell and Blanchflower 2010). The decline in employment was also below the mean at -1.5, compared with an OECD average of -2.4. The youth unemployment rate in Norway dropped at the beginning of the 2000s and reached its lowest level (7.37%) in 2007, rising to a high of 11.06% in 2016 (Plecher 2020).

### Moderators: The Micro-Level Economic Situation

At the micro level, the effects of narratives of the future on fertility intentions may be moderated by economic (labor-market) conditions. Unemployment is a crucial indicator of economic uncertainty and has often been used in demographic research (e.g., Özcan et al. 2010; Schmitt 2012). Negative theoretical effects of unemployment on fertility can be anticipated. On the one hand, unemployment erodes household financial resources by reducing a man's or a woman's income, in turn inhibiting the desire for children (*income effect*). On the other hand, unemployment might facilitate the decision to have a (or another) child by providing additional time for childbearing and childrearing (*substitution effect*). More recently, with the spread of time-limited employment in Europe, growing research has been conducted on the effects of these kinds of jobs on fertility (e.g., Pailhé and Solaz 2012). Time-limited employment often reflects a low level of labor-market integration, which is connected to low employment protection and wage penalties and may translate into a feeling of economic uncertainty for individuals (Scherer 2009; Schmitt 2012).

When facing negative economic and labor-market narratives of the future, jobless individuals and those with jobs with uncertain conditions may have lower fertility intentions than employed individuals with a permanent contract because of the expected *twofold disadvantage* of the shadow of the past and the shadow of the future. The expectations produced by the negative narrative of the future may, indeed, cumulate with personal lack of income and employment instability. Nonetheless, the socio-psychological “uncertainty reduction” framework contends that “having a child changes life from uncertain to relatively certain” (Friedman et al. 1994: 383). From this perspective, individuals—and especially women—may respond to unfavorable employment prospects by choosing to become parents. Hence, individuals who are already facing an economically disadvantaged setting may not be strongly affected in their fertility planning by a negative narrative of the future. Alternatively, those in an unfavorable employment situation may give more prominence

to a positive narrative of the future than others before planning to have a child. A positive narrative of the future may indeed *counterbalance* their unfavorable circumstances, producing a “distance experience” from the “contact experience” of daily routine (Dewey 1930: 58; Mische 2009: 697).

When facing positive economic and labor-market narratives of the future, similar effects may be anticipated. Those facing favorable employment prospects might find confirmation of their security in positive narratives of the future, and their fertility intentions may be enhanced by this *twofold advantage*. On the contrary, the negative narrative of the future may generate a sort of “distance experience” from the daily routine (ibid.) and increase its salience, which would result in a counterbalancing effect with respect to their favorable employment condition.

Our third research question is (RQ#3): *Does individuals’ actual labor-market condition moderate the effect of the narratives of the future on fertility intentions?*

## **A Laboratory Experiment**

### Experiment Description

The causal effect of being exposed to a certain economic narrative of the future on fertility (intentions) is difficult to be assessed with observational data. Laboratory experimentation, on the contrary, allows exploring this causal relationship with a high degree of control over the exposure to an economic narrative of the future, and then evaluate its effects on fertility intention. Laboratory experiments are usually conducted in a physical location selected by the researcher to maintain a high degree of control over treatments and other experimental conditions. Our laboratory experiments were organized at the University of Florence and at the University of Oslo<sup>1</sup> between June 2019 and early February 2020 – i.e. prior to the COVID-19 pandemic. When carried out with participants who vary in theoretically relevant ways, experimental designs allow researchers to both investigate causal relations and assess the heterogeneous impacts of the participants’ characteristics (Jackson and Cox 2013). In our study, the participants consisted of 846 couples (1,692 participants in total) in which women were aged 20–40 years. Balanced participation of jobless, permanently employed, and temporarily employed individuals was ensured. This allowed us to test the heterogeneous impacts of narratives of the future according to the macroeconomic context (Italy vs. Norway) and personal labor-market conditions (joblessness, permanent employment, temporary employment).

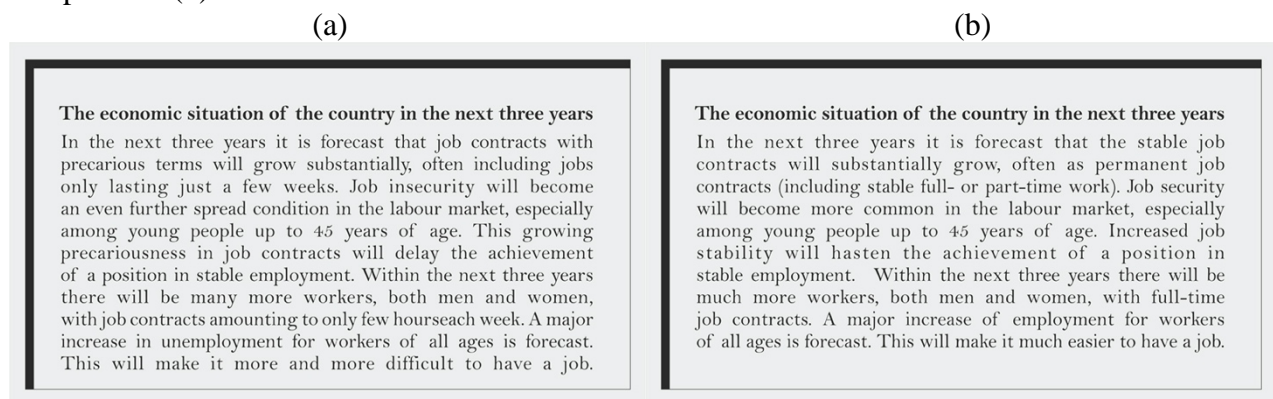
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<sup>1</sup> Although we refer to countries when presenting the results of the study, we acknowledge that the responses are not representative of Italy or Norway.

Participants were recruited through the services of specialized survey agencies, without any anticipation about the content of the experiment (i.e. no reference to family or economic aspects was made). They were asked to answer a large array of demographic, socio-economic, and psychological questions. The experiment was implemented using the O-TREE open-source platform (Chen et al. 2016). The experimental protocol is presented in Appendix 1.

The narratives of the future were embodied by mock newspaper stories that were used as treatments. Each treated participant was asked to read, on a computer, a mock newspaper story describing a potential future economic scenario. The participants were randomly assigned to one of three groups. One group was exposed to a positive scenario (positive treatment), one was exposed to a negative scenario (negative treatment), and one was not exposed to any scenario (control group). The positive and negative scenarios focused on the same three economic aspects projected over the following three years: jobs with uncertain conditions (juxtaposition of permanent and temporary jobs); instability of professional careers (whether young people will secure a stable position or not); and joblessness (chances to find or to lose a job). The negative treatment consisted in the reading of a short story describing a surge in precarious contracts, especially among the young, an increase in short-time jobs, and a rise in unemployment (Figure 1a). The positive treatment described a surge in permanent contracts, especially among the young, an increase in full-time jobs, and a rise in employability (Figure 1b). The random assignment of the treatment allowed us to compare groups that are similar on all characteristics but the treatment of interest and thus to make inferences about causation.

**Figure 2** Mock newspaper story describing the future economic situation of the country, negative (a) and positive (b) scenarios



Next, the participants were asked to imagine themselves in the described future scenario and rate their fertility intention for the next three years. No questions were asked in between the treatment exposure and the surveying of intentions, to assure a pure priming effect. Following recommendations from psychology literature, to grasp individual differences in psychological constructs with

acceptable levels of precision (MacCallum et al. 2002), fertility intentions were assessed on a scale of 0 to 10, where 0 corresponded to “definitely not” and 10 to “definitely yes.” This choice allowed us to assess not only the direction of fertility intention but also its intensity. The intermediate point of the scale was included to capture ambivalent or neutral positions as well (Zammuner, 1998). Questions regarding intentions “in close temporal proximity to the prospective behavior” (Ajzen and Fishbein 1973: 49) are generally considered suitable predictors of actual behavior (Philipov 2009; Spéder and Kapitany 2009; Régnier-Loilier and Vignoli 2011).

## Sample and Statistical Analysis

Overall, 33.9% of Italian and 34% of Norwegian respondents were placed in the control group (no scenario), 33.2% of Italian and 30.9% of Norwegian respondents were exposed to the negative scenario, and 32.4% of Italian and 35.1% of Norwegian respondents were exposed to the positive scenario (see Table 3). The experimental data were analyzed through means comparisons, given that randomization to treatment and control groups automatically controls for potential alternative explanations. In addition, multivariate analyses were performed by regressing fertility intentions via ordinary least square (OLS) regressions to improve the external validity of the results by including key socio-demographic control variables in the model equation. In all models, cluster-robust standard errors at the couple level were employed.

While the scenarios (i.e. the mock newspaper story) correspond to the narratives of the future, we included a set of proxies for economic uncertainty related to the shadow of the past in our analysis: employment status and characteristics (1 = employed with a permanent contract; 2 = employed with a temporary contract; 3 = jobless); the level of equalized household income (in €); and past experiences of joblessness (share of time spent jobless since the end of education). These objective economic conditions were further coupled with the perception of career instability (1 = always uncertain; 2 = predominantly uncertain; 3 = predominantly certain; 4 = always certain).<sup>2</sup>

We also included a set of variables to control for the individual’s background: level of education, distinguishing between low (1 = elementary, junior high school, and short vocational courses), medium (2 = high school), and high education (3 = tertiary or higher); parity, dividing those without children (= 0) from parents (= 1); relationship status, distinguishing between individuals in a living apart together (LAT) relationship (= 1), married couples (= 2), and cohabiting couples (= 3); age, as a continuous variable; and migration background (0 = “natives”; 1 = “with a migration

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<sup>2</sup> Preliminary analyses show that the answers to this question are not affected by the treatment.

background”). We also took into account the level of education of the respondents’ parents, measured using the dominance approach (i.e. the highest level of education between the mother and the father) and following the categorization described above. The respondents were also asked to disclose whether they were sterile or not. Couples with at least one sterile member were included in the analysis (33 couples), with a flag variable. We verified the model excluding these couples and observed that all effects remained virtually unchanged.

Finally, we accounted for personality traits by incorporating a self-assessed measure of risk aversion to control how individuals feel, tolerate, and react to uncertainty. Specifically, the experiment included the following question, taken from the German Socio-Economic Panel survey: “would you describe yourself as someone who tries to avoid risk (risk averse) or rather as someone who is available to take a chance (risk taker)?” Respondents were asked to rate their willingness to take risks on an eleven-point scale, with 0 indicating complete unwillingness to take risks and 10 signifying complete willingness to take risks.

The analysis consists of two steps. First, we evaluated the effect of the treatment exposure on fertility intentions (#RQ1). Second, we assessed whether the country context (RQ#2) and the employment status (#RQ3) moderate the effects of the treatment exposure. Clearly, other variables – that we included in the model equation – could be theorized as moderators (i.e., gender, age, parity, or level of education). In preliminary analyses, their moderation effects did not emerge as significant, however. Note that the experimental protocol imposed a balanced participation of individuals by different employment condition to be able to test such a moderation effect, and did not impose quotas for parity or education.

The overall distribution of our analytical sample is reported in Appendix 2, Table A1.

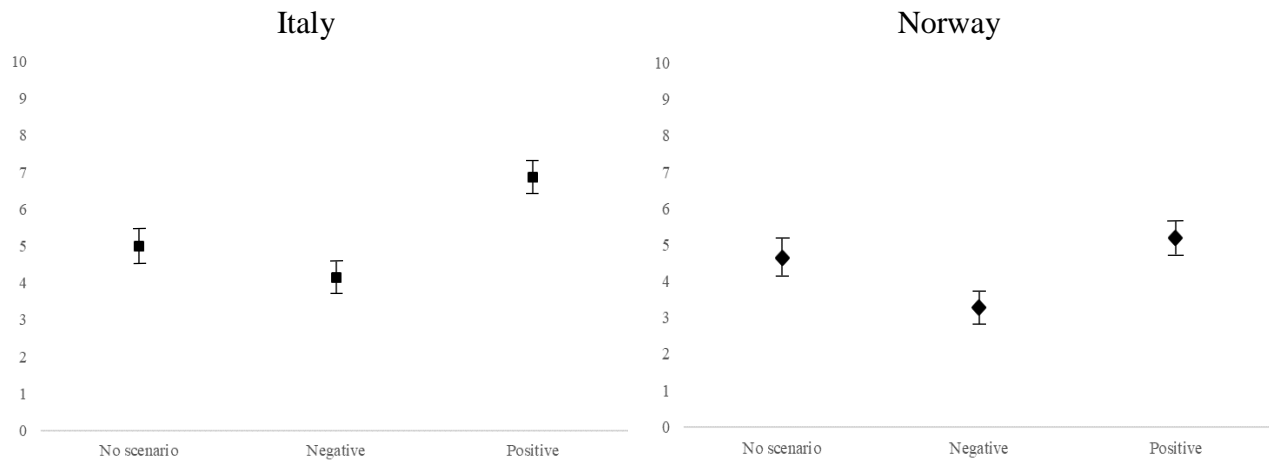
## **Results**

Fertility intentions differed between respondents exposed to future economic scenarios (treated) and those not exposed to any scenario (control group). We found a similar pattern for Italy and Norway, with some differences in the magnitude of the effect. The mean answer for the control group was 4.9 in Italy and 4.5 in Norway. The mean answer for respondents who read the negative scenario was lower: 4.2 in Italy and 3.3 in Norway. For those exposed to the positive scenario, the mean answer was higher: 6.9 in Italy and 5.2 in Norway. These first findings evidence a stronger effect of the positive scenario in Italy and a stronger effect of the negative scenario in Norway. On the whole, we found a self-evident impact of the narrative of the future on fertility planning.

The experiment included a manipulation check to verify the quality of our treatment. We asked the respondents to share what they thought about the description of the economic situation of the country that they read. Among those exposed to the negative scenario, 56.3% of the Italians and 64.2% of the Norwegians declared that it was a very negative economic scenario, 30% and 26.9% respectively judged that it was a mildly negative economic scenario, and 12.6% and 6.3% considered that it was neither a negative nor a positive economic scenario. Among those exposed to the positive scenario, 49.5% of the Italians and 56.5% of the Norwegians deemed it a very positive economic scenario, 44.4% and 31.2% respectively assessed it as a mildly positive economic scenario, and 4.1% and 8.9% described it as neither a negative nor a positive economic scenario. Very few respondents did not describe the scenario as expected. A one-way analysis of variance (ANOVA) between subjects was conducted, and a significant effect of the manipulation check on fertility intentions was found both in Italy and Norway [Italy:  $F = 13.95$ ,  $p < 0.001$ ] [Norway:  $F = 5.89$ ,  $p < 0.001$ ].

The great advantage of an experiment of this kind is that randomization to treatment and control groups automatically controls for potential alternative explanations. However, we also performed multivariate analyses with an OLS regression to improve the external validity of the results. The model equation includes several key socio-demographic determinants of fertility intentions. Figure 3 shows that the predicted probability of the intention to have a child differs between the treated and the control group (no scenario), and between a positive and a negative scenario. The highest fertility intentions were found among participants exposed to the positive scenario (6.87 for Italy and 5.19 for Norway, standardized models), while fertility intentions were lowest among respondents who had been exposed to a negative scenario (4.15 for Italy and 3.26 for Norway, standardized models). We compared the unstandardized and standardized effects of the scenarios. Considering that our main independent variable was randomized, the inclusion of all other variables left the coefficients associated with the different scenarios almost unchanged.

**Figure 3** Predicted level of fertility intentions by treatment, with a 95% confidence band: unstandardized and standardized, Italy and Norway



*Notes: Predictions are from a regression model with robust standard errors at the couple level. Unstandardized models include only the treatment. Models include, in addition to the treatment, all control variables listed in Table A2 (Appendix 2).*

Regarding RQ#1, we found a clear impact of the narrative of the future in predicting fertility intentions. These effects hold net of the markers of economic uncertainty related to the shadow of the past. Table 1 reports the results of the model including the months of joblessness since the end of education, the current work position, the level of the couple’s income, and the perception of one’s employment instability. Interestingly, we note that the fertility intentions were not diversified by employment situations. Additionally, a higher couple’s income was associated with higher fertility intentions in both countries. The perception of job instability had a negative effect only for those with a predominantly uncertain working life in Norway.

The interpretation of the effects of the variables grasping the effects of individuals’ background and personality traits (risk aversion) is beyond the scope of this paper, as they have been included solely to improve the external validity of results (complete models are in Appendix, Table A2). Nevertheless, the effects of personal characteristics (e.g., age, parity, relationship status) are all in line with what was found in previous literature for Italy (e.g., Rinesi et al. 2011) and Norway (e.g., Dommermuth et al. 2011), providing us with an indirect validation of our model. Individuals’ levels of risk aversion—a crucial trait in the study of decisions under uncertainty—did not affect fertility intentions in Norway; in Italy, conversely, higher levels of willingness to take risk corresponded to higher levels of fertility intentions.

To answer RQ#2, we examined whether pre-treatment conditions – namely, the different country context – moderated the impact of economic uncertainty on fertility intentions (Table 1). Despite both positive and negative scenarios have a significant effect in both countries, what seems to emerge is an important role played by the positive narrative of the future for Italy and by the

negative narrative for Norway. In Italy, where the economic context is quite turbulent, the positive economic narrative seemed the most relevant in affecting fertility intentions. In Norway, where the economic and financial context has been relatively stable over the last few years, the negative narrative of the future appeared particularly important.

To answer RQ#3, we examined the role of narratives of the future in relation to diverse positions on the labor market. Figure 4 illustrates a clear pattern: higher fertility intentions for those exposed to the positive scenario, and lower fertility intentions for those exposed to the negative scenario. However, especially in Italy, but also in Norway, the effect of the positive scenario was stronger for those experiencing employment instability—namely, respondents holding a temporary position. The pattern appears similar among the jobless, but for this group the statistical precision is hampered by the low number of cases. The effect of the negative scenario consistently produced statistically precise estimates only for those holding a permanent position, most notably for the Oslo case. Participants who had experienced or were experiencing more instability were especially affected by a positive narrative of the future, and vice versa.

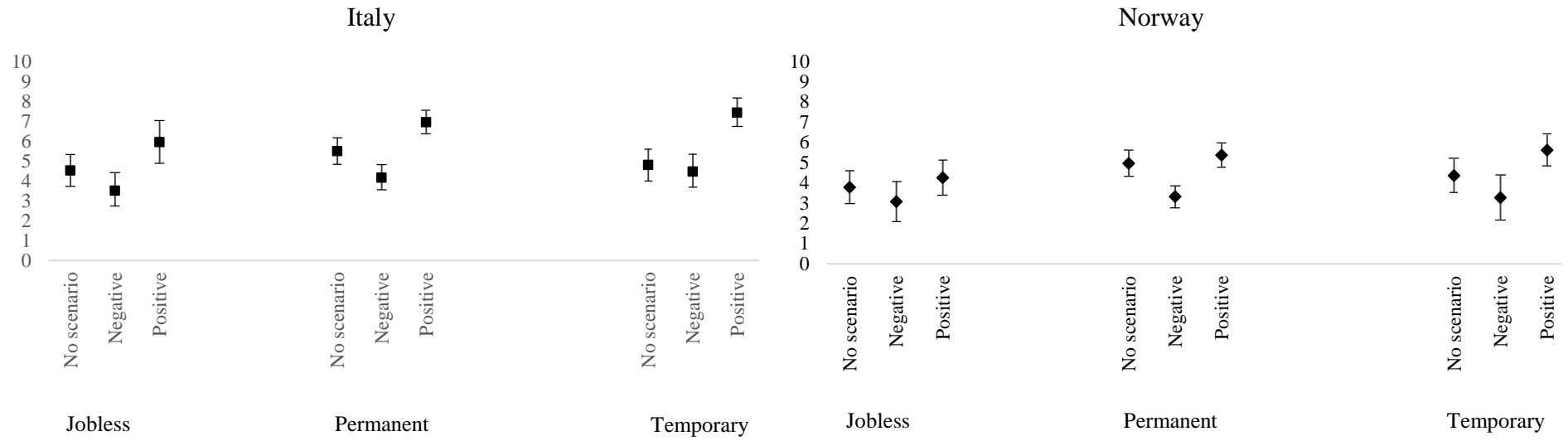
**Table 1** Effects of randomized narratives of the future on fertility intentions and of variables forming the “shadow of the past” of economic uncertainty

	Italy			Norway		
	Coefficient	Robust SE	P	Coefficient	Robust SE	P
<b>Narratives of the future</b>						
<i>Scenario</i>						
No scenario (ref.)						
Negative	-0.793	0.335	0.018	-1.246	0.344	0.000
Positive	1.844	0.326	0.000	0.681	0.346	0.049
<b>Shadow of the past</b>						
<i>Work position</i>						
Not working (ref.)						
Permanent job	0.428	0.401	0.292	0.102	0.332	0.756
Temporary job	0.125	0.382	0.751	0.284	0.357	0.424
<i>Couple's income</i>	0.004	0.003	0.000	0.002	0.007	0.002
<i>Months of unemployment</i>	0.390	0.564	0.490	0.799	0.691	0.636
<i>Perception of job instability</i>						
Always uncertain (ref.)						
Predominantly uncertain	-0.011	0.370	0.875	-1.199	0.543	0.028
Predominantly certain	-0.281	0.416	0.500	-0.619	0.509	0.225
Always certain	-0.213	0.561	0.704	-0.611	0.537	0.256

Notes: Predictions are from a regression model with robust standard errors at the couple level. The complete model controls for all variables listed in Table A2 (Appendix 2).



**Figure 4** Predicted level of fertility intentions by treatment and work condition, Italy and Norway, with a 95% confidence band.



Notes: Predictions are from a regression model with robust standard errors at the couple level. The complete model controls for all variables listed in Table A2 (Appendix 2).

## Conclusions

The future is more and more often less predictable, as the COVID-19 disaster all too drastically proved. This study posits that the rise of uncertainty is central to understanding contemporary fertility dynamics. Uncertainty encompasses objective states, and recent research has highlighted the salience of factors such as a broader perception of uncertainty, which are not captured by traditional economic and labor-market indicators and rose to prominence in the aftermath of the Great Recession (Comolli et al. 2019; Matysiak et al. 2020). Explanations for fertility decisions, we suggest, should take into account the capacity to imagine the future, and narratives of the future can influence the decision-making process. We tested this hypothesis by organizing an *ad hoc* laboratory experiment in Italy and Norway. We assessed fertility intentions after exposing individuals to a specific future economic scenario embodied in a mock newspaper story; contrary to most fertility investigations in middle- and high-income countries, our operationalization of uncertainty is thus forward-looking. The results highlight a clear causal impact of narratives of the future on fertility intentions. The pattern of this influence is coherent in the two contexts and for different social groups: the positive narrative of the future has a positive influence on fertility, while the negative one has a negative influence. The argument based on the psychological phenomenon wherein loss aversion causes negative news to have a stronger impact than positive information (Kahneman and Tversky 1979) does not apply to our results, as we observe symmetrical effects of both the positive and negative future scenarios. The external validity of our findings is reinforced when the estimates are adjusted for several labor market-related variables commonly employed in the literature: the effects of the narratives of the future persist net of the past and contingent economic condition of the individuals.

Our results demonstrate that macro-level conditions of the respondents' country matter. Clearly the country-specific moderation effect is difficult to be ascribed only to a more or less resilient economic context. On the one hand, Italy is characterized by persistently high levels of unemployment, especially among youths (Tomić 2018; Boeri and Jimeno 2016), a non-generous welfare state and lacking family policies; on the other hand, Norway is one of the few European countries that were not hit by the recent economic crisis, and it is characterized by a solid welfare state and reconciliation policies that favorite fertility choices. In principle, the effects of the new economic narrative of the future may interact with such contexts in two ambivalent ways: they may amplify or counterbalance the characteristics of the context. Only the hypothesis of a *counterbalancing effect* is in line with our results. Italian respondents reacted more strongly to the positive scenario than to the negative one, while Norwegian respondents were more influenced by the negative scenario. The positive scenario differs more from the real economic situation of the

country for the Italian respondents, whereas the opposite is true for the Norwegian respondents. The enhanced effect of the mock newspaper story can be interpreted in light of the contrast principle (Cialdini and Cialdini 2007): individuals tend to evaluate things based on the mode of comparison that is most easily accessible to them—in this case, the actual economic context of their country—rather than by using more correct absolute values (Schwarz and Bless 1992).

The impact of the narratives of the future also varied according to personal labor-market conditions, indicating that the individual employment situation moderates the impact of narratives of the future. The positive economic scenario had a positive impact particularly on the fertility intentions of the respondents who had a job with uncertain conditions. On the contrary, the effect of the negative scenario was stronger for those holding a permanent position. The causal effects of narratives of the future on fertility intentions proved especially powerful when the narratives differed most from the actual economic situation faced by our respondents. These results contrast with the hypothesis of the *twofold dis/advantage*: the negative/positive future scenario has a greater impact on the respondents with an actual economic condition that differs most from the one envisioned by the narrative of the future. Hence, the negative/positive narrative does not cumulate its effect with that of the objective employment status. Instead, the narrative of the future has a *counterbalancing effect*: we note, also at the micro level, a greater effect of negative narratives for an economically better-off condition and a greater effect of the positive narrative for a more critical economic condition. The counterbalancing moderating role of micro-economic conditions leads us away from the hypothesis of a direct determinism of the uncertain objective status on fertility intentions.

All in all, we suggest that the effects of objective economic situations on fertility intentions only account for part of the motivation driving fertility planning; narratives of the future also play a potent role. In addition, this paper shows that negative narratives of the future are most crucial when the economic condition at the macro (country context) or micro level (labor-market status and characteristics) is better-off. Conversely, when the economic condition is less favorable, positive narratives of the future prove especially important. Hence, the impact of the future scenarios on Norwegian and Italian respondents—considering also their different labor-market conditions—varies according to the gap between the positive or negative future scenario and the ordinary experience of respondents. The strongest reaction to the (negative or positive) scenario is observed when the envisioned situation diverges most from the current micro- or macroeconomic situation. Future scenarios, indeed, produce a “distance experience” from the “contact experience” of daily routine (Dewey 1930: 58; Mische 2009: 697). As we have demonstrated here, the distance between ordinary

life, at both the macro and micro levels, and a new economic narrative of the future affects fertility intentions.

This study has several limitations. First, the study's analytical strategy allowed us to offer strong causal evidence about the impact of narratives of the future on fertility intentions, but this is by construction limited to the participants to our experiment. The external validity of our findings remains to be seen with larger, representative samples. Second, we are aware that the country-level moderation effect is likely to be due not only to the different economic contexts (i.e., different level of resilience to adverse economic shocks and different economic trends) but also to other factors (i.e., different welfare regimes). Third, the limited sample size inhibited the stratification of the analysis by age, parity, or education despite the fact that such distinctions proved to be important in previous research (e.g., Billari et al. 2009). Fourth, considering only individuals in a partnership we are focusing on a specific group. For instance, we are excluding economically disadvantaged individuals who might struggle to find a partner (Vignoli et al. 2016). This may further drag downward our estimates of the effect of narratives of the future on fertility intentions. Finally, we collected fertility intentions using a 0-10 response scale, which makes it difficult to interpret the size of the estimated effects and limit the comparability with other studies employing a categorical fertility intention variable.

To our knowledge, this study is the first experiment to establish a causal effect of narratives of the future on fertility intentions. While most of the literature has related fertility intentions or behaviors to (cumulative) past life events (e.g., unemployment or joblessness: Pailhé and Solaz 2012; Busetta et al. 2019) or objective measures of uncertainty (e.g., unemployment or limited-time jobs: Kreyenfeld et al. 2012; Vignoli et al. 2012; Modena et al. 2013; Barbieri et al. 2015; Hanappi et al. 2017; Raymo and Shibata 2017), we consider here a pure forward-looking effect of uncertainty on fertility intentions. We demonstrate that a focus on narratives of the future will help scholars gaining a better understanding of contemporary fertility patterns.

## Appendix 1 – Experimental Protocol

The experiment was planned by a multidisciplinary team comprising demographers, sociologists, social psychologists, and economists. The team met several times over one year to design the experiment and the questionnaire. The experimental setting was implemented using the O-TREE3 open-source platform. A first pilot was organized in December 2017 with 200 students of the Department of Education, Languages, Interculture, Literature and Psychology (FORLILPSI) at the University of Florence. The aim was to test the very first version of the text of the scenario used in the experiments. After the pilot, a preliminary version of the full questionnaire was prepared by the research group. The first full-experiment pilot took place on September 8, 2018 at the University of Florence. A first scientific workshop was then organized on October 4–5 at the same university. Nine international experts from different fields (demography, sociology, economics, and social psychology) participated in the workshop and discussed the overall experimental protocol and the results of the pilot tests. After the workshop, the framing of the treatment and the questionnaire were slightly modified to accommodate the feedback received. The protocol was approved by the Ethics Committee of the University of Florence and was then updated after the first full-experiment pilot and the first scientific workshop and again approved by the Ethics Committee.

The laboratory experiments took place at the University of Florence and at the University of Oslo. Laboratory experiments in Italy were carried out during five sessions between May 2019 and February 8, 2020. Laboratory experiments in Oslo started in September 2019 and ended two months later; they required 16 sessions because of the reduced capacity of the rooms.

The structure of the experiment is described in Table 2. For this paper, we used answers from sections A, B, E, and G. The treatment consisted in the reading of a short mock newspaper story. After reading the text, participants were immediately presented with a series of items/scales to measure their fertility intentions (see the experiment description section for details about sections A and B). Then, a series of questions based on the theory of planned behavior (Ajzen 1991) applied to fertility intentions (Ajzen and Koblas 2013) were asked (section C). Information regarding individuals' intentions, attitudes, subjective norms, and perceived behavioral control was collected.

The members of the couples in the control group did not have to read a scenario. Their experiment started with questions about fertility intentions and the psychosocial items. They were then requested to answer open questions about the role of uncertainty in their lives (section C).

Sections E and F of the experimental session were devoted to assessing individual traits of all subjects. Several dimensions of individual heterogeneity were examined: risk aversion, loss aversion,

and time preferences (discount rates) (section E), as well as cognitive skills (section F). Person-specific time preferences were measured through a Kirby delay discounting questionnaire (Kirby et al., 1999). Risk and loss aversion were assessed via two incentivized lotteries (Holt and Laury, 2002), one with a 50/50 gamble and one with unknown probabilities. Participants were paid both for attending and according to their final lotteries' payoffs. The fact that the participants' remuneration depended on how much they won ensures the credibility of the behavioral results of the lottery. The amount of the payment for attendance depended on the country. To have a proxy of cognitive skills, a set of Raven Matrices (Raven 2000) and a Cognitive Reflection Test were used (Primi et al. 2016).

The final part of the survey was devoted to demographic questions about respondents' socio-economic conditions and habits (section G).

The approximate duration of the experiment and the survey was one hour; Table 2 specifies the mean time devoted to each section by the respondents.

**Table A1** Protocol structure

	No scenario	Scenario	Mean time (in sec.)
A. Scenario		✓	47.7
B. Questions about fertility intentions	✓	✓	49.2
C. Questions theory of planned behavior	✓	✓	322.7
D. Open questions about uncertainty	✓		Time not recorded
E. Lotteries/batteries to measure time preferences and risk aversion	✓	✓	513,0
F. Raven matrices test (selection) and logic test	✓	✓	633,0
G. Socio-demographics information	✓	✓	690,4

## Appendix 2

**Table A1** List of variables, distribution and means, by country and scenario

	Italy			Norway				
	Total	No scenario	Negative	Positive	Total	No scenario	Negative	Positive
<b>Narratives of the future</b>								
<i>Scenario</i>								
No scenario	33.9				34.0			
Negative	33.2				30.9			
Positive	32.9				35.1			
<b>Shadow of the past</b>								
<i>Work condition</i>								
Jobless	25.8	26.1	27.8	23.5	20.4	22.1	17.1	21.1
Permanent job	45.0	45.3	43	47	60.2	54.2	65.6	61.4
Temporary job	29.1	28.6	29.2	29.5	19.4	23.7	16.6	17.5
		2,140.6	2,132.51	2,358.19	4,528.	4,506.1	4,580.69	4,504.38
<i>Couple income (mean)</i>	2,209.56	0			54	7		
<i>Share of time in unemployment (mean)</i>	0.031	0.031	0.035	0.026	0.030	0.028	0.026	0.036
<i>Perception of career instability</i>								
Always uncertain	16.2	15.9	16.3	16.1	5.3	6.3	4.4	4.9
Predominantly uncertain	32.9	33.0	31.1	34.8	17.1	15.4	15.2	20.4
Predominantly certain	39.7	38.4	42.6	38.2	51.6	55.8	50.7	48.4
Always certain	11.2	12.7	10.0	10.9	26.0	22.4	29.6	26.3
<b>Individual background and traits</b>								
<i>Level of education</i>								
Low	16.6	17.4	16.0	16.5	10.8	10.0	8.5	13.6
Medium	46.9	45.4	47.2	47.9	19.2	19.7	14.4	22.7
High	36.5	37.1	36.8	35.6	70.0	70.2	77.0	63.6
With child/children	53.7	52.5	54.1	54.7	65.5	63.1	65.6	67.9
Without children	46.3	47.6	45.9	45.3	34.5	36.9	34.4	32.1
<i>Relationship status</i>								
LAT (Living Apart Together)	24.1	25.7	19.2	27.3	11.3	11.7	11.5	10.7
Marriage/Civil Union	32.6	31.2	37.8	28.8	29.2	31.5	27.0	28.9
Cohabitation	43.3	43.1	43.0	43.8	59.5	56.7	61.5	60.4
<i>Age</i>	33.6	33.8	33.9	33.0	30.4	30.4	30.6	30.1
<i>Migration background</i>	3.8	3.2	3.7	4.5	10.0	7.0	12.2	11.0
<i>Sterility</i>	2.3	1.8	1.8	3.4	2.2	1.3	2.9	2.3
<i>Level of education of the parents</i>								
Low	42.0	45.2	44.4	36.4	17.0	15.1	20.7	15.6
Medium	34.3	31.2	33.1	38.6	45.5	48.7	44.4	43.5
High	23.7	23.5	22.6	25.0	37.5	36.2	34.8	40.9
<i>Risk aversion</i>	5.9	5.7	6.0	6.0	5.0	4.8	5.1	5.1

**Table A2** The effects of randomized narrative of the future on fertility intentions. OLS regression with cluster-robust standard errors at the couple level.

	Italy			Norway		
	Coefficient	Robust SE	P	Coefficient	Robust SE	P
<b>Narratives of the future</b>						
<i>Scenario</i>						
No scenario (ref.)						
Negative	-0.793	0.335	0.018	-1.246	0.344	0.000
Positive	1.844	0.326	0.000	0.681	0.346	0.049
<b>Shadow of the past</b>						
<i>Work position</i>						
Not working (ref.)						
Permanent job	0.428	0.401	0.292	0.102	0.332	0.756
Temporary job	0.125	0.382	0.751	0.284	0.357	0.424
<i>Couple's income</i>						
	0.004	0.003	0.000	0.002	0.007	0.002
<i>Months of unemployment</i>						
	0.390	0.564	0.490	0.799	0.691	0.636
<i>Perception of job instability</i>						
Always uncertain (ref.)						
Predominantly uncertain	-0.011	0.370	0.875	-1.199	0.543	0.028
Predominantly certain	-0.281	0.416	0.500	-0.619	0.509	0.225
Always certain	-0.213	0.561	0.704	-0.611	0.537	0.256
<i>Work condition</i>						
Workers (ref)						
Inactive				-0.201	0.384	0.693
Unemployed				-0.701	0.363	0.054
<b>Individual background and traits</b>						
<i>Gender (ref. men)</i>						
	-0.274	0.215	0.204	0.189	0.173	0.274
<i>Education</i>						
Low (ref.)						
Medium	0.226	0.270	0.403	-0.293	0.449	0.542
High	0.291	0.313	0.353	0.836	0.423	0.049
<i>Number of children</i>						
No children (ref.)						
With child/children	-1.066	0.304	0.001	-0.517	0.442	0.243
<i>Relationship status</i>						
LAT (Living Apart Together) (ref.)						
Marriage/Civil Union	1.036	0.421	0.014	1.481	0.525	0.005
Cohabitation	0.837	0.341	0.015	1.597	0.395	0.000
<i>Age</i>						
	-0.086	0.029	0.003	-0.002	0.032	0.565
<i>Country of origin</i>						
Immigrants	-0.862	0.700	0.219	0.316	0.401	0.431
<i>Sterility</i>						
	-0.769	0.565	0.175	-0.803	0.696	0.249
<i>Parent's education</i>						
Low (ref.)						
Medium	-0.229	0.279	0.412	0.072	0.274	0.794
High	-0.234	0.325	0.372	0.035	0.303	0.678
<i>Risk aversion</i>						
	0.140	0.047	0.003	0.075	0.053	0.152
R <sup>2</sup>	0.243			0.231		



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