



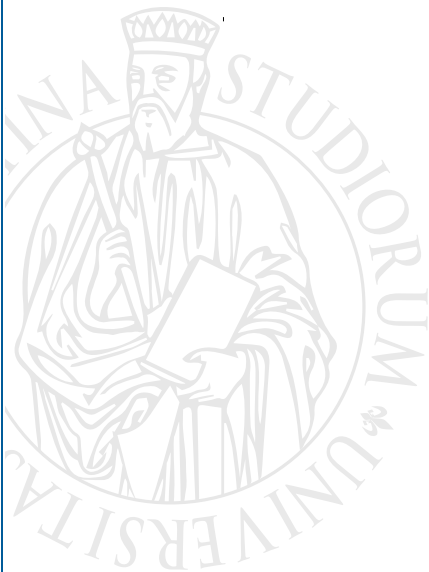
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## Media Coverage of the Economy and Fertility

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# Media Coverage of the Economy and Fertility

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## Abstract

In this paper, we argue that economic narratives conveyed by the media are crucial for understanding contemporary fertility dynamics net of objective economic constraints. We test such a hypothesis for Italy by combining individual-level data from the 2009 and 2016 releases of the nationally-representative *Family and Social Subjects Surveys* with *Media Tenor* data on the media coverage of the economy derived from the evening newscast of Italian TV channel one. Our findings reveal that both the incidence and tone of news on the state of the economy influence fertility behavior. An increase in the number of negative economic news items inhibits fertility, whereas an increase in positive news items facilitates fertility. The share of economic coverage out of all news has a negative association with fertility, yet this weakens as the average tone of the news improves. Interestingly, when positive news items outnumber negative ones, an increase in the incidence of economic news encourages fertility. These effects are substantially relevant, and statistically significant, net of contextual and individuals' socioeconomic characteristics.

**Keywords:** Media; Economy; Fertility; Italy

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## Introduction

In the late 2000s, the developed world (including Southern Europe) had accepted as fact “the end” of the lowest-low fertility regime (Billari and Dalla Zuanna 2008; Goldstein et al. 2009). However, since 2010, Europe has been facing a new winter of fertility levels. Total Fertility Rates (TFRs) began to decline not only in low-fertility countries of Southern Europe, but also in European areas with higher fertility rates. This observed trend stood in stark contrast to several arguments within the demographic literature that foresaw a rebound of European fertility—as one consequence of the “second half of the gender revolution” (Goldscheider et al. 2015) and gains in gender equality (Esping-Andersen and Billari 2015). Such a generalized pattern of fertility decline observed in the aftermath of the Great Recession poses serious challenges to current demographic knowledge. After all, the most widely accepted studies indicate that the contemporary European fertility decline cannot be explained solely by “traditional” economic and labour market fertility predictors (Comolli 2017; Comolli et al. 2021; Goldstein et al. 2013; Matysiak et al. 2021).

With increasing frequency, social observers are attributing part of this unexplained fertility decline to the rise of uncertainty (Comolli et al. 2021; Matysiak et al. 2021; Sobotka 2020; Sobotka et al. 2011; Vignoli et al. 2020a, 2020b), related especially, though not exclusively, to the economic sphere. In the empirical demographic literature, economic uncertainty has typically been operationalized through objective measures of individuals’ past (Busetta et al. 2019; Ciganda 2015) and current (Kreyenfeld et al. 2012; Mills and Blossfeld 2013; Raymo and Shibata 2017; Vignoli et al. 2020c) labor market situation, such as experiences of unemployment or temporary employment. A recent meta-analysis of European findings (Alderotti et al. 2021) has conclusively shown that employment instability’s detrimental impact on fertility—while by no means negligible—may not be of overwhelming importance for addressing current fertility trends. Furthermore, converging evidence suggests that fertility postponement has accelerated irrespective of person-specific economic circumstances (Comolli et al. 2021; Comolli and Vignoli 2021).

Our central thesis here is that, in the era of uncertainty, beside individuals’ economic situation, actors are influenced by *socially-constructed narratives of the future*. Based on these narratives, individuals project themselves in an actionable imagined future (Beckert 2016; Mische 2009) and take decisions that may be relatively independent from their actual economic situation and structural constraints (Vignoli et al. 2020a, 2020b). Future-related narratives may therefore produce real effects on individuals’ decision-making processes, irrespective of their level of truth, rationality, or plausibility (Beckert 2016; Beckert and Bronk 2018). In contemporary globalized societies, the diffusion of (social) media allows narratives to circulate socially (Johnson et al. 2020; Rotkirch 2020). Media narratives represent a source of “distance experience” from ordinary life (Dewey 1930:58; Mische 2009:697) and orient the decision-making process through a “framing effect” (Entman 1991; Goffman 1974). Indeed, for a majority of citizens, the media—which evaluate, filter, and simplify information—are an essential source of economic information (Boomgaarden et al. 2011; Joris et al. 2018). The perception of economic uncertainty is thus strongly rooted how it is covered by the media, as well as the public images produced by other powerful opinion-formers (Robins and Mayer 2000; Thibodeau and Boroditsky 2011; Vignoli et al. 2020b). Overall, media-conveyed narratives might play a substantial role in fertility decision-making by shaping perceptions and expectations about future states of the economy. This shaping could well occur through the provision of especially-selected contents, as well as by the framing of information from certain perspectives and tones.

Against these premises, we argue that media-conveyed narratives of the economy may be crucial for interpreting contemporary fertility dynamics net of objective economic constraints. We outline such an approach by testing—for, to the best of our knowledge, the first time in fertility research—the impact of the economy’s media coverage on individuals’ fertility behaviors. To this end, we have focused on Italy as a case study, and combined individual-level data from the 2009 and 2016 releases of the nationally-representative *Family and Social Subjects Surveys* with unique data derived from the evening newscast (*TGI*) of Italy’s most-viewed TV channel (*Rai 1*). The study documents a statistically and substantially significant influence of the economy’s media coverage on fertility behavior, controlling for micro- and macro-level indicators of objective economic conditions.

## **Background**

### **The Agenda-Setting in Contemporary Western Societies**

Communications scholars have long investigated the media’s impact on the public in terms of the levels of awareness of certain issues and the formation of the “pictures in our heads,” i.e. stereotypes which contribute to shaping our perceived reality (Lippman 1922; Noelle-Neumann 1980). Over the past century, the paradigm has shifted from the “almighty media” to “powerless media” to “moderate effects” (Bonfadelli and Friemel 2017:18). The agenda-setting theory (McCombs and Shaw 1972) is widely considered the most important theoretical concept in modern media impact research (Bonfadelli and Friemel 2017). It postulates that the media’s selection of which issues to report, and the salience of their coverage, significantly impacts their perceived relevance to the public. Hundreds of studies using this approach have since been published. The majority show a significant correlation between the perceived relevance of the issues and their media coverage (.53, according to a meta-analysis of 90 studies by Wanta and Ghanem 2007:45).

Framing theory (or second-level agenda setting) extends the agenda-setting approach by adding the role of attributes and perspectives contained in the news for shaping public perceptions: “The agenda-setting influence of the news media is not limited to this initial step of focusing public attention on a particular topic. The media also influences the next step in the communication process, our understanding and perspective on the topics in the news” (McCombs 2011:5). De Vreese (2009) argued that negatively and positively framed news differently affects individuals’ judgements. In his experimental research, de Vreese found that negative interpretations of economic consequences depress economic expectations, whereas the opposite is true for positive interpretations.

### **The Role of the Media in Shaping Perceptions and Expectations About the Economy**

The media are the main source of information about the economy for most people (Joris et al. 2014; Joris et al. 2018). As the media’s coverage of the economy grows, so too does individuals’ reliance on it to update their economic expectations due to the lower cost of information access (Carroll 2003; Doms and Morin 2004). The Great Recession and the Euro crisis saw the public discourse prominently focus on the state of the economy. The media described the crisis as the “evil” incumbent over European countries, proposing a simplified narrative of economic conjuncture, and a pessimistic image of Europe as a stagnant and underperforming economic system (Cepernich 2012). The public’s perceptions of the state of the economy were in turn influenced by these negative headlines, thereby allowing these opinions to become self-fulfilling prophecies as individuals behave according to their beliefs (McCombs 2011).

Until very recently, scholars had largely neglected to analyze the media's impact on economic behavior (Bachl 2008). The increasing availability of media data has fueled academic interest in investigating the relationship between media coverage of the economy, and perceptions and expectations about the current and future economic situation. For instance, Brettschneider (2000) showed that the proportion of Germans citing unemployment as the country's most important problem was more strongly correlated with the share of economic news than the unemployment rate. Uhl (2010) demonstrated an association between the sentiment of televised economic news and the consumption habits of US citizens. While news coverage about current and future inflation has led to improvements in the accuracy of German consumers' expectations, this precision deteriorates if the media overemphasize negative news (Lamla and Lein 2008; Lamla and Sarferaz 2012). Garz (2012) documented the existence of a correlation between the media coverage of labor market policies and the perceived job insecurity of German citizens. More recently, he showed that households' economic perceptions worsen in line with the increase in the number of words related to unemployment reported in the news (Garz 2018). These are just a handful of examples from the vast literature that has assessed the role of the media in shaping citizens' feelings about the economy.

Several scholars have studied the responsiveness of economic news coverage to the economic events themselves (see Damstra et al. 2018 for a review). Goidel and Langley (1995) showed that actual economic conditions can only account for a quarter of the variance in the number of negative economic articles, and even less in the case of positive items. Despite a small number of studies that documented a certain correspondence between economic reality and the media's portrayal of economy (Behr and Iyengar 1985; Casey and Owen 2013), most studies tend to agree that the media's economic coverage is affected by a negativity bias (Damstra et al. 2018): the media typically foreground negative economic events and deemphasize positive ones (Fogarty 2005; Goidel and Langley 1995; Hagen 2005; Soroka 2006, 2012; Van Dalen et al. 2015), as the former are considered particularly interesting by journalists (Haller and Norpoth 1997).

This concise review suggests that media-conveyed narratives of the economy do not overlap with the macroeconomic reality. Additionally, the volume and tone of economic news influences consumer perception and sentiment beyond the specific information reported (Doms and Morin 2004). The reality and the media portrayal of the economy may thus have distinct effects on individuals' choices, especially those taken under uncertain conditions. After all, economic news tends to overwhelmingly discuss future, rather than present, economic trends (Soroka et al. 2015), and especially impacts people's forward-looking judgments (Damstra and Boukes 2018; Soroka et al. 2015).

### **Media Coverage of the Economy and Fertility**

Despite the widely observed effects of economic media coverage on individuals' economic perceptions and expectations, we have only located a small number of studies on the role of the media on fertility. Hornik and McAnany (2001) reported that the number of televisions per capita in 1997 explained 74% of the TFR variance across 140 countries, allowing for a more accurate prediction of fertility rates than those obtained using other aggregated measures on the state of the economy (e.g. the GNP). The authors suggested different mechanisms by which the mass media may negatively influence fertility, distinguishing between the effect of the mere access to the media—more time devoted to the media reduces people's social engagements (Putnam 1995)—and that of different forms of influence due to the values conveyed through media content.

Several studies have focused on the diffusion of mass media as a result of the technological revolution, and on the conveyance of “modern” conceptions of the family through television in low-income countries. One of the first studies in this field was conducted by Westoff and Bankole (1997), and addressed the cases of six sub-Saharan African countries. The authors found strong positive effects of mass media exposure on contraceptive use among married women, along with a reduction in the desired number of children. The most consistent impacts are related to radio exposure, followed by print media, and, thirdly, to television. Jensen and Oster (2009) found that the introduction of cable TV in India positively affected subjective measures of female autonomy and school enrollment, while simultaneously negatively impacting fertility. Billari et al. (2020) related the diffusion of digital technologies with fertility dynamics in sub-Saharan Africa, showing that mobile phone ownership is associated with smaller family size ideals. In Brazil, a negative relationship between the presence of the Globo channel—the main broadcaster of soap operas whose protagonists tend to have small families—and fertility was noted (La Ferrara et al. 2012).

Regarding Western countries, Kearney and Levine (2015) showed that the broadcasting of the MTV show *16 and Pregnant* accounted for 24% of the total reduction in teen births in the US observed in the 18 months after its first airing. Analyses of data from Google Trends and Twitter suggested that the show highlighted the salience of such issues as abortion and contraception in the public discourse.

More specifically related to the current paper’s objectives, some recent studies have focused on the Italian case (Guetto et al. 2020, 2021). The impact of COVID-19-induced uncertainty was assessed through an experiment in which participants were exposed to a (mock) news bulletin on the expected duration of the pandemic. The authors demonstrated a causal impact of different narratives concerning the future of the pandemic on union formation (Guetto et al. 2020) and fertility intentions (Guetto et al. 2021). Vignoli et al. (2021)—through a controlled laboratory experiment—showed a clear causal impact of narratives of economic uncertainty on fertility intentions. Finally, Comolli and Vignoli (2021) estimated the effects of perceived economic uncertainty on birth postponement in Italy, using Google searches for the term “spread” as a proxy—i.e. the “thermometer of the crisis” both in the media and in everyday conversations. Through a regression discontinuity design centered at the pick of the google searches for “spread”, they estimated a reduction of between 1.5% and 5% in birth rates due to the increase in perceived uncertainty. This effect is comparable to that of rising unemployment rates on the TFRs (3%) estimated for Europe and United States during and after the Great Recession (Comolli 2017).

While these attempts are suggestive of the media’s potential power for shaping family decisions, they have not directly addressed the role of economic news on fertility behaviors. Sobotka et al. (2011), in their influential review on the effects of financial recessions on fertility, proposed that concern over future economic events substantially shapes fertility behaviors, and suggested that the media coverage of the economy might increase uncertainty, thereby negatively influencing fertility. Evidence for this thesis can be found in a study by Schneider (2015), whose results show that the press coverage of the economy accounts for part of the US’s reduction in state-level fertility rates in the years before and during the Great Recession, net of more traditional measures of economic conjuncture. However, we did not locate any study addressing the effects of media-conveyed economic narratives on individual fertility behaviors.

Building upon the argument that the media’s coverage of the economy directly influences fertility dynamics in contemporary societies, the present paper addresses the following research question:

- Q1: Does the media coverage of the economy effect fertility behavior, net of indicators of individuals' employment condition and aggregate measures of economic conjuncture?
- Q2a: Does the influence of economic media coverage change based on tone?
- Q2b: If so, are individuals more sensitive to positive or negative changes in the tones of media narratives?

We address these questions for Italy, a country that—after a rebound of fertility in the first decade of the new millennium—is now facing a continuous decline, falling below the “lowest-low” fertility threshold of 1.3 children per women in 2019.

## Data and Variables

### Media Coverage of Economic News and Other Macro-Economic Indicators

Data on the media coverage of economic news are provided by *Media Tenor International*, the Swiss-based research institute which analyzes items from newspapers and newscasts, distinguishing them by protagonist, topic, date, location, time reference, source, and tone. For Italian news, we used the evening edition of *TG1* (h. 20:00), *Rai 1*'s newscast program. *TG1* has an average daily viewership of almost 7 million Italians, and the program's share—which refers to the proportion of the viewership relative to television's total audience—is 35% (<https://www.auditel.it>). This makes this source particularly suitable for analyzing media-conveyed narratives and public discourse on the state of the economy, even in the absence of data on individual exposure. In a 2016 survey conducted by the Italian National Institute of Statistics (ISTAT 2016), 69.7% of respondents declared that they update their information by watching television newscasts—often, but not always, combined with other online sources. While the search for information exclusively through the internet and social networking sites is more common among young people, the use of both channels (television and the internet/social networking sites) is shared by all age groups.

Our media data consisted of the monthly number of economic news items reported in the newscast and covered between January 2006 to December 2016. We considered relevant news reports to be those in which the state of the economy in general, or in relation to such indicators as unemployment, economic growth, labor market, and so forth, was discussed. The tone of each economic news item has been coded according to codebook instructions, based on both explicit judgments and implicit evaluations reported in the news, to the extent that they may have influenced the perception of its content. This procedure allowed us to classify news items' tone as positive, negative, or with no clear tone. The high quality of the data provided by *Media Tenor* has made them ideal for many studies, especially (but not exclusively) concerning Germany and the United States (Beckmann et al. 2016; Berlemann and Thomas 2019; Dräger 2015; Garz 2012; Guadecker and Wogrolly 2021; Lamla and Lein 2008; Lamla and Sarferaz 2012; Maag and Lamla 2009; Püttmann 2018; Tausch and Zumbuehl 2016; Uhl 2010).

Our main measures of the media's economic coverage were set as: *# Negative Tone*, *# Positive Tone*, and *# No Clear Tone*. These served to represent the absolute monthly numbers of economic news stories in accordance with their tone.

The total number of news items reported in the newscast varied over time; hence, a relative indicator is also important for addressing the effect of the overall coverage of economic news (Garz 2018; Maag and Lamla 2009). For example, an increase in the number of economic news items could have a weaker effect if this rise is concurrent with a proportionally greater increase in the amount of all news. Indeed, in this case, the public's attention may well be diverted from the economy to other prominent topics. Similarly, the influence of positive (or negative) news may vary according to the amount of negative (or positive) news appearing at the same time:

e.g. the negative effect of reporting bad news may be stronger if fewer positive facts are reported. Hence, the effect of the news' tone may be assessed by jointly considering the amount of positive and negative news (Maag and Lamla 2009; Tausch and Zumbuehl 2016).

Consequently, we also derived the following relative measures: *Percentage* represents the incidence of economic items out of all news reports; *% Positive (Pos/Pos-Neg)* represents the percentage of positive news over positive and negative economic news (excluding stories with unclear tones), as proposed by Tausch and Zumbuehl (2016).

Further to the media coverage of the economy, we accounted for crucial macroeconomic factors traditionally employed in fertility research (Comolli 2017; Matysiak et al. 2021; see Sobotka et al. 2011 for a review). We considered: the *Unemployment Rate* (by 10-year age class beginning from the age of 15 years, ISTAT), GDP per capita at current market price (Eurostat), and the Harmonised Index of Consumer Prices (HICP, Eurostat).

Considering that parenthood is a long-term commitment, we have acted under the assumption that the media's economic coverage may have affected individuals' fertility decisions based on information recorded over a sufficiently long period of time. Hence, we constructed moving averages of the monthly amount of economic news reported over the previous 12 months. We were thus able to calculate the relative measures of media coverage for each month, based on these moving averages<sup>1</sup>. Similarly, we used macroeconomic indicators as moving averages of the previous year based on quarterly (*Unemployment Rate* and GDP) or monthly (HICP) values, depending on data availability.

## Micro-Level Data

We used micro-data from the 2009 and 2016 releases of the "Family and Social Subjects" (FSS)<sup>2</sup>, which included 43,850 and 32,585 individuals aged 18 and above, respectively. The FSS is a multipurpose survey conducted by ISTAT. The overall response rate of the FSS was 80% in 2009 and 77% in 2016<sup>3</sup>. Both surveys contain detailed information on individuals' fertility and employment histories, recorded on a monthly basis. Starting with retrospective data, we transposed information on the careers, unions, and childbearing histories of female respondents into a panel with monthly observations for individuals aged between 15–40, during January 2007–March 2016.

The response variable (*Conception*) is a dummy that indicates each child's month of conception. It was constructed from the information on childbirths (by subtracting nine months from the recorded date of birth).

We considered a series of well-established micro-level fertility antecedents. *Age* was included in its linear and quadratic form. *Employment* has four levels, which differentiate between joblessness, permanent employment, temporary employment, and self-employment. Regarding education, we used a dummy variable *Student*, and a three-category variable for the *Level of*

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<sup>1</sup> We have nevertheless tested the effects of the moving averages of the monthly number of economic news items reported in the previous semester, the previous quarter, and the monthly number of economic news stories. Results indicate that individuals' fertility is uninfluenced by the average amount of information reported over a period shorter than the preceding 12 months.

<sup>2</sup> In 2016, the survey was named "Family, Social Subjects and Life Cycle." Here we refer to the two releases as FSS.

<sup>3</sup> The data were collected using a two-stage sampling design with a stratification of the primary units. The municipalities are the primary units, and the households (in 2009) or the individuals (in 2016) are the secondary units. The municipalities were sampled with probabilities proportional to their population size and without replacement, whereas the households/individuals were drawn with equal probabilities and without replacement. All interviews were conducted face-to-face.



*Education* (lower-secondary education or lower; upper-secondary education; tertiary education). We also considered a variable that may mediate the relationship between the media's economic coverage and childbearing, namely *Union*, which indicates whether an individual lives in a coresidential union (distinguishing between cohabitation and marriage). With the exception of education level, all other variables were time-varying. Importantly, despite the fact that the surveys provide (subjective) information on the respondents' income, this was only collected at the time of the interview, meaning that we could not include this variable within our analysis.

## Analytical Sample

We merged micro- and macro-level variables into a unique dataset according to the month of occurrence. The final panel dataset covered the period of January 2007–August 2015, and included 12,521 women<sup>4</sup>. We observed 2,987 conceptions within this group. The overall composition of the sample is described in Table 1.

Regarding media coverage data, Figure 1 shows that the media regarded the economy as a hot topic until approximately 2013, that is during the Great Recession and the Euro crisis. The drop in the absolute number of economic news items that began in 2013 (and subsequently continued) may have been due to a “replacement effect” in favor of other prominent topics—most importantly the European migrant crisis that began in 2014, and represented a core topic in both the scientific and public discourse (Eberl et al. 2018; Garz 2018). Economic coverage decreased after 2013 even in relative terms, i.e. considering the ratio between the moving average of monthly economic news items and that of all monthly news stories, which shows that more coverage has been devoted to other topics. Additionally, the time series show that, after the onset of the Great Recession at the end of 2008, items with a negative tone significantly outnumbered those with a positive tone.

Figure 1 exemplifies how the media relevance of a topic may not overlap with its actual, public, bearing: in Italy, since 2012, the level of unemployment has almost doubled since 2012, whereas *TGI*'s coverage of the economy drastically declined.

## Methods

The time window available for the analysis was relatively short: each individual was observed for up to 8 years and 8 months, with an average of approximately four years and three months. In this setting, the separate modelling of each parity transition was complicated by the limited number of higher-order conceptions (1,486 first-order, 1,119 second-order, and 382 higher-orders conceptions). Due also to this reason we used the panel approach as a suitable design. However, so as to ensure the robustness of our results, we conducted a discrete-time event-history analysis for the transitions to first and second childbirth.

The Hausman test suggested the use of a Fixed Effects (FE) rather than a Random Effects model. The inclusion of this model allowed us to control for all of the individuals' time-constant unobserved characteristics. In the panels, we observed that the monthly risk of conception varied from 0.24% to 0.73%. In this range, the relationship between log-odds and probabilities is close to linear. Therefore, in our study, the use of Linear Probability Models (LPMs) is a valid alternative to logistic models (von Hippel 2015). In addition, by applying logistic models with FE, the estimates would rely only on the observations of women who had

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<sup>4</sup> After checking the trend of the monthly risk of conception, observations in the period September 2015–March 2016 are excluded due to the small number of conceptions recorded.

conceived at least one child in the panel’s time window. Such an application can markedly reduce the sample size, especially if the response variable concerns a relatively rare event (Beck 2020), as in our case. Applying a logistic model instead of an LPM would have led to a dramatic loss of information: the overall panel sample would consist of 2,425 women (rather than 12,521).

Our LPM is specified as follows:

$$P(Y_{it} = 1) = \beta_1 X_{MC,t} + \beta_2 X_{AG,it} + \beta_3 X_{SES,it} + \beta_4 X_{ME,t} + \beta_5 X_{U,it} + \alpha_i + t + \varepsilon_{it} \quad (1)$$

where  $i$  denotes individuals and  $t$  indicates months.

Our models included individual fixed effects  $\alpha_i$ , a linear time trend ( $t$ )<sup>5</sup>, and error terms  $\varepsilon_{it}$ . The dependent variable  $Y_{it}$  (*Conception*) was a dummy that assumed value one in the month of conception of each child, and zero otherwise<sup>6</sup>. We divided the independent variables into five groups: (i) media coverage variables, as indicated by  $X_{MC}$ ; (ii)  $X_{AG}$ , referring to age; (iii)  $X_{SES}$ , controlling for individuals’ socioeconomic status (education and employment status); (iv)  $X_{ME}$ , or macroeconomic indicators; and (v)  $X_U$ , the indicator of union status.

This modelling strategy allowed us to more accurately detect associations between (within-individual) monthly variations of fertility and changes in the media’s economy-based narratives, net of micro- and macro-level indicators of objective economic conditions.

## Results

### The Effects of the Media Coverage of the Economy vs. Objective Economic Indicators

We performed the first part of the analysis by applying the main specification of the media coverage variables ( $X_{MC}$ ), which consisted of the absolute numbers of negative, positive, and ambiguous news on the state of the economy (*# Negative Tone*, *# Positive Tone*, and *# No Clear Tone*).

The results are shown in Table 2, where all continuous variables have been standardized so as to more easily compare the magnitude of their coefficients (due to their different scales). Model 1 includes all variables listed in equation (1), except for the indicator of union status,  $X_U$ . We found that changes in the amount of negative economic news were negatively associated with the probability of conception. However, an increase in the moving average of the monthly number of positive news fostered fertility. This suggests that the media’s economic narratives significantly, and relevantly, affect fertility behavior (Q1), and its variations reduce or increase the probability of conception depending on tone (Q2a). The number of economic stories with no clear tone was found to have a negative effect, despite the estimate being statistically imprecise. We noted that the coefficient associated with an increase in the number of positive news stories was stronger than that of negative news (Q2b), which itself was stronger than that of ambiguous news<sup>7</sup>. In Model 2, we added the potential mediator *Union*. Media variables preserved their statistical significance, and the size of their coefficients remained unchanged.

The effects of the media’s economic coverage outlined immediately above are substantially and statistically significant net of the indicators of economic conjuncture included in the model.

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<sup>5</sup> Unchanged results emerged by including yearly fixed effects, even in addition to monthly fixed effects, or to the linear time trend.

<sup>6</sup> The outcome assumes value 0 in the pregnancy months as well, despite the impossibility of conceiving another child between the month of the first’s conception and its birth. The results remained virtually unchanged when we ran the models excluding observations in the pregnancy months.

<sup>7</sup> A similar pattern of results emerged by applying a logistic regression FE model.

While we observed increases in *Unemployment Rate* to discourage fertility, rises in *GDP* had the opposite effect. The *HICP*'s effect was not statistically significant. Interestingly, the effect sizes of macroeconomic trends and media coverage of the economy were of a similar magnitude. Figure 2 (based on Model 2 in Table 2) shows a comparison between the variations in the monthly probability of conception induced, *ceteris paribus*, by changes in the moving average of the number of economic news items, and those attributable to comparable changes in the macroeconomic indicators. A one standard deviation increase in the number of positive news stories was associated to an increase of 9.95% in the monthly probability of conception, compared to the mean risk observed in the sample (0.46%), whereas a one standard deviation increase in negative news items was connected with a decrease of 5.97% to the probability of conception. A one standard deviation increase in the unemployment rate reduced the probability of conception by 10.79%, which is to say almost double the variation due to the increase of negative news items. On the other hand, a one standard deviation increase in the *GDP* per capita was associated with almost half of the variation induced by the increase in positive news features (+4.67%).

### The Effects of the “Relative” Coverage and Tone of Economic News

In the second part of the analysis, we considered our two relative measures of the media coverage: the *Percentage* of economic features out of all news items (centered around its mean of 3.3%), and the percentage of positive news stories over positive and negative economic news (*Pos/Pos-Neg*). In order to more accurately answer research question Q2a, we further augmented the model with an interaction between the two measures. We did so hoping to reveal how simultaneous changes in the salience of economic news items, and in the number of positive and negative news stories, impact the probability of conception.

Our findings show that the “relative coverage” of the economy was negatively associated to fertility, whereas an increase in the “relative positive tone” of the news encouraged it. The composition by tone of the news has a significant role in shaping fertility choices that varies according to the incidence of the economic news<sup>8</sup>. These results are depicted in Figure 3, which reports predicted probabilities of conception at different levels of *Percentage* and *Pos/Pos-Neg*<sup>9</sup>. The fertility-inducing effect of sharing more positive news features relative to negative ones increased as the percentage of economic coverage grew. When this percentage exceeded its mean by 1.5 (i.e., when it stood at approximately 4.8%)—passing from a *Pos/Pos-Neg* of 20% to 70%—it determined a variation in the predicted probability of conception from approximately 0.37% to 0.51%, which correspond to -20.72% and +10.72% variations compared to the sample average (0.46%, the dotted line). Conversely, the tone decreases in relevance in line with the percentage of economic news.

The results suggest that, when the media devote high levels of attention to the economy, fertility is more responsive to the worsening of media narratives than to their improvement<sup>10</sup>. When the media give equal weight to positive and negative news stories, the relationship between economic coverage and fertility is only slightly negative. This may be due to the remarkable amount of reports whose tone is unclear (Figure 1), not included in the *Pos/Pos-Neg* indicator, which are thus mildly negatively associated with fertility (Table 2). However, the negative

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<sup>8</sup> Similar patterns of results were obtained using absolute measures of the news coverage and tone.

<sup>9</sup> We plotted values observed within the central 80% of the distributions of *Percentage* and *Pos/Pos-Neg*.

<sup>10</sup> When the incidence of economic news items is around 4.8%, sharing on average seven negative news stories for every three positive ones reduces the monthly probability of conception more than the positive effect estimated when, on average, we observe seven positive news every three negative ones (-14.43% vs. +10.72% compared to the mean risk of conception).

association between the “relative” coverage of the economy (regardless of tone) and the probability of conception remains until news items become mostly negative (*Pos/Pos-Neg*  $\leq 50\%$ ). However, this can be mitigated by an improvement in tone. When positive news features outnumber negative ones, an increase in the percentage of economic news positively affects fertility.

### **Additional Analyses and Robustness Checks**

We empirically tested for the possibility of parity-specific reactions to media coverage of the economy. We conducted separate discrete-time event-history models for the transitions to first and second child. Regarding childless women, we found that changes in the number of negative, positive, and ambiguous economic news features reported over the previous 12 months significantly affected the probability of conceiving a first child (Table 3, first column). One more positive news item leads to an increase of approximately 2.23% in the monthly probability of first conception (with respect to a mean risk of conception of 0.41%). An additional negative news story, however, results in a reduction in the probability of conception of roughly 1.35%. The average marginal effects of media coverage variables estimated on the mothers’ subsample (Table 3, second column) were close (or greater) to those estimated for childless women, but their statistical precision was lower. Overall, it is likely that the media’s economic narratives also affect higher-order childbirths, although the uncertainty surrounding our estimates prevents any firm conclusions.

Additionally, we augmented Model 2 in Table 2 with a set of interaction effects in order to test whether the effects we found were generalized or concentrated in particular groups. The results (not shown here but available upon request) indicated that media effects are almost exclusively driven by women aged between 25-34, the age group in which (first) childbirths were mostly concentrated. Regarding education, women with upper-secondary education were particularly affected, while jobless women tended to be more influenced than others by changes in the media’s economic coverage. Unmarried women were responsive to worsening media narratives of the economy, but were not significantly influenced by increases in the number of positive news items. Married women, however, were more influenced by positive economic news.

Finally, we found no substantial differences by gender. Indeed, we attempted to replicate our analyses on a panel of 12,348 male respondents included in the FSS surveys (2,619 conception events out of 633,394 observations). The pattern of results (available upon request) was highly similar to that shown in Table 2.

### **Conclusions**

The Great Recession and, more recently, the COVID-19 disaster have fueled interest in understanding whether (and, if so, to what extent) increasing economic uncertainty affects family behavior. Recent research has argued that, in the era of uncertainty, individuals are more heavily influenced by socially-constructed narratives—with the power to influence individual fertility decision-making (Vignoli et al. 2020a)—of the future than by the role of objective economic constraints (Beckert 2016; Beckert and Bronk 2018). The media represent a crucial building-block of these narratives (Vignoli et al. 2020b), since they are most citizens’ major source of information regarding economic affairs (Joris et al. 2014; Joris et al. 2018). However, the media do not merely provide information. Following the agenda-setting approach and framing theory, the media (in all its forms) affect public perception by specifically selecting content and providing information from certain perspectives and tones (McCombs and Shaw 1972).

To the best of our knowledge, the present study is the first attempt to test the effect of the media's economic narratives on fertility behaviours by combining nationally-representative individual-level data with data on the media's economic coverage collected by *Media Tenor* (based on the evening newscast of Italy's foremost TV channel). Our findings suggest that an increase in the number of negative news items on economic affairs inhibits fertility, whereas an increase in positive news facilitates fertility. In terms of the effects' magnitude, the role of economic news in shaping fertility behaviors (*ceteris paribus*) was found to be substantially relevant. An increase in the number of positive news items determined a positive fertility reaction that is almost double that of a comparable increase in GDP per capita. On the other hand, an increase in the number of negative news items was associated with a negative fertility reaction almost half that of a comparable increase in unemployment. Our results also documented that—compared with other issues—an increase in the salience of the economy in the media negatively affects fertility. Interestingly enough, as economic media coverage increases, the news' tone itself becomes a crucial moderator of its effects on fertility. When positive news items outnumber negative ones, an increase in the percentage of economic news features facilitates fertility.

Previous studies have shown that negative news has a stronger impact than positive news on economic perceptions and expectations among citizens of countries with prosperous economies, such as Germany and Sweden (Dräger 2015; Lamla and Lein 2008). In a country that has been characterized by economic hardship, such as Italy during the Great Recession, a positive narrative of the state of the economy may be just as relevant. Similar patterns of the influence of narratives of economic uncertainty on fertility intentions have been documented by Vignoli et al. (2021): the same laboratory experiment revealed a stronger impact on fertility intentions of news with a negative tone in Norway, and of news with a positive tone in Italy. In this regard, Schwartz and Bless (1992) argued that the impact of providing new information on judgements commonly depends on a comparison individuals make with the standard they are used to. In other words, where the economic trend is turbulent, a positive economic narrative provides a major “distance experience” from the habitual “contact experience” of everyday life (Dewey 1930:58; Mische 2009:697). This may be the reason why positive economic news stories in Italy have been found to be more influential for fertility compared to their negative counterparts.

Our results also suggest the existence of substantial heterogeneity across demographic and socioeconomic groups regarding the effects of the media coverage's of the economy. Age- and parity-specific effects suggest that worsening media narratives discourage fertility—most especially in the crucial life stage when Italians begin to build their own families and in times of economic stability, i.e. among childless young adult women. This result is in line with previous studies within the literature which have shown that young adults are more likely to postpone childbearing when faced with rising economic uncertainty (Mills and Blossfeld 2013). More research is needed to explore group-specific heterogeneity in the media coverage of the economy/fertility nexus.

This study has certain limitations, largely due to data availability. First, we have no information on the individual exposure to the news. However, we consider news reported by a “universal media” which reaches a large swathe of Italian society. Indeed, the *RAI* is the Italian Public Service Media (PSM), of which *RAI 1* is the main channel, and universality is one of the PSM's fundamental principles (Born and Prosser 2001). This means that the PSM must schedule its content in order to be accessible to all of the citizens in the community it serves, thereby appealing to individuals of different ages, genders, levels of education, and so on. However, further studies may successfully include information on the individual exposure to the media. Second, we considered a single source of news. Our estimates may thus underestimate the

impact of economic news items since we only included a limited part of the whole media coverage of the economy. A natural next step would be to include other media sources, such as print and online media. Third, our data do not include information on respondents' income. Fourth, the media coverage of the economy may partly embody real economic trends. We thus controlled for traditional macroeconomic correlates of fertility (e.g., Comolli 2017; Goldstein et al. 2013; Lanzieri 2013; Matysiak et al. 2021). Nonetheless, we cannot exclude the possibility that our indicators of economic media coverage were not fully independent from actual economic dynamics. Finally, our study addressed the Italian case, but the effects of the media may potentially differ across countries. We expect that where the general economic conjuncture is more favorable than in Italy, the impact of negative news items may be more prominent in predicting fertility behaviors. With this article, we hope to encourage future comparative studies on the relations between the media's coverage of the economy and fertility.

Despite these limitations, our paper has documented a statistically significant, and substantially relevant, contribution of the media's economic coverage in explaining fertility dynamics. To the best of our knowledge, this is the first micro-level study that has addressed the role of economic news for fertility behavior in a Western society. Beyond extending the literature on media effects, we argue that our results are also suggestive of what may underline the relatively homogeneous fertility decline in contemporary Western societies. The Great Recession fueled general perceptions of uncertainty regarding future economic conditions, above and beyond the direct and objective experience of unemployment or company bankruptcy, even in countries where economic growth promptly resumed in the aftermath of the crisis (Hofmann et al. 2017; Sobotka et al. 2011). In a context of increasing and persistent uncertainty—significantly worsening due to the COVID-19 pandemic—narratives of the future (especially those channeled by the media) may become more salient for fertility decisions in contemporary Western societies. Future studies should test such a hypothesis by collecting comparative data on the media's coverage of the economy.

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**Table 1** Descriptive statistics.

Variable	Mean/Freq (%)	Monthly Risk of Conception (%)
Conception	0.46	-
Age	29.45	-
Age class		
15-24	28.37	0.23
25-34	40.55	0.72
35-40	31.08	0.35
Student		
No	80.56	0.55
Yes	19.44	0.10
Employment		
Not employed	49.55	0.40
Permanent employed	32.72	0.55
Temporary employed	10.07	0.44
Self employed	7.66	0.56
Level of education		
Lower secondary or less	25.17	0.52
Upper secondary	49.17	0.43
Tertiary education	25.66	0.47
Union		
Not in union	50.04	0.11
Cohabitation	9.21	0.86
Marriage	40.75	0.80
Person-months		644,038
Individuals		12,521

**Table 2** Estimated standardized effects on the probability of conception.

Variable	Model 1	Model 2
Constant	0.00394*** (0.00023)	-0.00172*** (0.00040)
<i>Individual specific controls</i>		
Age	0.01696*** (0.00413)	0.00988* (0.00411)
Age <sup>2</sup>	-0.01616*** (0.00313)	-0.00901** (0.00310)
Employment (ref: Not employed)		
Permanent employed	0.00165*** (0.00047)	0.00208*** (0.00047)
Temporary employed	0.00130** (0.00044)	0.00188*** (0.00044)
Self employed	0.00224** (0.00083)	0.00210** (0.00080)
Student	-0.00020 (0.00043)	-0.00013 (0.00041)
Level of education#Age (ref: Lower secondary or less)		
Upper secondary	0.00280 (0.00380)	0.00638† (0.00374)
Tertiary education	0.00116 (0.00403)	0.00637 (0.00394)
Level of education#Age <sup>2</sup> (ref: Lower secondary or less)		
Upper secondary	-0.00161 (0.00343)	-0.00522 (0.00340)
Tertiary education	0.00211 (0.00380)	-0.00388 (0.00374)
Union (ref: Not in coresidential union)		
Cohabitation		0.00698*** (0.00069)
Marriage		0.01176*** (0.00071)
<i>Macroeconomic controls</i>		
Unemployment rate	-0.00088*** (0.00024)	-0.00048* (0.00024)
GDP	0.00019† (0.00011)	0.00022* (0.00011)
HICP	0.00110 (0.00075)	0.00096 (0.00075)
<i>Time trend control</i>		
Month	-0.00182† (0.00104)	-0.00243* (0.00103)
<i>Media coverage</i>		
# Negative tone	-0.00023* (0.00010)	-0.00025** (0.00010)
# Positive tone	0.00039* (0.00018)	0.00040* (0.00018)
# No clear tone	-0.00016 (0.00013)	-0.00017 (0.00012)
Observations		644,038
Individuals		12,521

† $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ 

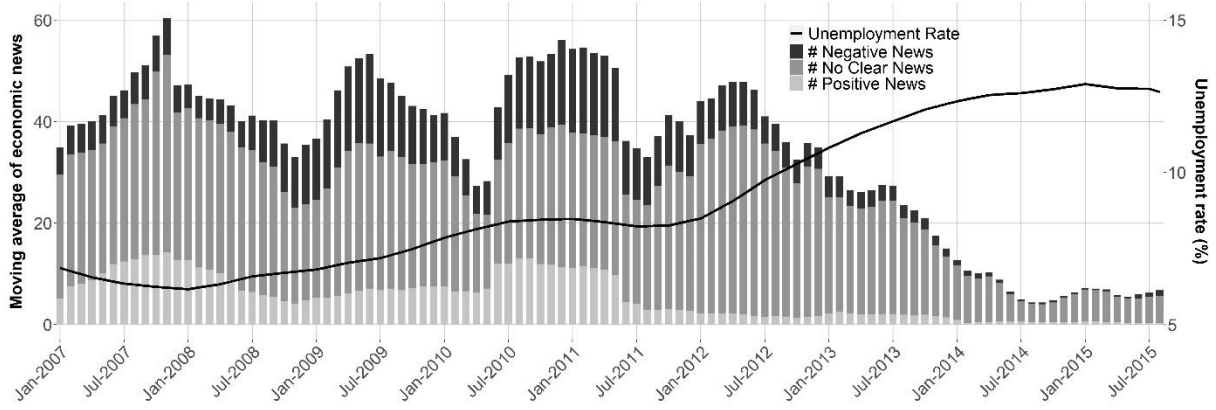
Note: Robust standard errors are in parenthesis.

**Table 3** Average Marginal Effects of media coverage variables on the transitions to first and second child from discrete-time event-history logit models.

Variable	First-Order births	Second-Order Births
# Negative tone	-0.00005* (0.00003)	-0.00010 (0.00008)
# Positive tone	0.00009† (0.00005)	0.00021 (0.00016)
# No clear tone	-0.00004† (0.00002)	0.00004 (0.00006)
Observations	365,120	110,310
Individuals	7,342	3,521
Conceptions events	1,486	1,119

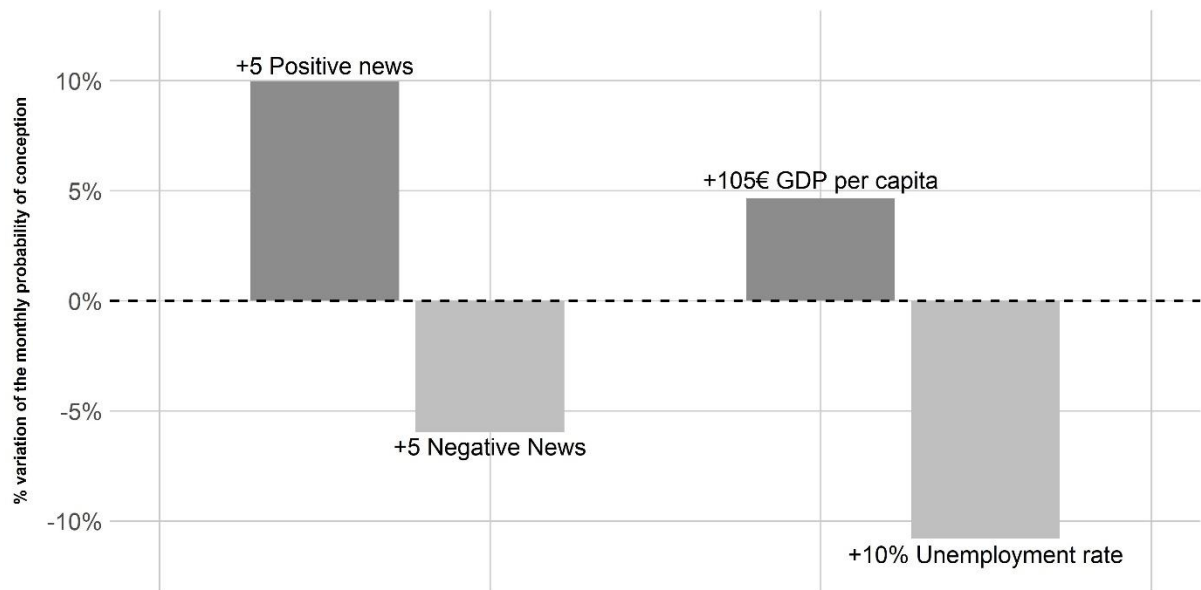
† $p < .10$ ; \* $p < .05$

*Note:* Cluster-robust standard errors are in parenthesis. Models control for all variables included in Model 2 in Table 2.



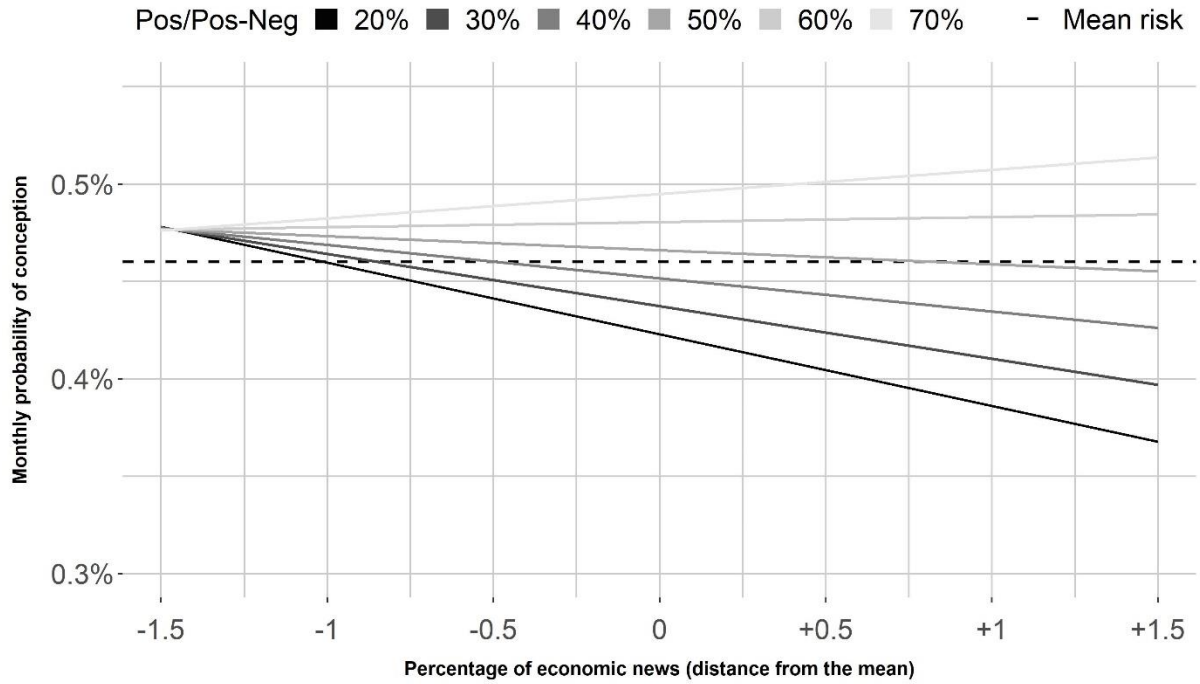
**Figure 1** Moving averages of the monthly number of economic news reported by *TGI* and of the quarterly unemployment rate in Italy during the previous 12 months, Jan 2007–Aug 2015.





**Figure 2** Percentage variation of the monthly probability of conception, compared to the mean risk observed in the sample (0.46%), due to one standard deviation increases in the media coverage of the economy and the macroeconomic context.

*Note:* Predictions obtained from Model 2 in Table 2.



**Figure 3** Interaction effects between the *Percentage* of economic news and *Pos/Pos-Neg* (the percentage of positive news items among positive and negative economic news) on the predicted probability of conception.

