

Fertility and Media Narratives of the Economy: Evidence From Italian News Coverage

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ABSTRACT We argue that media-conveyed economic narratives are crucial for understanding contemporary fertility dynamics, net of objective economic constraints. Individuals use these narratives to project themselves into an actionable imagined future and make decisions that may be relatively independent from their actual economic situation. We test this hypothesis for Italy by combining individual-level data from the 2009 and 2016 releases of the nationally representative Family and Social Subjects Survey with Media Tenor data on the coverage of the economy in the evening newscast of Italian TV's most-viewed channel (Rai 1). Our findings reveal that both the incidence and tone of news reports on the state of the economy are associated with fertility behavior. An increase in the number of negative economic news items is negatively associated with fertility, whereas an increase in positive items is positively correlated with fertility. Interestingly, when positive news items outnumber negative ones, an increase in the share of economic reports is positively associated with fertility. These associations are statistically significant and substantially relevant, net of traditional individual and contextual socioeconomic fertility correlates. Overall, our findings bolster the claim that media-conveyed narratives of the economy influence fertility behaviors.

KEYWORDS Media • Economy • Fertility • Narratives • Italy

Introduction

In the late 2000s, Goldstein and colleagues (2009) argued that the lowest-low fertility regime—that is, when total fertility rates (TFRs) are at or below 1.3 (Kohler et al. 2002)—had come to an end. Nonetheless, in the aftermath of the Great Recession, the large majority of European countries have witnessed a widespread fertility decline, regardless of their previous fertility levels. 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. 2015:208) and gains in gender equality (Esping-Andersen and Billari 2015). Such a generalized pattern of fertility decline poses serious challenges

to current demographic knowledge. After all, it cannot be explained solely by “traditional” economic and labor market fertility predictors (Comolli 2017; Comolli et al. 2021; Goldstein et al. 2013; Matysiak et al. 2021). At the micro level, a meta-analysis of European findings has conclusively shown that employment instability’s detrimental impact on fertility—while by no means negligible—does not appear to be of overwhelming importance (Alderotti et al. 2021). Furthermore, converging evidence suggests that fertility postponement has accelerated irrespective of person-specific economic circumstances (Comolli and Vignoli 2021).

Fertility choices are always made under conditions of fundamental uncertainty (Vignoli, Bazzani et al. 2020), that is, a child’s birth leads to a wide range of consequences in the parental life course that cannot be foreseen in advance with any confidence. In addition to this, in recent decades economic uncertainty expanded owing to the increasing speed of technological change, the constant flows of financial capital across the globe, and labor market deregulation reforms (Vignoli, Bazzani et al. 2020; Vignoli, Guetto et al. 2020), especially when compared with the post–World War II period. Social observers have indeed noted that a “harsh new world of economic insecurity” (Hacker 2019:xvi) appeared starting in the 1980s. The uncertainty induced by macro-level labor market conditions has been found to influence family dynamics (Harknett and Kuperberg 2011), including fertility (Cherlin et al. 2013).

Our central thesis is that, besides individuals’ economic situations, actors are influenced by socially constructed narratives of the future. Individuals use these narratives to project themselves into an actionable imagined future (Beckert 2016; Mische 2009) and make decisions that may be relatively independent of their actual economic situation and structural constraints (Vignoli, Bazzani et al. 2020; Vignoli, Guetto et al. 2020). 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 societies, the diffusion of (social) media allows narratives to circulate socially (Johnson et al. *forthcoming*; Rotkirch 2020). Media-conveyed narratives can be a source of “distance experience” from ordinary life (Dewey 1930:58; Mische 2009:697) and orient decision-making processes through a framing effect (Entman 1991; Goffman 1974). Indeed, for a significant proportion 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). Once a given media narrative is established—for example, a pessimistic view of future economic prospects—it may change expectations and behaviors (Robins and Mayer 2000; Thibodeau and Boroditsky 2011; (Vignoli, Guetto et al. 2020) through a “diffusion process” (Rogers 1962:17). Casterline posited that, similar to face-to-face interactions, mass media play a role in such processes “at a distance” (Casterline 2001:3). Behavioral changes derived from these dynamics are often independent of (objective) structural changes in the society (Bongaarts and Watkins 1996).

Against these premises, the increasing economic uncertainty characterizing contemporary societies—especially in the Western world—represents a contextual factor under which, we argue, media-conveyed narratives on the economy may become increasingly important for shaping individuals’ fertility behavior. This influence could well occur through the media’s selection of specific contents and their framing of information from certain perspectives and tones. We investigate our hypothesis of a media narratives–fertility nexus by testing (for the first time in fertility research,

to the best of our knowledge) the association between the economy's coverage in media news and individuals' fertility behaviors. To this end, we focus on Italy as a case study and combine individual-level data from the 2009 and 2016 releases of the nationally representative Family and Social Subjects Survey collected by the Italian Institute of Statistics (ISTAT) 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 association between media news on the economy and fertility behavior, while controlling for micro- and macro-level indicators of objective economic conditions.

Background

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" (Lippman 1922: chapter 1; Noelle-Neumann 1980). 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 proposes that the media's selection of which issues to report, and the salience of their coverage, significantly impacts their perceived relevance to the public. Several studies using this approach have shown a significant correlation between issues' coverage in media news and their perceived relevance—namely, a correlation of .53, as reported in Wanta and Ghanem's (2007:45) meta-analysis of 90 studies.

According to the framing theory (or second-level agenda-setting), the attributes and perspectives conveyed in media news also influence the public's understanding of the topics (McCombs 2011). By applying an experimental approach, de Vreese (2009) found that negatively framed newspaper articles on the economic consequences of the 2004 EU enlargement depressed economic expectations, whereas the opposite was the case for those that were positively framed. However, news coverage may also reflect the public's perceptions rather than shape them. After an extensive analysis of news reported by the American media (*CBS Evening News*, *NBC Nightly News*, *Newsweek*, and *Time*), Gans (2004) discussed the power of the audience in influencing the news selection mechanism by journalists. He found that, while being potentially relevant, the audience's power was less important than the sources' power, at least in the United States of the 1960s and 1970s. In his review, de Vreese (2005) assessed that, in addition to journalists' beliefs, the dynamic interactions with society have a role in shaping the framing proposed in media news.

The presence—or absence—of agenda-setting effects can be explained by individuals' need for orientation (McCombs 2011), which is a basic psychological trait that depends on relevance and uncertainty. Media effects are typically reinforced under uncertain conditions, as high levels of uncertainty lead individuals to seek information (Berger and Calabrese 1975). In periods of increasing economic uncertainty, individuals may thus intensify their economic information-seeking behaviors and, in turn, the economic news coverage may become increasingly crucial in influencing their choices.

Media and the Economy

For most people, the media are the main source of information about the economy (Joris et al. 2014; Joris et al. 2018). As economic coverage in newspaper articles grows, so too does individuals' reliance on it to update their economic expectations owing 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 focused on the state of the economy. Newspapers and weekly magazines described the crisis as the "evil" looming over European countries, thus providing a simplified narrative of economic conjuncture and a pessimistic image of the European economy (Cepernich 2012). The public's perceptions of the state of the economy were influenced by these negative headlines, thereby allowing these opinions to become self-fulfilling prophecies as individuals tend to behave according to their beliefs (McCombs 2011).

The increasing availability of media data has fueled academic interest in investigating the relationship between economic media coverage (especially in the news) and perceptions 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 economic coverage on television than with the actual unemployment rate. Uhl (2012) revealed an association between the sentiment of economic television news and the consumption habits of U.S. citizens. Garz (2012) documented a correlation between the media coverage of labor market policies in press and television and the perceived job insecurity of German citizens. More recently, he showed that households' economic perceptions worsened in line with the increase in the number of words related to unemployment reported by 35 newspapers in Germany (Garz 2018). Finally, Boydston et al. (2018) claimed there to be a direct and independent effect of the tone of U.S. newspapers' coverage of the economy on economic attitudes. This effect could be attributed to the portion of media coverage that deviated from economic reality.

The abovementioned studies have emphasized the effects of media news on individuals' economic perceptions and behaviors. However, the idea of a reversed causal pathway from citizens' perceptions to the news coverage of the economy has been advanced and tested by Soroka et al. (2015) and Wu et al. (2002) in considering the most important U.S. newspapers. For instance, during an economic recession, pessimistic individuals' beliefs about the economy were reflected in the *New York Times's* more negative economic coverage (Wu et al. 2002).

Scholars have also studied the responsiveness of economic news coverage to the economic events themselves (for a review, see Damstra et al. 2018). Goidel and Langley (1995) showed that actual economic conditions in the United States accounted for only a quarter of the variance in the number of negative economic articles from the *New York Times*—and even less in the case of positive items. Despite the fact that few studies documented a certain correspondence between American economic reality and its portrayal by television and print news (Behr and Iyengar 1985; Casey and Owen 2013), the majority of studies agreed that economic news coverage in print and television broadcasts is affected by a negativity bias (Damstra et al. 2018). News reporting typically foregrounds negative economic events and deemphasizes positive ones. This emerged in newspapers from both the United Kingdom (Soroka 2006) and the United States (Fogarty 2005; Soroka 2012; van Dalen et al. 2015).

This concise review suggests that media news narratives of the economy do not overlap with the macroeconomic reality. Also, economic news reporting tends to overwhelmingly discuss future economic trends (Soroka et al. 2015) and thus especially impacts people's forward-looking judgments (Damstra and Boukes 2018; Soroka et al. 2015). Such judgments have been argued to be crucial in understanding contemporary fertility decision-making processes (Vignoli, Bazzani et al. 2020; Vignoli, Guetto et al. 2020). The reality of the state of the economy and its portrayal by media news may thus have distinct effects on individuals' fertility choices.

Media and Fertility

Despite the widely observed effects of economic news coverage on individuals' economic perceptions and expectations, its potential role in shaping fertility has not yet been considered. Fertility studies have focused on the effects of the diffusion of mass media (e.g., Hornik and McAnany 2001), public health messages (e.g., Agha and Van Rossem 2002 analyzed the effects of radio and newspaper campaigns on female condom use in Tanzania), and the presentation of "modern" family ideas through television (e.g., La Ferrara et al. 2012). Hornik and McAnany (2001) reported that the number of televisions per capita in 1997 explained 74% of the TFR variance across 140 countries. Westoff and Bankole (1997) addressed the cases of six sub-Saharan African countries. The authors found strong positive effects of radio, television, and print media exposure on contraceptive use among married women, along with a reduction in the desired number of children. Jensen and Oster (2009) found that the introduction of cable TV in India positively affected subjective measures of female autonomy and school enrollment, while also 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 was associated with smaller family ideals. La Ferrara et al. (2012) noted a negative relationship in Brazil between the presence of the Globo channel—the main broadcaster of soap operas whose protagonists tend to have small families—and fertility.

In a review of the literature on the mass media–fertility nexus, Basten (2010) discussed the lack of such studies about Western countries. A stand-alone example is Kearney and Levine's (2015) study, which claimed that the broadcasting of the MTV show *16 and Pregnant* caused a substantial reduction in teen births in the United States. The validity of the findings reported is, however, shaky, according to Jaeger et al. (2020) and Kahn-Lang and Lang (2020).

Some recent studies have focused on the Italian context (Guetto et al. 2022; Guetto et al. 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 narratives concerning the future of the pandemic on union (Guetto et al. 2021) and fertility (Guetto et al. 2022) intentions. Vignoli et al. (2022)—in a controlled laboratory experiment conducted in Florence (Italy) and Oslo (Norway) in which they manipulated mock news bulletins on the economic prospects of the country—showed a clear causal impact of narratives of the economy on fertility intentions. Finally, using a regression discontinuity design centered in November

2012 during Italy's debt crisis, Comolli and Vignoli (2021) estimated a reduction of between 1.5% and 5% in birth rates owing to the increase in perceived economic uncertainty.

While these studies are suggestive of the media's potential power for shaping family behaviors, they have not directly addressed the influence of economic news on fertility behaviors. In their influential review on the effects of economic recessions on fertility, Sobotka et al. (2011) proposed that concern over future economic events substantially shapes fertility behaviors and suggested that media narratives of the economy may affect fertility. Evidence for this was found by Schneider (2015), the only study we identified that examined the association between economic news coverage and fertility, even if as an ecological association. Those results showed that press coverage of the economic recession accounted for part of the U.S. reduction in state-level fertility rates in the years before and during the Great Recession, net of traditional economic measures.

Building upon the argument that media coverage of the economy influences fertility dynamics in contemporary societies, the present study addresses the following research questions:

- *Question 1 (Q1)*: Is the volume of economic news items associated with fertility behavior, controlling for individuals' employment conditions and aggregate measures of economic conjuncture?
- *Question 2a (Q2a)*: Does the association between economic news and fertility outcomes change on the basis of the tone of the news items reported?
- *Question 2b (Q2b)*: If so, are fertility behaviors more sensitive to positive or negative changes in the news' tone?

We addressed 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 woman in 2019.

Data and Variables

Macro-Level Data

Data on the media coverage of economic news were provided by Media Tenor International, a Swiss-based research institute that analyzes print and broadcast news, distinguished by protagonist, topic, date, location, time reference, source, and tone. For Italian news, we used the evening edition of *TG1* (which airs at 20:00), Rai 1's newscast program. *TG1* has an average daily viewership of almost 7 million Italians, and the program's share—that is, the proportion of its 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 and notwithstanding the increasing use of social media. In the period covered by our data (January 2007–August 2015), the percentage of women aged 15–44 who used the internet on a daily basis—while growing rapidly—did not exceed the percentage

of television users.¹ In a 2016 survey conducted by ISTAT, 69.7% of respondents declared that they updated their knowledge by watching television newscasts—often, but not always, combined with online sources (ISTAT 2016). Watching television was still defined as an established habit in Italy for all age groups in 2019, albeit with a variable frequency (ISTAT 2020).

Media Tenor provided us with the monthly number of economic news items reported in the newscast—items in which the state of the economy in general, or in relation to such indicators as unemployment, economic growth, and the labor market, was discussed. They assigned a tone (positive, negative, or unclear/neutral) to each economic news item on the basis of both explicit judgmental language (e.g., “good,” “bad,” “ominous,” “ridiculous,” “brilliant”) and implicit evaluations reported to the extent that they may have influenced the perception of its content. For example, the statement “unemployment goes down” was coded as a positive news item, while “female unemployment rate grows by 0.2% in comparison with February” was classified as negative coverage. An unclear or neutral tone was assigned to statements such as “[pension reform] topics on the table are payout flexibility.” We received data on media news already coded by Media Tenor analysts, whose high-quality assessment has made the data ideal for numerous scientific studies (e.g., Beckmann et al. 2017; Berleemann and Thomas 2019; Dräger 2015; Garz 2012; Guadecker and Wogrolly 2022; Lamla and Lein 2014; Lamla and Maag 2012; Lamla and Sarferaz 2012; Püttmann 2018; Tausch and Zumbuehl 2016; Uhl 2012).

Our main measures of the economy’s coverage in the newscast were set as # *negative tone*, # *positive tone*, and # *unclear tone*, which represent the absolute monthly numbers of economic news stories according to their tone. The total number of news items reported in the newscast, regardless of their topic, varied over time. Hence it was also important to compute a relative indicator of the economic news coverage. An increase in the number of economic news items, for instance, could have a weaker effect on fertility if this rise is concurrent with a proportionally greater increase in the number of other types of news. In this case, the public’s attention could be diverted from the economy to other prominent topics (Garz 2018). Consequently, we derived the relative measure *percentage*, which represents the incidence of economic items out of all news reports. The influence of positive (negative) news reports may vary according to the amount of negative (positive) news reports appearing at the same time; for example, the negative effects of bad (good) news may be stronger if fewer positive (negative) facts are reported. Indeed, the effect of news items’ tone may be assessed by jointly considering the amount of positive and negative news items with a unique relative indicator (Lamla and Maag 2012; Tausch and Zumbuehl 2016). Thus, we used the following measure: $pos/pos + neg$ —the percentage calculated by dividing the number of positive economic news stories by the number of positive and negative economic news stories (excluding those with unclear tones), as proposed by Tausch and Zumbuehl (2016).

We also accounted for crucial macroeconomic factors traditionally employed in fertility research (Comolli 2017; Matysiak et al. 2021; for a review, see Sobotka et al. 2011): the *female unemployment rate* (by 10-year age classes beginning from the age

¹ Data were retrieved from <https://www.istat.it/it/cultura-comunicazione-viaggi?dati>.

of 15; ISTAT), the *GDP per capita* at current market price (Eurostat), and the *inflation rate* (the Harmonized Index of Consumer Prices;² Eurostat).³

Because parenthood is a long-term commitment, economic news could affect individuals' probabilities of conception on the basis of information recorded over a sufficiently long period of time. Information takes time to circulate (Carroll 2003) before any possible effects on individuals' perceptions and expectations—and subsequently on their behaviors—can be observed. Hence, we related the probability of conception at each month with the average monthly number of negative, positive, and neutral (or unclear) economic news items reported over the preceding 12 months. This approach also ensured that our results would not be affected by random fluctuations in media news. We calculated the relative measures of media news coverage for each month using these moving averages. Similarly, we employed macroeconomic indicators as moving averages of the previous year using quarterly (female unemployment rate and GDP per capita) or monthly (inflation rate) values, depending on data availability.

Micro-Level Data

We used microdata from the 2009 and 2016 releases of the Family and Social Subjects Survey (FSS),⁴ which included 43,850 and 24,753 individuals, respectively, resident in Italy and aged 18 or above. The overall response rate of the surveys was 80% in 2009 and 77% in 2016. Both releases contain detailed information on individuals' fertility and employment histories, recorded on a monthly basis. We transposed retrospective information on the careers, unions, and childbearing histories into a panel with monthly observations for female respondents aged between 15 and 40, during January 2007–August 2015.

The response variable (*conception*) is a dummy variable indicating each child's month of conception. It was constructed by subtracting nine months from the recorded date of birth. We considered well-established micro-level fertility antecedents. *Age* was included in its linear and quadratic forms. *Employment* has four levels: joblessness, permanent employment, temporary employment, and self-employment.⁵ Regarding education, we used *student* as a dummy variable, and a three-category variable for the *level of education*: lower-secondary education or less, upper-secondary education, and tertiary education. We also considered a potential mediator of the economic news–fertility relationship, namely, *union*, which distinguishes women not in a coresidential union from those in a cohabitation or marriage. All variables are

² The Harmonized Index of Consumer Prices measures consumer price inflation. It is a Laspeyres-type index of consumer goods and services classified in line with the European Classification of Individual Consumption According to Purpose (ECOICOP). For the complete ECOICOP classification, see <https://ec.europa.eu/eurostat/web/products-datasets/-/teicp000>.

³ Macroeconomic factors refer to the resident population, except for the inflation rate, which covers purchases by both resident and nonresident households.

⁴ In 2016, the survey was named Family, Social Subjects and Life Cycle. Here we refer to the two releases as FSS.

⁵ Because of data limitations, the employment variable does not distinguish between months in which women were unemployed and those in which they were inactive.

Table 1 Descriptive statistics

Variable	Mean/%	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
Number of Observations		644,038
Number of Individuals		12,521

time-varying, with the exception of level of education. Time-varying information on income was not available in the survey.

Analytic Sample

We merged micro- and macro-level variables into a unique data set according to the month of occurrence. The panel data set covered the period of January 2007–August 2015 and included 12,521 women having 2,987 conceptions (Table 1).

Regarding news coverage data, Figure 1 shows that the economy was a “hot topic” in the newscast schedule during the Great Recession and the Euro crisis. The drop in the absolute number of economic items that began in 2013 may have been due to a “replacement effect” in favor of other prominent topics. According to Media Tenor data, in 2014 the Russian invasion of Crimea, the escalation of the civil war in Syria and the resulting refugee crisis, and the Brexit referendum gained strong visibility in the media agenda. The refugee crisis became a core topic in both scientific and public discourse across Europe (Eberl et al. 2018; Garz 2018), and especially in Italy (Impicciatore et al. 2021). Indeed, the economic coverage also decreased in relative terms, confirming that greater coverage was devoted to other topics.

According to news value theory (Eilders 1997, 2016; Galtung and Ruge 1965; Kepplinger 2011; Maier et al. 2018), the news selection process also depends on

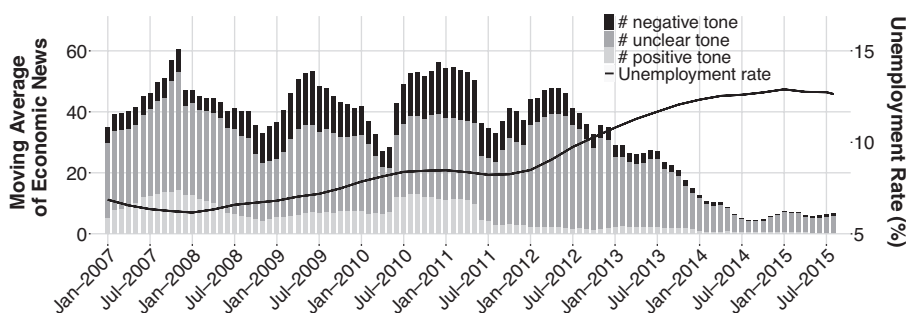


Fig. 1 Moving averages of the monthly number of economic news items reported by *TGI* and of the quarterly unemployment rate in Italy during the previous 12 months, January 2007–August 2015

journalists' opinions of newsworthiness (Kepplinger 2011). Journalists commonly consider negative stories as more attractive than positive or neutral ones. The high level of *TGI*'s coverage of the economy between 2008 and 2012 could thus be attributed to the negativity of the economic events occurring during this period. Once the debt crisis ended, declining woes over the stability of the Euro system may explain the significant subsequent decline in coverage. In line with this, during the period of the greatest economic news coverage, negative items significantly outnumbered positive ones (Figure 1).

Figure 1 also exemplifies how the relevance of a topic in media news may not overlap with its actual relevance: in Italy, the level of unemployment has almost doubled since 2012, whereas *TGI*'s coverage of the economy has drastically declined. An example unrelated to the economy (but indicative of media trends) can be found in the refugee crisis and related political debate: international migration inflows to Italy were stronger before the 2015 refugee crisis, but news coverage of migration became pervasive from 2015 onward (Impicciatore et al. 2021).

Methods

The time window available for the analysis was relatively short: each individual was observed for up to eight years and eight months, with an average of approximately four years and three months. In this setting, the separate modeling of each parity transition was complicated by the limited number of higher order conceptions (1,486 were first order, 1,119 were second order, and 382 were higher order). The main empirical analyses thus relied on a panel approach as a suitable design to maximize the number of conceptions considered. Nonetheless, we recognized that such a strategy collapses different parity progressions (Kreyenfeld 2021). To address this limitation, in a further step of the analysis we implemented discrete-time event-history models on the conditional probability of transition to first and second childbirth.

Regarding the panel analysis, the Hausman test suggested the use of a fixed-effects rather than a random-effects model. The fixed-effects model allowed us to control for individuals' time-constant unobserved characteristics. Since the monthly risk of conception varied from 0.24% to 0.73%, a range in which the relationship between

log-odds and probabilities is close to linear, we deemed the use of linear probability models (LPMs) as a valid alternative to logistic models (von Hippel 2015). Additionally, by applying logistic models with fixed effects, the estimates would rely only on women who had conceived at least one child in the panel's time frame. Such a modeling strategy would have led to a dramatic reduction of the sample size, which would have dropped from 12,251 to 2,425 women.

Our LPMs included all variables listed in the data section, individual fixed effects, a linear time trend,⁶ and error terms. The dependent variable is a dummy variable that assumes a value of 1 in the month of conception of each child, and 0 otherwise. We thus accounted for two complementary dimensions that could separately influence reproductive behaviors: what happened to the national economy (macroeconomic factors) and the relevance of the economy in the news and the feelings it conveyed (news coverage variables). This modeling strategy allowed us to detect associations between changes in the volume and tone of economic news items and (within-individual) monthly variations of fertility, net of micro- and macro-level indicators of objective economic conditions.

The chosen model has the drawback that it conflates different birth parities (Kreyenfeld 2021). To address this limitation, we also conducted a discrete-time event-history analysis on parity-specific fertility, that is, we modeled the conditional probability of the transitions to first and second childbirth. For this additional analysis, we observed childless women (or mothers of one child) from their entrance into the panel (or from the month after the birth of their first child, if it followed the panel's entrance) up to the month of the first (or second) conception, or until the end of the permanence in the panel if they did not conceive the first (or second) child in the meanwhile.

Results

Economic Coverage in Media News Versus Objective Economic Indicators

The first part of the analysis examined the absolute numbers of negative, positive, and neutral (or unclear) economic news items reported by *TGI* (# negative tone, # positive tone, and # unclear tone). In Table 2, all continuous variables have been standardized for easier comparison of the magnitude of their coefficients. Model 1 included all of the variables listed in the data section,⁷ except for the indicator of union status. We found that increases in the amount of negative economic news items were negatively associated with the probability of conception. However, an increase in the moving average of the monthly number of positive news reports was positively associated with fertility. This suggests that the volume of economic news items was significantly, and relevantly, associated with fertility behavior (Q1) and

⁶ Controlling for the seasonality of births by including monthly fixed effects, in addition to the linear time trend, did not change the results.

⁷ The variable concerning the (final) level of education is constant over time and could enter the models only through interactions. When estimating the models without interactions, results were virtually unchanged.

Table 2 Coefficients from linear probability models predicting the probability of conception

Variable	Model 1	Model 2
Constant	0.00394*** (0.00023)	−0.00172*** (0.00039)
Individual Controls		
Age	0.01696*** (0.00413)	0.00988* (0.00411)
Age ²	−0.01616*** (0.00312)	−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 ² (ref. = lower-secondary or less)		
Upper-secondary	−0.00161 (0.00343)	−0.00522 (0.00340)
Tertiary education	0.00211 (0.00380)	−0.00388 (0.00373)
Union (ref. = not in coresidential union)		
Cohabitation		0.00698*** (0.00069)
Marriage		0.01176*** (0.00071)
Macroeconomic Controls		
Female unemployment rate	−0.00088*** (0.00024)	−0.00048* (0.00024)
GDP per capita	0.00019† (0.00011)	0.00022* (0.00011)
Inflation rate	0.00110 (0.00075)	0.00096 (0.00075)
Time Trend Control: Month	−0.00182† (0.00104)	−0.00243* (0.00103)
News Coverage		
# negative tone	−0.00023* (0.00010)	−0.00025** (0.00010)
# positive tone	0.00039* (0.00018)	0.00040* (0.00018)
# unclear tone	−0.00016 (0.00012)	−0.00017 (0.00012)
Number of Observations	644,038	
Number of Individuals	12,521	

Notes: Robust standard errors are shown in parentheses. Estimates refer to standardized variables.

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

that their variations reduced or increased the probability of conception depending on tone (Q2a). The number of economic news items with an unclear tone was negatively associated with fertility, despite the estimate being statistically imprecise. We further noted that the association with positive news stories was stronger than that with negative news stories (Q2b), which itself was stronger than that with neutral (or unclear) news stories.

In Model 2, we added a control for union to assess whether the association between economic news coverage and conceptions was mediated (at least in part) by union status. Indeed, union status is a crucial predictor of fertility, especially in Italy where, in 2015, more than 70% of births occurred within marriages (Pirani et al. 2021). The coefficients associated with the numbers of economic news items were relatively unchanged compared with Model 1.⁸ To provide more rigorous evidence on this (lack of) mediating effect of partnerships, we applied a three-equations approach and the Sobel–Goodman test (Baron and Kenny 1986). We found that the news coverage of the economy was not significantly associated with the probability of marrying or cohabiting. The indirect association of news coverage with fertility, passing through union status, was therefore null (results are available upon request).

The associations between economic news and fertility were substantially and statistically significant net of the macroeconomic indicators. Increases in the female unemployment rate were associated with decreasing fertility, and rises in the GDP per capita were positively correlated with the probability of conceiving a child. The inflation rate was not significantly associated with fertility. Interestingly, the coefficients' sizes of macroeconomic trends and economic coverage in television news were of 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 averages of the number of economic news items and macroeconomic indicators. A 1-standard-deviation increase in the number of positive items (+5) was associated with an increase of 9.95% in the monthly probability of conception, compared with the mean risk observed in the sample (0.46%), whereas the same increase in negative items (+5) was connected to a decrease of 5.97%. A 1-standard-deviation increase in the female unemployment rate (+10 percentage points) was associated with a decline in the probability of conception of 10.78%, which is almost double the variation due to the increase of negative news items. On the other hand, this same increase in the quarterly GDP per capita (+105€) was associated with almost half of the variation induced by the increase in positive news items (+4.66%).

The "Relative" Coverage and Tone of Economic News

The public's attention may be diverted from the economy to other prominent topics if these are given greater coverage in the news schedule. For this reason, a *relative* indicator may be more appropriate for addressing the economy's coverage effect.

⁸ Similarly, we tested the potential mediating role of macroeconomic controls by adding the GDP per capita and the female unemployment rate one at a time. The point estimates and confidence intervals of coefficients associated with media news variables in the three nested models almost completely overlapped.

1-SD Increase in:

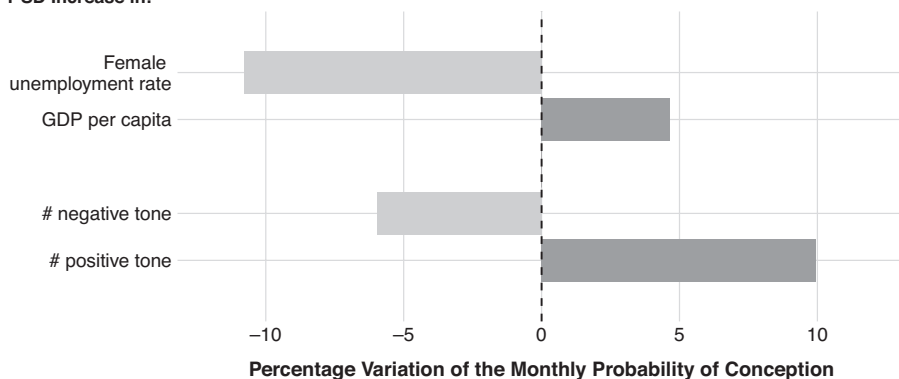


Fig. 2 Percentage variation of the monthly probability of conception (compared with the mean risk in the sample) associated with comparable changes in the news coverage of the economy and macroeconomic variables. Estimates are from Model 2 of Table 2.

Similarly, a unique measure that jointly considers both positive and negative news items reported at the same time may more accurately capture the association between tone and fertility. This is especially true since we systematically observed there being more negative than positive economic news items on average (see Figure 1). Finally, the relationship between the news coverage of the economy and fertility may change according to the news composition by tone—and the relationship between the news tone and fertility may change according to the level of coverage. We addressed these claims by considering our two relative measures of *TGI*'s news coverage: the percentage of economic features out of all news items (centered on its mean of 3.3%) and the percentage of positive news stories over positive and negative economic news stories ($\text{pos}/\text{pos} + \text{neg}$), as well as the interaction between them.

Our findings, reported in Table A1 of the online appendix, show that the “relative coverage” of the economy was negatively associated with fertility (regardless of its tone), whereas an increase in the “relative positive tone” of economic news items was positively correlated with it (regardless of the incidence of economic news items). These results confirmed our previous findings that both the incidence and tone of news reports on the state of the economy were associated with fertility behavior. Moreover, the interaction term between the relative coverage and the relative news tone was positively associated with fertility.

To more precisely interpret the model's findings, the results are graphically shown in Figure 3, which reports the predicted probability of conception at different levels of percentage and $\text{pos}/\text{pos} + \text{neg}$.⁹ The negative association between the relative coverage of the economy and the probability of conception remained until news items were mostly negative ($\text{pos}/\text{pos} + \text{neg} < 50\%$), but it could be mitigated by an improvement in tone. When positive news features outnumbered negative ones, an

⁹ We plotted values corresponding approximately to the 10th, 50th, and 90th percentiles of the distributions of percentage and $\text{pos}/\text{pos} + \text{neg}$.

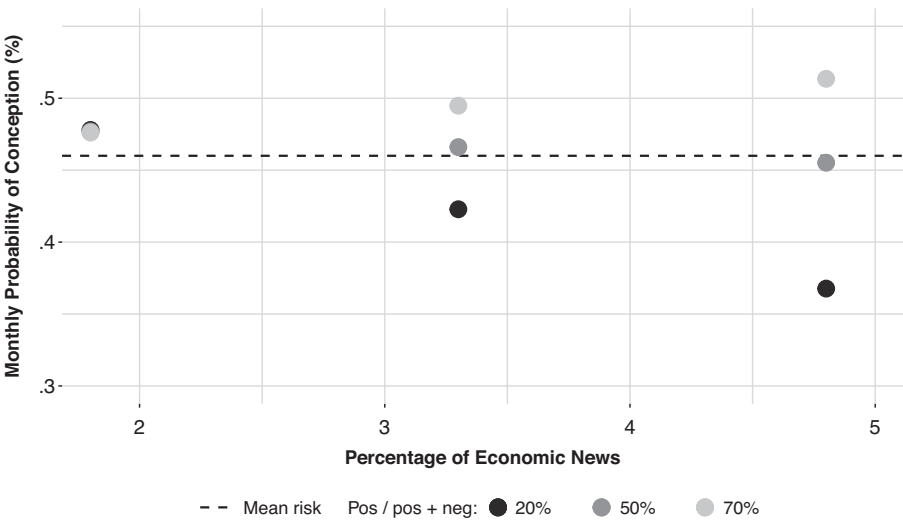


Fig. 3 Predicted probability of conception at different levels of the percentage of economic news items and pos/pos + neg (the percentage of positive news items among positive and negative economic news items)

increase in the percentage of economic news was positively associated with fertility. The positive association between fertility and the (relative) positive tone of the news items was greater as the percentage of economic coverage grew. When this percentage exceeded its mean by 1.5 percentage points (i.e., when it stood at approximately 4.8%), passing from a pos/pos + neg of 20% to one of 70%, the predicted probability of conception varied from 0.37% to 0.51%, which corresponded to -20.72% and $+10.72\%$ variations compared with the sample average (0.46%, the dashed line).

Consistent with these results, the numbers of economic news items were especially correlated with fertility during months in which the economy was frequently reported on. This emerged from an additional analysis (Table A2 in the online appendix) we conducted by augmenting Model 2 (Table 2) with interactions between the absolute numbers of economic news items and dummy variables identifying specific subperiods characterized by different levels of economic coverage (see Figure A1 in the online appendix).

Parity-Specific Analyses and Robustness Checks

We empirically tested for the possibility of parity-specific reactions to *TGI*'s coverage of the economy by conducting separate discrete-time event-history analyses for the transitions to first and second children. Regarding childless women, we found that changes in the average number of negative, positive, and neutral (or unclear) economic news features reported over the previous 12 months were significantly associated with the probability of conceiving a first child (Table 3, first column). One additional positive news item led 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 led to a reduction of roughly 1.35% in the

Table 3 Average marginal effects of news coverage variables on the transitions to first and second children from discrete-time 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 (0.00015)
# Unclear Tone	−0.00004† (0.00002)	0.00004 (0.00006)
Number of Observations	365,119	110,310
Number of Individuals	7,342	3,521
Number of Conception Events	1,486	1,119

Notes: Robust standard errors are shown in parentheses. Estimates refer to standardized variables. Models control for all variables included in Model 2 in [Table 2](#).

† $p < .10$; * $p < .05$

probability of conception. The average marginal effects of news coverage variables estimated on the mothers’ subsample (second column) were close (or greater) to those estimated for childless women—although it should be noted that their statistical precision was lower. Generally speaking, it is likely that media news on the economy was also associated with higher order conceptions, although the uncertainty in our estimates prevents any firm conclusions.

We further checked that the associations between news coverage variables and fertility remained even after augmenting Model 2 with a series of indicators of objective economic conditions (the GDP growth rate, the percentage of temporary employment, the percentage of part-time female employment, and female unemployment rates at both EU-19 and global levels) and aggregate measures of economic perceptions (consumer confidence, yields of government bonds with maturities close to 10 years, and the incidence of Google searches for the term “spread,” following Comolli and Vignoli (2021)).

In addition, although we decided to account for the news coverage in the previous 12 months, we also tested the averages of the monthly numbers of economic news items reported in different preceding intervals, from 1 to 24 months earlier. The results suggested that the average coverage calculated over very short and very long periods was not significantly associated with fertility, while the coverage in previous periods closer to 12 months was more relevant in size (Figure A2 in the online appendix).

Furthermore, we augmented Model 2 in [Table 2](#) with a set of interaction terms to test whether the associations we found were generalized or concentrated in particular groups. The results (available upon request) indicated that they were almost exclusively driven by women aged 25–34, the age group in which (first) childbirths were mostly concentrated. Regarding education, the associations were statistically and substantially significant only for women with upper-secondary education, a group that constituted almost half of our sample. The low statistical precision of the estimated associations for women with lower-secondary and tertiary education may be due to the smaller sample size of these subgroups. Also, the negative association between

the number of negative economic news items and fertility was greater among cohabiting women than among married women. Nonunion fertility was also negatively associated with a worsening in the news coverage. A similar pattern of associations also emerged for positive news. This may be explained by the fact that selection into cohabitation among women in Italy is driven by economic uncertainty (Vignoli et al. 2016). We detected no heterogeneity in the associations between news coverage variables and fertility by employment status, and no substantial differences by gender. Indeed, we replicated 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.

Finally, the effects of the economy's news coverage may reasonably change according to objective economic developments. We therefore augmented Model 2 (Table 2) by interacting news coverage variables with GDP per capita and female unemployment rate. The results (Table A3 in the online appendix) revealed that the relationship between economic news and fertility weakened when the female unemployment rate increased.

Conclusions

Recent research has argued that, in an era of economic uncertainty, individuals are influenced not only by objective economic constraints but also by *socially constructed narratives of the future* when making long-term binding decisions (Beckert 2016; Beckert and Bronk 2018), including those concerning fertility (Vignoli, Bazzani et al. 2020). The media represent a crucial building block of these narratives (Vignoli, Guetto et al. 2020) since they are the major source of economic information for most citizens (Joris et al. 2014, 2018). Following the agenda-setting approach and framing theory, the media (in all its forms) influence public perception by specifically selecting content and presenting it from certain perspectives and tones (McCombs and Shaw 1972). In recent years, the rising economic uncertainty in Western countries may have boosted the effects of media's economic narratives on individual perceptions and expectations about the economy and, in turn, fertility behavior.

We investigated the relationship between media-conveyed narratives of the economy and fertility behavior by combining nationally representative individual-level data with data on the economic coverage of Italy's most popular evening newscast. Our findings suggested that an increase in the number of negative economic news items was negatively associated with fertility, whereas an increase in positive items was positively, and more strongly, correlated with fertility. The association between economic news and fertility behavior (*ceteris paribus*) was found to be substantially relevant: the positive fertility reaction to an increase in positive news was almost double that of a comparable increase in the GDP per capita. On the other hand, the negative fertility reaction to an increase in negative news was almost half that of a comparable increase in the female unemployment rate. Our results also documented that an increase in the salience of the economy in the news—compared with other issues—was negatively associated with fertility. Importantly, when positive news items outnumbered negative ones, an increase in the percentage of economic news out of all news reports fostered fertility.

Previous studies have shown that reporting negative news had a stronger impact than reporting positive news on the economic perceptions and expectations of citizens from countries with prosperous economies, such as Sweden and Germany (Dräger 2015; Lamla and Lein 2014). In a country that has been characterized by economic hardship, such as Italy, a positive economic narrative may be just as relevant. A similar pattern of results about news tone has been documented by Vignoli et al. (2022): the same laboratory experiment revealed a stronger impact on fertility intentions of a news bulletin with a negative tone in Norway and one with a positive tone in Italy. In this regard, Schwarz and Bless (1992) argued that new information can influence individuals' judgments depending on the comparison they make with familiar standards. In other words, when the economic trend is turbulent, a positive economic narrative provides a major "distance experience" from the habitual "contact experience" of daily life (Dewey 1930:58; Mische 2009:697). This could possibly explain why we found a stronger influence of positive economic news items compared with negative items.

This study has certain limitations, largely due to data availability. First, we had no information on individuals' exposure to the news, nor on the composition of the audience by demographic factors (data on the composition of Italian programs' audiences are not made public). However, a 2016 ISTAT survey found that respondents of all age groups reported updating their knowledge of current events by both watching television newscasts and browsing the internet and social media. Moreover, we focused on news items reported by a "universal media" that reaches a large share of the 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). The potential effect of mass media transcends the direct viewers themselves (Hornik and McAnany 2001): audiences contribute to the public discourse on the economy, thus influencing the perceptions and expectations of those not exposed. Although a potential slight divergence between the *TG1* audience and the general population may not represent a crucial issue for our findings, further studies may successfully include information on individual exposure to the media. Another natural next step would be to widen the sources of media news by including print and online media. Media analysis on the European debt crisis coverage has shown a high level of consonance between different types of media in Italy (quality press, financial press, tabloids) (Arrese and Vara 2015), which suggests that the evening newscast of Rai 1 offered an adequate picture of what the media daily reported for Italy. Second, the association between economic news coverage and fertility may vary by area. Indeed, Italy suffers a considerable socioeconomic gap between the wealthier North and the more disadvantaged South. Unfortunately, micro-level data contained information about respondents' residence only at the time of the interview. Third, the economy's coverage 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 news coverage were not fully independent from actual economic dynamics. Finally, although the theoretical section of this article proposed potential pathways of association between economic news coverage and fertility, the understanding of the mechanisms underlying such association requires the availability of time-varying information on individuals' economic

perceptions. Because of data constraints, we could focus only on the “total effect” of economic news coverage on fertility behavior.

Despite these limitations, our study has documented a statistically significant, and substantially relevant, correlation between the economic news coverage and fertility dynamics. This is the first micro-level study that has addressed the role of economic news for fertility behavior in a Western country. Without deriving firm causal conclusions, our findings bolster the claim that media-conveyed narratives of the economy influence fertility behaviors. These narratives are socially constructed by a continuous, dynamic, and (potentially) mutual influence between societal beliefs and the media’s economic coverage. Beyond extending the literature on media effects, our results are suggestive of what may underlie the relatively homogeneous fertility decline seen in contemporary Western societies. The Great Recession, and later the COVID-19 pandemic, fueled general perceptions of uncertainty regarding future economic conditions, above and beyond the direct and objective experience of unemployment or company bankruptcy. In this context, economic narratives of the future (especially those channeled by the media) may become more salient for fertility decisions in Western societies (Vignoli, Bazzani et al. 2020; Vignoli, Guetto et al. 2020). ■

Acknowledgments The authors thank the members of the Population and Society Unit of the University of Florence for helpful comments on previous versions of the manuscript. We acknowledge financial support provided by the European Union’s Horizon 2020 research and innovation program/ERC Consolidator Grant Agreement No. 725961 (EU-FER project “Economic Uncertainty and Fertility in Europe,” PI: Daniele Vignoli) and by the Italian Ministry of University and Research, 2018 MiUR-FARE Grant (“Narratives,” PI: Daniele Vignoli). We thank Media Tenor International AG/Switzerland for the provision of the news coverage data.

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